APPENDICES

<u>APPENDIX A</u>

ENGINEERING DATA

APPENDIX A-1

Draft Beach Corridor Capital Cost Tech Memo

Capital Cost Estimates Technical Memorandum

For the

Beach Corridor Rapid Transit Project
Project Development and Environment (PD&E) Study

Prepared for:

MIAMI-DADE DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS

Prepared by:

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January 2020

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APPENDICES

LIST OF ACRONYMS:

APM	Automated People Mover
BDR	Bridge Development Report
BRT	Bus Rapid Transit
DTPW	(Miami-Dade County) Department of Transportation and Public Works
FDOT	Florida Department of Transportation
FTA	Federal Transit Administration
LPA	Locally Prefered Alternative
LRT	Light Rail Transit
PD&E	Project Development and Environment
ROW	Right of Way
SCC	Standard Cost Categories

INTRODUCTION AND PURPOSE

The Miami-Dade County Department of Transportation and Public Works (DTPW) is conducting a Project Development and Environment (PD&E) study for the Beach Corridor in collaboration with the Federal Transit Administration (FTA) and Florida Department of Transportation (FDOT). Based on the results of the Tier One Evaluation, four transit modes were recommended to advance for further analysis in Tier Two: automated people mover (Metromover expansion), bus rapid transit, monorail, and streetcar/light rail transit.

This memorandum summarizes the development and preparation of the Cost Estimates for all transit modes part of the Tier Two Evaluation. The primary purpose is to provide an updated cost estimate for each of the transit modes that reflects the latest assumptions, project developments, and design to define a cost for each transit mode and ultimately using it as part of the Evaluation Matrix to help define and ultimately select the locally preferred alternative (LPA).

Refer to Attachments A thru D for additional information.

COST ESTIMATE APPROACH

For this cost estimate, a combination of preliminary design for the fixed facility components (guideway) and historical cost was used to define a cost estimate for each of the transit modes given the current stage (PD&E) of the project.

Item Names: FDOT basis of estimates, SCC for Capital Projects along with samples of transit projects were used as a basis to develop our Capital Cost Estimate Items.

Quantities: The preparation and assembly of the quantities were done by the respective team members, summarized and arranged according to the SCC, FDOT BDR Cost Estimating Method, FDOT Unit Costs and FDOT Basis of Estimates.

Historical Costs: Parsons used FDOT Historical Item Average Unit Costs and FTA's Capital Cost Database. Prior experience and bid tabulations from sample transit projects also supplemented these costs.

SCC Codes: SCC were used for transit items listed, such as track elements, stops, support facilities, vehicles, etc.

FDOT Unit Costs: Costs were derived using FDOT BDR Cost Estimating Method (2019), FDOT Unit Costs (August 2018 to July 2019) and FDOT Basis of Estimates (2019). These were used to compliment the estimate with roadway and bridge costs as well as related items.

Sample transit projects used as reference are Amtrak National Network Analysis, M. Gitlin (CivCon), N. Corridor Transit Study (Columbus, OH), Euclid Ave BRT (Cleveland, OH), A. Peterson (PB), Wave Streetcar Project, MCW, A. Danaher (PB), PTG, DG Jones Minn Interchange Station, Metromover System and MIA Mover APM.

ASSUMPTIONS

The following assumptions were made in the development and preparation of the Capital Cost Estimates:

General

For each of the elevated rapid transit modes and each segment, the costs of the fixed facilities were established using either existing plans for guideway and stations or a preliminary design of structural members for the typical span length and extrapolated for the length of the project.

- Sections: The estimate assumes that the costs are being divided into the three sections in which the project has been divided, Section 1 Bay Crossing, Section 2 Miami Extension (along N. Miami Avenue) and Sectiont 3 Miami Beach Extension (Washington Avenue to Miami Beach Convention Center).
- Systems: Systems quantities use historical unit costs, which consist of lump sum and a flat amount for the transit mode.
- Maintenance of Traffic: Maintenance of traffic quantities are a percentage of structure and trackwork of the transit mode.
- Mobilization: Mobilization quantities are a percentage of structure and trackwork of the transit mode.

Quantities

- Guideway & Track Elements:
  - o Based on project/segment length and existing Metromover superstructure design (i.e. Beams and Plinths)

  - Unit costs based on FDOT BDR Cost Estimating Method and Unit Costs.
  - Connection to existing transit system (Existing Metromover - Museum Park Station) for all elevated transit modes.
- Stations, Stops, Terminals, Intermodal:
  - Based on existing plans and/or historical data of type similar projects.
- Support Facilities: Yards, Shops, Admin Buildings
  - Estimates based on similar type projects (ie Exisitng Metromover System)
- Sitework & Special Conditions
  - Based on project length of corridor
- Roadway-Civil:
  - LRT: Tracks on road is embedded in concrete.
  - BRT: Patterned Pavement for dedicated BRT Lanes and Bike Lanes within Miami Beach Area.
  - All pavement markings that need to be replaced will be thermoplastic.
  - All areas affected by guideway will be replaced in kind.
- Systems:
  - Systems quantities use historical unit costs, which consist of lump sum and a flat amount for the transit mode.

Unit Prices

- General Assumptions
  - To the extent possible, FDOT Historical Unit Cost data or SCC data base was used to generate reasonable unit price for standard and non-standard items.
  - For non-standard items, a combination of local transit projects and numbers from national transit projects were used.
- Lump Sum Items
  - ROW, Land, Existing Improvements estimate was developed based on estimated ROW takes that encompassed both aerial easement rights and perpetual easements.
  - For systems components, a 10% cost was estimated for LRT & Monorail, however for APM a 7% was assumed given there is existing infrastructure in place.

- Sample transit projects used as reference are Amtrak National Network Analysis, M. Gitlin (CivCon), N. Corridor Transit Study (Columbus, OH), Euclid Ave BRT (Cleveland, OH), A. Peterson (PB), Wave Streetcar Project, MCW, A. Danaher (PB), PTG, DG Jones Minn Interchange Station, Metromover System and MIA Mover APM.

CONTINGENCIES AND EXCLUSIONS

- To reflect a more realistic level of effort for the Capital Cost Estimate, a design allowance (design contingency) for the various modes in the engineer's estimate to account for:
  - Minor items
  - Uncertainties
  - Design details
  - Unknown and unqualified items.
- Costs for escalation, design, temporary power, construction management and administration have not been included in this memorandum.
- The costs represented in the Capital Cost Estimate are for 2019 year construction costs.

APPENDIX A | AUTOMATED PEOPLE MOVER (APM)

DTPW Beach Corridor

APM (Metromover) - Total Project (Miami Design District to Miami Beach Convention Center)

Project Development & Environmental (PD&E) Cost Estimate

SCC	ITEM DESCRIPTION	UNIT	QTY	UNIT COST	ALLOCATED COSTS	ALLOCATED CONTINGENCY	TOTAL COST (2019$)
	Assumed Cost - Entire System	*MILE*	*5.4*	*$189,186,120*			$ 1,022,250,000
10 GUIDEWAY & TRACK ELEMENTS						***20%***	***$ 220,794,000***
10.01	Guideway: At-grade exclusive right-of-way	TF	-	$ -	$ -	$ -	$ -
10.02	Guideway: At-grade semi-exclusive (allows cross-traffic)	TF	-	$ -	$ -	$ -	$ -
10.03	Guideway: At-grade in mixed traffic	TF	-	$ -	$ -	$ -	$ -
10.04	Guideway: Aerial structure	LF	28,530	$ 6,300	$ 179,745,000	$ 35,949,000	$ 215,694,000
10.05	Guideway: Built-up fill	LF	-	$ -	$ -	$ -	$ -
10.06	Guideway: Underground cut & cover	LF	-	$ -	$ -	$ -	$ -
10.07	Guideway: Underground tunnel	LF	-	$ -	$ -	$ -	$ -
10.08	Guideway: Retained cut or fill	LF	-	$ -	$ -	$ -	$ -
10.09	Track: Direct fixation	TF	-	$ -	$ -	$ -	$ -
10.10	Track: Embedded	TF	-	$ -	$ -	$ -	$ -
10.11	Track: Ballasted	TF	-	$ -	$ -	$ -	$ -
10.12	Track: Special (switches, turnouts)	EA	17	$ 250,000	$ 4,250,000	$ 850,000	$ 5,100,000
10.13	Track: Vibration and noise dampening	TF	-	$ -	$ -	$ -	$ -
20 STATIONS, STOPS, TERMINALS, INTERMODAL						***20%***	***$ 150,604,200***
20.01	At-grade station, stop, shelter, mall, terminal, platform	EA	-	$ -	$ -	$ -	$ -
20.02	Aerial station, stop, shelter, mall, terminal, platform	EA	10	$ 12,000,000	$ 120,000,000	$ 24,000,000	$ 144,000,000
20.03	Underground station, stop, shelter, mall, terminal, platform	EA	-	$ -	$ -	$ -	$ -
20.04	Other stations, landings, terminals: Intermodal, ferry, trolley, etc.	EA	-	$ -	$ -	$ -	$ -
20.05	Joint development	EA	-	$ -	$ -	$ -	$ -
20.06	Automobile parking multi-story structure	EA	-	$ -	$ -	$ -	$ -
20.07	Elevators, escalators	EA	10	$ 550,262	$ 5,503,500	$ 1,100,700	$ 6,604,200
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS						***20%***	***$ 44,522,400***
30.01	Administration Building: Office, sales, storage, revenue counting	EA	1	$ 5,000,000	$ 5,000,000	$ 1,000,000	$ 6,000,000
30.02	Light Maintenance Facility	EA	-	$ -	$ -	$ -	$ -
30.03	Heavy Maintenance Facility	EA	1	$ 19,602,000	$ 19,602,000	$ 3,920,400	$ 23,522,400
30.04	Storage or Maintenance of Way Building	EA	-	$ -	$ -	$ -	$ -
30.05	Yard and Yard Track	EA	1	$ 12,500,000	$ 12,500,000	$ 2,500,000	$ 15,000,000
40 SITEWORK & SPECIAL CONDITIONS						***20%***	***$ 54,441,300***
40.01	Demolition, Clearing, Earthwork	AC	28	$ 5,000	$ 141,568	$ 28,314	$ 169,900
40.02	Site Utilities, Utility Relocation	LSUM	1	$ 17,507,000	$ 17,507,000	$ 3,501,400	$ 21,008,400
40.03	Haz. mat'l, contam'd soil removal/mitigation, ground water treatments	LSUM	1	$ 1,621,120	$ 1,621,120	$ 324,224	$ 1,945,400
40.04	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	LSUM	1	$ 1,361,768	$ 1,361,768	$ 272,354	$ 1,634,200
40.05	Site structures including retaining walls, sound walls	LSUM	1	$ -	$ -	$ -	$ -
40.06	Pedestrian / bike access and accommodation, landscaping	LSUM	1	$ 270,200	$ 270,200	$ 54,040	$ 324,300
40.07	Automobile, bus, van accessways including roads, parking lots	LSUM	1	$ 6,000,000	$ 6,000,000	$ -	$ 6,000,000
40.08	Temporary Facilities and other indirect costs during construction	%	5	$ -	$ 19,465,848	$ 3,893,170	$ 23,359,100
50 SYSTEMS						***20%***	***$ 132,014,400***
50.01	Train control and signals	LSUM	1	$ 32,359,300	$ 32,359,300	$ 6,471,860	$ 38,831,200
50.02	Traffic signals and crossing protection	EA	-	$ -	$ -	$ -	$ -
50.03	Traction power supply: substations	EA	8	$ 3,800,413	$ 30,403,400	$ 6,080,680	$ 36,484,100
50.04	Traction power distribution: catenary and third rail	LSUM	1	$ 28,065,200	$ 28,065,200	$ 5,613,040	$ 33,678,300
50.05	Communications	LSUM	1	$ 14,184,000	$ 14,184,000	$ 2,836,800	$ 17,020,800
50.06	Fare collection system and equipment	EA	-	$ -	$ -	$ -	$ -
50.07	Central Control	EA	-	$ -	$ 5,000,000	$ 1,000,000	$ 6,000,000
SUBTOTAL - CONSTRUCTION COSTS							***$ 602,376,300***
60 ROW, LAND, EXISTING IMPROVEMENTS						***25%***	***$ 65,443,500***
60.01	Purchase or lease of real estate	AC	4.0		$ 52,354,800	$ 13,088,700	$ 65,443,500
60.02	Relocation of existing households and businesses	EA	-	$ -	$ -	$ -	$ -
70 VEHICLES						***20%***	***$ 91,200,000***
70.01	Light Rail	EA	-	$ -	$ -	$ -	$ -
70.02	Heavy Rail	EA	-	$ -	$ -	$ -	$ -
70.03	Commuter Rail	EA	-	$ -	$ -	$ -	$ -
70.04	Bus	EA	-	$ -	$ -	$ -	$ -
70.05	Other	EA	20	$ 3,800,000	$ 76,000,000	$ 15,200,000	$ 91,200,000
70.06	Non-revenue vehicles	EA	-	$ -	$ -	$ -	$ -
70.07	Spare parts	EA	-	$ -	$ -	$ -	$ -
80 PROFESSIONAL SERVICES						***10%***	***$ 170,281,000***
80.01	Project Development	%	3%	$ -	$ 17,524,500	$ 1,752,450	$ 19,277,000
80.02	Engineering	%	8%	$ -	$ 46,731,500	$ 4,673,150	$ 51,404,700
80.03	Project Management for Design and Construction	%	4%	$ -	$ 23,366,000	$ 2,336,600	$ 25,702,600
80.04	Construction Administration & Management	%	4%	$ -	$ 23,366,000	$ 2,336,600	$ 25,702,600
80.05	Professional Liability and other Non-Construction Insurance	%	2%	$ -	$ 11,683,500	$ 1,168,350	$ 12,851,900
80.06	Legal; Permits; Review Fees by other agencies, cities, etc.	%	1%	$ -	$ 5,842,000	$ 584,200	$ 6,426,200
80.07	Surveys, Testing, Investigation, Inspection	%	0.50%	$ -	$ 2,921,000	$ 292,100	$ 3,213,100
80.08	Start up	%	4%	$ -	$ 23,366,000	$ 2,336,600	$ 25,702,600
90 UNALLOCATED CONTINGENCY							***$ 92,930,100***
90.00	Unallocated Contingency (Project Reserve)	%	10				$ 92,930,100
PD&E CAPITAL COST ESTIMATE							**$ 1,022,250,000**

Notes: 1) Unit costs primarily based on FTA Capital Cost Database and FDOT construction costs
2) ROW Cost includes cost for one maintenance faciliy located at the Bay Crossing (Trunkline)

DTPW Beach Corridor

APM (Metromover) - Trunkline (Bay Crossing)

Project Development & Environmental (PD&E) Cost Estimate

SCC	ITEM DESCRIPTION	UNIT	QTY	UNIT COST	ALLOCATED COSTS	ALLOCATED CONTINGENCY	TOTAL COST (2019$)
	Assumed Cost - Bay Crossing (Trunkline)	*MILE*	*3.66*	*$172,521,883*			$ 631,600,000
10 GUIDEWAY & TRACK ELEMENTS						***20%***	***$ 156,260,400***
10.01	Guideway: At-grade exclusive right-of-way	TF	-	$ -	$ -	$ -	$ -
10.02	Guideway: At-grade semi-exclusive (allows cross-traffic)	TF	-	$ -	$ -	$ -	$ -
10.03	Guideway: At-grade in mixed traffic	TF	-	$ -	$ -	$ -	$ -
10.04	Guideway: Aerial structure	LF	19,330	$ 6,620	$ 127,967,000	$ 25,593,400	$ 153,560,400
10.05	Guideway: Built-up fill	LF	-	$ -	$ -	$ -	$ -
10.06	Guideway: Underground cut & cover	LF	-	$ -	$ -	$ -	$ -
10.07	Guideway: Underground tunnel	LF	-	$ -	$ -	$ -	$ -
10.08	Guideway: Retained cut or fill	LF	-	$ -	$ -	$ -	$ -
10.09	Track: Direct fixation	TF	-	$ -	$ -	$ -	$ -
10.10	Track: Embedded	TF	-	$ -	$ -	$ -	$ -
10.11	Track: Ballasted	TF	-	$ -	$ -	$ -	$ -
10.12	Track: Special (switches, turnouts)	EA	9	$ 250,000	$ 2,250,000	$ 450,000	$ 2,700,000
10.13	Track: Vibration and noise dampening	TF	-	$ -	$ -	$ -	$ -
20 STATIONS, STOPS, TERMINALS, INTERMODAL						***20%***	***$ 50,641,800***
20.01	At-grade station, stop, shelter, mall, terminal, platform	EA	-	$ -	$ -	$ -	$ -
20.02	Aerial station, stop, shelter, mall, terminal, platform	EA	4	$ 10,000,000	$ 40,000,000	$ 8,000,000	$ 48,000,000
20.03	Underground station, stop, shelter, mall, terminal, platform	EA	-	$ -	$ -	$ -	$ -
20.04	Other stations, landings, terminals: Intermodal, ferry, trolley, etc.	EA	-	$ -	$ -	$ -	$ -
20.05	Joint development	EA	-	$ -	$ -	$ -	$ -
20.06	Automobile parking multi-story structure	EA	-	$ -	$ -	$ -	$ -
20.07	Elevators, escalators	EA	4	$ 550,262	$ 2,201,500	$ 440,300	$ 2,641,800
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS						***20%***	***$ 44,522,400***
30.01	Administration Building: Office, sales, storage, revenue counting	EA	1	$ 5,000,000	$ 5,000,000	$ 1,000,000	$ 6,000,000
30.02	Light Maintenance Facility	EA	-	$ -	$ -	$ -	$ -
30.03	Heavy Maintenance Facility	EA	1	$ 19,602,000	$ 19,602,000	$ 3,920,400	$ 23,522,400
30.04	Storage or Maintenance of Way Building	EA	-	$ -	$ -	$ -	$ -
30.05	Yard and Yard Track	EA	1	$ 12,500,000	$ 12,500,000	$ 2,500,000	$ 15,000,000
40 SITEWORK & SPECIAL CONDITIONS						***20%***	***$ 37,854,300***
40.01	Demolition, Clearing, Earthwork	AC	17.8	$ 5,000	$ 88,751	$ 17,750	$ 106,600
40.02	Site Utilities, Utility Relocation	LSUM	1	$ 12,279,653	$ 12,279,653	$ 2,455,931	$ 14,735,600
40.03	Haz. mat'l, contam'd soil removal/mitigation, ground water treatments	LSUM	1	$ 1,098,295	$ 1,098,295	$ 219,659	$ 1,318,000
40.04	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	LSUM	1	$ 922,568	$ 922,568	$ 184,514	$ 1,107,100
40.05	Site structures including retaining walls, sound walls	LSUM	1	$ -	$ -	$ -	$ -
40.06	Pedestrian / bike access and accommodation, landscaping	LSUM	1	$ 183,049	$ 183,049	$ 36,610	$ 219,700
40.07	Automobile, bus, van accessways including roads, parking lots	LSUM	1	$ 6,000,000	$ 6,000,000	$ 1,200,000	$ 7,200,000
40.08	Temporary Facilities and other indirect costs during construction	%	5	$ -	$ 10,972,683	$ 2,194,537	$ 13,167,300
50 SYSTEMS						***20%***	***$ 87,598,100***
50.01	Train control and signals	LSUM	1	$ 20,371,050	$ 20,371,050	$ 4,074,210	$ 24,445,300
50.02	Traffic signals and crossing protection	EA	-	$ -	$ -	$ -	$ -
50.03	Traction power supply: substations	EA	5	$ 3,800,413	$ 19,002,066	$ 3,800,413	$ 22,802,500
50.04	Traction power distribution: catenary and third rail	LSUM	1	$ 19,015,031	$ 19,015,031	$ 3,803,006	$ 22,818,100
50.05	Communications	LSUM	1	$ 9,610,085	$ 9,610,085	$ 1,922,017	$ 11,532,200
50.06	Fare collection system and equipment	EA	-	$ -	$ -	$ -	$ -
50.07	Central Control	EA	-	$ 5,000,000	$ 5,000,000	$ 1,000,000	$ 6,000,000
SUBTOTAL - CONSTRUCTION COSTS							***$ 376,877,000***
60 ROW, LAND, EXISTING IMPROVEMENTS						***25%***	***$ 41,805,200***
60.01	Purchase or lease of real estate	AC	3.0	$ -	$ 33,444,100	$ 8,361,025	$ 41,805,200
60.02	Relocation of existing households and businesses	EA	-	$ -	$ -	$ -	$ -
70 VEHICLES						***20%***	***$ 45,600,000***
70.01	Light Rail	EA	-	$ -	$ -	$ -	$ -
70.02	Heavy Rail	EA	-	$ -	$ -	$ -	$ -
70.03	Commuter Rail	EA	-	$ -	$ -	$ -	$ -
70.04	Bus	EA	-	$ -	$ -	$ -	$ -
70.05	Other	EA	10	$ 3,800,000	$ 38,000,000	$ 7,600,000	$ 45,600,000
70.06	Non-revenue vehicles	EA	-	$ -	$ -	$ -	$ -
70.07	Spare parts	EA	-	$ -	$ -	$ -	$ -
80 PROFESSIONAL SERVICES						***10%***	***$ 109,863,000***
80.01	Project Development	%	3%	$ -	$ 11,306,500	$ 1,130,650	$ 12,437,200
80.02	Engineering	%	8%	$ -	$ 30,150,500	$ 3,015,050	$ 33,165,600
80.03	Project Management for Design and Construction	%	4%	$ -	$ 15,075,500	$ 1,507,550	$ 16,583,100
80.04	Construction Administration & Management	%	4%	$ -	$ 15,075,500	$ 1,507,550	$ 16,583,100
80.05	Professional Liability and other Non-Construction Insurance	%	2%	$ -	$ 7,538,000	$ 753,800	$ 8,291,800
80.06	Legal; Permits; Review Fees by other agencies, cities, etc.	%	1%	$ -	$ 3,769,000	$ 376,900	$ 4,145,900
80.07	Surveys, Testing, Investigation, Inspection	%	0.50%	$ -	$ 1,884,500	$ 188,450	$ 2,073,000
80.08	Start up	%	4%	$ -	$ 15,075,500	$ 1,507,550	$ 16,583,100
90 UNALLOCATED CONTINGENCY							***$ 57,414,600***
90.00	Unallocated Contingency (Project Reserve)	%	10				$ 57,414,600
PD&E CAPITAL COST ESTIMATE							**$ 631,600,000**

Notes: 1) Unit costs primarily based on FTA Capital Cost Database and FDOT construction costs

DTPW Beach Corridor

APM (Metromover) - Miami Extension (Miami Design District to School Board Station)

Project Development & Environmental Cost Estimate

SCC	ITEM DESCRIPTION	UNIT	QTY	UNIT COST	ALLOCATED COSTS	ALLOCATED CONTINGENCY	TOTAL COST (2019$)
	Assumed Cost - Miami Extension (North Miami Ave)	*MILE*	*1.74*	*$233,869,565*			$ 407,500,000
10 GUIDEWAY & TRACK ELEMENTS						***20%***	***$ 64,533,600***
10.01	Guideway: At-grade exclusive right-of-way	TF	-	$ -	$ -	$ -	$ -
10.02	Guideway: At-grade semi-exclusive (allows cross-traffic)	TF	-	$ -	$ -	$ -	$ -
10.03	Guideway: At-grade in mixed traffic	TF	-	$ -	$ -	$ -	$ -
10.04	Guideway: Aerial structure	LF	9,200	$ 5,628	$ 51,778,000	$ 10,355,600	$ 62,133,600
10.05	Guideway: Built-up fill	LF	-	$ -	$ -	$ -	$ -
10.06	Guideway: Underground cut & cover	LF	-	$ -	$ -	$ -	$ -
10.07	Guideway: Underground tunnel	LF	-	$ -	$ -	$ -	$ -
10.08	Guideway: Retained cut or fill	LF	-	$ -	$ -	$ -	$ -
10.09	Track: Direct fixation	TF	-	$ -	$ -	$ -	$ -
10.10	Track: Embedded	TF	-	$ -	$ -	$ -	$ -
10.11	Track: Ballasted	TF	-	$ -	$ -	$ -	$ -
10.12	Track: Special (switches, turnouts)	EA	8	$ 250,000	$ 2,000,000	$ 400,000	$ 2,400,000
10.13	Track: Vibration and noise dampening	TF	-	$ -	$ -	$ -	$ -
20 STATIONS, STOPS, TERMINALS, INTERMODAL						***20%***	***$ 75,962,400***
20.01	At-grade station, stop, shelter, mall, terminal, platform	EA	-	$ -	$ -	$ -	$ -
20.02	Aerial station, stop, shelter, mall, terminal, platform	EA	6	$ 10,000,000	$ 60,000,000	$ 12,000,000	$ 72,000,000
20.03	Underground station, stop, shelter, mall, terminal, platform	EA	-	$ -	$ -	$ -	$ -
20.04	Other stations, landings, terminals: Intermodal, ferry, trolley, etc.	EA	-	$ -	$ -	$ -	$ -
20.05	Joint development	EA	-	$ -	$ -	$ -	$ -
20.06	Automobile parking multi-story structure	EA	-	$ -	$ -	$ -	$ -
20.07	Elevators, escalators	EA	6	$ 550,262	$ 3,302,000	$ 660,400	$ 3,962,400
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS				$ -		***20%***	$ -
30.01	Administration Building: Office, sales, storage, revenue counting	EA	-	$ -	$ -	$ -	$ -
30.02	Light Maintenance Facility	EA	-	$ -	$ -	$ -	$ -
30.03	Heavy Maintenance Facility	EA	-	$ -	$ -	$ -	$ -
30.04	Storage or Maintenance of Way Building	EA	-	$ -	$ -	$ -	$ -
30.05	Yard and Yard Track	EA	-	$ -	$ -	$ -	$ -
40 SITEWORK & SPECIAL CONDITIONS						***20%***	***$ 16,346,900***
40.01	Demolition, Clearing, Earthwork	AC	10.6	$ 5,000	$ 52,801	$ 10,560	$ 63,400
40.02	Site Utilities, Utility Relocation	LSUM	1	$ 5,227,273	$ 5,227,273	$ 1,045,455	$ 6,272,800
40.03	Haz. mat'l, contam'd soil removal/mitigation, ground water treatments	LSUM	1	$ 522,727	$ 522,727	$ 104,545	$ 627,300
40.04	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	LSUM	1	$ 439,091	$ 439,091	$ 87,818	$ 527,000
40.05	Site structures including retaining walls, sound walls	LSUM	1	$ -	$ -	$ -	$ -
40.06	Pedestrian / bike access and accommodation, landscaping	LSUM	1	$ 87,121	$ 87,121	$ 17,424	$ 104,600
40.07	Automobile, bus, van accessways including roads, parking lots	LSUM	1	$ -	$ -	$ -	$ -
40.08	Temporary Facilities and other indirect costs during construction	%	5	$ -	$ 7,293,160	$ 1,458,632	$ 8,751,800
50 SYSTEMS						***20%***	***$ 50,416,300***
50.01	Train control and signals	LSUM	1	$ 11,988,226	$ 11,988,226	$ 2,397,645	$ 14,385,900
50.02	Traffic signals and crossing protection	EA	-	$ -	$ -	$ -	$ -
50.03	Traction power supply: substations	EA	3	$ 3,800,413	$ 11,401,240	$ 2,280,248	$ 13,681,500
50.04	Traction power distribution: catenary and third rail	LSUM	1	$ 9,050,092	$ 9,050,092	$ 1,810,018	$ 10,860,200
50.05	Communications	LSUM	1	$ 4,573,864	$ 4,573,864	$ 914,773	$ 5,488,700
50.06	Fare collection system and equipment	EA	-	$ -	$ -	$ -	$ -
50.07	Central Control	EA	-	$ 5,000,000	$ 5,000,000	$ 1,000,000	$ 6,000,000
SUBTOTAL - CONSTRUCTION COSTS							***$ 207,259,200***
60 ROW, LAND, EXISTING IMPROVEMENTS						***25%***	***$ 57,135,900***
60.01	Purchase or lease of real estate	AC	2.6	$ -	$ 45,708,700	$ 11,427,175	$ 57,135,900
60.02	Relocation of existing households and businesses	EA	-	$ -	$ -	$ -	$ -
70 VEHICLES						***20%***	***$ 45,600,000***
70.01	Light Rail	EA	-	$ -	$ -	$ -	$ -
70.02	Heavy Rail	EA	-	$ -	$ -	$ -	$ -
70.03	Commuter Rail	EA	-	$ -	$ -	$ -	$ -
70.04	Bus	EA	-	$ -	$ -	$ -	$ -
70.05	Other	EA	10	$ 3,800,000	$ 38,000,000	$ 7,600,000	$ 45,600,000
70.06	Non-revenue vehicles	EA	-	$ -	$ -	$ -	$ -
70.07	Spare parts	EA	-	$ -	$ -	$ -	$ -
80 PROFESSIONAL SERVICES						***10%***	***$ 60,419,000***
80.01	Project Development	%	3%	$ -	$ 6,218,000	$ 621,800	$ 6,839,800
80.02	Engineering	%	8%	$ -	$ 16,581,000	$ 1,658,100	$ 18,239,100
80.03	Project Management for Design and Construction	%	4%	$ -	$ 8,290,500	$ 829,050	$ 9,119,600
80.04	Construction Administration & Management	%	4%	$ -	$ 8,290,500	$ 829,050	$ 9,119,600
80.05	Professional Liability and other Non-Construction Insurance	%	2%	$ -	$ 4,145,500	$ 414,550	$ 4,560,100
80.06	Legal; Permits; Review Fees by other agencies, cities, etc.	%	1%	$ -	$ 2,073,000	$ 207,300	$ 2,280,300
80.07	Surveys, Testing, Investigation, Inspection	%	0.50%	$ -	$ 1,036,500	$ 103,650	$ 1,140,200
80.08	Start up	%	4%	$ -	$ 8,290,500	$ 829,050	$ 9,119,600
90 UNALLOCATED CONTINGENCY							***$ 37,041,500***
90.00	Unallocated Contingency (Project Reserve)	%	10				$ 37,041,500
PD&E CAPITAL COST ESTIMATE							**$ 407,500,000**

Notes: 1) Unit costs primarily based on FTA Capital Cost Database and FDOT construction costs

APPENDIX B | LIGHT RAIL TRANSIT (LRT)

PARSONS

DTPW Beach Corridor

LRT/Streetcar - Total Project (Miami Design District to Miami Beach Convention Center)

Project Development & Environmental (PD&E) Cost Estimate

SCC	ITEM DESCRIPTION	UNIT	QTY	UNIT COST	ALLOCATED COSTS	ALLOCATED CONTINGENCY	TOTAL COST (2019$)
	Assumed Cost - Entire System	*MILE*	*7.4*	*$153,221,024*			*$ 1,136,900,000*
10 GUIDEWAY & TRACK ELEMENTS						***20%***	***$ 246,483,000***
10.01	Guideway: At-grade exclusive right-of-way	TF		$ -	$ -	$ -	$ -
10.02	Guideway: At-grade semi-exclusive (allows cross-traffic)	TF	-	$ -	$ -	$ -	$ -
10.03	Guideway: At-grade in mixed traffic	TF	-	$ -	$ -	$ -	$ -
10.04	Guideway: Aerial structure	LF	20,880	$ 7,128	$ 148,823,800	$ 29,764,760	$ 178,588,600
10.05	Guideway: Built-up fill	LF	-	$ -	$ -	$ -	$ -
10.06	Guideway: Underground cut & cover	LF	-	$ -	$ -	$ -	$ -
10.07	Guideway: Underground tunnel	LF	-	$ -	$ -	$ -	$ -
10.08	Guideway: Retained cut or fill	LF	3,000	$ 3,000	$ 9,000,000	$ 1,800,000	$ 10,800,000
10.09	Track: Direct fixation	TF	40,550	$ 547	$ 22,200,884	$ 4,440,177	$ 26,641,100
10.10	Track: Embedded	TF	37,805	$ 547	$ 20,697,699	$ 4,139,540	$ 24,837,300
10.11	Track: Ballasted	TF	-	$ -	$ -	$ -	$ -
10.12	Track: Special (switches, turnouts)	EA	13	$ 360,000	$ 4,680,000	$ 936,000	$ 5,616,000
10.13	Track: Vibration and noise dampening	TF	-	$ -	$ -	$ -	$ -
20 STATIONS, STOPS, TERMINALS, INTERMODAL						***20%***	***$ 84,931,200***
20.01	At-grade station, stop, shelter, mall, terminal, platform	EA	25	$ 725,000	$ 18,125,000	$ 3,625,000	$ 21,750,000
20.02	Aerial station, stop, shelter, mall, terminal, platform	EA	3	$ 15,000,000	$ 45,000,000	$ 9,000,000	$ 54,000,000
20.03	Underground station, stop, shelter, mall, terminal, platform	EA	-	$ -	$ -	$ -	$ -
20.04	Other stations, landings, terminals: Intermodal, ferry, trolley, etc.	EA	-	$ -	$ -	$ -	$ -
20.05	Joint development	EA	-	$ -	$ -	$ -	$ -
20.06	Automobile parking multi-story structure	EA	1	$ 6,000,000	$ 6,000,000	$ 1,200,000	$ 7,200,000
20.07	Elevators, escalators	EA	3	$ 550,262	$ 1,651,000	$ 330,200	$ 1,981,200
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS						***20%***	***$ 121,650,000***
30.01	Administration Building: Office, sales, storage, revenue counting	EA	1	$ 10,000,000	$ 10,000,000	$ 2,000,000	$ 12,000,000
30.02	Light Maintenance Facility	EA	-	$ -	$ -	$ -	$ -
30.03	Heavy Maintenance Facility	EA	1	$ 76,374,924	$ 76,375,000	$ 15,275,000	$ 91,650,000
30.04	Storage or Maintenance of Way Building	EA	-	$ -	$ -	$ -	$ -
30.05	Yard and Yard Track	EA	1	$ 15,000,000	$ 15,000,000	$ 3,000,000	$ 18,000,000
40 SITEWORK & SPECIAL CONDITIONS						***20%***	***$ 62,380,200***
40.01	Demolition, Clearing, Earthwork	AC	36.0	$ 5,000	$ 180,000	$ 36,000	$ 216,000
40.02	Site Utilities, Utility Relocation	LSUM	1	$ 23,559,500	$ 23,559,500	$ 4,711,900	$ 28,271,400
40.03	Haz. mat'l, contam'd soil removal/mitigation, ground water treatments	LSUM	1	$ 2,226,300	$ 2,226,300	$ 445,260	$ 2,671,600
40.04	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	LSUM	1	$ 1,870,100	$ 1,870,100	$ 374,020	$ 2,244,200
40.05	Site structures including retaining walls, sound walls	LSUM	1	$ -	$ -	$ -	$ -
40.06	Pedestrian / bike access and accommodation, landscaping	LSUM	1	$ 371,050	$ 371,050	$ 74,210	$ 445,300
40.07	Automobile, bus, van accessways including roads, parking lots	LSUM	1	$ 6,000,000	$ 6,000,000	$ 1,200,000	$ 7,200,000
40.08	Temporary Facilities and other indirect costs during construction	%	5		$ 17,776,395	$ 3,555,279	$ 21,331,700
50 SYSTEMS						***20%***	***$ 138,923,900***
50.01	Train control and signals	LSUM	1	$ -	$ 23,648,900	$ 4,729,800	$ 28,378,700
50.02	Traffic signals and crossing protection	EA	-	$ -	$ -	$ -	$ -
50.03	Traction power supply: substations	EA	9	$ 3,800,413	$ 26,602,900	$ 5,320,600	$ 31,923,500
50.04	Traction power distribution: catenary and third rail	LSUM	1	$ 3,600,000	$ 28,625,200	$ 5,725,100	$ 34,350,300
50.05	Communications	LSUM	1	$ 2,250,000	$ 16,892,800	$ 3,378,600	$ 20,271,400
50.06	Fare collection system and equipment	EA	1	$ 5,000,000	$ 5,000,000	$ 1,000,000	$ 6,000,000
50.07	Central Control	EA	1	$ 15,000,000	$ 15,000,000	$ 3,000,000	$ 18,000,000
SUBTOTAL - CONSTRUCTION COSTS							***$ 654,368,300***
60 ROW, LAND, EXISTING IMPROVEMENTS						***25%***	***$ 117,823,400***
60.01	Purchase or lease of real estate	AC	8.3	$ -	$ 94,258,600	$ 23,564,650	$ 117,823,400
60.02	Relocation of existing households and businesses	EA				$ -	$ -
70 VEHICLES						***25%***	***$ 66,976,300***
70.01	Light Rail	EA	13	$ 4,121,612	$ 53,581,000	$ 13,395,250	$ 66,976,300
70.02	Heavy Rail	EA	-	$ -	$ -	$ -	$ -
70.03	Commuter Rail	EA	-	$ -	$ -	$ -	$ -
70.04	Bus	EA	-	$ -	$ -	$ -	$ -
70.05	Other	EA	-	$ -	$ -	$ -	$ -
70.06	Non-revenue vehicles	EA	-	$ -	$ -	$ -	$ -
70.07	Spare parts	EA	-	$ -	$ -	$ -	$ -
80 PROFESSIONAL SERVICES						***10%***	***$ 194,350,500***
80.01	Project Development	%	3%	$ -	$ 19,631,500	$ 1,963,150	$ 21,594,700
80.02	Engineering	%	8%	$ -	$ 52,350,000	$ 5,235,000	$ 57,585,000
80.03	Project Management for Design and Construction	%	4%	$ -	$ 26,175,000	$ 2,617,500	$ 28,792,500
80.04	Construction Administration & Management	%	5%	$ -	$ 29,447,000	$ 2,944,700	$ 32,391,700
80.05	Professional Liability and other Non-Construction Insurance	%	2%	$ -	$ 13,087,500	$ 1,308,750	$ 14,396,300
80.06	Legal; Permits; Review Fees by other agencies, cities, etc.	%	1%	$ -	$ 6,544,000	$ 654,400	$ 7,198,400
80.07	Surveys, Testing, Investigation, Inspection	%	0.50%	$ -	$ 3,272,000	$ 327,200	$ 3,599,200
80.08	Start up	%	4%	$ -	$ 26,175,000	$ 2,617,500	$ 28,792,500
90 UNALLOCATED CONTINGENCY							***$ 103,351,900***
90.00	Unallocated Contingency (Project Reserve)	%	10				$ 103,351,900
PD&E CAPITAL COST ESTIMATE							***$ 1,136,900,000***

Notes: 1) Unit costs primarily based on FTA Capital Cost Database and FDOT construction costs
2) LRT System has to be implemented as a "Totoal Project" due to Maintenance and Storage Facility (M&SF) site requirements and land availability.

PARSONS

DTPW Beach Corridor

LRT/Streetcar - Trunkline (Bay Crossing)

Project Development & Environmental (PD&E) Cost Estimate

SCC	ITEM DESCRIPTION	UNIT	QTY	UNIT COST	ALLOCATED COSTS	ALLOCATED CONTINGENCY	TOTAL COST (2019$)
	Assumed Cost - Bay Crossing (Trunkline)	*MILE*	*3.84*	*$168,579,882*			*$ 647,500,000*
	10 GUIDEWAY & TRACK ELEMENTS					***20%***	***$ 210,321,500***
10.01	Guideway: At-grade exclusive right-of-way	TF	-	$ -	$ -	$ -	$ -
10.02	Guideway: At-grade semi-exclusive (allows cross-traffic)	TF	-	$ -	$ -	$ -	$ -
10.03	Guideway: At-grade in mixed traffic	TF	-	$ -	$ -	$ -	$ -
10.04	Guideway: Aerial structure	LF	20,280	$ 7,128	$ 144,547,000	$ 28,909,400	$ 173,456,400
10.05	Guideway: Built-up fill	LF	-	$ -	$ -	$ -	$ -
10.06	Guideway: Underground cut & cover	LF	-	$ -	$ -	$ -	$ -
10.07	Guideway: Underground tunnel	LF	-	$ -	$ -	$ -	$ -
10.08	Guideway: Retained cut or fill	LF	2,000	$ 3,000	$ 6,000,000	$ 1,200,000	$ 7,200,000
10.09	Track: Direct fixation	TF	40,550	$ 547	$ 22,200,884	$ 4,440,177	$ 26,641,100
10.10	Track: Embedded	TF	-	$ -	$ -	$ -	$ -
10.11	Track: Ballasted	TF	-	$ -	$ -	$ -	$ -
10.12	Track: Special (switches, turnouts)	EA	7	$ 360,000	$ 2,520,000	$ 504,000	$ 3,024,000
10.13	Track: Vibration and noise dampening	TF	-	$ -	$ -	$ -	$ -
	20 STATIONS, STOPS, TERMINALS, INTERMODAL					***20%***	***$ 63,181,200***
20.01	At-grade station, stop, shelter, mall, terminal, platform	EA	-	$ -	$ -	$ -	$ -
20.02	Aerial station, stop, shelter, mall, terminal, platform	EA	3	$ 15,000,000	$ 45,000,000	$ 9,000,000	$ 54,000,000
20.03	Underground station, stop, shelter, mall, terminal, platform	EA	-	$ -	$ -	$ -	$ -
20.04	Other stations, landings, terminals: Intermodal, ferry, trolley, etc.	EA	-	$ -	$ -	$ -	$ -
20.05	Joint development	EA	-	$ -	$ -	$ -	$ -
20.06	Automobile parking multi-story structure	EA	1	$ 6,000,000	$ 6,000,000	$ 1,200,000	$ 7,200,000
20.07	Elevators, escalators	EA	3	$ 550,262	$ 1,651,000	$ 330,200	$ 1,981,200
	30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS					***20%***	***$ -***
30.01	Administration Building: Office, sales, storage, revenue counting	EA	-	$ -	$ -	$ -	$ -
30.02	Light Maintenance Facility	EA	-	$ -	$ -	$ -	$ -
30.03	Heavy Maintenance Facility	EA	-	$ -	$ -	$ -	$ -
30.04	Storage or Maintenance of Way Building	EA	-	$ -	$ -	$ -	$ -
30.05	Yard and Yard Track	EA	-	$ -	$ -	$ -	$ -
	40 SITEWORK & SPECIAL CONDITIONS					***20%***	***$ 42,666,500***
40.01	Demolition, Clearing, Earthwork	AC	18.6	$ 5,000	$ 93,113	$ 18,623	$ 111,800
40.02	Site Utilities, Utility Relocation	LSUM	1	$ 12,819,425	$ 12,819,425	$ 2,563,885	$ 15,383,400
40.03	Haz. mat'l, contam'd soil removal/mitigation, ground water treatments	LSUM	1	$ 1,152,273	$ 1,152,273	$ 230,455	$ 1,382,800
40.04	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	LSUM	1	$ 967,909	$ 967,909	$ 193,582	$ 1,161,500
40.05	Site structures including retaining walls, sound walls	LSUM	1	$ -	$ -	$ -	$ -
40.06	Pedestrian / bike access and accommodation, landscaping	LSUM	1	$ 192,045	$ 192,045	$ 38,409	$ 230,500
40.07	Automobile, bus, van accessways including roads, parking lots	LSUM	1	$ 6,000,000	$ 6,000,000	$ 1,200,000	$ 7,200,000
40.08	Temporary Facilities and other indirect costs during construction	%	5	$ 14,330,364	$ 14,330,364	$ 2,866,073	$ 17,196,500
	50 SYSTEMS					***20%***	***$ 111,504,100***
50.01	Train control and signals	LSUM	1	$ 19,179,655	$ 19,179,655	$ 3,835,931	$ 23,015,600
50.02	Traffic signals and crossing protection	EA	-	$ -	$ -	$ -	$ -
50.03	Traction power supply: substations	EA	5	$ 3,800,413	$ 19,002,066	$ 3,800,413	$ 22,802,500
50.04	Traction power distribution: catenary and third rail	LSUM	4	$ 1,200,000	$ 23,215,509	$ 4,643,102	$ 27,858,700
50.05	Communications	LSUM	1	$ 750,000	$ 11,522,727	$ 2,304,545	$ 13,827,300
50.06	Fare collection system and equipment	EA	1	$ 5,000,000	$ 5,000,000	$ 1,000,000	$ 6,000,000
50.07	Central Control	EA	1	$ 15,000,000	$ 15,000,000	$ 3,000,000	$ 18,000,000
	SUBTOTAL - CONSTRUCTION COSTS						***$ 427,673,300***
	60 ROW, LAND, EXISTING IMPROVEMENTS					***25%***	***$ 3,014,200***
60.01	Purchase or lease of real estate	AC	0.3	$ 2,411,300	$ 2,411,300	$ 602,825	$ 3,014,200
60.02	Relocation of existing households and businesses	EA	-	$ -	$ -	$ -	$ -
	70 VEHICLES					***25%***	***$ 30,912,100***
70.01	Light Rail	EA	6	$ 4,121,612	$ 24,729,674	$ 6,182,418	$ 30,912,100
70.02	Heavy Rail	EA	-	$ -	$ -	$ -	$ -
70.03	Commuter Rail	EA	-	$ -	$ -	$ -	$ -
70.04	Bus	EA	-	$ -	$ -	$ -	$ -
70.05	Other	EA	-	$ -	$ -	$ -	$ -
70.06	Non-revenue vehicles	EA	-	$ -	$ -	$ -	$ -
70.07	Spare parts	EA	-	$ -	$ -	$ -	$ -
	80 PROFESSIONAL SERVICES					***10%***	***$ 127,021,000***
80.01	Project Development	%	3%	$ -	$ 12,830,500	$ 1,283,050	$ 14,113,600
80.02	Engineering	%	8%	$ -	$ 34,214,000	$ 3,421,400	$ 37,635,400
80.03	Project Management for Design and Construction	%	4%	$ -	$ 17,107,000	$ 1,710,700	$ 18,817,700
80.04	Construction Administration & Management	%	5%	$ -	$ 19,245,500	$ 1,924,550	$ 21,170,100
80.05	Professional Liability and other Non-Construction Insurance	%	2%	$ -	$ 8,553,500	$ 855,350	$ 9,408,900
80.06	Legal; Permits; Review Fees by other agencies, cities, etc.	%	1%	$ -	$ 4,277,000	$ 427,700	$ 4,704,700
80.07	Surveys, Testing, Investigation, Inspection	%	0.50%	$ -	$ 2,138,500	$ 213,850	$ 2,352,400
80.08	Start up	%	4%	$ -	$ 17,107,000	$ 1,710,700	$ 18,817,700
	90 UNALLOCATED CONTINGENCY						***$ 58,862,100***
90.00	Unallocated Contingency (Project Reserve)	%	10				$ 58,862,100
	PD&E CAPITAL COST ESTIMATE						**$ 647,500,000**

Notes: 1) Unit costs primarily based on FTA Capital Cost Database and FDOT construction costs
2) ROW Cost does include cost of land for a Maintenance & Storage Facility due to site requirements and lack of land availability.

DTPW Beach Corridor

LRT/Streetcar - Miami Extension (Miami Design District to Downtown)

Project Development & Environmental (PD&E) Cost Estimate

SCC	ITEM DESCRIPTION	UNIT	QTY	UNIT COST	ALLOCATED COSTS	ALLOCATED CONTINGENCY	TOTAL COST (2019$)
	Assumed Cost - Miami Extension (North Miami Ave)	*MILE*	*2.48*	*$174,072,581*			*$ 431,700,000*
10 GUIDEWAY & TRACK ELEMENTS						***20%***	***$ 27,233,900***
10.01	Guideway: At-grade exclusive right-of-way	TF	-	$ -	$ -	$ -	$ -
10.02	Guideway: At-grade semi-exclusive (allows cross-traffic)	TF	-	$ -	$ -	$ -	$ -
10.03	Guideway: At-grade in mixed traffic	TF	-	$ -	$ -	$ -	$ -
10.04	Guideway: Aerial structure	LF	600	$ 7,128	$ 4,276,800	$ 855,360	$ 5,132,200
10.05	Guideway: Built-up fill	LF	-	$ -	$ -	$ -	$ -
10.06	Guideway: Underground cut & cover	LF	-	$ -	$ -	$ -	$ -
10.07	Guideway: Underground tunnel	LF	-	$ -	$ -	$ -	$ -
10.08	Guideway: Retained cut or fill	LF	1,000	$ 3,000	$ 3,000,000	$ 600,000	$ 3,600,000
10.09	Track: Direct fixation	TF	-	$ -	$ -	$ -	$ -
10.10	Track: Embedded	TF	26,189	$ 547	$ 14,338,071	$ 2,867,614	$ 17,205,700
10.11	Track: Ballasted	TF	-	$ -	$ -	$ -	$ -
10.12	Track: Special (switches, turnouts)	EA	3	$ 360,000	$ 1,080,000	$ 216,000	$ 1,296,000
10.13	Track: Vibration and noise dampening	TF	-	$ -	$ -	$ -	$ -
20 STATIONS, STOPS, TERMINALS, INTERMODAL						***20%***	***$ 12,180,000***
20.01	At-grade station, stop, shelter, mall, terminal, platform	EA	14	$ 725,000	$ 10,150,000	$ 2,030,000	$ 12,180,000
20.02	Aerial station, stop, shelter, mall, terminal, platform	EA	-	$ -	$ -	$ -	$ -
20.03	Underground station, stop, shelter, mall, terminal, platform	EA	-	$ -	$ -	$ -	$ -
20.04	Other stations, landings, terminals: Intermodal, ferry, trolley, etc.	EA	-	$ -	$ -	$ -	$ -
20.05	Joint development	EA	-	$ -	$ -	$ -	$ -
20.06	Automobile parking multi-story structure	EA	-	$ -	$ -	$ -	$ -
20.07	Elevators, escalators	EA	-	$ -	$ -	$ -	$ -
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS						***20%***	***$ 121,650,000***
30.01	Administration Building: Office, sales, storage, revenue counting	EA	1	$ 10,000,000	$ 10,000,000	$ 2,000,000	$ 12,000,000
30.02	Light Maintenance Facility	EA	-	$ -	$ -	$ -	$ -
30.03	Heavy Maintenance Facility	EA	1	$ 76,374,924	$ 76,375,000	$ 15,275,000	$ 91,650,000
30.04	Storage or Maintenance of Way Building	EA	-	$ -	$ -	$ -	$ -
30.05	Yard and Yard Track	EA	1	$ 15,000,000	$ 15,000,000	$ 3,000,000	$ 18,000,000
40 SITEWORK & SPECIAL CONDITIONS						***20%***	***$ 13,614,100***
40.01	Demolition, Clearing, Earthwork	AC	12.0	$ 5,000	$ 60,121	$ 12,024	$ 72,200
40.02	Site Utilities, Utility Relocation	LSUM	1	$ 7,440,000	$ 7,440,000	$ 1,488,000	$ 8,928,000
40.03	Haz. mat'l, contam'd soil removal/mitigation, ground water treatments	LSUM	1	$ 744,000	$ 744,000	$ 148,800	$ 892,800
40.04	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	LSUM	1	$ 624,960	$ 624,960	$ 124,992	$ 750,000
40.05	Site structures including retaining walls, sound walls	LSUM	1	$ -	$ -	$ -	$ -
40.06	Pedestrian / bike access and accommodation, landscaping	LSUM	1	$ 124,000	$ 124,000	$ 24,800	$ 148,800
40.07	Automobile, bus, van accessways including roads, parking lots	LSUM	1	$ -	$ -	$ -	$ -
40.08	Temporary Facilities and other indirect costs during construction	%	5	$ 2,351,901	$ 2,351,901	$ 470,380	$ 2,822,300
50 SYSTEMS						***20%***	***$ 19,517,000***
50.01	Train control and signals	LSUM	1	$ 3,095,982	$ 3,095,982	$ 619,196	$ 3,715,200
50.02	Traffic signals and crossing protection	EA	-	$ -	$ -	$ -	$ -
50.03	Traction power supply: substations	EA	3	$ 1,900,207	$ 5,700,620	$ 1,140,124	$ 6,840,800
50.04	Traction power distribution: catenary and third rail	LSUM	1	$ 1,200,000	$ 3,747,450	$ 749,490	$ 4,497,000
50.05	Communications	LSUM	1	$ 750,000	$ 3,720,000	$ 744,000	$ 4,464,000
50.06	Fare collection system and equipment	EA	1	$ -	$ -	$ -	$ -
50.07	Central Control	EA	1	$ -	$ -	$ -	$ -
SUBTOTAL - CONSTRUCTION COSTS							***$ 194,195,000***
60 ROW, LAND, EXISTING IMPROVEMENTS						***25%***	***$ 114,809,200***
60.01	Purchase or lease of real estate	AC	8.0	$ -	$ 91,847,300	$ 22,961,825	$ 114,809,200
60.02	Relocation of existing households and businesses	EA	-	$ -	$ -	$ -	$ -
70 VEHICLES						***25%***	***$ 25,760,100***
70.01	Light Rail	EA	5	$ 4,121,612	$ 20,608,061	$ 5,152,015	$ 25,760,100
70.02	Heavy Rail	EA	-	$ -	$ -	$ -	$ -
70.03	Commuter Rail	EA	-	$ -	$ -	$ -	$ -
70.04	Bus	EA	-	$ -	$ -	$ -	$ -
70.05	Other	EA	-	$ -	$ -	$ -	$ -
70.06	Non-revenue vehicles	EA	-	$ -	$ -	$ -	$ -
70.07	Spare parts	EA	-	$ -	$ -	$ -	$ -
80 PROFESSIONAL SERVICES						***10%***	***$ 57,678,000***
80.01	Project Development	%	3%	$ -	$ 5,826,000	$ 582,600	$ 6,408,600
80.02	Engineering	%	8%	$ -	$ 15,536,000	$ 1,553,600	$ 17,089,600
80.03	Project Management for Design and Construction	%	4%	$ -	$ 7,768,000	$ 776,800	$ 8,544,800
80.04	Construction Administration & Management	%	5%	$ -	$ 8,739,000	$ 873,900	$ 9,612,900
80.05	Professional Liability and other Non-Construction Insurance	%	2%	$ -	$ 3,884,000	$ 388,400	$ 4,272,400
80.06	Legal; Permits; Review Fees by other agencies, cities, etc.	%	1%	$ -	$ 1,942,000	$ 194,200	$ 2,136,200
80.07	Surveys, Testing, Investigation, Inspection	%	0.50%	$ -	$ 971,000	$ 97,100	$ 1,068,100
80.08	Start up	%	4%	$ -	$ 7,768,000	$ 776,800	$ 8,544,800
90 UNALLOCATED CONTINGENCY							***$ 39,244,300***
90.00	Unallocated Contingency (Project Reserve)	%	10				$ 39,244,300
PD&E CAPITAL COST ESTIMATE							**$ 431,700,000**

Notes: 1) Unit costs primarily based on FTA Capital Cost Database and FDOT construction costs
2) ROW Cost includes cost of land for a Maintenance & Storage Facility.

PARSONS

DTPW Beach Corridor

LRT/Streetcar - Miami Beach Extension (5th Street to Miami Beach Convention Center)

Project Development & Environmental (PD&E) Cost Estimate

SCC	ITEM DESCRIPTION	UNIT	QTY	UNIT COST	ALLOCATED COSTS	ALLOCATED CONTINGENCY	TOTAL COST (2019$)
	Assumed Cost - Miami Beach Extension (Washington Ave)	*MILE*	*1.10*	*$52,500,000*			$ 57,750,000
10 GUIDEWAY & TRACK ELEMENTS						***20%***	***$ 8,927,600***
10.01	Guideway: At-grade exclusive right-of-way	TF	-	$ -	$ -	$ -	$ -
10.02	Guideway: At-grade semi-exclusive (allows cross-traffic)	TF	-	$ -	$ -	$ -	$ -
10.03	Guideway: At-grade in mixed traffic	TF	-	$ -	$ -	$ -	$ -
10.04	Guideway: Aerial structure	LF	-	$ -	$ -	$ -	$ -
10.05	Guideway: Built-up fill	LF	-	$ -	$ -	$ -	$ -
10.06	Guideway: Underground cut & cover	LF	-	$ -	$ -	$ -	$ -
10.07	Guideway: Underground tunnel	LF	-	$ -	$ -	$ -	$ -
10.08	Guideway: Retained cut or fill	LF	-	$ -	$ -	$ -	$ -
10.09	Track: Direct fixation	TF	-	$ -	$ -	$ -	$ -
10.10	Track: Embedded	TF	11,616	$ 547	$ 6,359,628	$ 1,271,926	$ 7,631,600
10.11	Track: Ballasted	TF	-	$ -	$ -	$ -	$ -
10.12	Track: Special (switches, turnouts)	EA	3	$ 360,000	$ 1,080,000	$ 216,000	$ 1,296,000
10.13	Track: Vibration and noise dampening	TF	-	$ -	$ -	$ -	$ -
20 STATIONS, STOPS, TERMINALS, INTERMODAL						***20%***	***$ 9,570,000***
20.01	At-grade station, stop, shelter, mall, terminal, platform	EA	11	$ 725,000	$ 7,975,000	$ 1,595,000	$ 9,570,000
20.02	Aerial station, stop, shelter, mall, terminal, platform	EA	-	$ -	$ -	$ -	$ -
20.03	Underground station, stop, shelter, mall, terminal, platform	EA	-	$ -	$ -	$ -	$ -
20.04	Other stations, landings, terminals: Intermodal, ferry, trolley, etc.	EA	-	$ -	$ -	$ -	$ -
20.05	Joint development	EA	-	$ -	$ -	$ -	$ -
20.06	Automobile parking multi-story structure	EA	-	$ -	$ -	$ -	$ -
20.07	Elevators, escalators	EA	-	$ -	$ -	$ -	$ -
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS						***20%***	***$ -***
30.01	Administration Building: Office, sales, storage, revenue counting	EA	-	$ -	$ -	$ -	$ -
30.02	Light Maintenance Facility	EA	-	$ -	$ -	$ -	$ -
30.03	Heavy Maintenance Facility	EA	-	$ -	$ -	$ -	$ -
30.04	Storage or Maintenance of Way Building	EA	-	$ -	$ -	$ -	$ -
30.05	Yard and Yard Track	EA	-	$ -	$ -	$ -	$ -
40 SITEWORK & SPECIAL CONDITIONS						***20%***	***$ 6,099,500***
40.01	Demolition, Clearing, Earthwork	AC	5.3	$ 5,000	$ 26,667	$ 5,333	$ 32,000
40.02	Site Utilities, Utility Relocation	LSUM	1	$ 3,300,000	$ 3,300,000	$ 660,000	$ 3,960,000
40.03	Haz. mat'l, contam'd soil removal/mitigation, ground water treatments	LSUM	1	$ 330,000	$ 330,000	$ 66,000	$ 396,000
40.04	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	LSUM	1	$ 277,200	$ 277,200	$ 55,440	$ 332,700
40.05	Site structures including retaining walls, sound walls	LSUM	1	$ -	$ -	$ -	$ -
40.06	Pedestrian / bike access and accommodation, landscaping	LSUM	1	$ 55,000	$ 55,000	$ 11,000	$ 66,000
40.07	Automobile, bus, van accessways including roads, parking lots	LSUM	1	$ -	$ -	$ -	$ -
40.08	Temporary Facilities and other indirect costs during construction	%	5	$ 1,093,963	$ 1,093,963	$ 218,793	$ 1,312,800
50 SYSTEMS						***20%***	***$ 7,902,900***
50.01	Train control and signals	LSUM	1	$ 1,373,218	$ 1,373,218	$ 274,644	$ 1,647,900
50.02	Traffic signals and crossing protection	EA	-	$ -	$ -	$ -	$ -
50.03	Traction power supply: substations	EA	1	$ 1,900,207	$ 1,900,207	$ 380,041	$ 2,280,300
50.04	Traction power distribution: catenary and third rail	LSUM	1	$ 1,200,000	$ 1,662,176	$ 332,435	$ 1,994,700
50.05	Communications	LSUM	1	$ 750,000	$ 1,650,000	$ 330,000	$ 1,980,000
50.06	Fare collection system and equipment	EA	-	$ -	$ -	$ -	$ -
50.07	Central Control	EA	-	$ -	$ -	$ -	$ -
SUBTOTAL - CONSTRUCTION COSTS							***$ 32,500,000***
60 ROW, LAND, EXISTING IMPROVEMENTS						***25%***	***$ -***
60.01	Purchase or lease of real estate	AC	0	$ -	$ -	$ -	$ -
60.02	Relocation of existing households and businesses	EA	-	$ -	$ -	$ -	$ -
70 VEHICLES						***25%***	***$ 10,304,100***
70.01	Light Rail	EA	2	$ 4,121,612	$ 8,243,225	$ 2,060,806	$ 10,304,100
70.02	Heavy Rail	EA	-	$ -	$ -	$ -	$ -
70.03	Commuter Rail	EA	-	$ -	$ -	$ -	$ -
70.04	Bus	EA	-	$ -	$ -	$ -	$ -
70.05	Other	EA	-	$ -	$ -	$ -	$ -
70.06	Non-revenue vehicles	EA	-	$ -	$ -	$ -	$ -
70.07	Spare parts	EA	-	$ -	$ -	$ -	$ -
80 PROFESSIONAL SERVICES						***10%***	***$ 9,653,000***
80.01	Project Development	%	3%	$ -	$ 975,000	$ 97,500	$ 1,072,500
80.02	Engineering	%	8%	$ -	$ 2,600,000	$ 260,000	$ 2,860,000
80.03	Project Management for Design and Construction	%	4%	$ -	$ 1,300,000	$ 130,000	$ 1,430,000
80.04	Construction Administration & Management	%	5%	$ -	$ 1,462,500	$ 146,250	$ 1,608,800
80.05	Professional Liability and other Non-Construction Insurance	%	2%	$ -	$ 650,000	$ 65,000	$ 715,000
80.06	Legal; Permits; Review Fees by other agencies, cities, etc.	%	1%	$ -	$ 325,000	$ 32,500	$ 357,500
80.07	Surveys, Testing, Investigation, Inspection	%	0.50%	$ -	$ 162,500	$ 16,250	$ 178,800
80.08	Start up	%	4%	$ -	$ 1,300,000	$ 130,000	$ 1,430,000
90 UNALLOCATED CONTINGENCY							***$ 5,245,800***
90.00	Unallocated Contingency (Project Reserve)	%	10				$ 5,245,800
PD&E CAPITAL COST ESTIMATE							**$ 57,750,000**

Notes: 1) Unit costs primarily based on FTA Capital Cost Database and FDOT construction costs

APPENDIX C | MONORAIL

PARSONS

DTPW Beach Corridor

Monorail - Trunkline (Bay Crossing)

Project Development & Environmental (PD&E) Cost Estimate

SCC	ITEM DESCRIPTION	UNIT	QTY	UNIT COST	ALLOCATED COSTS	ALLOCATED CONTINGENCY	TOTAL COST (2019$)
	Assumed Cost - Bay Crossing	*MILE*	*3.66*	*$183,475,220*			$ 671,700,000
10 GUIDEWAY & TRACK ELEMENTS						***20%***	***$ 168,441,000***
10.01	Guideway: At-grade exclusive right-of-way	TF	-	$ -	$ -	$ -	$ -
10.02	Guideway: At-grade semi-exclusive (allows cross-traffic)	TF	-	$ -	$ -	$ -	$ -
10.03	Guideway: At-grade in mixed traffic	TF	-	$ -	$ -	$ -	$ -
10.04	Guideway: Aerial structure	LF	19,330	$ 7,115	$ 137,527,000	$ 27,505,400	$ 165,033,000
10.05	Guideway: Built-up fill	LF	-	$ -	$ -	$ -	$ -
10.06	Guideway: Underground cut & cover	LF	-	$ -	$ -	$ -	$ -
10.07	Guideway: Underground tunnel	LF	-	$ -	$ -	$ -	$ -
10.08	Guideway: Retained cut or fill	LF	-	$ -	$ -	$ -	$ -
10.09	Track: Direct fixation	TF	-	$ -	$ -	$ -	$ -
10.10	Track: Embedded	TF	-	$ -	$ -	$ -	$ -
10.11	Track: Ballasted	TF	-	$ -	$ -	$ -	$ -
10.12	Track: Special (switches, turnouts)	EA	4	$ 710,000	$ 2,840,000	$ 568,000	$ 3,408,000
10.13	Track: Vibration and noise dampening	TF	-	$ -	$ -	$ -	$ -
20 STATIONS, STOPS, TERMINALS, INTERMODAL						***20%***	***$ 50,641,800***
20.01	At-grade station, stop, shelter, mall, terminal, platform	EA	-	$ -	$ -	$ -	$ -
20.02	Aerial station, stop, shelter, mall, terminal, platform	EA	4	$ 10,000,000	$ 40,000,000	$ 8,000,000	$ 48,000,000
20.03	Underground station, stop, shelter, mall, terminal, platform	EA	-	$ -	$ -	$ -	$ -
20.04	Other stations, landings, terminals: Intermodal, ferry, trolley, etc.	EA	-	$ -	$ -	$ -	$ -
20.05	Joint development	EA	-	$ -	$ -	$ -	$ -
20.06	Automobile parking multi-story structure	EA	-	$ -	$ -	$ -	$ -
20.07	Elevators, escalators	EA	4	$ 550,262	$ 2,201,500	$ 440,300	$ 2,641,800
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS						***20%***	***$ 52,363,200***
30.01	Administration Building: Office, sales, storage, revenue counting	EA	1	$ 5,000,000	$ 5,000,000	$ 1,000,000	$ 6,000,000
30.02	Light Maintenance Facility	EA	-	$ -	$ -	$ -	$ -
30.03	Heavy Maintenance Facility	EA	1	$ 26,136,000	$ 26,136,000	$ 5,227,200	$ 31,363,200
30.04	Storage or Maintenance of Way Building	EA	-	$ -	$ -	$ -	$ -
30.05	Yard and Yard Track	EA	1	$ 12,500,000	$ 12,500,000	$ 2,500,000	$ 15,000,000
40 SITEWORK & SPECIAL CONDITIONS						***20%***	***$ 38,585,100***
40.01	Demolition, Clearing, Earthwork	AC	17.8	$ 5,000	$ 88,751	$ 17,750	$ 106,600
40.02	Site Utilities, Utility Relocation	LSUM	1	$ 12,279,653	$ 12,279,653	$ 2,455,931	$ 14,735,600
40.03	Haz. mat'l, contam'd soil removal/mitigation, ground water treatments	LSUM	1	$ 1,098,295	$ 1,098,295	$ 219,659	$ 1,318,000
40.04	Environmental mitigation, e.g. wetlands, historic/archeologic, parks	LSUM	1	$ 922,568	$ 922,568	$ 184,514	$ 1,107,100
40.05	Site structures including retaining walls, sound walls	LSUM	1	$ -	$ -	$ -	$ -
40.06	Pedestrian / bike access and accommodation, landscaping	LSUM	1	$ 183,049	$ 183,049	$ 36,610	$ 219,700
40.07	Automobile, bus, van accessways including roads, parking lots	LSUM	1	$ 6,000,000	$ 6,000,000	$ 1,200,000	$ 7,200,000
40.08	Temporary Facilities and other indirect costs during construction	%	5	$ -	$ 11,581,713	$ 2,316,343	$ 13,898,100
50 SYSTEMS						***20%***	***$ 88,673,700***
50.01	Train control and signals	LSUM	1	$ 18,939,020	$ 18,939,020	$ 3,787,804	$ 22,726,900
50.02	Traffic signals and crossing protection	EA	-	$ -	$ -	$ -	$ -
50.03	Traction power supply: substations	EA	5	$ 3,154,343	$ 17,101,860	$ 3,420,372	$ 20,522,300
50.04	Traction power distribution: catenary and third rail	LSUM	1	$ 16,841,885	$ 16,841,885	$ 3,368,377	$ 20,210,300
50.05	Communications	LSUM	1	$ 8,511,790	$ 8,511,790	$ 1,702,358	$ 10,214,200
50.06	Fare collection system and equipment	EA	1	$ 2,500,000	$ 2,500,000	$ 500,000	$ 3,000,000
50.07	Central Control	EA	1	$ 10,000,000	$ 10,000,000	$ 2,000,000	$ 12,000,000
SUBTOTAL - CONSTRUCTION COSTS							***$ 398,704,800***
60 ROW, LAND, EXISTING IMPROVEMENTS						***25%***	***$ 41,805,200***
60.01	Purchase or lease of real estate	AC	3.0	$ -	$ 33,444,100	$ 8,361,025	$ 41,805,200
60.02	Relocation of existing households and businesses	EA	-	$ -	$ -	$ -	$ -
70 VEHICLES						***20%***	***$ 40,800,000***
70.01	Light Rail	EA	-	$ -	$ -	$ -	$ -
70.02	Heavy Rail	EA	-	$ -	$ -	$ -	$ -
70.03	Commuter Rail	EA	-	$ -	$ -	$ -	$ -
70.04	Bus	EA	-	$ -	$ -	$ -	$ -
70.05	Other	EA	8	$ 4,250,000	$ 34,000,000	$ 6,800,000	$ 40,800,000
70.06	Non-revenue vehicles	EA	-	$ -	$ -	$ -	$ -
70.07	Spare parts	EA	-	$ -	$ -	$ -	$ -
80 PROFESSIONAL SERVICES						***10%***	***$ 118,419,000***
80.01	Project Development	%	3%	$ -	$ 11,961,500	$ 1,196,150	$ 13,157,700
80.02	Engineering	%	8%	$ -	$ 31,896,500	$ 3,189,650	$ 35,086,200
80.03	Project Management for Design and Construction	%	4%	$ -	$ 15,948,500	$ 1,594,850	$ 17,543,400
80.04	Construction Administration & Management	%	5%	$ -	$ 17,942,000	$ 1,794,200	$ 19,736,200
80.05	Professional Liability and other Non-Construction Insurance	%	2%	$ -	$ 7,974,500	$ 797,450	$ 8,772,000
80.06	Legal; Permits; Review Fees by other agencies, cities, etc.	%	1%	$ -	$ 3,987,500	$ 398,750	$ 4,386,300
80.07	Surveys, Testing, Investigation, Inspection	%	0.50%	$ -	$ 1,994,000	$ 199,400	$ 2,193,400
80.08	Start up	%	4%	$ -	$ 15,948,500	$ 1,594,850	$ 17,543,400
90 UNALLOCATED CONTINGENCY							***$ 71,967,500***
90.00	Unallocated Contingency (Project Reserve)	%	12%				$ 71,967,500
PD&E CAPITAL COST ESTIMATE							***$ 671,700,000***

Notes: 1) Unit costs primarily based on FTA Capital Cost Database and FDOT construction costs

APPENDIX D | BUS RAPID TRANSIT (BRT)

PARSONS

DTPW Beach Corridor

Bus Rapid Transit (BRT 395 Option) - Overtown Tansit Village to Miami Beach Convention Center

Project Development & Environmental Cost Estimate

SCC	ITEM DESCRIPTION	UNIT	QTY	UNIT COST	ALLOCATED COSTS	ALLOCATED CONTINGENCY	TOTAL COST
	Assumed Cost	*MILE*	*6.6*	*$55,575,758*			$ 366,800,000
10 GUIDEWAY & TRACK ELEMENTS						*20%*	$ -
10.01	Guideway: At-grade, exclusive right-of-way	TF	-	$ -	$ -	$ -	$ -
10.02	Guideway: At-grade, semi-exclusive (allows cross-traffic)	TF	-	$ -	$ -	$ -	$ -
10.03	Guideway: At-grade in mixed traffic	TF	-	$ -	$ -	$ -	$ -
10.04	Guideway: Aerial structure	TF	-	$ -	$ -	$ -	$ -
10.05	Guideway: Built-up fill	LF	-	$ -	$ -	$ -	$ -
10.06	Guideway: Underground cut & cover	LF	-	$ -	$ -	$ -	$ -
10.07	Guideway: Underground tunnel	LF	-	$ -	$ -	$ -	$ -
10.08	Guideway: Retained cut or fill	LF	-	$ -	$ -	$ -	$ -
10.09	Track: Direct fixation	TF	-	$ -	$ -	$ -	$ -
10.10	Track: Embedded	TF	-	$ -	$ -	$ -	$ -
10.11	Track: Ballasted	TF	-	$ -	$ -	$ -	$ -
10.12	Track: Special (switches, turnouts)	EA	-	$ -	$ -	$ -	$ -
10.13	Track: Vibration and noise dampening	TF	-	$ -	$ -	$ -	$ -
20 STATIONS, STOPS, TERMINALS, INTERMODAL						*20%*	$ 12,085,500
20.01	At-grade station, stop, shelter, mall, terminal, platform	EA	10	$ 513,408	$ 5,134,080	$ 1,026,816	$ 6,160,900
20.01	ADA Lift	EA	2	$ 36,753	$ 73,506	$ 14,701	$ 88,300
20.01	Pedestrian Bridge	SF	5,283	$ 829	$ 4,378,697	$ 875,739	$ 5,254,500
20.02	Aerial station, stop, shelter, mall, terminal, platform	EA	-	$ -	$ -	$ -	$ -
20.03	Underground station, stop, shelter, mall, terminal, platform	EA	-	$ -	$ -	$ -	$ -
20.04	Other stations, landings, terminals: Intermodal, ferry, trolley, etc.	EA	-	$ -	$ -	$ -	$ -
20.05	Joint development	EA	-	$ -	$ -	$ -	$ -
20.06	Automobile parking multi-story structure	EA	-	$ -	$ -	$ -	$ -
20.07	Elevators, escalators	EA	2	$ 242,409	$ 484,818	$ 96,964	$ 581,800
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN BLDGS						*20%*	$ -
30.01	Administration Building: Office, sales, storage, revenue counting	EA	-	$ -	$ -	$ -	$ -
30.02	Light Maintenance Facility	EA	-	$ -	$ -	$ -	$ -
30.03	Heavy Maintenance Facility	EA	-	$ -	$ -	$ -	$ -
30.04	Storage or Maintenance of Way Building	EA	-	$ -	$ -	$ -	$ -
30.05	Yard and yard track	EA	-	$ -	$ -	$ -	$ -
40 SITEWORK & SPECIAL CONDITIONS						*20%*	$ 134,442,100
40.01	Demolition, clearing, earthwork	AC	20.2	$ -	$ 2,024,242	$ 404,848	$ 2,429,100
40.01	Earthwork, Cut & Fill	CY	436,826	$ -	$ 8,736,520	$ 1,747,304	$ 10,483,900
40.02	Site utilities, utility relocation	LSUM	1.0	$ -	$ 6,489,620	$ 1,297,924	$ 7,787,600
40.03	Haz. Mat'l, contam'd soil removal/mitigation, ground water treatments	LSUM	1.0	$ -	$ 660,000	$ 132,000	$ 792,000
40.04	Environmental mitigation, e.g. wetlands, historic, parks	LSUM	1.0	$ -	$ 4,712,400	$ 942,480	$ 5,654,900
40.05	Retaining Wall, Sheet Pile, Steel	SF	462,000	$ -	$ 25,410,000	$ 5,082,000	$ 30,492,000
40.06	Pedestrian/bike access and accommodation, landscaping	LSUM	1.0	$ -	$ 835,000	$ 167,000	$ 1,002,000
40.07	Automobile, bus, van accessways including roads, parking lots	LSUM	1.0	$ -	$ 62,141,324	$ 12,428,265	$ 74,569,600
40.07	a. Roadway	LSUM	-	$ 17,212,444	$ -	$ -	$ -
40.07	b.1 Bridge Widening for West Bridge	LF	2,500	$ 25,000,000	$ -	$ -	$ -
40.07	b.2 Bridge Widening for East Bridge	LF	2,155	$ 19,000,000	$ -	$ -	$ -
40.07	c. Pavement Markings	LSUM	-	$ 817,195	$ -	$ -	$ -
40.07	d. Roadway Signs	LSUM	-	$ 111,686	$ -	$ -	$ -
40.08	Temporary Facilities and other indirect costs during construction	%	1.0	$ -	$ 1,230,946	$ -	$ 1,231,000
50 SYSTEMS						*20%*	$ 17,032,000
50.01	Train controls and signals	EA	-	$ -	$ -	$ -	$ -
50.02	Traffic signals and crossing protection	EA	37	$ 280,000	$ 10,360,000	$ 2,072,000	$ 12,432,000
50.03	Traction power supply: substations	EA	-	$ -	$ -	$ -	$ -
50.04	Traction power distribution: catenary and third rail	EA	-	$ -	$ -	$ -	$ -
50.05	Communications	LF	34,848	$ 110	$ 3,833,280	$ 766,656	$ 4,600,000
50.06	Fare collection system and equipment	EA	-	$ -	$ -	$ -	$ -
50.07	Central Control	EA	-	$ -	$ -	$ -	$ -
SUBTOTAL - CONSTRUCTION COSTS							$ 163,559,600
60 ROW, LAND, EXISTING IMPROVEMENTS						*25%*	$ -
60.01	Purchase or lease of real estate	LSUM	-	$ -	$ -	$ -	$ -
60.02	Relocation of existing households and businesses	EA	-	$ -	$ -	$ -	$ -
70 VEHICLES						*25%*	$ 21,727,400
70.01	Light Rail	EA	-	$ -	$ -	$ -	$ -
70.02	Heavy Rail	EA	-	$ -	$ -	$ -	$ -
70.03	Commuter Rail	EA	-	$ -	$ -	$ -	$ -
70.04	Bus, Transit	EA	11	$ 1,580,171	$ 17,381,879	$ 4,345,470	$ 21,727,400
70.05	Other	EA	-	$ -	$ -	$ -	$ -
70.06	Non-revenue vehicles	EA	-	$ -	$ -	$ -	$ -
70.07	Spare parts	EA	-	$ -	$ -	$ -	$ -
80 PROFESSIONAL SERVICES						*10%*	$ 55,774,300
80.01	Project Development	%	3%	$ -	$ 4,906,788	$ 490,679	$ 5,397,500
80.02	Engineering	%	8%	$ -	$ 13,084,768	$ 1,308,477	$ 14,393,300
80.03	Project Management for Design & Construction	%	4%	$ -	$ 6,542,384	$ 654,238	$ 7,196,700
80.04	Construction Administration & Management	%	6%	$ -	$ 9,813,576	$ 981,358	$ 10,795,000
80.05	Professional liability and other Non-Construction insurance	%	2%	$ -	$ 3,271,192	$ 327,119	$ 3,598,400
80.06	Legal; Permits; Review Fees by other agencies, cities	%	1%	$ -	$ 1,635,596	$ 163,560	$ 1,799,200
80.07	Surveys, Testing, Investigation	%	3%	$ -	$ 4,906,788	$ 490,679	$ 5,397,500
80.08	Start up	%	4%	$ -	$ 6,542,384	$ 654,238	$ 7,196,700
90 CONTINGENCIES							$ 24,106,200
	Construction and Professional Services	%	10%				$ 24,106,130
PD&E CAPITAL COST ESTIMATE							$ 366,800,000

Notes: 1) Unit costs primarily based on FTA Capital Cost Database and FDOT construction costs

PARSONS

DTPW Beach Corridor

Bus Rapid Transit (BRT 195 Option) - Overtown Tansit Village to Miami Beach Convention Center

Project Development & Environmental Cost Estimate

SCC	ITEM DESCRIPTION	UNIT	QTY	UNIT COST	ALLOCATED COSTS		TOTAL COST
	Entire System Assumed Cost	*MILE*	*10.8*	*$22,611,111*			*$ 244,200,000*
10 GUIDEWAY & TRACK ELEMENTS						***20%***	***$ -***
10.01	Guideway: At-grade, exclusive right-of-way	TF	-	$ -	$ -	$ -	$ -
10.02	Guideway: At-grade, semi-exclusive (allows cross-traffic)	TF	-	$ -	$ -	$ -	$ -
10.03	Guideway: At-grade in mixed traffic	TF	-	$ -	$ -	$ -	$ -
10.04	Guideway: Aerial structure	TF	-	$ -	$ -	$ -	$ -
10.05	Guideway: Built-up fill	LF	-	$ -	$ -	$ -	$ -
10.06	Guideway: Underground cut & cover	LF	-	$ -	$ -	$ -	$ -
10.07	Guideway: Underground tunnel	LF	-	$ -	$ -	$ -	$ -
10.08	Guideway: Retained cut or fill	LF	-	$ -	$ -	$ -	$ -
10.09	Track: Direct fixation	TF	-	$ -	$ -	$ -	$ -
10.10	Track: Embedded	TF	-	$ -	$ -	$ -	$ -
10.11	Track: Ballasted	TF	-	$ -	$ -	$ -	$ -
10.12	Track: Special (switches, turnouts)	EA	-	$ -	$ -	$ -	$ -
10.13	Track: Vibration and noise dampening	TF	-	$ -	$ -	$ -	$ -
20 STATIONS, STOPS, TERMINALS, INTERMODAL						***20%***	***$ 9,386,800***
20.01	At-grade station, stop, shelter, mall, terminal, platform	EA	11	$ 513,408	$ 5,647,488	$ 1,129,498	$ 6,777,000
20.01	ADA Lift	EA	2	$ 36,753	$ 73,506	$ 14,701	$ 88,300
20.01	Pedestrian Bridge	SF	1,950	$ 829	$ 1,616,349	$ 323,270	$ 1,939,700
20.02	Aerial station, stop, shelter, mall, terminal, platform	EA	-	$ -	$ -	$ -	$ -
20.03	Underground station, stop, shelter, mall, terminal, platform	EA	-	$ -	$ -	$ -	$ -
20.04	Other stations, landings, terminals: Intermodal, ferry, trolley, etc.	EA	-	$ -	$ -	$ -	$ -
20.05	Joint development	EA	-	$ -	$ -	$ -	$ -
20.06	Automobile parking multi-story structure	EA	-	$ -	$ -	$ -	$ -
20.07	Elevators, escalators	EA	2	$ 242,409	$ 484,818	$ 96,964	$ 581,800
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN BLDGS						***20%***	***$ -***
30.01	Administration Building: Office, sales, storage, revenue counting	EA	-	$ -	$ -	$ -	$ -
30.02	Light Maintenance Facility	EA	-	$ -	$ -	$ -	$ -
30.03	Heavy Maintenance Facility	EA	-	$ -	$ -	$ -	$ -
30.04	Storage or Maintenance of Way Building	EA	-	$ -	$ -	$ -	$ -
30.05	Yard and yard track	EA	-	$ -	$ -	$ -	$ -
40 SITEWORK & SPECIAL CONDITIONS						***20%***	***$ 69,000,400***
40.01	Demolition, clearing, earthwork	AC	19.2	-	$ 1,921,212	$ 384,242	$ 2,305,500
40.01	Earthwork, Cut & Fill	CY	-	$ -	$ -	$ -	$ -
40.02	Site utilities, utility relocation	LSUM	1.0	$ -	$ 1,109,500	$ 221,900	$ 1,331,400
40.03	Haz. Mat'l, contam'd soil removal/mitigation, ground water treatments	LSUM	1.0	$ -	$ 317,000	$ 63,400	$ 380,400
40.04	Environmental mitigation, e.g. wetlands, historic, parks	LSUM	1.0	$ -	$ 861,840	$ 172,368	$ 1,034,300
40.05	Retaining Wall, Sheet Pile, Steel	SF	-	$ -	$ -	$ -	$ -
40.06	Pedestrian/bike access and accommodation, landscaping	LSUM	1.0	$ -	$ 792,500	$ 158,500	$ 951,000
40.07	Automobile, bus, van accessways including roads, parking lots	LSUM	1.0	$ -	$ 49,822,590	$ 9,964,518	$ 59,787,200
40.07	a. Roadway	LSUM	-	*$ 18,973,902*	$ -	$ -	$ -
40.07	b.1 Bridge Widening for West Bridge	LF	2,200	*$ 19,900,000*	$ -	$ -	$ -
40.07	b.2 Bridge Widening for East Bridge	LF	1,140	*$ 10,150,000*	$ -	$ -	$ -
40.07	c. Pavement Markings	LSUM	-	*$ 646,710*	$ -	$ -	$ -
40.07	d. Roadway Signs	LSUM	-	*$ 151,978*	$ -	$ -	$ -
40.08	Temporary Facilities and other indirect costs during construction	%	5.0		$ 3,210,572	$ -	$ 3,210,600
50 SYSTEMS						***20%***	***$ 22,311,200***
50.01	Train controls and signals	EA	-	$ -	$ -	$ -	$ -
50.02	Traffic signals and crossing protection	EA	44	$ 280,000	$ 12,320,000	$ 2,464,000	$ 14,784,000
50.03	Traction power supply: substations	EA	-	$ -	$ -	$ -	$ -
50.04	Traction power distribution: catenary and third rail	EA	-	$ -	$ -	$ -	$ -
50.05	Communications	LF	57,024	$ 110	$ 6,272,640	$ 1,254,528	$ 7,527,200
50.06	Fare collection system and equipment	EA	-	$ -	$ -	$ -	$ -
50.07	Central Control	EA	-	$ -	$ -	$ -	$ -
SUBTOTAL - CONSTRUCTION COSTS							***$ 100,698,400***
60 ROW, LAND, EXISTING IMPROVEMENTS						***25%***	***$ -***
60.01	Purchase or lease of real estate	LSUM	-	$ -	$ -	$ -	$ -
60.02	Relocation of existing households and businesses	EA	-	$ -	$ -	$ -	$ -
70 VEHICLES						***25%***	***$ 21,727,400***
70.01	Light Rail	EA	-	$ -	$ -	$ -	$ -
70.02	Heavy Rail	EA	-	$ -	$ -	$ -	$ -
70.03	Commuter Rail	EA	-	$ -	$ -	$ -	$ -
70.04	Bus, Transit	LSUM	11	$ 1,580,171	$ 17,381,879	$ 4,345,470	$ 21,727,400
70.05	Other	EA	-	$ -	$ -	$ -	$ -
70.06	Non-revenue vehicles	EA	-	$ -	$ -	$ -	$ -
70.07	Spare parts	EA	-	$ -	$ -	$ -	$ -
80 PROFESSIONAL SERVICES						***10%***	***$ 34,338,500***
80.01	Project Development	%	3%	$ -	$ 3,020,952	$ 302,095	$ 3,323,100
80.02	Engineering	%	8%	$ -	$ 8,055,872	$ 805,587	$ 8,861,500
80.03	Project Management for Design & Construction	%	4%	$ -	$ 4,027,936	$ 402,794	$ 4,430,800
80.04	Construction Administration & Management	%	6%	$ -	$ 6,041,904	$ 604,190	$ 6,646,100
80.05	Professional liability and other Non-Construction insurance	%	2%	$ -	$ 2,013,968	$ 201,397	$ 2,215,400
80.06	Legal; Permits; Review Fees by other agencies, cities	%	1%	$ -	$ 1,006,984	$ 100,698	$ 1,107,700
80.07	Surveys, Testing, Investigation	%	3%	$ -	$ 3,020,952	$ 302,095	$ 3,323,100
80.08	Start up	%	4%	$ -	$ 4,027,936	$ 402,794	$ 4,430,800
90 CONTINGENCIES							***$ 15,676,500***
	Construction and Professional Services	%	10%	$ -	$ -	$ -	$ 15,676,430
PD&E CAPITAL COST ESTIMATE							$ 244,200,000

Notes: 1) Unit costs primarily based on FTA Capital Cost Database and FDOT construction costs

APPENDIX A-2

Operations and Maintenance Cost Estimates Technical Memorandum

Operations and Maintenance Cost Estimates Technical Memorandum

For the

SMART Plan Beach Corridor Rapid Transit

Project Development and Environment (PD&E) Study

Prepared for:

MIAMI-DADE DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS

Prepared by:

Cambridge Systematics, Inc.

In association with:

Parsons Corporation

January 2020

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1 OPERATIONS AND MAINTENANCE COSTS

1.1 INTRODUCTION

This section describes the process used to develop Operations and Maintenance (O&M) cost estimates for four transit technology alternatives for the Miami SMART Plan Beach Corridor alternatives analysis, reflecting the latest assumptions, project developments, and design.

The Beach Corridor alignment includes three segments:

- Bay Crossing Trunkline: a east-west bay crossing segment connecting Miami mainland at Herald Plaza and Miami Beach at 5th Street and Washington Avenue.
- Design District/Midtown Miami Extension: a north-south segment along the North Miami Avenue connecting downtown Miami and the Design District (approximately NE 41st Street), and
- Miami Beach Extension: a north-south segment in Miami Beach along Washington Avenue connecting the 5th Street area and the Miami Beach Convention Center.

The technologies analyzed included:

- Automated People Mover (APM)
- Monorail
- Light Rail Transit (LRT) and
- Bus Rapid Transit (BRT)

The above technologies have various different feasibilities for application in each of these segments based on their characteristics and limitations from the local environment. A total of eight project alternatives using different technologies were developed for the Beach Corridor as part of the Tier Two analysis, as shown below. It should be noted that each alternative has unique termini and lengths, which affects the bottom line operating costs. O&M costs were estimated for each alignment of these alternatives. Note that Light Rail Transit is the only technology assumed to cover all three segments in a single project. Technologies and alternatives can be combined in implementation to provide full coverage of the study area. These alignments are shown graphically in the accompanying Ridership technical memorandum which provides forecasts for each alternative.

APM/Metromover

- Bay Crossing Trunkline:
  - a new service to connect Herald Plaza and Miami Beach (5th Street at Washington Avenue) via MacArthur Causeway;
- Design District/Midtown Miami Extension:
  - an extension of the existing Metromover Omni loop from the School Board Station to connect the Government Center and the Design District via Miami Avenue;
- Beach Express:
  - a new service to connect Government Center and Miami Beach (5th Street at Washington Avenue) via MacArthur Causeway with limited stops;

- Herald Express:
  - a new service to connect Government Center and Herald Plaza with limited stops;

Monorail:

- Bay Crossing Trunkline:
  - a new service to connect Herald Plaza and Miami Beach via MacArthur Causeway;

Light Rail Transit (LRT):

- Bay Crossing Trunkline+ Design District/Midtown Miami Extension + Miami Beach Extension
  - a new service to connect Miami Design District with the Miami Beach Convention Center, traveling on North Miami Avenue, across the MacArthur Causeway, and on Washington Avenue.

Bus Rapid Transit (BRT) / Premium Bus:

- BRT I-195/Julia Tuttle Causeway option:
  - a new service to connect Overtown Transit Village to the Design District via I-95 and Miami Beach Convention Center via I-195 and Collins Avenue;
- BRT I-395/MacArthur Causeway option:
  - a new service to connect Overtown Transit Village and Convention Center via MacArthur Causeway;
- Premium Bus Miami Beach Extension
  - a new service to connect 5th Street & Washington Avenue and Miami Beach Convention Center.

1.2 APPROACH

Following Federal Transit Administration (FTA) requirements and general industry practice, a simplified cost allocation model was developed to estimate operations and maintenance (O&M) cost for the Beach Corridor alternatives. The O& M costs were estimated as the sum of four categories:

- Vehicle operations
- Vehicle maintenance
- Non-vehicle maintenance (includes guideway maintenance which is elevated – and therefore more expensive – for APM and Monorail)
- General administration

The cost of each category is driven by a key service variable: vehicle or train revenue hours for vehicle operation, vehicle revenue miles for vehicle maintenance, directional route miles for non-vehicle maintenance, and peak vehicles[1] for general administration. Train revenue hours were used as the vehicle operation cost variables for rail modes. The O&M costs were then calculated by multiplying the unit costs of each category by the corresponding service variables based on a common service plan with weekday headways of five minutes during peak hours and 10 minutes during off-peak hours. The development of unit costs for each technology and service variables for each alternative are further described below.

[1] Number of vehicles operating at maximum/peak service.

$$Vehicle\ Operation\ Cost = Unit\ Cost\ per\ Vehicel\ or\ Train\ Revenue\ Hour\ \times\ Vehicel\ or\ Train\ Revenue\ Hours$$

$$Vehicle\ Maintenance\ Cost = Unit\ Cost\ per\ Vehicel\ Revenue\ Mile \times\ Vehicel\ Revenue\ Miles$$

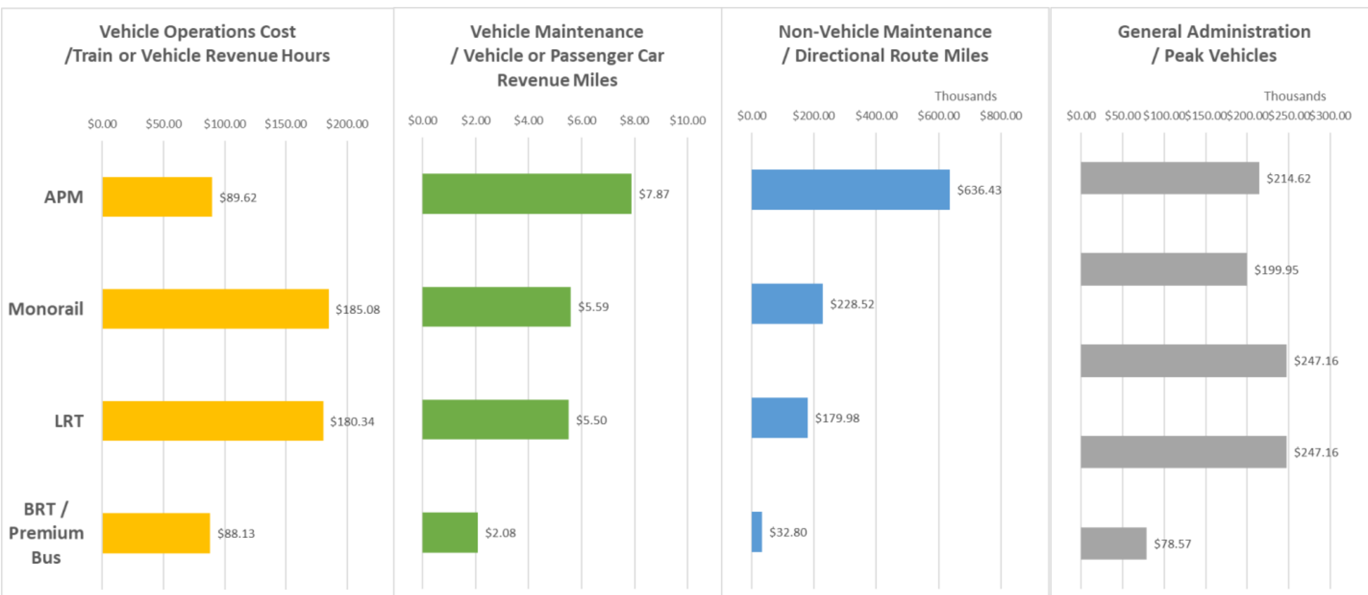
$$Non - Vehicle\ Maintenance\ Cost = Unit\ Cost\ per\ Directional\ Route\ Mile\ \times\ Directional\ Route\ Miles$$

$$General\ Administration\ Cost = Unit\ Cost\ per\ Vehicle\ \times\ Peak\ Vehicles$$

1.3 UNIT COSTS

The unit costs for the four categories described above were developed separately by technology. Given a long history of local Metromover operations in Miami, Automated People Mover costs were established using historical average unit costs computed from operating and service data of Miami's system obtained from the National Transit Database (NTD). The unit costs for Monorail LRT/Streetcar, and Bus Rapid Transit were developed using national average costs of agencies operating these technologies. Costs from 2006 to 2017 were obtained from NTD and inflated to 2019 dollars using Consumer Price Index (CPI) data from the Bureau of Labor Statistics (BLS). Figure 1-1 summarizes the unit costs of all four modes/technologies used in the O&M model.

Figure 1-1 Operations and Maintenance (O&M) Unit Cost by Technology



Source: NTD, M-D DTPW, 2006-2015, shown in 2019 dollars.

Note: Train revenue hours were used as the vehicle operation cost factor for rail modes. Unit costs for APM were from Miami-Dade DTPW cost reporting to NTD. Unit costs for "Light Rail / Streetcar", Monorail and BRT were average unit costs for systems operating these technologies as reported to NTD.

Table 1-1 Operations and Maintenance (O&M) Unit Cost by Technology

	APM	Monorail	LRT	BRT / Premium Bus
Vehicle Operations Cost /Train or Vehicle Revenue Hours	$89.62	$185.08	$180.34	$88.13
Vehicle Maintenance / Vehicle Revenue Miles	$7.87	$5.59	$5.50	$2.08
Non-Vehicle Maintenance / Directional Route Miles	$636,433	$228,516	$179,978	$32,802
General Administration / Peak Vehicles	$214,617	$199,951	$247,157	$78,574

Source: NTD, M-D DTPW, 2006-2015, shown in 2019 dollars.

Note: Train revenue hours were used as the vehicle operation cost factor for rail modes. Unit costs for APM were from Miami-Dade DTPW cost reporting to NTD. Unit costs for “Light Rail / Streetcar”, Monorail and BRT were average unit costs for systems operating these technologies as reported to NTD.

1.4 SERVICE STATISTICS

Service statistics – a measure of the amount of transit service provided – is calculated from the proposed service plan, as shown in Table 1-2 and Table 1-3. These metrics are then multiplied by the unit costs in the section above to derive project operating costs. Note that each alternative provides the same operating plan (5-minute peak frequency) to meet SMART Plan goals for this corridor.

Table 1-2 Weekday Service Plan

Schedule	Early Morning		AM Peak		Midday		PM Peak		Evening		Late Night	
	from	*to*	*from*	*to*	*from*	*to*	*from*	*to*	*from*	*to*	*from*	*to*
	5:00 AM	7:00 AM	7:00 AM	9:00 AM	9:00 AM	4:00 PM	4:00 PM	6:00 PM	6:00 PM	9:00 PM	9:00 PM	12:00 AM
Headway	10 min		5 min		10 min		5 min		10 min		20 min	

Table 1-3 Saturday and Sunday Service Plan

Schedule	Early Morning		AM Peak		Midday		PM Peak		Evening		Late Night	
	from	*to*	*from*	*to*	*from*	*to*	*from*	*to*	*from*	*to*	*from*	*to*
	5:00 AM	7:00 AM	7:00 AM	9:00 AM	9:00 AM	4:00 PM	4:00 PM	6:00 PM	6:00 PM	9:00 PM	9:00 PM	12:00 AM
Headway	20 min		20 min		10 min		10 min		10 min		20 min	

Based on the service plan and each alternative’s operating characteristics, estimates were developed for vehicle revenue hours, vehicle revenue miles, peak vehicles, and guideway miles that would be required to operate each alternative, as shown in the table below.

Table 1-4 Service Statistics

	APM				Monorail	LRT	BRT / Premium Bus		
	Bay Crossing Trunkline	Design District/Midtown Miami Extension (Incremental)	Beach Express	Herald Express			I-195	I-395	Miami Beach Extension
Annual Train or Vehicle Revenue Hours	13,400	11,600	27,900	14,400	13,400	43,300	42,300	41,000	14,200
Annual Vehicle Revenue Miles	326,800	245,000	434,300	114,400	326,800	481,100	428,200	286,100	66,900
Directional Route Miles	8	3	10	3	8	15	20	13	3
Vehicle (Passenger Car) Operated in Maximum Service	6	11	14	8	6	18	11	11	3

Source: Cambridge Systematics, 2019. Note : Numbers are rounded to the nearest hundred.

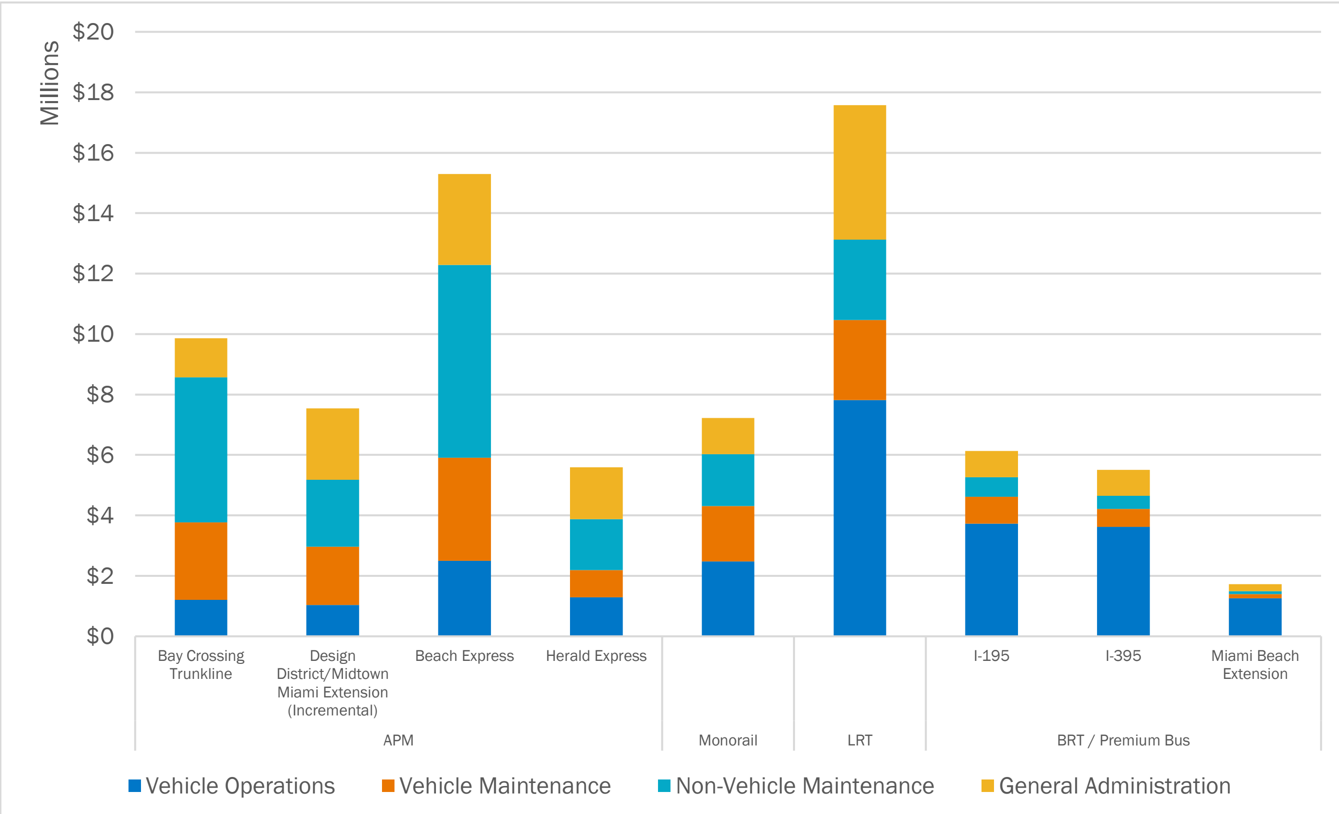
Note: APM and Monorail operate in trainsets made up of two passenger cars each while LRT uses a single vehicle with multiple articulated segments and BRT uses a single vehicle of 60-feet with two articulated segments.

These statistics are then multiplied by the unit costs for each component cost relative to each alternative technology.

1.5 OPERATIONS AND MAINTENANCE ESTIMATES

The resulting product of unit costs and operating statistics is indicated in Figure 1-2 and Table 1-5 below.

Figure 1-2 Annual Operations and Maintenance (O&M) Cost by Technology



Source: Cambridge Systematics, 2019.

Table 1-5 Annual Operations and Maintenance (O&M) Cost by Technology

	APM				Monorail	LRT	BRT / Premium Bus		
	Bay Crossing Trunkline	Miami Extension (Incremental)	Beach Express	Herald Express			I-195	I-395	Miami Beach Extension
Vehicle Operations	$1,201,200	$1,037,400	$2,495,900	$1,294,700	$2,480,700	$7,816,100	$3,727,800	$3,617,800	$1,254,600
Vehicle Maintenance	$2,571,300	$1,928,000	$3,417,000	$900,300	$1,825,200	$2,644,500	$889,700	$594,400	$138,900
Non-Vehicle Maintenance	$4,798,700	$2,214,800	$6,377,100	$1,680,200	$1,723,000	$2,663,700	$648,200	$433,000	$93,200
General Administration	$1,287,700	$2,360,800	$3,004,600	$1,716,900	$1,199,700	$4,448,800	$864,300	$864,300	$235,700
Total	$9,858,800	$7,541,000	$15,294,500	$5,592,100	$7,228,600	$17,573,000	$6,130,000	$5,509,500	$1,722,400

Source: Cambridge Systematics, 2019. Note : Numbers are rounded to the nearest hundred.

As previously stated, the Miami Beach corridor study area includes three segments: Bay Crossing Trunkline, Design District/Midtown Miami Extension, and Miami Beach Extension. The above technologies and alternatives can be combined to provide full coverage to the study area. Table 1-6 and Table 1-7 show examples of the combinations by technology and their estimated O&M costs.

Table 1-6 Full Project Annual Operations and Maintenance (O&M) Cost by Technology without Express Service

Technology	Description	Estimated O&M Cost
APM (Transfer)	APM Bay Crossing Trunkline + APM Design District/Midtown Miami Extension + Premium Bus Miami Beach Extension	$19,122,200
Monorail	Monorail Bay Crossing Trunkline + APM Design District/Midtown Miami Extension + Premium Bus Miami Beach Extension	$16,491,900
LRT	LRT Bay Crossing Trunkline+ Design District/Midtown Miami Extension + Miami Beach Extension	$17,573,000
BRT I-395	BRT I-395	$5,509,500
BRT I-195	BRT I-195	$6,130,000

Source: Cambridge Systematics, 2019. Note : Numbers are rounded to the nearest hundred.

Table 1-7 Full Project Annual Operations and Maintenance (O&M) Cost by Technology with Express Service

Technology	Description	Estimated O&M Cost
APM (One-seat ride)	APM Beach Express + APM Design District/Midtown Miami Extension + Premium Bus Beach Extension +	$24,557,900
APM (Transfer)	APM Bay Crossing Trunkline + APM Design District/Midtown Miami Extension + Premium Bus Miami Beach Extension + APM Herald Express	$24,714,300
Monorail	Monorail Bay Crossing Trunkline + APM Design District/Midtown Miami Extension + Premium Bus Miami Beach Extension + APM Herald Express	$22,084,100
LRT	LRT + APM Herald Express	$23,165,200
BRT I-395	BRT I-395 + APM Herald Express	$11,722,200
BRT I-195	BRT I-195 + APM Herald Express	$11,101,600

Source: Cambridge Systematics, 2019. Note : Numbers are rounded to the nearest hundred.

APPENDIX – DEFINITION OF KEY VARIABLES

Vehicle or Train Revenue Hours – Calculated as the total number of hours the vehicles or trains travel while in revenue service. Vehicle revenue hours include running time and layover / recovery time.

Vehicle Revenue Miles - Calculated as the total mileage the vehicles or passenger cars travel while in revenue service.

Directional Route Miles – Calculated as the total mileage in each direction that the transit vehicle travel in revenue service. For example, a transit route operates in both direction over a one-mile segment has two directional route miles.

Peak Vehicles – Calculated as the number of vehicles operated to meet the maximum service requirement.

APPENDIX A-3

Travel Demand Analysis Memorandum

Travel Demand Analysis Memorandum

For the

SMART Plan Beach Corridor Rapid Transit Project

Prepared for:

MIAMI-DADE DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS

Prepared by:

Cambridge Systematics, Inc.

In association with:

Parsons Corporation

January 2020

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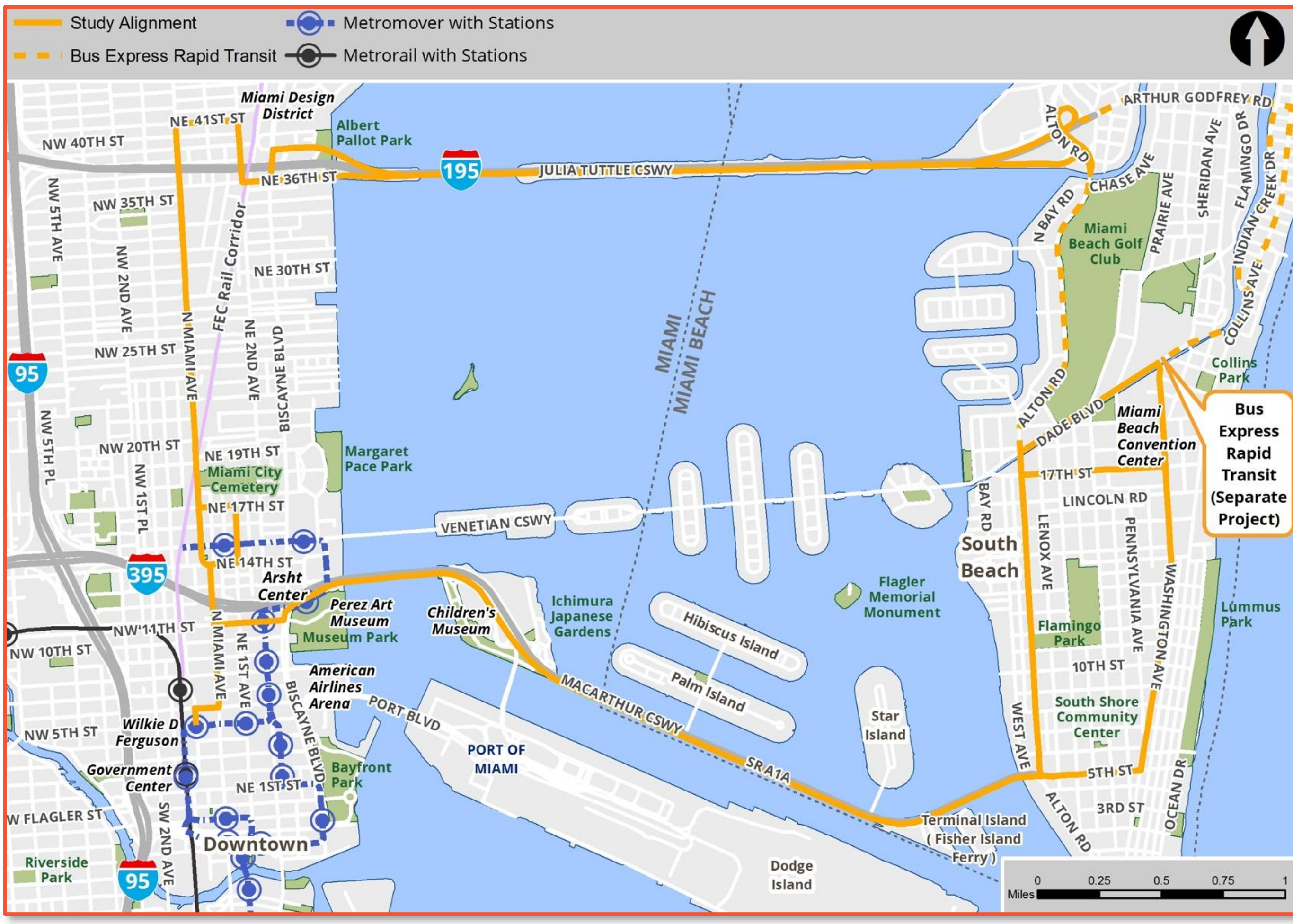
1 INTRODUCTION

This technical memorandum summarizes the ridership forecasts for the Beach Corridor, one of six rapid transit corridors studied as part of Miami-Dade County and Miami-Dade Transportation Planning Organization's Strategic Miami Area Rapid Transit (SMART) plan. The Beach Corridor's goal is to provide direct, convenient, and comfortable rapid transit service to connect three major activity centers in Miami-Dade County: Downtown Miami, Miami Design District, and Miami Beach. **Figure 1** below shows the study area of the beach corridor.

Figure 1 Beach Corridor Study Area



The Beach Corridor includes three segments:

- Bay Crossing Trunkline: an east-west bay crossing segment connecting Miami mainland at Herald Plaza or Museum Park and Miami Beach at 5th Street and Washington Avenue.
- Design District/Midtown Miami Extension: a north-south segment along the North Miami Avenue connecting downtown Miami and the Design District (approximately NE 41st Street), and

– Miami Beach Extension: a north-south segment in Miami Beach along Washington Avenue connecting the 5th Street area and the Miami Beach Convention Center.

Four potential technologies were considered to provide the rapid transit connection:

- Automated People Mover (APM - same as Miami's Metromover),
- Light Rail Transit (LRT),
- Bus Rapid Transit (BRT), and
- Monorail,

The above technologies have various different feasibilities for application in each of these segments, which has led to slightly different project design for each technology - alternatives have different termini and markets as well as different alignments. These technologies were combined into various project alternatives. Ridership estimates were provided by segment and combination of segments of the study corridor.

Consistent with the other five SMART Plan Corridors, ridership for the Beach Corridor was estimated using the Simplified Trips-on-Project Software (STOPS) model, Version 2.50, calibrated for the Miami-Dade County-wide SMART Plan application, and provided to the study team by the Miami-Dade Transportation Planning Organization (TPO). This approach ensures consistency across the different transit corridor studies.

In addition to the STOPS model forecasts, model estimates were developed using the Southeast Florida Regional Planning Model (SERPM) version 7.071. These results were used as a point of reference for use with the STOPS estimates, specifically to remain consistent with the approach taken for the other SMART Plan corridor studies.

2 STOPS MODEL FORECAST

The Simplified Trips-on-Project Software (STOPS) model is a stand-alone ridership forecasting software package developed by the Federal Transit Administration (FTA)[1] to support funding recommendations for FTA's Capital Investment Grant (CIG) program across the nation. STOPS utilizes a modified four-step (trip generation, trip distribution, mode choice, and trip assignment) model structure to produce estimated transit project ridership. The forecast process utilizes readily available data and is calibrated to match both local and national experience related to fixed guideway transit ridership.

The STOPS Version 2.50, calibrated for the Miami-Dade County-wide SMART Plan application, is used for this study to ensure the consistent and accurate representation of the study corridor. This version was released to users in May 2018 with several enhancements that allow it to be easily implemented in very large urban areas such as Southeast Florida. It also has been updated with a new set of calibration parameters to take advantage of the ridership experience that has been gained with recently built transit projects across the country.

STOPS consists of three main elements:

Transit Supply provides information about the transit system. Like traditional models, transit network characteristics are used to build zone-to-zone level of service (skim[2]) matrices and load transit trips to determine ridership by route and station. Unlike traditional forecasting models, STOPS does not use elaborate hand-coded networks. Instead, STOPS takes advantage of a recent advance in on-line schedule data—the General Transit Feed Specification (GTFS). This data format is a commonly used format for organizing transit data so that on-line mapping programs can help customers find the optimal paths (times, routes, and stop locations) for their trips. STOPS includes a program known as GTFPath that generates the shortest path between

[1] See "An overview of STOPS", Federal Transit Administration, 2013 (https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/STOPS.overview-web-final.pdf)
[2] A skim matrix typically refers to a matrix of impedance (cost) estimates between travel zones, which include a combination of travel times, distances, and/or direct costs, are used in estimating zone-to-zone travel demand.

every combination of regional origin and destination. This path is used for estimating travel times (as an input to mode choice) and for assigning transit trips (an output of mode choice) to routes and stations.

Highway Supply, reflecting information about the highway system in the region, STOPS does not directly process information on highway attributes but instead relies on estimates of zone-to-zone highway travel times and distances obtained from SERPM 7.0. STOPS includes a procedure to convert Southeast Florida Traffic Analysis Zone (TAZ)[3] geography to Census Transportation Planning Products Program (CTPP)[4] geography.

Travel Demand addresses the demand side of STOPS. STOPS uses CTPP journey to workflow data to estimate zone-to-zone demand for travel (i.e., trip flows) as an input to the models that determine the mode of travel. These data are factored to represent the regular weekday resident trip market via a calibration process that compares estimated transit boardings at stops to observed boardings. Future year person trips are forecasted based on user-specified zone-specific population and employment forecasts. A traditional nested logit mode choice model is used to determine the proportion of person trips that use transit, stratified by access mode and transit sub- mode. The results of the mode choice are summarized in a series of district-to-district trip flow tables.

It should be noted that while the use of Census-based journey-to-work data and the resident trip market is standard in STOPS transit ridership forecasting, there is significant non-work and non-resident travel demand, particularly within this study area. On each side of Biscayne Bay, there are numerous attractions that generate non-work trips by both visitors and residents for special events, culture, recreation and entertainment. STOPS does not address tourist and special event demand. For this reason, the passenger-carrying capacity of the alternatives is an important consideration, as there is a likelihood of significant visitor/special event/non-work transit demand in addition to the modeled transit demand.

2.1 KEY INPUTS

Key inputs for the Beach Corridor STOPS forecasts are listed as follows.

2.1.1 STATION FILES

The STOPS software includes a nation-wide database of existing transit stations, with pre-populated information of locations, IDs, names, types (park-and-ride or no park-and-ride; at-grade or grade-separated), and daily boardings (only for calibration purposes). This information is used to link to the transit service and schedule data in the GTFS files. For each analyzed alternative of the beach corridor, new stations were added to this station database using standard GIS tools.

2.1.2 CENSUS AND CTPP DATA

The Year 2010 Census Transportation Planning Package (CTPP) Journey-to-Work (JTW) flow data were obtained from the FTA STOPS website. This information was used in STOPS to estimate zone-to-zone demand for travel as an input to the nested logit mode models that determine mode choice.

2.1.3 DEMOGRAPHIC DATA

STOPS uses local metropolitan planning organization's demographic forecasts to account for zone-specific growth in population and employment to represent current and future years condition. The demographic data are obtained from Miami-Dade Transportation Planning Organization for years 2015 and 2040.

2.1.4 TRAVEL TIME DATA

STOPS does not directly process information on highway attributes but instead relies on estimates of zone-to-zone highway travel times and distances produced by the regional travel demand model. For this study, the highway travel time and distance

[3] TAZ: A traffic analysis zone or transportation analysis zone (TAZ) is the unit of geography most commonly used in conventional transportation planning models (https://en.wikipedia.org/wiki/Traffic_analysis_zone).
[4] CTPP: The CTPP is a State DOT-funded, cooperative program that produces special tabulations of American Community Survey (ACS) data that have enhanced value for transportation planning, analysis, and strategic direction (https://ctpp.transportation.org/).

data were obtained from SERPM 7.

2.1.5 TRANSIT SERVICE DATA

STOPS uses transit service timetable from the General Transit Feed Specification (GTFS). GTFS is a standardized format for public transportation schedules used by transit agencies throughout the world for trip planning, scheduling, and mobile application. GTFS files for Miami-Dade Transit were acquired from the Google Transit Feeds website to be used as inputs into STOPS. GTFS files were developed for each analyzed alternative of the Beach Corridor to represent the service.

2.2 MODELING PROCESS

2.2.1 DATA PREPARATION

STOPS generates transit ridership based on extracted stop level socio-economic data, CTPP flows and user specified GTFS network and ridership data. The following are the input data preparation steps that STOPS performs prior to forecasting:

- Create Station Buffers: This step is an automated process that builds a series of buffers around the stations and compares them to the Census-based CTPP geography (TZ[5], BG[6], or TR[7]) file. The outcome is a file containing a listing of each CTPP zone (TZ, BG, or TR) to be included in the modeling file and the proximity of each zone to any fixed guideway station and the distance to the nearest PNR station.
- District Definitions and Zonal Data: Districts are groups of one or more zones used by STOPS to aggregate travel data to a level suitable for model calibration and reporting. Depending on the growth factoring selected by the model user, districts also define the unit of geographic analysis used to update the Year 2010 CTPP to represent current and forecast year population and employment. Given this important role inside STOPS, districts must be defined to represent groups of similar stops along the project and other existing fixed guideway transit lines. Districts should represent areas with levels of walk- and drive-accessibility to stations that are relatively close to one-another and share similar levels of transit service.
- Create MPO-TAZ Equivalency File and Generate Zonal Socioeconomic Forecasts: This is an automated step that creates an equivalency file between the CTPP geography and the MPO zone system and then generates a file with one record for each unit of CTPP geography containing MPO forecasts of population and employment for each year defined in the forecast year parameter file.
- Prepare Pedestrian Environment Data: This is another automated step that generates an estimate of the number of Census blocks contained in each unit of CTPP geography. This statistic is used to indicate the completeness of the street grid in a zone which serves as a proxy for the walkability of an area.

2.2.2 RIDERSHIP FORECASTING

STOPS runs a series of sub-models before running the ridership forecast:

- CTPP Extract. This step calls the CTPP Extract program which reads the CTPP files and prepares an output dataset with one record for each zone-to-zone pair containing the number of CTPP journey to work flows.
- GTF Path. This calls the GTF Path program which reads the GTFS files and generates estimates of zone-to-zone transit travel times.
- GTF Post. This step calls GTF Post which reads each zone-to-zone JTW flow file and posts the appropriate travel times to each record.
- Prepare Forecast Years. This step calls the program that reads each zone-to-zone journey-to-work flow file with posted

[5] Traffic Analysis Zone.
[6] Census Block Group.
[7] Census Track.

travel time estimates and inflates the file to represent the user-selected forecast year.

Once these steps have been completed, STOPS applies a nested logit mode choice model to forecast transit trips, and assigns transit trips to the fixed guideway routes. Finally, it prepares various summary reports.

2.3 SMART PLAN MODELING COORDINATION

The project team coordinated with Miami-Dade Transportation Planning Organization (TPO) and their consultants closely during the modeling process. Samples of model files were shared with Miami-Dade TPO and their consultants for review, whose suggestions were incorporated and applied to the modeling of all Beach corridor alternatives. These coordination efforts were to assure:

- Codings of project alternatives are incorporated into the existing GTFS files;
- Consistent location coordinates and stop ID are coded as the existing GTFS files for existing stations used by project alternatives;
- Run-through services are consistently represented as the existing GTFS files using Block ID;
- Station-to-station travel time of the APM alternatives on the downtown loop is consistent with the existing GTFS files, and the start times of the alternatives are nested between existing services to provide maximum benefits.

3 BEACH CORRIDOR ALTERNATIVES

Ridership for a total of ten project alternatives was modeled for the Beach Corridor, with four focus on the Bay Crossing / Trunkline segment, and the rest covering the full study corridor (Trunkline + Miami Extension + Beach Extension). All alternatives are modeled with an APM / Metromover express service connecting Government Center and Herald Plaza with no intermediate stops.

For each alternative, the transit network operating assumptions in the existing and No- Build scenarios are obtained from the Miami-Dade Department of Transportation and Public Works GTFS files. In each build scenario, the project alternatives are assumed to operate on a 5-minute headway during peak hours (7-9 AM & 4-6 PM), and a 10-minute headway during off-peak hours, with a service span from 5 AM to 12 AM (midnight). Transit travel time for each project alternative was calculated based on maximum speed and acceleration/deceleration rates of the technology, transit lane types (dedicated/shared), corridor types (freeway/urban street), and transit dwell time. The DTPW automated vehicle location (AVL) data, HERE speed data, and Google Map travel time were used as references when developing transit travel time. Ridership forecasting was conducted for base year 2015 and future year 2040.

Table 3-1 BEACH CORRIDOR ALTERNATIVES[8]

Main Technology	Bay Crossing / Trunkline	Full Project
APM (One-Seat Ride)	APM Express from Government Center to 5th St & Washington Ave	APM Express from Government Center to 5th St & Washington Ave + Omni Extension from Government Center to Design District + Premium Bus from 5th St & Washington Ave to Convention Center
APM (Transfer)	APM Express from Government Center to Herald + APM from Herald Plaza to 5th St & Washington Ave	APM Express from Government Center to Herald Plaza + APM from Herald Plaza to 5th St & Washington Ave + Omni Extension from Government Center to Design District+ Premium Bus from 5th St & Washington Ave to Convention Center
Monorail	APM Express from Government Center to Herald Plaza + Monorail from Herald Plaza to 5th St & Washington Ave	APM Express from Government Center to Herald + Monorail from Herald Plaza to 5th St & Washington Ave + Omni Extension from Government Center to Design District+ Premium Bus from 5th St & Washington Ave to Convention Center
LRT	APM Express from Government Center to Herald Plaza + LRT from Museum Park to 5th St & Washington Ave	APM Express from Government Center to Herald Plaza+ LRT from Design District to Convention Center
BRT I-195		APM Express from Government Center to Herald Plaza + Overtown Transit Village to Convention Center via I-195
BRT I-395		APM Express from Government Center to Herald Plaza+ Overtown Transit Village to Convention Center via MacArthur

To compare and analyze ridership for the above alternatives, three model outputs are reported: route boardings, system boarding increments, and linked transit trips on project. Route boardings are the total boardings at all stations of a transit route, reflecting transit utilization of each project alternative. Because boardings of a new transit project usually include riders shifting from existing service, system boarding increments are also reported to illustrate the system-wide net boarding increase added by the new service. In addition, given that most of the project alternatives include multiple routes, linked transit trips on project are reported to avoid double-counting transfer trips when comparing projects alternatives. For example, a person takes the Herald Express from Government Center and transfers to Monorail to go to the beach will be counted as two boardings (one for each route), but will only be counted as one linked transit trips on project. These three model outputs are provided for each project alternative below.

[8] BRT I-195 and BRT I-395 were not tested for just the trunkline but rather include full connections on either side of the bay.

3.1 AUTOMATED PEOPLE MOVER (APM)

APM/Metromover (One-Seat Ride) Alignment

Bay Crossing / Trunkline (Figure 2):

– a new APM express service[9] to connect Government Center and Herald Plaza with limited stops and continue to Miami Beach (at 5th Street and Washington Avenue) via MacArthur Causeway (Beach Express).

Full Project (Figure 3):

– a new express service to connect Government Center and Herald Plaza with limited stops and continue to Miami Beach via MacArthur Causeway (Beach Express);

– an extension of the existing Metromover Omni loop from the School Board Station to connect the Government Center and the Design District via Miami Avenue (Omni Miami Extenstion) ;

– an new premium bus service to connect 5th Street and Washington Avenue and Miami Beach Convention Center via Washington Avenue (Beach Extension).

Figure 2 APM (One-Seat Ride) Bay Crossing / Trunkline

Figure 3 APM (One-Seat Ride) Full Project

APM/Metromover (Transfer) Alignment

Bay Crossing / Trunkline (Figure 5):

– a new APM express service to connect Government Center and Herald Plaza with limited stops (Herald Express) ;

– a new APM service to connect Herald Plaza to Miami Beach (at 5th Street and Washington Avenue) via MacArthur Causeway (APM Trunkline).

Full Project (Figure 4):

– a new APM express service to connect Government Center and Herald Plaza with limited stops (Herald Express).;

– a new APM service to connect Herald Plaza to Miami Beach (at 5th Street and Washington Avenue) via MacArthur Causeway (APM Trunkline) ;

– an extension of the existing Metromover Omni loop from the School Board Station to connect the Government Center and the Design District via Miami Avenue (Omni Miami Extenstion) ;

– an new premium bus service to connect 5th Street and Washington Avenue and Miami Beach Convention Center via Washington Avenue (Beach Extension).

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[9] The express service inbound from Miami Beach to Government Center follows the existing track unaltered: southbound and westbound on OMNI (outer) loop then approaching Government Center uses a new switch to stop on the inner loop at the station. The outbound trip follows the inner loop, switching to outer loop west of College North, follows OMNI southbound track before switching near Freedom Tower to northbound track and continues via new track to the Beach.

The “Route Type” of APM alternatives were coded as “1 – Subway, Metro” in the GTFS files; and fixed guideway setting of 1.2 was used, consistent with the settings for existing Miami dedicated transit facility technologies (Metromover and Metrorail). The travel time for APM Alternatives are shown in Table 3-2 and Table 3-3. In the STOPS model, Government Center station is an existing station; all other stations of the APM alternatives are coded as “new station”. It should be noted that the travel time shown in the tables is in-vehicle travel time only, not including transfer time or wait time. The transfer time used in the STOPS model is 7.5 minutes. However, the platform design at the proposed transfer station will minimize the horizontal/vertical movement time required.

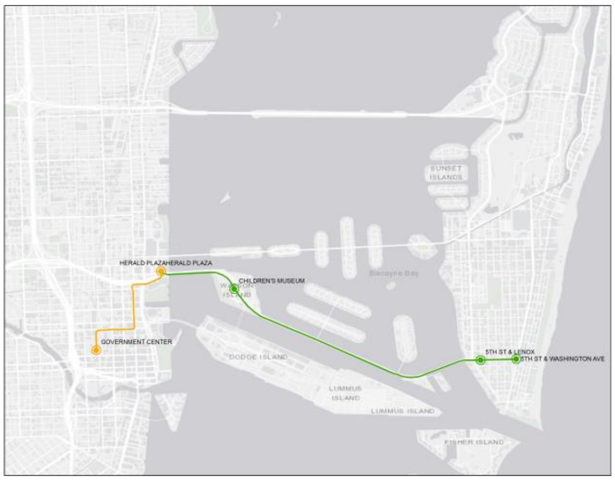


Figure 5 APM (Transfer) Bay Crossing / Trunkline

Figure 4 APM (Transfer) Full Project

Table 3-2APM Bay Crossing / Trunkline Travel Times

Alternative	Terminal		Travel Time (min)	
APM/Metromover (One-Seat Ride)			**EB/SB**	**WB/NB**
Beach Express	Government Center	5th St and Washington Ave	13	13
APM/Metromover (Transfer)			**EB/SB**	**WB/NB**
Herald Express	Government Center	Herald Plaza	7	7
APM Trunkline	Herald Plaza	5th St and Washington Ave	6	6
Total[10]	Government Center	5th St and Washington Ave	13	13

Table 3-3APM Full Project Travel Times

Alternative	Terminal		Travel Time (min)	
APM/Metromover (One-Seat Ride)			**EB/SB**	**WB/NB**
Beach Express	Government Center	5th St and Washington Ave	13	13
Omni Miami Extension	Government Center	NE 40th St & N Miami Ave	22	17
Beach Extension	5th St and Washington Ave	Miami Beach Convention Center	6	6
APM/Metromover (Transfer)			**EB/SB**	**WB/NB**
Herald Express	Government Center	Herald Plaza	7	7
APM Trunkline	Herald Plaza	5th St and Washington Ave	6	6
Omni Miami Extension	Government Center	NE 40th St & N Miami Ave	22	17
Beach Extension	5th St and Washington Ave	Miami Beach Convention Center	6	6

[10] Not including walking time or wait time for transfer. The transfer time used in the STOPS model is 7.5 minutes. However, the platform design at the proposed transfer station will minimize the horizontal/vertical movement time required.

Table 3-4 and Table 3-5 show the ridership estimates for the APM alternatives. The APM one-seat ride option is slightly more productive than the APM transfer option, carrying over 13 thousand linked transit trips in the base year and over 20 thousand linked transit trips in the future year between Government Center and Miami Beach. The APM transfer option carries about nine thousand linked transit trips in the base year, and 14 thousand linked transit trips in the future year.

The system boardings (increment) measures the difference of system-wide boardings in the no-build scenarios and build scenarios. In the base year scenario, the APM one-seat ride option is projected to add about 12.6 thousand boardings to the existing transit system, and the APM transfer option will add about 10.3 thousand boardings.

Looking at the full project scenarios, extending the Omni Loop to Design District and adding the beach extension are expected to generate over 10 thousand more linked transit trips for both APM options in the base year, and over 20 thousand more in the future year. The full project of APM one-seat ride option is estimated to carry 23.8 thousand linked transit trips in the base year, and over 40 thousand linked transit trips in the future year. The full project of APM transfer option is estimated to carry 19.6 thousand linked transit trips in the base year, and 34.9 thousand linked transit trips in the future year.

It should be noted that the STOPS Version 2.50, calibrated for the Miami-Dade County-wide SMART Plan application, applied a 1.5 factor of the default 5-minute transfer penalty for all stations in the system[11]. The Miami-Dade Transportation and Public Works (DTPW) is aiming to create an optimized seamless transfer experience for the Beach Corridor through design, engineering, and operational improvements. Therefore, the transfer time at Herald Plaza could be lower than the average transfer time at the existing stations, and the ridership of APM transfer option could be somewhat higher than the current model projection.

Table 3-4APM Daily Ridership Estimates - Bay Crossing / Trunkline

Alternative	2015			2040		
	Route Boardings	System Boardings (Increment)	Linked Transit Trips on Projects	Route Boardings	System Boardings (Increment)	Linked Transit Trips on Projects
APM / Metromover (One-Seat Ride)						
Beach Express	13,600	12,600	13,600	20,900	19,500	20,900
APM / Metromover (Transfer)						
Herald Express	4,800	10,300	8,900	6,800	15,500	14,200
APM Trunkline	7,700			12,800		

11 A total of 7.5 minutes of transfer time.

Table 3-5APM Daily Ridership Estimates – Full Project

Alternative	2015			2040		
	Route Boardings (Increment)[12]	System Boardings (Increment)	Linked Transit Trips on Projects	Route Boardings (Increment)	System Boardings (Increment)	Linked Transit Trips on Projects
APM/Metromover (One-Seat Ride)						
Beach Express	14,600	17,000	23,800	23,200	27,300	40,400
Omni Miami Extension	4,300			8,500		
Beach Extension	1,300			2,400		
APM/Metromover (Transfer)						
Herald Express	4,400	15,100	19,600	6,100	23,700	34,900
APM Trunkline	9,200			15,600		
Omni Miami Extension	5,700			10,200		
Beach Extension	700			1,000		

[12] Applied to Omni Miami Extension, the route boarding (increment) is the boarding of Omni Miami Extension minus the boarding of existing Metromover Omni route,

3.2 MONORAIL

Monorail Alignment

Bay Crossing / Trunkline (Figure 6):

- a new APM express service to connect Government Center and Herald Plaza with limited stops (Herald Express) ;
- a new Monorail service to connect Herald Plaza to Miami Beach (at 5th Street and Washington Avenue) via MacArthur Causeway (Monorail Trunkline).

Figure 6 Monorail Bay Crossing / Trunkline

Full Project (Figure 7):

- a new APM express service to connect Government Center and Herald Plaza with limited stops (Herald Express);
- a new Monorail service to connect Herald Plaza to Miami Beach (at 5th Street and Washington Avenue) via MacArthur Causeway (APM Trunkline) [13];
- an extension of the existing Metromover Omni loop from the School Board Station to connect the Government Center and the Design District via Miami Avenue (Omni Miami Extenstion) ;
- an new premium bus service to connect 5th Street and Washington Avenue and Miami Beach Convention Center via Washington Avenue (Beach Extension).

Figure 7 Monorail Full Project

The "Route Type" of the Monorail alternative was coded as "1 - Subway, Metro" in the GTFS files; and a fixed guideway setting of 1.2 was used, consistent with the settings for exiting Miami dedicated transit facility technologies (Metromover and Motrorail). In the STOPS model, Government Center station is an existing station; all other stations of the Monorail alternatives are coded as "new station".The travel time for Monorail Alternatives are shown in Table 3-6 and Table 3-7. It should be noted that the travel time shown in the tables does not include walking time or wait time for transfer.

Table 3-6Monorail Travel Times -Bay Crossing / Trunkline

Alternative	Terminal		Travel Time (min)	
Monorail			**EB/SB**	**WB/NB**
Herald Express	Government Center	Herald Plaza	7	7
Monorail Trunkline	Herald Plaza	5th St and Washington Ave	6	6
Total[14]	Government Center	5th St and Washington Ave	13	13

[13] The coding, parameters, and modeling assumption are the same as APM Trunkline due to their similarity in alignment and operating characteristics.
[14] Not including waiting time.

Table 3-7Monorail Full Project Travel Times

Alternative	Terminal		Travel Time (min)	
Monorail			**EB/SB**	**WB/NB**
Herald Express	Government Center	Herald Plaza	7	7
Monorail Trunkline	Herald Plaza	5th St and Washington Ave	6	6
Omni Miami Extension	Government Center	NE 40th St & N Miami Ave	22	17
Beach Extension	5th St and Washington Ave	Miami Beach Convention Center	6	6

Table 3-8 and Table 3-9 show the ridership estimates for the Monorail alternatives. The Monorail Bay Crossing / Trunkline option is expected to generate about 9 thousand linked transit trips in the base year, and over 14 thousand in the future year. Having the Omni Miami Extension will increase the boardings on Monorail Trunkline by about 20 percent, adding over 10 thousand transit trips to the project corridors.

It should be noted that the STOPS Version 2.50, calibrated for the Miami-Dade County-wide SMART Plan application, applied a 1.5 factor of the default 5-minute transfer penalty for all stations in the system. The Miami-Dade Transportation and Public Works (DTPW) is aiming to create an optimized seamless transfer experience for the Beach Corridor through design, engineering, and operational improvements. Therefore, the transfer time at Herald Plaza could be lower than the average transfer time at the existing stations, and the ridership of Monorail alternative could be somewhat higher than the current model projection.

Table 3-8Monorail Daily Ridership Estimates - Bay Crossing / Trunkline

Alternative	2015			2040		
	Route Boardings	System Boardings (Increment)	Linked Transit Trips on Projects	Route Boardings	System Boardings (Increment)	Linked Transit Trips on Projects
Monorail						
Herald Express	4,800	10,300	8,900	6,800	15,500	14,200
Monorail Trunkline	7,700			12,800		

Table 3-9Monorail Daily Ridership Estimates – Full Project

Alternative	2015			2040		
	Route Boardings (Increment)	System Boardings (Increment)	Linked Transit Trips on Projects	Route Boardings (Increment)	System Boardings (Increment)	Linked Transit Trips on Projects
Monorail						
Herald Express	4,400	15,100	19,600	6,100	23,700	34,900
Monorail Trunkline	9,200			15,600		
Omni Miami Extension	5,700			10,200		
Beach Extension	700			1,000		

3.3 LIGHT RAIL TRANSIT (LRT)

LRT Alignment

Bay Crossing / Trunkline (Figure 8):

– a new APM express service to connect Government Center and Herald Plaza with limited stops (Herald Express) ;
– a new LRT service to connect Museum Park to Miami Beach (at 5th Street and Washington Avenue) via MacArthur Causeway (LRT Trunkline).

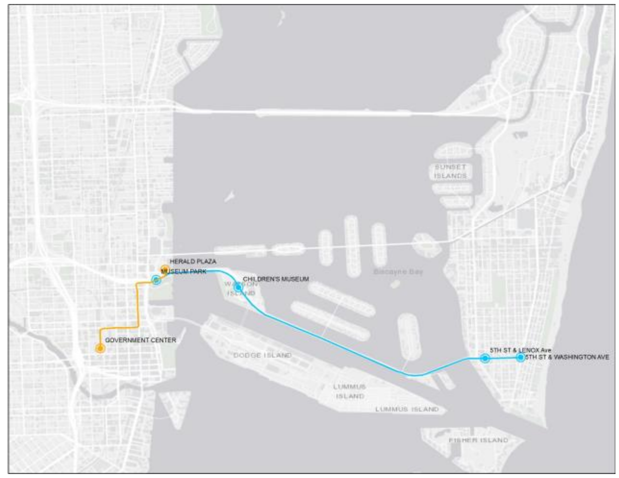


Figure 8 LRT Bay Crossing / Trunkline

Full Project (Figure 9):

– a new APM express service to connect Government Center and Herald Plaza with limited stops (Herald Express).;
– a new service to connect Miami Design District with the Miami Beach Convention Center, traveling on North Miami Avenue, across the MacArthur Causeway, and on Washington Avenue (LRT full project).

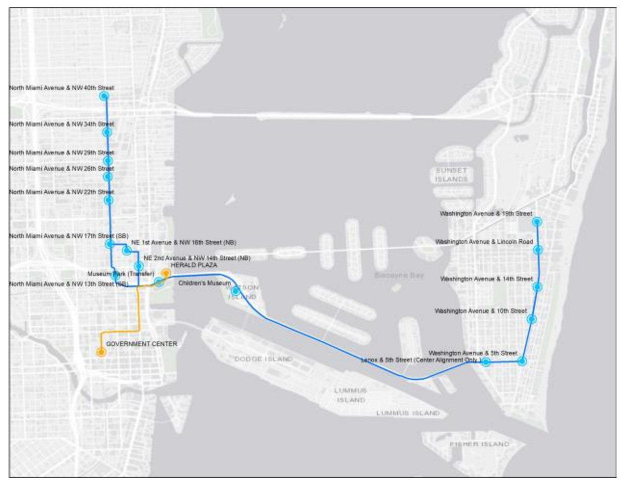


Figure 9 LRT Full Project

The travel time for LRT alternatives are shown in the tables below. The "Route Type" of the LRT alternative was coded as "0 - Tram, streetcar, LRT, and BRT" in the GTFS files; and a fixed guideway setting of 1.0 was used. In the STOPS model, Government Center and Museum Park stations are existing stations; all other stations of the LRT alternatives are coded as "new station".

Table 3-10LRT Travel Times -Bay Crossing / Trunkline

Alternative	Terminal		Travel Time (min)	
LRT			**EB/SB**	**WB/NB**
Herald Express	Government Center	Herald Plaza	7	7
LRT Trunkline	Museum Park	5th St and Washington Ave	7	7

Table 3-11LRT Travel Times - Full Project

Alternative	Terminal		Travel Time (min)	
LRT			**EB/SB**	**WB/NB**
Herald Express	Government Center	Herald Plaza	7	7
LRT Full Project	Design District	Miami Beach Convention Center	24	23

Table 3-12 and Table 3-13 show the ridership estimates for the LRT alternatives. The LRT Bay Crossing / Trunkline scenario is projected to carry about 7,500 transit trips in the base year and over 10 thousand in the future year. Having the full project coverage from the Design District to the Miami Convention Center will increase the LRT ridership significantly, generating over 18 thousand transit trips in the base year and over 31 thousand trips in the future year.

Table 3-12LRT Daily Ridership Estimates - Bay Crossing / Trunkline

Alternative	2015			2040		
	Route Boardings	System Boardings (Increment)	Linked Transit Trips on Projects	Route Boardings	System Boardings (Increment)	Linked Transit Trips on Projects
LRT Trunkline	6,300	7,400	7,500	10,000	10,600	11,600
Herald Express	3,100			4,100		

Table 3-13LRT Daily Ridership Estimates – Full Project

Alternative	2015			2040		
	Route Boardings	System Boardings (Increment)	Linked Transit Trips on Projects	Route Boardings	System Boardings (Increment)	Linked Transit Trips on Projects
LRT Full Project	17,000	16,100	18,200	29,500	24,400	31,000
Herald Express	4,400			5,800		

3.4 BUS RAPID TRANSIT (BRT)

BRT Alignment

I-195 (Figure 10):

- a new service to connect Overtown Transit Village, Design District, and Convention Center via I-195;
- a new APM express service to connect Government Center and Herald Plaza with limited stops (Herald Express).

I-395 (Figure 11):

- a new service to connect Overtown Transit Village and Convention Center via MacArthur Causeway;
- a new APM express service to connect Government Center and Herald Plaza with limited stops (Herald Express).

The travel time for BRT alternatives are shown in the tables below[15]. The "Route Type" of BRT alternatives were coded as "0 - Tram, streetcar, LRT, and BRT" in the GTFS files; and a fixed guideway setting of 0.4 were used. In the STOPS model, Government Center station is an existing station; all other stations of the BRT alternatives are coded as "new station".

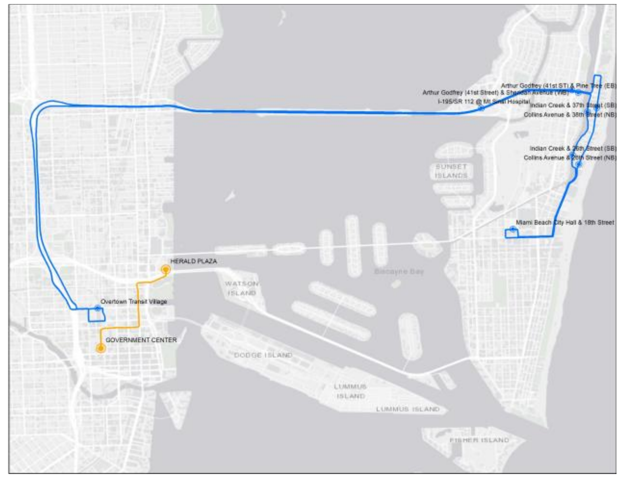


Figure 10 BRT I-195

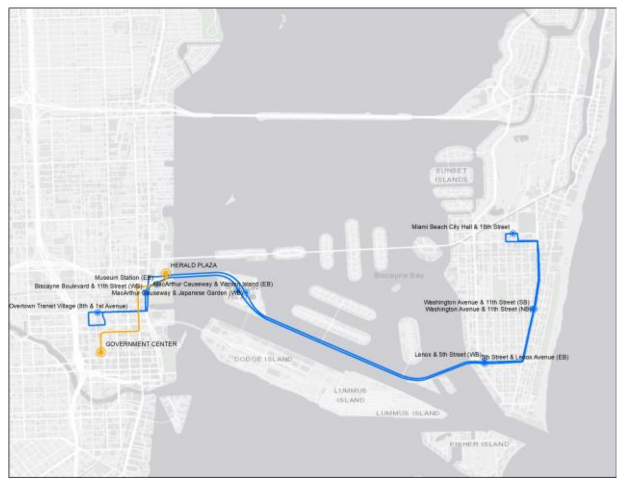


Figure 11 BRT I-395

Table 3-14BRT Travel Times – I-195

Alternative		Terminal	Travel Time (min)	
BRT I-195	**From**	**To**	**EB**	**WB**
BRT I-195	Overtown Transit Village	Miami Beach Convention Center	25	21
Herald Express	Government Center	Herald Plaza	7	7

15 BRT travel time is estimated based on roadway traffic condition for segment where BRT operates in mixed traffic.

Table 3-15BRT Travel Times – I-395

Alternative		Terminal	Travel Time (min)	
BRT I-395	**From**	**To**	**EB**	**WB**
BRT I-395	Overtown Transit Village	Miami Beach Convention Center	22	18
Herald Express	Government Center	Herald Plaza	7	7

Table 3-16 and Table 3-17 show the ridership estimates for the BRT alternatives. The BRT I-195 alternative is projected to carry about 10.8 thousand linked transit trips in the base year and 17.8 thousand in the future year. The BRT I-395 alternative is projected to carry about 10.6 thousand linked transit trips in the base year and 16 thousand in the future year. Among the 9,300 boardings of BRT I-395 route, about 3,800 boardings are generated at stations in the trunkline segment.

Table 3-16BRT Ridership Estimates – I-195

Alternative	2015			2040		
	Route Boardings	System Boardings (Increment)	Linked Transit Trips on Projects	Route Boardings	System Boardings (Increment)	Linked Transit Trips on Projects
BRT I-195	9,500	8,100	10,800	16,100	12,900	17,800
Herald Express	1,400			1,700		

Table 3-17BRT Daily Ridership Estimates – I-395

Alternative	2015			2040		
	Route Boardings	System Boardings (Increment)	Linked Transit Trips on Projects	Route Boardings	System Boardings (Increment)	Linked Transit Trips on Projects
BRT I-395	9,300	9,200	10,600	14,300	13,700	16,000
Herald Express	1,600			2,200		

4 SUMMARY

Table 4-1 and Table 4-2 summarize the ridership by technology and by segment for base year (2015) and future year (2040) conditions for the Trunkline segment and full project. Ridership is shown in a +/- 20% range to account for likely ridership fluctuation due to future alternative refinement based on DTPW's SMART Plan experience with FTA review.

The APM one-seat ride alternative is projected to generate the most ridership among all alternatives. APM transfer alternative and Monorail alternative are projected to have similar ridership and are the second most productive options among all alternatives. LRT technology is a better option when implemented as a full project than built for only the Bay Crossing / Trunkline segment. The LRT alternative is estimated to have 18% lower ridership than the APM transfer and Monorail alternatives in the Bay Crossing / Trunkline segment, however, this difference is reduced to about 7% in the full project level. The two BRT alternatives are projected to have less ridership potential than the other technologies. The ridership of the BRT alternatives are about 60% of the ridership as the LRT full project, and about half of the APM transfer and Monorail alternatives.

Table 4-1Ridership Summary - 2015

Technology	Bay Crossing / Trunkline	Full Project
APM (One-Seat Ride)	8,100 - 12,100	19,000 - 28,600
APM (Transfer)	6,200 - 9,200	15,700 - 23,500
Monorail	6,200 - 9,200	15,700 - 23,500
LRT	5,000 - 7,600	14,600 - 21,800
BRT I-395	N/A	8,500 – 13,000
BRT I-195	N/A	8,500 – 13,000

Table 4-2Ridership Summary - 2040

Technology	Bay Crossing / Trunkline	Full Project
APM (One-Seat Ride)	13,000 - 19,400	32,300 - 48,500
APM (Transfer)	10,200 - 15,400	27,900 - 41,900
Monorail	10,200 - 15,400	27,900 - 41,900
LRT	8,000 - 12,000	24,800 - 37,200
BRT I-395	N/A	11,500 - 21,400
BRT I-195	N/A	11,500 - 21,400

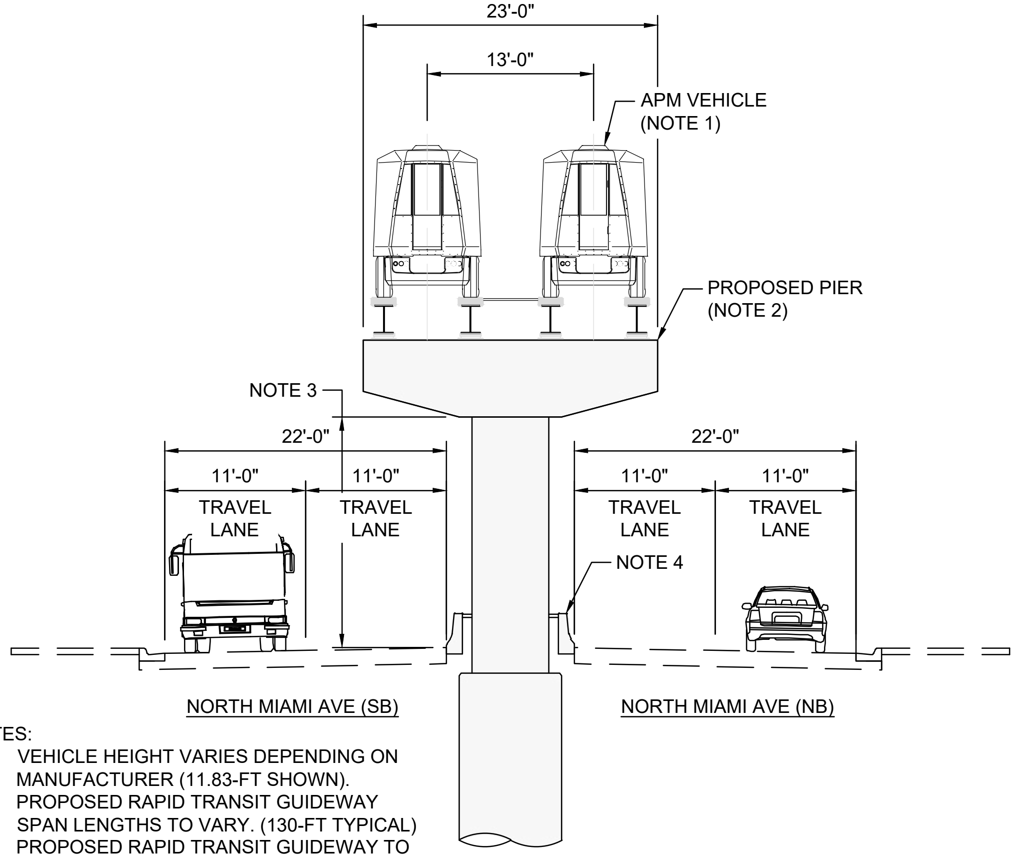
The STOPS model Version 2.50, calibrated for the Miami-Dade County-wide SMART Plan application, applies the default national average ratio of work-related trips and non-work-related trips. This is likely to cause underestimation of ridership for the Beach Corridor, given that it is likely to have a larger market for non-work trips (e.g. tourists, leisure trips, students) than the national average. The ridership projection for the APM transfer options and Monorail alternatives are therefore likely to be higher than the current estimates with future recalibration of the STOPS model when transit rider survey and more accurate estimation of the transfer time becomes available. As a result, the ridership difference between the APM one-seat ride option and the transfer option would therefore be smaller than the current projection.

It should also be noted that all scenarios are modeled assuming existing MDT bus services remain unchanged. Potential transit route consolidation or modification to preclude duplication of service across the MacArthur Causeway could add 3,000 to 5,400 daily riders (2015) to all alternatives based on existing ridership on Routes 113, 119 and 120 based on ridership on those routes across Biscayne Bay; the number of additional riders for LRT alternative is likely to be smaller due to the walk distance between the Omni/Herald bus terminal and Museum Park station.

It was verified that each alternative provides sufficient capacity for estimated typical demand; for special event demand, additional service may be provided via more frequent vehicles for the time periods when peak demand is anticipated.

APPENDIX A-4

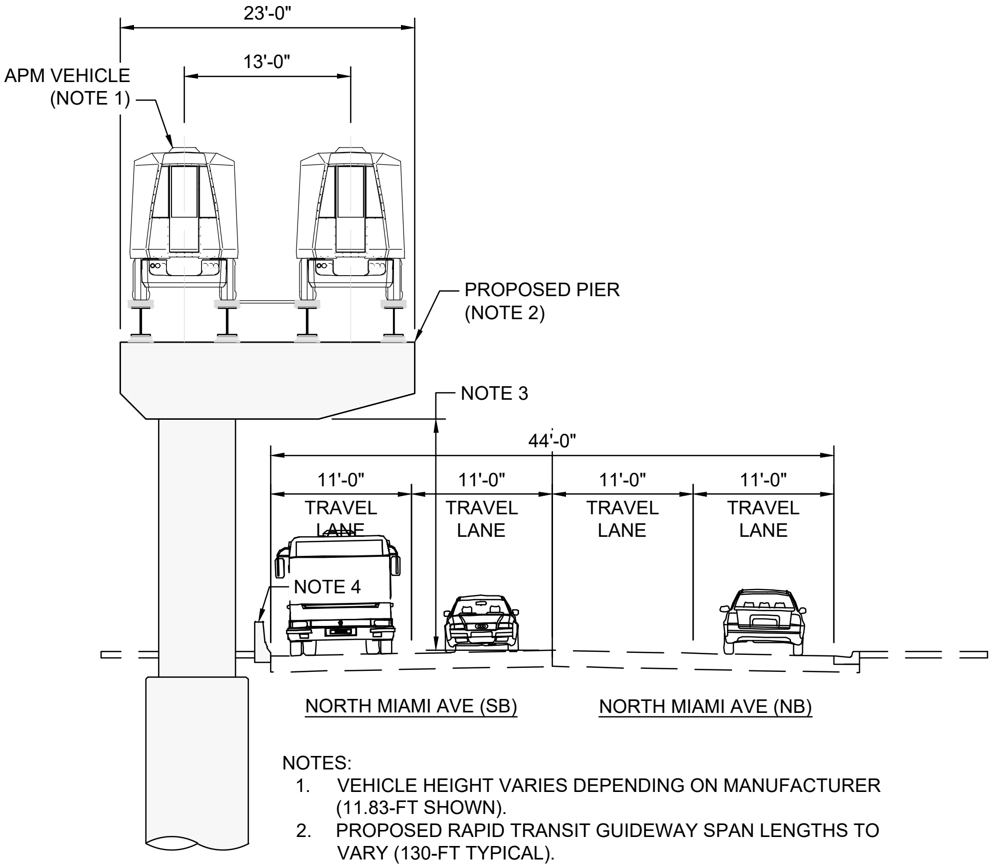
Typical Sections for Beach Corridor-Tier 2 Transit Modes



NOTES:
1. VEHICLE HEIGHT VARIES DEPENDING ON MANUFACTURER (11.83-FT SHOWN).
2. PROPOSED RAPID TRANSIT GUIDEWAY SPAN LENGTHS TO VARY. (130-FT TYPICAL)
3. PROPOSED RAPID TRANSIT GUIDEWAY TO PROVIDE A 16.50-FT MINIMUM VERTICAL CLR. OVER ROADWAY.
4. PROPOSED PIER PROTECTION AS REQUIRED BY FDOT FDM 215.

APM Section - North Miami Ave (22nd to 40th)

SCALE 1:15



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APM Section - North Miami Ave (15th to 22nd)

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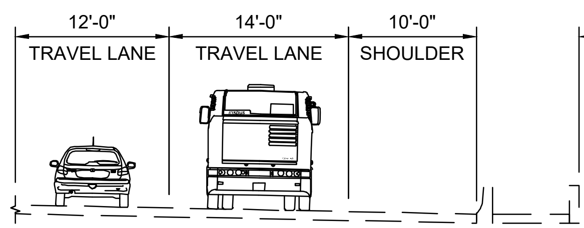
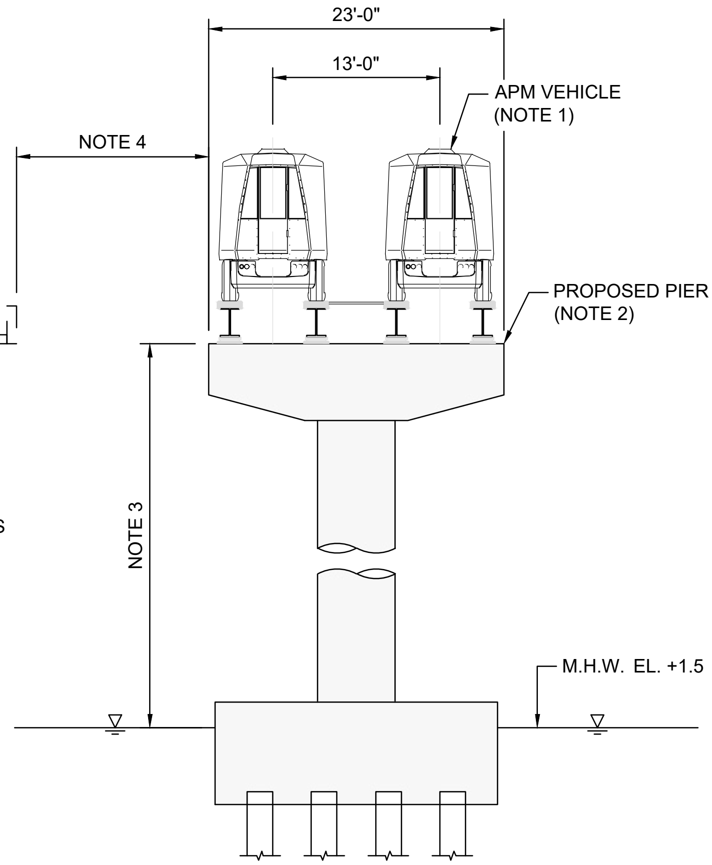


WEST BRIDGE (EB)



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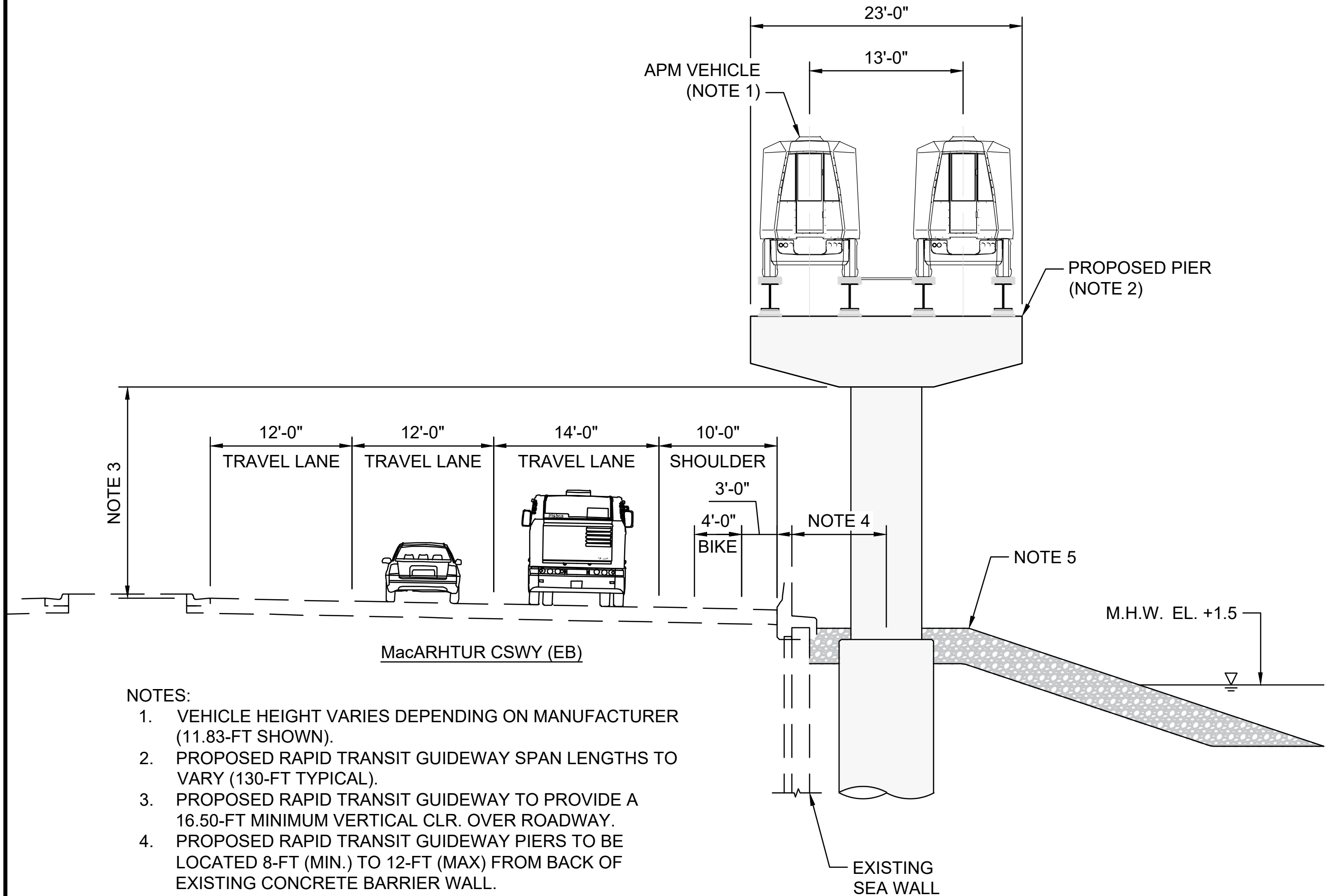
APM Section - West Bridge

SCALE 1:15



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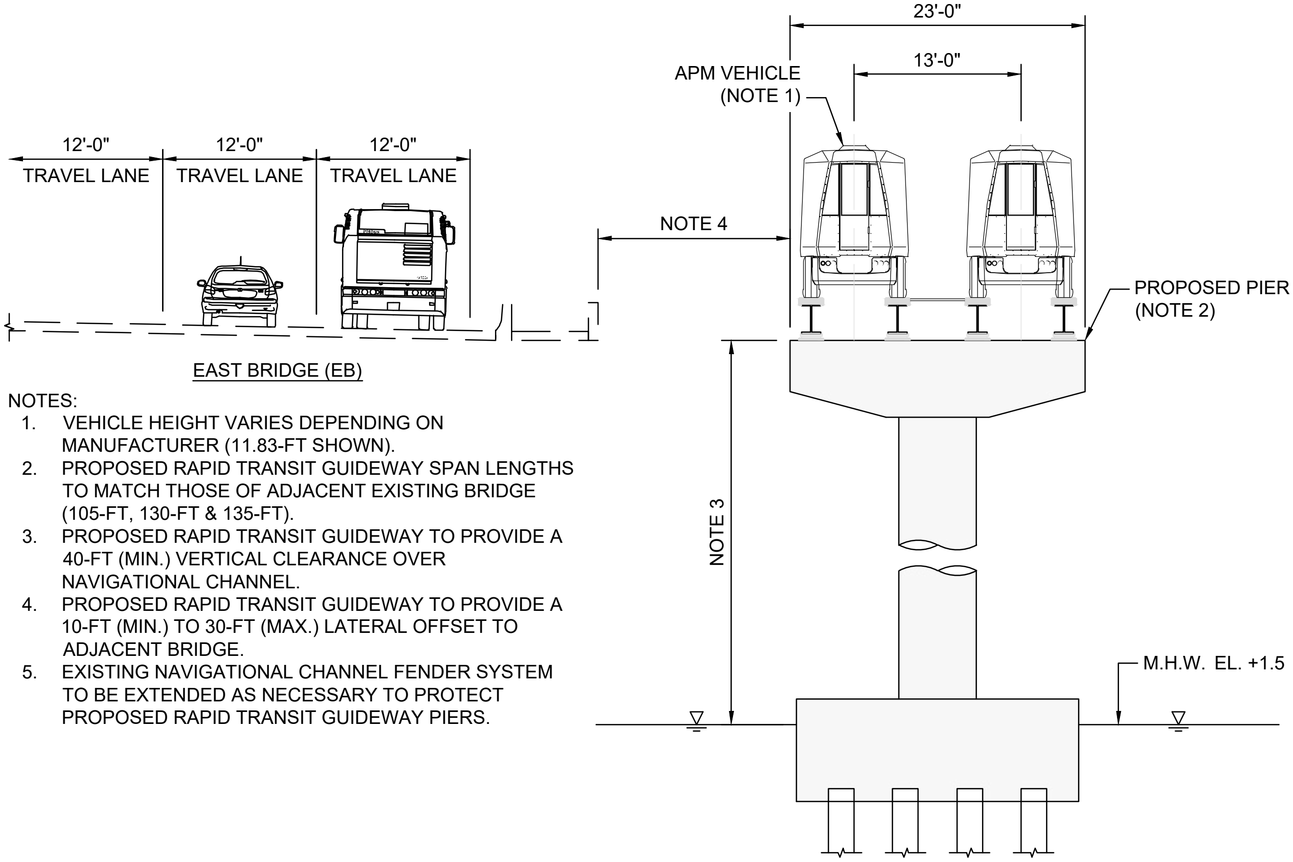
APM Section - MacARTHUR CSWY

SCALE 1:15



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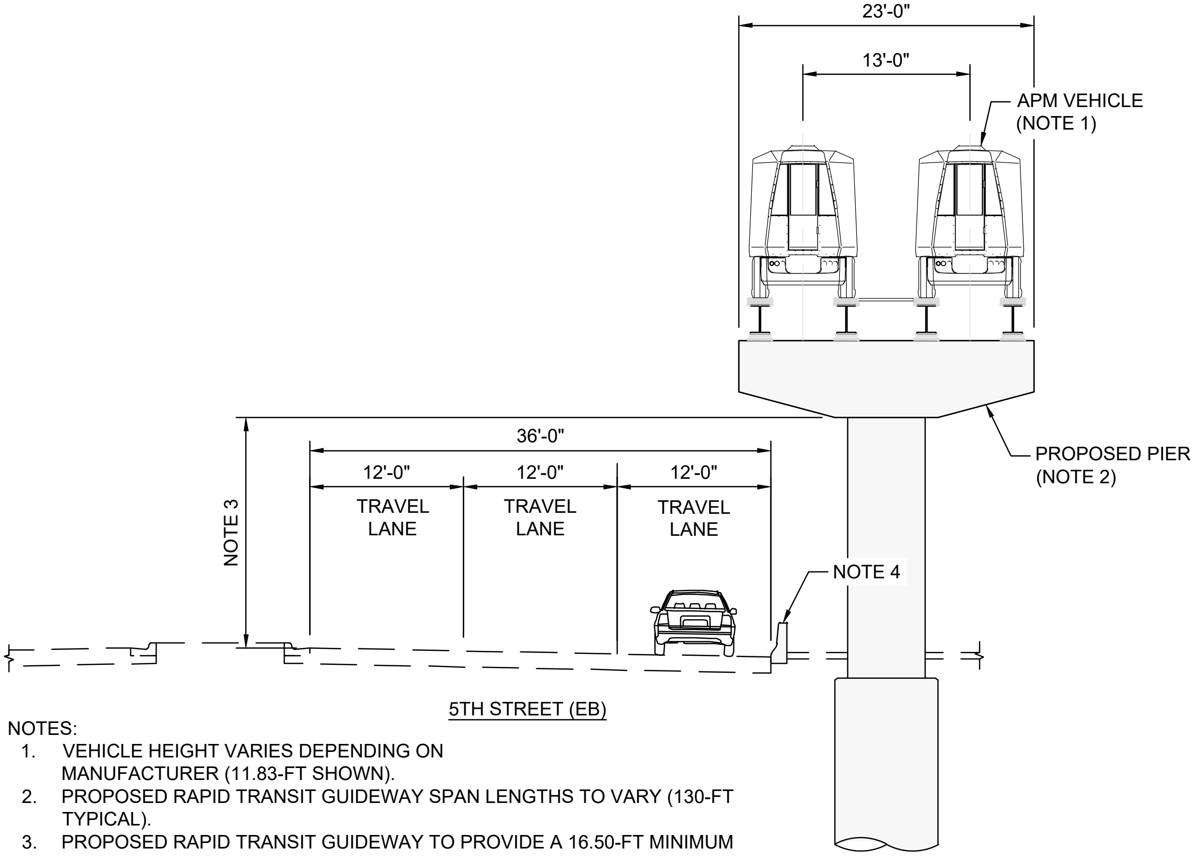
APM Section - East Bridge

SCALE 1:15



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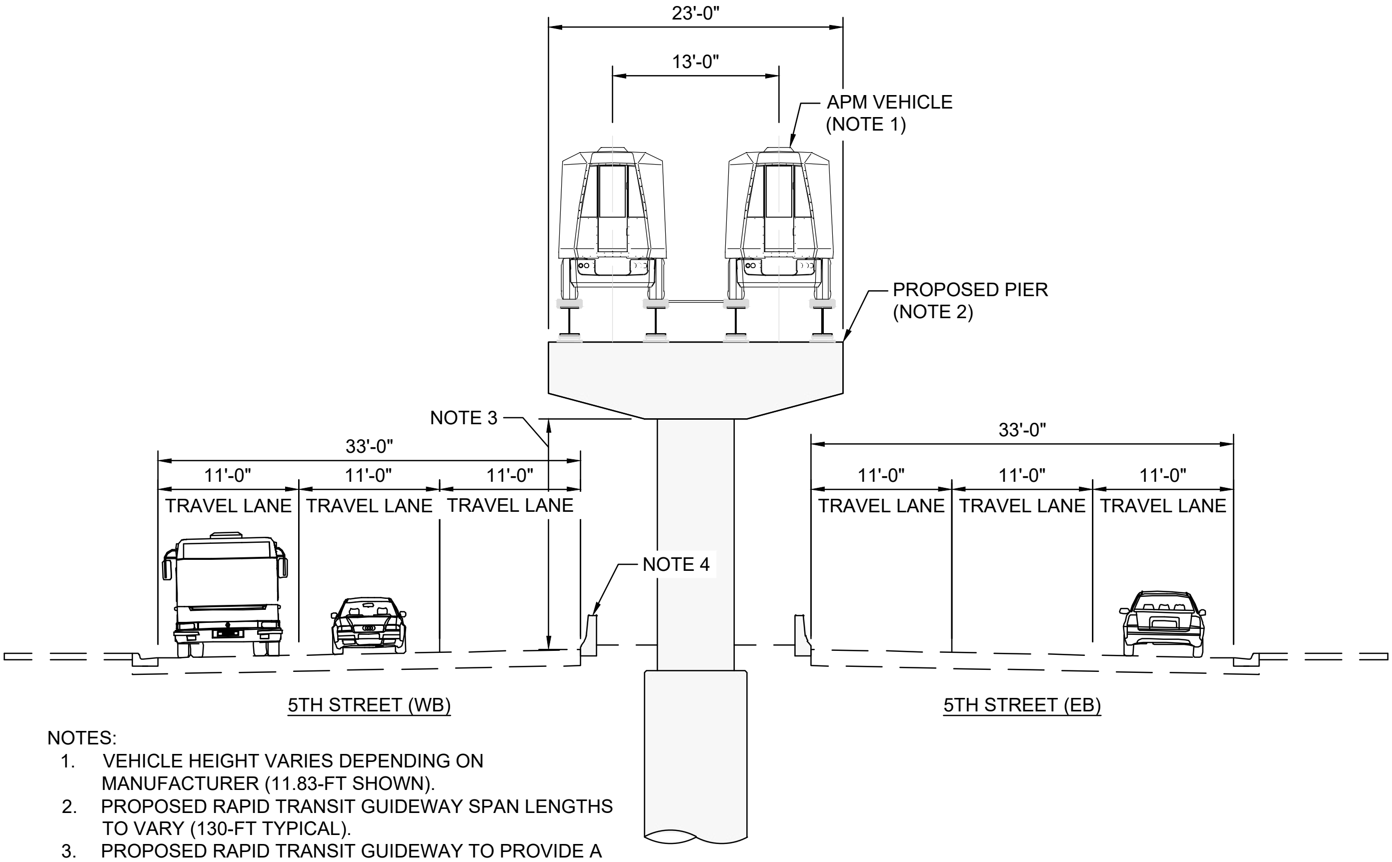
APM Section - 5th Street

SCALE 1:15



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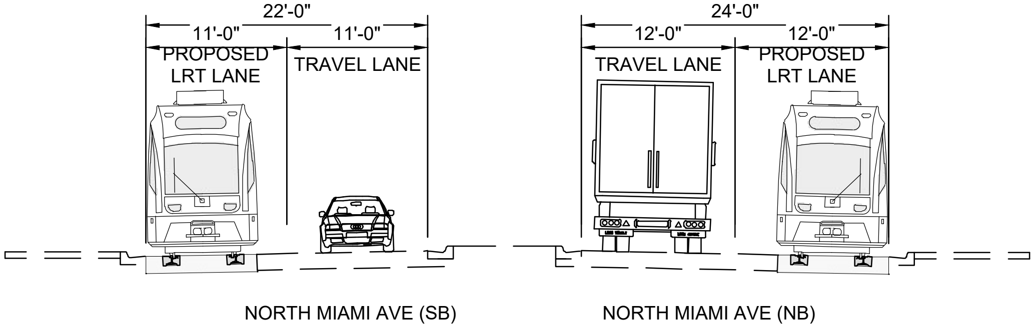
APM Section - 5th Street (Median)

SCALE 1:15



LRT Section - North Miami Ave (29nd to 40th)

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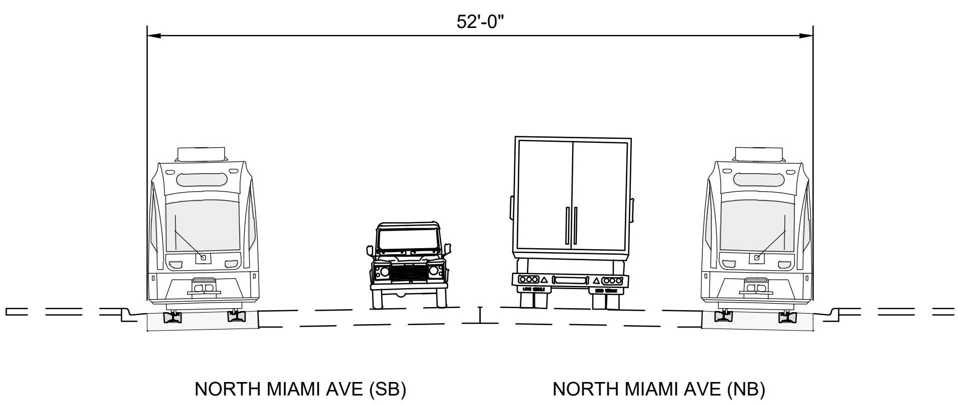

LRT Section - North Miami Ave (22nd to 29th)

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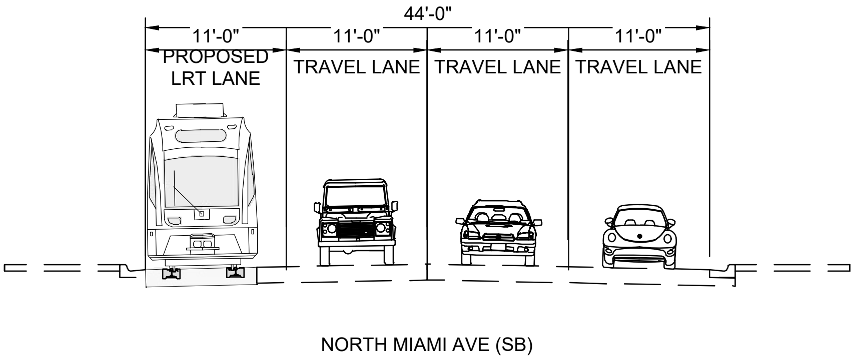

LRT Section - North Miami Ave (11th to 17th)

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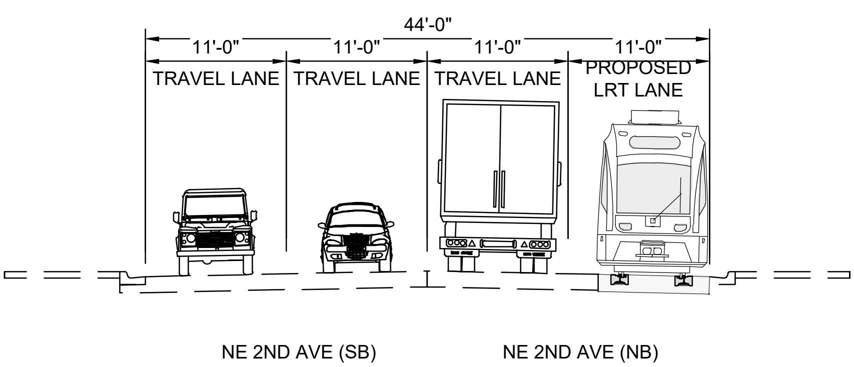

LRT Section - Northeast 2nd Ave (11th to 17th)

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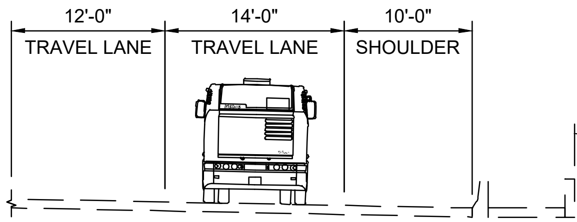

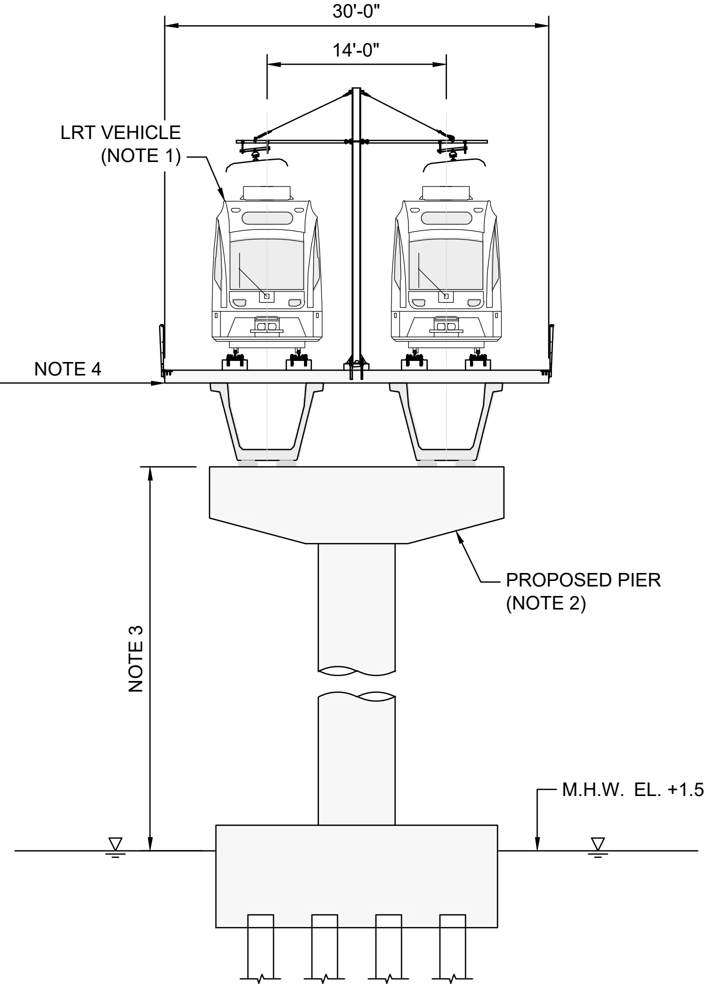

WEST BRIDGE (EB)

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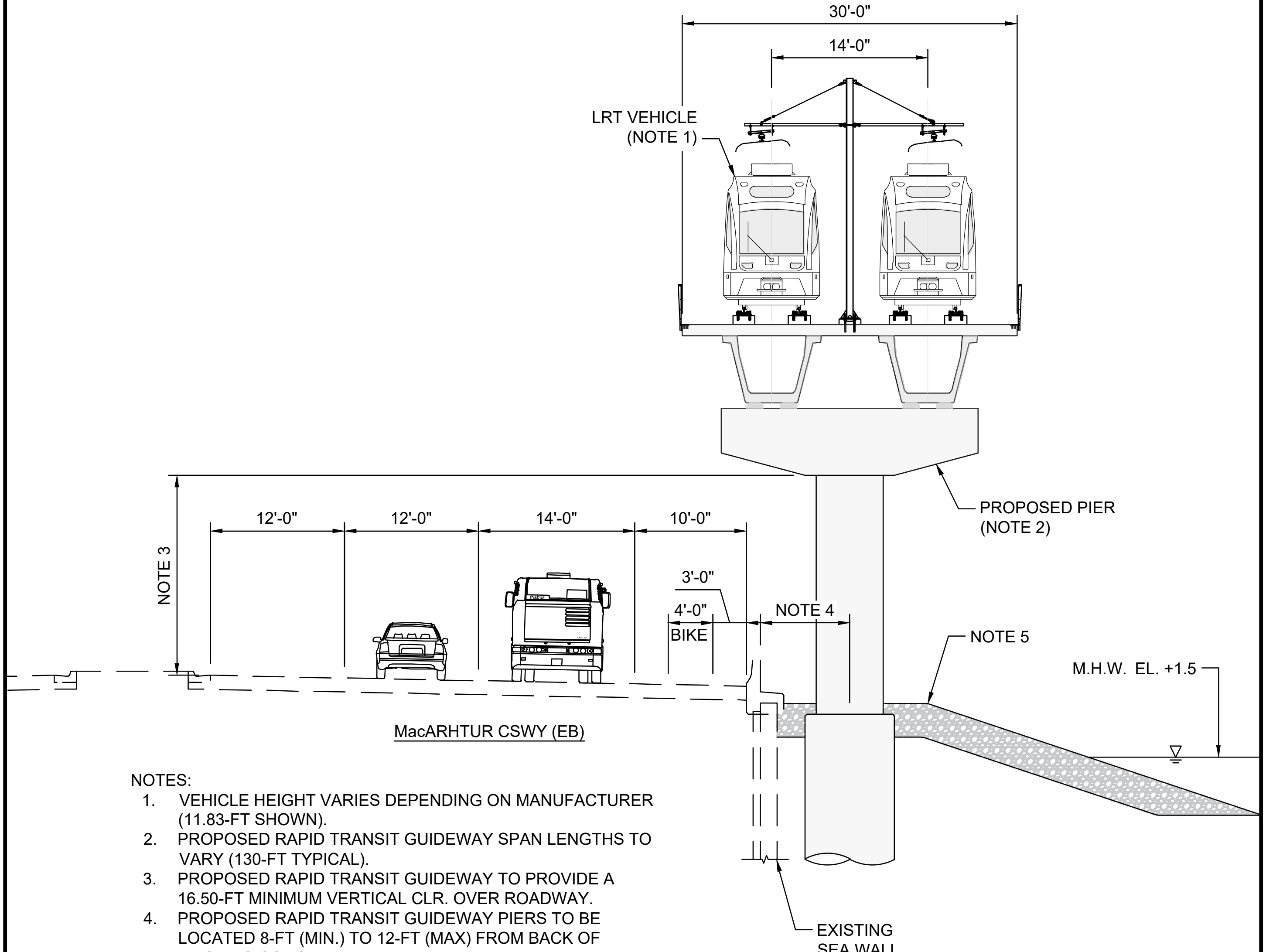
LRT Section - West Bridge

SCALE 1:15



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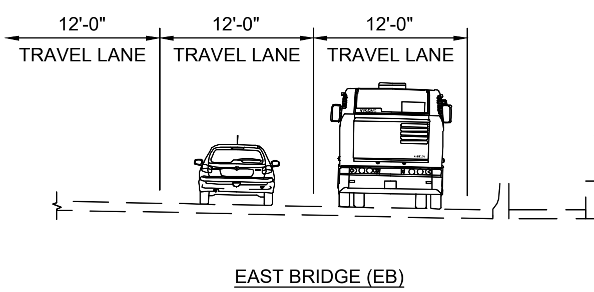
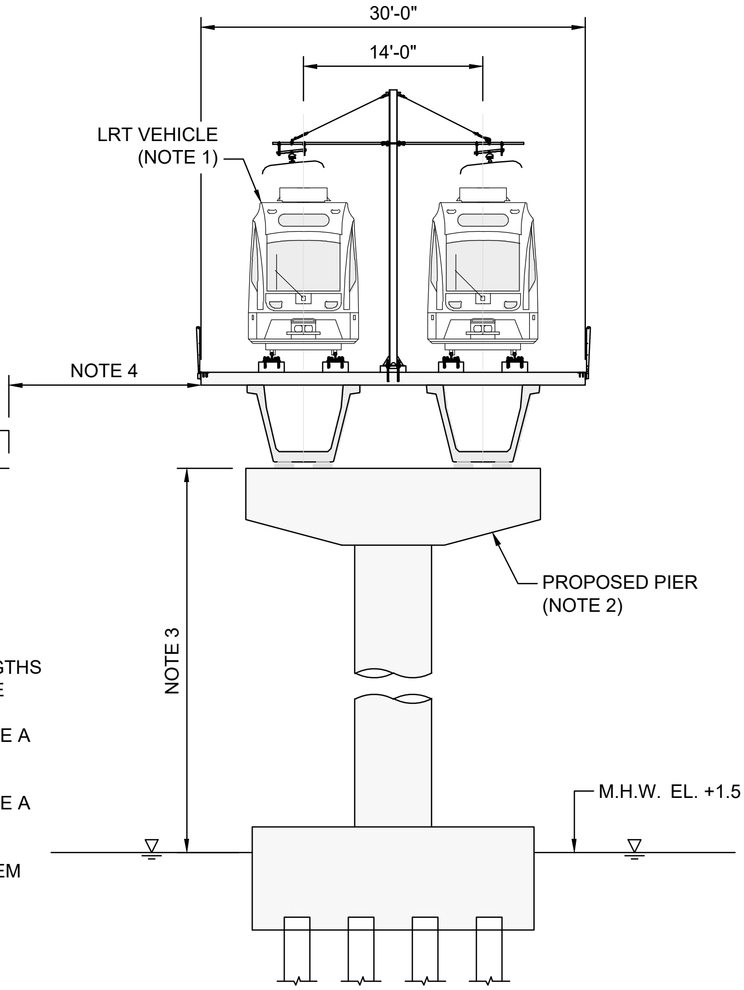
LRT Section - MacARTHUR CSWY

SCALE 1:15





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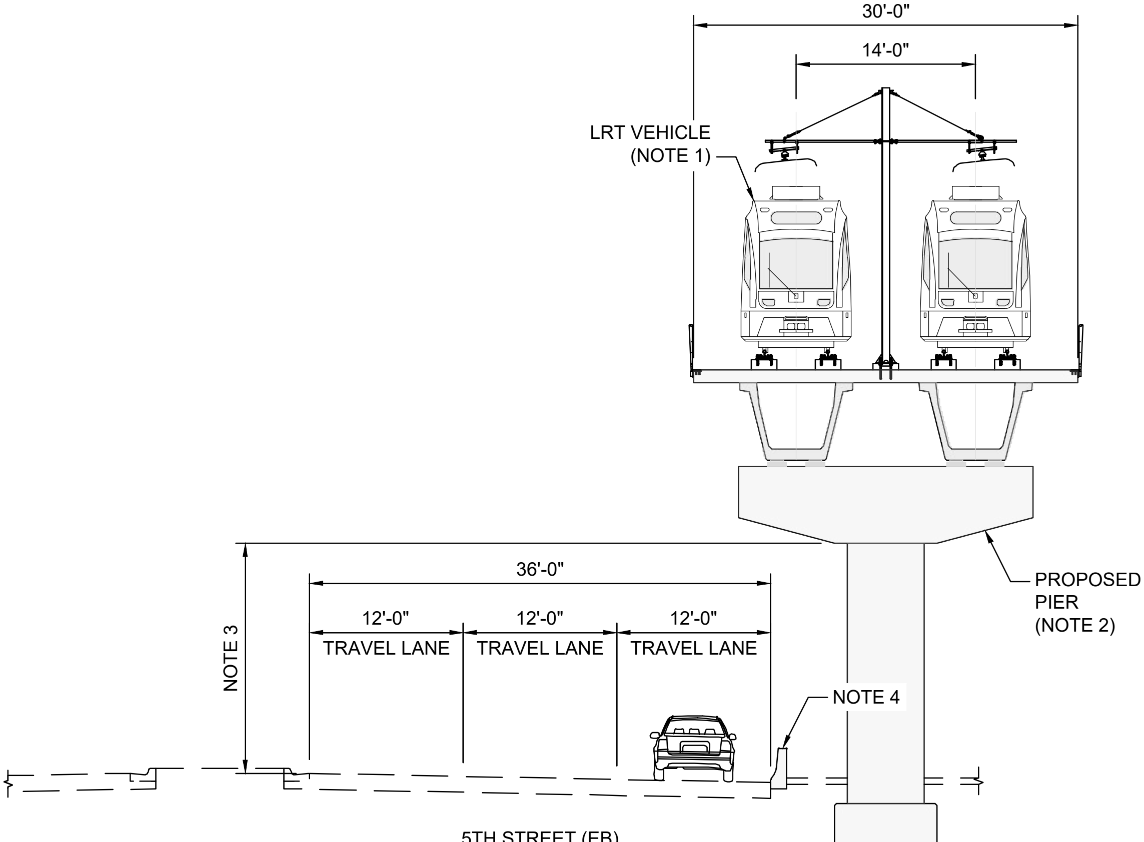
LRT Section - East Bridge

SCALE 1:15



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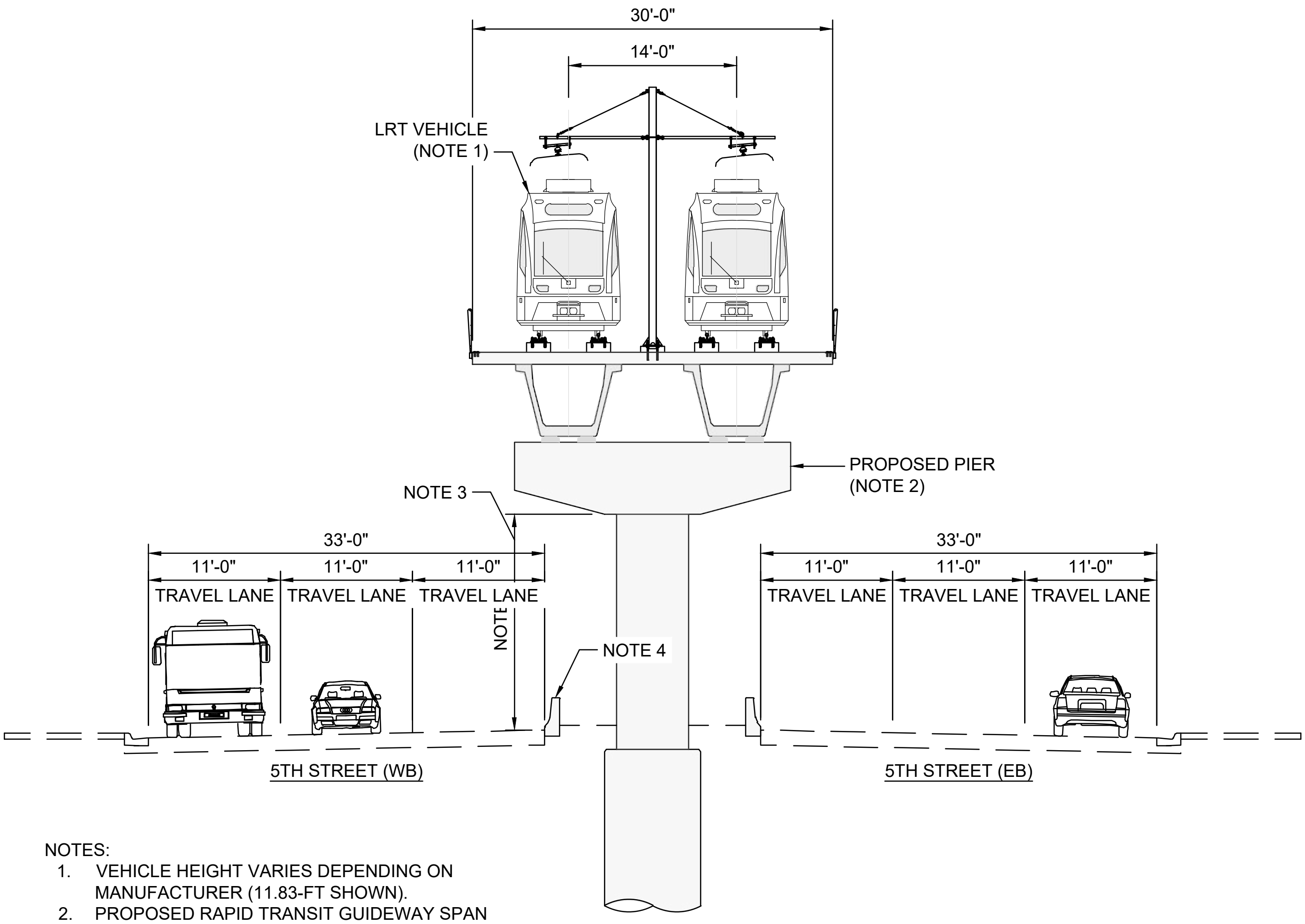
LRT Section - 5th Street

SCALE 1:15



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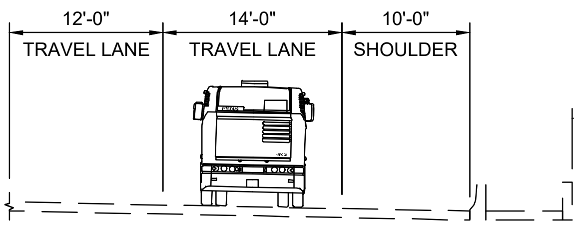
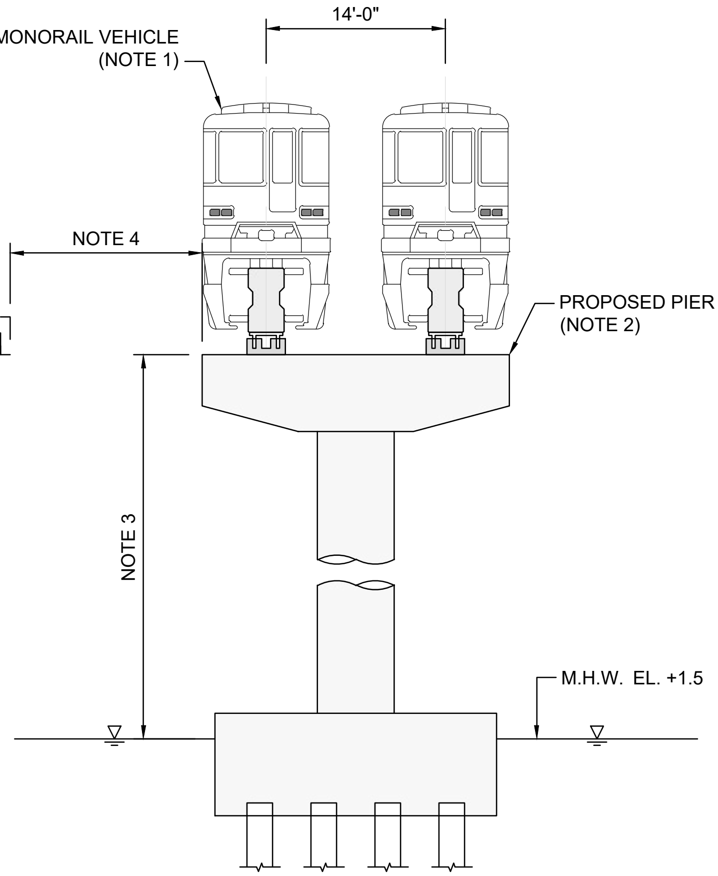
LRT Section - 5th Street (Median)

SCALE 1:15



WEST BRIDGE (EB)



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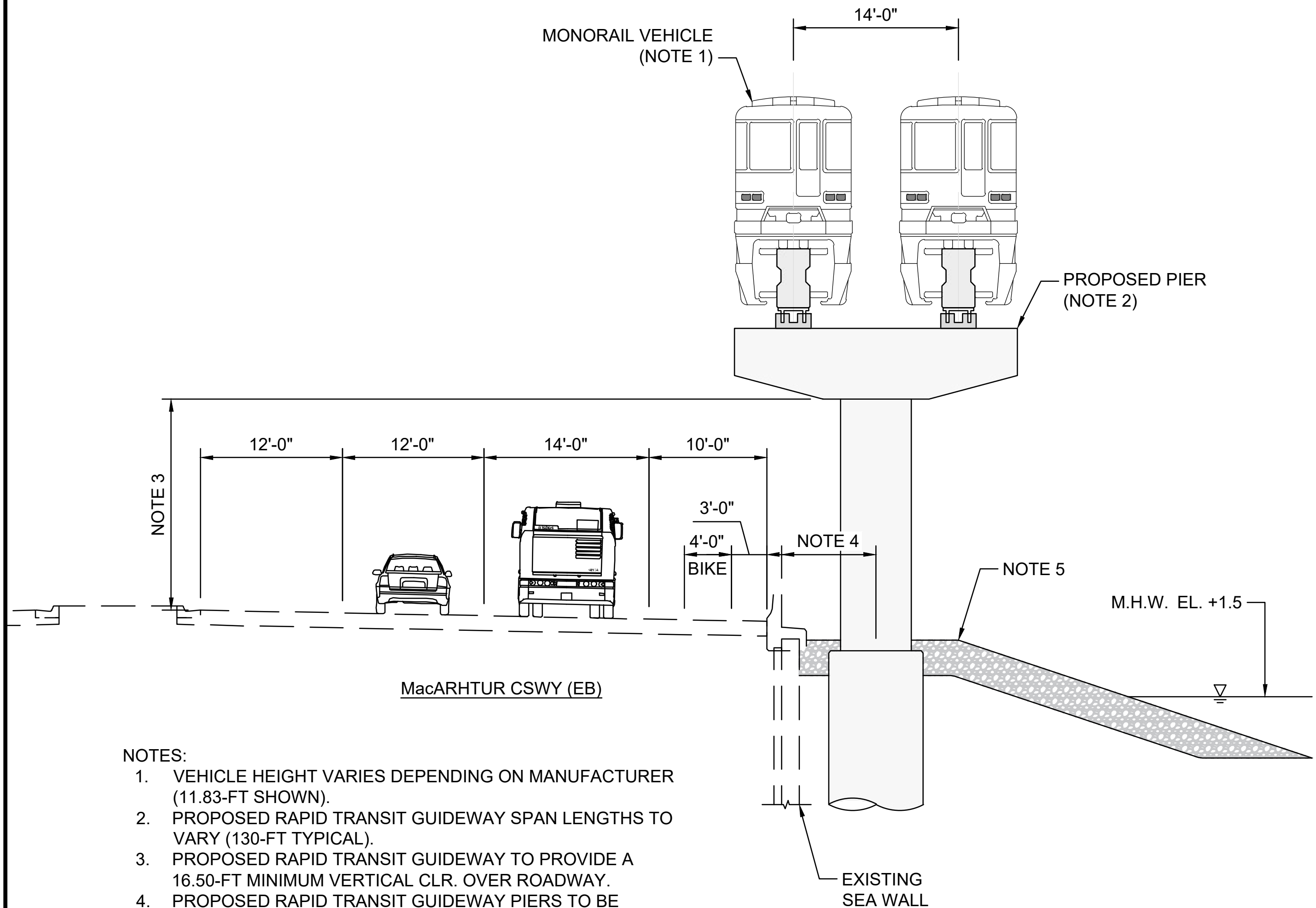
Monorail Section - West Bridge

SCALE 1:15



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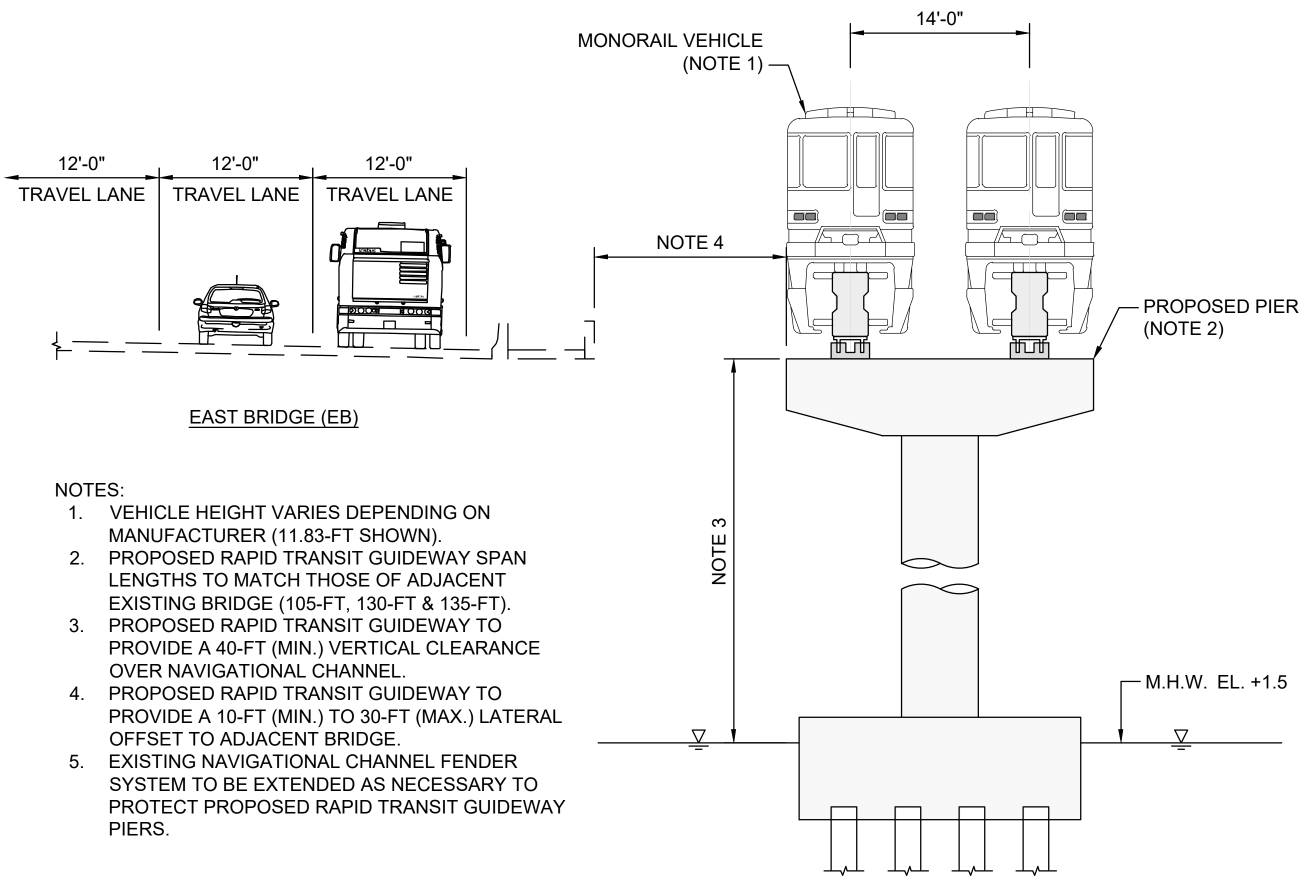
Monorail Section - MacARTHUR CSWY

SCALE 1:15



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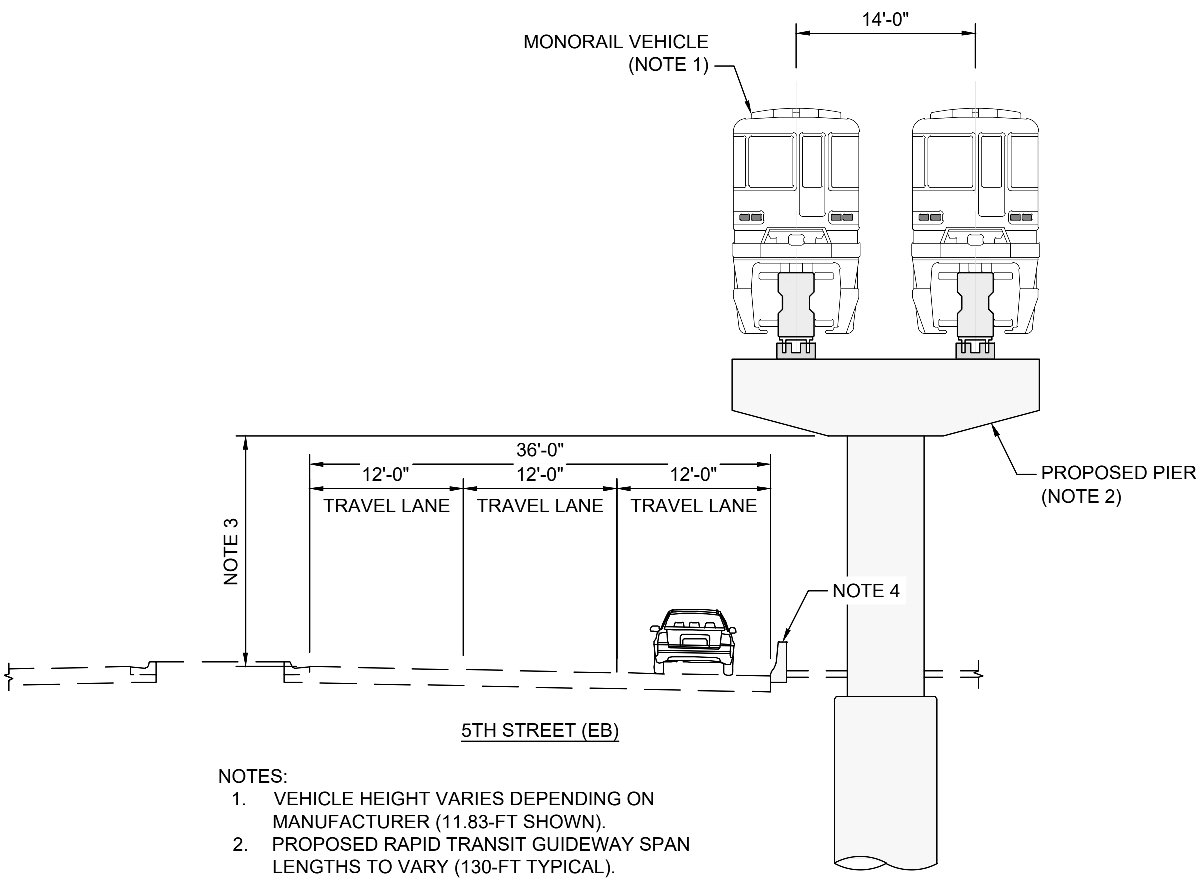
Monorail Section - East Bridge

SCALE 1:15



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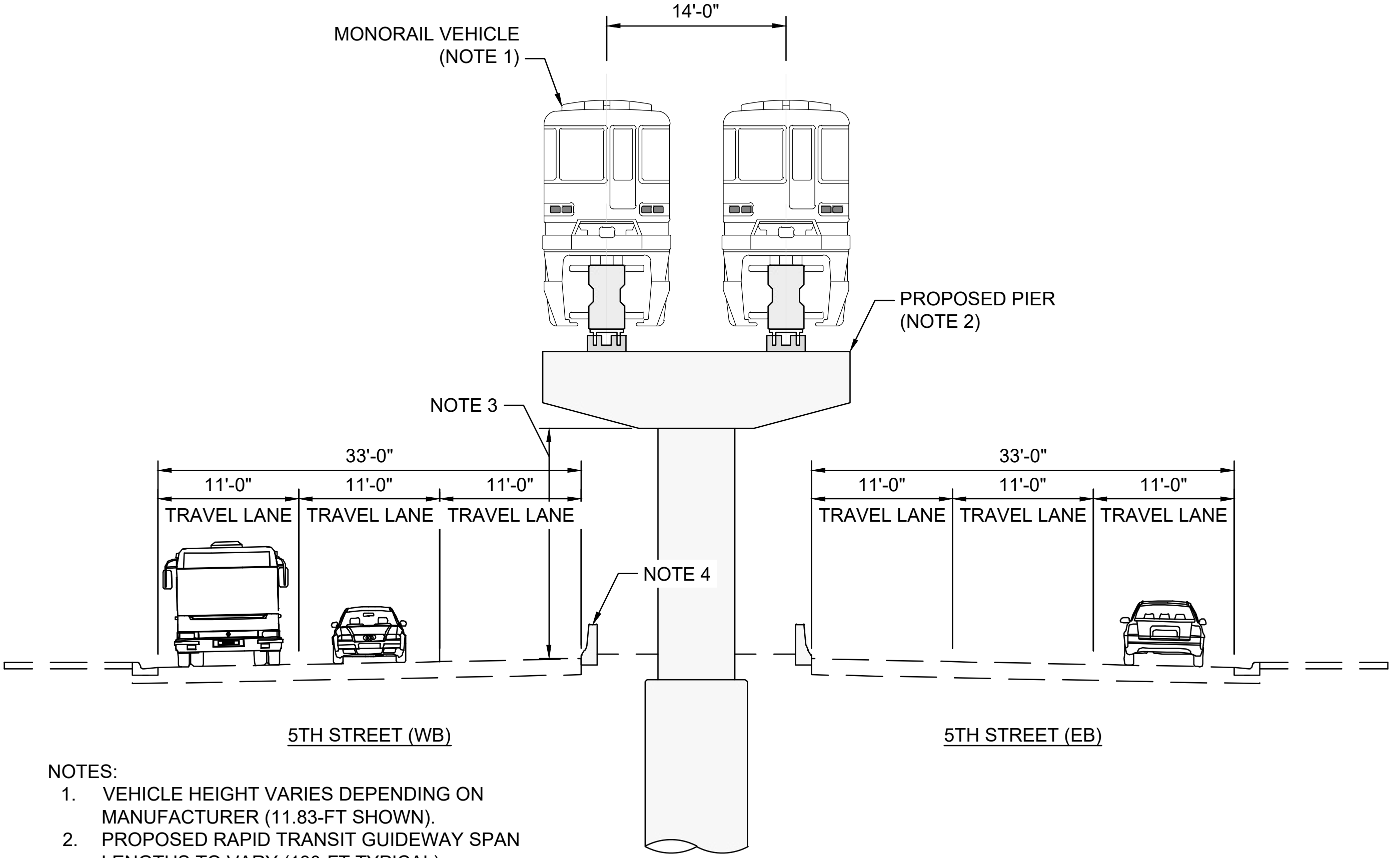
Monorail Section - 5th Street

SCALE 1:15



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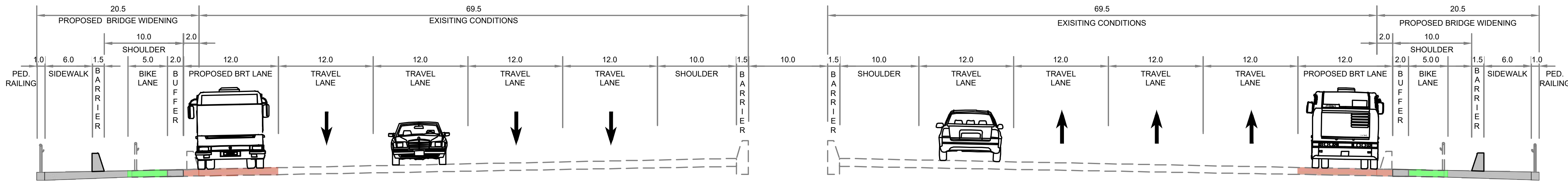
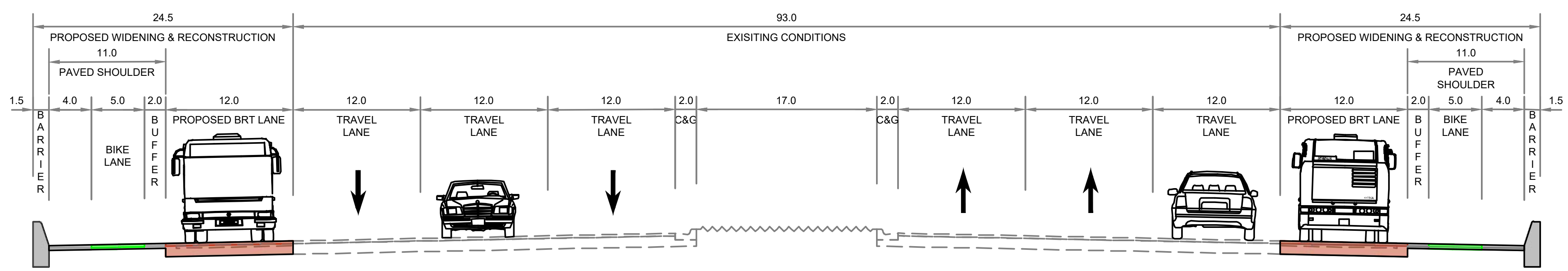
Monorail Section - 5th Street (Median)

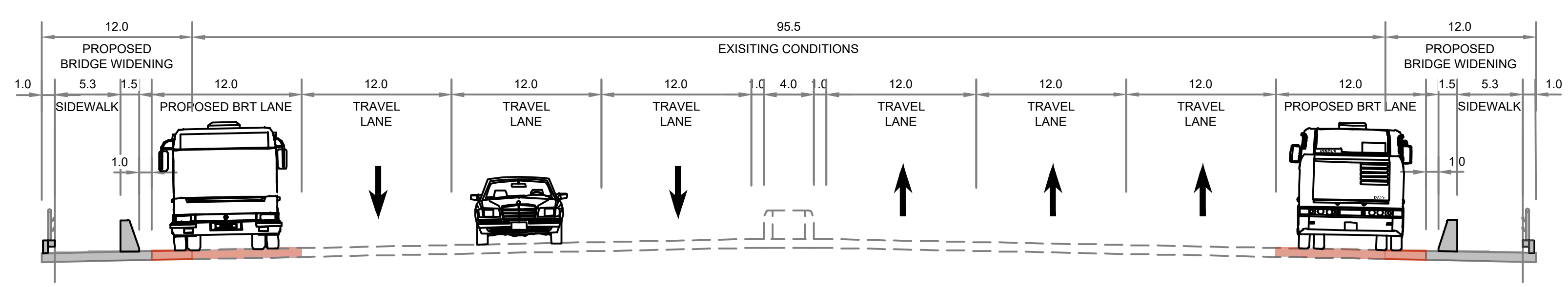
SCALE 1:15



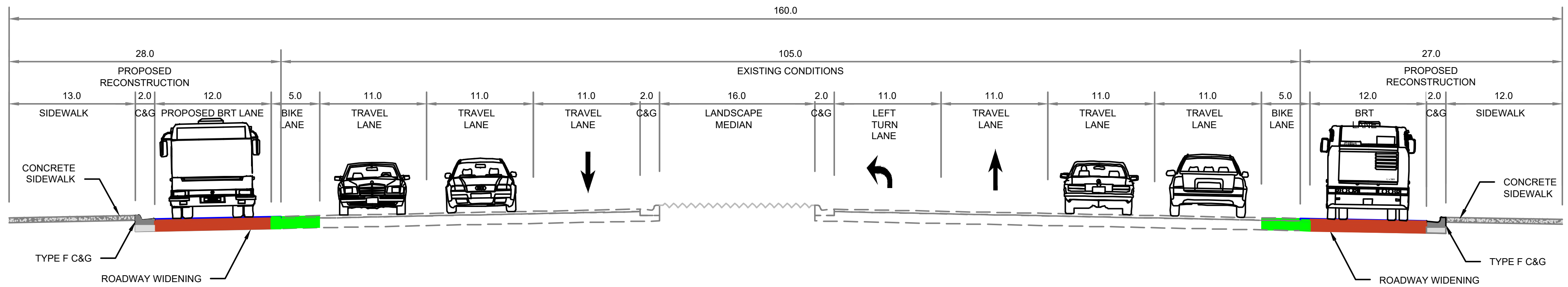
Section A1
Proposed Typical BRT Section
MacArthur Causeway Bridges 870771/ 8708772



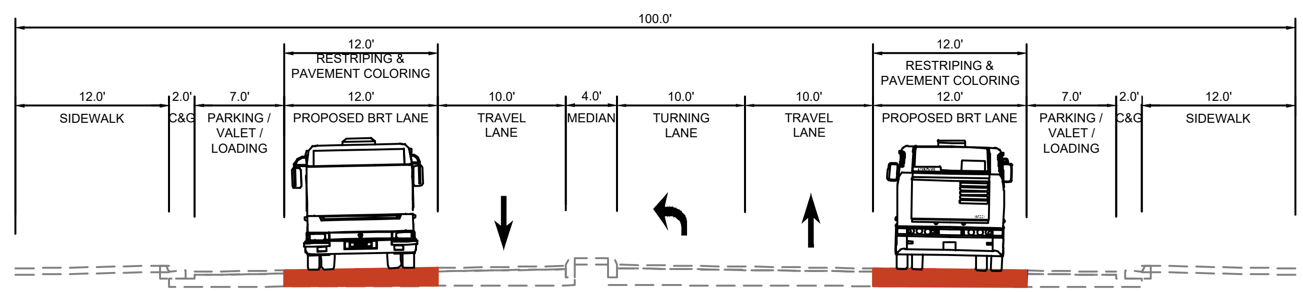
Section A2
Proposed Typical BRT Section MacArthur Causeway



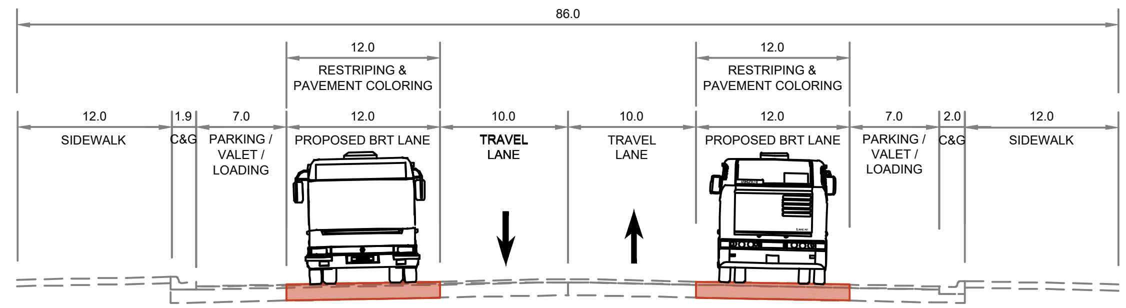
Section A3
Proposed Typical BRT Section
MacArthur Causeway Bridge 870077



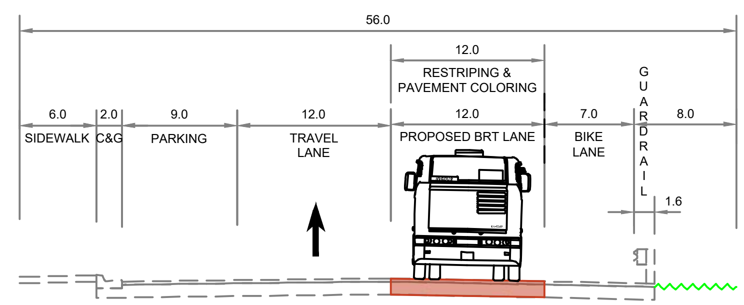
Section A4
Proposed Typical BRT Section
5th Street (Section Looking East)



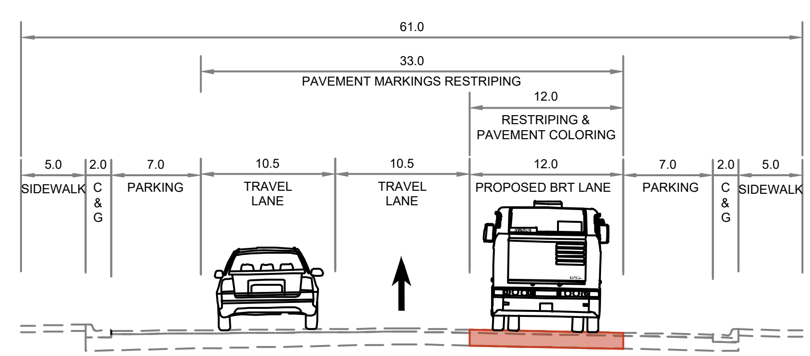
Section A5
Proposed Typical BRT Section
Washington Ave (Section Looking North)



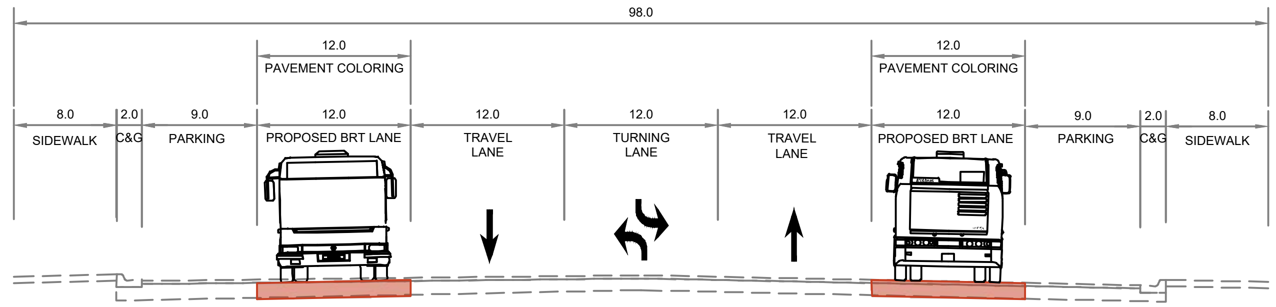
Section A6
Proposed Typical BRT Section
Collins Ave (Section Looking South)



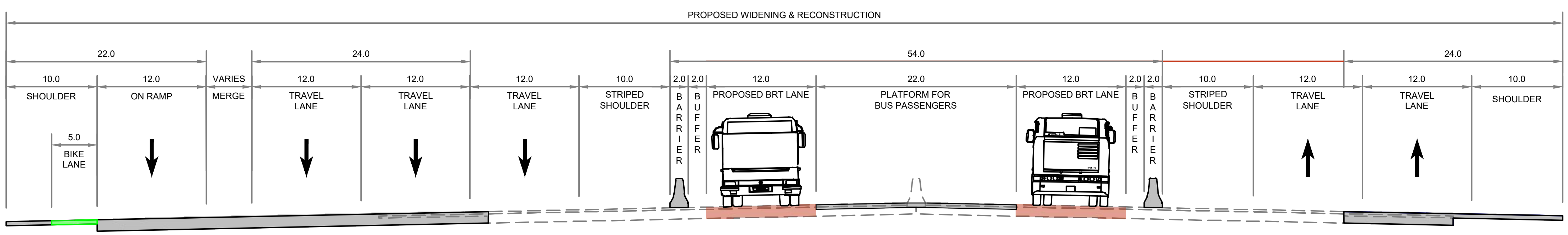
Section A7
Proposed Typical BRT Section
Indian Creek Drive (Section Looking South)



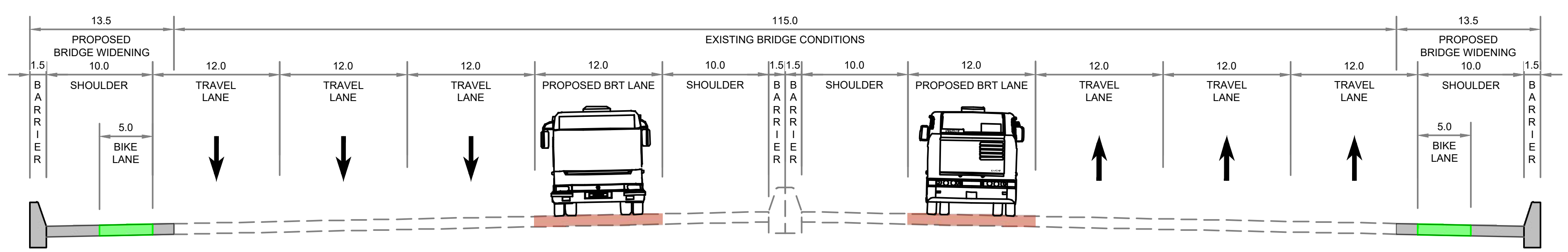
Section A8
Proposed Typical BRT Section
Collins Ave (Section Looking North)



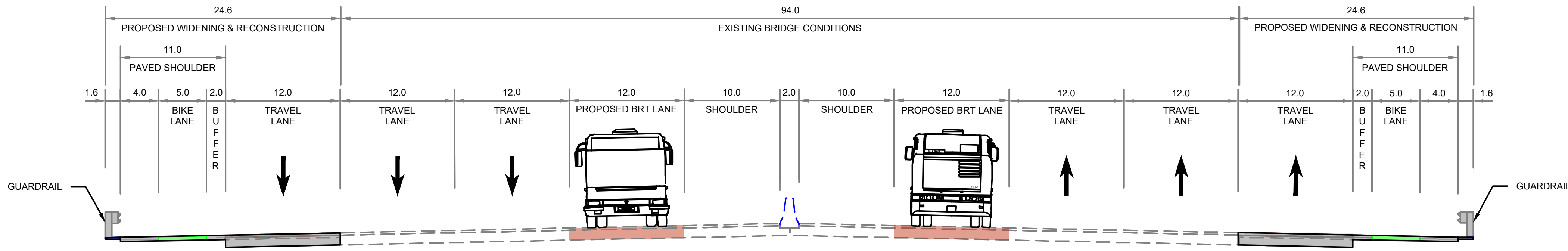
Section A9
Proposed Typical BRT Section
41st Street (Section Looking East)



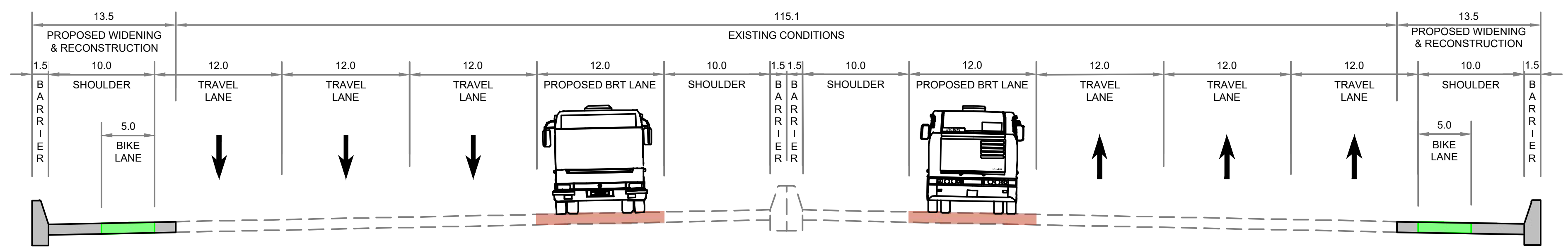
Section A10
Proposed Typical BRT Section
Julia Tuttle Causeway - Proposed Mt. Sinai Hospital Station
(Looking East)



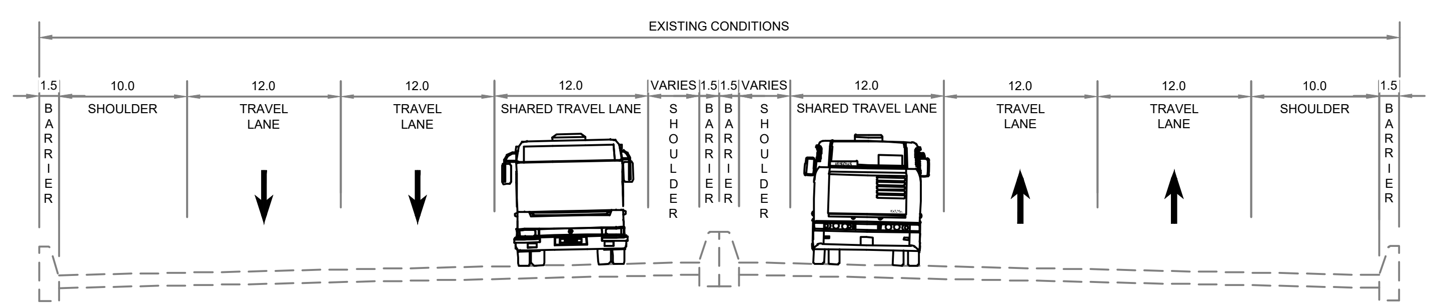
Section A11
Proposed Typical BRT Section
Julia Tuttle Causeway Bridge 870302



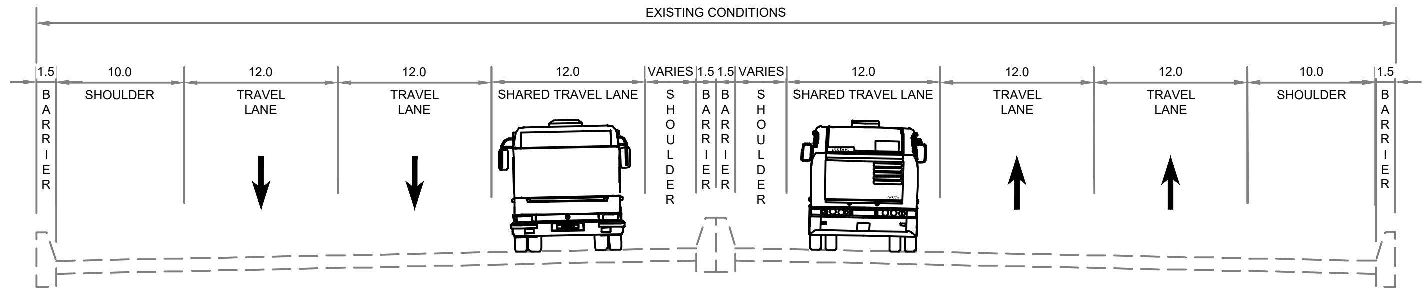
Section A12
Proposed Typical BRT Section
Julia Tuttle Causeway



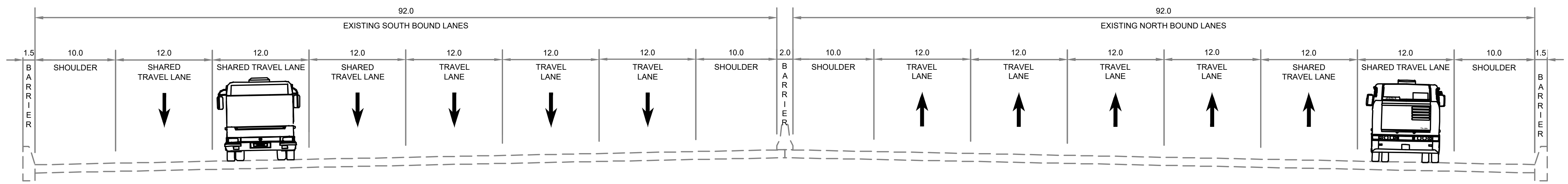
Section A13
Proposed Typical BRT Section
Julia Tuttle Causeway Bridge 870301



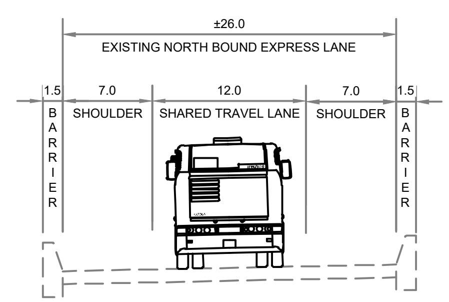
Section A14
Proposed Typical BRT Section
SR112/ I-195 - East of Biscayne Blvd.
(Looking East)



Section A15
Proposed Typical BRT Section
SR112/ I-195 - East of N. Miami Ave
(Looking East)



Section A16
Proposed Typical BRT Section
I-195 - North of 29th Street
(Looking East)



Section A17
Proposed Typical BRT Section
I-195 - NB Express Lane
(Looking North)

APPENDIX A-5

Tier 1 Evaluation Final Report

TIER ONE EVALUATION REPORT

Miami-Dade County
Department of Transportation and Public Works
Beach Corridor Rapid Transit Project

Bus Rapid Transit (BRT)


Aerial Cable Transit (ACT)


Monorail

Autonomous Vehicles


Automated Guideway Transit (AGT)


Light Rail Transit (LRT)/Streetcar


Heavy Rail Transit (HRT)

CIP Project Number: 153 | ETDM Number : 14257 | November 2017
Revised April 2018

Submitted by:

PARSONS

Submitted to:

MIAMI-DADE COUNTY

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1 EXECUTIVE SUMMARY

1.1 INTRODUCTION

The Miami-Dade County Department of Transportation and Public Works (DTPW) is conducting a Project Development and Environment (PD&E) study for the Beach corridor in collaboration with the Federal Transit Administration (FTA) and Florida Department of Transportation (FDOT). This Tier One Evaluation considered six alternative technologies to provide rapid-transit connections between the Midtown Miami/Design District, Downtown Miami, and Miami Beach (**Figure** 1.1). The Tier One Evaluation studies a connection to Fifth Street/Alton Road in Miami Beach. A subsequent Tier Two study will feature an expanded study area to include additional destinations in Miami Beach, including the Washington Avenue and Alton Road corridors between Fifth Street and the Miami Beach Convention Center. DTPW identified the following transit technologies (modes) for consideration in the Beach Corridor Rapid Transit Project Tier One Evaluation:

- Automated guideway transit (Metromover)
- Streetcar/light rail transit
- Heavy rail transit (Metrorail)
- Bus rapid transit
- Aerial cable transit
- Monorail
- Automated transit systems

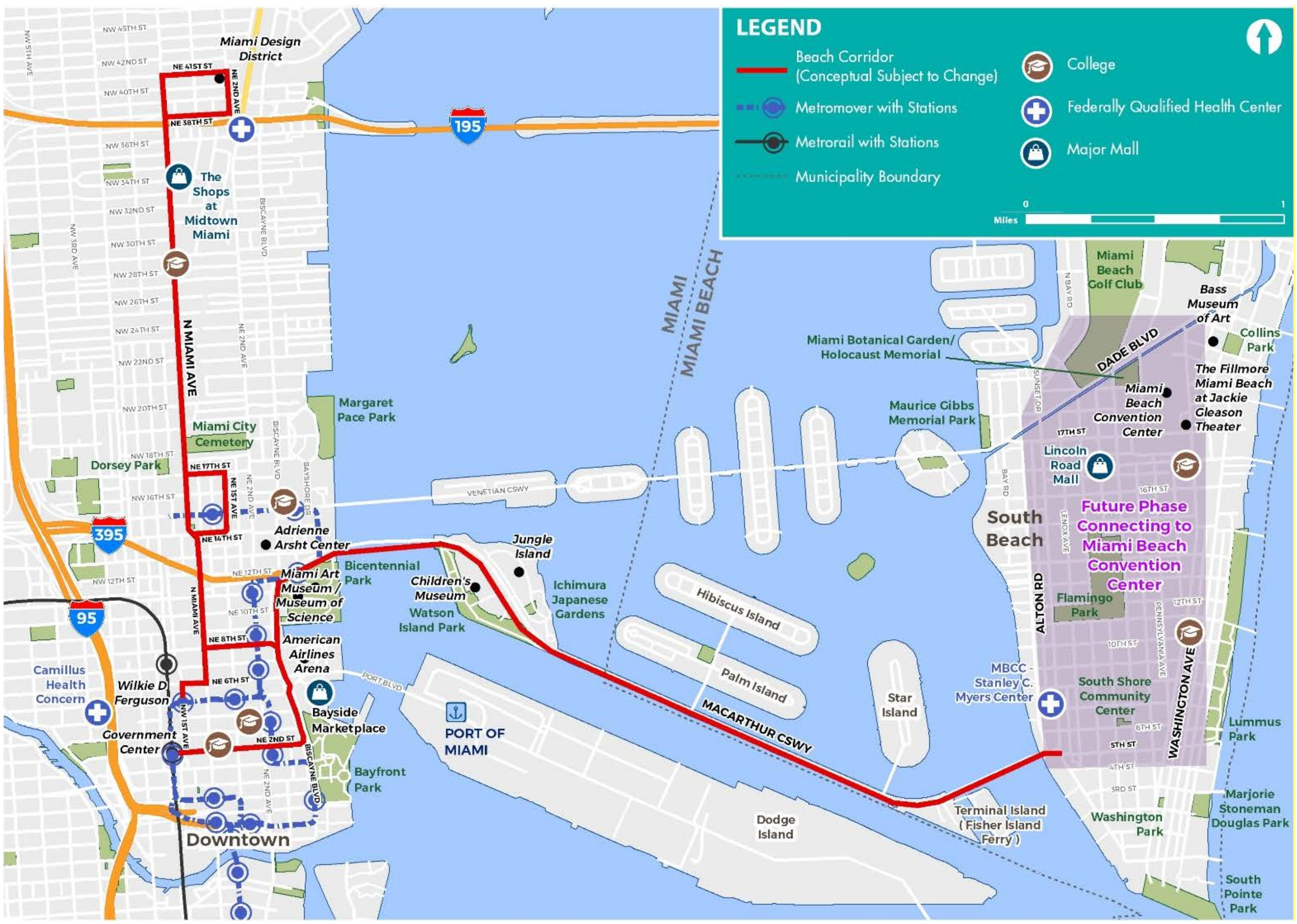

Figure 1.1 | Study Area

The Tier One Evaluation included a summary of these transit technologies and modes, the development of representative alignments, public involvement (as summarized in Appendix B), and the evaluation of the potential modes with respect to transit performance, economic and community development, environmental effects, and cost/feasibility. Based on the results of the evaluation, four transit modes are recommended to advance for further analysis in Tier Two: automated people mover (Metromover expansion), bus rapid transit/express bus, monorail, and streetcar/light rail transit.

1.2 OVERVIEW OF THE CORRIDOR

The Beach corridor traverses an area that is at the epicenter of population and economic growth within Miami-Dade County. The central business district (CBD) area and Miami Beach have undergone rapid population and employment increases over the past decade, a trend that is projected to continue over the next 20 years. The population densities in the study area are among the highest in the nation, with Downtown Miami (CBD) at 17,800 persons per square mile and Miami Beach at 11,500 persons per square mile, per the 2010 U.S. Census. Downtown Miami saw a dramatic 172 percent increase in population density over the last decade.

Due to the region's appealing qualities, such as its temperate climate; attractive beaches; and convenient access to the Caribbean and Latin America, South Florida, and Miami-Dade County, it has become an important tourist destination for both national and international visitors. The county hosts millions of annual visitors and seasonal residents. Visitors typically access the study area via tour bus, taxi, or rental car.

Miami Beach and Downtown Miami are the two most popular locations for overnight stays, lodging 60 percent of all 2012 visitors with approximately 5.8 million and 2.4 million overnight guests, respectively. Additionally, four of the six most-visited attractions are in close proximity to the Beach corridor, including South Beach, the beaches, Lincoln Road, and Downtown Miami. The study area also contains PortMiami. In 2013, 4.1 million cruise ship passengers used the port, up from 3.4 million in 2000. This high rate of tourism generates additional demand for travel, produces additional trips within the area, and contributes to traffic and subsequently roadway congestion. The 2012 Visitor Industry Overview, a survey that reached 13.4 percent of all visitors that year, listed traffic congestion as the top negative aspect of trips to greater Miami. Traffic congestion has been the top-ranked problem in each of the last five annual surveys.

The project corridor includes three distinct segments of travel demand and origin/destination pairs: an east–west connection between Miami Beach and downtown Miami (approximately 5 miles), and a north–south connection between the Design District/Midtown and downtown Miami (approximately 3 miles); as well as Design District/Midtown to Miami Beach (approximately 8 miles).

In the east–west segment, I-195 is operating at capacity and I-395 is experiencing traffic volumes that exceed its capacity by more than 50 percent. Existing bus transit service in the east–west corridor serves more than 17,000 riders per day, with the two most frequent routes at 72 percent and 89 percent of their existing capacity, respectively.

The north–south segment is served by several local streets, operating at between 50 and 90 percent of capacity. The most frequent bus service in the north–south segment operates at 87 percent capacity, while Metromover operates at 85 percent capacity.

The 8-mile project corridor is further characterized by the following:

- Mixed-use development, including areas of high residential and employment density
- A diverse population with a higher-than-countywide minority percentage and a lower median household income than county and national levels
- Limited transportation pathways, with high average daily traffic volumes and congestion on the expressways and major roadways
- Historic, cultural, and recreational resources
- Wetlands and critical habitats for protected species
- Land uses sensitive to noise and vibration effects
- Special Flood Hazard Area (SFHA) designation for nearly 50 percent of the corridor
- A navigable waterway (the Atlantic Intracoastal Waterway)

1.3 PURPOSE, GOALS, AND CRITERIA

A draft purpose and need statement was developed to guide this Tier One Evaluation, including the identification of project goals and evaluation criteria. The draft statement of purpose and need will be further refined as the project development process progresses.

The purpose of the project is to increase the person-throughput to the Beach corridor's major origins and destinations via a rapid transit technology. Project goals include the following:

- Connect to and provide direct, convenient, and comfortable rapid-transit service to serve existing and future planned land uses
- Provide enhanced interconnections with Metrorail, Tri-Rail, Brightline, Metromover, and Metrobus routes; Broward County Transit (BCT) bus routes; Miami and Miami Beach circulators; jitneys; shuttles; taxis; Transportation Network Companies (TNCs); and/or other supporting transportation services
- Promote pedestrian- and bicycle-friendly solutions in the corridors of the study area

The technology characteristics of each transit mode were considered in the context of representative alignments, allowing for evaluation against the following criteria:

1.3.1 Transit Performance Criteria

- Interoperability and modal integration: The compatibility of the proposed mode with other existing and proposed transit modes, including the availability of one-seat rides between significant origins and destinations, the number of transfers required for trips between significant origins and destinations, and the horizontal and vertical separation between modes at significant transfer points.
  - *Interoperability:* The ability to operate contiguously as an extension of an existing technology/mode, offering one-seat rides, economies of scale in operations and maintenance, and the potential for a shared fleet/operations and maintenance facility.
  - *Modal integration:* Because there are several existing modes in operation in Miami, and because of limitations on the transit mode options that the City of Miami Beach is willing to consider, the Beach Corridor Rapid Transit Project will feature some transfers between modes for many of the possible trip origins and destinations. The quality of these intermodal connections in terms of ease and location of transfer will influence the ridership of both the selected beach corridor technology and the overall transit system ridership.
- Operational speed and reliability: The average operating speed of the mode on the representative alignment and the proportion of trips that are likely to achieve the scheduled times and/or headways. Average operating speed is influenced by factors such as the maximum operating speed of the vehicle technology; curves, grades and stop spacing in the transit alignment; and traffic congestion for those modes that operate at-grade on arterial streets.
- Resiliency: Considering the effects of climate change, including sea level rise and the frequency and severity of weather events, the relative resiliency of the mode to changing climatic conditions. The resiliency of the alternative technologies and modes is considered with respect to how quickly they could be expected to return to service after a storm/flood event.
- Passenger capacity: Capacity of the mode to serve the projected passenger demand in the corridor.
- Vehicle reliability and safety: Reliability and safety record of the technology/mode.
- Passenger amenities: Air-conditioning, ride comfort, passenger information systems, and other passenger amenities available as a proven feature of the technology.

1.3.2 Economic and Community Development Criteria

- Scale/urban fit: The relationship of the infrastructure required by the transit mode to the scale of the pedestrian and built environments, and the ability to fit the infrastructure into existing rights-of-way.
- Transit-oriented development (TOD) compatibility: The ability of the mode to support or catalyze TOD at station areas, as influenced by the capacity of the mode and the compatibility of the mode with the scale of the built environment at station areas.
- Pedestrian/bicycle access: The positive or negative contribution of the mode to pedestrian and bicycle access in the corridor. This includes impacts of the infrastructure to pedestrian and bicycle facilities, as well as the potential for passengers to bring bikes onto the transit mode.

1.3.3 Environmental Effects Criteria

- Natural Resources Impacts
  - Wetland and other surface waters
  - Protected species and habitat
  - Coastal
  - Floodplain
- Socioeconomic Impacts
  - Social/economic

    - Mobility
    - Relocation potential
    - Cultural
    - Historic/archaeological resources
    - Recreational facilities
    - Visual and aesthetic
- Physical Impacts
    - Contamination
    - Noise and vibration
    - Air quality

1.3.4 Cost and Feasibility Criteria

- **Constructablity:** The ability to construct the project in the proposed corridor within the typical range of cost for the mode; cost-effectiveness to be considered as part of the Tier Two Evaluation.
- **Operating cost:** The ability to provide transit service of sufficient capacity to serve projected demand within the typical range of cost for the mode; cost-effectiveness to be considered as part of Tier Two Evaluation.
- **Eligibility for funding:** The ability to meet required and desirable characteristics for federal funding, including the Americans with Disabilities Act (ADA), Buy America, and service-proven technology.

1.4 SUMMARY OF TRANSIT TECHNOLOGIES AND MODES

The summary of transit technologies and modes (**Figure 1.2**) included the following topics:

- **Technological Features:** A summary of technological features including the size and capacity of the transit vehicles, propulsion systems, guideway characteristics (such as elevated or at-grade), and the minimum turning radius and maximum grade capabilities of the vehicles. Unique characteristics such as battery technologies, passenger amenities, and safety were also addressed as applicable.
- **Modal Application:** A summary of the typical application of the technology regarding stop spacing, average operating speed, and total length.
- **Alignment and Station Locations:** A representative potential alignment and station locations that would be feasible for the beach corridor were identified.
- **Key Constraints, and Cost and Feasibility Issues:** For each mode and alignment, any constraints that are significant to either the cost to build and operate the system or the feasibility of effective operations were identified.

	Automated Guideway Transit	Light Rail Transit			Heavy Rail Transit	Bus Rapid Transit		Aerial Cable Transit		Monorail	ATS
		Streetcar	Tram	Light Rail		Arterial BRT	Busway BRT	Gondola	Aerial Tram		
Typical Application											
Line Length	2-5 miles	2-5 miles	6-15 miles	15-30 miles	20-40 miles	10-20 miles	10-50 miles	1-3 miles	.5-1 miles	15-20 miles	TBD
Stop Spacing	.50 miles	.25 miles	.25-.50 miles	.50 miles	.25-2 miles	.50 miles	.75 miles	.50 miles	.50 miles	.50 miles	TBD
Transit Right-of-Way[1]	Exclusive	Mixed	Semi-Exclusive	Semi-Exclusive to Exclusive	Exclusive	Semi-Exclusive & Mixed	Exclusive	Exclusive	Exclusive	Exclusive	Semi-Exclusive & Mixed
Average Operating Speed	20 mph	10 mph	20 mph	35 mph	45 mph	20 mph	35 mph	15 mph	18 mph	35 mph	20 mph
Peak Service Frequency	2-6 mins.	10-15 mins.	6 mins.	6-10 mins.	2-10 mins.	10-12 mins.	8-12 mins.	15-60 secs.	4-15 mins.	4-10 mins.	4 mins.
Capital Cost/Mile	$100 Million	$40 Million	$60 Million	$75 Million	$200 Million	$10 Million	$25 Million	$55 Million	$60 Million	$110 Million	$10 Million
Technological Features & Requirements											
Vehicle Length (Single Car)	42′	66′ to 82′	120′ to 155′	82′ to 92′	70′ to 350′	60′	60′	15′	25′	42′	TBD
Passenger Capacity Per Car/Train	50/200	120/car	265 to 340/car	225 car/ 900 train	170/850	100	100	6-15	50-100	85/350	TBD
Minimum Turning Radius	98′	82′	82′	82′	90′	42′	42′	N/A	N/A	98′	TBD
Maximum Grade	10%	9%	7%	7%	6%	10%	10%	30%	30%	10%	TBD
Propulsion System[2]	AC Third Rail	DC OCS or OESS	DC OCS, OESS or APS	DC OCS	DC Third Rail	Diesel, CNG, Battery, DC OCS	Diesel, CNG, Battery	Haul Cable	Haul Cable	DC Third Rail	TBD
Level Boarding	✓	Optional	✓	✓	✓	Optional	Optional	✓	✓	✓	TBD
Low Floor	100%	50%-100%	100%	50%-100%	100%	0%-50%	0%-50%	100%	100%	100%	TBD
Representative System	Metromover	Seattle Streetcar	Team de Bordeaux	MAX (Portland)	Metrorail	Healthline (Cleveland)	RIT Curitiba (BR)	La Paz, Bolivia	Roosevelt Island, NY	Las Vegas, NV	N/A

Transit Right of Way[1]
Transit Right-of-Way: Operating environment of the mode, which may include mixed traffic (lane shared with general trafffic), semi-exclusive (separate lane, stopping at intersections), exclusive (grade-separated), or a combination of these operating environments.

Propulsion System[2]
Propulsion System: OCS=Overhead Contact System; OESS=On-Board Energy Storage System (Batteries or Supercapacitors); APS=Embedded powerrail.

MIAMI-DADE COUNTY

Beach Corridor Rapid Transit Project

Mode & Technolgy Characteristics

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Figure 1.2 | Mode and Technology Characteristics

1.5 ALTERNATIVES EVALUATION

The following transit modes are recommended for further evaluation because the Tier One Evaluation shows that these modes have the potential to meet the project goals of providing direct, convenient and comfortable rapid-transit service, providing enhanced intermodal connections, and promoting pedestrian- and bicycle-friendly solutions in the corridor.

- Automated guideway transit (Metromover expansion)
- Monorail
- Bus rapid transit/Express bus
- Light rail transit/streetcar

The potential to meet the project goals with these transit modes is demonstrated in the evaluation of these modes regarding transit performance, economic and community development benefits, environmental effects, and cost and feasibility, as shown in **Figure 1.3.**

The following modes are recommended to advance to Tier Two Evaluation:

- **Monorail** is a technology capable of operating at high speeds, with vehicles that provide high passenger capacity. As an elevated mode, monorail is reliable (does not get stuck in traffic) and is resilient in the face of climate change impacts (particularly flooding). The scale and urban fit of this elevated mode, and the feasibility or impact of providing safety walkways on the guideway, are potential concerns that will be further evaluated in Tier Two.
- **AGT** is an existing technology operating in Miami; an extension of the Metromover would provide the opportunity for one-seat rides or cross-platform transfers from any of the locations currently served by Metromover, as well as an easy transfer from Metrorail at Government Center. As compared with monorail, AGT operates at lower speeds and with smaller vehicles. Similar to monorail, AGT is reliable (does not get stuck in traffic) and is resilient in the face of climate change impacts (particularly flooding). The scale and urban fit of this elevated mode is a potential concern that will be further evaluated in Tier Two.
- **Light Rail Transit** is a flexible technology that can operate at lower speeds in mixed traffic on city streets, or at higher speeds on an exclusive guideway. Light rail is offered in a range of sizes and capacities, branded as streetcar, tram or LRT service. Off-wire technologies that allow LRT to operate without overhead wires make it compatible in urban settings where views and aesthetics are important considerations.
- **Bus Rapid Transit** provides passenger amenities similar to rail transit service and, like LRT, is a flexible technology that can operate at lower speeds in mixed traffic on city streets, or at higher speeds in dedicated lanes. Bus rapid transit carries fewer passengers per vehicle than rail transit modes. A variation of the bus mode in the form of Express Bus will also be evaluated in Tier 2.

The Tier One evaluation demonstrated that the recommended modes differ in their suitability to sub-areas of the study corridor. Four distinct segments were identified for consideration in Tier Two, with approximate study area boundaries indicated in **1.4** and **1.5**:

- Design District
- Downtown Miami
- Bay Crossing
- Miami Beach.

The recommended Tier Two study areas for alignment alternatives by mode, as shown in the figures, are:

- **Monorail:** Recommended for study of alignment alternatives in the Design District, Downtown Miami, and Bay Crossing segments.
- **Metromover:** Recommended for study of alignment alternatives in all segments (Design District, Downtown Miami, Bay Crossing and Miami Beach).
- **BRT/Express Bus:** Recommended for study of BRT and/or Express Bus from Downtown to Convention Center (with a repurposed typical section along the Causeway and a dedicated lane in Miami Beach) and Express Bus along a freeway loop alignment using I-95, I-195, I-395 in Miami and 5th street, Washington and Alton Roads in the Miami Beach segment.
- **LRT/Streetcar:** Recommended for study of alignment alternatives in the Design District, Bay Crossing, and Miami Beach segments.

For each of these study area segments and modes, the Tier Two evaluation will consider additional alignment alternatives and will not be limited to the representative alignments that were developed for Tier One evaluation.

As part of the Tier Two Evaluation, DTPW will develop detailed cost and ridership estimates, as well as conceptual engineering that may refine some of the transit performance evaluation, to allow for a comparison of these options regarding cost-effectiveness and other capital investment criteria, such as mobility improvement, congestion relief, land use, economic development, and environmental benefits such as greenhouse gas reductions.

The following modes are not recommended for further evaluation:

- Aerial Cable Transit: This mode is not recommended because of significant flaws regarding transit performance (lack of modal integration, low speed, insufficient capacity, and safety concerns) and environmental effects (impacts to views).
- Heavy Rail Transit: This mode is not recommended because of significant flaws regarding environmental effects (impacts to historic properties) and cost/feasibility (construction cost expected to be above the typical range for this mode).
- Automated Transit Systems: This mode is not recommended as a stand-alone modal option because of a significant flaw regarding transit performance (insufficient capacity). However, in the Tier Two Evaluation of bus rapid transit, opportunities to adapt elements of automated transit systems to bus rapid transit will be considered.

Sensitive

	Automated Guideway Transit	Ligh Rail Transit/ Streetcar	Heavy Rail Transit	Bus Rapid Transit	Aerial Cable Transit	Monorail	ATS
Transit Performance Criteria							
Interoperability/Modal Integration	●	◑	●	◑	○	◔	◑
Operational Speed & Reliability	◕	◑	●	◑	◑	●	◑
Resiliency	●	◔	●	◑	◕	●	◑
Passenger Capacity	◑	◕	●	◑	◔	●	◔
Vehicle Reliability & Safety	●	●	●	●	◔	●	◕
Passenger Amenities	◕	●	●	◑	○	●	◑
Economic & Community Development Criteria							
Scale/Urban Fit	◔	●	○	◑	○	○	◕
TOD Compatibility	◑	●	◕	◑	○	◕	◔
Ped/Bike Access	◑	◕	◑	◑	○	◑	○
Environmental Effects Criteria							
Natural Resources	◑	◕	◕	○	◕	◕	○
Socio Economic Impacts	◕	◔	◕	◔	◑	◕	◔
Physical Impacts	◑	◕	●	◔	○	◔	○
Cost & Feasibility Criteria							
Constructability	◑	◔	●	◔	◕	●	○
Operating Cost	◑	◑	●	◑	●	◑	◔
Eligibility for Funding	●	●	◕	●	○	●	◑

LEGEND

Lowest Benefit ○ ◔ ◑ ◕ ● Most Benefit

Lowest Impact/Cost ○ ◔ ◑ ◕ ● Highest Impact/Cost

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Figure 1.3 | Evaluation Matrix

Figure 1.4 | Tier Two Alignment Study Areas—Design District Segment & Downtown Miami Segment

Sensitive

Figure 1.5 | Tier Two Alignment Study Areas—Bay Crossing Segment & Miami Beach Segment

2 OVERVIEW OF THE CORRIDOR

This section provides an overview of existing conditions in the corridor including the following:

- Land use, population, and employment
- Environmental conditions
- Traffic conditions and travel demand
- Existing structures crossing Biscayne Bay

2.1 LAND USE, POPULATION, AND EMPLOYMENT

The Beach Corridor Rapid Transit Project is proposed for a corridor of approximately 8 miles in length. The study area extends approximately 0.5 miles on each side of the corridor, or roughly 8 square miles. For purposes of initial travel shed evaluation, the corridor is centered on Miami Avenue and MacArthur Causeway, and reflects the typical half-mile walking distance to transit service. The travel corridor extends from Miami Avenue/41st Street in the Miami Midtown/Design District, through Downtown Miami, to Miami Beach via the MacArthur Causeway, and ends at 5th Street/Alton Road. **Figure** 2.1 illustrates the traffic analysis zones (TAZs) included in the regional travel demand model that define the study corridor, for which there are land use, population, and employment data. The corridor study area comprises all or portions of 104 TAZs.

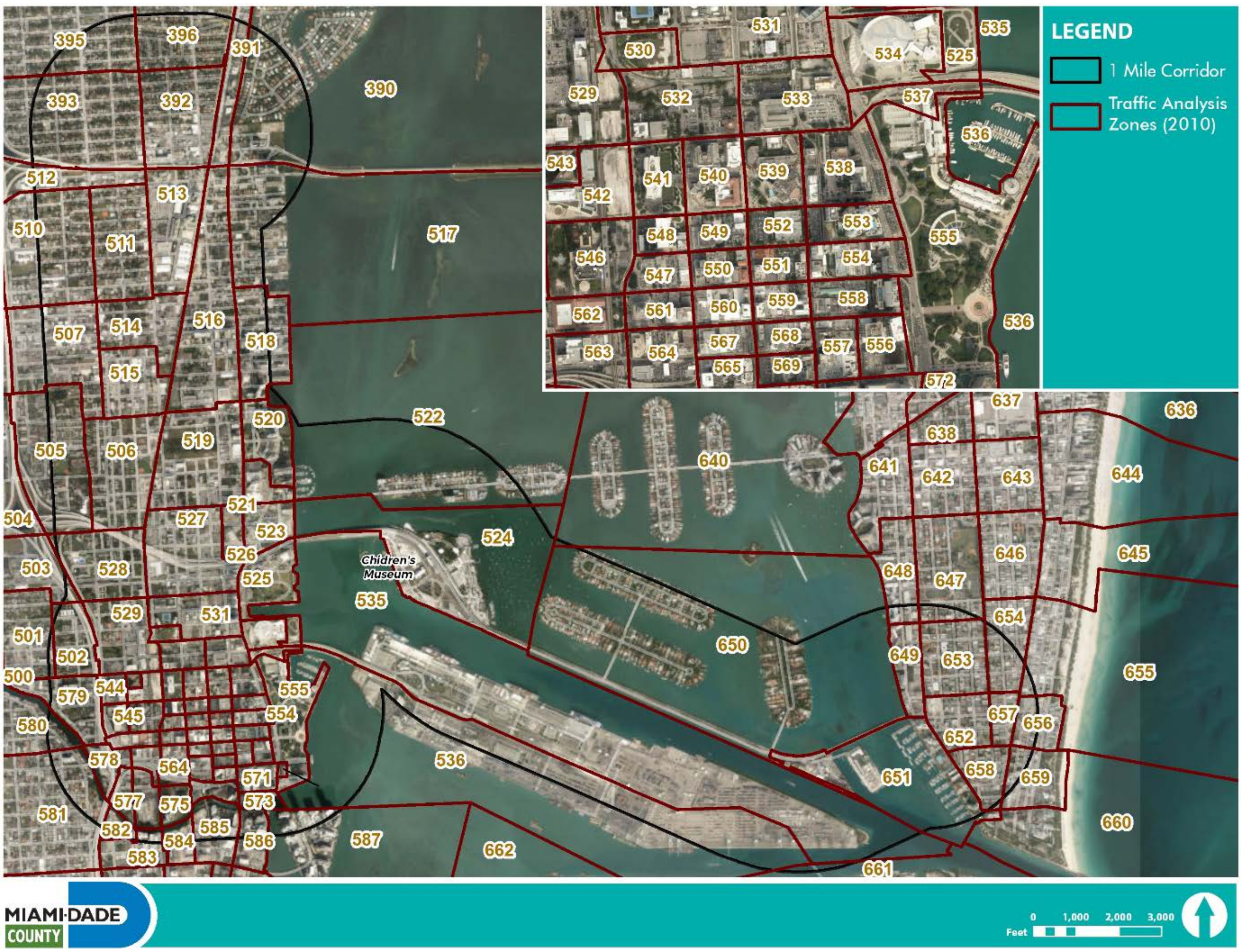


Figure 2.1 | Beach Corridor Rapid Transit Project Study Area and TAZs

Figure 2.2 illustrates the land uses in the corridor study area. As shown, there is a wide mix of land uses in the corridor, including residential areas in Midtown Miami and South Miami Beach; retail, office, and public areas distributed throughout the corridor but particularly focused in Downtown Miami; and industrial areas in the middle of the Miami Avenue segment between 14th and 30th streets. The residential areas represent the population centers, and the retail, office, public, and industrial areas represent significant employment centers as described below.

Figure 2.2 | Corridor Land Use

Figure 2.3 illustrates the population locations and densities (persons per acre) in the corridor, based on 2010 census data, and Figure 2.4 illustrates the distribution of employment by TAZ in the study area. Approximately 90,000 persons live within the corridor, and there are approximately 150,000 jobs within the corridor. As shown on the maps, there are several areas with high population densities and others with high employment concentrations. Combined, the population and employment data facilitate analysis of various travel markets as well as potential alignments of enhanced transit to serve the primary origins and destinations (or trip-producers and attractions), particularly the largest category of home-to-work commuter trips during morning and afternoon peak hours.

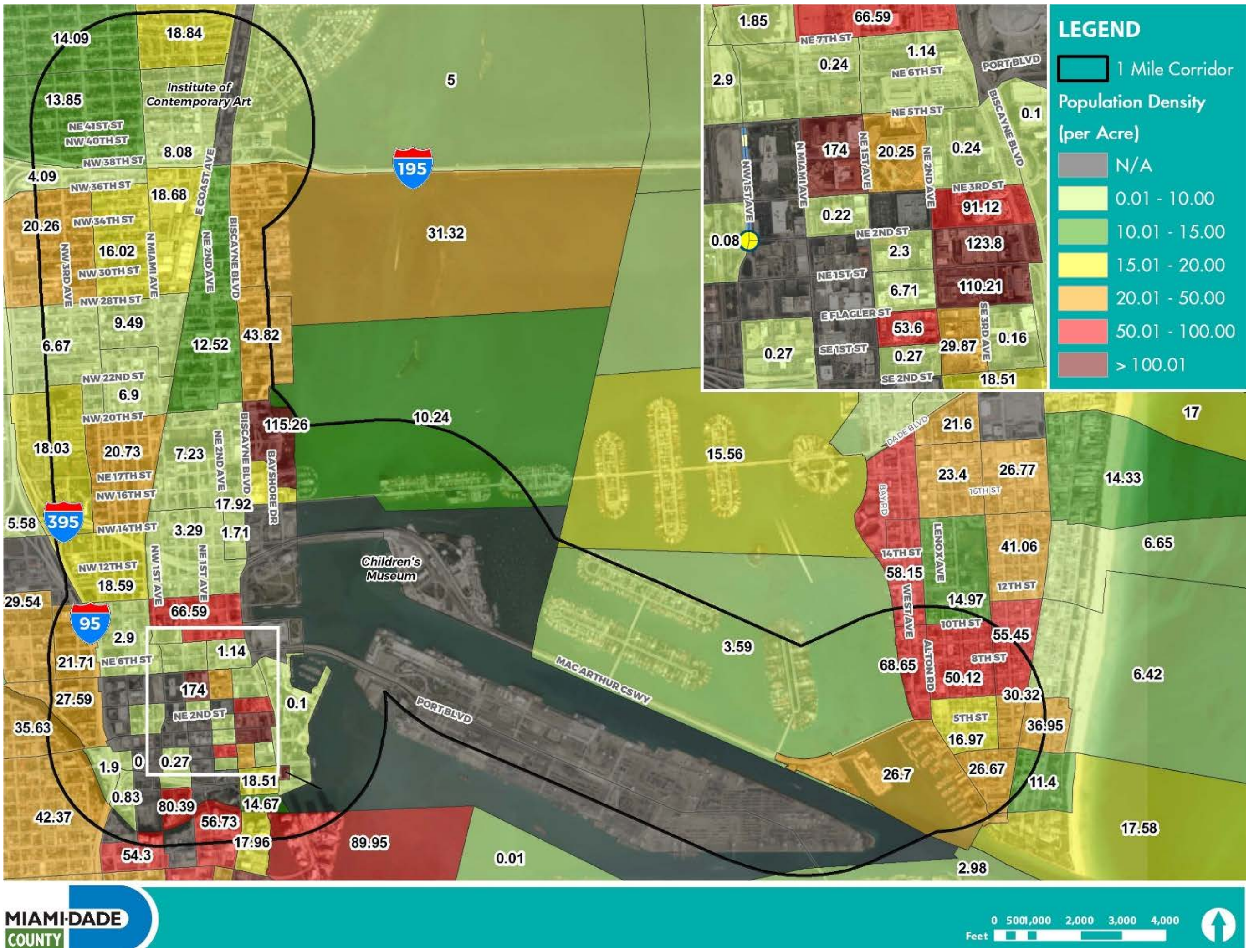


Figure 2.3 | Corridor Population Densities

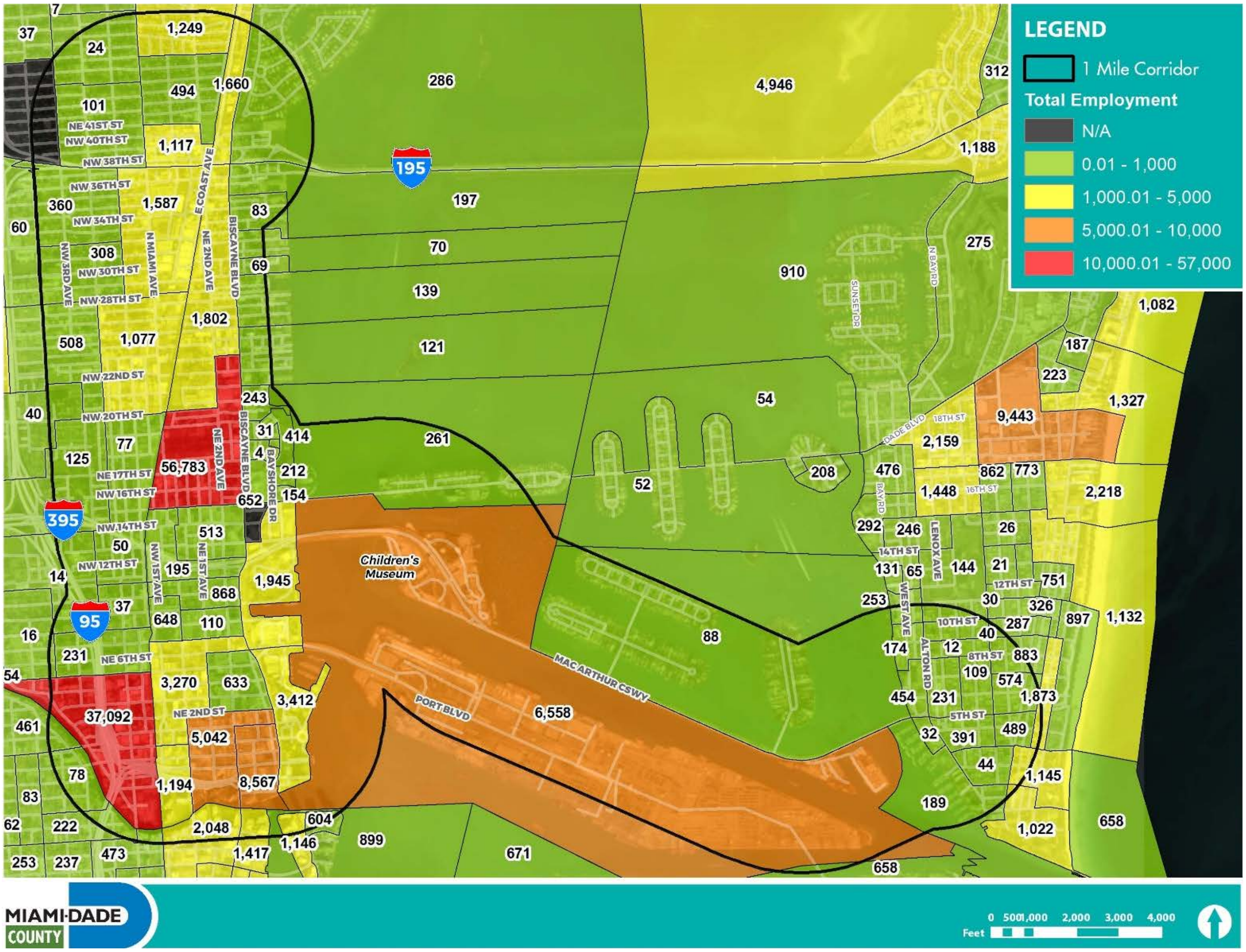


Figure 2.4 | Corridor Employment

2.2 ENVIRONMENTAL CONDITIONS

FDOT conducted a screening of the project using the Efficient Transportation Decision Making (ETDM) Environmental Screening Tool (EST) with a buffer of 200 feet. A supplemental desktop study of environmental resources, and evaluation of potential effects on those resources, was conducted as part of the Tier One analysis. Buffers for this additional analysis were expanded for some environmental resources as appropriate. The following describes the findings of the desktop study and the buffers used. The results of the evaluation of the degree of potential impact by alternative are provided in the evaluation matrix included in Section 5.

2.2.1 Social and Economic

A 500-foot buffer was used for the demographic and income screening criteria. A 200-foot buffer for the proposed corridor was used for the screening of other social and economic data.

2.2.1.1 Socioeconomic

The project traverses two Miami-Dade County census-designated places (Miami Beach and Miami). Seven Developments of Regional Impact (DRI) and four brownfield sites are present along the project corridor. The Miami-Dade County Enterprise Zone, which encompasses a U.S. Housing and Urban Development (HUD) Empowerment Zone (the Miami-Dade County Empowerment Zones), also spans portions of the project corridor. A 200-foot buffer was selected to evaluate community features and to identify the community facilities that would be directly and physically impacted by the proposed improvements.

Community features reported within the 200-foot buffer of the project corridor include the following: four civic centers, two community centers, 19 cultural centers, five government buildings, four health care facilities, 11 homeowner and condominium associations, seven group care facilities, two laser facilities, three local Florida park and recreational facility boundaries (two are national parks), five religious centers, 17 schools, one social service facility, three existing recreational trails, one fire station, and one Florida Site File cemetery.

A 500-foot buffer was selected to evaluate the project's potential impact to disadvantaged populations residing within the project area. Comparing the area of the project corridor with the demographic characteristics for Miami-Dade County, a 500-foot buffer contains a higher percentage of minorities, a lower percentage of individuals age 65 and over, and a lower median household income of $36,660 compared to $43,129 for the county and $50,157 nationally (Figure 2.5.). Additionally, 24.62 percent, or 1,958 persons, within the census block groups within 500 feet of the corridor "speak English less than well." This percentage is lower than the percentage for Miami-Dade County (34.5 percent).

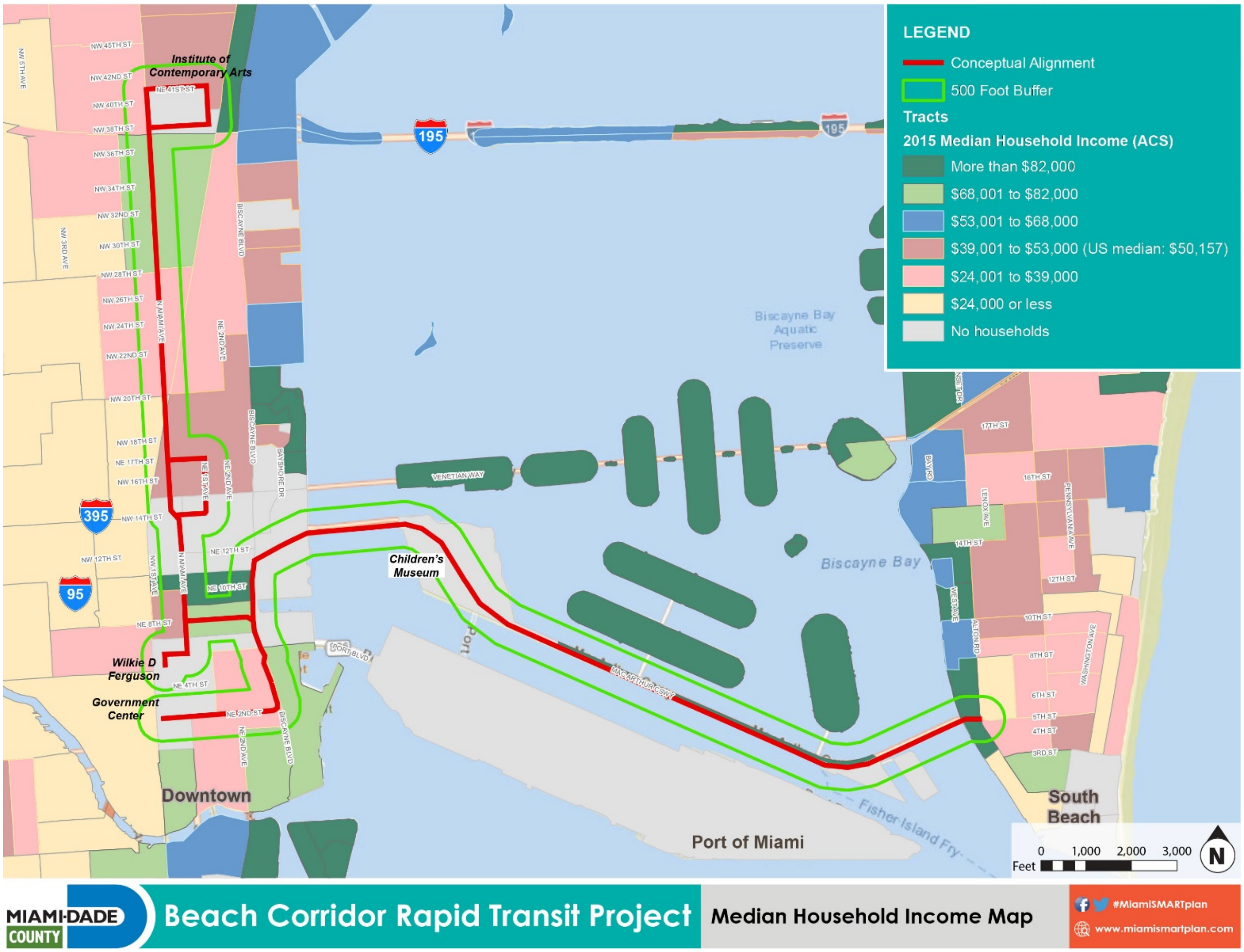


Figure 2.5 | Median Household Income

2.2.1.2 *Mobility*

The project encompasses the I-395/MacArthur Causeway/SR A1A corridor. I-395/MacArthur Causeway/SR A1A connects the southern end of Miami Beach to the central core of Miami, providing important linkages to I-95, SR 836/Dolphin Expressway, Miami International Airport, and PortMiami and cruise terminals. Routes C, M, and S, as well as Route 120 (Beach Max, providing limited-stop service), are operated by DTPW and use significant portions of the project, including I-395/MacArthur Causeway/SR A1A, and SR 5/US 1/Biscayne Boulevard.

The Downtown Miami portion of the project is anchored by North Miami Avenue, a north–south arterial connecting Downtown Miami at the southern end with the Little Haiti neighborhood at the northern end. This arterial is important because it provides a parallel facility to I-95, linking I-395 and I-195 and providing greater accessibility to the Downtown Miami core.

The Metromover operates within 200 feet of the project corridor. The project additionally occurs within two Transportation Disadvantaged Service Provider Areas (Miami-Dade Transit Agency and Logisticare Solutions, LLC) and is within the vicinity of three transit stations, multiple existing recreational trails, 16 FDOT Roadway Characteristics Inventory (RCI) bridges, 21 facility crossings and the navigable Atlantic Intracoastal Waterway.

2.2.1.3 Relocation Potential

The area surrounding the project corridor is composed primarily of public/semi-public and retail/office activities, industrial land uses, notable vacant land (nonresidential and residential), and residential uses. Given the fact that right-of-way availability along the project is limited due to the surrounding urban environment and access to proximate businesses, the project will be designed to avoid and minimize relocation.

2.2.2 Cultural

For this evaluation, a 200-foot buffer for the screening of cultural data in the vicinity of the proposed corridor was included.

2.2.2.1 Historic/Archaeological

The following historic and archaeological resources are reported within 200 feet of the project corridor (**Figure 2.6**):

- **Historic Standing Structures:** 144 total. Eight eligible for the National Register of Historic Places (NRHP), 55 ineligible for the NRHP, 79 not evaluated by the State Historic Preservation Office (SHPO), and two with potential to be eligible.
- **Historic Bridges:** Two total. Both ineligible for the NRHP.
- **Historic Cemeteries:** One total. Eligible for the NRHP.
- **Resource Groups:** Four total. Two eligible for the NRHP, one ineligible for the NRHP, one not evaluated by the SHPO.

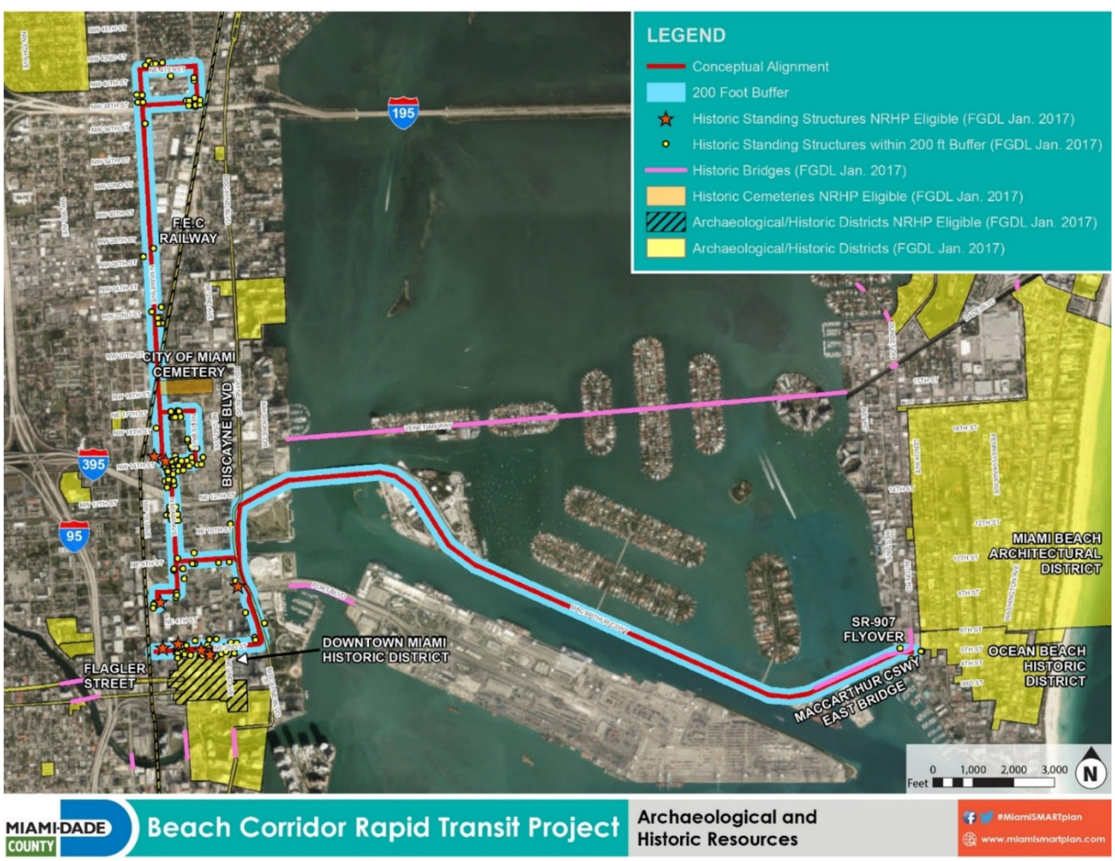


Figure 2.6 | Archaeological and Historic Resources

2.2.2.2 Recreational Sites

The following recreation areas/features are reported within the 200-foot buffer of the project: four park and recreational facility boundaries (two are National Park Projects); three existing recreational trails; two Office of Greenways and Trails (OGT) multiuse trail opportunity and hiking trail priorities, including two of the same trails identified as part of the Shared-Use Nonmotorized (SUN) trail network in Florida (All Aboard Florida rail-with-trail corridor and East Coast Greenway–Dade corridor); a third OGT multiuse trail opportunity (Baywalk trail corridor); one related OGT paddling trail opportunity; and the navigable Atlantic Intracoastal Waterway.

2.2.3 Natural

2.2.3.1 Wetlands and Other Surface Waters

Per review of the latest Florida Fish and Wildlife Conservation Commission (FWC) Geographic Information Services (GIS) data set for submerged aquatic vegetation (seagrass) coverage, 9.2 acres of discontinuous seagrass beds lie within 200 feet of the project corridor (Figure 2.7). These seagrass beds, located at the eastern end of the project, are associated with Biscayne Bay and occur around I-395/MacArthur Causeway/SR A1A. Seagrass is also designated by the National Oceanic and Atmospheric Administration (NOAA) as an Essential Fish Habitat (EFH) for several federally managed fish species and their prey.

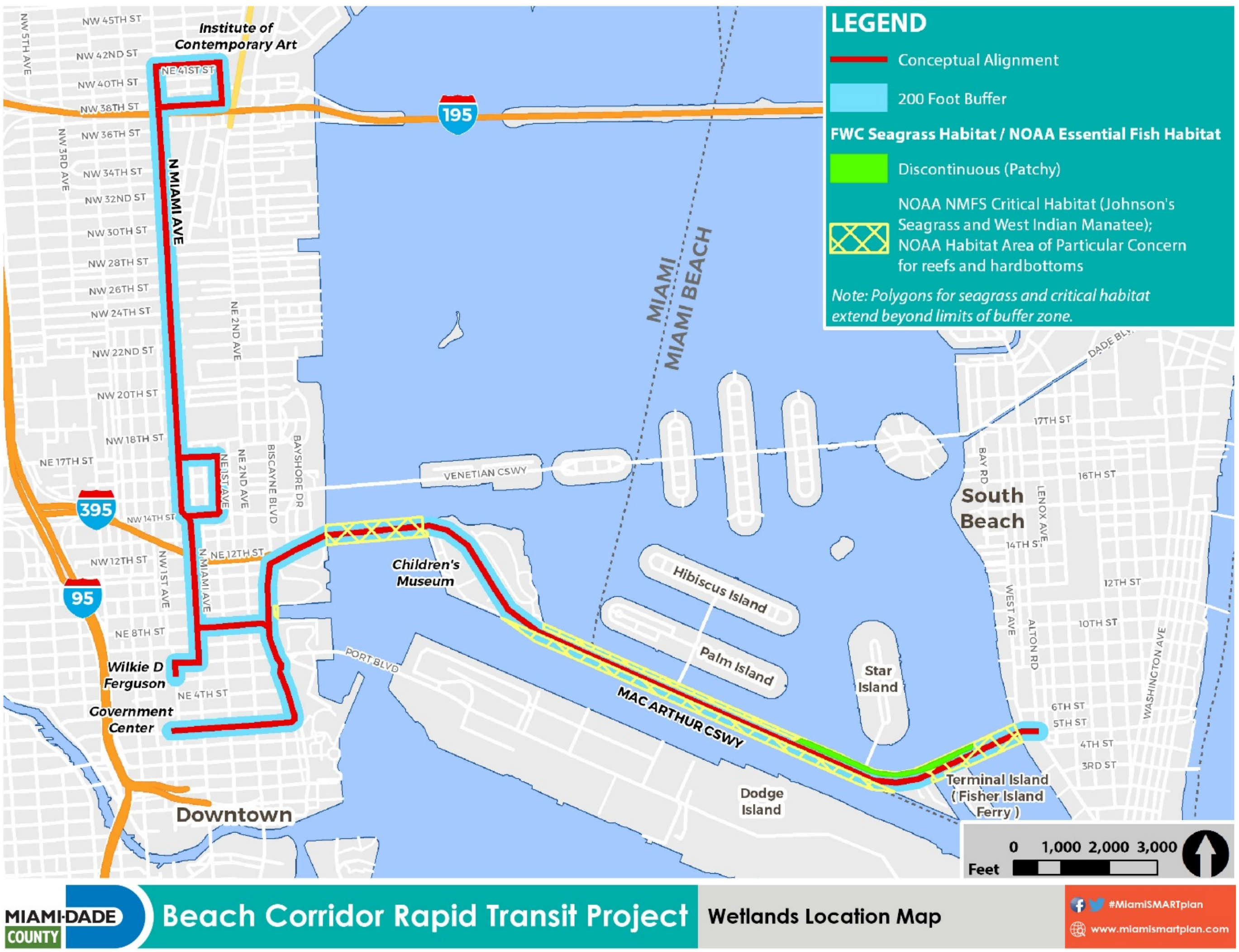


Figure 2.7 | Wetlands Locations

2.2.3.2 Protected Species and Habitat

The 200-foot project buffer zone occurs within the South Florida Ecosystem Management Area (Lower East Coast Management Area). The buffer zone falls entirely within the U.S. Fish and Wildlife Service (USFWS) Consultation Areas (CA) for the West Indian manatee, piping plover, American crocodile, and Atlantic Coast plants, while the western portion of buffer zone falls within the CA of the Florida bonneted bat (Figure 2.8).

All open-water portions of the buffer zone fall within NOAA Critical Habitat Zones for the West Indian manatee and Johnson's seagrass, and a NOAA Habitat Area of Particular Concern for reefs and hardbottoms.

Additional federally-listed species that may potentially be present within the buffer include the Eastern indigo snake and sea turtles.

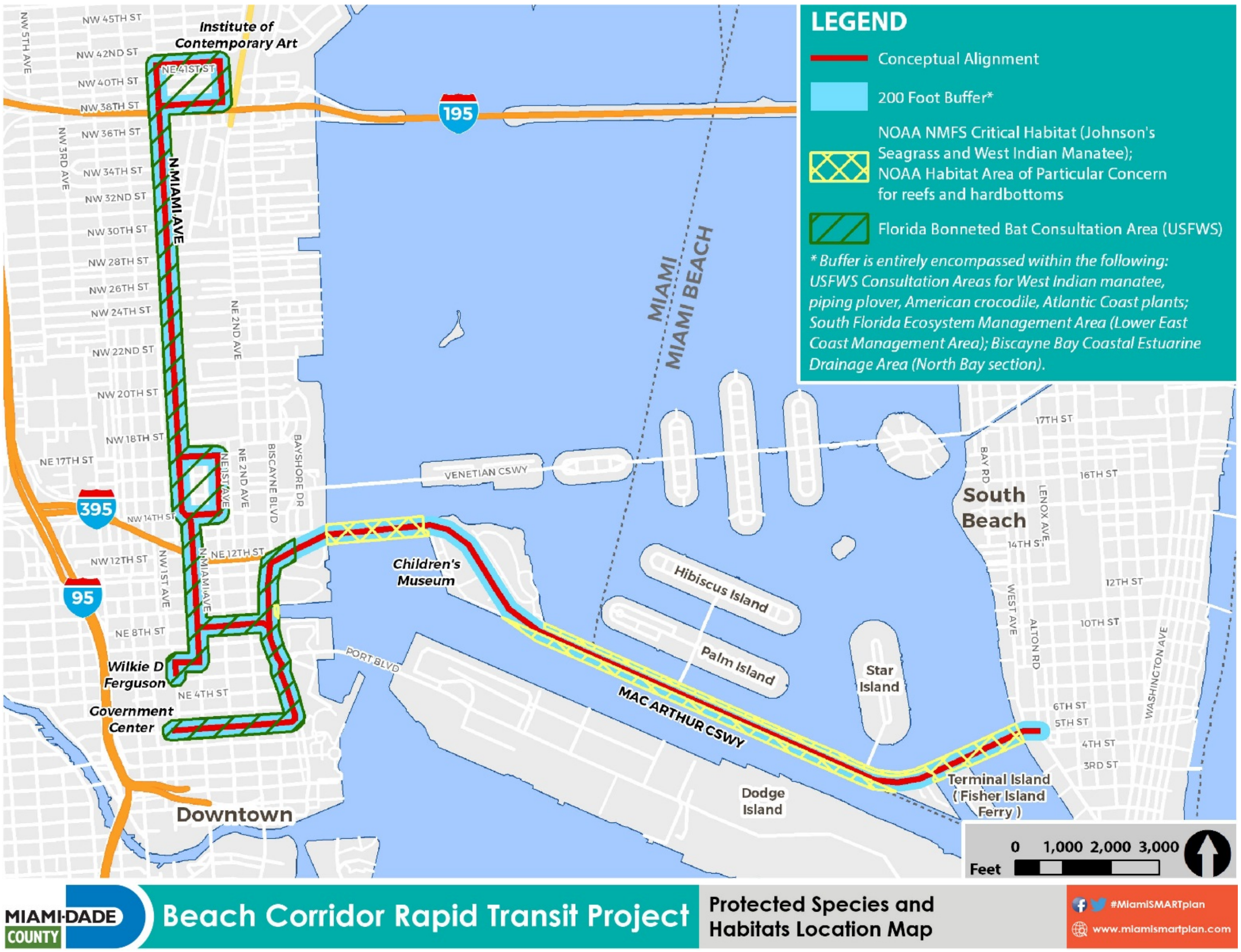


Figure 2.8 | Protected Species and Habitats Locations

2.2.3.3 Coastal

The 200-foot project buffer zone falls within the Biscayne Bay Coastal Estuarine Drainage Area (in the North Bay section). In addition, more than 20,000 linear feet of environmentally-sensitive shoreline and 9.2 acres of seagrass beds/EFH are located within the buffer zone (seagrass coverage described above).

2.2.3.4 Floodplain

Flood hazard areas identified on Florida Emergency Management Agency (FEMA) flood insurance rate maps are identified as Special Flood Hazard Areas (SFHAs), which are defined as areas that will be inundated by a flood event having a 1 percent chance of being equaled or exceeded in any given year. The 1-percent-annual-chance flood is also referred to as the base flood or 100-year flood. FEMA floodplain data was evaluated for the project using a 200-foot buffer of the project area. According to FEMA floodplain data, 199 acres, or 49 percent of the project buffer, are located within SFHA Flood Zone AE (**Figure 2.9**). FEMA defines Flood Zone AE as areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods. The remaining area is identified to be outside of the SFHAs and at a higher than the elevation of 0.2-percent-annual-chance flood.

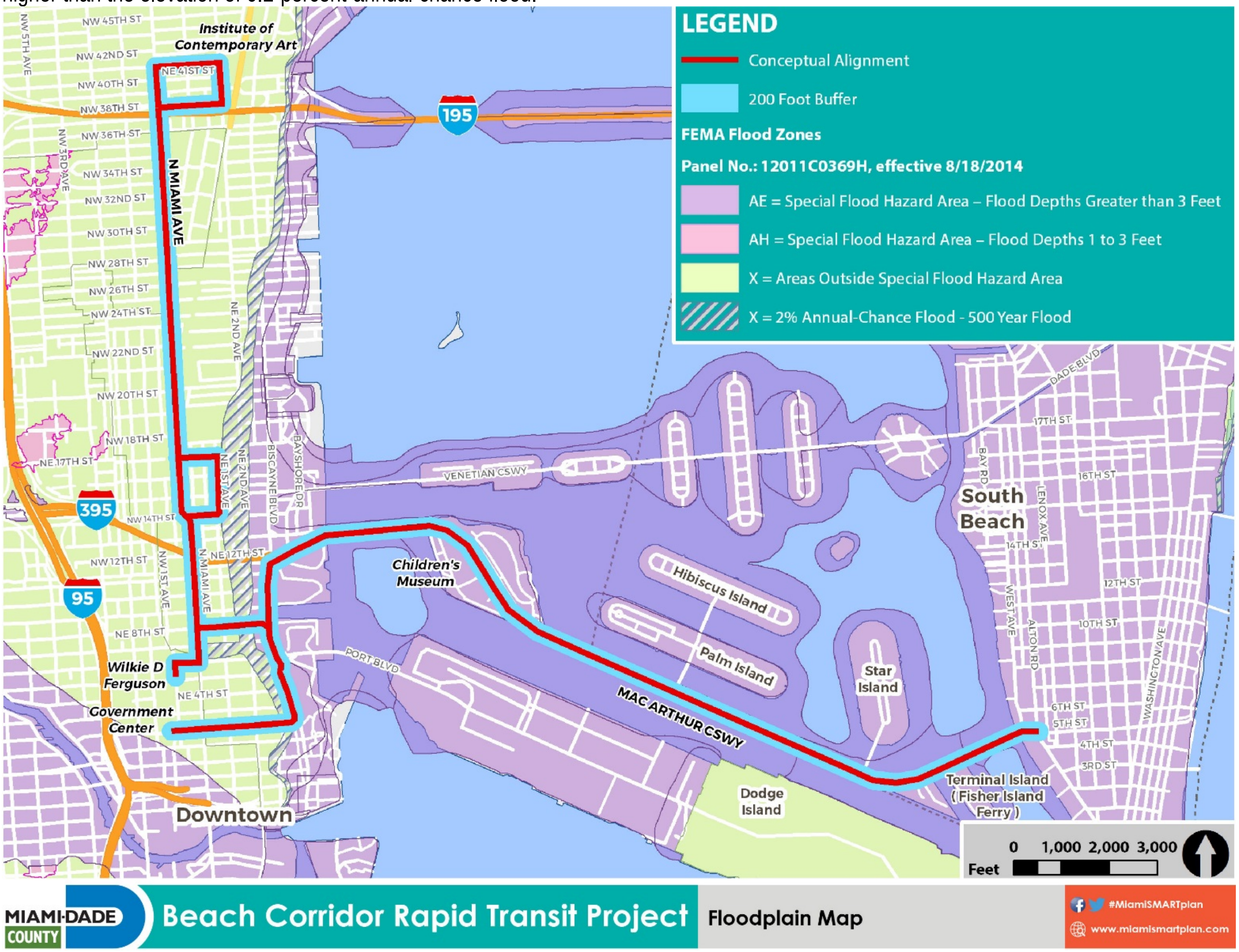


Figure 2.9 | Floodplains

2.2.4 Physical

2.2.4.1 Noise

The project is located within two Miami-Dade County census-designated places (Miami Beach and Miami). Seven DRIs and 29 acres (2.87 percent) of residential uses are also present within a 200-foot buffer surrounding the project corridor. The primary sources of existing noise along the proposed project corridor are local traffic on surface roads, as well as, noise from the existing Metromover and Metrorail transit operations.

Other community features within the 200-foot buffer of the project corridor that may be sensitive to noise and vibration effects include the following: four civic centers, two community centers, 19 cultural centers, five government buildings, four health care facilities, 11 homeowner and condominium associations, seven group care facilities, two laser facilities, three park and recreational facility boundaries, five religious centers, 17 schools, one social service facility, three existing recreational trails, three OGT multiuse trail opportunity and hiking trail priorities, two related OGT paddling trail opportunities, and several archaeological and historic resources.

The Tier One comparative evaluation of noise impacts of transit technologies is presented in Appendix C.

2.2.4.2 Air Quality

The project is located within the Southeast Florida air shed. However, the metadata states that the information is based on 1990 data. As such, current information published on the U.S. Environmental Protection Agency (USEPA) website was consulted for the project. The current data (June 2017) indicates that the project is not located within a USEPA-designated Air Quality Maintenance or Non-Attainment Area for any of the six pollutants (nitrogen oxides, ozone, carbon monoxide, lead, sulfur dioxide, and small particulate matter) specified by the USEPA in National Ambient Air Quality Standards.

2.2.4.3 Contamination

Three buffers were used for the review of contaminated sites: 500 feet for contaminated sites; 1,000 feet for non-landfill solid waste sites; and 0.5 miles for National Priority List (NPL) and Comprehensive Environmental Response, Compensation, and Liability (CERCLA) Superfund sites. The 500-foot buffer of the project corridor contains four brownfield sites and 29 contaminated sites regulated by Miami-Dade Department of Environmental Resources Management (DERM) or Florida Department of Environmental Protection (FDEP), including petroleum, dry cleaner, and other waste cleanup categories (**Figure 2.10**). Additionally, three non-landfill solid waste sites are located within 1,000 feet of the project corridor. No NPL or Superfund sites are present within 0.5 miles of the project corridor.

2.2.4.4 Navigation

The project corridor crosses the Atlantic Intracoastal Waterway, a navigable waterway.

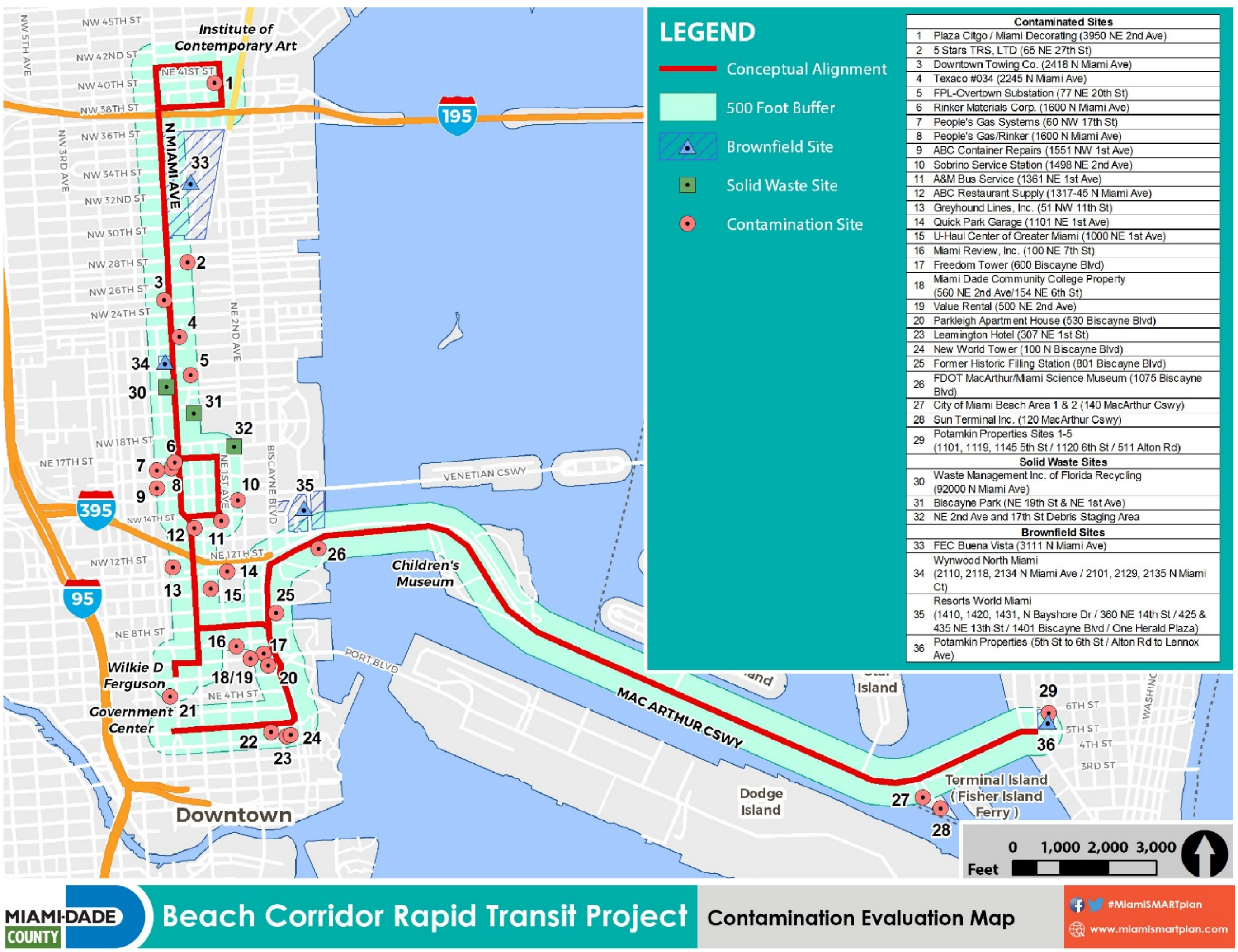


Figure 2.10 | Contamination Evaluation

2.3 TRANSIT CONDITIONS, TRAFFIC CONDITIONS, AND TRAVEL DEMAND

Downtown Miami and South Miami Beach (South Beach) are two major activity centers in Miami-Dade County. Over the past decades, these two areas have experienced significant growth in population, employment, and tourism. The significant growth, projected to continue in the coming decades, will generate travel demand that can no longer be met by the current roadway and transit network. To improve transportation between the Design District, Downtown Miami, and Miami Beach, the Strategic Miami Area Rapid Transit (SMART) Plan identified the need to analyze the feasibility of a fixed-guideway transit connection.

The project study area serves two distinct travel segments: an east–west connection between Miami Beach and Downtown Miami (approximately 5 miles), and a north–south connection between the Design District/Midtown and Downtown Miami (approximately 3 miles).

This analysis evaluates existing transit and traffic conditions in these two travel segments separately.

2.3.1 Transit Conditions

2.3.1.1 East–West Connection

The east–west segment connecting Downtown Miami with Miami Beach along the MacArthur Causeway is served by five bus routes: routes C/103, M/113, S/119, and 120 operate on the MacArthur Causeway; and route A/101 follows the Venetian Causeway (Table 2.1).

Peak-hour headways for these routes range from 12 minutes to 45 minutes, resulting in 440 daily bus trips running in the corridor carrying about 17,500 passengers on a typical weekday. It typically takes at least 30 minutes to travel from Downtown Miami to Miami Beach by transit during peak hours, which is about twice as long as by driving.

Table 2.1 | East–West Transit Services

Route	Peak-Hour Headway	Ridership Per Day	Buses Per Day	Capacity	Capacity Consumption
A/101	30	70	28	1,680	4%
C/103	20	2,500	103	6,180	40%
M/113	45	700	19	1,140	61%
S/119	12	8,600	161	9,660	89%
120	12	5,600	129	7,740	72%
Total		17,470	440	26,400	53%

Source: Miami-Dade Department of Transportation and Public Works, May 2017.

The final column in the table above indicates an estimate of the service consumption, or ratio of riders to seats provided. Route S/119, with 12-minute peak headways, is a highly productive route, operating close to capacity. For the corridor as a whole this ratio is lower, but still relatively high compared with the system overall.

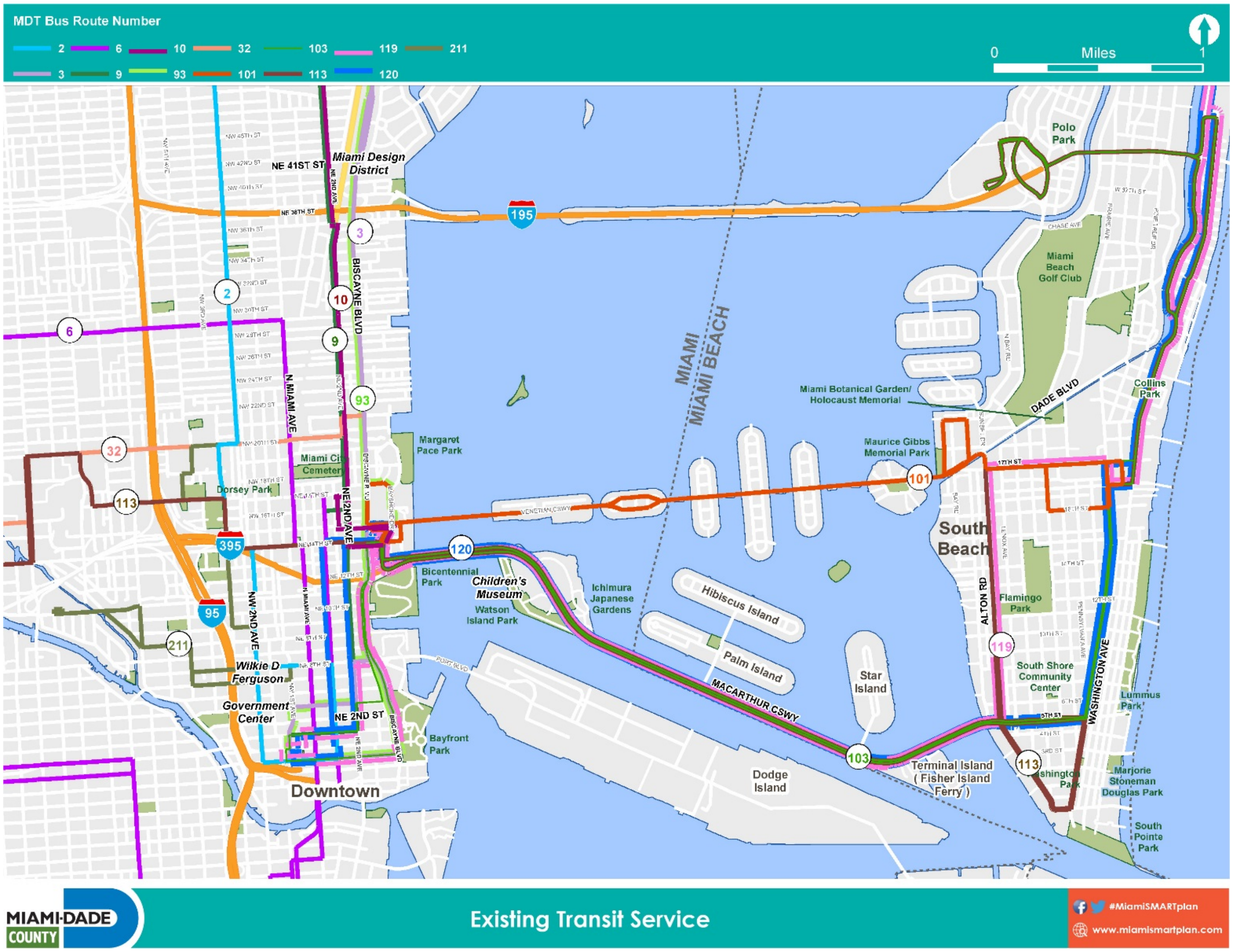


Figure 2.11 | Existing Transit Service

2.3.1.2 North–South Connection

The north–south connection between the Design District/Midtown and Downtown Miami is served by eight bus routes operating on NW Third Avenue, NW Second Avenue, NW First Avenue, North Miami Avenue, NE Second Avenue, and Biscayne Boulevard, providing peak-hour headways ranging from 15 to 60 minutes (Table 2.2). On a typical weekday, approximately 614 buses provide service in this corridor, carrying about 23,700 passengers. It takes at least 20 minutes to travel from the Design District/Midtown to Downtown Miami by transit during peak hours, which is about twice the time to travel by car.

The southern portion of this segment is also served by Metromover, which consists of the following three loops:

- Outer/Omni Loop connects Adrienne Arsht Center and the Omni neighborhood with Downtown Miami with 5-minute peak-period headways
- Inner/Downtown Loop serves Downtown Miami central business district with 1.5-minute peak-period headways
- Outer/Brickell Loop connects Downtown Miami with the Brickell area to the south with 5-minute peak-period headways

The Outer/Omni Loop of Metromover runs parallel with NE Second Avenue between NE 15th Street in the Omni neighborhood and NE First Street in Downtown Miami, and provides transfer access to Inner/Downtown Loop and Outer/Brickell Loop in Downtown Miami, as well as to Metrorail at the Government Center and Brickell stations. The average weekday ridership of Metromover is about 29,000 passengers.

Table 2.2 | North–South Transit Services

Route	Peak-hour headway	Ridership per day	Buses per day	Capacity	Capacity consumption
2	20	2,500	96	5,760	43%
3	20	6,000	125	7,500	80%
6	60	500	20	1,200	42%
9	12	5,900	113	6,780	87%
10	30	2,500	67	4,020	62%
32	30	2,700	64	3,840	70%
93	15	3,500	89	5,340	66%
211	45	90	16	960	9%
Total Bus		23,690	590	35,400	57%
Metromover	1.5 –– 5	29,300	360	34,560	85%

Source: Miami-Dade Department of Transportation and Public Works, May 2017.

The final column in the table above indicates an estimate of the service consumption, or ratio of riders to seats provided. Routes 3 (Biscayne Boulevard) and 9 (NE Second Avenue) are highly productive routes, while Route 211 (Overtown circulator) sees very low ridership.

2.3.2 Traffic Conditions

2.3.2.1 East–West Connection

The major roadway serving this segment is the MacArthur Causeway, a six-lane highway that connects to I-395 and crosses Biscayne Bay alongside PortMiami on Dodge Island and the main channel used by cruise ships. As the major connection between Downtown Miami and South Beach, MacArthur Causeway carries more than 97,000 vehicles per day, exceeding the design capacity by more than 50 percent and resulting in severe congestion in both directions during peak hours and on weekends. Despite this constraint, traffic has grown 4 percent in the past five years.

Venetian Way/NE 15th Street is a two-lane roadway built on the Venetian Causeway connecting Downtown Miami and the city center of Miami Beach, and serving several residential communities on the islands in between. Located about 1 mile north of MacArthur Causeway, Venetian Way also serves as an alternative road for people traveling between Downtown Miami and Miami Beach. The annual average daily traffic (AADT) on Venetian Way has increased about 44 percent over the past five years alone.

I-195 is a six-lane highway connecting I-95 with the Miami Design District and the Bayshore and Mid-Beach areas in Miami Beach. The AADT on I-195 has grown 14 percent from 101,200 in 2011 to 115,400 in 2016. The volume to capacity (V/C) ratio for this roadway is 0.99.

Table 2.3 | East–West Traffic Conditions

Route	Lanes	AADT 2011	AADT 2016	Growth	V/C Ratio
I-195	6	101,200	115,400	14%	0.99
Venetian Causeway	2	2,700	3,900	44%	0.37
MacArthur Causeway/I-395	6	93,300	97,100	4%	1.62
Total		197,200	216,400	10%	

Source: Florida Traffic Information, 2016.

2.3.2.2 North–South Connection

NW Second Avenue is a two-lane arterial running through Downtown Miami and Wynwood. The AADT on NW Second Avenue was about 9,100 in 2016, which has grown by 25 percent since 2011.

Miami Avenue is the main north–south street running through Brickell, Downtown Miami, and the Design District/Midtown. It is a two-way, four-lane road from NE 17th Street to the Design District, and a one-way southbound road from NE 17th Street to Downtown Miami, with three lanes on the segment between NE 17th Street and NE Fifth Street, and two lanes south of NE Fifth Street. (Note that traffic data for Miami Avenue does not reflect changes to the configuration of the street after the 2011 counts as well as diversion to avoid construction impacts in the corridor; the Tier Two evaluation will feature additional traffic counts to provide a more detailed analysis of Miami Avenue traffic conditions and travel demand.)

NE Second Avenue is a four-lane arterial connecting Downtown Miami and the Design District, transitioning to a three-lane road north of 36th Street. Traffic on NE Second Avenue has increased significantly over the past five years. There are about 11,600 vehicles on NE Second Avenue per day in 2016, a growth of 29 percent since 2011.

Biscayne Boulevard is a six-lane arterial running north–south alongside Biscayne Bay, providing access to many major activity centers in Downtown Miami, including Museum Park, American Airlines Arena, and PortMiami. The AADT on Biscayne Boulevard was about 39,000 in 2016, which has grown by 47 percent since 2011.

Table 2.4 | North–South Traffic Conditions

Route	Lanes	AADT 2011	AADT 2016	Growth	V/C Ratio
NW 2nd Ave.	2	7,300	9,100	25%	0.87
Miami Ave.*	4*	31,500	13,400	-57%*	0.59
NE 2nd Ave. (N of 41st St.)	3	9,000	11,600	29%	0.79
Biscayne Blvd.	6	26,500	39,000	47%	0.77
Total		74,300	73,100	-2%	

** - No count available for the 2-lane segment of Miami Avenue.*
Source: Florida Traffic Information, 2016.

The final column in Table 2.4 above provides a volume-to-capacity (V/C) ratio based on daily traffic volumes and service volume thresholds for a facility of that type. As indicated, NW Second Avenue is operating closest to capacity, with the other roadways operating at between 60 percent and 80 percent of capacity over a 24-hour period.

2.3.3 Intersection Conditions

Using Highway Capacity Software (HCS), a peak-hour intersection level of service (LOS) analysis was conducted for three intersections along the study-area roadways for which traffic counts were available from DTPW. The results are shown in Table 2.5 and Table 2.6. These roads are generally operating below capacity conditions, with conditions approaching capacity as one moves south closer to Downtown Miami (20th Street).

The intersection of NE Second Avenue and 41st Street is a T-intersection and is currently unsignalized, however it was analyzed as though a signal were installed since that will be required for premium transit operations. During p.m. peak hours, the overall LOS of the intersection is at LOS A, however, the eastbound approach is at LOS C with about a 28-second delay per vehicle.

The intersection of Miami Avenue and 29th Street operates at LOS C during both a.m. and p.m. peak hours with about a 24- to 25-second delay per vehicle. The southbound traffic experiences the longest delay during a.m. peak hours, while the northbound traffic has the longest delay during p.m. peak hours, reflecting peak flows southbound into downtown in the a.m. and northbound in the p.m.

The intersection of Miami Avenue and 20th Street operates at LOS D in a.m. peak hours and LOS E in p.m. peak hours. The eastbound approach experiences the most delay, operating at LOS F with about a 121-second delay per vehicle during the a.m. peak hour and a 95-second delay per vehicle during p.m. peak.

Table 2.5 | Intersection Delay and LOS — A.M. Peak

	Intersection		Approach							
			Eastbound		Westbound		Northbound		Southbound	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
NE 2nd Ave. and 41st St.	No traffic count available									

Miami Ave. and 29th St.	24.9	C	13.8	B	13.2	B	19.3	B	33	C
Miami Ave. and 20th St.	54.8	D	121	F	54.9	D	9.2	A	24.4	C
Note: Delay in seconds.										

Table 2.6 | Intersection Delay and LOS — P.M. Peak										
	Intersection		Approach							
	Delay	LOS	Eastbound		Westbound		Northbound		Southbound	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
NE 2nd Ave. and 41 St.	8.7	A	28.4	C	N/A	N/A	8.1	A	6.9	A
Miami Ave. and 29th St.	23.6	C	15.3	B	14.2	B	32.5	C	21.0	C
Miami Ave. and 20th St.	61.8	E	94.9	F	50.5	D	50.0	D	59.3	E
Note: Delay in seconds.										

2.3.4 Findings

The study area contains some of the highest-density activity centers in South Florida and experiences very high traffic volumes and highly congested traffic conditions for much of the typical weekday, with even greater congestion on weekends on some roadways. Both Miami and Miami Beach are in the midst of building booms, with dozens of high-rise projects under construction currently, and many more planned as residents and businesses continue to relocate to this area.

Both east–west and north–south connections are totally constrained. As travel demand increases in the region and the study area, traffic will quickly reach gridlock conditions unless additional travel capacity is provided via transit investments that can make better use of the existing road capacity, or by adding new transit guideway capacity.

2.4 EXISTING STRUCTURES

Existing structures in the corridor that cross Biscayne Bay are key considerations in the evaluation of potential transit technologies and modes. The bridge crossings on the MacArthur Causeway consist of three structures. Bridge Nos. 870771 and 870772, which were completed in 1996 and 1995 respectively, were originally designed as three-lane bridges carrying westbound (WB) and eastbound (EB) traffic respectively over Biscayne Bay. Both bridges underwent superstructure and substructure widening in 2013 to add an additional lane of traffic to bring them to their current-day configuration of four traffic lanes in each direction. The third structure is Bridge No. 870077, designed in 1956, as a six-lane highway carrying both WB and EB traffic over the east channel of MacArthur Causeway.

2.4.1 Bridge No. 870771 (WB MacArthur Causeway) and No. 870772 (EB MacArthur Causeway)

The overall lengths of the WB and EB bridges are 2,467 feet, 8 5/8 inches and 2,454 feet, 0 inches respectively. The WB bridge superstructure consists of two, three-span continuous deck units and three, four-span continuous deck units, whereas the EB bridge superstructure consists of three, three-span continuous deck units, two, four-span continuous deck units, and a single simple span unit. Both bridges use post-tensioned Florida Bulb-T 72 beams. The end bents are founded on 42-inch drilled shafts and the piers on either 48-inch or 84-inch drilled shafts.

In 2013 these bridges were widened to the inside within the original median gap of 30 feet, 4 inches (see Figure 2.12). Single piers were constructed to accommodate the widening of both bridges. Exterior substructure and superstructure widening was also done on spans 15-18 for the EB bridge. The operational and inventory load rating of the EB bridge is 1.32 and 1.02 respectively. The sufficiency rating for the WB and EB bridges is 84 and 85 respectively.

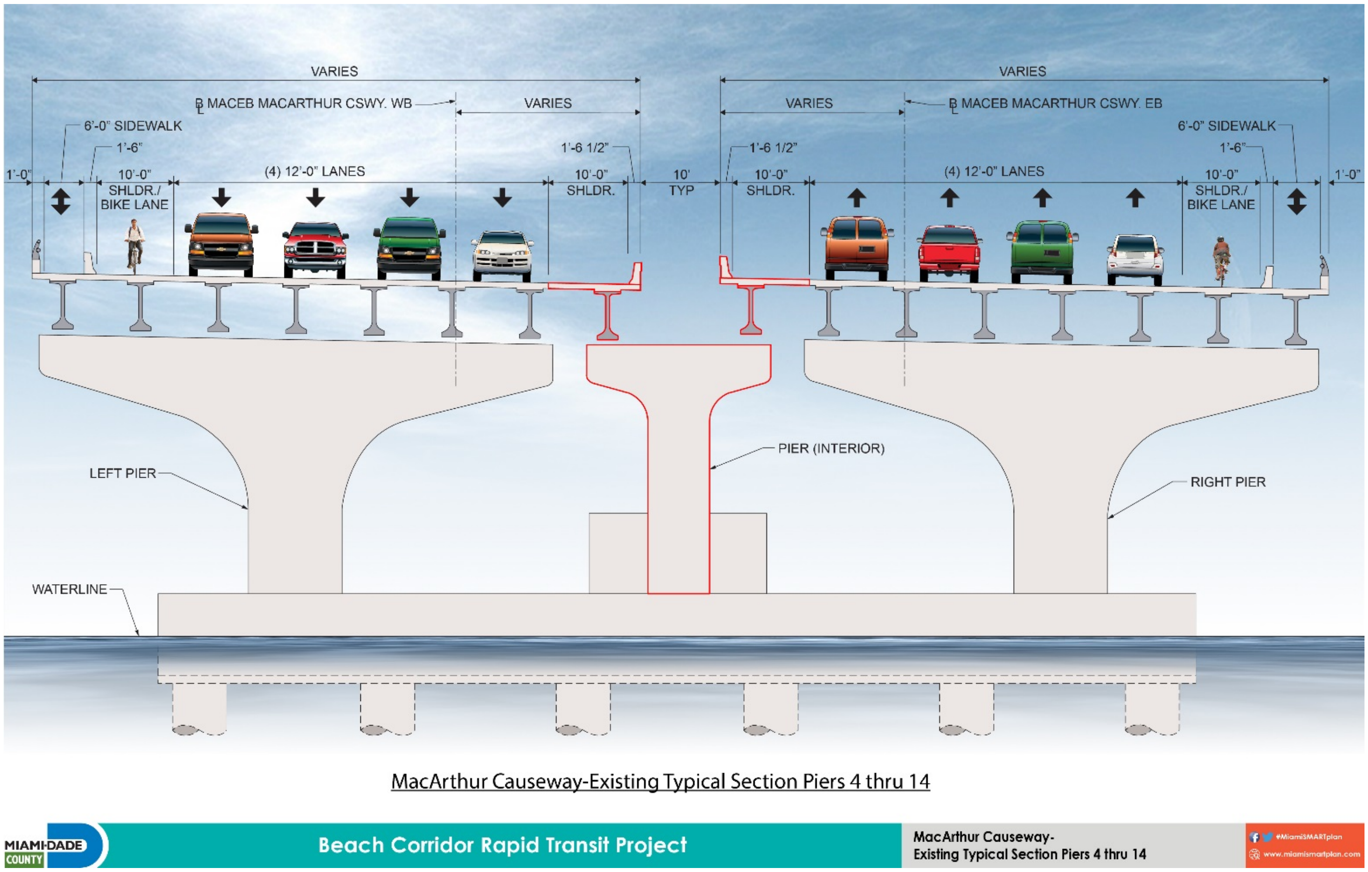


Figure 2.12 | MacArthur Causeway Existing Typical Section (Bridge No. 870771 and No. 870772)

2.4.2 Bridge No. 870077 (WB and EB MacArthur Causeway over East Channel)

The overall length of this bridge is 2,155 feet, 0 inches. The bridge superstructure consists of 15 spans of 45 feet, 19 spans of 65 feet, two spans of 70 feet, and a single 105-foot span. The bridge uses AASHTO Type II beams. The end bents and piers are founded on 20-inch precast concrete piles.

In 1978, the bridge underwent several repair procedures, including cleaning and resealing joints with elastomeric compression seals, repairing spalls with epoxy mortar, constructing steel saddle-beam supports on Pier 26, painting structural steel and shoe assemblies, and installing guardrails. The sufficiency rating for the bridge is 72.

2.4.3 Options to Accommodate Future Transit Crossing Biscayne Bay

In lieu of repurposing lanes on the existing bridges, the alternatives to accommodate a future mode of transit on these bridges are either to widen the EB bridges (bridge widening to the south) or to construct a new bridge to the south of the EB bridges.

Widening was assumed to be feasible only for the EB bridges/widening to the south because:

- Due to the reconstruction of I-395 with a signature bridge, in the planning phase a transit corridor was provided for a future transit extension to/from Miami Beach. The corridor is located directly south of I-395, thus eliminating the option of utilizing the north side of I-395 as a viable transit route.
- The optimal location for a transit transfer station with metromover could occur at the existing Museum Station. Utilizing a transit alignment north of the Causeway bridge would not allow access to the Museum Station.

The widening alternative not only will have to account for construction of foundation and substructure in very close proximity to the existing structures, but also for vessel-impact loads on the new and existing foundations. In addition, the existing superstructure and substructure must be evaluated to account for the effects of the selected transit alternative. Widening also will conflict with the existing pedestrian ramp at the east end of the bridge that leads to Parrot Jungle Trail. In lieu of the issue associated with the widening of existing structure, constructing a new bridge for transit would be a more feasible solution.

The Tier One evaluation included preliminary evaluation of the potential for a new center-running guideway structure using the existing median of the bridge, rather than widening the existing bridge or constructing a new transit bridge. The technical feasibility of a median option will be evaluated further in Tier Two; the Tier One evaluation assumes the need to widen or construct a new structure, based on the following considerations:

- The space between bridges 870771 and 870772 is 10'-5" for the majority of the structures, but this gap reduces to roughly 3 ft. by the end of bridge at Span 18. In addition, FDOT District 6's Design-Build project (Contract Number E-6J53) proposes inside widening of the first 2 units (7 spans) of the EB Bridge (870772) that will significantly reduce the gap between the bridges. There is no gap between the EB and WB travel lanes on Bridge 870077.
- Reverse curves would be required at each end of the bridge that could negatively affect the ride of the vehicle.
- There may be adequate space for a 9' diameter hammer-head pier to fit between the structures to accommodate rail on an elevated guideway that is cantilevered over the existing travel lanes; see Figure 2.11 illustrating the 10' existing clearance between the left and right piers. New piers may be required in the Bay to support the guideway structure, and long bridge spans over the eastbound travel lanes would be required for transitions to and from the center median, meaning there may not be a significant cost, schedule or environmental permitting advantage for a center median guideway structure.
- Tier two will feature further evaluation of the potential to support a new guideway structure on the existing bridge foundations.

2.5 EXISTING UTILITIES

The following activities were undertaken to identify public- and privately-owned utilities within a 200-foot buffer of the study corridors:

- Sunshine State One Call (Sunshine811®) design tickets issued in June 2017 listed 29 utility agencies/owners (UAOs) with facilities within the study limits. (Table 2.7, and Figures 2.13 and 2.14).
- UAOs were contacted for information relating to the size, type, and location of their facilities within the limits of the study.
- Field surveys were conducted along each study alignment.
- Roadway and structures as-built plans were reviewed.
- Utility work schedules (UWS), relocation plans, and coordination reports for the I-395 design-build project (FDOT FPID 251688-1-56-01) were reviewed to identify potential relocations associated with the planned improvements.
- Information was obtained for the following Miami-Dade County Water and Sewer Department (MDWAS) utility improvement projects identified on the MDC GISWeb:
  - Project ID 10666: The CL-1 Downtown Transmission Force Main (FM) Extension project is currently under design-build construction and involves the installation of a 48-inch force main along North Miami Avenue from NW Eighth Street to NW 36th Street, and along NE 36th Street from North Miami Avenue to NE Second Avenue, as well as installation of a 12-inch water main.
  - Project ID 13494: This project is in design, with anticipated construction completion in 2019 for a new, second, reinforcing 42-inch FM from NE Fourth Avenue and 62nd Street to N Miami Avenue and 36th Street, and an upgraded 48-inch FM (Project ID 10666) at North Miami Avenue and 36th Street.

The locations of existing major utilities are summarized in Table 2.7, and Figures 2.13 and 2.14. The utility information collected for the Tier One analysis of the Beach corridor rapid transit alternatives is considered Levels C and D. For the purpose of this Tier One feasibility study, "major" utilities were defined as the following:

- Gas lines with a diameter of 4 inches or greater
- Water and sewer pipes with a diameter of 4 inches or greater
- Buried distribution and subaqueous electric duct banks
- Aerial and buried electric transmission lines
- High-capacity fiber-optic cables and fiber-optic duct banks

The location, size, and type of utilities within the project limits will be confirmed through additional coordination with UAOs and utility surveys as technologies, alignments, and station locations are evaluated and refined.

Table 2.7 | Utility Agencies/Owners and Utility Locations

	Utility Agency/Owner (UAO) | Contact Person	Utility Type	Utility Locations(1)												
			MacArthur Cswy.	Biscayne Blvd	NE 2nd St	NW 1st Ave	NE 5th St	NE 8t St	N Miami Ave	NE 17th St	NE 13th St	NE 1st Ave	NE 41st St	NE 38th St	NE 2nd Ave
1	A T & T/ Distribution | Steve Lowe	Tel, FOC	●	●	●	●	●	●	●	●	●	●	●	●	●
2	AT&T Corporation (Transmission)(2) | Greg Jacobson	HC FOC		●	●	●	●	●	●						
3	American Traffic Solutions | Santiago Martinez	ITS							●					●	
4	Atlantic Broadband | Edwin Zambrana	FOC	●		●	●	●	●	●	●	●	●			
5	Centurylink | Allen Aten	FOC, CATV			●	●	●	●	●	●			●	●	●
6	City of Miami Beach Utilities | Ashok Verma	W, S, RCW	●												
7	Comcast Cable | Leonard Maxwell-Newbald	CATV, FOC	●	●	●	●	●	●	●	●	●	●	●	●	●
8	Crown Castle Ng | Randy Oliver	FOC							●						
9	Miami-Dade County Traffic(3) |	ITS	●	●	●	●	●	●	●	●	●	●	●	●	●
10	FDOT District 6 ITS | Thomas Miller	ITS	●	●	●	●	●	●	●		●	●		●	●
11	Fiberlight | Jacob Marroney	FOC		●	●	●	●	●	●						
12	Fibernet Direct (formerly FPL Fibernet) | Danny Haskett	FOC		●	●	●	●	●	●			●		●	●
13	Florida Gas Transmission | Joseph E. Sanchez	Gas	●						●	●		●			
14	Florida Power & Light – Distribution | Edgar Aguilara	Electric	●	●	●	●	●	●	●	●	●	●	●	●	●
15	Florida Power & Light - Subaqueous | Joel Bray	Electric	●												
16	Florida Power & Light--Transmission | George Beck	Electric	●	●	●	●	●	●	●	●	●	●			
17	Hotwire Communications | Phil Gallub	FOC	●	●	●	●		●	●	●			●	●	●
18	Intermetro Fiber | William Valentine	FOC			●	●	●		●						
19	Level 3 Communications | Jorge Pelaez	FOC		●	●	●	●	●	●	●			●	●	●
20	MCI Communications | Dean Boyers	Electric	●	●	●	●	●	●	●		●	●		●	●
21	Miami-Dade County Central Support(3) | Milton Hernandez	Chilled W	●	●	●	●	●	●	●		●				
22	Miami- Dade Enterprise Technology | Frank Dopico	ITS	●	●	●	●	●	●	●						
23	Miami-Dade County Water & Sewer | Patrick Chong	W, S	●	●	●	●	●	●	●	●	●	●	●	●	●
24	Sprint | Mark Caldwell	FOC						●	●	●			●	●	●
25	Strome Networks | Kristin Zaky	FOC						●	●						
26	Teco Peoples Gas | Alex Roche	Gas	●	●	●	●	●	●	●	●	●	●	●	●	●
27	Windstream Communications | Douglas Pickle	Tel, FOC				●	●	●	●	●	●	●	●	●	●
28	X O Communications | Anthony Kowaleski	FOC		●	●	●	●	●	●						

(1) Facility located within 200-foot buffer of corridor, per Sunshine State One-Call® design tickets, issued in June 2017.
(2) Includes PortMiami (Teleport Communications America) facilities

Table 2.7 | Utility Agencies/Owners and Utility Locations

	Utility Agency/Owner (UAO) | Contact Person	Utility Type	Utility Locations[1]												
			MacArthur Cswy.	Biscayne Blvd	NE 2nd St	NW 1st Ave	NE 5th St	NE 8t St	N Miami Ave	NE 17th St	NE 13th St	NE 1st Ave	NE 41st St	NE 38th St	NE 2nd Ave

[3] Includes Miami-Dade County chilled water and associated power facilities

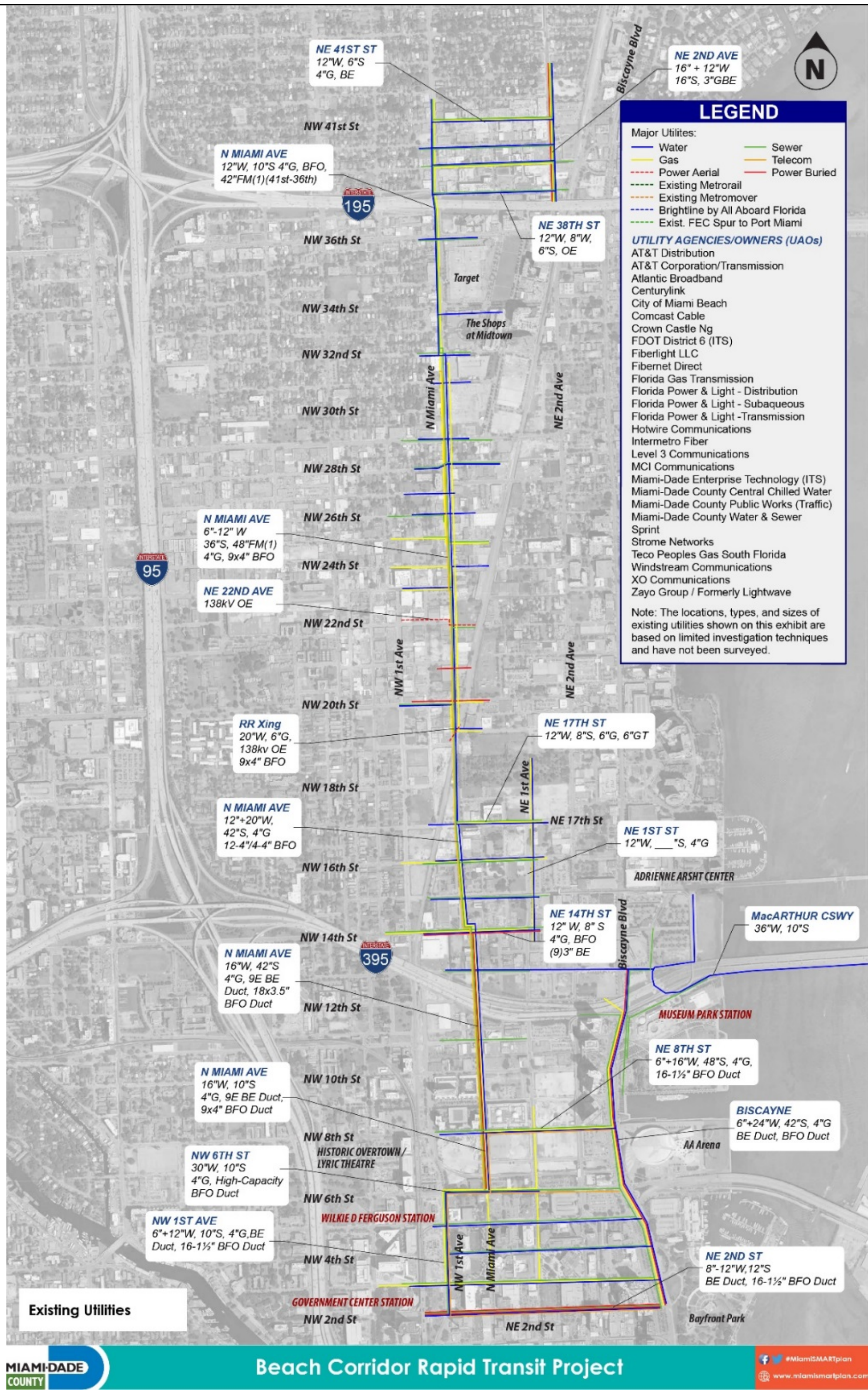


Figure 2.13 | Existing Utilities – Miami

Figure 2.14 | Existing Utilities – Bay Crossing and Miami Beach

3 PURPOSE, GOALS, AND EVALUATION CRITERIA

A draft purpose and need statement was developed to guide this Tier One Evaluation, including the identification of project goals and evaluation criteria. The statement will be further refined as the project development process progresses.

3.1 PROJECT CORRIDOR

The Miami-Dade County DTPW is conducting a PD&E study for the Beach corridor in collaboration with the FTA and FDOT. The study areas is shown below in **Figure 3.1**:

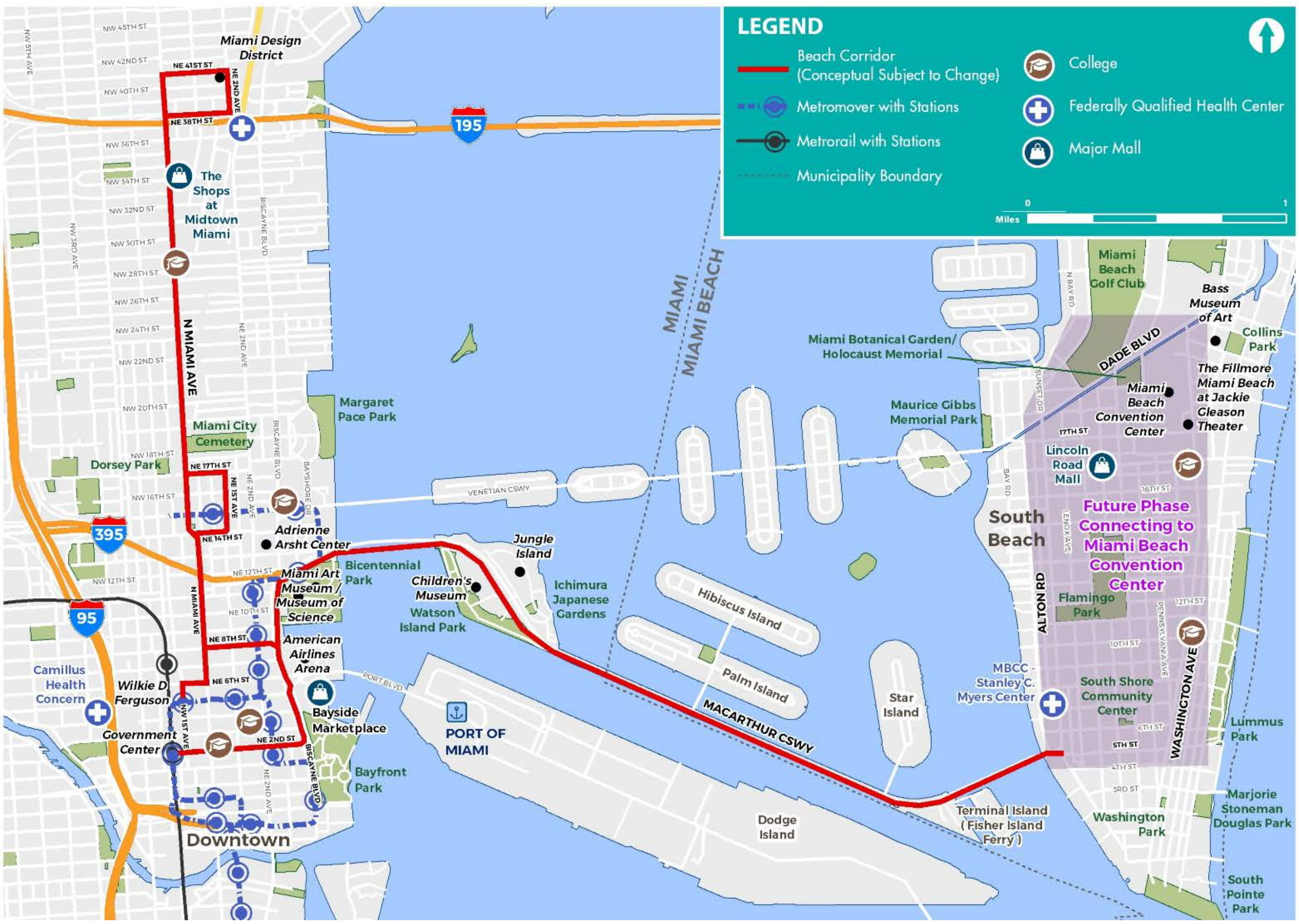


Figure 3.1 | Study Area

3.2 PROJECT PURPOSE

The purpose of the project is to increase the person-throughput to the Beach corridor's major origins and destinations via rapid-transit technology.

3.3 PROJECT NEED

The Beach corridor traverses an area which is at the epicenter of population and economic growth within Miami-Dade County. The central business district (CBD) area and Miami Beach within the county have undergone rapid population and employment increases over the past decade, a pattern that is projected to continue over the next 20 years. The population densities in the study area are among the highest in the nation, with Downtown Miami (CBD) at 17,800 persons per square mile and Miami Beach at 11,500 persons per square mile, per the 2010 U.S. Census. Downtown Miami saw a dramatic 172 percent increase in population density over the last decade.

Due to the region's appealing qualities, including its temperate climate, attractive beaches, and convenient access to the Caribbean and Latin America, Miami-Dade County has become an important tourist destination for both national and international visitors and hosts millions of annual visitors and seasonal residents. Visitors typically access the study area via tour bus, taxi, or rental car.

Miami Beach and Downtown Miami are the two most popular locations for overnight stays, lodging 60 percent of all 2012 visitors with approximately 5.8 million and 2.4 million overnight guests, respectively. Additionally, four of the six most-visited attractions are in close proximity to the beach corridor, including South Beach, the beaches, Lincoln Road, and Downtown Miami. The study area also contains PortMiami. In 2013, 4.1 million cruise ship passengers used the port, up from 3.4 million in 2000. This high rate of tourism generates additional demand for travel, produces additional trips within the area, and contributes to traffic and subsequently roadway congestion. The 2012 Visitor Industry Overview, a survey that reached 13.4 percent of all visitors that year, listed traffic congestion as the top negative aspect of trips to greater Miami. Traffic congestion has been the top-ranked problem in each of the last five annual surveys.

The project corridor includes two distinct segments: an east–west connection between Miami Beach and Downtown Miami (approximately 5 miles), and a north–south connection between the Design District/Midtown and Downtown Miami (approximately 3 miles).

In the east–west segment, I-195 is operating at capacity and I-395 is experiencing traffic volumes that exceed its capacity by more than 50 percent. Existing bus transit service in the east–west corridor serves more than 17,000 riders per day, with the two most frequent routes at 72 percent and 89 percent of their existing capacity, respectively.

The north–south segment is served by several local streets, operating at between 60 and 90 percent of capacity. The most frequent bus service in the north–south corridor operates at 87 percent capacity, while Metromover operates at 85 percent capacity. Currently, in the peak periods, transit travel times along the north–south and east–west segments are more than double the automobile travel times. Average automobile volumes in the corridors serving the study area range from 39,000 along arterial roadways to 97,000 along I-395.

The upsurge in tourism, residential growth, and economic redevelopment in the study area have all generated additional demand for travel. Yet, the study area's growth and development is constrained by its natural geographic boundaries that significantly limit the availability of land for additional roadways and parking.

To retain and continue to attract such growth, more core capacity is needed to maintain mobility essential to sustainable growth.

3.4 PROJECT GOALS

The draft project purpose and need serves as the basis for project goals and evaluation criteria relating to the following:

- Connect to and provide direct, convenient, and comfortable rapid transit service to serve existing and future planned land uses
- Provide enhanced interconnections with Metrorail, Tri-Rail, Brightline, Metromover, Metrobus routes, Broward County Transit (BCT) bus routes, Miami and Miami Beach circulators, jitneys, shuttles, taxis, Transportation Network Companies (TNCs), and/or other supporting transportation services
- Promote pedestrian- and bicycle-friendly solutions in the corridors of the study area

3.5 TECHNOLOGIES CONSIDERED IN TIER ONE EVALUATION

DTPW identified the following transit technologies (modes) for consideration in the Beach Corridor Rapid Transit Project Tier One Evaluation:

- Automated guideway transit
- Streetcar/light rail transit
- Heavy/third rail transit
- Bus rapid transit
- Aerial cable transit
- Monorail
- Autonomous/connected vehicle transit

3.6 EVALUATION OF TECHNOLOGY/MODAL CHARACTERISTICS

The first step in the Tier One Evaluation was to identify the following key characteristics of technology/mode:

3.6.1 Typical Application of the Technology

- Line length: The typical length of individual lines in a system using the specified technology.
- Stop spacing: The typical distance between stops that is characteristic of the specified technology and mode
- Transit right-of-way: The operating environment of the mode, which may include mixed traffic (lane shared with general traffic), semi-exclusive (separate lane, stopping at intersections), exclusive (grade-separated), or a combination of these operating environments.
- The average operating speed typically achieved. Each technology has a maximum operating speed, but the average operating speed is influenced by constraints within the alignment such as grades, curves, deceleration and acceleration upon entering and exiting stations, stop spacing and, for modes operating at-grade and in mixed flow, traffic conditions and congestion.
- Peak service frequency
- Capital cost/mile
- Operating cost/mile

3.6.2 Technological Features and Requirements

- Vehicle length (single car)
- Passenger capacity per car/train: most rail vehicle technologies allow for "coupling" of train cars into "train sets." Additionally, light rail vehicles are offered as "articulated' cars of varying lengths, made up of multiple sections.
- Minimum turning radius: the tightest turn that a given transit technology is capable of making.
- Maximum grade: the steepest grade that a given transit technology is capable of climbing.
- Propulsion system: the power source and type of motor used to move the transit vehicle.
- Level boarding: The vehicle floor level at entry is level with the passenger platform.
- Low floor: The percentage of total vehicle floor area that is at the same level as the boarding level.

3.7 REPRESENTATIVE ALIGNMENT DEVELOPMENT AND SCREENING

To support the Tier One Evaluation of transit technologies/modes, alignment alternatives by mode were developed and screened to allow the evaluation of a representative alignment for each mode, including the identification of study area segments and, as applicable, operational concepts for serving the major origin and destination pairs.

The initial development and screening asked the following questions regarding the representative alignment:

- Is it duplicative of existing premium transit?
- Is it near existing transit to allow for integration?
- Is it serving existing/future land use, particularly mixed-use/high-density?
- Is it maximizing accessibility from surrounding areas?
- Can it incentivize redevelopment, increase densities, or lead to land-use changes?
- Is it efficient in terms of operations (ability to provide service to Midtown without having to go all the way to the beach and back)?
- Can the proposed alignment for premium transit fit within existing rights-of-way?
- Can we optimize existing rights-of-way (potential use of existing publicly owned lands)?
- Can we minimize construction costs and impacts by limiting the number of Florida East Coast (FEC) railway crossings, I-95/I-395/I-195 crossings, and Metrorail/Metromover crossings?
- Can we minimize potential impacts to major utilities?
- Can we minimize potential impacts to historic and environmental features?

The purpose of the representative alignments is to provide enough specificity about the application of each mode to the corridor to allow for a comparative evaluation of the modes. For those modes advancing to Tier Two, additional alignment alternatives will be developed in an effort to minimize costs and impacts, to improve performance, and to respond to additional public and agency feedback. The alignment alternatives study areas for Tier Two evaluation are discussed further in Section 5, Alternatives Evaluation.

3.8 TIER ONE EVALUATION CRITERIA FOR MODES AND REPRESENTATIVE ALIGNMENTS

The technology characteristics of each transit mode were considered in the context of the representative alignments, allowing for evaluation of the following criteria:

3.8.1 Transit Performance Criteria

- Interoperability and modal integration: The compatibility of the proposed mode with other existing and proposed transit modes, including the availability of one-seat rides between significant origins and destinations, the number of transfers required for trips between significant origins and destinations, and the horizontal and vertical separation between modes at significant transfer points.
  - Interoperability: The ability to operate contiguously as an extension of an existing technology/mode, offering one-seat rides, economies of scale in operations and maintenance, and the potential for a shared fleet/operations and maintenance facility.
  - Modal integration: Because there are several existing modes in operation in Miami, and because of limitations on the transit mode options that the City of Miami Beach is willing to consider, the Beach Corridor Rapid Transit Project will feature some transfers between modes for many of the possible trip origins and destinations. The quality of these intermodal connections in terms of the ease and location of transfer will influence the ridership of both the selected beach corridor technology and the overall transit system ridership.
- Operational speed and reliability: The average operating speed of the mode on the representative alignment, and the proportion of trips that are likely to achieve the scheduled times and/or headways.
- Resiliency: Considering the effects of climate change, including sea level rise and the increased frequency and severity of weather events, the relative resiliency of the mode to changing climatic conditions.
- Passenger capacity: The number of passengers that the mode can accommodate with a given service plan, as determined by the passenger capacity of vehicle technology, the average operating speed of the mode given the representative alignment, and the number of vehicle trips that will be required to meet the service plan. Adjustments to the operating plan to meet passenger demand will be considered in the Tier Two evaluation.
- Vehicle reliability and safety.
- Passenger amenities: Air-conditioning, ride comfort, passenger information systems, etc.

3.8.2 Technological Features and Requirements

- Scale/urban fit: The relationship of the infrastructure required by the transit mode to the scale of the pedestrian environment and the built environment, and the ability to fit the infrastructure into existing rights-of-way.
- TOD compatibility: The ability of the mode to support or catalyze TOD at station areas as influenced by the cumulative effects of the capacity of the mode and the compatibility of the mode with the scale of the built environment at station areas.
- Pedestrian/bicycle access: The positive or negative contribution of the mode to pedestrian and bicycle access in the corridor. This includes impacts of the infrastructure to pedestrian and bicycle facilities, as well as the potential for passengers to bring bikes onto the transit mode.

3.8.3 Environmental Effects Criteria

- Natural resources impacts
  - Wetland and other surface waters
  - Protected species and habitat
  - Coastal
  - Floodplain
- Socioeconomic impacts
  - Social/economic
  - Mobility
  - Relocation potential
  - Cultural
  - Historic/archaeological resources
  - Recreational facilities
  - Visual and aesthetic

- Physical impacts
  - Contamination
  - Noise and vibration
  - Air quality

3.8.4 Technological Features and Requirements

- Constructability: The ability to construct the project within the typical range of cost for the mode; cost-effectiveness to be considered as part of Tier Two Evaluation. This criterion addresses constraints and characteristics of the corridor which would influence the capital cost of a given transit mode as applied to this corridor.
- Operating cost: The ability to provide transit service of sufficient capacity to serve projected demand within the typical range of cost for the mode; cost-effectiveness to be considered as part of Tier Two Evaluation. This criterion considers the frequency of service that would be required for a given transit mode to provide sufficient capacity in this corridor.
- Eligibility for funding: The ability to meet required and desirable characteristics for federal funding, including ADA, Buy America, and service-proven technology.

4 SUMMARY OF TRANSIT TECHNOLOGIES AND MODES

4.1 INTRODUCTION

This section provides summary information about each transit technology/mode that is considered in the Tier One Evaluation, including the following topics:

- Technological features: Size and capacity of the transit vehicles, propulsion systems, guideway characteristics (such as elevated or at-grade), and the minimum turning radius and maximum grade capabilities of the vehicles. Unique characteristics such as battery technologies, passenger amenities, and safety are also addressed as applicable.
- Modal application: The typical application of the technology with respect to stop spacing, average operating speed, and total length.
- Alignment and station locations: A representative potential alignment and station locations that would be feasible for the beach corridor are identified, including a minimum operable segment that connects from Downtown Miami to Fifth Street and Alton Road in Miami Beach.
- Key constraints, and cost and feasibility issues: For each mode and alignment, any constraints that are significant to either the cost to build and operate the system or the feasibility of effective operations.
- The characteristics of the transit technologies/modes are summarized in Figure 4.1 and described below. Transit modes are evaluated in Section 5, Alternatives Evaluation.

4.2 AERIAL CABLE TRANSIT (AERIAL TRAM/GONDOLA)

4.2.1 Technology and Modal Characteristics

Technological Features: Aerial cable transit (ACT) is a technology that uses tensioned cables to support and propel suspended passenger cabins. On-board rechargeable batteries provide power for equipment such as lighting and doors. Air-conditioning is typically not provided, although there are systems in development that provide air-conditioning for short distances or durations (less than 5 minutes).

There are two types of ACT systems: detachable gondolas and fixed aerial trams. Gondolas feature small passenger cabins ranging from 8- to 35-passenger capacity depending on the number of cables used to support the cabin. Multiple closely-spaced gondolas travel in a loop, allowing for headways as short as 15 seconds. The maximum capacity of a gondola system is 5,000 passengers per hour per direction (assuming a tri-cable gondola with 35-passenger cabins operating at 15-second headways). Gondolas do not come to a complete stop at stations—passengers board slowly moving vehicles (50 feet per minute). To meet ADA, attendants are required at each station to assist passengers and, if necessary, stop the vehicles during boarding.

Aerial trams operate like elevators, traveling back and forth along the same cable. They feature larger passenger cabins than gondola systems (up to 200 passengers), but headways are limited by the end-to-end travel time, and therefore capacity is lower (500 to 1,500 passengers per hour per direction).

Modal Application: Aerial trams are typically implemented to make short-distance connections (1 mile or less) without intermediate stops to address issues such as steep grades or water crossings. Gondola systems can accommodate more station stops and have been implemented for lines of up to 6 miles.

Examples: The Portland Aerial Tram carries passengers from Portland's South Waterfront area to Oregon Health and Sciences University (OHSU), which includes a hospital/medical center. The tram alignment is 3,300 feet and rises 500 feet from the South Waterfront to OHSU. The tram cabins can accommodate up to 78 passengers and travel at up to 22 miles per hour, though they slow to a near stop at the midway point as they move through a

The Portland Aerial Tram connects the South Waterfront area to the OHSU medical campus.

	Automated Guideway Transit	Light Rail Transit			Heavy Rail Transit	Bus Rapid Transit		Aerial Cable Transit		Monorail	ATS
		Streetcar	Tram	Light Rail		Arterial BRT	Busway BRT	Gondola	Aerial Tram		
Typical Application											
Line Length	2-5 miles	2-5 miles	6-15 miles	15-30 miles	20-40 miles	10-20 miles	10-50 miles	1-3 miles	.5-1 miles	15-20 miles	TBD
Stop Spacing	.50 miles	.25 miles	.25-.50 miles	.50 miles	.25-2 miles	.50 miles	.75 miles	.50 miles	.50 miles	.50 miles	TBD
Transit Right-of-Way(1)	Exclusive	Mixed	Semi-Exclusive	Semi-Exclusive to Exclusive	Exclusive	Semi-Exclusive & Mixed	Exclusive	Exclusive	Exclusive	Exclusive	Semi-Exclusive & Mixed
Average Operating Speed	20 mph	10 mph	20 mph	35 mph	45 mph	20 mph	35 mph	15 mph	18 mph	35 mph	20 mph
Peak Service Frequency	2-6 mins.	10-15 mins.	6 mins.	6-10 mins.	2-10 mins.	10-12 mins.	8-12 mins.	15-60 secs.	4-15 mins.	4-10 mins.	4 mins.
Capital Cost/Mile	$100 Million	$40 Million	$60 Million	$75 Million	$200 Million	$10 Million	$25 Million	$55 Million	$60 Million	$110 Million	$10 Million
Technological Features & Requirements											
Vehicle Length (Single Car)	42′	66′ to 82′	120′ to 155′	82′ to 92′	70′ to 350′	60′	60′	15′	25′	42′	TBD
Passenger Capacity Per Car/Train	50/200	120/car	265 to 340/car	225 car/ 900 train	170/850	100	100	6-15	50-100	85/350	TBD
Minimum Turning Radius	98′	82′	82′	82′	90′	42′	42′	N/A	N/A	98′	TBD
Maximum Grade	10%	9%	7%	7%	6%	10%	10%	30%	30%	10%	TBD
Propulsion System(2)	AC Third Rail	DC OCS or OESS	DC OCS, OESS or APS	DC OCS	DC Third Rail	Diesel, CNG, Battery, DC OCS	Diesel, CNG, Battery	Haul Cable	Haul Cable	DC Third Rail	TBD
Level Boarding	✓	Optional	✓	✓	✓	Optional	Optional	✓	✓	✓	TBD
Low Floor	100%	50%-100%	100%	50%-100%	100%	0%-50%	0%-50%	100%	100%	100%	TBD
Representative System	Metromover	Seattle Streetcar	Team de Bordeaux	MAX (Portland)	Metrorail	Healthline (Cleveland)	RIT Curitiba (BR)	La Paz, Bolivia	Roosevelt Island, NY	Las Vegas, NV	N/A

Transit Right of Way(1)
Transit Right-of-Way: Operating environment of the mode, which may include mixed traffic (lane shared with general trafffic), semi-exclusive (separate lane, stopping at intersections), exclusive (grade-separated), or a combination of these operating environments.

Propulsion System(2)
Propulsion System: OCS=Overhead Contact System; OESS=On-Board Energy Storage System (Batteries or Supercapacitors); APS=Embedded powerrail.

MIAMI-DADE COUNTY | Beach Corridor Rapid Transit Project | Mode & Technolgy Characteristics | #MiamiSMARTplan www.miamismartplan.com

Figure 4.1 | Mode and Technology Characteristics

Figure 4.2a | Aerial Cable Transit Representative Alignment – Miami

Figure 4.2b | Aerial Cable Transit Representative Alignment – Biscayne Bay/Miami Beach

support tower. With two trams in operation and an end-to-end travel time of 4 minutes, the typical headway is approximately 6 minutes. The cost to construct the tram was $57 million (in 2006 dollars). The round-trip fare is $4.70, but annual passes are available for $100, and annual/monthly passes for Portland light rail, bus, and streetcar are accepted as free transfers. As a result, the cost for daily riders is much lower than the cost for tourists or infrequent users.

4.2.2 Representative Alignment

As shown in Figures 4.2a and 4.2 b, the representative alignment for Tier One Evaluation includes a station north of I-395, which would provide access to the Metromover at Museum Park via a pedestrian bridge, and an alignment that generally follows MacArthur Causeway, including a Watson Island stop.

4.2.3 Key Constraints and Cost/Feasibility Issues

Geometric Constraints: Because ACT runs on suspended cables, the horizontal alignment must be straight between each station. Without the flexibility to make turns that follow roadways in an urbanized area with high-rise buildings, the technology is limited to the minimum operable segment with one station at each side of Biscayne Bay and an intermediate station at Watson Island. ACT does not appear to be a feasible technology to provide circulation to and within the Miami Design District and Downtown Miami.

Operational Constraints: With a maximum operating speed in the 15–20 miles per hour range, the travel time across the bay would be approximately 15 minutes, which is comparable to current travel times by bus transit. The capacity of the system, which could be in the range of 1,000–4,000 passengers per hour per direction, may not be sufficient to accommodate demand in the corridor.

4.3 AUTOMATED GUIDEWAY TRANSIT (METROMOVER EXTENSION)

4.3.1 Technology and Modal Characteristics

Technological features: Automated guideway transit (AGT) is a fully-automated transportation system with driverless vehicles operating on fixed guideways and exclusive rights-of-way (elevated in urban areas or in tunnels at airports). AGT trains operate on a two-rail guideway system with either rubber tires on concrete or steel guideway or steel wheels on steel rail.

Typically, AGTs, regardless of the technology or manufacturer, are defined by the following characteristics:

- Driverless/fully automated
- Operate on fixed guideway (usually elevated)
- Vehicles have rubber tires on concrete or steel surface

Miami currently has an AGT system in place, which is known as the Metromover. The existing vehicles have an overall body length of 39 feet, 8 inches, and body width of 9 feet, 4 inches. The minimum turning radius of the CX100 vehicle is 75 feet, and the maximum grade is 10 percent. The maximum operating speed is 25 miles per hour, but newer vehicles are expected to be able to achieve speeds of 35 miles per hour. In Downtown Miami, curves and stop spacing limit the Metromover to average operating speeds of 10 miles per hour, but AGT would be able to travel at or near the maximum operating speed for the bay crossing segment of the alignment.

Modal Application: Because the maximum operating speed of an AGT is lower than that of other rail modes operating on exclusive guideways, it is typically applied to relatively short corridors of 2–5 miles in length, with stop spacing of 0.25–0.5 miles.

Examples: Miami's Metromover is an automated, driverless, rubber-tired people-mover system located in the highly urbanized area of Downtown Miami. The original Metromover vehicle was the C100 vehicle, named because of its nominal capacity of 100 passengers. This specific AGT system design has been owned by multiple companies, and the name evolved to be the CX-100 vehicle, and then the Innovia vehicle for later versions. Currently, the Metromover vehicle design is owned and manufactured by Bombardier.

The Metromover system is a fully elevated AGT that spans an approximate system length of 4.4 miles with stations typically located every three city blocks. There are 21 stations extending from SW 14th Street in the Brickell financial district to the school board at NW 15th Street. Service on the Brickell and Omni loops is in a counterclockwise direction, while the service on the downtown loops is in a clockwise direction. Connections to Metrorail are provided at the Government Center and Brickell stations. The Third Street station is a transfer station for transfers between the Omni and Brickell loops, while the Arena/State Plaza station is a transfer station between all three loops. There are two stations (Fifth Street and Riverwalk) located immediately on either side of the Miami River that are approximately 70 feet above grade due to navigational clearance requirements over the Miami River.

The CX-100 vehicles can reach a maximum speed of approximately 32 miles per hour, but because the stations are closely spaced and there are numerous turns in the downtown alignment, the average operating speed of the system is 10 miles per hour.

4.3.2 Representative AGT Alignment

For the purposes of Tier One Evaluation of this technology, the AGT mode is assumed to follow the alignment shown in Figures 4.3a and 4.3b. This alignment connects to the existing Metromover system at three locations: the vicinity of the Wilkie D Ferguson, Jr., station (enabling connection to the Government Center station for transfer to Metrorail, bus, and the upcoming Brightline rail system), the Museum Park station, and between the First Street and College Bayside stations. The Metromover extension would be a spur of the existing Omni Loop east of the Museum Park station, which would then follow the MacArthur Causeway alignment to Miami Beach, and the westbound route would rejoin the Omni Loop east of the Arsht Center station.

The potential alignment traversing Biscayne Bay may utilize separate bridge structures (parallel to the existing bridges carrying I-395/MacArthur Causeway vehicular traffic) and generally follow a path on the south side of the existing Interstate. An additional alignment option can be considered at Watson Island in concert with a future proposed development, as shown in the figure.

Figure 4.3a | Metromover Extension Representative Alignment – Miami

Sensitive

Figure 4.3b | Metromover Extension Representative Alignment – Biscayne Bay/Miami Beach

4.3.3 Key Constraints and Cost/Feasibility Issues

Geometric Constraints: The Metromover's relatively small minimum turning radius and grade-separated nature allows this technology to navigate within the geometric constraints of the existing built environment, thus minimizing the need to acquire rights-of-way. It is possible that some existing on-street parking along N Miami Avenue, NW Fifth Street, and NE Second Avenue may be removed to accommodate the support structure of the elevated guideway system. Crossings with the planned reconstruction of the I-395 viaduct through the downtown area should be evaluated and will be further analyzed during the Tier Two phase.

Profile Constraints: Elevated guideway structures would be able to cross over existing structures or limited-access roadways.

Operational Constraints: Operating on a grade-separated guideway allows this technology to perform at consistent speeds and on a reliable schedule.

4.4 BUS RAPID TRANSIT

4.4.1 Technology and Modal Characteristics

Technological Features: Bus rapid transit (BRT) typically features 60-foot articulated buses, raised platforms at stations for near-level boarding, station amenities such as off-board fare payment and real-time arrival information, and some level of priority for operations, such as bus-only lanes and transit signal priority. Some BRT projects feature a "busway," with exclusive, grade-separated operations. Some BRT vehicles feature left-sided doors to accommodate center-running alignments and center-platform stations. BRT vehicles may be traditional diesel-powered buses, or may be powered with compressed natural gas (CNG), or battery-electric propulsion systems. The bus batteries can be charged during short station stops (station charging) or during longer layovers at terminus stations/maintenance facilities (depot charging). New technologies in development in China combine many of the characteristics of rail vehicles into a rubber-tired vehicle that offers passenger capacity, ease of access and ride comfort similar to rail vehicles without the expense of track installation (trackless train technology). If this technology becomes viable, it could likely be implemented at a cost closer to that of BRT than that of LRT.

Battery-powered buses and charging facilities.

Omnitrans sbX E Street BRT Vehicles, San Bernardino, California.

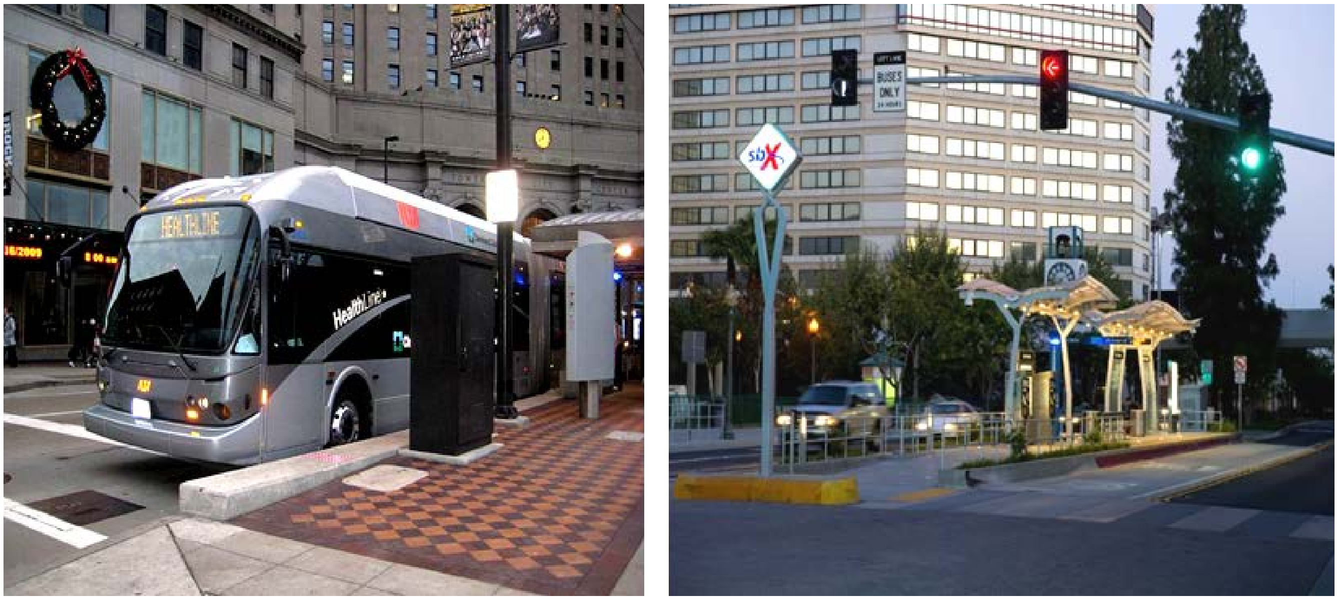

CRRC Corporation of China is developing a bus that offers a rail-like experience.

BRT stations range from simple platforms at sidewalk level with shelter/canopy structures and amenities such as off-board fare collection and real-time arrival information, to grade-separated structures similar to light rail stations, providing in-line stops in a highway right-of-way.

Modal Application: BRT typically employs low-floor, 60-foot articulated buses for easier access and higher capacity, operating with limited stops and enhanced stations (typically spaced 0.5–1 mile apart), faster operating speed due to transit signal priority (TSP) at intersections, and frequent headways (typically 5–10 minutes during peak hours). These capital investment elements ensure faster operating speeds, greater reliability of service, and increased convenience and passenger amenities.

Examples: Within the range of approaches and capital improvements, BRT can include buses using dedicated lanes (such as the Omnitrans sbX E Street BRT corridor in San Bernardino, California,); exclusive busways (such as the 19.8-mile South Miami-Dade Busway); shared high-occupancy vehicle (HOV) lanes for Express bus operations; or improved bus service in mixed-traffic flow on city streets.


South Miami-Dade Busway.



Cleveland Euclid Corridor HealthLine BRT (left) and Omnitrans sbX E Street BRT (right).

4.4.2 Representative BRT Alignment

As shown in Figures 4.4a and 4.4b, the representative BRT alignment developed for Tier One evaluation was assumed to operate on surface streets in the Midtown Miami/Design District and Downtown Miami, and in an exclusive busway on MacArthur Causeway, making 12 station stops for an average spacing of approximately 0.65 miles. The representative alignment assumes side alignment/stops, but center-running/center-platform configurations may be feasible for some segments of the alignment, which can be evaluated in Tier Two. Additional alignment considerations for Tier Two are discussed in Section 5.

The southbound/eastbound BRT route from the Institute of Contemporary Art in Midtown Miami to 5th Street/Alton Road in Miami Beach would depart from the Institute station at NE 2nd Avenue and travel south, turn right (west) onto NE 40th Street, then turn left (south) onto Miami Avenue, and continue to the 34th Street station (The Shops at Midtown Miami). The route would continue south on Miami Avenue to the 27th Street station, continue south to the 17th Street station, continue south to the 9th Street station, and then the route would turn right (west) on NW 6th Street to the NW 6th Street/Miami station. The route would continue west and then turn left (south) onto NW 1st Avenue to the NW 2nd Street station (Government Center and Metromover/Metrorail stations). The route would turn left (east) on NW 2nd Street and continue to the NE 2nd Avenue station (First Street Metromover station). The route would turn left (north) on Biscayne Blvd. and continue to the Biscayne Blvd./Port Blvd. station, then continue north and turn right (east) onto the on-ramp for the MacArthur Causeway, with a stop at Bayshore Drive and the on-ramp (Museum Park Metromover station). The route would continue east on MacArthur Causeway to the Miami Children's Museum station on Watson Island, and then continue east on the Causeway to the terminal station at 5th Street and Alton Road in Miami Beach. The 7.56-mile eastbound alignment includes a total of 12 stations with average spacing of 0.63 mile.

The westbound/northbound BRT route from the 5th Street/Alton Road station in Miami Beach to the Institute of Contemporary Art in Midtown Miami would depart from the 5th/Alton station, travel west on the MacArthur Causeway, and continue west to the Miami Children's Museum station on Watson Island. The route would continue west to the Biscayne off-ramp and the Biscayne/NE 13th Street station. The route would turn left (south) on Biscayne Blvd. and continue south to the 5th Street/Biscayne station (opposite the NB Biscayne/Port Blvd. station). The route would turn right (west) on NE 1st Street and continue to the NE 1st Street/NE 3rd Avenue station (near First Street Metromover station), then turn right (north) on NW 1st Avenue and continue to the NW 1st Avenue/NW 2nd Street station (Government Center and Metromover/Metrorail stations). The route would continue north on NW 1st Avenue and turn right (east) on NW 5th Street, continue east to the NE 5th Street/NE 1st Avenue station (College North Metromover station), then turn left (north) on NE 1st Avenue. The route would continue north on NE 1st Avenue to the NE 1st Street/NE 9th Street station, then turn left (west) on NE 17th Street, then turn right (north) to the 17th

Street station on Miami Avenue. The route would continue north on Miami Avenue to the 27th Street station, then on to the 34th Street station (The Shops at Midtown Miami), then turn right (east) on NE 41st Street, then turn right (south) on NE 2nd Avenue, and terminate at the Institute of Contemporary Art station. The 8.01-mile westbound alignment includes a total of 12 stations with average spacing of 0.67 mile.

Figure 4.4a | BRT Representative Alignment – Miami

Figure 4.4b | BRT Representative Alignment – Biscayne Bay/Miami Beach

4.4.3 Key constraints and Cost/Feasibility Issues

The representative alignment roadways are congested, especially in the urban core areas, which could limit the speed and reliability of service. Converting general-purpose lanes to transit-only lanes may be feasible for portions of the alignment, which will improve speed and reliability. These opportunities will be evaluated in Tier Two.

4.5 HEAVY RAIL TRANSIT (METRORAIL EXTENSION)

4.5.1 Technology and Modal Characteristics

Technological features: The heavy rail transit (HRT) options in this study will connect to the existing Metrorail system that is operated by DTPW. The existing system consists of two lines (Green and Orange) and includes 23 stations and a little more than 24 miles of track. Through the downtown area, the system is entirely aerial, on a dedicated, grade-separated right-of-way. Station platforms are typically 456 feet in length, with track alignments that allow for expansion to an ultimate length of 616 feet. The 456-foot length allows for operations of a six-car train, and ultimately an eight-car train. Currently, operations include both four-car and six-car trains.

The vehicles are 75 feet long (coupler-to-coupler) and 10 feet, 3 inches wide over the door threshold. Seating capacity is approximately 76, with “crush loading” of approximately 250 passengers per car. A four-car trainset could carry 304 seated passengers and 1,000 total passengers. The vehicles are propelled by AC propulsion equipment, powered by a 750-volt AC contact rail system.

Although the vehicles can traverse a curve with a radius as small as 250 feet (low-speed yard operations), the mainline design criteria specify a desired minimum radius of 1,000 feet (with smaller values requiring DTPW approval). It is anticipated that the future east–west corridor extension may involve a mainline radius of 350 feet. The design criteria indicate a maximum desired grade of 3 percent, but will allow 4 percent with DTPW approval.

Miami’s elevated Metrorail HRT

Modal Application: HRT offers very high capacity with high speed and reliability, and therefore is typically applied to routes that serve high-density origins and destinations and may include both short and long trip lengths. HRT is typically implemented as a subway in dense urban areas, transitioning to elevated or fully exclusive at-grade alignments outside of the center city.

Stations on HRT alignments are typically spaced at 1-mile intervals on average. Frequently, the spacing of downtown stations is closer, and those further from the CBD are spaced a little farther apart, with the existing DTPW lines being no exception.

Although the vehicles and most horizontal curves are designed for a maximum operating speed of 70 miles per hour, DTPW limits operations to 58 miles per hour (which is the next-lower speed setting on the automatic train operations controller). When station stops and other restrictions are included, the average speed on the existing system drops to somewhere near 27–31 miles per hour.

Examples: The heavy rail options in this study will connect to the existing Metrorail system that is operated by DTPW. Similar HRT systems operate in many other cities, including Washington, D.C.; Baltimore, Maryland; Dallas, Texas; and San Francisco, California.

4.5.2 Representative HRT Alignment

A representative alignment for extension of Metrorail is shown in Figures 4.5a and 4.5b. The eastern extension that eventually crosses the bay connects to the existing system, with No. 15 turnouts just south of the existing Overtown/Arena Rail station. The alignment turns east and traverses NW and NE Second streets until it turns north along Biscayne Boulevard/US 1, then crosses the bay on a new structure immediately south of MacArthur Causeway/SR A1A, terminating in Miami Beach along Fifth Street/SR A1A. The large turning radius requirments for Metrorail limit the alignment options. Therefore, there would be separate spurs for connections to the Design District and to Miami Beach, and many origin-destination pairs would require transfers and out-of-drection travel.

The northern extension connects to the existing system on the east–west tangent (north of NW 11th Street) between the existing Culmer and Overtown/Arena Rail stations. The connections are made with No. 15 turnouts, and could not be made closer to the Overton/Arena station because of inadequate tangent lengths. The alignment goes east along NW 11th Street, and then turns north along N Miami Avenue.

Figure 4.5a | Metrorail Extension Representative Alignment – Miami

Figure 4.5b | Metrorail Extension Representative Alignment – Biscayne Bay/Miami Beach

4.5.3 Key Constraints and Cost/Feasibility Issues

Within the City of Miami area, there are several large buildings that conflict with the proposed alignment, even when using radii that are less than desired. Therefore, a Metrorail extension to serve the Beach corridor would have very high costs for property acquisition and significant impacts to economic development. A tunnel alignment could be considered, but similar impacts would result from the need to construct large tunnel portals and to purchase and clear private parcels for the approach segments for transitions from elevated to subway line segments. In a National Environmental Policy Act (NEPA) environmental process, the availability of reasonable alternatives to a Metrorail extension, and the degree of environmental/social impacts would make it unlikely that a Metrorail extension for the beach corridor could be approved and survive legal challenges.

The representative alignment would require two or three routes to provide service on the existing Metrorail routing, the Midtown/Design District route, and the direct connection to Miami Beach. The introduction of additional routes would adversely affect the frequency of service on the system. When two routes share a common section of track, the frequency of service within the common area is a combination of that of the two separate routes. For example, if each route has 10-minute headways, then the common portion will have 5-minute headways.

4.6 LIGHT RAIL/TRAM/STREETCAR

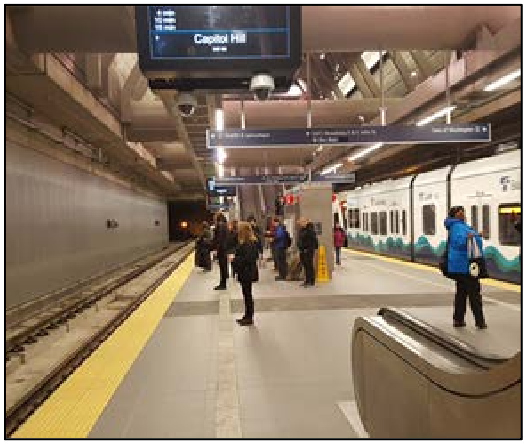
4.6.1 Technology and Modal Characteristics

Technological Features: Light rail vehicle (LRV) technology features railcars that operate on steel wheels/rails with electric propulsion, level boarding, air-conditioning, passenger information systems, and double-leaf doors. LRVs range from 8–10 feet in width and from 66-foot, three-section, single-unit trains (modern streetcar) to 400-foot, four-car trainsets (light rail transit or LRT) in length. Trams, as implemented in Europe, are typically five- to seven-section, single-unit trains ranging from 98–155 feet in length. LRVs also vary in their minimum turning radius and maximum grade capabilities and can be powered via an overhead contact, battery power, or embedded third-rail power system (the latter limited to trams comprised of at least five sections because of requirements for the length of the train). Streetcars and trams are now offered with a variety of off-wire technologies, allowing them to operate off-wire in some segments with power supplied via on-board rechargeable batteries or in-ground power systems. The off-wire capability can be applied to avoid overhead obstacles such as low-clearance bridges, or in areas where overhead wires are not locally acceptable for visual/aesthetic reasons. These vehicles offer “hybrid” operation, so they can operate with power from an overhead wire in segments where off-wire is not required. The battery-drive systems have significant range (for example, streetcars in Seattle travel off-wire for 3 miles on each round trip). The in-ground systems have unlimited range but require a somewhat longer, tram-style vehicle to provide adequate spacing of the in-ground electrical relays. This allows the power system to be safely turned on while the train passes over the power source and off when the train is not present.

Modal Application: Modern streetcars are typically operated in mixed-traffic flow at low speeds with relatively close stop spacing, with lines of up to 5 miles in length. Modern trams are typically operated in a mix of dedicated surface lanes and exclusive lanes at-grade, with varied stop spacing (tighter at the most central urban locations) and lines of 5–15 miles in length. LRT systems are typically operated in a mix of dedicated lanes and fully grade-separated guideways (elevated or subway), operating at high speeds over lines of 15–50 miles in length. Most of these differences in the typical modal application of the different LRV types are not mandated by the type of vehicle, so there is flexibility to customize the application of any of the modes to the needs of a given community and alignment, as noted in the examples below.

Examples:

- LRT
  - Seattle's Link light rail system operates primarily in tunnels and on elevated guideways, with a 3-mile, at-grade section that operates in an exclusive median with signal pre-emption at intersections. This system also features 400-foot platforms that can accommodate four-car trainsets. These features make it very similar to heavy rail in speed, reliability, capacity, and construction cost.



Link light rail arriving at a tunnel station in Seattle.

  - Portland's MAX light rail system features a broad range of applications, from tunnels and elevated guideways to at-grade operations through downtown Portland. The MAX platforms are shorter for a better fit with urban settings, which limits the operation to two-car trainsets.

Two-car MAX light rail train operating at-grade in downtown Portland.

- Tram
    - o The Tramway de Bordeaux in Bordeaux, France, uses trains with five to seven sections for greater capacity than streetcars, and uses a ground-level power supply to provide for off-wire operation through historic city center.

Off-wire operation of the Tramway de Bordeaux allows integration of the tram into the historic city center.

The Tramway de Bordeaux features an in-ground power-supply that is activated only when the tram is passing over the power rails.

- Streetcar
  - The Seattle Streetcar uses rechargeable batteries to power the streetcars through a 3-mile off-wire segment. These three-section streetcars operate primarily in mixed flow with general purpose traffic, but approximately 1 mile of the system operates in exclusive transit-only lanes that are shared with buses.

The Seattle Streetcar operating on battery power to avoid conflicts with the existing overhead trolley bus system.

4.6.2 Representative LRT Alignment

The representative alignment developed for Tier One evaluation, as shown in Figures 4.6a and 4.6b, would operate in an exclusive right-of-way, primarily on a new structure along the south side of MacArthur Causeway, and in a combination of mixed-flow and semi-exclusive lanes at-grade in Downtown Miami and Midtown/Design District. The alignment includes a Downtown Miami loop route, as well as a route that would continue north through Midtown/Design District before returning to Downtown Miami and the bay crossing. This would allow for operation of two routes—one of which would bet through-routed to Miami Beach, and the other that would return to the Design District via the downtown loop. The representative alignment assumes vehicles with off-wire capability for segments that cross beneath I-395, I-195, and certain downtown roadways.

The representative alignment assumes a three-section, 75-foot streetcar vehicle with 80-foot platforms, but could be adjusted to five-section, 98-foot tram technology; the type of off-wire technology and the length of the vehicle will be determined after Tier One. Additionally, after Tier One, side- and center-alignment options will be revisited and optimized. Additional alignment considerations for Tier Two are discussed in Section 5.

Sensitive

Figure 4.6a | Light Rail Transit Representative Alignment – Miami

Figure 4.6b | Light Rail Transit Representative Alignment – Biscayne Bay/Miami Beach

4.6.3 Key Constraints and Cost/Feasibility Issues

Geometric Constraints: This technology is one of the most flexible in its ability to conform to existing geometric constraints because of the tighter turning radii available with the tram and streetcar sub-technologies of LRT.

Profile Constraints: This technology is also flexible in terms of profile. It can operate at-grade through surface street intersection and transition onto elevated guideway structures as needed to cross over existing structures or limited access roadways.

Operational Constraints: This technology option would operate at-grade in Downtown Miami, which will limit speed and reliability due to congestion in the urban core. There may be opportunities to mitigate this limitation through the use of dedicated lanes and signal priority. Without dedicated lanes and signal priority, the surface street portion of the alignment will likely operate at average speeds of about 10 miles per hour; with dedicated lanes and priority, the average operating speed could be improved to about 15 miles per hour. In exclusive guideway across the bay, the average operating speed would be approximately 35 miles per hour.

4.7 MONORAIL

4.7.1 Monorail Technology and Modal Characteristics

Technological Features: Straddle monorail technology features railcars that operate on concrete beam guideways, with rubber drive wheels that run on the top of the beam and guide wheels running along the two sides. Traction power is supplied by a trolley wire mounted on the sides of the guideway beam, and electricity is picked up by shoes on the vehicle. Monorail vehicles are 10 feet wide and roughly 35–45 feet long (can vary by manufacturer), and may be operated in two- to eight-car trainsets. Monorails have a minimum turning radius of 130–150 feet and can handle grades as steep as 10 percent.

Modal Application: Monorails are operated on an exclusive guideway separated from vehicular traffic, typically via elevated structure supported by columns. The average length of a monorail system is about 10 miles with an average station spacing of 0.5–1 mile. Typical monorail systems are automated and operate at a top speed of 55 miles per hour.

Examples:

The Seattle monorail guideway in downtown Seattle.

Passengers wait to board the Seattle monorail.

4.7.2 Representative Monorail Alignment

As shown in Figures 4.7a and 4.7b, the representative alignment developed for Tier One evaluation would begin in the Design District and follow N Miami Avenue to the downtown area, where it would use NW First Ave, NE Second Street, and Biscayne Boulevard to make stops at locations such as Government Center, Bayfront Park, AA Arena, and Museum Park. The alignment would then cross the bay by following alongside MacArthur Causeway to the south, stopping at Watson Island, and Fifth Street and Alton Road. Additional alignment considerations for Tier Two are discussed in Section 5.

Figure 4.7a | Monorail Representative Alignment – Miami

Figure 4.7b | Monorail Representative Alignment – Biscayne Bay/Miami Beach

4.7.3 Key Constraints and Cost/Feasibility Issues

Geometric constraints: In the downtown area, the alignment must traverse some areas where right-of-way is tight, requiring curves that push the limits of what the infrastructure/vehicles can handle. Further engineering needs to be done to minimize impacts.

Operational constraints: The smaller-radius curves in the downtown area will impact the speed of the vehicles, creating a longer transit time through downtown and limiting the speed advantage that monorail technology has over AGT technology.

Safety requirements: National fire/life safety guidelines recommend a walkway located along one side or in the center of an aerial structure to provide an alternative means of moving passengers from the vehicle to a point of safety (i.e., the next station). If such a walkway is required for a new monorail system, the walkway would impact cost, environmental impact, and the ability to design a system that will fit within the constraints of the built environment. As part of the Tier Two evaluation, the safety issues and possible requirement for a walkway will be reviewed in detail with the Federal Transit Administration and local agencies.

4.8 CONNECTED/AUTONOMOUS VEHICLES–AUTOMATED TRANSIT SYSTEMS

4.8.1 Technology and Modal Characteristics

Technological Features: Autonomous vehicle technology uses advanced control systems and sensory information to navigate without human input. Connected vehicle technology incorporates information transmitted by other vehicles and by traffic signals. The combination of these technologies could allow vehicles to operate more efficiently on existing roadways, yielding higher capacity and higher average operating speeds. Together, autonomous and connected vehicle technology could be applied to vans or buses to create automated transit systems (ATS).

Modal Application: For the Tier One Evaluation, application of ATS to the Beach corridor is assumed to be a variation of the BRT mode, with the added characteristics of autonomous and connected vehicle features that may allow for more frequent and reliable service.

Examples: Currently, apart from fixed-guideway, automated-guideway transit systems, no fully autonomous transit operation exists. However, some transit operators are beginning to incorporate driver-assistive ATS technology into conventional transit vehicles for BRT operations in Minneapolis, Minnesota, and Eugene, Oregon. The Jacksonville Transit Authority is planning for conversion of the Jacksonville Skyway into the "Ultimate Urban Circulator," which would run automated shuttles on the elevated guideway system, rather than vehicles on tracks. This will allow for some future extensions to be at-grade, rather than limiting extensions to additional elevated segments.

There have been several demonstrations or pilots of fully autonomous transit vehicles, primarily in western Europe. Such demonstrations use small, electric, low-floor transit vehicles with capacities of up to 15 passengers and operating speeds of up to about 20 miles per hour. These projects suggest that the opening stages of functional autonomous transit will utilize small, electric vehicles on geofenced shuttle or circulator routes operating on exclusive right-of-way.

At the time of this report, no major high-occupancy bus manufacturer has a fully autonomous vehicle in production, and only one (Nova Bus/Volvo) offers driver-assistive technology on its vehicles. Mercedes-Benz is actively developing a semi-autonomous bus based on sensors now deployed on its Actros truck platform, and an electric bus manufacturer (Proterra) has partnered with the University of Nevada-Reno to pilot self-driving technology in Reno, Nevada.

Oklahoma City recently conducted an Autonomous Streetcar Study and recommend a pilot project that would introduce one driverless streetcar into operation on the new streetcar line that is scheduled to open in late 2018; the target date for implementation of the pilot project is 2021.

4.8.2 Example ATS Vehicles Currently Developed

4.8.3 Representative ATS Alignment

The ATS mode is assumed to follow the same alignment as the BRT option described in section 4.4.

4.8.4 Key Constraints and Cost/Feasibility Issues

Operational Constraints: ATS would realize siimilar average operating speeds and travel times as BRT (Table 4.1) when operating along the same routes with similar station spacing.

5 ALTERNATIVES EVALUATION

5.1 INTRODUCTION

The following transit modes are recommended for further evaluation because the Tier One Evaluation shows that these modes have the potential to meet the project goals of providing direct, convenient, and comfortable rapid-transit service, enhanced intermodal connections, and pedestrian- and bicycle-friendly solutions in the corridor.

- Monorail
- Automated guideway transit (AGT/Metromover expansion)
- Bus rapid transit (BRT)/Express Bus, including the potential to incorporate automated transit system (ATS) technologies
- Light rail transit/streetcar (LRT)

The potential to meet the project goals with these transit modes is demonstrated in the evaluation of these modes regarding transit performance; economic and community development benefits; environmental effects; and cost and feasibility; as shown in Figure 5.1 and described below. Based on the results oft of the Tier One evaluation, technologies that require at-grade operations or dedicated lanes in the urban congested core of Downtown Miami (LRT and BRT), will not be considered in Tier Two within those subareas. Bus technology applications will be limited to express bus alignments along the major expressways serving the study area and a potential for crossing the Bay area using a repurposed typical section for MacArthur Causeway.

The Tier One evaluation demonstrated that the recommended modes differ in their suitability to sub-areas of the study corridor. Four distinct segments were identified for consideration in Tier Two, with approximate study area boundaries indicated in Figures 5.2 and 5.3:

- Design District
- Downtown Miami
- Bay Crossing
- Miami Beach.

5.1.1 Recommended Tier Two Study Areas

The recommended Tier Two study areas for alignment alternatives by mode, as shown in Figures 5.2 and 5.3, are:

- Monorail: Recommended for study of alignment alternatives in the Design District, Downtown Miami, and Bay Crossing segments.
- Metromover: Recommended for study of alignment alternatives in all segments (Design District, Downtown Miami, Bay Crossing and Miami Beach).
- BRT/Express Bus: Recommended for BRT and/or Express Bus study from Downtown to Convention Center (with a repurposed typical section along the Causeway and a dedicated lane in Miami Beach) and Express Bus along a freeway loop alignment using I-95, I-195, I-395 in Miami and 5th street, Washington and Alton Roads in the Miami Beach segment.
- LRT/Streetcar: Recommended for study of alignment alternatives in the Design District, Bay Crossing, and Miami Beach segments.

For each of these study area segments and modes, the Tier Two evaluation will consider additional alignment alternatives and will not be limited to the representative alignments that were developed for Tier One evaluation. Alignment segments that have been demonstrated in Tier One to have significant flaws (including at-grade LRT and BRT alignments in the Downtown Miami segment) will not be advanced in Tier Two.

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	Automated Guideway Transit	Ligh Rail Transit/ Streetcar	Heavy Rail Transit	Bus Rapid Transit	Aerial Cable Transit	Monorail	ATS
Transit Performance Criteria							
Interoperability/Modal Integration	●	◑	●	◑	○	◔	◑
Operational Speed & Reliability	◕	◑	●	◑	◑	●	◑
Resiliency	●	◔	●	◑	◕	●	◑
Passenger Capacity	◑	◕	●	◑	◔	●	◔
Vehicle Reliability & Safety	●	●	●	●	◔	●	◕
Passenger Amenities	◕	●	●	◑	○	●	◑
Economic & Community Development Criteria							
Scale/Urban Fit	◔	●	○	◑	○	○	◕
TOD Compatibility	◑	●	◕	◑	○	◕	◔
Ped/Bike Access	◑	◕	◑	◑	○	◑	○
Environmental Effects Criteria							
Natural Resources	◑	◕	◕	○	◕	◕	○
Socio Economic Impacts	◕	◔	◕	◔	◑	◕	◔
Physical Impacts	◑	◕	●	◔	○	◔	○
Cost & Feasibility Criteria							
Constructability	◑	◔	●	◔	◕	●	○
Operating Cost	◑	◑	●	◑	●	◑	◔
Eligibility for Funding	●	●	◕	●	○	●	◑

LEGEND
Lowest Benefit ○ ◔ ◑ ◕ ● Most Benefit
Lowest Impact/Cost ○ ◔ ◑ ◕ ● Highest Impact/Cost

MIAMI-DADE COUNTY | Beach Corridor Rapid Transit Project | Tier One Evaluation Matrix | #MiamiSMARTplan www.miamismartplan.com

Figure 5.1 | Evaluation Matrix

Figure 5.2 | Tier Two Alignment Study Areas—Design District Segment & Downtown Miami Segment

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Figure 5.3 | Tier Two Alignment Study Areas—Bay Crossing Segment & Miami Beach Segment

5.2 MONORAIL

5.2.1 Transit Performance Criteria

Interoperability and Modal Integration: A monorail system would provide one-seat rides from Fifth Street and Alton Road in Miami Beach to destinations in Downtown Miami and the Design District. An elevated station at Museum Park would allow for an easy transfer to Metromover. The representative alignment developed for Tier One analysis assumes that connecting service on Metrorail would require either a second transfer (from Metromover) at Government Center station, or a walk of approximately 200 feet. In Tier Two, options that may provide a more direct connection to Metrorail will be analyzed. A monorail system would not extend an existing mode of transit, and it is unlikely that a monorail extension beyond 5th Street/Alton Road in Miami Beach would be feasible given existing historic resource areas.

Operational Speed and Reliability: As a grade-separated system operating on an exclusive, elevated guideway, monorail would provide fast, reliable travel times and headways with a significant travel-time advantage over existing modes of travel.

Resiliency: As an elevated mode with a power-supply system integrated into the guideway structure, monorail is expected to perform well with respect to resiliency issues such as flooding and high winds.

Passenger Capacity: Monorail is a high-capacity system. Based on the service plan shown in Appendix A, the peak hour passenger capacity per direction would be approximately 1,600 passengers, and daily capacity would be in the range of 35,000.

Vehicle Reliability and Safety: Monorail is a proven technology that operates safely and reliably.

Passenger Amenities: Monorail provides excellent ride comfort and a 100 percent low-floor vehicle.

5.2.2 Economic and Community Development Criteria

Scale/Urban Fit: Monorail transit requires large support columns for elevated guideway structures that may be considered out of scale with the urbanized settings of the Beach corridor and could impact the existing roadway and pedestrian environment. Figure 5.4 presents a plan view of a monorail station if constructed within a 70' street right-of-way. Figures 5.5 and 5.6, respectively, present typical sections of monorail transit on N Miami Avenue and on I-395/MacArthur Causeway.

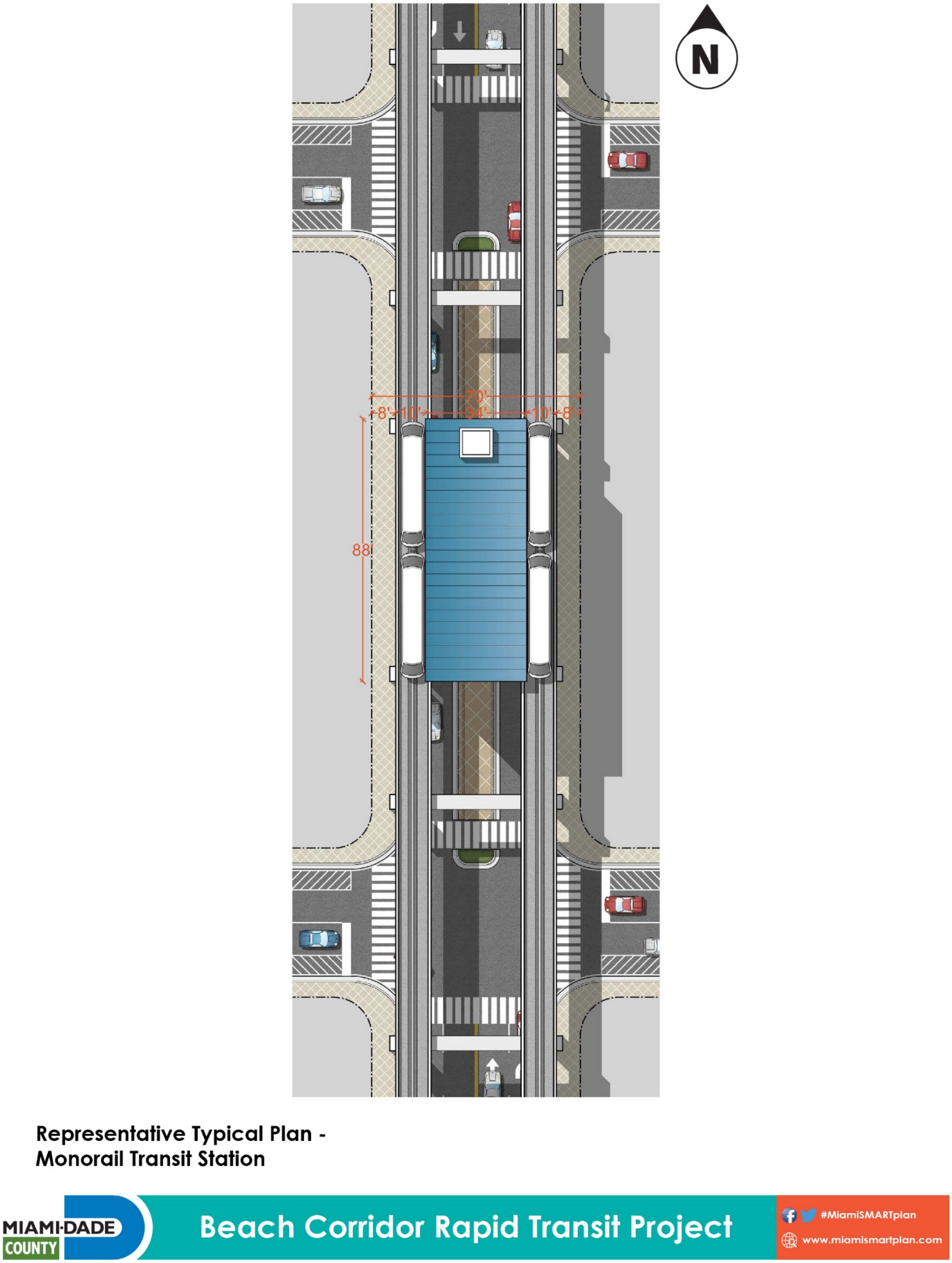

Figure 5.4 | Proposed Typical Plan – Monorail Transit Station

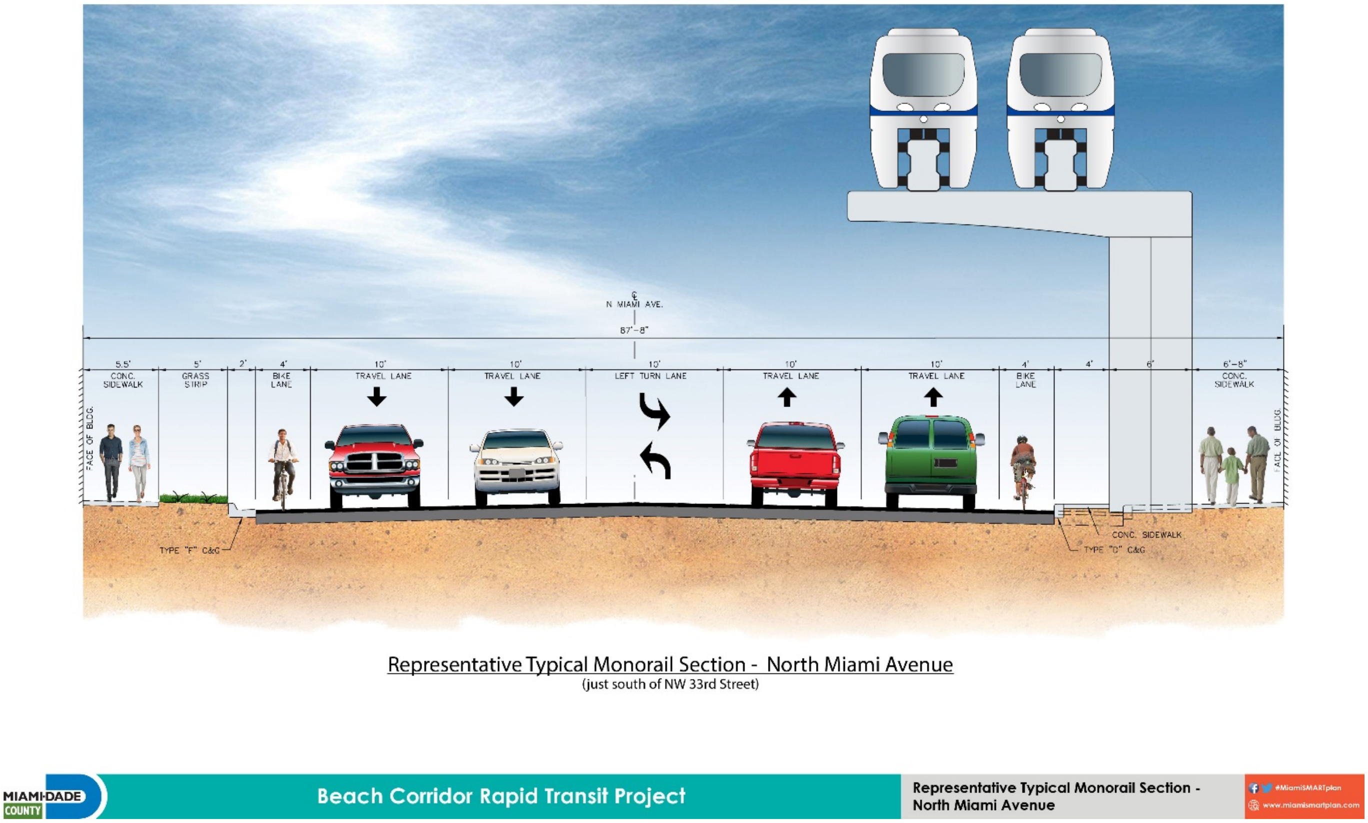

Figure 5.5 | Representative Typical Monorail Section – N Miami Avenue

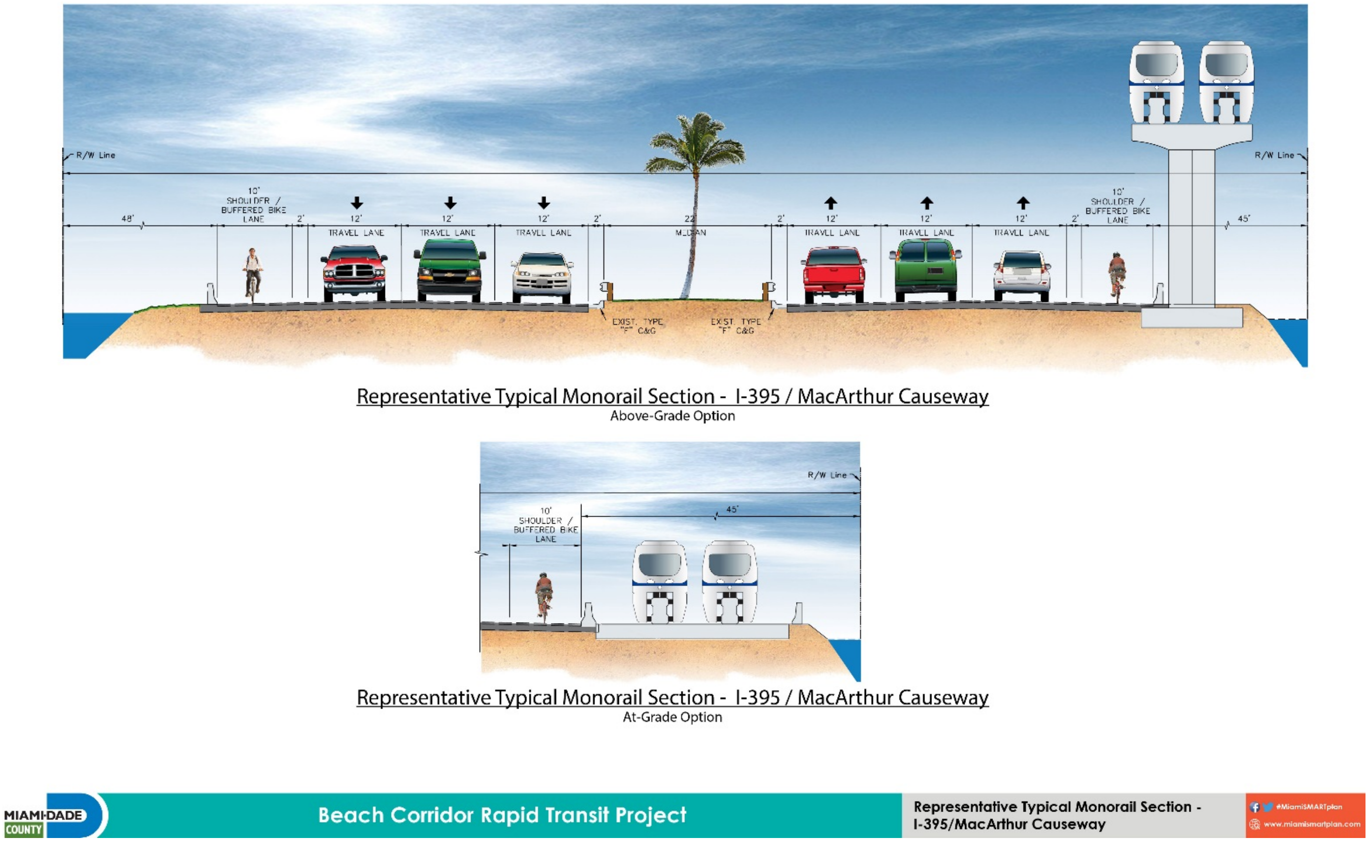

Figure 5.6 | Representative Typical Monorail Section – N Miami Avenue

TOD Compatibility: Monorail has the potential to facilitate TOD by providing a high-capacity, high-ridership mode of transit with recognizable stations. In some areas, the visual impact of the monorail infrastructure might detract from the TOD opportunities.

Pedestrian/Bicycle Access: Monorail stations and vehicles are accessible for people with bicycles and could accommodate bicycles on board (either by installing bike racks or allowing passengers with bikes to hold them upright during travel). The guideway support columns may have some adverse impacts to pedestrian and bicycle facilities. As compared with an at-grade mode, elevated stations are not as convenient for pedestrians, requiring use of escalators and elevators which may experience reliability issues.

5.2.3 Environmental Effects Criteria

Social and Economic: Monorail would be elevated throughout much of the corridor. Access and lack of connectivity with other modes of transit (e.g., Metromover) may limit use by some of the population of the area. However, this mode of transit is fast and reliable, with high-capacity, which is a benefit for residents and visitors.

Cultural: Construction within the existing right-of-way reduces impacts to historic/archaeological resources and other community services and resources. However, construction of the piers for an elevated structure may cause vibrations that could potentially affect historic structures. This would be evaluated during Tier 2.

Natural: If no construction work is performed within Biscayne Bay, impacts to wetlands (seagrass) and marine protected species would be minimal. An elevated monorail also has less impact to the floodplain than at-grade alternatives.

Physical: Physical impacts from noise are less with monorail than with other forms of transit. The Downtown Miami area of the project has several potential contamination sites, which would need to be evaluated in the Tier 2 analysis.

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5.2.4 Cost and Feasibility Criteria

Constructability: The estimated capital cost of the representative alignment, inclusive of a maintenance facility and vehicles, is in the range of $900 Million (M) to $1.1 Billion (B). The cost-effectiveness of the mode will be evaluated in the Tier Two Evaluation, which will also feature consideration of additional alignment alternatives.

Operating Cost: The estimated annual operations and maintenance cost of the monorail mode, based on a service plan assuming 5-minute peak headways as shown in *Appendix A*, is $18 million.

Eligibility for Funding: Monorail is a service-proven technology, ADA-compliant, and available as Buy America compliant.

5.2.5 Tier Two Alignments

Tier Two evaluation will consider monorail alignments within the Design District, Downtown Miami and Bay Crossing segments within the study areas shown in Figures 5.2 and 5.3.

5.3 AUTOMATED GUIDEWAY TRANSIT (METROMOVER EXPANSION)

5.3.1 Transit Performance Criteria

Interoperability and Modal Integration: An extension of the AGT/Metromover system would provide the best opportunity for interoperability with existing transit. An extended Metromover would provide one-seat rides from Fifth Street and Alton Road in Miami Beach to destinations in downtown served by the existing Metromover stations at Museum Park, 11th Street, Park West, Freedom Tower, College North, Wilkie D. Ferguson, Government Center, First Street, and College Bayside, and to new stations on a Metromover extension to the Midtown/Design District area (Figure 5.7). Additionally, this mode would provide for easy transfers at Government Center to reach destinations served by Metrorail (including Miami International Airport) and the Metromover Brickell Loop.

Operational Speed and Reliability: As a grade-separated system operating on an exclusive, elevated guideway, the Metromover would provide reliable travel times and headways. Average operating speed on the existing system is relatively slow (10 miles per hour) due to stop spacing and curves, but the bay-crossing segment of the system would operate at or near the top speed of the vehicles (approximately 30 miles per hour), resulting in a crossing time of approximately 7 minutes that would provide a significant travel-time advantage over existing peak-period options.

Resiliency: As an elevated mode with a power-supply system integrated into the guideway structure, AGT is expected to perform well with respect to resiliency issues such as flooding and high winds.

Passenger Capacity: The existing Metromover platforms would constrain the system to two-car trains. Based on the service plan shown in *Appendix A*, the peak-hour passenger capacity per direction would be approximately 500 passengers, and daily capacity would be in the range of 12,000. AGT systems often operate with very frequent service to provide passenger capacity to meet demand; potential service plan modifications to provide additional capacity will be considered in the Tier Two evaluation.

Vehicle Reliability and Safety: AGT is a proven technology that operates safely and reliably.

Passenger Amenities: AGT provides excellent ride comfort and a 100 percent low-floor vehicle, and the system is familiar to travelers around the world, as it is ubiquitous in airports. However, they are mostly used for shorter trips, where standing during the ride is less of a concern.

5.3.2 Economic and Community Development Criteria

Scale/urban fit: As an elevated transit mode, the Metromover has some negative impacts within urban areas, such as Downtown Miami and the Design District, in terms of both visual impact and impacts to existing roadway and pedestrian infrastructure where support columns and station entries would be placed. The relatively tight turning radii that AGTs can accomplish allow them to follow existing rights-of-way without requiring extensive property acquisition and demolition of existing buildings. Figure 5.8 presents a plan view of a Metromover station if constructed within a 70-foot street right-of-way. Figures 5.9 and 5.10, respectively, present the existing North Miami Avenue roadway cross-section and the potential cross-section after construction of a Metromover extension. Figures 5.11and 5.12, respectively, present the existing I-395/MacArthur Causeway roadway cross-section and the potential cross-section after construction of a Metromover extension.

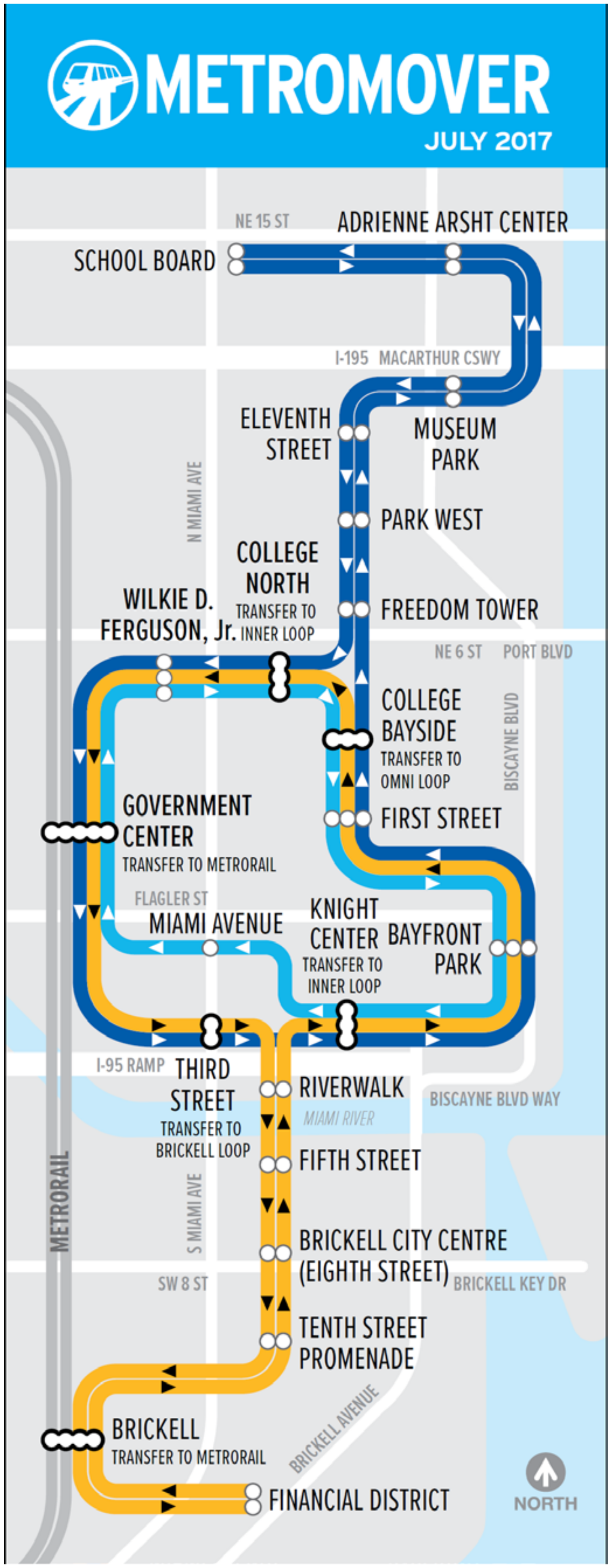


Figure 5.7 | Existing Metromover System Map

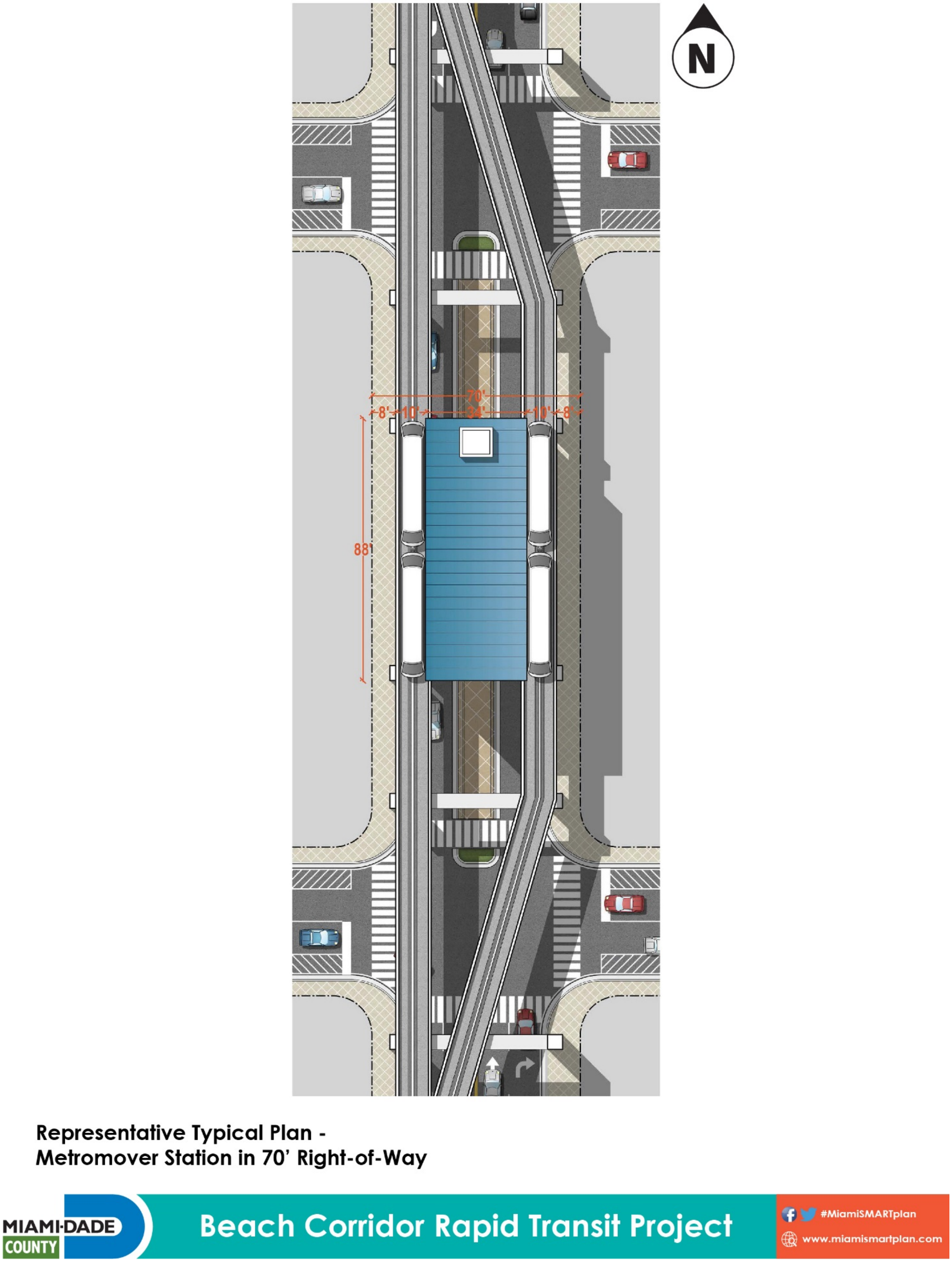


Figure 5.8 | Representative Typical Plan – Metromover in 70-Foot ROW

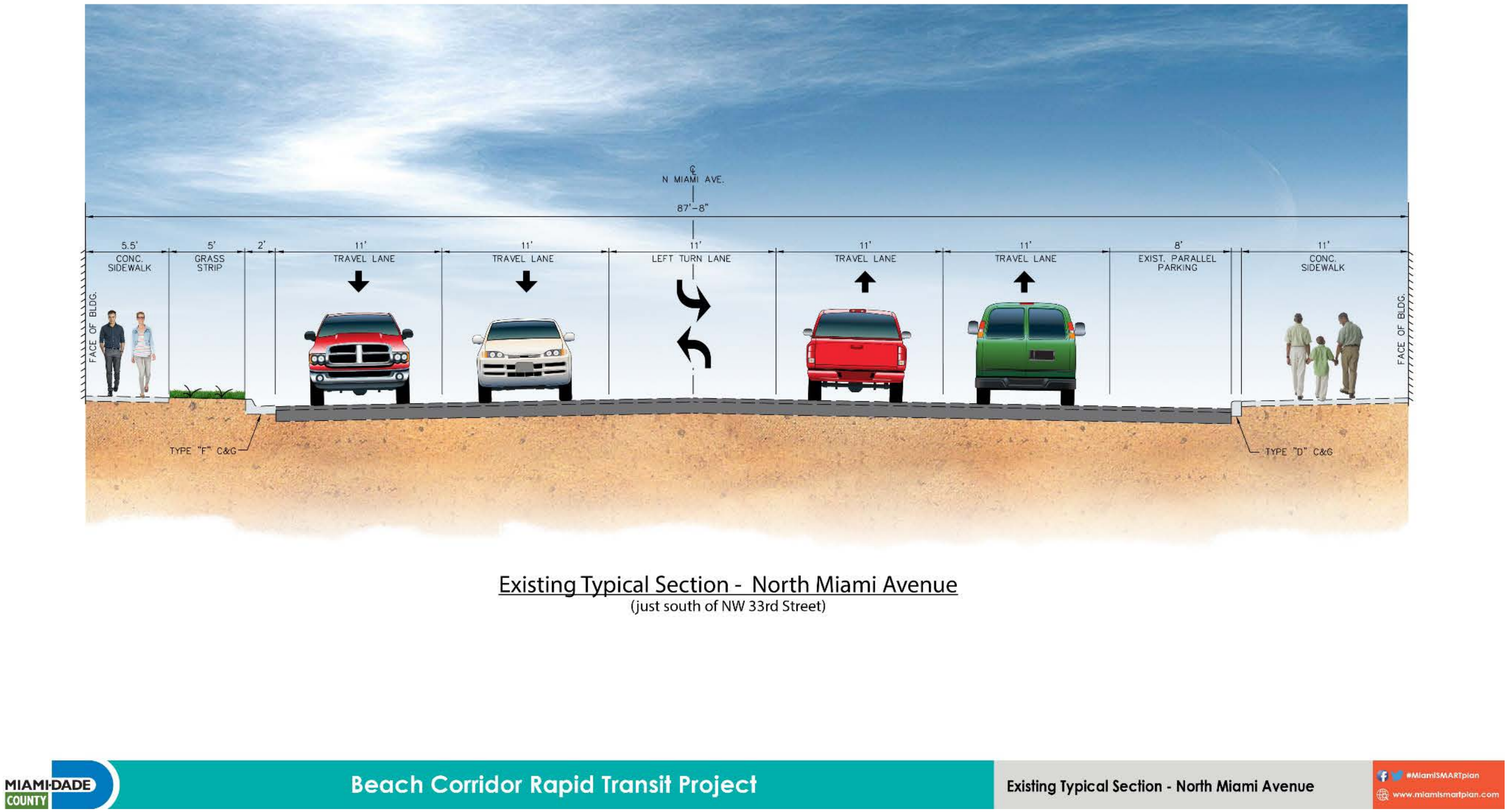
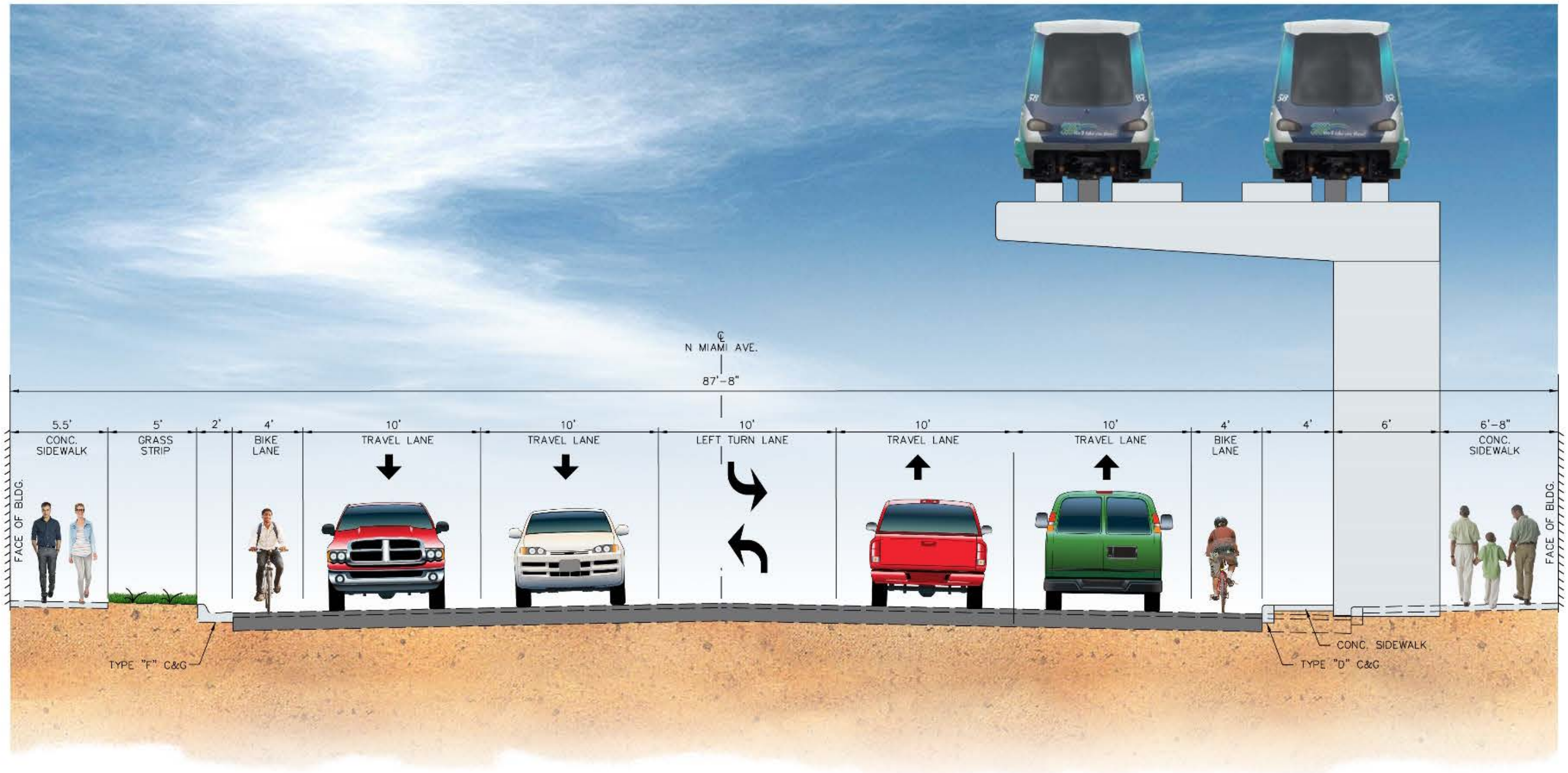


Figure 5.9 | Existing Typical Section – N Miami Avenue



Representative Typical Metromover Section - North Miami Avenue
(just south of NW 33rd Street)

MIAMI-DADE COUNTY

Beach Corridor Rapid Transit Project

Representative Typical Metromover Section - North Miami Avenue

#MiamiSMARTplan
www.miamismartplan.com

Figure 5.10 |Representative Typical Metromover Section – N Miami Avenue

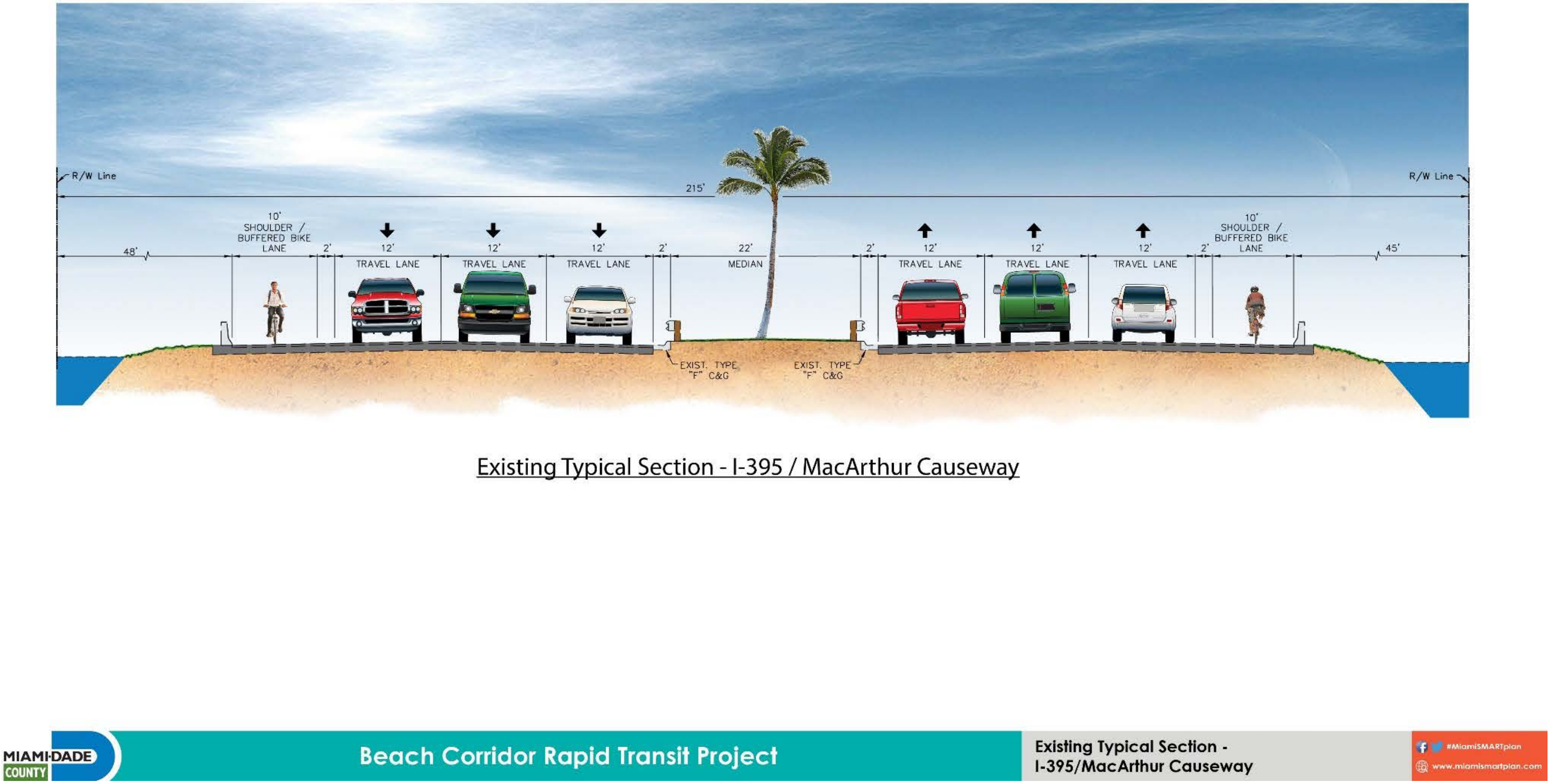
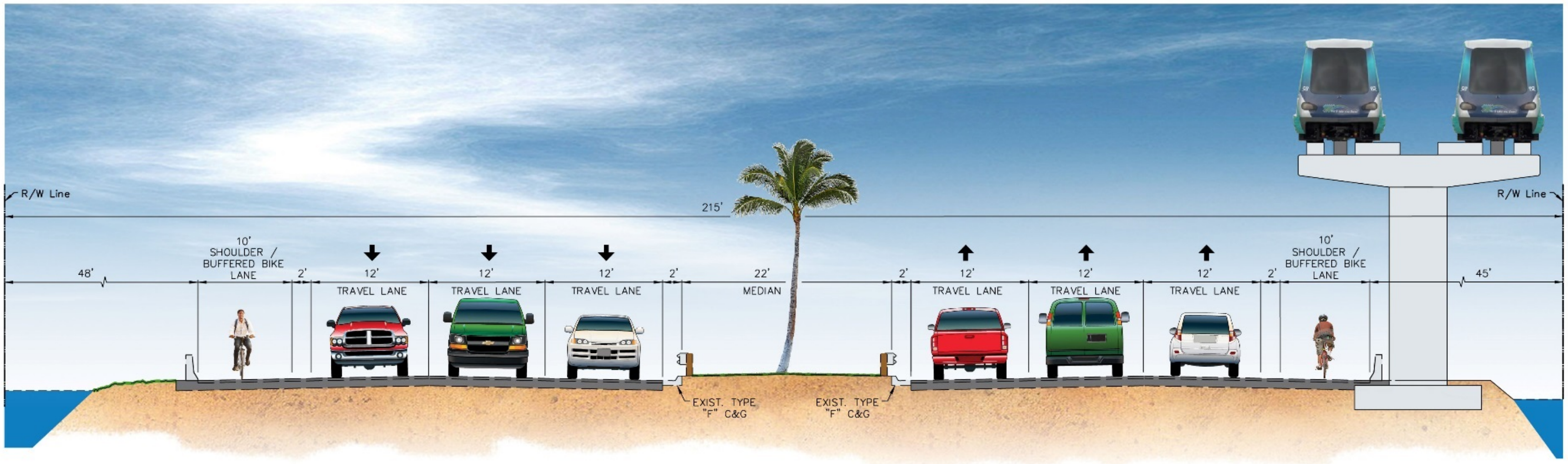
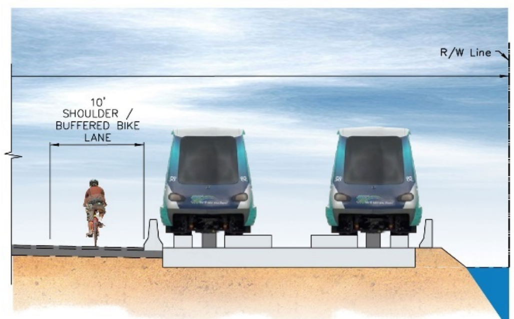


Figure 5.11 | Existing Typical Section – I-395/MacArthur Causeway



Representative Typical Metromover Section - I-395 / MacArthur Causeway
Above-Grade Option



Representative Typical Metromover Section - I-395 / MacArthur Causeway
At-Grade Option

Figure 5.12 | Representative Typical Metromover Section – I-395/MacArthur Causeway

TOD Compatibility: The Metromover has potential to facilitate TOD by providing a high-capacity, high-ridership mode of transit with recognizable stations. In some areas, however, the visual impact of the Metromover infrastructure might detract from the TOD opportunities.

Pedestrian/Bicycle Access: Metromover stations and vehicles are accessible for people with bicycles and could accommodate bicycles on board (either by installing bike racks or allowing passengers with bikes to hold them upright during travel). The guideway support columns may have some adverse impacts to pedestrian and bicycle facilities. As compared with an at-grade mode, elevated stations are not as convenient for pedestrians, requiring the use of escalators and elevators that may experience reliability issues.

5.3.3 Environmental Effects Criteria

Social and Economic: The Metromover has the highest rating for the mobility of residents and visitors because it would be integrated with existing transit systems and accessibility would not be affected by distance.

Cultural: Construction within the existing right-of-way reduces impacts to historic/archaeological resources and other community services and resources. However, construction of the piers for an elevated structure may cause vibrations that could potentially affect historic structures. The potential effects will be evaluated during Tier 2.

Natural: The Metromover is similar to the monorail in natural impacts because it will be constructed within existing right-of-way; impacts to wetlands (seagrass) and protected species will be minimal and the impacts to the floodplain are less than BRT and LRT.

Physical: The noise levels of the Metromover is similar to other forms of transit and will therefore result in equivalent noise impacts along the corridor. The Downtown Miami area of the project has several potential contamination sites, which would need to be evaluated in the Tier 2 analysis.

5.3.4 Cost and Feasibility Criteria

Constructability: The estimated capital cost of the representative alignment, inclusive of maintenance facility expansion and vehicles, is in the range of $900 M to $1.1 B, which is within the range of typical cost per mile for this mode. The cost-effectiveness of the mode will be evaluated in the Tier Two Evaluation.

Operating Cost: The estimated annual operations and maintenance cost of the Metromover extension, based on a service plan assuming 4-minute peak headways as shown in Appendix *A*, is $17 million. The cost-effectiveness of the mode will be evaluated in the Tier Two Evaluation, which will also feature consideration of additional alignment alternatives.

Eligibility for Funding: The Metromover is a service-proven technology, ADA-compliant, and available as Buy America compliant.

5.3.5 Tier Two Alignments

Tier Two evaluation will consider Metromover alignments within the Design District, Downtown Miami, Bay Crossing and Miami Beach segments within the study areas shown in Figures 5.2 and 5.3.

5.4 BUS RAPID TRANSIT (BRT)

5.4.1 Transit Performance Criteria

Interoperability and Modal Integration: BRT would not extend an existing mode, but would have the potential to be extended along dedicated lanes in Miami Beach. BRT would provide easy transfers to numerous existing bus routes, and in Miami Beach could provide an easy transfer to another mode such as LRT, or be extended to reach additional Miami Beach destinations. BRT would offer a transfer to Metrorail and Metromover at Government Center, however the distance between the BRT and Metrorail/Metromover platforms would be approximately 200 feet, which would be less convenient and desirable to passengers than the Metromover-to-Metrorail transfer. Local commuters and some tourists might find this transfer acceptable, but some airport-bound travelers would likely be discouraged by this transfer and choose other travel options.

Operational Speed and Reliability: BRT would operate at-grade in a combination of mixed-flow and semi-exclusive (dedicated transit lane) operations.

Resiliency: As an at-grade mode, BRT has vulnerability to flooding. If an advanced technology such as an automated guidance system with sensors in the roadways were implemented with BRT, this could be another vulnerability to flood. BRT is not expected to be vulnerable to high winds (other than during a storm event).

Passenger Capacity: Based on the service plan shown in *Appendix A*, the peak-hour passenger capacity per direction would be approximately 700 passengers, and daily capacity would be in the range of 15,000.

Vehicle Reliability and Safety: BRT is a safe and reliable mode.

Passenger Amenities: BRT is comfortable for seated passengers, but the ride quality for standing passengers is not comparable to the ride quality of the rail transit modes.

5.4.2 Economic and Community Development Criteria

Scale/Urban Fit: BRT would operate within existing roadways and would be compatible with the scale of the neighborhoods along the Beach corridor. **Figures 5.13** and **5.14** present plan views of side-platform and center-platform BRT stations if constructed within a 70’ street right-of-way. **Figures 5.15** and **5.16** present potential roadway cross-sections after construction of BRT.

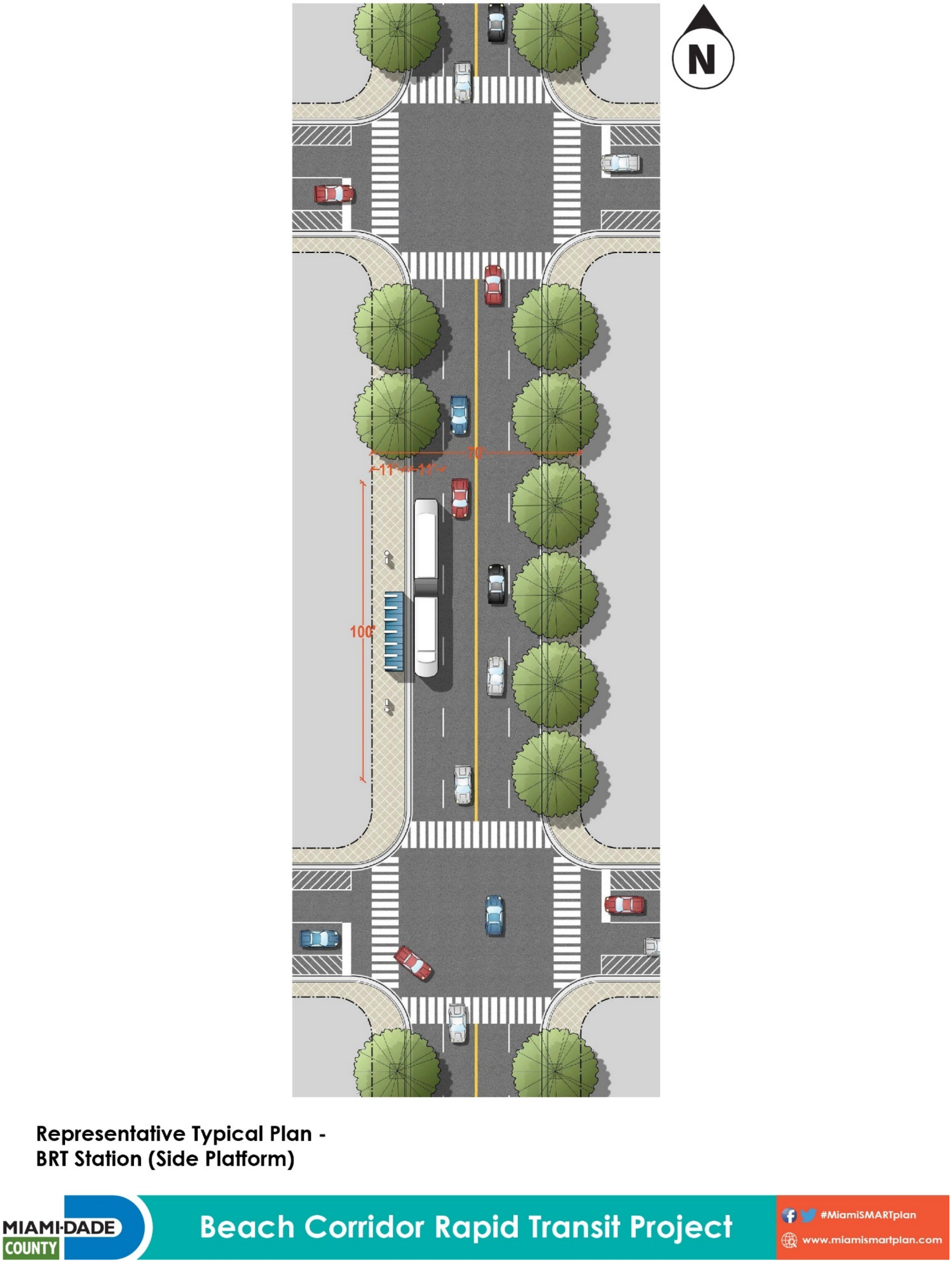


Figure 5.13 | Representative Typical Plan – BRT Station (Side Platform)

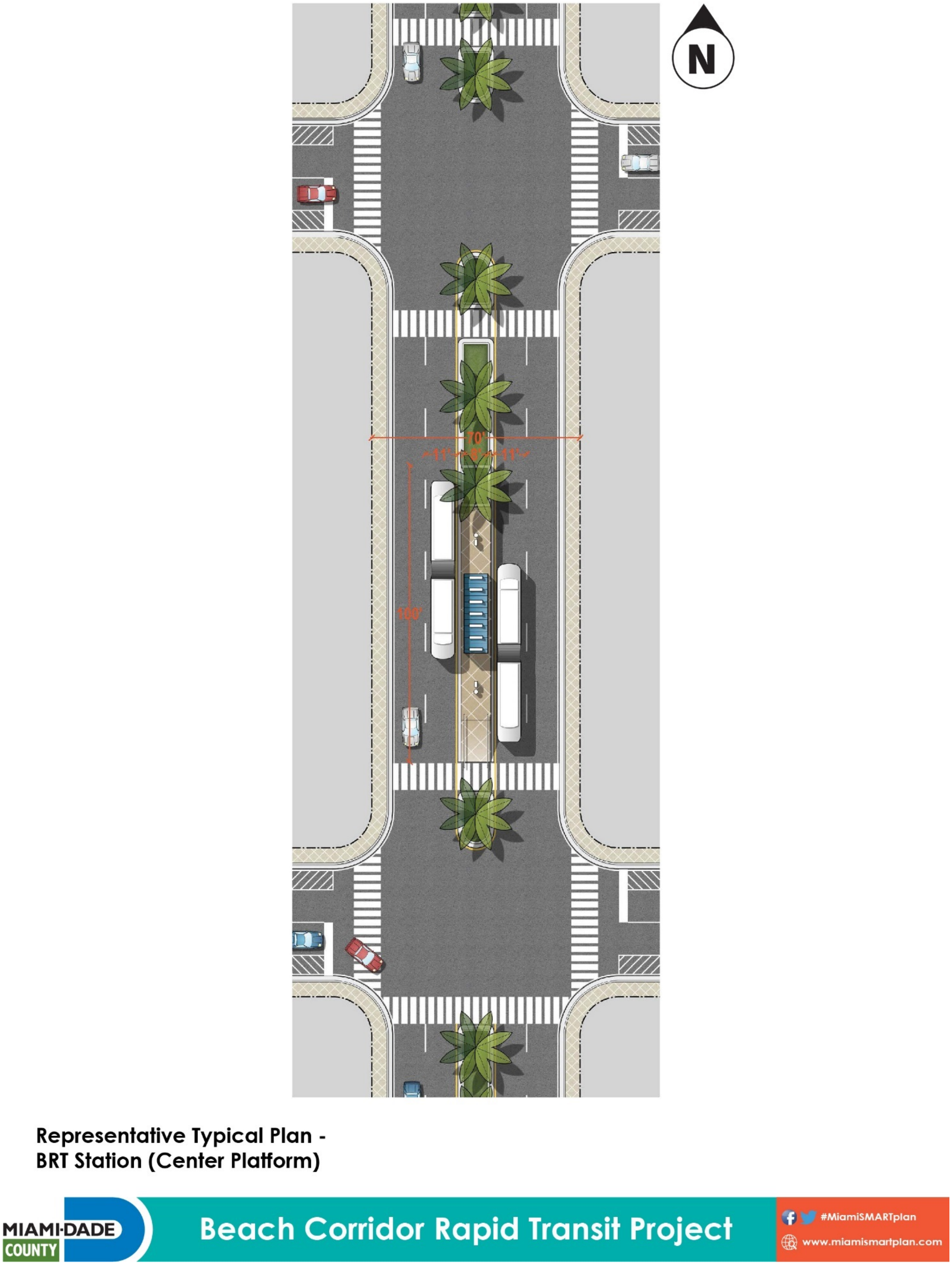


Figure 5.14 | Representative Typical Plan – BRT Station (Center Platform)

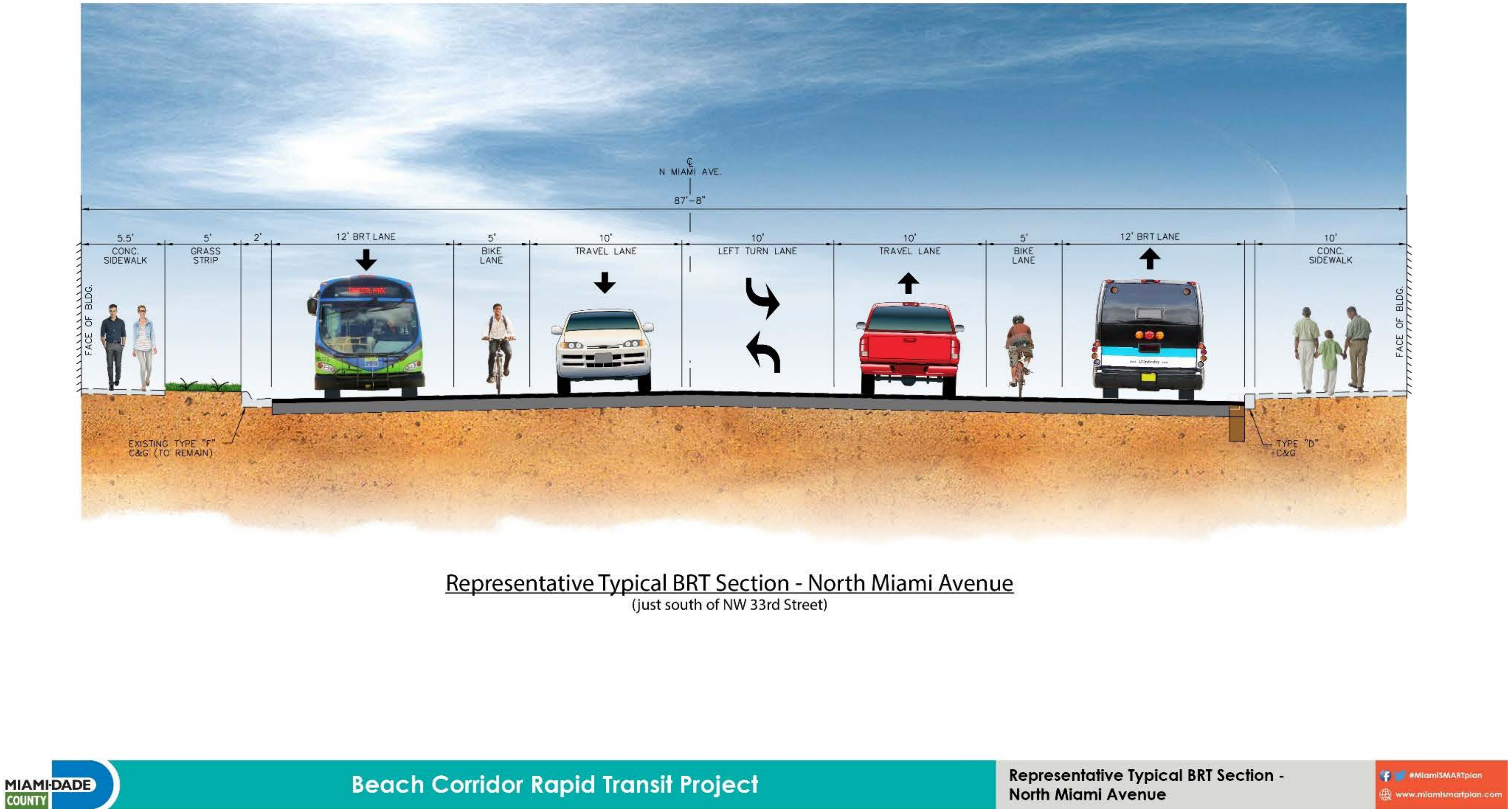


Figure 5.15 | Representative Typical BRT Section – N Miami Avenue

Figure 5.16 | Representative Typical BRT Section – I-395/MacArthur Causeway

TOD Compatibility: BRT has some potential to serve as a catalyst for TOD, particularly if it is implemented with features that make the stations and dedicated lane segments recognizable and attractive features of the urban environment. Typically, the development community does not respond to bus transit in the same way it responds to rail transit, but there are examples of BRT systems, such as the "Healthline" BRT system in Cleveland, Ohio, that have spurred TOD.

Pedestrian/Bicycle Access: BRT infrastructure is not expected to have adverse impact on pedestrian and bicycle facilities. It may be feasible to accommodate people with bikes on the BRT vehicles, depending on the design of the vehicle. Exterior bike racks would likely not be included, because the process of loading and unloading the bikes would delay the service.

5.4.3 Environmental Effects Criteria

Social and Economic: The advantage of BRT is that it provides accessibility to other bus transit routes as well as other modes of transportation and government/employment centers.; however, the distance between the BRT and Metrorail/Metromover stations may limit accessibility for some travelers. In addition, because some of the operation would be in mixed-flow lanes, the level-of-service (travel times) may be reduced, thereby reducing mobility of travelers.

Cultural: Construction within the existing right-of-way reduces impacts to historic/archaeological resources and other community services and resources. Effects to historic resources and recreational areas will be evaluated during Tier 2.

Natural: Construction of BRT lanes within existing right of way would have limited impact to natural resources; i.e., wetlands (seagrass) and protected species. However, the increase of at-grade pavement increases impacts to the floodplain.

Physical: BRT would increase traffic at ground level and, potentially, increase noise levels. The Downtown Miami area of the project has several potential contamination sites, which would need to be evaluated in the Tier 2 analysis.

5.4.4 Cost and Feasibility Criteria

Constructability: The estimated capital cost of the representative alignment, including vehicles, is in the range of $300 M to $400 M. This assumes that a to provide exclusive bay-crossing lanes is within the range of typical cost per mile for BRT projects that incorporate exclusive guideways. See section 5.4.5 below for discussion of the assumptions to be carried forward into Tier Two evaluation.

Operating Cost: The annual operating and maintenance cost of this mode, based on the service plan assuming 5-minute peak headways as shown in Appendix A, is $11 million. The cost-effectiveness of the mode will be evaluated in the Tier Two Evaluation, which will feature express bus options along expressways and a BRT connection only from downtown to Miami Beach Convention Center.

Eligibility for Funding: BRT is a service-proven technology, ADA-compliant, and available as Buy America compliant.

5.4.5 Tier Two Alignments

Tier Two evaluation will include a BRT and/or Express Bus study from Downtown Miami to Convention Center (with a repurposed typical section along the Causeway and a dedicated lane in Miami Beach) and Express Bus along a freeway loop alignment using I-95, I-195, I-395 in Miami and 5th street, Washington and Alton Roads in the Miami Beach segment. The evaluation of a BRT option that uses existing right-of-way across Biscayne Bay rather than a widened bridge with an exclusive guideway will ensure that the Tier Two evaluation includes a low-cost rapid transit option.

5.5 LIGHT RAIL TRANSIT (LRT/TRAM/STREETCAR)

5.5.1 Transit Performance Criteria

Interoperability and Modal Integration: LRT would not extend an existing mode, but would have the potential to be extended in Miami Beach. An LRT mode would provide a one-seat ride between the origins and destinations along the alignment including the Design District, and Fifth Street/Alton Road in Miami Beach, and could be integrated into a future LRT/streetcar system as currently proposed in Miami Beach. The representative LRT alignment is elevated at the Museum Park station, allowing for an easy transfer to Metromover. Connecting service on

Metrorail would require either a second transfer (from Metromover) at Government Center station, or a walk of approximately 200 feet. LRT also would provide for easy at-grade transfers to numerous existing bus routes.

Operational Speed and Reliability: The LRT mode would provide a fast and reliable bay crossing and could be accessed via Metromover from numerous origins along the Metromover system for a fully grade-separated, reliable trip. For trips continuing on the LRT mode into the Design District, operations will be similar to those of BRT — faster than existing bus service, but subject to traffic congestion or accidents at intersections that would impact reliability.

Resiliency: As an at-grade mode, LRT has vulnerability to flooding. Additionally, traditional overhead power supply systems for light rail/streetcar systems present vulnerability to high winds. Off-wire technologies may mitigate this vulnerability.

Passenger Capacity: There is a range of vehicle sizes and configurations available with the LRT family of modes, including the three-section modern streetcar used in new streetcar systems in the United States and the five-section tram that is common in European light rail systems. Either is feasible for the Beach corridor and would provide a range of approximately 120–265 passengers per train. Based on the service plan shown in *Appendix A* and the assumption of a five-section tram, the peak-hour passenger capacity per direction would be approximately 1,300 passengers, and daily capacity would be in the range of 29,000.

Vehicle Reliability and Safety: LRT vehicles and systems are safe and reliable.

Passenger Amenities: LRT vehicles can be provided as 100 percent low-floor with level boarding and provide excellent ride quality for both seated and standing passengers.

5.5.2 Economic and Community Development Criteria

Scale/Urban Fit: LRT, in a tram or modern streetcar configuration, fits easily within existing roadways and the scale of urbanized neighborhoods. Most streetcar and tram systems are considered enhancements to their urban settings. Figures 5.17 and 5.18 present plan views of side-platform and center-platform LRT stations if constructed within a 70’ street right-of-way. Figure 5.19 presents a potential North Miami Avenue roadway cross-section after construction of LRT. Figure 5.20 presents a potential I-395/MacArthur Causeway cross-section after construction of LRT.

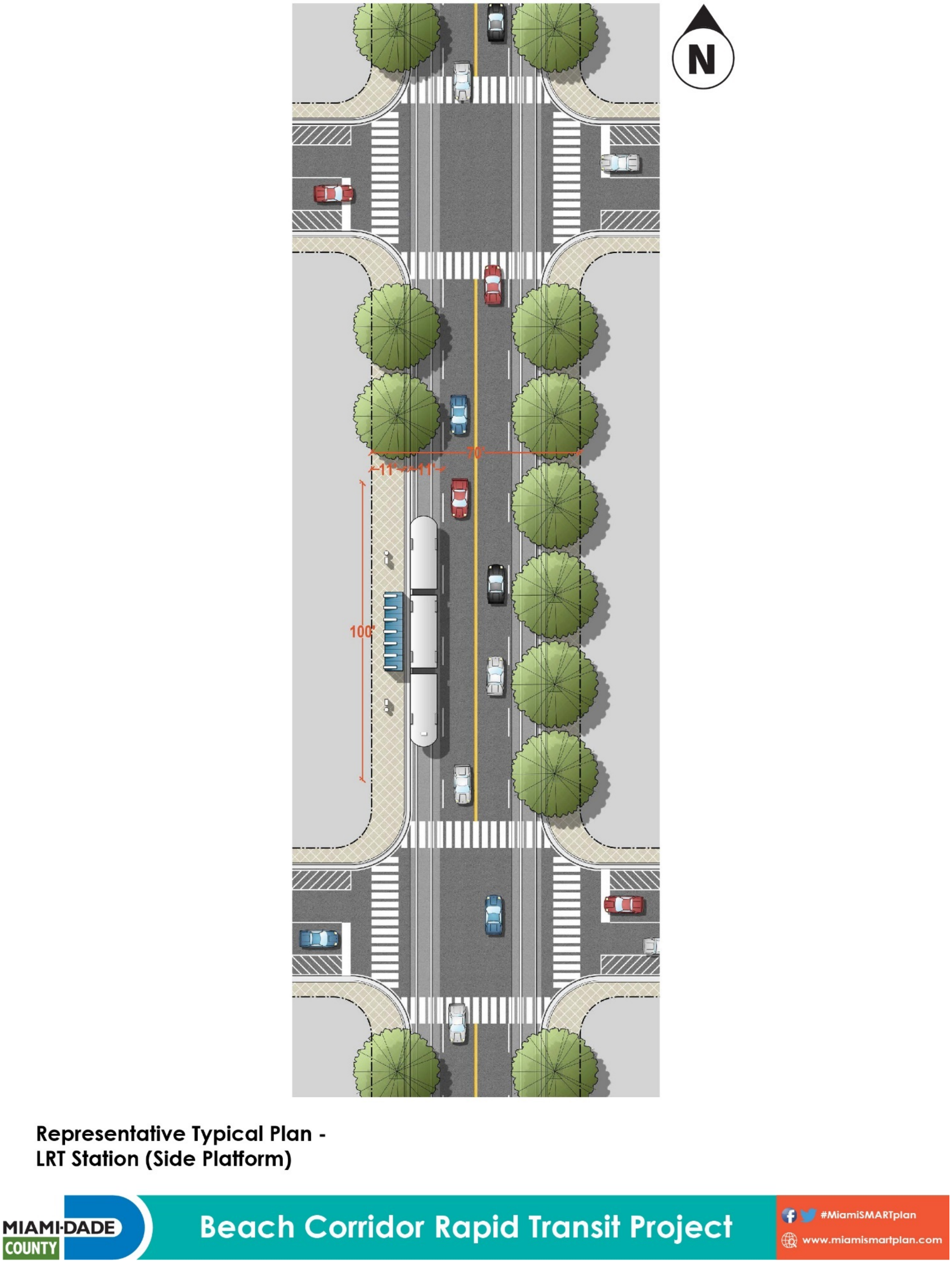


Figure 5.17 | Representative Typical Plan – LRT Station (Side Platform)

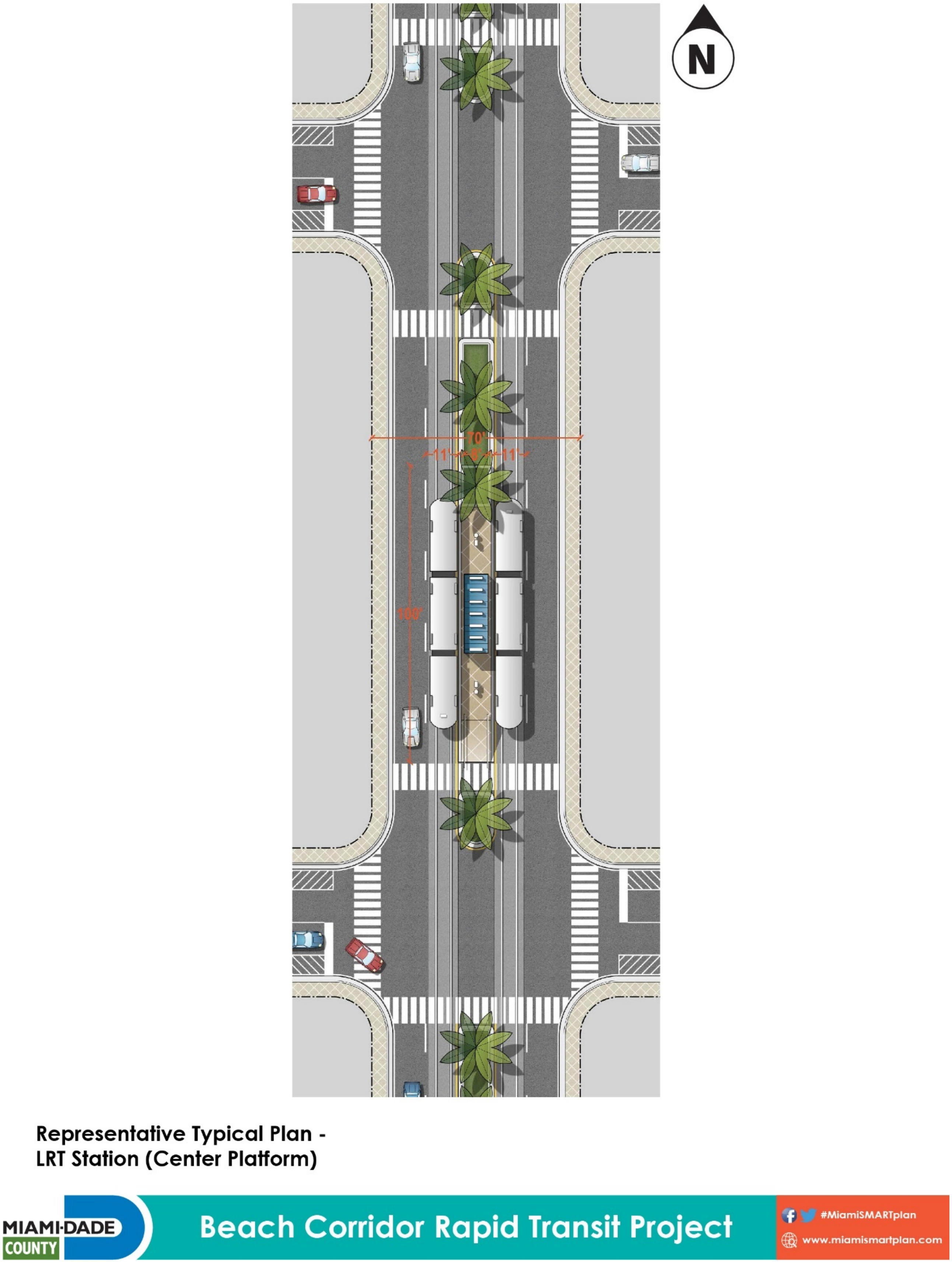


Figure 5.18 | Representative Typical Plan – LRT Station (Center Platform)

Sensitive

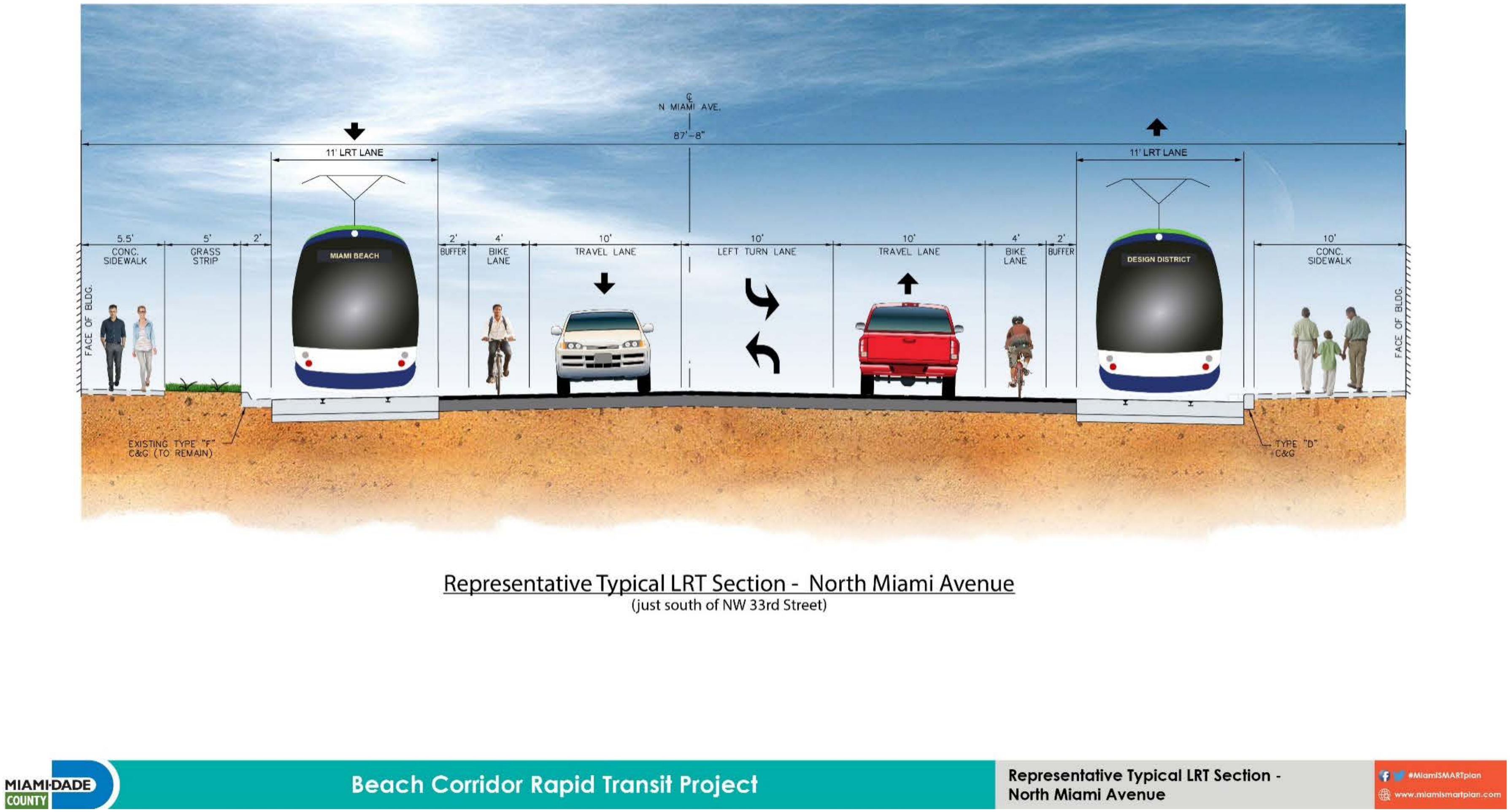


Figure 5.19 | Representative Typical LRT Section – N Miami Avenue

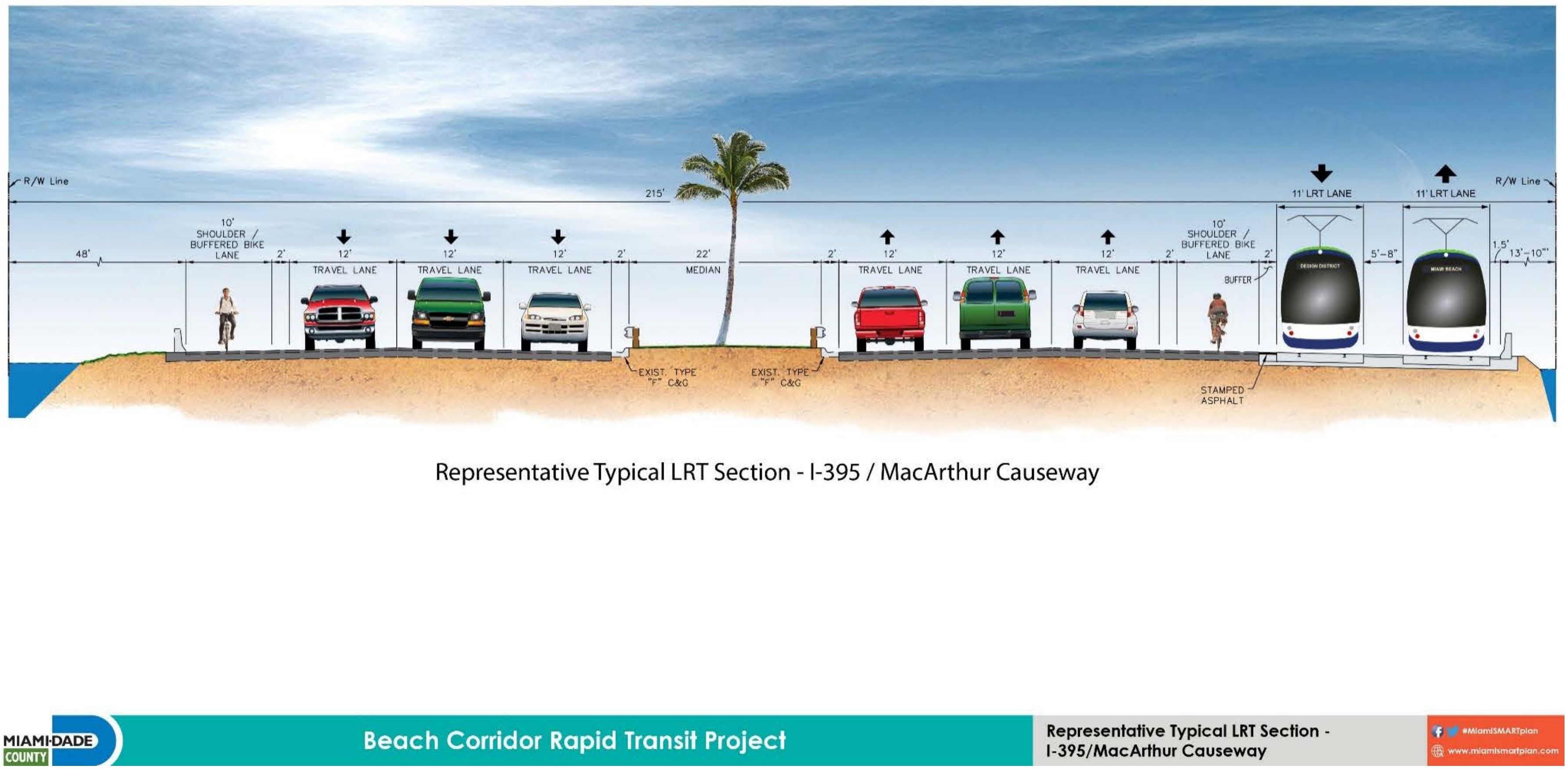


Figure 5.20 | Representative Typical Section – I-395/MacArthur Causeway

TOD Compatibility: LRT, including trams and modern streetcars, have a demonstrated ability to catalyze economic development.

Pedestrian/Bicycle Access: LRT stations and vehicles are accessible for people with bicycles and could accommodate bicycles on board (either by installing bike racks or allowing passengers with bikes to hold them upright during travel). LRT tracks can be a hazard for cyclists, but there are a variety of design solutions that can provide a safe travel pathway for cyclists.

5.5.3 Environmental Effects Criteria

Social and Economic: LRT would also provide for easy transfers to existing bus transit routes. Similar to BRT and the monorail, the distance between the LRT and Metrorail/Metromover stations may limit accessibility for some travelers. Part of travel on the LRT across MacArthur Causeway would be fast and reliable. Sections in mixed-flow lanes in Downtown Miami and the Design District would be subject to traffic and congestion. (An exclusive LRT travel lane will not be designated in the Downtown Miami segment.) In addition, at-grade rail service can cause conflicts with pedestrians and cyclists in all segments of the study area.

Cultural: Construction within the existing right-of-way reduces impacts to historic/archaeological resources and other community services and resources. Effects to historic resources and recreational areas will be evaluated during Tier 2.

Natural: Construction of LRT lanes within existing right of way would have limited impact to natural resources; i.e., wetlands (seagrass) and protected species. However, the increase of at-grade pavement increases impacts to the floodplain.

Physical: LRT would increase traffic at ground level and, potentially, increase noise levels. The Downtown Miami area of the project has several potential contamination sites, which would need to be evaluated in the Tier 2 analysis. An exclusive LRT travel lane will not be designated in the Downtown Miami segment.

5.5.4 Cost and Feasibility Criteria

Constructability: The estimated capital cost of the representative alignment, inclusive of a maintenance facility and vehicles, is in the range of $700 M to $800 M, which is within the range of typical cost per mile for this mode. The cost-effectiveness of the mode will be evaluated in the Tier Two Evaluation, which will also consider additional alignment alternatives and will limit this mode to the Design District, Bay Crossing and Miami Beach segments.

Operating Cost: The estimated annual operations and maintenance cost of the representative light rail/streetcar mode, based on a service plan assuming 5-minute peak headways as shown in *Appendix A*, is $17 million. The alignment and operating plan will be refined in the Tier Two Evaluation.

Eligibility for Funding: LRT is a service-proven technology, ADA-compliant, and available as Buy America compliant.

5.5.5 Tier Two Alignments

Tier Two evaluation will consider LRT alignments within the Design District, Bay Crossing and Miami Beach segments. The Downtown Miami segment will not advance for further evaluation of a street-running LRT mode, given the existing congestion that would make fast and reliable operations, by way of an exclusive transit lane, in this segment, infeasible. Tier Two alignments will include additional analysis of the potential for elevated segments or exclusive transit lanes to optimize speed, reliability, and ridership potential (such as for the connection between the Design District and Bay Crossing segments, or for an elevated segment to connect LRT to Metromover in Downtown Miami).

5.6 ALTERNATIVES NOT RECOMMENDED FOR FURTHER EVALUATION

The following alternatives are not recommended for further evaluation, either because they are not expected to be able to meet the project goals or because there are significant cost and feasibility issues associated with the application of the mode to the Beach corridor:

- Aerial cable transit
- Heavy rail transit
- Automated transit system (as a stand-alone technology; advanced to Tier Two as applied to a BRT system)

These transit modes are not considered suitable for the Beach corridor because of significant flaws regarding transit performance, economic and community development benefits, environmental effects, or cost and feasibility, as shown in Figure 5.1 and described below.

5.7 AERIAL CABLE TRANSIT (ACT)

5.7.1 Transit Performance Criteria

Interoperability and Modal Integration: An aerial tram or gondola system would not extend any of the existing modes operating in Miami. Trips between most origins and destinations in the Beach corridor would require at least one transfer, and most trips would require more than one transfer because of the limited portion of the corridor that could feasibly be served by ACT.

Operational Speed and Reliability: Travel on an aerial tram or gondola would be reliable, but would offer the lowest average operating speed across the bay of the modes under consideration, because of the technological limitations of the mode.

Passenger Capacity: An aerial tram may not offer sufficient capacity to meet the potential ridership demand in the Beach corridor; a gondola system with very frequent service might offer sufficient capacity. Based on the service plan shown in *Appendix A*, the peak-hour passenger capacity per direction of an aerial tram would be approximately 240 passengers, and daily capacity would be in the range of 5,000.

Resiliency: As an elevated mode, ACT is not vulnerable to flooding. However, most ACT systems are required to suspend operations during high winds.

Vehicle Reliability and Safety: ACT has a good safety record. However, crossing Biscayne Bay would present unique challenges in terms of the ability to evacuate passengers in the event of a malfunction. The iconic nature of the bay location may also make ACT in this location more vulnerable to threats than other transit modes.

Passenger Amenities: Although industry representatives claim that aerial trams or gondolas can now be provided with air-conditioning, there is no system in service that provides air-conditioning for a 15-minute trip. Without climate control, travel in an aerial tram or gondola in Miami would be uncomfortable for much of the calendar year.

5.7.2 Economic and Community Development Criteria

Scale/Urban Fit: ACT would require very large towers at the termini in Downtown Miami and Miami Beach, which would limit the siting options for the terminal stations and make it difficult to achieve a good fit with the adjacent urban settings.

TOD Compatibility: Because of the limitations described in Section 4, the ACT mode would serve only three station locations, which limits its potential to catalyze economic development.

Pedestrian/Bicycle Access: ACT stations and vehicles are accessible for people with bicycles and could accommodate bicycles on board (either by installing bike racks or allowing passengers with bikes to hold them upright during travel). An operating policy accommodating bicycles would be more likely for an aerial tram system than for a gondola system (because of the small size of the gondolas). ACT infrastructure is not expected to have any adverse impacts to pedestrian or bicycle facilities.

5.7.3 Environmental Effects Criteria

Social and Economic: ACT would require travelers to transfer between modes of transportation modes because ACT is not feasible throughout the corridor. Also, ACT has the lowest operating speed of any of the alternatives and would not have climate control. Therefore, ACT would not meet the socioeconomic need for mobility in the corridor.

Cultural: ACT is not feasible in several sections of the corridor, therefore, its effect on cultural resources is unknown.

Natural: The ACT would require large towers to operate, which may require additional right-of-way and impact natural resources in Biscayne Bay.

Physical: The Downtown Miami area of the project has several potential contamination sites, which would need to be evaluated in the Tier 2 analysis.

5.7.4 Cost and Feasibility Criteria

- **Constructability:** The estimated capital cost of this mode, assuming an aerial tram with characteristics similar to the Portland Aerial Tram, is in the range of $500 M to $600 M.
- **Operating Cost:** The estimated annual operations and maintenance cost of this mode, based on the service plan assuming 6 minute peak headways as shown in Appendix A, is $13 million.
- **Eligibility for Funding:** To be implemented in the beach corridor, ACT would require a climate-control system that is not yet service-proven, which could be a concern for potential funding partners.

5.8 HEAVY RAIL TRANSIT (HRT)

5.8.1 Transit performance criteria

Interoperability and Modal Integration: An extension of the Metrorail system would provide one-seat rides from Fifth Street/Alton Road in Miami Beach to destinations in downtown already served by existing Metrorail stations. Transfers would be required for service from the Midtown/Design District area. Additionally, this mode would provide for easy transfers at Government Center to reach destinations served by Metromover. In Miami Beach, there is potential for an easy transfer from a Metrorail station at Fifth Street/Alton Road to an at-grade premium transit service such as LRT/streetcar.

Operational Speed and Reliability: As a grade-separated system operating on an exclusive, elevated guideway, Metrorail would provide fast, reliable travel times and headways with a significant travel-time advantage over other modes of travel.

Resiliency: As an elevated mode with a power-supply system integrated into the guideway structure, Metrorail is expected to perform well with respect to resiliency issues such as flooding and high winds.

Passenger Capacity: Metrorail is a very high-capacity system. Based on the service plan shown in *Appendix A*, the peak-hour passenger capacity per direction would be approximately 2,700 passengers, and daily capacity would be in the range of 60,000.

Vehicle Reliability and Safety: Heavy rail is a proven technology that operates safely and reliably.

Passenger Amenities: Heavy rail provides excellent ride comfort and a 100 percent low-floor vehicle.

5.8.2 Economic and Community Development Criteria

Scale/Urban Fit: HRT requires large support columns for elevated guideway structures, or large tunnel portals for subway alignments, which are out of scale with the urbanized settings of the Beach corridor and would impact the existing roadway and pedestrian environment. **Figure 5.19** presents a plan view of a Metrorail station if constructed within a 70’ street right-of-way.

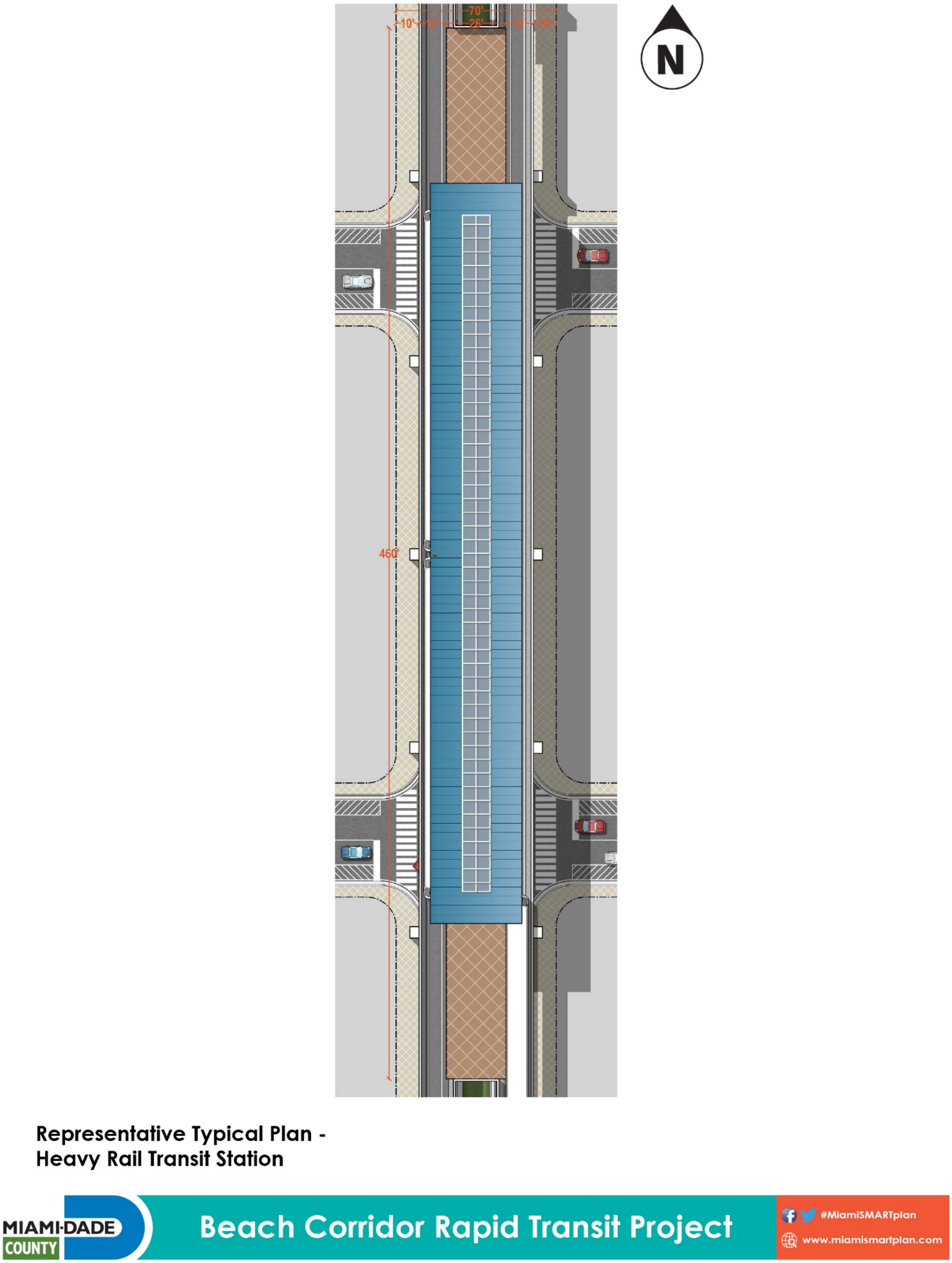


Figure 5.21 | Representative Typical Plan – Heavy Rail Transit Station

TOD Compatibility: Metrorail has potential to facilitate TOD by providing a high-capacity, high-ridership mode of transit with recognizable stations. In some areas, the visual impact of the infrastructure might detract from the TOD opportunities.

Pedestrian/Bicycle Access: Metrorail stations and vehicles are accessible for people with bicycles and could accommodate bicycles on board (either by installing bike racks or allowing passengers with bikes to hold them upright during travel). The guideway support columns may have some adverse impacts to pedestrian and bicycle facilities. As compared with an at-grade mode, elevated stations are not as convenient for pedestrians, requiring use of escalators and elevators which may experience reliability issues.

5.8.3 Environmental Effects Criteria

Social and Economic: In terms of mobility, heavy rail is fast, reliable, accommodates high-capacity travel and is easily accessible.

Cultural: Construction of heavy rail would require large support columns and, potentially additional right-of-way. Therefore, historic/archaeological sites or other community resources could be impacted by the project.

Natural: Construction of heavy rail would likely impact natural resources in Biscayne Bay due to the need for additional right-of-way.

Physical: Heavy rail generates high levels of noise and vibration, which would impact residents and visitors, community and cultural facilities and wildlife in the area. The alignment would also likely impact contaminated properties.

5.8.4 Cost and Feasibility Criteria

Constructability: The estimated capital cost of the representative alignment is in the range of $1.7 B to $2 B. This is outside the range of typical cost per mile for this mode because of the extensive acquisition of developed land, demolition, and site work that would be required to extend Metrorail in the study area.

Operating Cost: The estimated annual operations and maintenance cost of the heavy rail mode, based on a service plan assuming 8-minute peak headways as shown in *Appendix A*, is $22 million.

Eligibility for Funding: Heavy rail transit is a service-proven technology, ADA-compliant, and available as Buy America compliant.

5.9 AUTOMATED TRANSIT SYSTEMS (ATS)

5.9.1 Transit Performance Criteria

Interoperability and Modal Integration: ATS operating on the representative alignment developed for the BRT mode would provide a one-seat ride between the origins and destinations along the alignment including the Design District, Downtown Miami, and Fifth Street/Alton Road in Miami Beach. ATS would provide for easy transfers to numerous existing bus routes, and in Miami Beach could provide an easy transfer to another mode such as LRT, or could be extended to reach additional Miami Beach destinations. ATS would offer a transfer to Metrorail and Metromover at Government Center. However, the distance between the ATS and Metrorail/Metromover platforms would be approximately 200 feet, which will be less convenient and desirable to passengers than the Metromover-to-Metrorail transfer. Local commuters and some tourists might find this transfer acceptable, but some airport-bound travelers would likely be discouraged by this transfer and choose other travel options.

Operational Speed and Reliability: ATS would operate at-grade in a combination of mixed-flow and semi-exclusive (dedicated transit lane) operations. ATS would offer a significant travel-time advantage over existing bus service, but travel at speeds roughly comparable to auto travel times. Additionally, the at-grade operations would limit the reliability of the service, as it could be impacted by traffic congestion or accidents at intersections, even where a dedicated lane and transit signal priority may be provided. Options to maximize speed and reliability in conjunction with BRT will be evaluated as part of the Tier Two Evaluation.

Resiliency: As an at-grade mode, ATS would be vulnerable to flooding.

Passenger Capacity: ATS is initially expected to be provided in small vehicles, which may limit the capacity. Therefore, the mode is not expected to be able to meet the travel demand in the corridor. Based on the service plan shown in *Appendix A*, the peak-hour passenger capacity per direction would be approximately 130 passengers, and daily capacity would be in the range of 3,000.

Vehicle Reliability and Safety: ATS is anticipated to offer safety advantages over vehicles operated by humans, but the actual performance is unknown.

Passenger Amenities: ATS is initially expected to be provided in small vehicles that may not offer the ride quality or ease of entry and exit that larger transit vehicles provide.

5.9.2 Economic and Community Development Criteria

Scale/Urban Fit: ATS would operate within existing roadways and would be compatible with the scale of the neighborhoods along the Beach corridor.

TOD Compatibility: There is no experience with ATS related to TOD.

Pedestrian/Bicycle Access: ATS is initially expected to be provided in small vehicles that would not accommodate bicycles.

5.9.3 Environmental Effects Criteria

Social and Economic: ACT would provide for easy transfers to existing bus transit routes. Similar to other modes of transit, the distance between the ACT and Metrorail/Metromover stations may limit accessibility for some travelers. Part of travel would be fast and reliable; however, sections in mixed-flow lanes would be subject to traffic and congestion, slowing travel times. In addition, this mode of transit does not meet the capacity needs of the corridor.

Cultural: Construction within the existing right-of-way reduces impacts to historic/archaeological resources and other community services and resources.

Natural: Construction within existing right of way would have limited impact to natural resources; i.e., wetlands (seagrass) and protected species. However, the increase of at-grade pavement increases impacts to the floodplain.

Physical: Noise and contamination impacts are expected to be comparable to other modes of transit.

5.9.4 Cost and Feasibility Criteria

Constructability: The estimated capital cost of the representative alignment, inclusive of vehicles, is in the range of $8 to $10 million.

Operating Cost: The estimated annual operations and maintenance cost of the ATS mode, based on a service plan assuming 5-minute peak headways as shown in *Appendix A,* is $11 million.

Eligibility for Funding: ATS is a new technology and may not be a good stand-alone candidate for traditional transit capital funding sources.

APPENDIX A | TRANSIT OPERATIONS AND MAINTENANCE (O&M) COST ESTIMATION

Transit Operations and Maintenance (O&M) Cost Estimation

Following Federal Transit Administration (FTA) requirements and general industry practice, a simplified cost allocation model was developed to estimate operations and maintenance (O&M) cost for the Beach Corridor alternatives based on four cost categories:

- Vehicle operations ($/ vehicle or train revenue hours)
- Vehicle maintenance ($/ vehicle revenue miles)
- Non-vehicle maintenance ($/ directional route miles)
- General administration ($/ peak vehicles)

The unit costs for these four categories were developed separately by technology. Heavy rail, Automated People Mover (Metromover), and BRT were established using historical average unit costs computed from operating and service data of Miami's Metrorail, Metromover, and regular and commuting bus service in the National Transit Database (NTD). Monorail was developed using unit costs of Metromover. LRT/Streetcar, and Aerial Cable Car were developed using national average costs from 2006 to 2015 in NTD. Costs were inflated to 2017 dollars using Consumer Price Index (CPI) data from the Bureau of Labor Statistics (BLS). Figure A-1 summarizes the unit costs of all seven modes/technologies from the O&M model.

Figure A-1 | Operations and Maintenance (O&M) Unit Cost by Technology

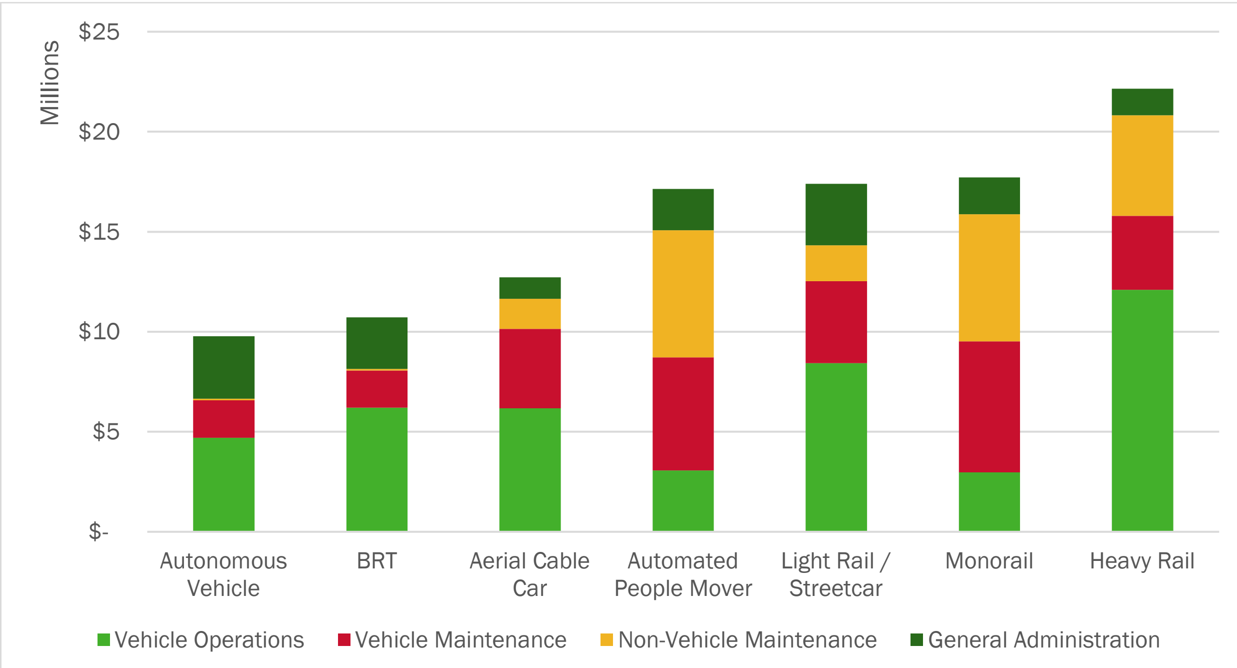
Source: NTD, M-D DTPW, 2006-2015.

Note: Train revenue hours were used as the vehicle operation cost factor for rail modes. Autonomous vehicle was assumed to have 60% unit cost for vehicle operations and the same unit costs for vehicle maintenance, non-vehicle maintenance, and general administration as BRT. The unit costs of "Light Rail / Streetcar" were average unit costs of all light rails and streetcars in NTD. Monorail was developed using unit costs of Metromover.

In terms of vehicle operations, heavy rail has the highest cost per train revenue hour and autonomous vehicles and automated people mover have the lowest unit costs. Aerial cable car's unit costs for vehicle maintenance are significantly higher than other technologies. Automated people mover has the highest non-vehicle maintenance unit cost, followed by heavy rail and aerial cable car. The unit costs of general administration are relatively similar for all seven technologies.

The O&M costs were then calculated using a service plan with headways of five minutes during peak hours and 10 minutes during off-peak hours (slightly longer headways for heavy rail and aerial cable car.) The results are illustrated in Figure A-2.

Figure A-2 | Operations and Maintenance (O&M) Cost by Technology



BRT and autonomous vehicle are estimated to have the lowest O & M cost, which are around 10 million dollars per year. Due to technology and engineering limitations, aerial cable car will only be feasible from approximately the Museum Park Metromover Station to 5th Street & Alton Road. The O&M cost for this 3.5-mile representative aerial cable car alignment is approximately $13 million. Automated people mover, light rail/streetcar, and monorail O&M expenses are estimated at approximately $17 million annually. Heavy Rail O&M expenses are estimated at approximately $22 million annually, mostly as a result of high vehicle operation expense.

Detailed tables of the service plan and O&M cost model results can be found in Table A-1 and Table A-2 respectively.

Table A-1 | Service Plan

Time Period	Early Morning		AM Peak		Midday		PM Peak		Evening		Late Night	
	5:00 AM	7:00 AM	7:00 AM	9:00 AM	9:00 AM	4:00 PM	4:00 PM	6:00 PM	6:00 PM	9:00 PM	9:00 PM	11:00 PM
Weekdays Headways (min)												
Heavy Rail	10		8		10		8		10		20	
Monorail	10		5		10		5		10		20	
BRT	10		5		10		5		10		20	
Light Rail / Streetcar	10		5		10		5		10		20	
Autonomous Vehicle	10		5		10		5		10		20	
Automated People Mover	10		5		10		5		10		20	
Aerial Cable Car	12		6		12		6		12		20	
Weekends Headways (min)												
Heavy Rail	20		20		10		10		10		20	
Monorail	20		20		10		10		10		20	
BRT	20		20		10		10		10		20	
Streetcar	20		20		10		10		10		20	
Autonomous Vehicle	20		20		10		10		10		20	
Automated People Mover	20		20		10		10		10		20	
Aerial Cable Car	20		20		12		12		12		20	

Table A-2 | Operations and Maintenance Cost Model

	Autonomous Vehicle	BRT	Aerial Cable Car[1]	Automated People Mover	Light Rail / Streetcar	Monorail[2]	Heavy Rail
Unit Cost							
Vehicle Operations Cost / Vehicle or train Revenue Hours	$74.76	$124.60	$284.57	$85.76	$172.57	$85.76	$483.56
Vehicle Maintenance / Vehicle Revenue Miles	$2.48	$2.48	$14.06	$7.53	$5.26	$7.53	$2.46
Non-Vehicle Maintenance / Directional Route Miles	$6,288	$6,288	$431,814	$609,026	$172,227	$609,026	$481,407
General Administration / Peak Vehicles	$184,402	$184,402	$179,380	$205,375	$236,513	$205,375	$132,870
Service Statistics							
Annual Vehicle or Train Revenue Hours	62,898	49,860	21,696	35,778	48,816	34,734	25,032
Annual Vehicle Revenue Miles	754,776	747,900	282,048	751,338	781,056	868,350	1,501,920
Directional Route Miles	11.77	11.77	3.50	10.43	10.43	10.43	10.43
Peak Vehicles	17	14	6	10	13	9	10
O & M Cost							
Vehicle Operations	$4,702,192	$6,212,473	$6,173,990	$3,068,281	$8,424,317	$2,978,748	$12,104,483
Vehicle Maintenance	$1,870,380	$1,853,340	$3,964,571	$5,657,102	$4,108,547	$6,538,129	$3,692,685
Non-Vehicle Maintenance	$73,989	$73,989	$1,511,350	$6,353,120	$1,796,607	$6,353,120	$5,021,844
General Administration	$3,134,831	$2,581,626	$1,076,280	$2,053,754	$3,074,675	$1,848,378	$1,328,697
Total	$9,781,392	$10,721,428	$12,726,191	$17,132,257	$17,404,147	$17,718,376	$22,147,709

[1] ACT cost was developed for the representative alignment from approximately the Museum Park Metromover Station to 5th Street & Alton Road.
[1] Monorail was developed using unit costs of Metromover.

[1] Cost was developed for the representative alignment from approximately the Museum Park Metromover Station to 5th Street & Alton Road.
[2] Monorail was developed using unit costs of Metromover.

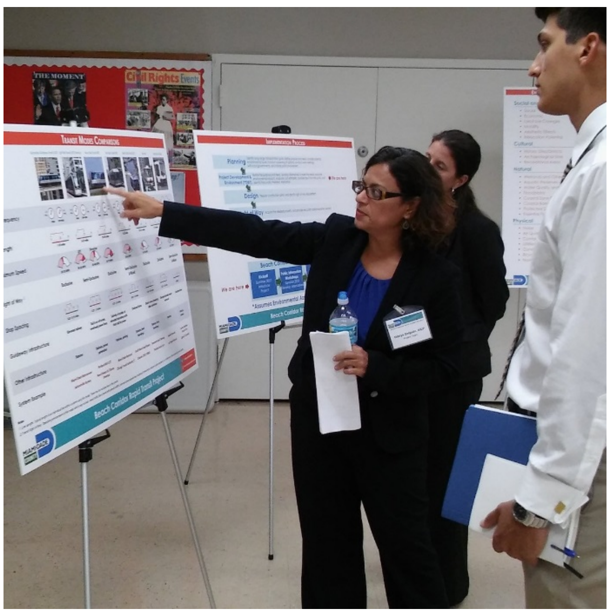
Table A-3 | Travel Time by Mode and Segment

			Heavy Rail Transit	Monorail	BRT	LRT / Streetcar	Autonomous Vehicle	Automated People Mover	Aerial Cable Car
Southbound/Eastbound		Distance (mi	Travel Time (min:sec)						
	Total	**7.6**	**15:35**	**18:02**	**29:44**	**28:04**	**37:49**	**21:10**	**35:04**
	Design District - Downtown Miami Travel Tim	4.2	10:55	11:55	18:34	17:10	23:13	13:29	22:19
	Downtown Miami - Miami Beach Travel Time	3.3	04:40	06:07	11:11	10:54	14:36	07:40	12:45
Westbound/Northbound		Distance (mi	Travel Time (min:sec)						
	Total	**8.5**	**16:28**	**19:22**	**32:23**	**30:43**	**41:21**	**22:56**	**38:01**
	Miami Beach-Downtown Miami Travel Time	3.3	04:40	06:07	11:10	10:54	14:35	07:40	12:45
	Downtown Miami- Design District Travel Tim	5.1	11:48	13:15	21:13	19:50	26:46	15:15	25:16
	Avg One-Way Travel Time (min)		**16.02**	**18.70**	**31.06**	**29.40**	**39.59**	**22.04**	**36.54**

APPENDIX B | PUBLIC INVOLVEMENT

The Beach Corridor Rapid Transit Project Tier One public involvement effort included one agency/elected official kickoff meeting, two public kickoff meetings, several one-on-one meetings with elected officials, the City of Miami and the City of Miami Beach. Meeting announcements were mailed to nearby property owners, placed in the *Miami Herald* and *el Nuevo Herald*, posted on social media and hundreds were distributed by hand at transit hubs and posted on buses and municipal trolleys.

The kickoff meetings were held in an open-house format followed by a formal presentation and comment period. There were 176 total attendees. Attendees were provided with a project fact sheet, speaker card for verbal comment, comment card for written comment, and a survey of public transit modes and preferences. Comments received were largely in support of providing additional public transit services and delivering improvements quickly. Residents urged that more be done in the short term to improve access to Miami Beach from the mainland while we consider long-term solutions. Current inadequate transit options for people who work on the Beach contribute to lack of parking for residents. Several meeting attendees recommended that a direct connection to Miami International Airport should be included. Attendees suggested using data from previous studies of the same area to expedite the process. They also expressed concerned about the study limits and terminus of the corridor, because they stated that Fifth Street and Alton Road in Miami Beach is not a desired destination for anyone visiting Miami Beach. Subsequent presentations to stakeholders included comments on studying different north south alignments in comparison to Miami Avenue (NE 2nd Avenue and Biscayne Boulevard in Design district segment and NW 2nd Avenue in Downtown Miami segment). As a result of input received, the Tier 2 evaluation will be expanded to included alignments to the Miami Beach Convention Center.



APPENDIX C | NOISE IMPACT ANALYSIS

An operational noise assessment was conducted for each mode and representative alignment considered in the Tier One evaluation, using the FTA guidelines spreadsheet and procedures. Aerial Cable Transit was excluded from the analysis, based on literature review indicating this mode would not be expected to cause noise impacts. Project-related noise levels and noise impact distance were calculated using FTA reference sound levels for each transit technology. These noise impacts distances were used for the rank order rating assessment and were also used to show noise impact buffers on corridor figures for each technology.

Table C-1 shows the existing noise level, predicted distance for moderate and severe noise impacts due to each mass transits technology, and the rank order assigned to determine potential for noise impact for each technology.

Table C-1 | Operational Noise Impacts

Alignment Section	Land Use	Rail Technology Type	Speed, mph^	Existing Noise Level L_{dn}, dBA	Mod. Impact Noise Level, dBA	Sev. Impact Noise Level, dBA	Mod. Impact Distance, ft*	Sev. Impact Distance, ft*	Mod. Impact Rank Order	Sev. Impact Rank Order
Design District	Residential	Metromover	20	75	65	73	13	4	4	4
MacArthur Causeway	Residential	Metromover	30	61	58	64	64	27	4	3
Design District	Residential	Monorail	25	75	65	73	3	1	2	2
MacArthur Causeway	Residential	Monorail	45	61	58	64	19	8	2	2
Design District	Residential	Metrorail	30	75	65	73	55	16	6	6
MacArthur Causeway	Residential	Metrorail	55	61	58	64	340	145	6	6
Design District	Residential	LRT/Streetcar**	15	75	65	73	14	4	5	4
MacArthur Causeway	Residential	LRT/Streetcar**	45	61	58	64	170	73	5	5
Design District	Residential	BRT	15	75	65	73	5	1	3	2
MacArthur Causeway	Residential	BRT	45	61	58	64	62	27	3	3

<u>APPENDIX A-6</u>

Miami Corridor Analysis Final Report

Miami Corridor Analysis Report

For the

Beach Corridor Rapid Transit Project

Project Development and Environment (PD&E) Study

Prepared for:

MIAMI-DADE DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS

Prepared by:

Parsons Corporation

August 2018

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1 Introduction

1.1 Project Description

The Miami-Dade County Department of Transportation and Public Works (DTPW) is conducting a Project Development and Environment (PD&E) study for the Beach corridor in collaboration with the Federal Transit Administration (FTA) and Florida Department of Transportation (FDOT). A Tier One Evaluation considered six alternative technologies to provide rapid-transit connections between the Midtown Miami/Design District, Downtown Miami, and Miami Beach (**Figure 1-1**). The Tier One Evaluation studied a connection to Fifth Street/Alton Road in Miami Beach. DTPW identified the following transit technologies (modes) for consideration in the Beach Corridor Rapid Transit Project Tier One Evaluation:

- Automated guideway transit (Metromover)
- Streetcar/light rail transit
- Heavy rail transit (Metrorail)
- Bus rapid transit
- Aerial cable transit
- Monorail
- Automated transit systems

Figure 1-1 | Study Area

1.2 Project Purpose Overview

The purpose of the project is to increase the person-throughput to the Beach corridor's major origins and destinations via a rapid transit technology. Project need includes the following:

- Connect to and provide direct, convenient, and comfortable rapid-transit service to serve existing and future planned land uses
- Provide enhanced interconnections with Metrorail, Tri-Rail, Brightline, Metromover, and Metrobus routes; Broward County Transit (BCT) bus routes; Miami and Miami Beach circulators; jitneys; shuttles; taxis; Transportation Network Companies (TNCs); and/or other supporting transportation services
- Promote pedestrian- and bicycle-friendly solutions in the corridors of the study area

1.3 Project Need Overview

The Beach corridor traverses an area that is at the epicenter of population and economic growth within Miami-Dade County. The central business district (CBD) area and Miami Beach have undergone rapid population and employment increases over the past decade, a trend that is projected to continue over the next 20 years. The population densities in the study area are among the highest in the nation, with Downtown Miami (CBD) at 17,800 persons per square mile and Miami Beach at 11,500 persons per square mile, per the 2010 U.S. Census. Downtown Miami saw a dramatic 172 percent increase in population density over the last decade.

Due to the region's appealing qualities, such as its temperate climate; attractive beaches; and convenient access to the Caribbean and Latin America, South Florida, and Miami-Dade County, it has become an important tourist destination for both national and international visitors. The county hosts millions of annual visitors and seasonal residents. Visitors typically access the study area via tour bus, taxi, or rental car. Miami Beach and Downtown Miami are the two most popular locations for overnight stays, lodging 60 percent of all 2012 visitors with approximately 5.8 million and 2.4 million overnight guests, respectively. Additionally, four of the six most-visited attractions are in close proximity to the Beach corridor, including South Beach, the beaches, Lincoln Road, and Downtown Miami. The study area also contains PortMiami. In 2013, 4.1 million cruise ship passengers used the port, up from 3.4 million in 2000. This high rate of tourism generates additional demand for travel, produces additional trips within the area, and contributes to traffic and subsequently roadway congestion. The 2012 Visitor Industry Overview, a survey that reached 13.4 percent of all visitors that year, listed traffic congestion as the top negative aspect of trips to greater Miami. Traffic congestion has been the top-ranked problem in each of the last five annual surveys.

The project corridor includes three distinct segments of travel demand and origin/destination pairs: an east–west connection between Miami Beach and downtown Miami (approximately 5 miles), and a north–south connection between the Design District/Midtown and downtown Miami (approximately 3 miles); as well as Design District/Midtown to Miami Beach (approximately 8 miles).

In the east–west segment, I-195 is operating at capacity and I-395 is experiencing traffic volumes that exceed its capacity by more than 50 percent. Existing bus transit service in the east–west corridor serves more than 17,000 riders per day, with the two most frequent routes at 72 percent and 89 percent of their existing capacity, respectively.

The north–south segment is served by several local streets, operating at between 50 and 90 percent of capacity. The most frequent bus service in the north–south segment operates at 87 percent capacity, while Metromover operates at 85 percent capacity.

1.4 Tier One Analysis Results

The Tier One evaluation demonstrated that the recommended modes differ in their suitability to sub-areas of the study corridor. Four distinct segments were identified for consideration in Tier Two.

- Design District
- Downtown Miami

- Bay Crossing
- Miami Beach.

The recommended Tier Two study areas for alignment alternatives by mode are as follows:

- Monorail: Recommended for study of alignment alternatives in the Design District, Downtown Miami, and Bay Crossing segments.
- Metromover: Recommended for study of alignment alternatives in all segments (Design District, Downtown Miami, Bay Crossing and Miami Beach).
- BRT/Express Bus: Recommended for study of BRT and/or Express Bus from Downtown to Convention Center (with a repurposed typical section along the Causeway and a dedicated lane in Miami Beach) and Express Bus along a freeway loop alignment using I-95, I-195, I-395 in Miami and 5th street, Washington and Alton Roads in the Miami Beach segment.
- LRT/Streetcar: Recommended for study of alignment alternatives in the Design District, Bay Crossing, and Miami Beach segments.

1.4.1 Public Involvement in Tier 1

The Beach Corridor Rapid Transit Project public involvement effort included one agency/elected official kickoff meeting, two public kickoff meetings, several one-on-one meetings with elected officials, the City of Miami and the City of Miami Beach. During the public meetings, a conceptual alignment along North Miami Avenue from Downtown to Design District in the City of Miami was presented. In subsequent presentations to individual stakeholder groups, comments were received regarding the study of additional north/south corridor alignments instead of North Miami Avenue. At the time of an Overtown Community Advisory Board (OCAB) presentation (October 19, 2017), all technologies were being considered within all segments of the study area. A request was received by the OCAB to study the light rail at-grade option further west along NW 2nd Avenue instead of NW 1st Avenue as shown in Figure 1-1. However, as detailed above in the Tier 1 results, the light rail at-grade alignment was removed from further consideration south of I-395 due to the difficulty of introducing a new mode, that would require a dedicated lane, into already congested downtown streets. The Overtown community and the NW 2nd Avenue area is already served by Metromover, thus, any elevated Metromover extensions studied would serve this area. Results of the corridor analysis will be presented to the interested stakeholders.

Therefore, the purpose of this corridor analysis report presents the main analysis conducted for two additional corridors: NE 2nd Avenue and Biscayne Boulevard from Downtown to the Design district, in comparison to the previously studied North Miami Avenue. The corridor analysis only considered technologies recommended to proceed into Tier 2 as outlined above, further generalized as elevated (Metromover and Monorail) and at-grade (Light Rail Transit) for simplicity of evaluation.

2 Corridor Analysis

2.1 Alternate Corridor Descriptions

2.1.1 North Miami Avenue

The limits for comparison along North Miami Avenue are from just south of I-395 to north of I-195 as depicted in Figure 2.1. North Miami Avenue is a county-maintained roadway. From just south of I-395 to NW 17th Street, the corridor is generally a 3-lane, one-way roadway carrying vehicular traffic southbound. From NW 17th Street to just north of I-195 the corridor generally consists of a 4-lane, undivided roadway with a center, left turn lane. Concrete sidewalks, bicycle lanes, some on-street parking and street lighting exist throughout the corridor. The posted speed limit is 30-MPH.

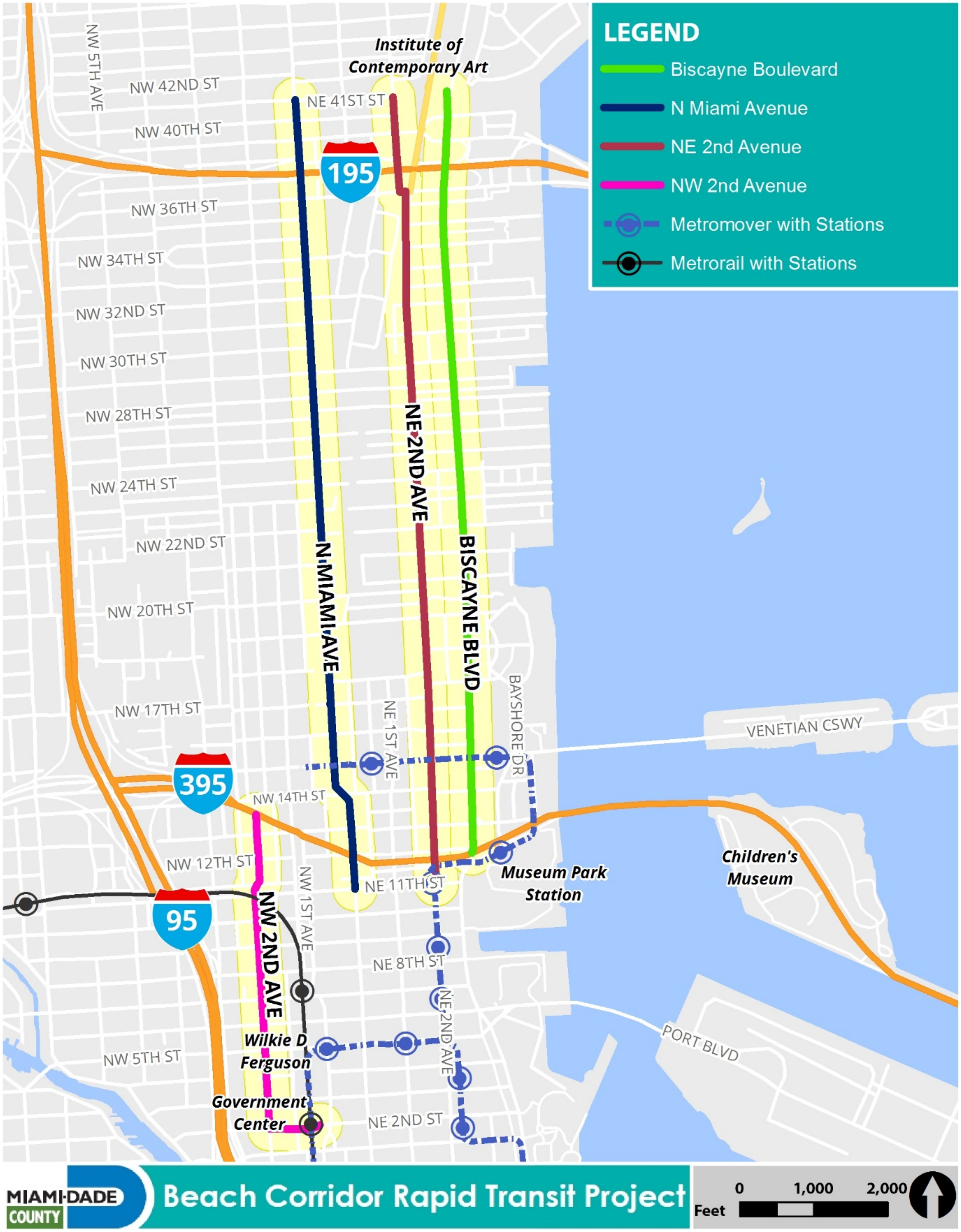


Figure 2-1 | Alternate Corridors

Notable features of this corridor include the reverse curves in the roadway alignment at the NW 14th Street intersection, the above grade crossing of the Metromover at NW 15th Street, the at-grade crossing of the Florida East Coast Railway (FEC) at NW 19th Street, extensive overhead utilities (particularly along the west side of the road), and the Shops at Midtown at the north end of the corridor.

City of Miami land uses include mostly general commercial and industrial although the corridor is experiencing extensive residential and retail redevelopment.

2.1.2 NE 2nd Avenue

The second corridor analyzed is along NE 2nd Avenue from just south of I-395 to north of I-195 as depicted in **Figure 2.1.** NE 2nd Avenue is a county-maintained roadway. The corridor generally consists of a 4-lane, undivided roadway. Concrete sidewalks and some lighting exist along the corridor. The posted speed limit is 30-MPH.

Notable features of this corridor include the above grade crossings of the Metromover just south of I-395 and at NE 15th Street, the pedestrian overpass just north of NE 15th Street, overhead utilities (particularly along the west side of the road), and segments with constrained right-of-way adjacent to the FEC at the north end of the corridor.

City of Miami land uses include general commercial, office, some mixed residential uses and industrial/institutional at the southern end.

2.1.3 Biscayne Boulevard

The third corridor analyzed is along Biscayne Boulevard (SR 5) from just south of I-395 to north of I-195 as depicted in **Figure 2.1.** Biscayne Boulevard is a part of the State Highway System (SHS) and maintained by the Florida Department of Transportation (FDOT). The corridor generally consists of a 4-lane, undivided roadway with a center, left turn lane. Wide concrete sidewalks with landscaping strips (grass or Palm trees) and some decorative street lighting exists along the corridor. The posted speed limit is 30-MPH.

Notable features of the corridor include the pedestrian overpass at the Adriene Arsht Center and the above grade crossings of the Metromover just south of I-395 and at NE 15th Street.

City of Miami land uses include mixed use and residential uses, office, some general commercial and institutional at the southern end.

2.1.4 NW 2nd Avenue

NW 2nd Avenue, as depicted in **Figure 2.1**, was considered at the request of the OCAB. NW 2nd Avenue is a county-maintained roadway. The corridor generally consists of a 2-lane, undivided roadway. Concrete sidewalks and some on-street parking exist along the corridor. The posted speed limit is 30-MPH.

The existing Metromover system is located one block to the east and runs parallel from NW 5th Street and to the south. Based on the proximity of the Metromover line along the corridor, an elevated transit alternative (Metromover, monorail) would be redundant and has not been further analyzed as part of this study. As mentioned previously, the at-grade light rail alternative is not being further considered south of I-395. Therefore, no additional analysis was conducted for NW 2nd Avenue.

2.2 Maintenance Facility Identification

2.2.1 Vehicle Maintenance and Storage Facility

For purposes of determining whether one corridor along the Miami side of the Beach Corridor conceptual alignment has more likelihood of accommodating a future vehicle maintenance and storage facility (VMSF), a preliminary assessment of potential sites was conducted. This assessment assumes that a new VMSF will be required to store, service and maintain light rail vehicles

(LRVs) for revenue service on the Beach Corridor line. If other technologies are chosen as the preferred (Metromover or Bus Rapid Transit), existing storage facilities provided by DTPW will be analyzed for accommodation of new service vehicles. The assessment is therefore for the most stringent requirement of providing a new VMSF assumption for a new technology. The VMSF would be designed to accommodate new vehicles to provide DTPW with the ability to run any LRV on any operating line segment. The VMSF will be designed and configured to handle an ultimate capacity of LRV's to be determined in the Environmental Impact Statement phase of the project and would include the following vehicle maintenance activities:

- Daily servicing (interior cleaning, sanding, and daily inspections)
- Exterior washing
- Scheduled vehicle inspections
- Unscheduled running repairs
- Component changeouts including truck removals
- Minor glass and panel replacements
- Fleet modifications and campaigns
- Major vehicle repairs, scheduled vehicle overhauls and all major component repairs and overhauls

Facilities would also be provided to accommodate the following:

- Rail Operations (Transportation)
- Materials Management
- Rail Systems Maintenance (Track, Traction Power, Signals, and Communications)
- Facilities Maintenance

A needs analysis will be performed as part of the EIS phase to develop a program of requirements for the new VSMF. It is anticipated that at a minimum the following will be required:

- One drive-through automatic exterior car washer
- Two inspection/repair pit positions with car rooftop access platforms
- Two in-ground car hoists
- One vehicle position designed to facilitate the removal and replacement of car roof level components
- Spare truck and component storage
- Some minor component repair capability
- Office and welfare areas for the Vehicle Maintenance, Operations (Transportation) and Rail Systems Maintenance departments
- Materials Management main parts storeroom for vehicle and corridor components
- A Facilities Maintenance shop and office
- Indoor parking/storage bays for specialized non-revenue vehicles (i.e., salt truck, crane trucks, boom trucks, and platform truck)
- Outdoor storage for Systems Maintenance materials
- Yard and shop substation(s)

The LRV storage tracks and the daily LRV servicing (sanding) track would accommodate three cars at a minimum. Based on current unknown fleet projections and VMSF building footprint, it is broadly estimated that a minimum site size of four acres will be necessary.

The fleet capacity and building size is to be confirmed during the preliminary engineering design phase of the project.

Site Considerations

The basic premise of site considerations is to minimize non-revenue track to access the proposed site. Based on the above assumptions four sites were identified: 1) North Miami Avenue at NE 17th Terrace; 2) Biscayne Boulevard at NE 33 street; 3) Biscayne Boulevard at NE 26 street; 4) NE 15th street and NE 1 court – school board site.

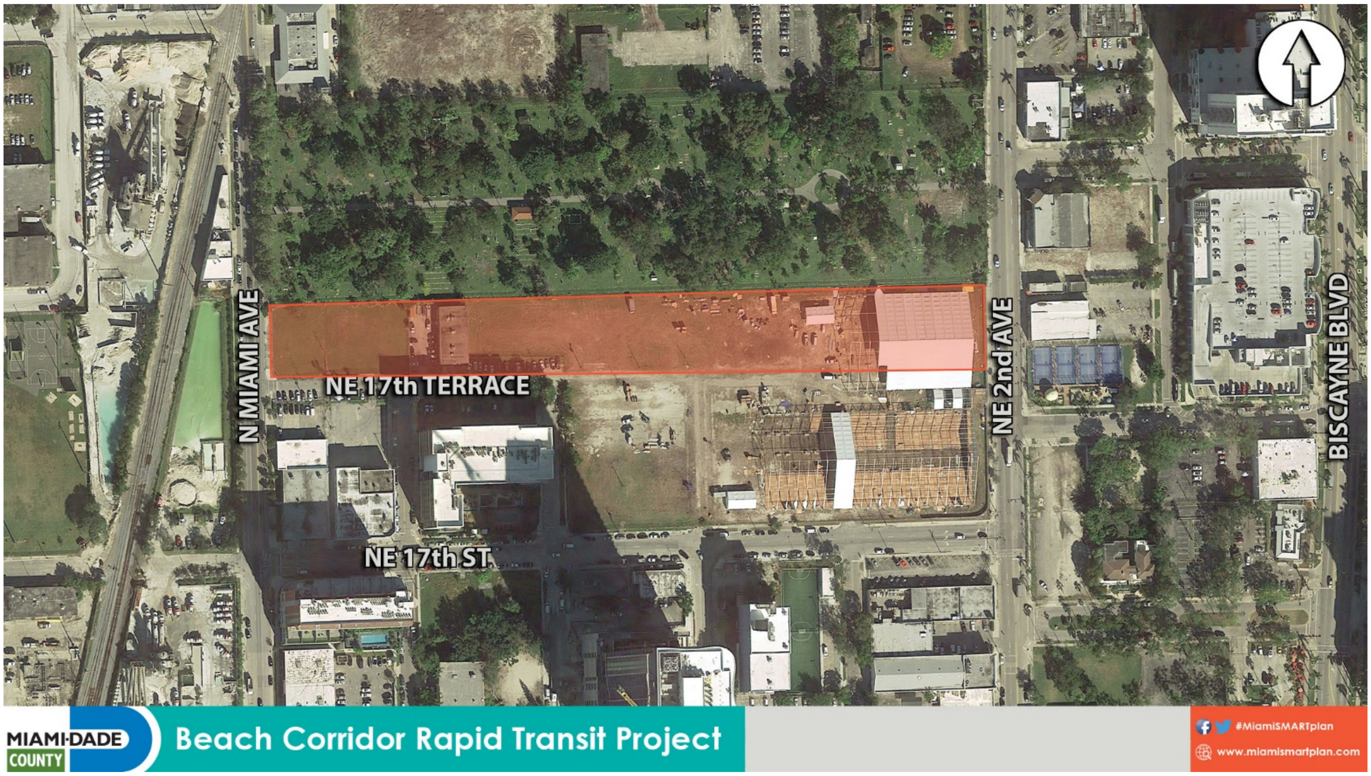


Figure 2-2 | North Miami Avenue/17th Terr.

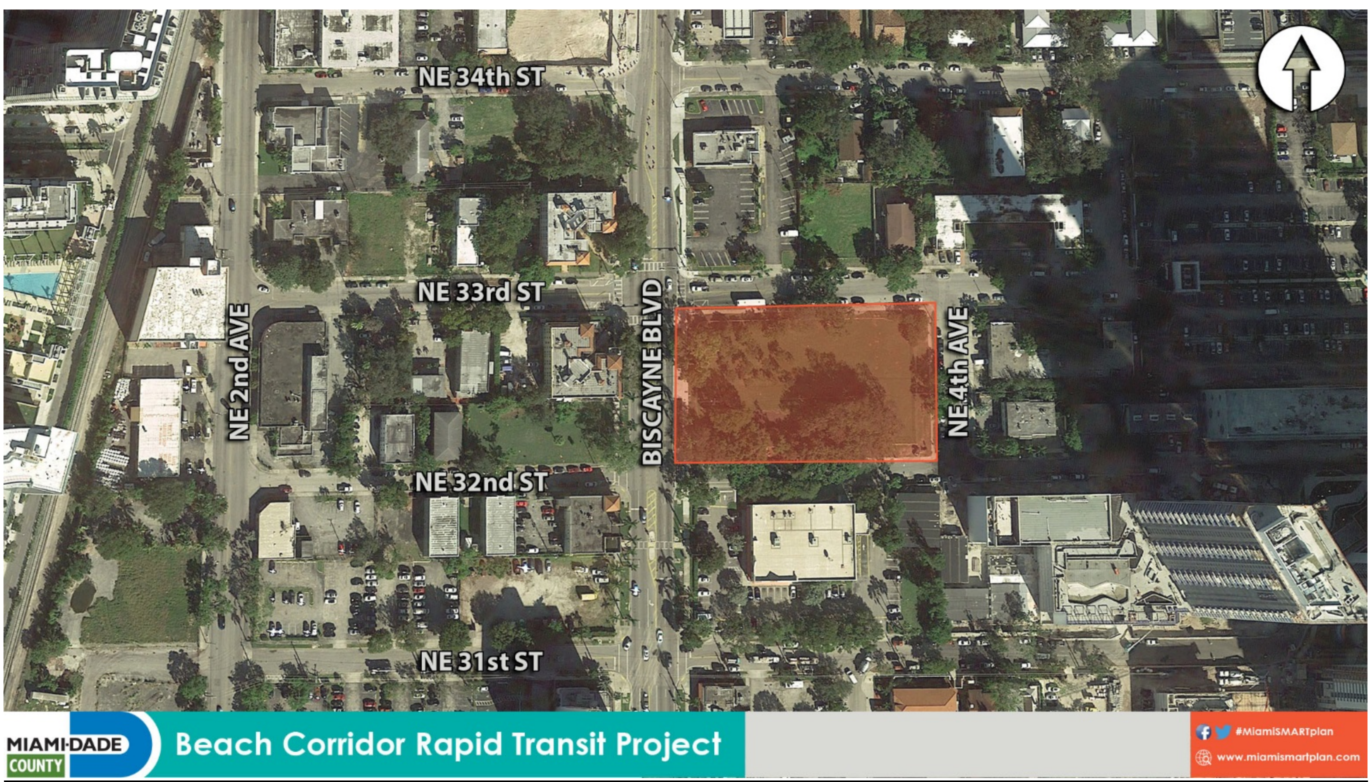


Figure 2-3 | Biscayne/33rd street

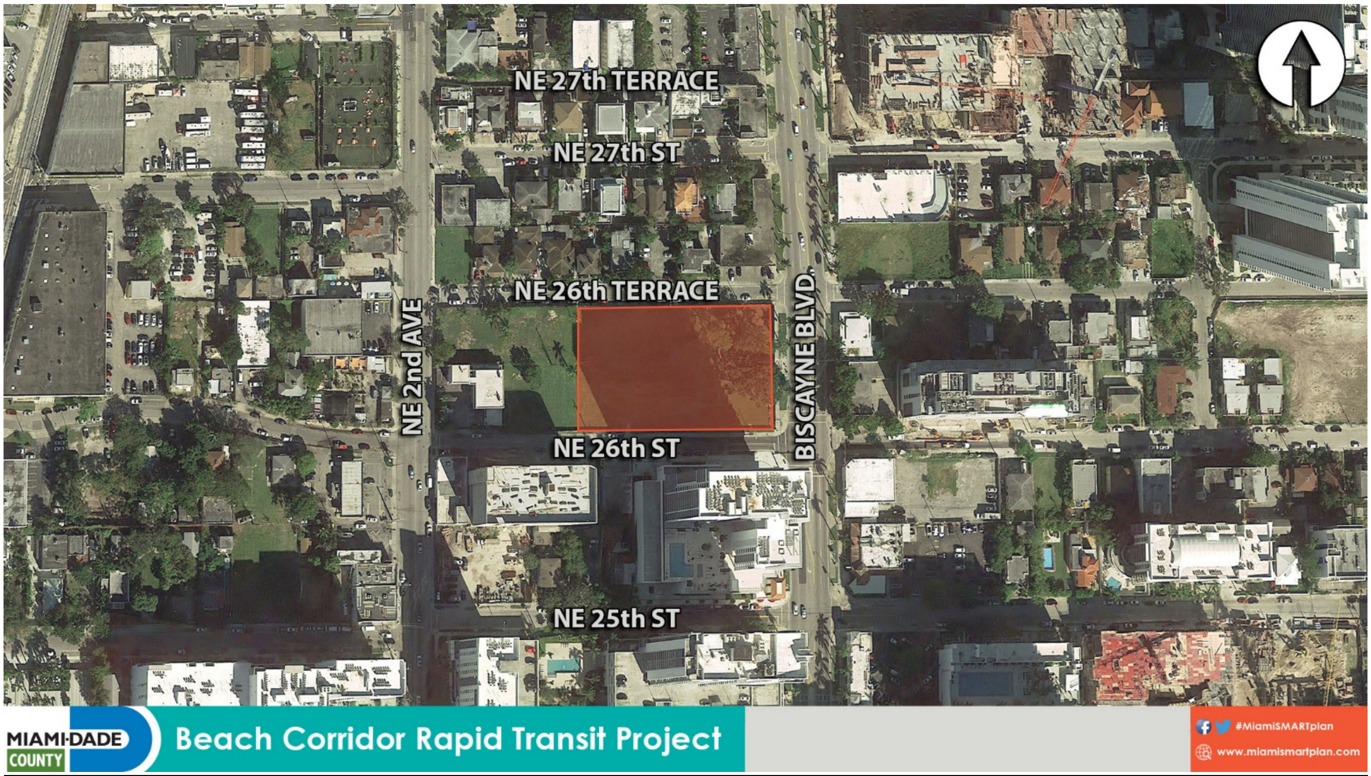


Figure 2-4 | Biscayne/26th street

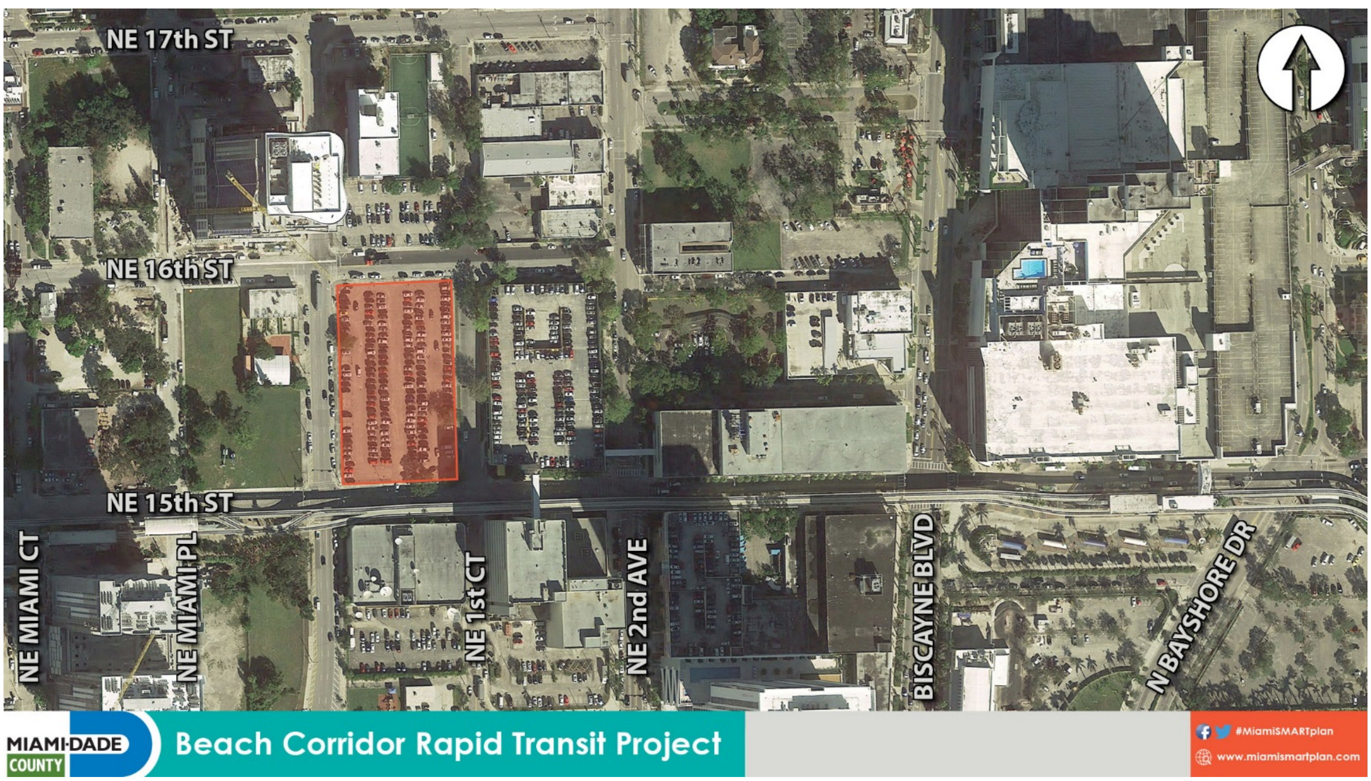


Figure 2-5 | NE 15th St/1 court

The sites identified along North Miami Avenue and NE 15th Street could accommodate service either along a NE 2nd Avenue alignment or a North Miami Avenue alignment. Several sites identified along Biscayne Boulevard would accommodate a service along this corridor. Based on this preliminary review, it appears that all three corridors can accommodate the more stringent requirement for a new VMSF on a four-acre site.

Safety and Security features to be included in the VMSF relate to fencing and CCTV cameras. Fencing options would depend on adjacent land use areas to minimize visual impacts. Noise and vibration would be associated with any proposed maintenance facility.

2.3 Existing Environmental Conditions

As part of the Beach Corridor alternatives analysis, the existing environmental conditions of the three main conceptual alternative alignments were evaluated. The desktop analysis involved downloading the most recent data layers from the Florida Geographic Data Library (FGDL) for each environmental resource and clipping the data to a buffer surrounding each alignment in ArcGIS. The buffer radius used in the analysis varied for each environmental resource and is specified in the sections below. Environmental maps depicting analysis for each resource is included in Appendix A.

A matrix was developed to compare the impacts and benefits to resources between the three alternatives and between an at-grade or elevated option for each alternative (Table 2-1). Positive impacts, or benefits were assigned a "+" and negative impacts were assigned a "-". If there was no involvement or no impact or benefit, a "0" was assigned. The following describes the findings of the desktop analysis.

2.3.1 Social and Economic

2.3.1.1 Demographics

The demographic data was obtained by conducting a search in the Efficient Transportation Decision Making (ETDM) Environmental Screening Tool (EST), using a one-quarter mile buffer for each corridor. Data was obtained from the 2016 American Community Survey. The population is greatest in the Biscayne Boulevard corridor (17,765). The median income of this area is also the highest ($71,450). This corridor also has the highest percentage of college graduates (50.63%) and the smallest percentage of housing units with no vehicle (10.14%). The North Miami Avenue corridor has the smallest population (9,417) but the largest percentage of housing units without a vehicle (24.05%). The North Miami Avenue corridor also has the lowest median household income ($36,359), the lowest percentage of college graduates (31.88%), the highest minority population percentage (84.97%) and the highest percentage of persons aged 20-64 who are disabled (10.78%). These demographic characteristics are between each of these values for the NE 2nd Avenue corridor. NE 2nd Avenue has a population of 16,740, 46.86% of which are college graduates and 72.57% are minorities. The median household income is $52,067 and 11.38% of the housing units do not have a vehicle. Based on the demographic data, the benefit to the surrounding community would be the greatest for the North Miami Avenue corridor whether the system is at-grade or elevated.

2.3.1.2 Community Facilities

The presence of community facilities in each alternative corridor was gauged using a one-quarter mile buffer. A map of these facilities is shown in Appendix A. Based on the data, the North Miami Avenue corridor and the NE 2nd Avenue corridor have a greater number of community facilities nearby than the Biscayne Boulevard corridor; 98 and 97 compared to 75, respectively. In comparing just the North Miami Avenue and NE 2nd Avenue corridors, it appears that there are more cultural centers (32), schools (14), group care facilities (17) and religious centers (16) within the North Miami Avenue corridor. In addition to this, the facilities appear to be closer to the project corridor in the North Miami Avenue corridor, increasing the accessibility of riders to the facilities.

There are positive benefits of increased accessibility to these facilities along both these corridors whether there is an at-grade system or an elevated system.

2.3.1.3 Mobility

Each alternative corridor provides a parallel facility to I-95 linking I-395 and I-195 providing greater accessibility to the Downtown Miami core area. Each alternative presented would also be compliant with safety and Americans with Disabilities Act (ADA) guidelines.

There are currently two Metromover stations on NE 15th Street: one is located between North Miami Avenue and NE 2nd Avenue and the second is just east of the intersection with Biscayne Boulevard. Therefore, all three alternative corridors would have access to Metromover. However, along North Miami Avenue, service will soon also be provided by the Brightline (high-speed rail), which leads to the Metrorail station on North Miami Avenue. Thus, there will be additional modes of public transit available near the North Miami Avenue corridor. For increased mobility, an elevated technology may be preferred to allow for easier connections to Metromover, higher speed and reduced travel times. Portions of the at-grade option may be in mixed traffic, resulting in delays and reduced travel times.

2.3.1.4 Aesthetics

While the aesthetical impacts of an at-grade system would be minimal for the three alternative corridors, an elevated system may cause an obstruction of view or change the viewshed. Of the three alternatives presented, the Biscayne Boulevard corridor would be aesthetically impacted the most by an elevated alternative because it has the highest residential land use percentage (18.68%) compared to that of the NE 2nd Avenue corridor (16.56%) and the North Miami Avenue corridor (15.99%). Biscayne Boulevard also has extensive landscaping that would be impacted with either an elevated alternative or overhead catenary from a light rail system. Additionally, the Biscayne Boulevard corridor is closer to Biscayne Bay, and an elevated system parallel to the waterfront is more likely to detract from the view.

2.3.1.5 Relocation Potential

The three alternative corridors are generally within the current right-of-way. Elevated options may require small right-of-way impacts for columns. However, no displacement is anticipated at this time.

2.3.2 Cultural

2.3.2.1 Historic/Archaeological

In regard to historical and archaeological features within the alternative corridors, a 300-foot buffer was used. The locations of these features can be seen in Appendix A. The Biscayne Boulevard corridor has the most historical resources eligible for the National Register of Historic Places (NRHP), potentially eligible for the NRHP and not evaluated by State Historic Preservation Officer (SHPO). Seven sites eligible for the NRHP, 22 potentially eligible for the NRHP and 90 not evaluated by SHPO. The North Miami Avenue corridor has the least amount of historical resources, with only four eligible for the NRHP, one potentially eligible for the NRHP and 20 not evaluated by SHPO. The resources are also generally further away from the roadway in the North Miami Avenue corridor. The NE 2nd Avenue corridor has four sites eligible for the NRHP, three sites are potentially eligible and 49 sites that have not been evaluated by the SHPO. Both the North Miami Avenue corridor and NE 2nd Avenue corridor are adjacent to the City of Miami Cemetery, which is a historical cemetery eligible for the NRHP. For this reason, an at-grade option may be preferred to reduce the possibility of damage to the cemetery due to vibration during installation of deep foundations for elevated columns.

2.3.2.2 Recreational Sites

A 200-foot buffer was used to analyze potential impacts to recreational sites (Appendix A). The recreational sites within the three alternative corridors include one park and three trails. Biscayne Park lies within 200 feet of the NE 2nd Avenue corridor. The only trail present within 200 feet of both the NE 2nd Avenue and the North Miami Avenue corridors is the All Aboard Florida Rail with Trail, which parallels the Florida East Coast (FEC) Railway. However, the Biscayne Boulevard corridor has two trails present within its 200-foot buffer: the M-Path Metrorail Trail and the East Coast Greenway. These trails coincide at this location. The M-Path is a 10-mile, urban trail only in Miami-Dade County underneath the Metrorail line, whereas, the East Coast Greenway is a 3,000-mile, mostly off-road trail from Key West, Florida to Calais, Maine at the Canadian border. Nonetheless, the addition of transit, whether at-grade or elevated, is not anticipated to impact any of the recreational sites.

2.3.3 Natural

2.3.3.1 Wetlands and Other Surface Waters

According to the National Wetlands Inventory, there are no wetlands present within a 200-foot buffer of the three alternative corridors presented within this report. Therefore, a 0 was assigned for each of the alternatives, at-grade or elevated.

2.3.3.2 Protected Species and Habitat

Each alternative corridor falls entirely within the United States Fish and Wildlife Service (USFWS) Consultation Areas (CA) for the West Indian manatee, piping plover, American Crocodile, Atlantic Coast Plants, and Florida Bonneted Bat. While the likelihood of protected species being in the project limits is minimal, any encounter with wildlife is deemed to have a potentially negative impact regardless of the elevated or at-grade technology selected.

2.3.3.3 Coastal

There are no coastal areas of significance within 200 feet of the three alternative corridors. The 200-foot buffer zones of the three alternative corridors are not within seagrass, mangrove or aquatic preserve areas.

2.3.3.4 Floodplains

FEMA floodplain data was evaluated for a 200-foot buffer around each alternative corridor. According to FEMA floodplain data, the entirety of the North Miami Avenue corridor lies outside of the 100-year floodplain. Only five percent of the NE 2nd Avenue corridor is within the 100-year floodplain. However, 52 percent of the Biscayne Boulevard corridor is within a 100-year floodplain, zone AE with flood depths greater than three feet during a 100-year flood. Considerations for transit within a 100-year floodplain would be required for the Biscayne Boulevard corridor, whether at-grade or elevated.

2.3.4 Physical

2.3.4.1 Noise and Vibration

Residences were considered the primary noise-sensitive receptors and community features were of secondary importance. Of the three alternative corridors, North Miami Avenue is least populated with residents within the one-quarter mile buffer evaluated; the other two alternative corridors having more than 80 percent more residents within a quarter mile of the proposed corridor. In addition, there are other community features within the proposed alternative corridors that may potentially be sensitive to noise and vibration effects such as schools, cultural centers, government buildings, healthcare facilities, parks, religious centers, recreational trails and historic resources. While the Biscayne Boulevard corridor has fewer community features, based on the substantially lower number of residences along the North Miami Avenue corridor, the overall effect of noise and vibration is potentially lowest for the North Miami Avenue corridor.

2.3.4.2 Air Quality

The current data on the United States Environmental Protection Agency (USEPA) website indicates that the three alternative corridors are not located within a USEPA-designated Air Quality Maintenance or Non-Attainment Area. Therefore, the Clean Air Act conformity requirements do not apply at this time. While potential impacts to air quality could occur as a result of emissions from equipment and dust generated from construction activities, no permanent effects to air quality are anticipated. As such, the three alternative corridors present remain viable options in this regard, whether they are at-grade or elevated.

2.3.4.3 Contamination

Three buffers were used for the review of contaminated sites: 500 feet for contaminated sites and brownfields; 1,000 feet for non-landfill solid waste sites and a half-mile for landfills, National Priority List (NPL) and Comprehensive Environmental Response, Compensation and Liability (CERCLA) Superfund sites. Contaminated sites for the three alternatives are shown in Appendix A.

Regarding brownfields, the entire area, all three corridors are within the Miami Area Brownfields. Both the North Miami Avenue corridor and the NE 2nd Avenue corridor contain one brownfield site and the Biscayne Boulevard corridor also has one brownfield site within 500 feet. Regarding potential contamination sites, the North Miami Avenue corridor has seven contaminated sites compared to nine in the Biscayne Boulevard corridor and 16 in the NE 2nd Avenue corridor. There are also two solid waste sites within 1,000 feet of the NE 2nd Avenue and North Miami Avenue corridors while only one solid waste site within 1,000 feet of the Biscayne Boulevard corridor. There are no landfill, NPL or CERCLA Superfund sites within a half of a mile radius of any of the three alternative corridors.

A more detailed analysis of contamination in the existing right-of-way would be required to determine the impacts of at-grade versus elevated structures. However, it is generally believed that there would be less impact with elevated transit options due to less opportunity for conflict with contaminated sites.

Table 2-1 is a summary of the corridor evaluation from an environmental assessment perspective. As indicated, from a social and economic perspective, the North Miami Avenue corridor scored best; for the cultural and natural assessment all the corridors had similar ratings; and for the physical assessment the North Miami Avenue corridor had the potential for least impact with respect to noise and vibration.

Table 2-1 | Summary of Relative Environmental Impacts and Benefits for Each Alternative Corridor

ALTERNATIVE	N MIAMI AVENUE		NE 2ND AVENUE		BISCAYNE BOULEVARD	
	At-grade	Elevated	At-grade	Elevated	At-grade	Elevated
Social and Economic						
Demographics	+ + +	+ + +	+ +	+ +	+	+
Community Facilities	+ + +	+ + +	+ +	+ +	+	+
Mobility	+ + +	+ + + +	+ +	+ + +	+	+ +
Aesthetics	0	—	0	—	0	— —
Relocation Potential	0	0	0	0	0	0
Cultural						
Historical/Archeological Resources	—	— —	—	— —	—	— —

Table 2-1 | Summary of Relative Environmental Impacts and Benefits for Each Alternative Corridor

ALTERNATIVE	N MIAMI AVENUE		NE 2ND AVENUE		BISCAYNE BOULEVARD	
	At-grade	Elevated	At-grade	Elevated	At-grade	Elevated
Recreational Facilities	0	0	0	0	0	0
Natural						
Wetlands and Other Surface Waters	0	0	0	0	0	0
Protected Species and Habitat	–	–	–	–	–	–
Coastal	0	0	0	0	0	0
Floodplain	0	0	0	0	–	–
Physical						
Contamination	– –	–	– –	–	– –	–
Noise	–	–	– –	– –	– –	– –
Air Quality	0	0	0	0	0	0

+, ++, +++ or ++++ = Relative Benefit

- or -- = Relative Adverse Impact

0 = No Impact or Benefit

2.4 Transportation and Ridership Analysis

2.4.1 Land Use Capture analysis

The study corridor consists of two segments, a north-south connection between the Design District and Downtown Miami, and an east-west connection between Downtown Miami and Miami Beach. For the north-south segment, alternative alignments along three parallel corridors were evaluated to enable maximum transit benefit to this area: NE 2nd Avenue, North Miami Avenue, and Biscayne Boulevard.

The parallel corridor alternatives have quite different levels of population and employment density today and are anticipated to continue to do so in the future as indicated in Table 2-2 and Table 2-3 below. It should be noted that the data here (population and employment estimates by traffic analysis zone [TAZ] prepared by Miami-Dade County for transportation modeling purposes) differs slightly from that used earlier in Section 2.3.1.1 which accessed through FDOT's Environmental Screening Tool and originates from the Census's American Community Survey which includes more information on income and education etc. does not include employment. Additionally, the polygons used to query the data are station-based walk buffers as opposed to ¼ mile offset from the corridor centerline.

Miami Avenue currently has the lowest densities of both population and employment; the relative 2015 population densities along NE 2nd Avenue are 60 percent higher than North Miami Avenue, and for Biscayne Boulevard they are 100 percent higher than Miami Avenue, making Biscayne Boulevard the most productive location for a major transit investment based on existing conditions.

Table 2-2 | Station Area Demographics – ¼ mile station catchment area						
	North Miami Avenue		NE 2nd Avenue		Biscayne Boulevard.	
	2015	2040	2015	2040	2015	2040
Population	8,700	20,500	13,600	36,700	20,600	49,200
Employment	6,300	8,600	9,100	12,800	9,900	13,700
Relative Density	1.0x		1.6x		2.0x	

Table 2-3 | Growth – 2015 to 2040			
	North Miami Avenue	NE 2nd Avenue	Biscayne Boulevard.
Population	+136%	+170%	+139%
Employment	+38%	+40%	+40%

When looking at the growth for the three corridors from 2015 to 2040, NE 2nd Avenue demonstrates the greatest future potential relative to today, but Biscayne Boulevard will remain the largest potential market for transit trips – due essentially to the large condominium buildings along and to the east of the roadway. The relative growth along North Miami Avenue is the smallest, but only marginally lower than for Biscayne Boulevard.

2.4.2 Transportation Analysis

In addition to a review of demographic conditions and growth (above), additional factors were reviewed to evaluate the relative attractiveness of the three alternate corridors,

- Travel conditions including posted speed and congestion based on peak period travel speed, and
- Ridership potential

Travel Conditions on the existing network do not apply to elevated modes that operate in a dedicated guideway, but are relevant to surface modes i.e. light rail/streetcar and bus/BRT if those are to operate in a mixed traffic scenario. For the purposes of this study, the at-grade modes are assumed to operate in a dedicated lane, but there may be localized segments where mixed traffic operation is required for overall transportation network optimization.

Table 2-4 below indicates the average peak period (7-9 am and 4-6 pm) travel speeds by direction for North Miami Avenue and Biscayne Boulevard based on 2017 HERE traffic probe data obtained through the National Performance Measures Research Data Set (NPMRDS[1]).

Figure 2-6 on the following page shows relative speeds by direction and time of day for these two roads in the study segments. NE 2nd Avenue is not covered under the HERE data set.

Table 2-4 | Corridor Speeds					
	North Miami Avenue		NE 2nd Avenue	Biscayne Boulevard.	
Posted speed (mph)	30		30	30	
Direction	SB	NB		SB	NB

1 https://npmrds.ritis.org/analytics/

Peak period travel speed	15	13	n/a	16	8

As indicated, there is not a great deal of difference in the travel conditions along the three corridors based on these data. The greatest differential is that Biscayne Boulevard operates five miles per hour slower than North Miami Avenue during the afternoon peak in the northbound direction. During the morning peak period, Biscayne Boulevard operates one mile-per hour faster than North Miami Avenue southbound. Posted speeds are the same for each corridor. These data points do not point to any great benefit of one alternative roadway over another.

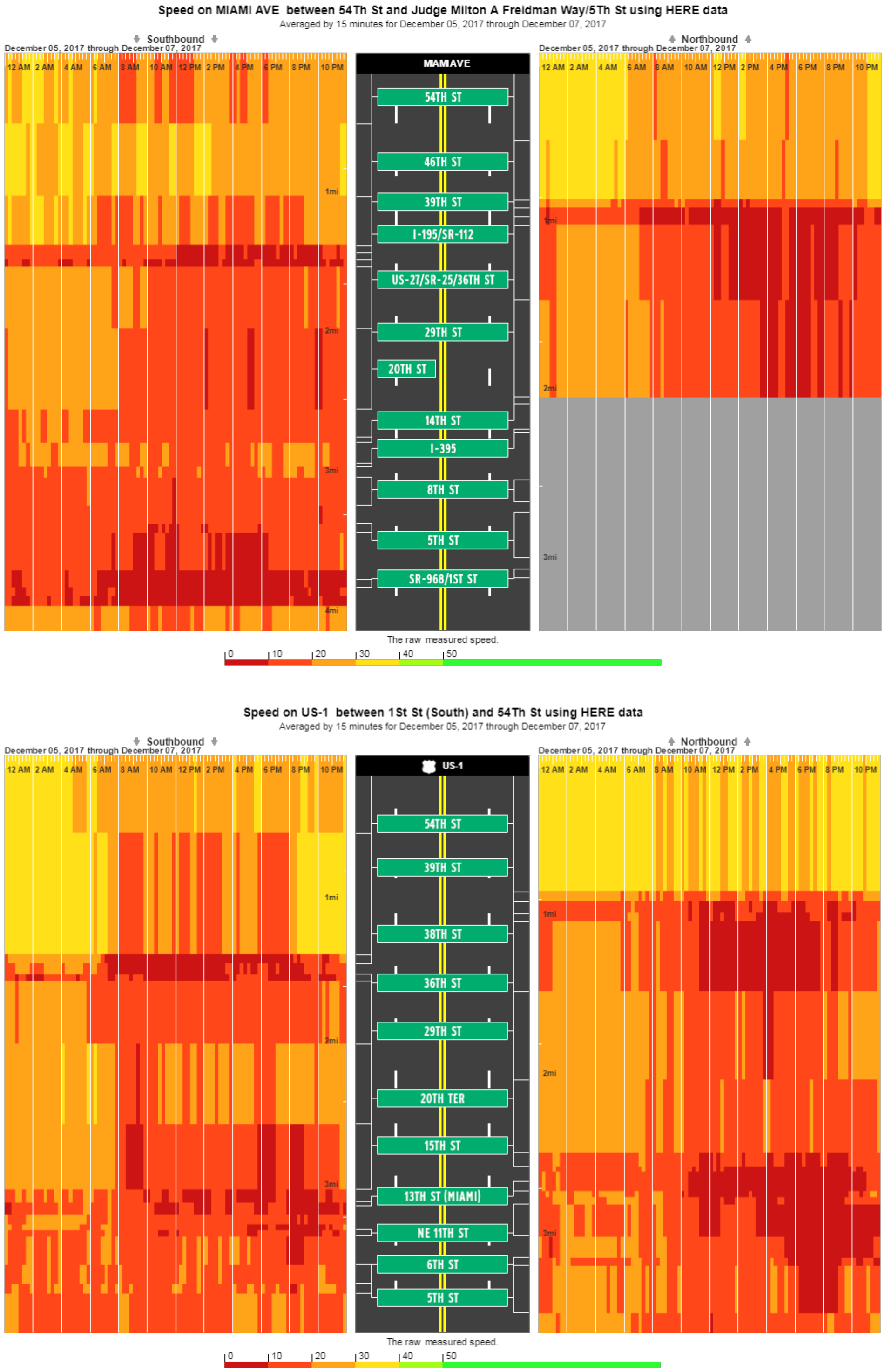


Figure 2-6 | Comparison of Weekday Travel and Speeds by Time and Direction

2.4.3 Ridership potential

To evaluate the differential in transit ridership potential between the three alternate corridors, the study team used the Federal Transit Administration's Simplified Trips on Project Software or STOPS model[2]. The FDOT has developed a Southeast Florida STOPS planning model for fixed guideway transit projects in the three-county region[3] and this was used for this task.

Results of the STOPS model analysis for current year conditions are shown in Table 2-5 below.

Table 2-5 | Forecast Daily Ridership – Current Year

	North Miami Avenue	NE 2nd Avenue	Biscayne Boulevard.
Ridership	11,200	10,700	11,400

To ensure an apples-to-apples comparison, light rail transit was assumed in this application. Six stations were assumed along each of the three corridors, at roughly the same cross-streets e.g. N 36th Street.

As indicated in Table 2-5, there is very little difference in forecast ridership between the three alternatives. Despite its lower population density, North Miami Avenue has a higher ridership projection than NE 2nd Avenue, and only marginally lower than Biscayne Boulevard. This is influenced by two factors: North Miami Avenue currently has no bus service where the other alternatives have at least two, and the distance between the three corridors is relatively small, making walking between them feasible. The forecasts produced here assumed no changes to existing bus service – this is consistent with the preliminary forecast methodology used for other SMART Plan corridors.

In summary, from a transportation and ridership perspective, the Biscayne Boulevard corridor has the higher existing population and employment density, but all three corridors will experience significant growth between 2015 and 20140 due to their proximity to existing transit and the Miami Central Business District.

2.5 Engineering Analysis

2.5.1 Typical Sections

Existing and proposed typical sections for the three corridors appear in Figure 2-7 - Figure 2-15. Proposed typical sections for the at-grade and elevated alternatives were developed to minimize impacts along the corridors and adhere to American Association of State Highway and Transportation Officials (AASHTO) and FDOT roadway design criteria.

Each corridor was evaluated for the potential impacts of implementing the proposed typical sections. Impacts to right-of-way, businesses and/or building structures, utilities, number of vehicular travel lanes, on-street parking, alignment geometry and landscaping were considered. A matrix was developed for each corridor to detail the proposed impacts (see Appendix B). A photo log supplements the matrices, providing an image of the specific impacts listed in the matrices (see Appendix C). As indicated previously, due to the at-grade LRT alternative no longer being considered south of I-395 and the proximity of existing Metromover, there was no analysis of the NW 2nd Avenue corridor to this level of detail.

North Miami Avenue

At-Grade LRT: As shown in Figure 2-8, the proposed LRT typical section eliminates one lane of travel in each direction as well as all on-street parking. Minor reductions in sidewalk width would also occur. This typical section shows bike lanes which is consistent with the TPO's Bike Lane Master Plan for this corridor.

Elevated (Metromover / Monorail): Figure 2-9 shows the elevated alternative along the east side of the corridor. Where the support columns of the guideway are located, the existing sidewalk width would be reduced. This figure shows a column with 6-ft diameter

[2] https://www.transit.dot.gov/funding/grant-programs/capital-investments/stops-%E2%80%93-documentation-and-software
[3] http://www.fsutmsonline.net/index.php?/user_groups/comments/sefl_stops_planning_model/

which is consistent with the columns for the existing Metromover system. No vehicular travel lanes are eliminated. On-street parking would be impacted at the locations where the guideway columns are placed. The number of parking spaces impacted would depend on the column spacing and side of the street on which the guideway is located. This typical section shows bike lanes which is consistent with the TPO's Bike Lane Master Plan for this corridor.

NE 2^{nd} Avenue

At-Grade LRT: As shown in Figure 2-11, the proposed LRT typical section eliminates one lane of travel in each direction. Minor reductions in sidewalk width would also occur.

Elevated (Metromover / Monorail): Figure 2-12 shows the elevated alternative along the east side of the corridor. Where the support columns of the guideway are located, the existing sidewalk width would be reduced. This figure shows a column with 6-ft diameter which is consistent with the columns for the existing Metromover system.

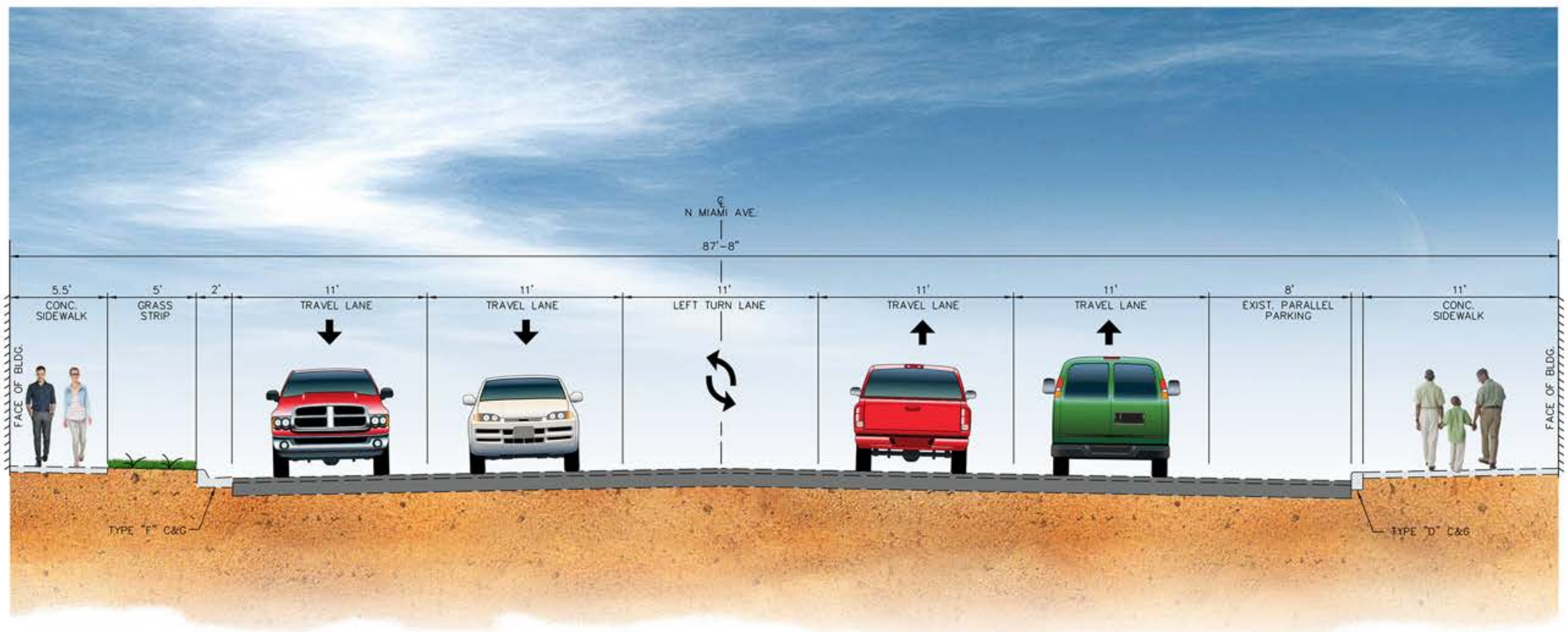
Biscayne Boulevard

At-Grade LRT: As shown in Figure 2-14, the proposed LRT typical section does not reduce the number of vehicular travel lanes, but eliminates the landscaping along the sidewalks. The wide sidewalks along this corridor are reduced be several feet.

Elevated (Metromover / Monorail): Figure 2-15 shows the elevated alternative along the east side of the corridor. Where the support columns of the guideway are located, the existing sidewalk width would be reduced. This figure shows a column with 6-ft diameter which is consistent with the columns for the existing Metromover system. The landscaping below the guideway would be impacted.

2.5.2 Potential Cost Assessment

An estimate of the capital cost of implementing an at-grade and elevated transit mode along each corridor was analyzed using impact matrices (see Appendix B). The ability to construct a transit mode within a corridor is correlated to the number of anticipated impacts. In general, as the number of impacts increases, cost increases. Property acquisition and utility relocations were the costliest impacts. North Miami Avenue and Biscayne Boulevard are the only corridors that may require minimal purchase of additional right-of-way to accommodate the proposed transit modes. NE 2^{nd} Avenue had the most engineering and right-of-way challenges.



Existing Typical Section - North Miami Avenue
(just south of NW 33rd Street)

MIAMI-DADE COUNTY

Beach Corridor Rapid Transit Project

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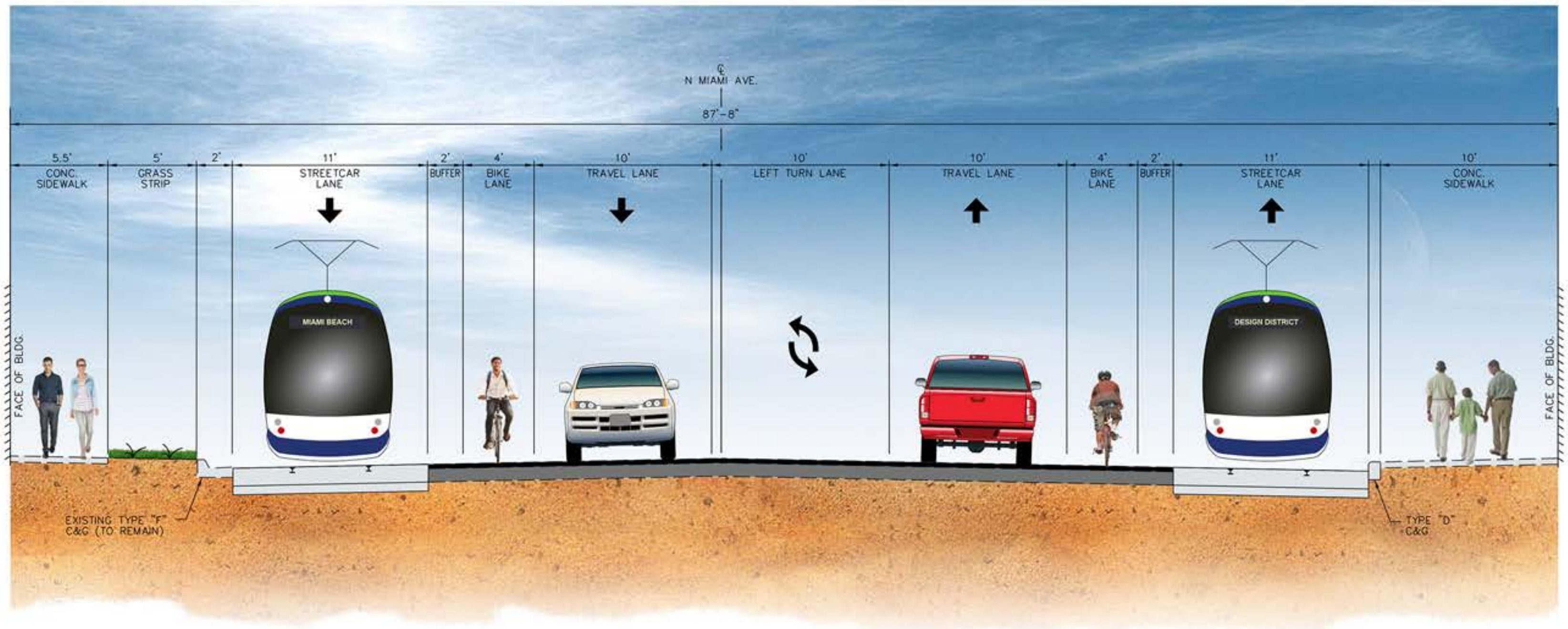
Figure 2-7 | Existing Typical Section of North Miami Avenue



Proposed Typical LRT Section - North Miami Avenue
(just south of NW 33rd Street)

Beach Corridor Rapid Transit Project

Figure 2-8 | Proposed Typical LRT Section on North Miami Avenue

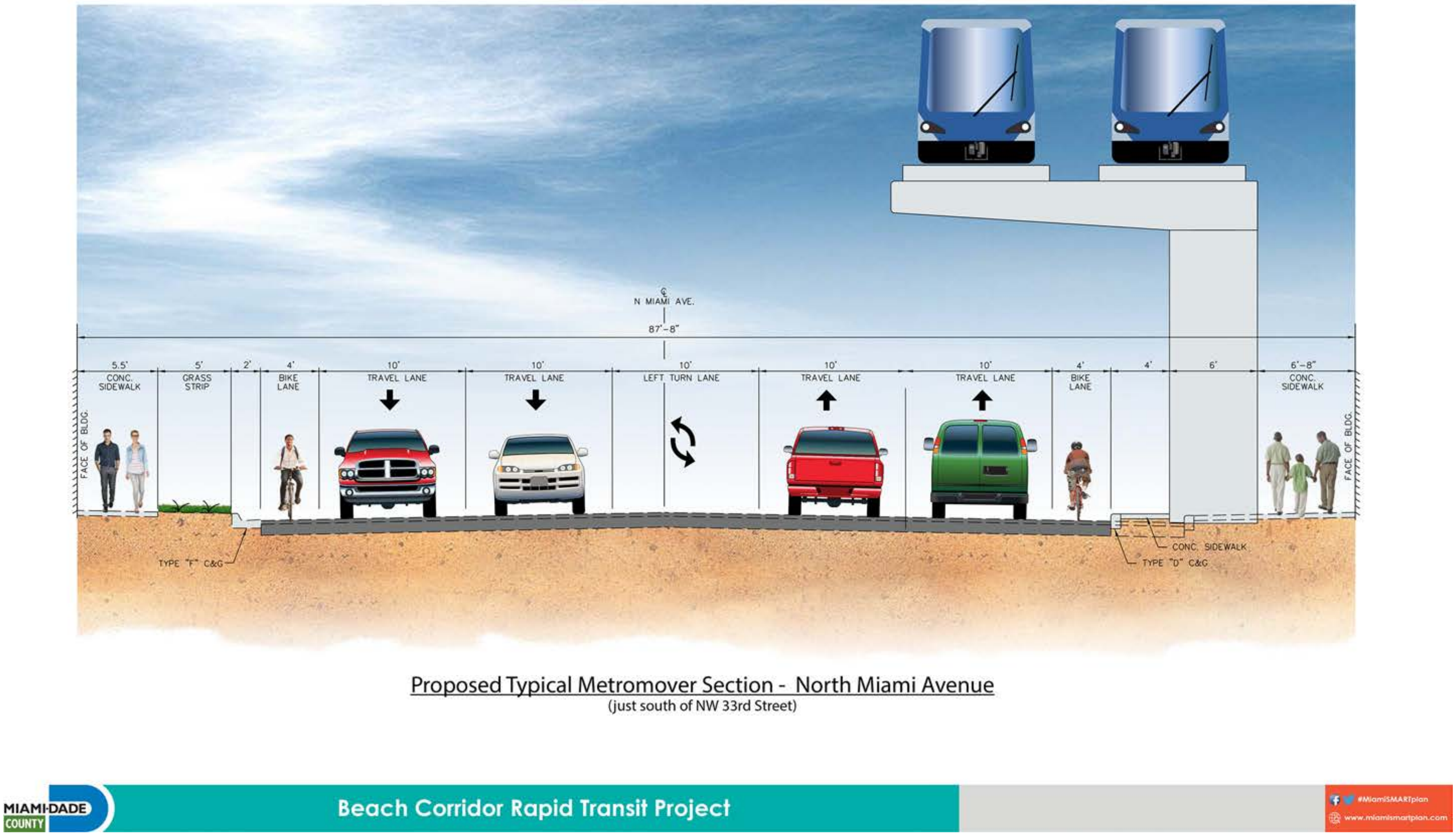


Figure 2-9 | Proposed Typical Metromover Section on North Miami Avenue

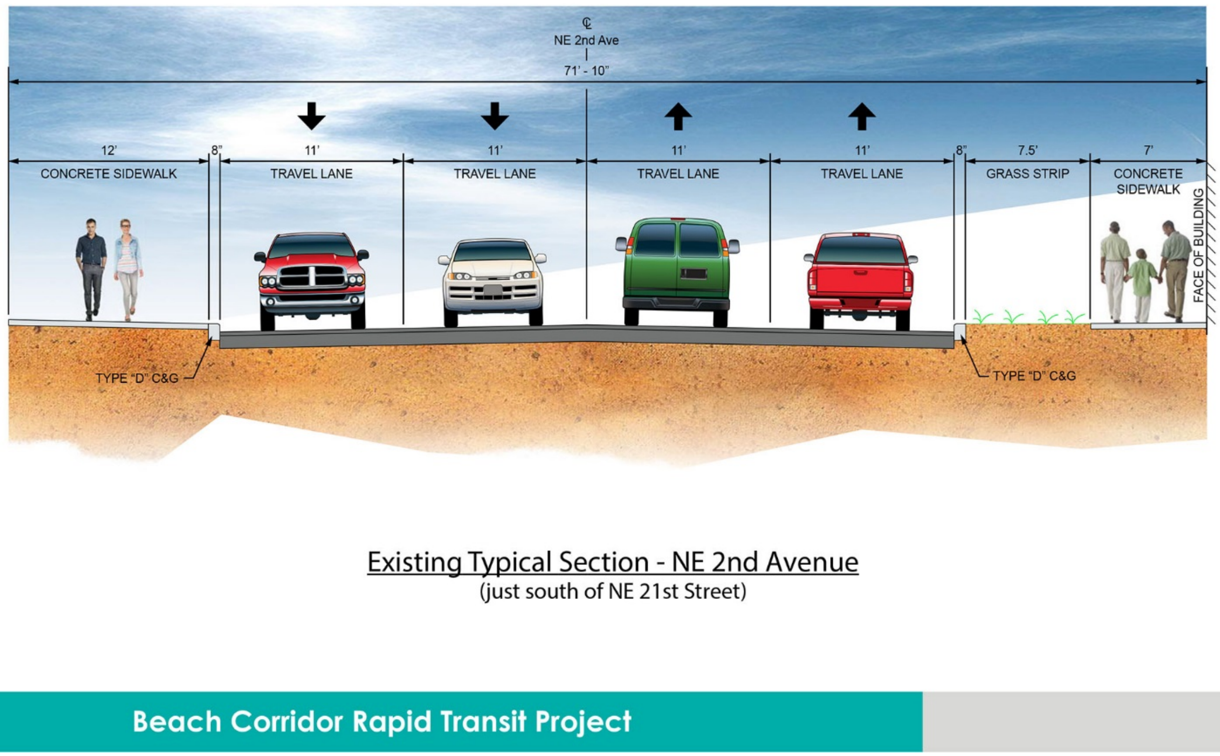


Figure 2-10 | Existing Typical Section of NE 2nd Avenue

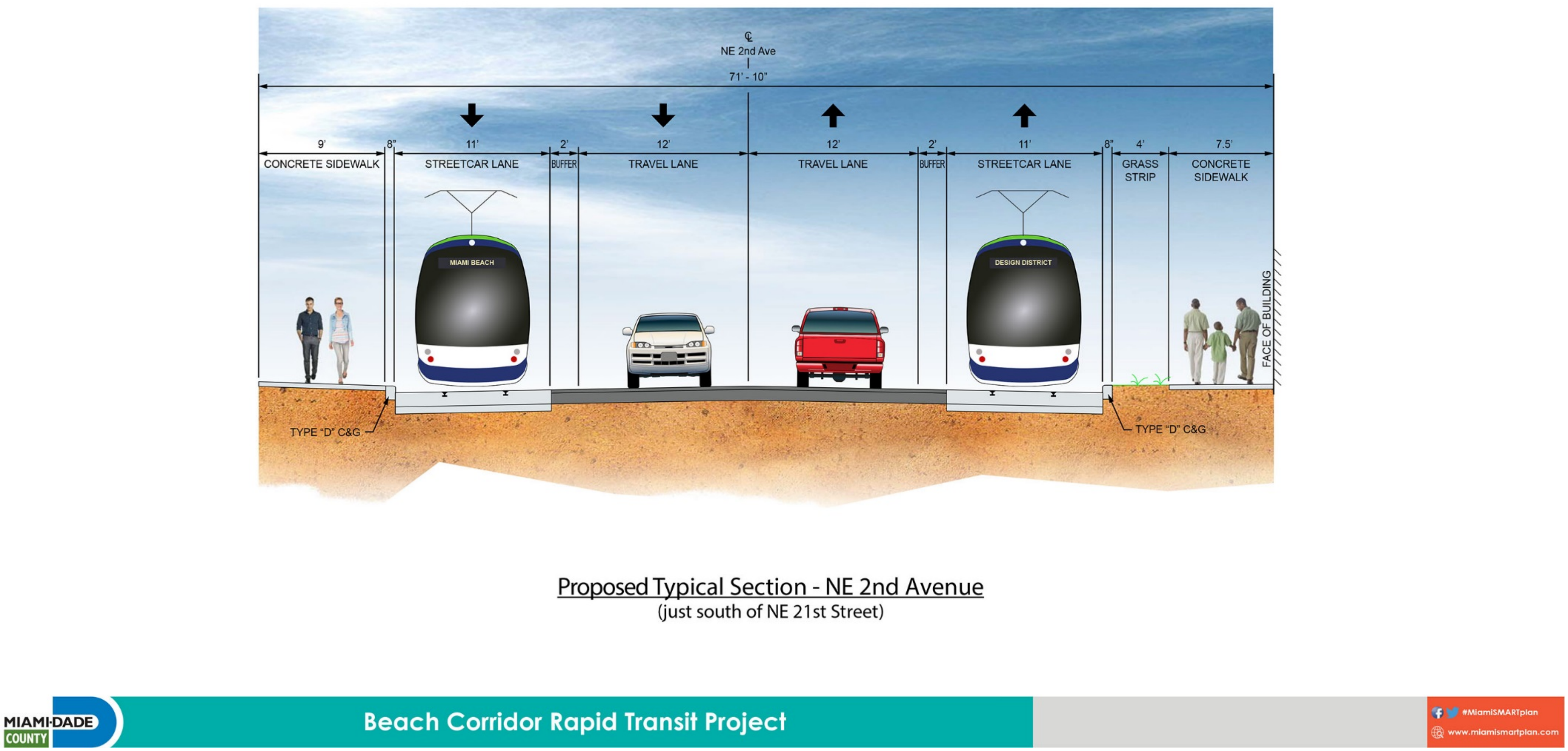
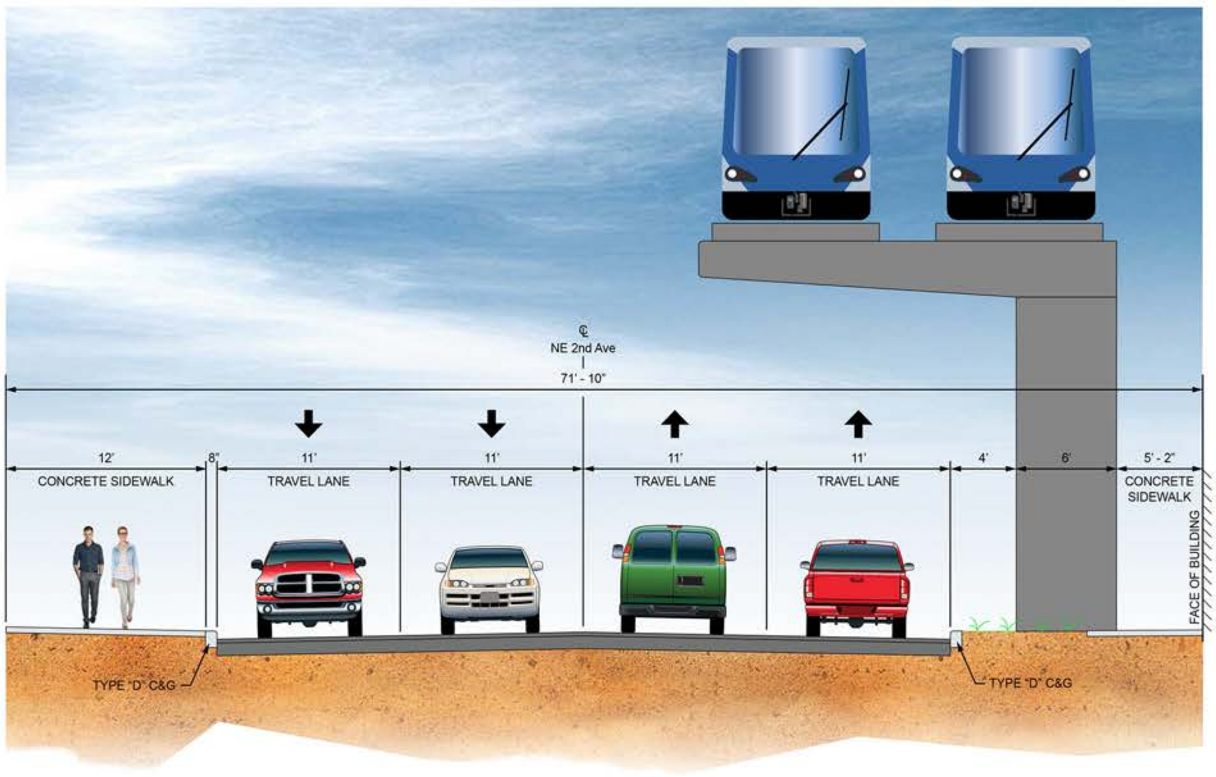


Figure 2-11 | Proposed Typical LRT Section on NE 2nd Avenue



Proposed Typical Section - NE 2nd Avenue
(just south of NE 21st Street)

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Figure 2-12 | Proposed Metromover Typical Section on NE 2nd Avenue

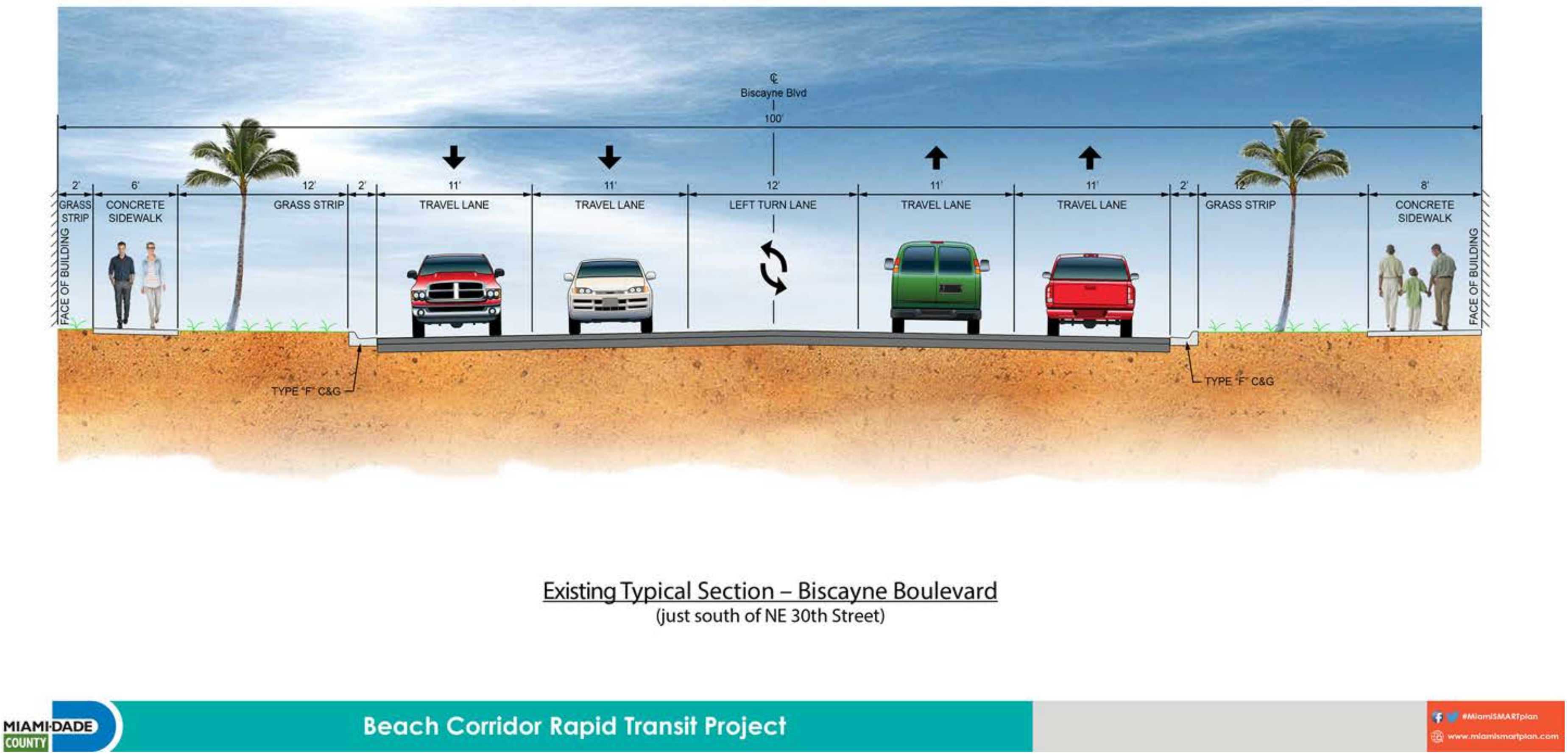

Figure 2-13 | Existing Typical Section of Biscayne Boulevard

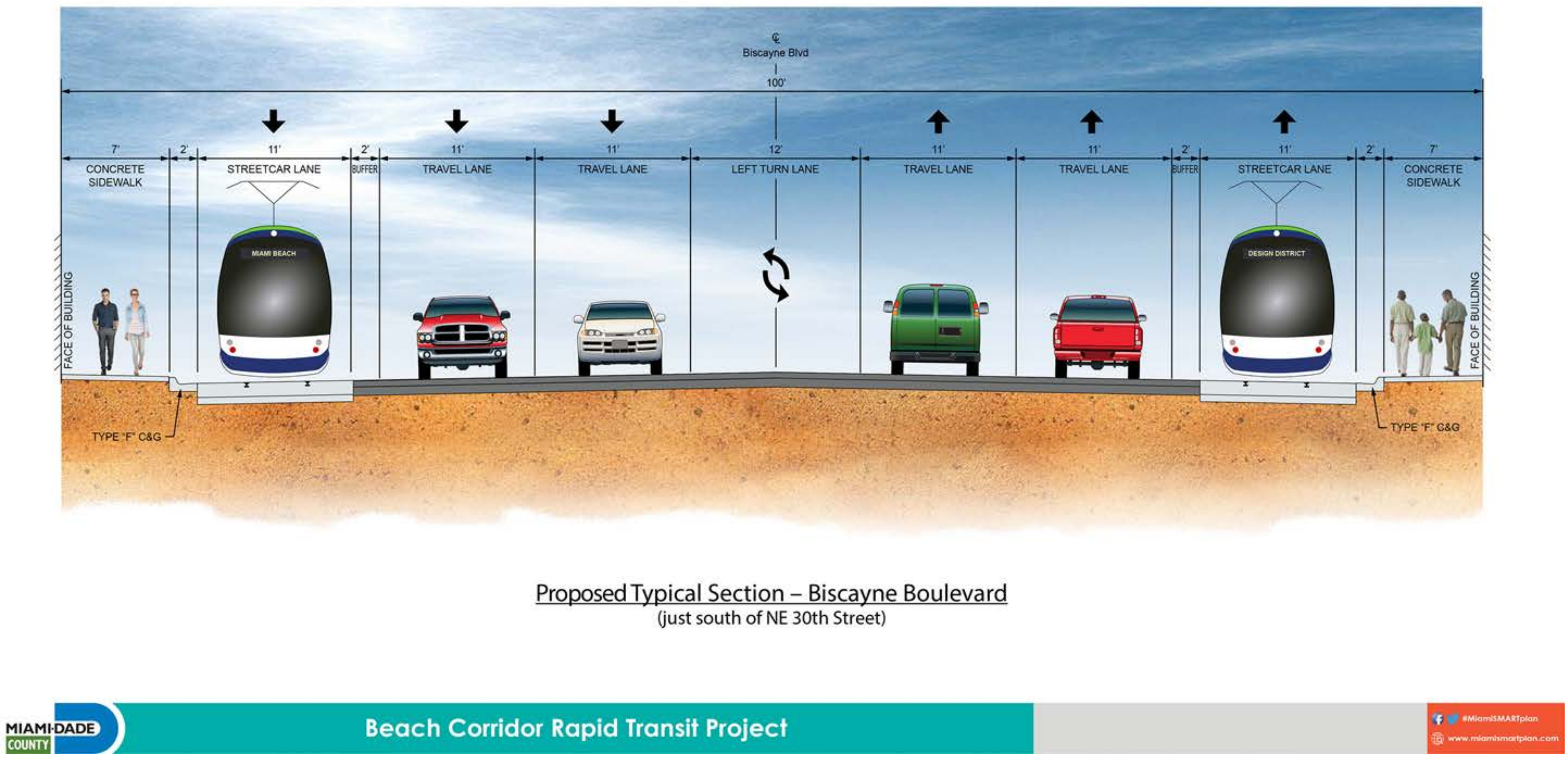

Figure 2-14 | Proposed LRT Typical Section on Biscayne Boulevard

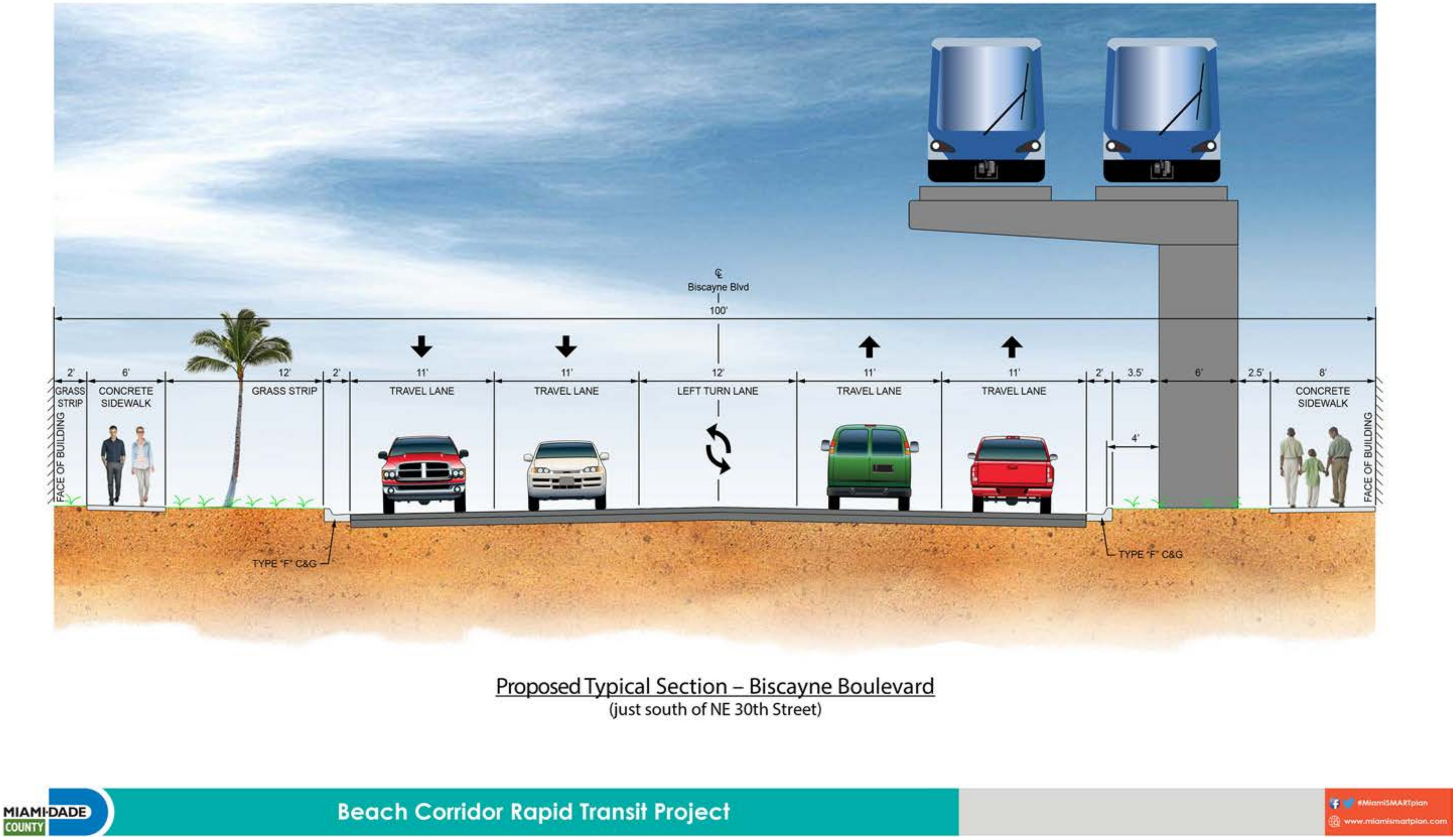

Figure 2-15 | Proposed Metromover Typical Section on Biscayne Boulevard

2.5.3 Feasibility

For purposes of assessing engineering feasibility, corridor alignments were reviewed (see Figure 2-16 - Figure 2-21). In general, for the at-grade transit options, it was assumed that a vehicular lane for dedicated transit would be required. The feasibility of implementing either transit mode along a corridor is greatly influenced by right-of-way constraints, impacts to vehicular travel, parking, utilities and geometric constraints.

The following sections detail these factors for each corridor and transit option (at-grade / elevated).

2.5.3.1 Right-Of-Way

North Miami Avenue

At-Grade LRT: Right-of-way acquisition not anticipated.

Elevated (Metromover / Monorail): Right-of-way acquisition not anticipated.

NE 2nd Avenue

At-Grade LRT: Right-of-way acquisition anticipated. The existing right-of-way along NE 2nd Avenue varies from roughly 60-FT to 90-FT.

Elevated (Metromover / Monorail): Right-of-way acquisition anticipated. The elevated transit option would require the purchase of additional right-of-way at two locations (between NE 25th Street and NE 27th Street, between NE 34th Street and NE 35th Street).

Biscayne Boulevard

At-Grade LRT: Right-of-way acquisition not anticipated.

Elevated (Metromover / Monorail): Right-of-way acquisition not anticipated.

2.5.3.2 Vehicular Travel Lanes

North Miami Avenue

At-Grade LRT: It is anticipated that one (1) vehicular travel lane in each direction will be eliminated.

Elevated (Metromover / Monorail): No vehicular travel lanes are to be eliminated. Existing lane widths to be reduced.

NE 2nd Avenue

At-Grade LRT: It is anticipated that one (1) vehicular travel lane in each direction will be eliminated.

Elevated (Metromover / Monorail): At three (3) locations a vehicular travel lane would be eliminated if additional right-of-way is not acquired.

Biscayne Boulevard

At-Grade LRT: No vehicular travel lanes would be eliminated. Assuming existing landscape buffer would be repurposed for transit.

Elevated (Metromover / Monorail): No vehicular travel lanes would be eliminated.

2.5.3.3 Parking

North Miami Avenue

At-Grade LRT: Elimination of all on-street parking is anticipated.

Elevated (Metromover / Monorail): Elimination of some on-street parking is anticipated. On-street parking would be impacted at the locations where the guideway columns are placed. The number of parking spaces impacted would depend on the column spacing and the side of the street on which the guideway is located.

NE 2nd Avenue

At-Grade LRT: Limited on-street parking exists along this corridor, the majority of which is located south of NE 17th Street. It is anticipated that these spaces will be eliminated.

Elevated (Metromover / Monorail): No impacts to on-street parking anticipated.

Biscayne Boulevard

At-Grade LRT: There is no on-street parking along this segment of the corridor, therefore, no impacts to parking.

Elevated (Metromover / Monorail): There is no on-street parking along this segment of the corridor, therefore, no impacts to parking.

2.5.3.4 Utilities

North Miami Avenue

At-Grade LRT: Impacts to underground and overhead utilities are anticipated.

Elevated (Metromover / Monorail): Numerous impacts to overhead utilities are anticipated. Impacts to utilities will vary based on the location of the elevated guideway (left or right side of street). Frequent shifts in the horizontal alignment of an elevated guideway would be required to avoid impacting some utilities, however such an alignment would come at an increased cost of construction.

NE 2nd Avenue

At-Grade LRT: Impacts to underground and overhead utilities are anticipated.

Elevated (Metromover / Monorail): Impacts to overhead utilities are anticipated. Impacts to utilities will vary based on the location of the elevated guideway (left or right side of street).

Biscayne Boulevard

At-Grade LRT: Impacts to underground and overhead utilities are anticipated.

Elevated (Metromover / Monorail): Impacts to underground and overhead utilities are anticipated. The impacts would be less than those associated with an at-grade transit option.

2.5.3.5 Guideway Geometry

North Miami Avenue

At-Grade LRT: Potential geometric constraints are aniticipated at the overpasses for I-395 and I-195 as well as at the FEC RR crossing. Traversing these intersecting facilities at-grade is feasible, however would most likely increase construction costs. An LRT car could likely run off-wire in these areas. No cross street or median/driveway closures are anticipated to accommodate the at-grade option.

Elevated (Metromover / Monorail): Traversing I-195 and the FEC RR crossing would require increasing span lengths and raising the profile of the elevated guideway so as to provide the required vertical clearance. This will result in increases to the overall construction cost. No cross street or median/driveway closures are anticipated to accommodate an elevated option.

NE 2nd Avenue

At-Grade LRT: Potential geometric constraints are aniticipated at the overpasses for I-395 and I-195 as well as at the FEC RR crossing. Traversing these intersecting facilities at-grade is feasible, however would most likely would increase construction costs. An LRT car could run off-wire at these locations. No cross street or median/driveway closures are anticipated to accommodate the at-grade option.

Elevated (Metromover / Monorail): Traversing I-195 and the FEC RR crossing would require increasing span lengths and raising the profile of the elevated guideway so as to provide the required vertical clearance. This will result in increases to the overall construction cost.

On NE 2nd Avenue it may not be feasible to connect an elevated guideway to the existing Metromover line along NE 15th Street due to vertical profile (geometric) constraints. A vertical alignment would not be able to achieve vertical clearance over the pedestrian overpass located approximately 70-ft north of the Metromover line if it is to tie into the existing guideway.

To avoid further impacts to vehicular travel lanes or right-of-way acquisition, frequent shifts in the horizontal alignment of an elevated guideway would be required along NE 2nd Avenue. Straddle bents and additional columns would be needed to support shifts in the horizontal alignment of the guideway. This would increase construction costs making the elevated transit mode less feasible.

No cross street or median/driveway closures are anticipated to accommodate an elevated option.

Biscayne Boulevard

At-Grade LRT: Potential geometric constraints are aniticipated at the overpasses for I-395 and I-195. Traversing these intersecting facilities at-grade is feasible, however would likely increase construction costs. An LRT car could run off-wire in these areas. No cross street or median/driveway closures are anticipated to accommodate the at-grade option.

Elevated (Metromover / Monorail): Traversing I-195 would require increasing span lengths and raising the profile of the elevated guideway so as to provide the required vertical clearance. This will result in increases to the overall construction cost. No cross street or median/driveway closures are anticipated to accommodate an elevated option.

2.5.4 Summary Engineering Evaluation

In analyzing the feasibility of the proposed transit modes there was a notable difference between NE 2nd Avenue and the other two corridors. The existing right-of-way along NE 2nd Avenue varies from roughly 60-FT to 90-FT. Over much of the corridor, additional width is required to accommodate an elevated or at grade transit option. On NE 2nd Avenue it may not be feasible to connect an elevated guideway to the existing Metromover line along NE 15th Street due to vertical profile (geometric) constraints. A vertical alignment would not be able to achieve vertical clearance over the pedestrian overpass located approximately 70-ft north of the Metromover line if it is to tie into the existing guideway. The elevated transit option was also found to require the purchase of additional right-of-way at two locations (between NE 25th Street and NE 27th Street, between NE 34th Street and NE 35th Street). To avoid further impacts to vehicular travel lanes or right-of-way acquisition, frequent shifts in the horizontal alignment of an elevated guideway would be required along NE 2nd Avenue making the elevated transit mode less feasible.

The primary limitations along North Miami Avenue and Biscayne Boulevard are impacts to utilities and landscaping. Only known above grade utility impacts were considered. Unique to North Miami Avenue would be potential impacts to on-street parking at various locations. As shown in the North Miami Avenue typical section Figures 2-8 and 2-9, proposed bicycle lanes are accommodated consistent with the TPO’s Bike Lane Master Plan for this corridor.

Along both North Miami Avenue and Biscayne Boulevard there is also a potential for geometric constraints for a transit crossing of I-395, I-195 and at the FEC RR crossing. Traversing these intersecting facilities is possible, however would most likely increase construction costs. The feasibility of either transit option along Biscayne Boulevard would be constrained by the existing landscaping along the corridor, which is significantly more prevalent than along North Miami Avenue. However, as indicated in Figure 2-14, the landscape strip along Biscayne Boulevard could be used to accommodate transit.

The right-of-way widths along North Miami Avenue (average 70-ft) and Biscayne Boulevard (100-ft min) within the study limits are larger than that of NE 2nd Avenue (60-ft min). The large right-of-way widths could better accommodate the footprint of the proposed transit modes, resulting in lower capital costs. The feasibility of implementing the proposed transit options along the corridors was found to be most limited along NE 2nd Avenue. Regardless of the right-of-way width, utility impacts are anticipated as is typical in urban areas. All three corridors were found to have geometric challenges to implementing the proposed transit options. The most severe geometric challenge is along NE 2nd Avenue by the NE 15th St intersection. As previously addressed, vertical constraints would limit the ability to tie an extension of the Metromover system to the existing line at this location.

Figure 2-16 | Proposed LRT Alignment on North Miami Avenue

Figure 2-17 | Proposed Metromover Alignment on North Miami Avenue

Figure 2-18 | Proposed LRT Alignment on NE 2nd Avenue

Figure 2-19 | Proposed Metromover Alignment on NE 2nd Avenue

Figure 2-20 | Proposed Alignment of LRT on Biscayne Boulevard

Figure 2-21 | Proposed Metromover Alignment on Biscayne Boulevard

2.6 Evaluation of Alternate Corridors

The findings of the corridor analysis for North Miami Avenue, NE 2nd Avenue and Biscayne Boulevard are summarized in **Table 2-6** for each category assessed (Environmental, Transportation and ridership, and Engineering). The table represents a relative score for each corridor.

Table 2-6 | Corridor Comparison

	North Miami Avenue			NE 2nd Avenue			Biscayne Boulevard		
Measures	BEST	MEDIUM	WORST	BEST	MEDIUM	WORST	BEST	MEDIUM	WORST
Environmental Impacts	●	○	○	○	●	○	○	○	●
Transportation / Ridership	○	●	○	○	●	○	●	○	○
Engineering Feasibility	○	●	○	○	○	●	○	●	○

2.6.1 Conclusions of Evaluation

Based on the results of the analysis, it is recommended that North Miami Avenue be the selected corridor for implementation of any future transit mode.

As indicated above, from an engineering perspective, both North Miami Avenue and Biscayne Boulevard Avenue have similar geometric constraints and potential impacts to utilities. In terms of utilities, however, there was no detailed research on underground utilities along the corridors. It is anticipated the underground utilities are more prevalent and larger in size along the more established and developed Biscayne Boulevard corridor than North Miami Avenue. Landscaping impacts would be more significant along Biscayne Boulevard with either transit mode (elevated or at-grade). NE 2nd Avenue was the most constrained corridor from an engineering perspective.

With respect to land use and ridership potential, the catchment area for existing demographics and development along the Biscayne Boulevard corridor was most ripe for transit investment. However, when accounting for future growth along the corridors and ridership potential, both North Miami Avenue and Biscayne Boulevard performed similarly. As indicated, this is as a result of underlying transit service along the Biscayne Boulevard corridor in comparison to none along North Miami Avenue. It is also a result of the future growth anticipated along all the corridors.

The key swing perspective relates to potential environmental impacts. The North Miami Avenue corridor would serve more transit dependent populations and have less visual (aesthetic), noise, and vibration impacts than along Biscayne Boulevard. Additionally, over 50% of the Biscayne Boulevard corridor is in a 100-year floodplain and more susceptible to flooding which would pose engineering/resiliency challenges. Lastly, Biscayne Boulevard had the most historic resources along the corridor and North Miami Avenue had the least number, thus the potential for impacts to these resources is reduced.

A Environmental Assessment GIS Maps

B Corridor Comparison Matrix

C Photo Log

LRT – North Miami Avenue

Metromover/Monorail – North Miami Avenue

LRT – NE 2nd Avenue

Metromover/Monorail – NE 2nd Avenue

LRT – Biscayne Boulevard

Metromover/Monorail – Biscayne Boulevard

APPENDIX B

PUBLIC INVOLVEMENT DATA

APPENDIX B-1

Alternatives Public Workshops

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

Connecting the Miami Design District to 5th Street and Alton Road in Miami Beach

Public Meeting Comment Sheet

Please check one box to indicate the meeting you have attended

[X] **Meeting Location**
Culmer Community Action Center
1600 NW 3rd Avenue, Miami, FL 33136

Meeting Date
~~Tuesday, July 25, 2017~~
Thursday, Oct 19, 2017

[ ] **Meeting Location**
New World Symphony
500 17th Street, Miami Beach, FL 33139

Meeting Date
Thursday, July 27, 2017

Please Write Comments Below

The kick off was held in Summer 17 but I see the timeline shows that another workshop won't be held until Summer of 18. Please keep community engaged in the process - updates regularly so residents continue to stay engaged and are able to provide input on the process.

Name: Brandyss Howard

Address: 1490 NW 3rd Avenue Miami, FL 33136

Phone Number: 3059605133

Email: bhoward@miamigov.com

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

Connecting the Miami Design District to 5th Street and Alton Road in Miami Beach

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Tuesday, July 25, 2017
10 · 19 · 2017

[ ] **Meeting Location**
New World Symphony
500 17th Street, Miami Beach, FL 33139

Meeting Date
Thursday, July 27, 2017

Please Write Comments Below

I have resided in Miami since 2012. Downtown and off Biscayne Blvd and NE 22nd Street. never needing a car due to having access to the trolly system.

I do believe that NE 2nd Ave or Biscayne Blvd would be more Sutable, for Resident who live outside the city, who work or attend events in the city to move freely and have more acces to transportation. for low income families.

I would love any additional info on other projects and upcoming Transit Plans.

Name: Camille Dircks

Address: 724 NE 88th St Apt 201 M.F 33138

Phone Number: 786.449.0275

Email: camilledircks@gmail.com

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

MIAMI-DADE COUNTY

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New World Symphony
500 17th Street, Miami Beach, FL 33139
Meeting Date
Thursday, July 27, 2017

Please Write Comments Below

10/19/2017.

(1) Will there be a fee?
(2) Will there be a shuttle bus provided, and parking?

Name: Ms. La'shown Naylor
Address: 1637 N.W. 1st. place #4. Miami, Fl. 33136
Phone Number: (305) 216-4563.
Email: Naylorbyrd1459@gmail.com

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

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Meeting Date
Thursday, July 27, 2017

Please Write Comments Below

Mode of Transportation, DouBBle Deckker Bus with sun Roof Top. ADA AccessiBle?. Would consider changeing Routh, To include From Mia. Bch. Though over Town N.W. 2ct Ave to N.W. 20TH ST. Then over to Miami Ave. up to Wynn wood – Community. ect...

Name: Reginald C. Munnings
Address: 1000 N.W. 1Ave #1010 MIA. FL. 33136
Phone Number: 786-212-6489
Email: Rmunnings@poweru.org

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

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Meeting Date
Thursday, July 27, 2017

Please Write Comments Below

Need to Connect with Metro Rail, and All Aboard florida at the Overtown Station.

Name: Irby McKnight

Address: 3000 NW 3 Ave 210 miami, Fl 33127

Phone Number: 7864439861

Email: Irby_m@hotmail.Com

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

MIAMI-DADE COUNTY

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Meeting Date
Thursday, July 27, 2017

Please Write Comments Below

1) SHOULD HAVE ACCESS FROM AND ALONG 14th & 3rd AVE

2) Would this be AFFORDABLE FOR RESIDENTS

Name: ZELDA Williams

Address: 450 NW 14 StreeT

Phone Number: 305.349.1204

Email: ZELDA.Williams@OVERTOWNYOUTH.ORG

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

Connecting the Miami Design District to 5th Street and Alton Road in Miami Beach

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Please Write Comments Below

EXTEND TO OVERTOWN SO IT HELP OUR COMMUNITY TO DEVELOP HAVING THE ATTRACTION OF EASY TRANSIT CONSIDERING WE'LL HAVE/OR EXPETING TO HAVE LOTS OF VISITORS WITH THE SOCCER STADIUM.

Name: ROSANGELA DINIZ

Address: 1490 NW 3rd Ave, #106 MIAMI, FL 33136

Phone Number: 786 223-9929

Email: GOALNEWS@AOL.COM

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

MIAMI-DADE COUNTY

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New World Symphony
500 17th Street, Miami Beach, FL 33139
Meeting Date
Thursday, July 27, 2017

Please Write Comments Below

I would like to be placed on the email list and be a part of future meetings.

Name: Nicole Crooks

Address: 1000 NW 1st Ave #805 miami, FL 33136

Phone Number: 786-263-8063

Email: 78650LUVLY@gmail.com

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

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New World Symphony
500 17th Street, Miami Beach, FL 33139
Meeting Date
Thursday, July 27, 2017

Please Write Comments Below

Thank you for attending and we look forward to attending more informational meeting like these

Name: Beatriz Laracuente
Address: 1490 NW 3rd Ave, suite 106
Phone Number: (305) 915-4784
Email: bealarallc@gmail.com

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

Beach Corridor Rapid Transit Project Alternatives Workshops

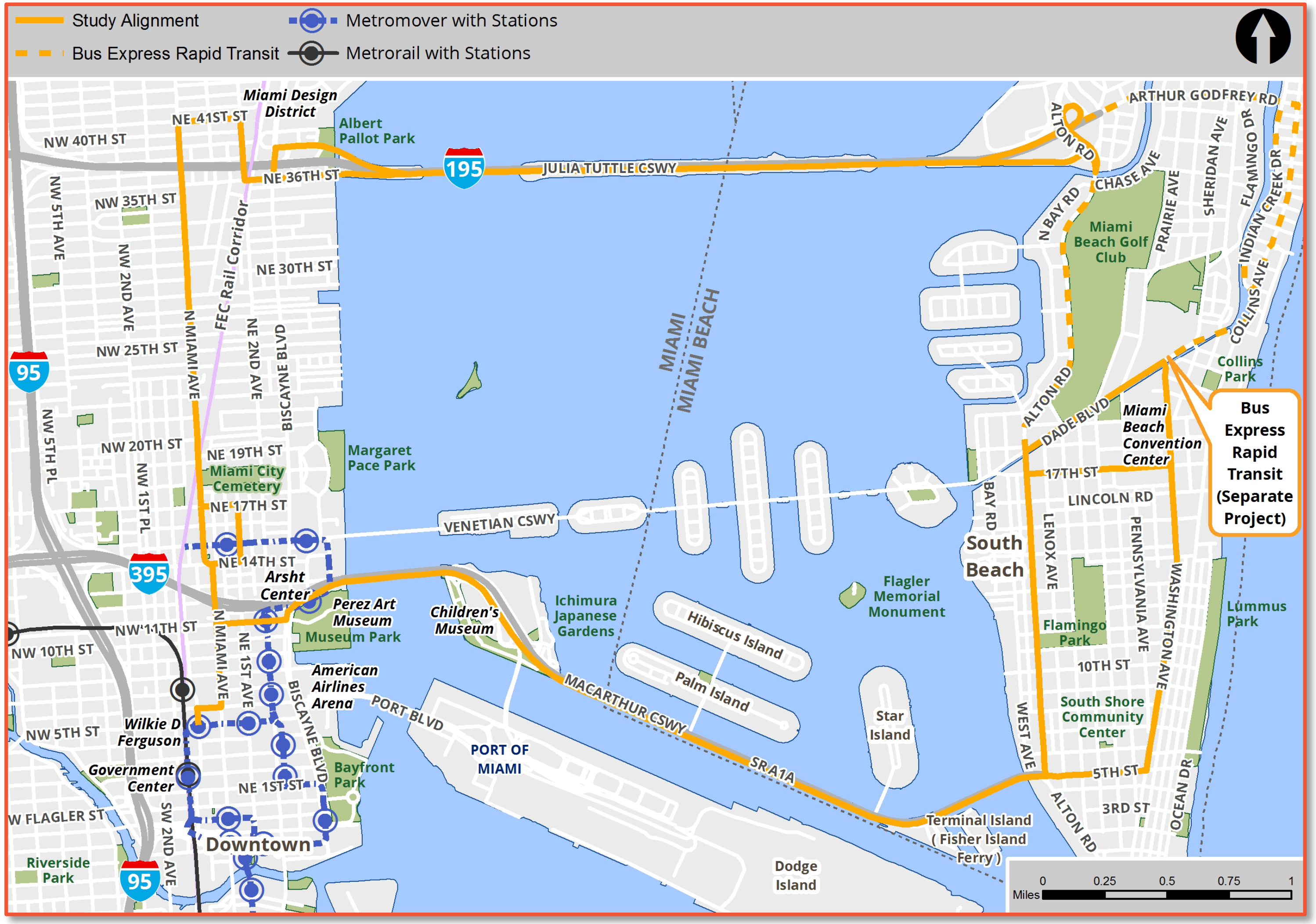
Department of Transportation and Public Works

June 17 and 20, 2019

Meeting Agenda

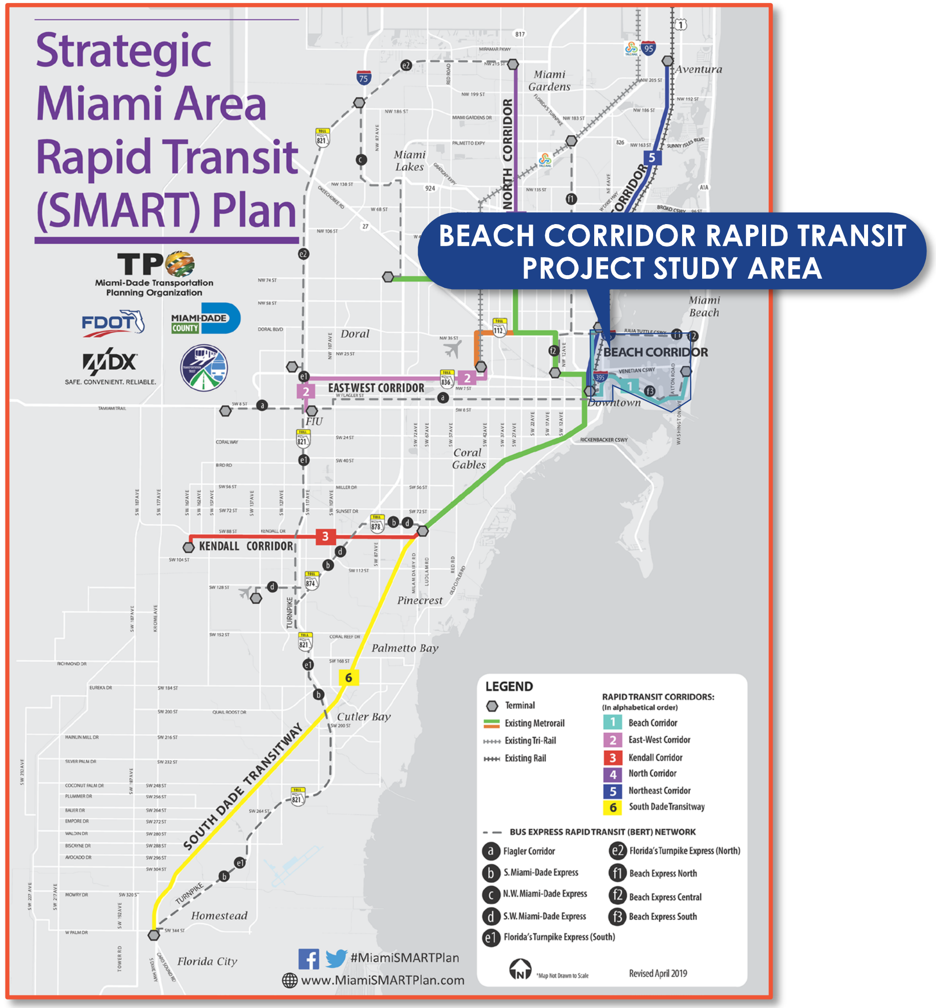
- Introductions
- Project Overview
- Project Milestones
- Project Status Update
- Project Alignments
- Project Schedule
- Public Engagement
- Review and Comments on Alignments

Project Overview – Project Location



Project Overview – Purpose and Need

- Selected as one of the six SMART Plan Rapid Transit Corridors
- Major East-West Connection
- High levels of traffic congestion
- Need to serve major regional economic engines



Project Overview – Project Goals

- Provide direct, convenient and comfortable rapid transit service to existing and future planned land uses
- Provide enhanced transit interconnections
- Promote pedestrian and bicycle-friendly solutions

Project Milestones

- May 2017 to July 2018
  - Completed Tier 1 Analysis
  - Completed Miami Corridor Analysis
- August 2018
  - Began Tier 2 Analysis
  - Inclusive of expanded Miami Beach area
  - Including new Personal Rapid Transit (PRT) mode

Project Milestones – Tier 1 Analysis Results

- Eliminated dedicated lane options south of I-395
- Eliminated Aerial Cable Transit and Heavy Rail Transit technologies
- Recommended technologies to move forward into Tier 2
  - Monorail
  - Metromover/AGT
  - BRT/Express Bus
  - LRT/Streetcar

Aerial Cable Transit

Heavy Rail Transit

Project Milestones – City of Miami Corridor Analysis Results

- Analyzed Miami Avenue, Biscayne Boulevard, NE 2nd Avenue Corridors
- Criteria: Public impact, Engineering, Environmental

Corridor Comparison			
	North Miami Avenue	NE 2nd Avenue	Biscayne Boulevard
Environmental Impacts	First	Second	Third
Transportation / Ridership	Second	Second	First
Engineering Feasibility	Second	Third	Second

Project Status Update

- Held additional project kick off meeting in December 2018 for expanded study area in Miami Beach
- Analyzed additional mode: Personal Rapid Transit
  - Existing systems throughout the world serve special purpose environments with low ridership
  - Vehicle reliability, safety and capacity unproven in a high ridership, urban environment
  - To minimize risk, a proof of concept demonstration project would be required
  - Minimal opportunity for interoperability and/or interlining with other modes
  - PRT costs would be similar to other proven technologies such as Metromover (high fleet size requirements, and similar causeway crossing improvements)

Recommendation: eliminate from further study

Project Status Update

- Travel Market Analysis
  - Higher population and employment densities in southern portion of study area
  - Study area has double the trip density of the County – more transit options needed
  - Zero-car households concentrated in southern portion of study area
  - Existing transit connections focused on downtown – southern connection to the Beach would serve more people
  - Northern Miami-Dade accounts for large portion of trips to study area
    - Lower density origins – requires connectivity to existing transit
  - Trips starting or ending in the study area travel north/south on either side of Bay
    - Small number cross the Bay
  - Travel demand in the study area highest in daytime and nighttime; not commute times
    - Wide range of trip purposes served – tourism/entertainment

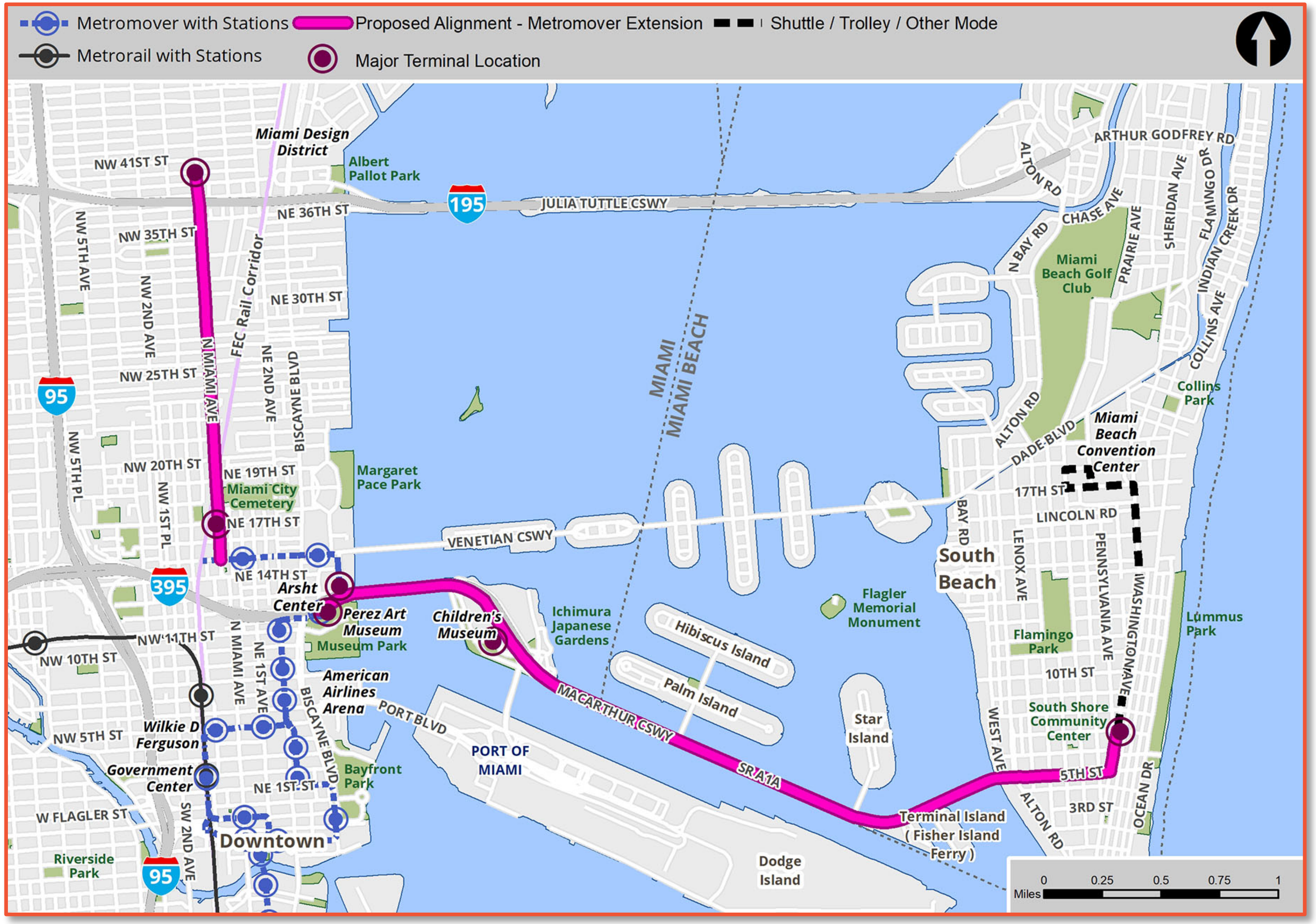
Project Status Update

- Bay Crossing Alternatives Analysis
  - Analyzed two causeways for Beach Corridor fixed transit connection: I-195/Julia Tuttle Causeway and I-395/MacArthur Causeway
  - Potential environmental impacts are similar across both causeways
  - Cost of infrastructure improvements required for transit connection highest along Julia Tuttle Causeway
    - Assumes need to connect JTC to existing system
    - Median alignment of JTC highest cost
    - Southern alignment of JTC lower cost than all elevated on MacArthur Causeway
  - Transportation demand and anticipated ridership better served along MacArthur Causeway
    - Cost per rider for Southern alignment of JTC (without connection to existing system) is higher

Recommendation: Eliminate Julia Tuttle Causeway alignment from further study for fixed transit connection. Continue to analyze BRT/Express Bus along this corridor

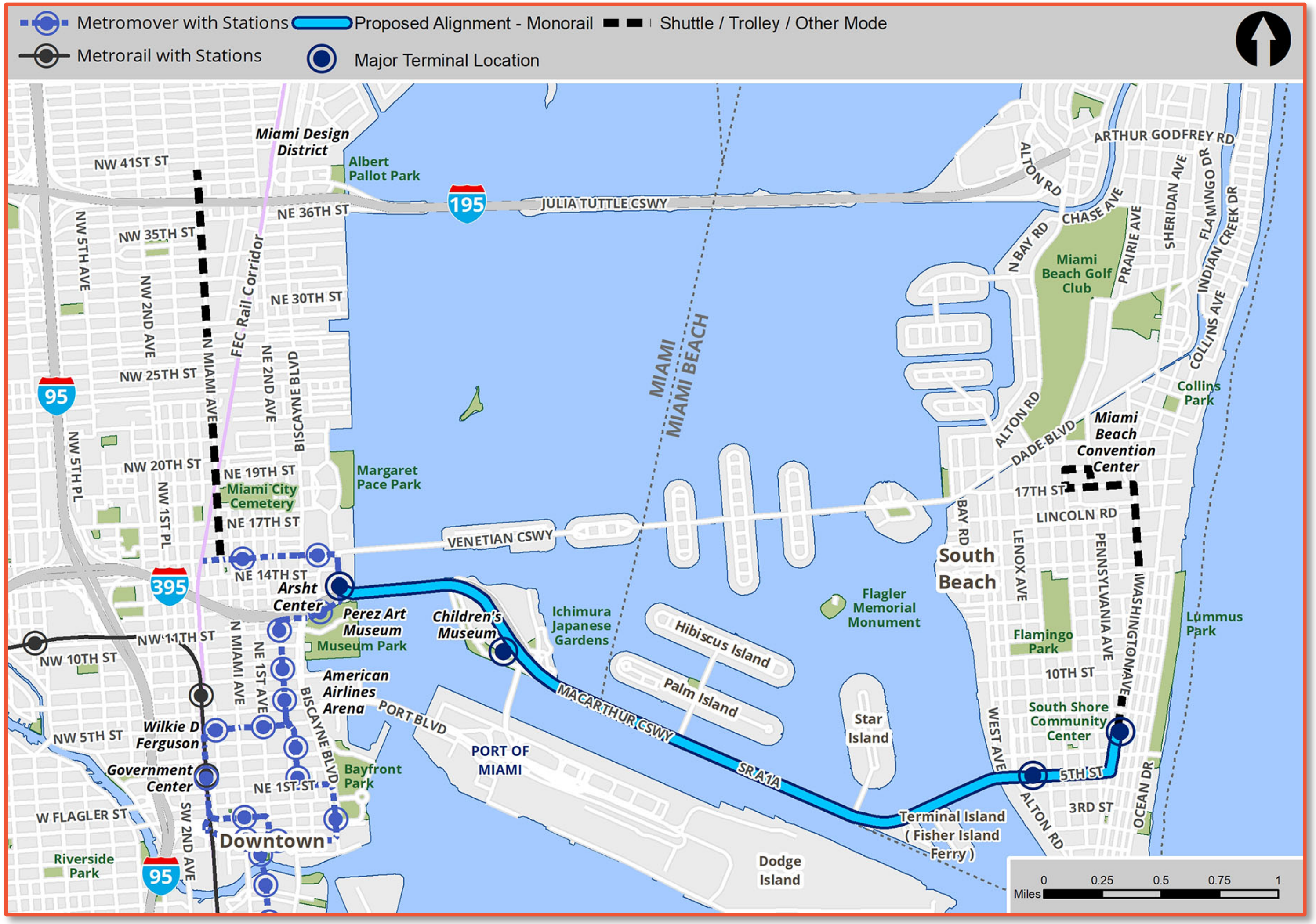
Project Alignments – Metromover (AGT)

Automated Guideway Transit



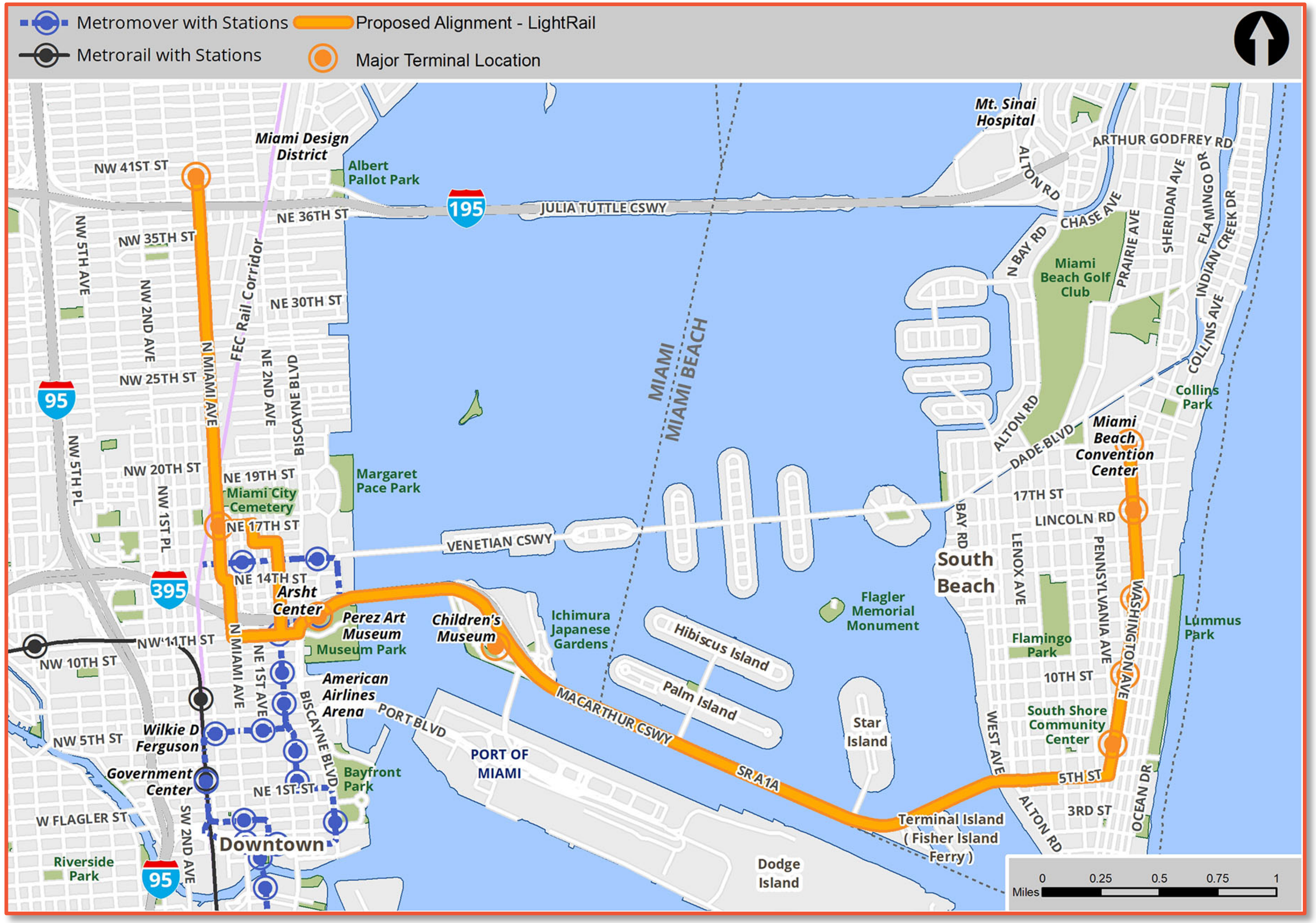
Project Alignments – Monorail

Monorail



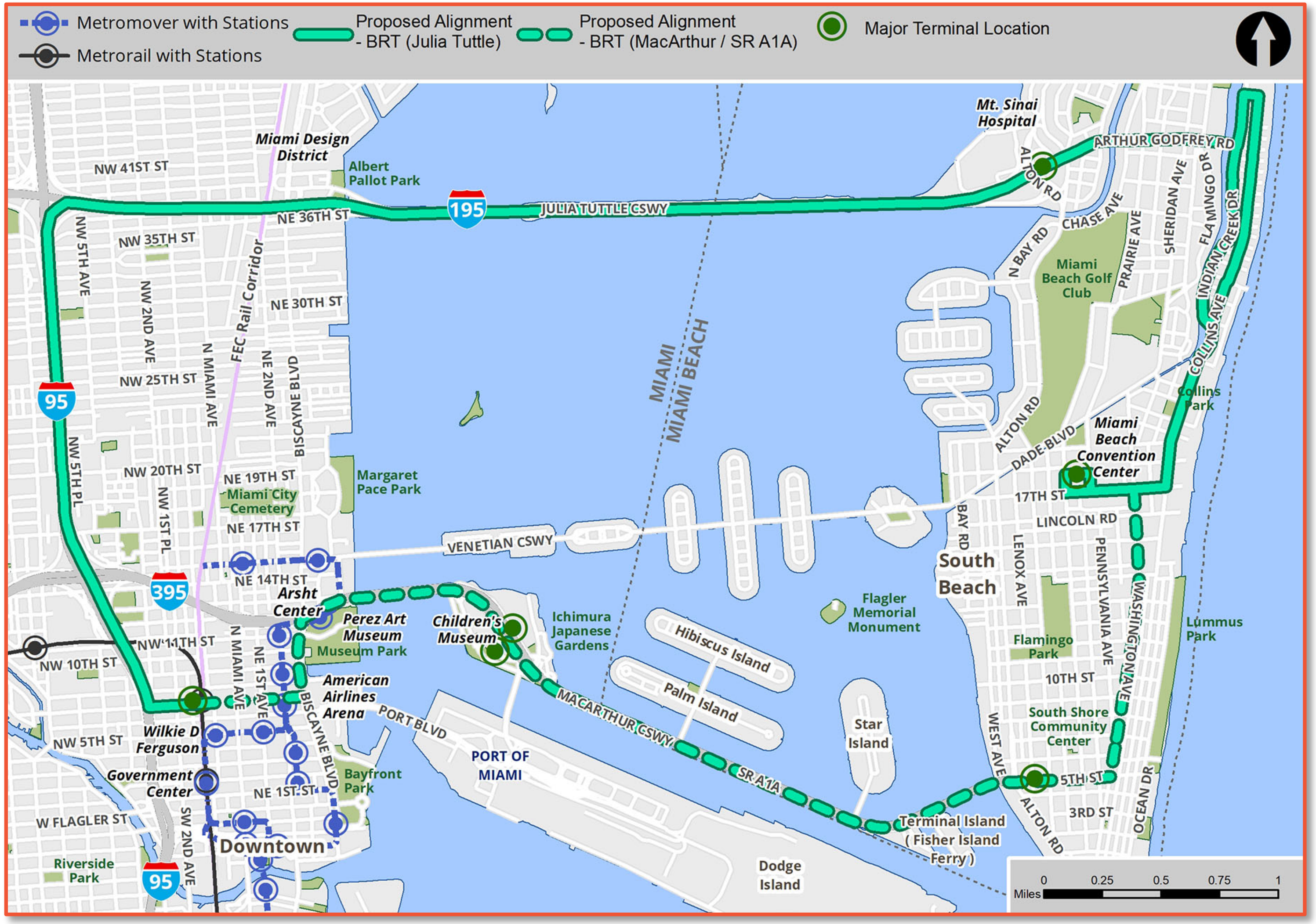
Project Alignments – Light Rail Transit

Light Rail Transit

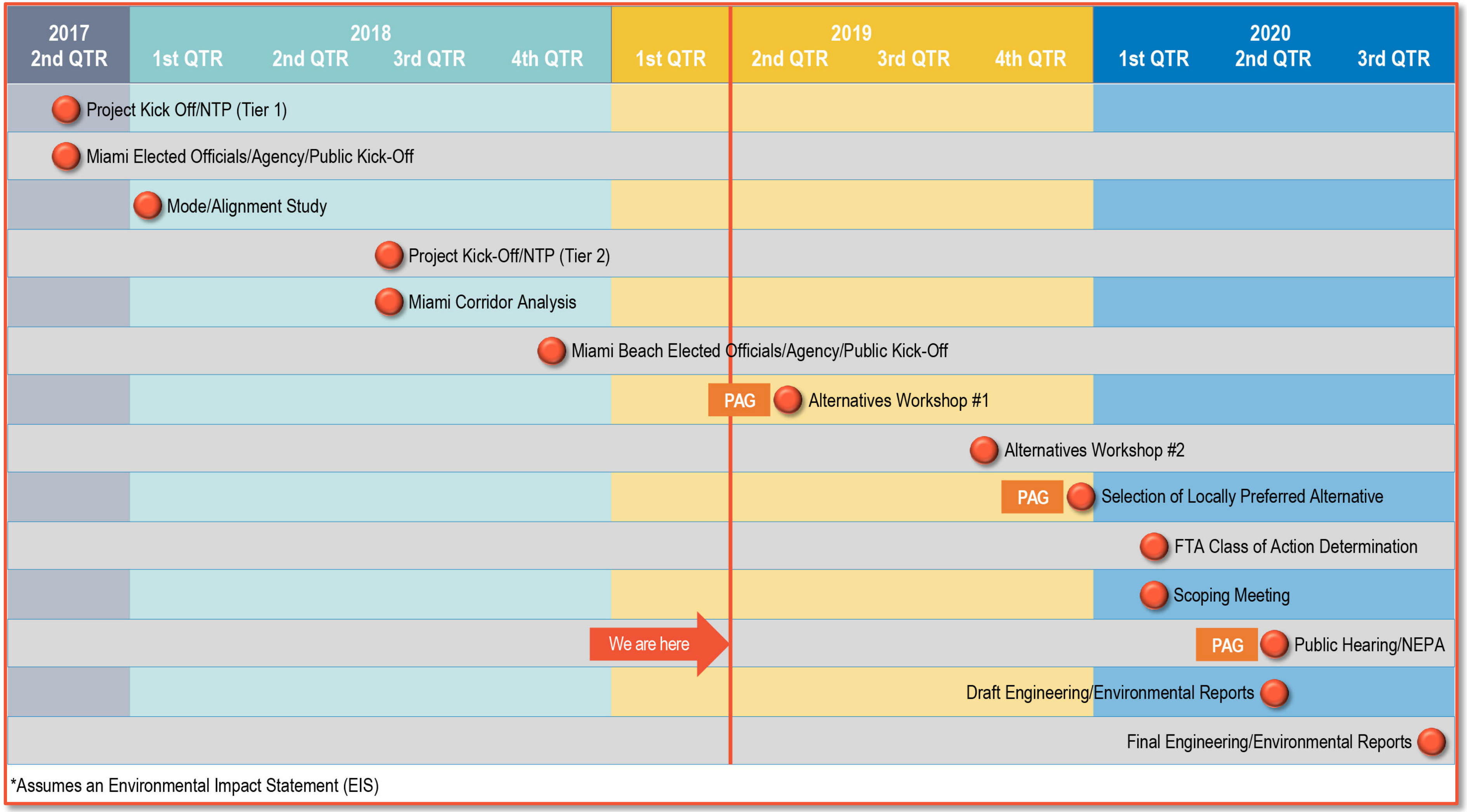


Project Alignments – Bus Rapid Transit

Bus Rapid Transit



Project Schedule



Public Engagement

For more information:

Kiranmai Chirumamilla, E.I., DTPW Project Manager
Phone: 786-469-5283
Email: Kiranmai.chirumamilla@miamidade.gov

Odalys Delgado, AICP, Consultant Project Manager
Phone: 305-507-5583
Email: Odalys.Delgado@parsons.com

Yvette Holt, Consultant Public Information Officer (PIO)
Phone: 305-335-0924
Email: Yvette@Holtcommunications.net

Your feedback is important!

Beach Corridor Rapid Transit Project Alternatives Workshops

Department of Transportation and Public Works
June 17 and 20, 2019

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Alternatives Workshop – Agency/Project Team Sign In

Project	Meeting Location	Meeting Date & Time
Beach Corridor Rapid Transit Project Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District	**New World Center** 500 17th St. Miami Beach, FL 33139	**Monday, June 17, 2019** 6 p.m. to 8 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
Ken Jeffries	FDOT	1000 NW 111 Ave	305.470.5445	Ken.jeffries@dot.state.fl.us
Mari Tere Vilches	MD-TPO	111 NW 1st Suite 920	305 375 4507	Maria.Vilches@mdtpo.org
David Leyte-Vidal	MDC BCC			david.leyte-vidal@miamidade.gov
Karla Damian	DTPW			kdamian@miamidade.gov
Vinod Sandanasamy	MDC RER Planng	111 NW 1st St #810	305 375 2835	vinod.sandanasamy@miamidade.gov
JOSE R. GONZÁLEZ	CITY OF MIAMI BEACH	~~1700 MERIDIAN AVE~~ CITY HALL	(305) 673-7514	JOSEGONZALEZ@MIAMIBEACHFL.GOV

If you have any questions or comments, please contact Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov.**

Department of Transportation and Public Works

Alternatives Workshop – Elected Official Sign In

Project

Beach Corridor Rapid Transit Project
Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District

Meeting Location

Miami Marriott Biscayne Bay
1633 N. Bayshore Dr.
Miami, FL 33132

Meeting Date & Time

Thursday, June 20, 2019
6 p.m. to 8 p.m.

CHECK IN	NAME	REPRESENTED BY	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
	Miami-Dade County Mayor Gimenez		111 NW 1st Street, 29th Floor Miami, FL 33128	305-375-5071	mayor@miamidade.gov
	Miami-Dade County Commissioner Jordan		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-5694	district1@miamidade.gov
	Miami-Dade County Commissioner Monestime		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-4833	district2@miamidade.gov
	Miami-Dade County Chairwoman Edmonson		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-5393	district3@miamidade.gov
	Miami-Dade County Commissioner Heyman		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-5128	district4@miamidade.gov
✓	Miami-Dade County Commissioner Higgins	Nancy Jackson	111 NW 1st Street, Suite 220 Miami, FL 33128	305-643-8525	district5@miamidade.gov
	Miami-Dade County Vice Chairwoman Sosa		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-5696	district6@miamidade.gov

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MIAMI-DADE COUNTY

Department of Transportation and Public Works

Alternatives Workshop – General Public Sign In

Project

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6 p.m. to 8 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS	HOW DID YOU HEAR ABOUT THIS MEETING? (Please circle all that apply)
Lowell Clary	Clary Consulting	2606 Olivia Dr, Tallahassee FL 32308	850-212-7772	lowell.clary@claryconsulting.com	Ad Mail Bus Terminal
JOSE A. RAMOS	MDAD	AIRPORT	305-876-8080	JRAMOS@MIAMI-AIRPORT.com	Ad Mail Bus Terminal
Revanth Katta	BCC Engineering	4901 NW 17th way, ste#506, FLL-33309	352-665-9085	rkatta@bcceng.com	Ad Mail Bus Terminal
Alejandra Agredo	Self	3381 SW 24 TER MIAMI, FL	786-495-2116	ALE@CYBERSCAPE.co	Ad Mail Bus Terminal
[illegible]	—	1688 West Ave	—	—	Ad Mail Bus Terminal
Giovanni A. Serrano	Self.	1800 N BAYSHORE DRIVE MIAMI FL 33132	—	giovanni.serrano.wg08@alumni.upenn.edu	Ad Mail Bus Terminal
Steve Hamilton	Self	961 SW 176 Ave Pembroke Pines	954-801-7880	stephen@citytram.org	Ad Mail Bus Terminal

If you have any questions or comments, please contact Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov.**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Alternatives Workshop – General Public Sign In

Project	Meeting Location	Meeting Date & Time
Beach Corridor Rapid Transit Project Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District	**Miami Marriott Biscayne Bay** 1633 N. Bayshore Dr. Miami, FL 33132	**Thursday, June 20, 2019** 6 p.m. to 8 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS	HOW DID YOU HEAR ABOUT THIS MEETING? (Please circle all that apply)
Myriam Márquez	North Beach condo Resident			myriam.marquez@md.gov	Ad Mail Bus Terminal
Gabriela Noa Betancourt	Unite Here Local 355	7315 Byron Ave.	786 302 8378	gbetancourt@unitehere.org	Ad Mail Bus Terminal
Alberto Perez [illegible]	Unite Here Loca	7430 Byron Av	(305) 2021550	Alberto031870@gmail.com	Ad Mail Bus Terminal
AV					Ad Mail Bus Terminal
					Ad Mail Bus Terminal
					Ad Mail Bus Terminal
					Ad Mail Bus Terminal

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MIAMI-DADE COUNTY

Department of Transportation and Public Works

Alternatives Workshop – Agency/Project Team Sign In

Project

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Thursday, June 20, 2019
6 p.m. to 8 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
Christian Mulaire	Parsons		305 812 8186	christian.mulaire@parsons.com
~~PETER~~ HALBURTON	CAMBRIDGE	✓	✓	✓
Karla Damian	DTPW	✓		kdamian@miamidade.gov
Ethan Melone	PARSONS	✓	206-475-4539	ethan.melone@seattle.gov
ENEIDA MARTINEZ	PARSONS			eneida.martinez@PARSONS.COM
ANGEL CHAVARRIA	PARSONS			angel.CHAVARRIA@PARSONS.COM
JUAN RAMIREZ	PARSONS			JUAN.RAMIREZ@PARSONS.COM

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Alternatives Workshop – Agency/Project Team Sign In

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NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
Gerard Osborne	HBC			
José R. González	City of Miami Beach	City Hall	(305) 673-7514	josegonzalez@miamibeachfl.gov
Tristan Jackson	City of Miami	MRC	305 416 1122	jonjackson@miamigov.com
Alfredo Sanchez	D&A	—	—	—
Jie Bian	DTPW	701 NW 1st Ct. Miami 33136	786-469-5245	jie.bian@miamidade.gov
Kiranmai Chirumamilla	DTPW	701 NW 1st Ct, Miami 33136	786-469-5283	kiranmaichirumamilla@miamidade.gov

If you have any questions or comments, please contact Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov.**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Alternatives Workshop – Agency/Project Team Sign In

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6 p.m. to 8 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
Greg H	Holt		754-208-8826	Gregory@holtcommunications.net
Joshua Rall	BA	—	—	—
Phil Hoffmann	Parsons	—	—	—
Juan Ramírez	Parsons	—	—	—
Mechelle Kerns	Search/Parsons			
Carlos Cejas	FDOT		786 845-9540	
Jeannine Gaslonde	TPO	—	305-3751739	Jeannine.gaslonde@mdtpo.org

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MIAMI-DADE COUNTY

Department of Transportation and Public Works

Alternatives Workshop – Agency/Project Team Sign In

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Miami Beach, FL 33139

Meeting Date & Time

Monday, June 17, 2019
6 p.m. to 8 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
Cynthia P.	Holt Comm	—	—	—
Gayle Stone	ESciences			
Phil Hoffmann	Parsons			
Christian Mulaire	Parsons			
Yvette Holt	Holt Comm			
JOSHUA RAK	BPA			
PETER HALBURTON	CAMBRIDGE SYSTEMATICS	✓	✓	✓
Jeremy Braithwaite	HBC Engineering Company	—	—	—

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MIAMI-DADE COUNTY

Department of Transportation and Public Works

Alternatives Workshop – Agency/Project Team Sign In

Project	Meeting Location	Meeting Date & Time
Beach Corridor Rapid Transit Project Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District	**New World Center** 500 17th St. Miami Beach, FL 33139	**Monday, June 17, 2019** 6 p.m. to 8 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
Mark Richard	MDC Parks Recreation + Open Space		305-365-3015	mrich@miamidade.gov
Alice Bravo	DTPW			

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Alternatives Workshop – Agency/Project Team Sign In

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NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
Shereen Yee Fong	FDOT		305 470 5393	shereen.yee-fong@dot.state.fl.us
Gavin Sitkoff-Vuong	MDC-BCC			gavin.sitkoff@miamidade.gov
ENEIDA MARTINEZ	PARSONS		305.507.5586	eneida.MARTINEZ@PARSONS.COM
ANGEL CHAVARRIA	PARSONS		305.507 ~~3589~~	ANGEL.CHAVARRIA@PARSONS.COM
JUAN RAMIREZ	PARSONS		305.507 3638	JUAN.RAMIREZ@PARSONS.COM
Greg H	HOLT		754-208-8826	GREGORY@HOLTCOMMUNICATIONS.NET
Lisa Spadafina	MDC-DERM		305-372-6575	spadal@miamidade.gov
Lynda Weston	Miami Beach		3/673-7000 x 26693	lyndaweston@miamibeachfl.gov

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MIAMI-DADE COUNTY

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NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
Jie Bian	DTPW	701 NW 1st Ct. 33136	786-469-5245	jie.bian@miamidade.gov
Kiranmai Chirumamilla	DTPW	701 NW 1st Ct, Miami Fl 33136	786-469-5283	kiranmai.chirumamilla@miamidade.gov.
Ethan Melone	PARSONS		(206) 475-4395	ethan.melone@parsons.com
PRAKASH KUMAR	CITT (dist 5)		305 803 7759	parkuss@Gmail Com
Mechelle Kerns	SEARCH-Parsons		410-409 5187	Mechelle.Kerns@SEARCHinc.com
Carlos Cejas	FDOT		786-845-9540	ccejas@gfnet.com
David Coker	HBC Engineering Co.			dcoker@hbcengineeringco.com

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Department of Transportation and Public Works

MIAMI-DADE COUNTY

Alternatives Workshop – General Public Sign In

Project

Beach Corridor Rapid Transit Project
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NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS	HOW DID YOU HEAR ABOUT THIS MEETING? (Please circle all that apply)
Eric Penfield	RS&H	3125 W. Commercial Blvd	954-236-7565	Eric.Penfield@RSandH.com	Ad Mail Bus Terminal
David Golden	—	1688 West Ave	—	—	Ad Mail Bus Terminal
Gerardo Vildostegui	resident			gvildost@gmail.com	Ad Mail Bus Terminal
Richard Silverman	Resident	1800 Jefferson Ave	305.532.9846	RichardSilverman@TulaneAlumni.net	Ad Mail Bus Terminal
Steve Hamilton	self	961 SW 176 Ave Pembroke Pines, FL	954-801-7880	stephen@citytram.org	Ad Mail Bus Terminal
Alan Aitken	CTAC	4045 Sheridan Ave		AJESQ@AOL.com	Ad Mail Bus Terminal
Kermit Not ~~Gerry~~ The Frog	Sesame St.	PBS	JE84186	Gerry3040@AOL.com	Ad E-Mail Bus Terminal

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MIAMI-DADE COUNTY

Department of Transportation and Public Works

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NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS	HOW DID YOU HEAR ABOUT THIS MEETING? (Please circle all that apply)
Mark Pistiner			954.235.0618	~~[illegible]~~ pistinermR@cdmsmith.com	Ad Mail Bus Terminal
Peter Sair				psmwonder@gmail.com	Ad Mail Bus Terminal
ARTHUR LEIBELL		330 W. Rivo Alto DR	305-632-1669	AJLEIBELL@ATT.NET	Ad E Mail Bus Terminal
Charles Fischer		1401 Euclid Ave M.B.	305-342-9905	charlie.nj@ [illegible]	Ad Social Media Mail Bus Terminal
ADRIAN GONZALEZ	Lakeview HOA	5990 LAKEVIEW DR	305.206.8249	ADRIAN@davidscafe.com	Ad Mail Bus Terminal
Derrick Chan		300 S. Pointe Dr 1003	4155962907	dcsfcaus@gmail	Ad Mail Bus Terminal
Erin Sutherland		2665 S. Bayshore	305 416 4556	esutherland@terragroup.com	Ad Mail Bus Terminal

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Department of Transportation and Public Works

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NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS	HOW DID YOU HEAR ABOUT THIS MEETING? (Please circle all that apply)
Ryan Shedd	resident	1621 Bay Rd	484-881-2625	ryanshedd@gmail.com	Ad Mail Bus Terminal
Demetria Henderson	Miami-Dade	111 NW 1st street	305-375-5694	demetria@miamidade.gov	Ad Mail Bus Terminal
Maria I. Pedraza	Resident	6039 collins Ave.	305-905-7729	~~mari~~ mariat.pedraza@hotmail.com	Ad Mail Bus Terminal
Veronica Llaneza	Resident	2555 Collins Rd.			Ad Mail Bus Terminal
Gary P	Resident				Ad Mail Bus Terminal
					Ad Mail Bus Terminal
					Ad Mail Bus Terminal

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NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS	HOW DID YOU HEAR ABOUT THIS MEETING? (Please circle all that apply)
Wendy Joseph	N/A				Ad Mail Bus Terminal
					Ad Mail Bus Terminal
					Ad Mail Bus Terminal
					Ad Mail Bus Terminal
					Ad Mail Bus Terminal
					Ad Mail Bus Terminal
					Ad Mail Bus Terminal

Department of Transportation and Public Works

Alternatives Workshop – Elected Official Sign In

Project

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CHECK IN	NAME	REPRESENTED BY	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
	Miami-Dade County Mayor Gimenez		111 NW 1st Street, 29th Floor Miami, FL 33128	305-375-5071	mayor@miamidade.gov
	Miami-Dade County Commissioner Jordan		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-5694	district1@miamidade.gov
	Miami-Dade County Commissioner Monestime		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-4833	district2@miamidade.gov
	Miami-Dade County Chairwoman Edmonson		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-5393	district3@miamidade.gov
	Miami-Dade County Commissioner Heyman		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-5128	district4@miamidade.gov
	Miami-Dade County Commissioner Higgins	[illegible]	111 NW 1st Street, Suite 220 Miami, FL 33128	305-643-8525	district5@miamidade.gov
	Miami-Dade County Vice Chairwoman Sosa		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-5696	district6@miamidade.gov

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Alternatives Workshop – Elected Official Sign In

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CHECK IN	NAME	REPRESENTED BY	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
	City of Miami Beach Mayor Gelber		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7035	dangelber@miamibeachfl.gov
	City of Miami Beach Commissioner Steinberg		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7030 ext. 6087	mickysteinberg@miamibeachfl.gov
5:51	City of Miami Beach Commissioner Samuelian	Self	1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7104	marksamuelian@miamibeachfl.gov
	City of Miami Beach Commissioner Góngora		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7106	michael@miamibeachfl.gov
	City of Miami Beach Commissioner Malakoff		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7125	joymalakoff@miamibeachfl.gov
	City of Miami Beach Commissioner Arriola		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7030 ext. 6274	rickyarriola@miamibeachfl.gov
	City of Miami Beach Commissioner Alemán		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7030 ext. 6437	johnaleman@miamibeachfl.gov

Department of Transportation and Public Works

Alternatives Workshop – Elected Official Sign In

Project	Meeting Location	Meeting Date & Time
Beach Corridor Rapid Transit Project Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District	**New World Center** 500 17th St. Miami Beach, FL 33139	**Monday, June 17, 2019** 6 p.m. to 8 p.m.

CHECK IN	NAME	REPRESENTED BY	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
	Rachel Cohen/ Chris Hardmaker	Commissioner Higgins			
	Margie Robinson	o/c of Sally Heyman			
	Alix Fernandez	Comm. Rebeca Sosa			
	Nephtalie J.	State Rep District 108 Dotie Joseph			
	R				

If you have any questions or comments, please contact Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov.**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

Connecting the Miami Beach Convention Center Area to Downtown Miami and Midtown/Miami Design District

Alternatives Workshop Comment Sheet

Meeting Location

New World Center
500 17th St.
Miami Beach, FL 33139

Meeting Date

Monday, June 17, 2019
6 p.m. to 8 p.m.

Please Write Comments Below

OUT OF THE 4 OPTIONS GOING ACROSS 395
I PREFER THE METRO MOVER ROUTE EXTENSION

Name: GERRY GOLDSTEIN
Address: 3040 ALTON RD
Phone Number: 305 336 8627
Email: GERRY3040 @ AOL.COM

If you have any questions or comments, please contact the Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov.**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

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Please Write Comments Below

P/s post all of the options
on line for the different technologies
along with the cost of each.

Name: Ken Jeffries Address: FDOT.

Phone Number: 305.470.5445 Email:

MIAMI-DADE COUNTY

Departamento de Transporte y Obras Públicas

Proyecto de Transporte Rápido para el Corredor de la Playa

Conectando el área del Centro de Convenciones de Miami Beach con el Downtown de Miami y el Midtown/Distrito de Diseño de Miami

Hoja de Comentarios Sobre Taller de Alternativas

Lugar de Reunión

New World Center
500 17th St.
Miami Beach, FL 33139

Fecha de Reunión

lunes, 17 de junio del 2019
desde 6 p.m. a 8 p.m.

Por Favor Escriba Sus Comentarios a Continuación

1) Transfering from the metromover to ~~t~~ a new mode will make me not use this system blocks from by house
2) Alton Road really feels like it would get more use in Miami Bea

Nombre:

Dirección:

Número de Teléfono:

Correo Electrónico:

Para más información, por favor contacte a la Oficial de Información Pública al **786-476-2852**, o por correo electrónico a **SMARTBeach@miamidade.gov.**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

Connecting the Miami Beach Convention Center Area to Downtown Miami and Midtown/Miami Design District

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Meeting Date

Monday, June 17, 2019
6 p.m. to 8 p.m.

Please Write Comments Below

Please show the costs comparisons amongst the alternatives. Aslo show the lenght of time or schedule for implementation

Name: Shereen Yee Fong

Address: FDOT

Phone Number: 305 470 5393

Email: shereen.yee-fong@dot.state.fl.us

If you have any questions or comments, please contact the Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov.**

MIAMI-DADE COUNTY

Departamento de Transporte y Obras Públicas

Proyecto de Transporte Rápido para el Corredor de la Playa

Conectando el área del Centro de Convenciones de Miami Beach con el Downtown de Miami y el Midtown/Distrito de Diseño de Miami

Hoja de Comentarios Sobre Taller de Alternativas

Lugar de Reunión

New World Center
500 17th St.
Miami Beach, FL 33139

Fecha de Reunión

lunes, 17 de junio del 2019
desde 6 p.m. a 8 p.m.

Por Favor Escriba Sus Comentarios a Continuación

I think that the lack of direct connectivity to Metrorail is a serious problem. Please reconsider the heavy-rail option. Framing the issue, as Ms. Delgado did tonight, as one of connecting Downtown to South Beach obscures the need for an integrated, countywide system.

Nombre: Gerardo Vildostegui Dirección:

Número de Teléfono: 415.305.8239 Correo Electrónico: gvildost@gmail.com

Para más información, por favor contacte a la Oficial de Información Pública al **786-476-2852**, o por correo electrónico a **SMARTBeach@miamidade.gov.**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

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Alternatives Workshop Comment Sheet

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Please Write Comments Below

I suggest to implement BRT Beach Corridor,
Also, I suggest Route 120 Beach MAX to eliminate short-turn trips ending at Haulover and extend all-trips to Aventura Mall and modify headway adjustments daily (Mon-Sat).

Name: Gary Price

Address: 6748 NW 193 Lane Hialeah, FL 33015

Phone Number: 786-218-0615

Email:

1

Beach Corridor Rapid Transit Project
Alternatives Workshop Speaker Request Card
Monday, June 17, 2019

PLEASE PRINT:

First Name: ARTHUR LEIBELL
Last Name:
Address: 330 W. RIVO ALTO DR
City: MIAMI BEACH
State: Zip:
Email:
Telephone:
Representing: Self ____ Firm/Agency ____
Government Agency:
Civic Organization:
Homeowner Association:
Other:

2

Beach Corridor Rapid Transit Project
Alternatives Workshop Speaker Request Card
Monday, June 17, 2019

PLEASE PRINT:

First Name: Gerardo
Last Name: Vildostegui
Address: 9148 Frandle Ave
City: SURFSIDE
State: Zip:
Email:
Telephone:
Representing: Self ____ Firm/Agency ____
Government Agency:
Civic Organization:
Homeowner Association:
Other:

8

Beach Corridor Rapid Transit Project
Alternatives Workshop Speaker Request Card
Monday, June 17, 2019

PLEASE PRINT:

First Name: KERMIT
Last Name: GOLDSTEIN
Address:
City: MIAMI BEACH
State: FL Zip: 33140
Email: GEARI/3040 @AOL.COM
Telephone: 6584186
Representing: Self ✓ Firm/Agency ____
Government Agency:
Civic Organization:
Homeowner Association:
Other:

4

Beach Corridor Rapid Transit Project
Alternatives Workshop Speaker Request Card
Monday, June 17, 2019

PLEASE PRINT:

Charles

First Name: Charles
Last Name: Fischer
Address:
City: Miami Beach
State: FL Zip:
Email:
Telephone:
Representing: Self X Firm/Agency ____
Government Agency:
Civic Organization:
Homeowner Association:
Other:

Beach Corridor Rapid Transit Project
Alternatives Workshop Speaker Request Card
Monday, June 17, 2019

5

PLEASE PRINT:

First Name: RICHARD

Last Name: SILVERMAN

Address: 1800 JEFFERSON AVE

City: MB

State: FL Zip: 33139

Email: RICHARDSILVERMAN@TULANEALUMNI.NET

Telephone: 305-532-9846

Representing: Self ✓ Firm/Agency ____

Government Agency: ____

Civic Organization: ____

Homeowner Association: ____

Other: ____

Department of Transportation and Public Works

Alternatives Workshop – Elected Official Sign In

Project

Beach Corridor Rapid Transit Project
Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/Miami Design District

Meeting Location

New World Center
500 17th St.
Miami Beach, FL 33139

Meeting Date & Time

Thursday, September 12, 2019
6 p.m. to 8 p.m.

CHECK IN	NAME	REPRESENTED BY	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
	Miami-Dade County Mayor Gimenez		111 NW 1st Street, 29th Floor Miami, FL 33128	305-375-5071	mayor@miamidade.gov
✓	Miami-Dade County Commissioner Jordan	Demetria Henderson	111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-5694	district1@miamidade.gov
	Miami-Dade County Commissioner Monestime		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-4833	district2@miamidade.gov
	Miami-Dade County Chairwoman Edmonson		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-5393	district3@miamidade.gov
	Miami-Dade County Commissioner Heyman		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-5128	district4@miamidade.gov
✓	Miami-Dade County Commissioner Higgins	Rachel Cohen	111 NW 1st Street, Suite 220 Miami, FL 33128	305-643-8525	district5@miamidade.gov
	Miami-Dade County Vice Chairwoman Sosa		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-5696	district6@miamidade.gov

If you have any questions or comments, please contact Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov.**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Alternatives Workshop – Elected Official Sign In

Project	Meeting Location	Meeting Date & Time
Beach Corridor Rapid Transit Project Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/Miami Design District	**New World Center** 500 17th St. Miami Beach, FL 33139	**Thursday, September 12, 2019** 6 p.m. to 8 p.m.

CHECK IN	NAME	REPRESENTED BY	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
	City of Miami Beach Mayor Gelber		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7035	dangelber@miamibeachfl.gov
	City of Miami Beach Commissioner Steinberg		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7030 ext. 6087	mickysteinberg@miamibeachfl.gov
MS	City of Miami Beach Commissioner Samuelian		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7104	marksamuelian@miamibeachfl.gov
	City of Miami Beach Commissioner Góngora		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7106	michael@miamibeachfl.gov
	City of Miami Beach Commissioner Malakoff		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7125	joymalakoff@miamibeachfl.gov
	City of Miami Beach Commissioner Arriola		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7030 ext. 6274	rickyarriola@miamibeachfl.gov
	City of Miami Beach Commissioner Alemán		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7030 ext. 6437	johnaleman@miamibeachfl.gov

If you have any questions or comments, please contact Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov**.

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Alternatives Workshop – Elected Official Sign In

Project

Beach Corridor Rapid Transit Project
Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/Miami Design District

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500 17th St.
Miami Beach, FL 33139

Meeting Date & Time

Thursday, September 12, 2019
6 p.m. to 8 p.m.

NAME	REPRESENTING	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
Jordan corona	State Rep. Grieco		954-804-3712	Jordan.corona@myfloridahouse.gov

If you have any questions or comments, please contact Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov.**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Alternatives Workshop – Agency/Project Team Sign In

Project	Meeting Location	Meeting Date & Time
Beach Corridor Rapid Transit Project Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/Miami Design District	**New World Center** 500 17th St. Miami Beach, FL 33139	**Thursday, September 12, 2019** 6 p.m. to 8 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
Peter Hallbrooker	CAMBRIDGE	—	954 331 6100	
JOSHUA RAK	BSA		305-860-3766	
Alan Brick-Turin	FDOT		786.4179405	
PRAKASH KUMAR	CITT Dt #5	—	305 803 7759	
TRISTAN JACKSON	CITY OF MIAMI	—	305 416 1122	ON FILE
Jennifer Schull	NOAA - NMFS	400 N. Congress Ave West Palm Beach, FL 33405	561-440-1748	jennifer.schull@noaa.gov
Karla Damian	DTPW		786 469-5420	kdamian@miamidade.gov
Kiranmai Chirumamilla	DTPW		786 469 5283	kiranmai.chirumamilla@miamidade.gov

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Department of Transportation and Public Works

MIAMI-DADE COUNTY

Alternatives Workshop – Agency/Project Team Sign In

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NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
James A. McCall	Transportation & Public Works	701 NW 1st Court	786 469 5290	James.McCall@miamidade.gov
Kevin Pulido	City of Miami Beach Communications	1701 Meridian Ave.	786 568 6051	KevinPulido@miamibeachfl.gov
Jeannine Gaslonde	TPO		305-375-1739	Jeannine.gaslonde@mdtpo.org
Lisa Colmenares	TPO	111 NW 1st St	305-375-1738	lisa.colmenares@mdtpo.org
Lynda West	City of Miami Beach	1688 Meridian #801	3/673-7000 x 2669 3	lyndawest@miamibeachfl.gov
JOSE R. GONZALEZ	''	''	'' x7514	JOSEGONZALEZ ''
Jie Bian	DTPW	701 NW 1st Ct	786-469-5245	jie.bian@miamidade.gov
Alice Bravo	'' ''			

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MIAMI-DADE COUNTY

Department of Transportation and Public Works

Alternatives Workshop – Agency/Project Team Sign In

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NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
Phil Hoffmann	Parsons		303-913-6097	philhoffmann@parsons.com
Cynthia Perez	Holt	—	—	—
ENEIDA MARTINEZ	PARSON		305.507.5586	eneida.martinez@parsons.com
Nadia Locke	ESciences		954.484 8500	nlocke@esciencesinc.com
Gayle Stone	EScrences		954-484-8500	gstone@escrenoesinc.com
A. CHAVARRIA	PARSONS		305.507.8890	angel.chavarria@parsons.com
G. HARLESTON	HOLT		—	—

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MIAMI-DADE COUNTY

Department of Transportation and Public Works

Alternatives Workshop – Agency/Project Team Sign In

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6 p.m. to 8 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
Odalys Delgado	Parsons			odalys.Delgado@Parsons.com
Lynn Hogan	Parsons			Lynn.Hogan@Parsons.com
ALFREDO SANCHEZ	BEA			ASANCHEZ@BAMIAMI.com
Yvette Holt	Holt Comm			

If you have any questions or comments, please contact Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov.**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Alternatives Workshop – Agency/Project Team Sign In

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NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
JUAN M. RAMIREZ	PARSONS			

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MIAMI-DADE COUNTY

Department of Transportation and Public Works

Alternatives Workshop – General Public Sign In

Project

Beach Corridor Rapid Transit Project
Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/Miami Design District

Meeting Location

New World Center
500 17th St.
Miami Beach, FL 33139

Meeting Date & Time

Thursday, September 12, 2019
6 p.m. to 8 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS	HOW DID YOU HEAR ABOUT THIS MEETING? (Please circle all that apply)
Linda Frankel		43 Star Island Dr.	860.575.3191	LFRANKEL860@gmail.com	Ad Mail Bus Terminal
CARMINE BORGA	FINLEY ENGINEERING GROUP	1588 METROPOLITAN BLV. TALLAHASSEE FL	850 274 7482	CARMINE.BORGA@FINLEYENGINEERINGGROUP.COM	Ad Mail Bus Terminal
Gabriela Noa Betancourt	Unite Here Local 355	1525 NW 167 St.	786 302 8378	gbetancourt@unitehere.org	Ad Mail Bus Terminal
ESTEBAN PORCELLI	MBNA	3411 INDIAN CREEK DR	917-294-3511	eporcelli@yahoo.com	Ad Mail Bus Terminal
NOAH JOLLEY	ACS INFRASTRUCTURE	1 ALHAMBRA PLAZA	786 495 5866	njolley@acsinfra.com	Ad Mail Bus Terminal
Matthew Komisarjevsky	ACS Infrastructure	" "	" "	mkomisarjevsky@acsinfra.com	Ad Mail Bus Terminal
					Ad Mail Bus Terminal

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MIAMI-DADE COUNTY

Department of Transportation and Public Works

Alternatives Workshop – General Public Sign In

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NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS	HOW DID YOU HEAR ABOUT THIS MEETING? (Please circle all that apply)
DAN SOMMER		POB 402573 M.B.	305-450-3006	SOMMERHS1@AOL.COM	Ad Mail Bus Terminal
DAVID PIZZIMENTI	SHIKUN AND BINUI	999 PONCE DE LEON	954 5124422	DAVID_PI@AMERICASBA.COM	Ad Mail Bus Terminal
John Kulpa	HNTB	161 NW 6 ST #1000 MIAMI FL	786.682.4965	JKULPA@HNTB	Ad E Mail Bus Terminal
Andy Cueto		409 N.E 36 St			Ad Mail Bus Terminal
David Richardson	self				Ad Mail Bus Terminal
ATIOSIS BLANCO	Self				Ad Mail Bus Terminal
					Ad Mail Bus Terminal

If you have any questions or comments, please contact Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov**.

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Alternatives Workshop – General Public Sign In

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NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS	HOW DID YOU HEAR ABOUT THIS MEETING? (Please circle all that apply)
Youssef ISSA		1776 James Ave			Ad Mail Bus Terminal
Valerie Navarrete		1441 Lincoln Rd.			Ad Mail Bus Terminal
Stephen Hamilton	self	961 SW 176 Ave. Pembroke Pi	954-801-7880	stephen@citytram.org	Ad Mail Bus Terminal
Kyle Henry	EXP	201 Alhambra Cir Coral GAbles	561-329-9263	Kyle.Henry@EXP.com	Ad Mail Bus Terminal
					Ad Mail Bus Terminal
					Ad Mail Bus Terminal
					Ad Mail Bus Terminal

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MIAMI-DADE COUNTY

Department of Transportation and Public Works

Alternatives Workshop – General Public Sign In

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WEBSITE

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS	HOW DID YOU HEAR ABOUT THIS MEETING? (Please circle all that apply)
Doug Hanks	Miami Herald	~~FH~~ 3511 NW [illegible] Doral FL		DHanks@miamiherald.com	Ad Mail Bus Terminal
Leonte Almonte	Kimley-Horn	355 Alhambra circle coral gables	305-673-2025	leo.almonte@kimley-horn.com	Ad Mail Bus Terminal
Michael Barrineau	—	110 Washington Ave #1613	786.445.0160	mikeb@mikebarrineau.com	Ad Mail Bus Terminal
Madeline Roch	self				Ad Mail Bus Terminal
					Ad Mail Bus Terminal
					Ad Mail Bus Terminal
					Ad Mail Bus Terminal

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Alternatives Workshop – General Public Sign In

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Beach Corridor Rapid Transit Project Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/Miami Design District	**New World Center** 500 17th St. Miami Beach, FL 33139	**Thursday, September 12, 2019** 6 p.m. to 8 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS	HOW DID YOU HEAR ABOUT THIS MEETING? (Please circle all that apply)
ALEJANDRA AGREDO	—	3381 SW 24 TER MIAMI, FL	786-495-2116	ALEJANDRA@CYBERSCAPE.CO	Ad Mail Bus Terminal
MJOSÉ Belmonte	SACYR.	3191 Coral Way		mjbelmonte@sacyr.com	Ad Mail Bus Terminal
Mather	South Beach	—	—	—	~~Ad~~ Mail Bus Terminal
					Ad Mail Bus Terminal
					Ad Mail Bus Terminal
					Ad Mail Bus Terminal
					Ad Mail Bus Terminal

If you have any questions or comments, please contact Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov.**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Alternatives Workshop – General Public Sign In

Project

Beach Corridor Rapid Transit Project
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NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS	HOW DID YOU HEAR ABOUT THIS MEETING? (Please circle all that apply)
Ana Velasco	Ocean Drive Assoc	1020 Ocean Drive	305 821 4394	execdirector@oceandrivemb.com execdirector@oceandrivemb.com	Ad Mail Bus Terminal
Ryan Shedd		1621 Bay Rd, Apt. 603	484-881-2625	rymshedd@gmail.com	Ad Mail Bus Terminal
					Ad Mail Bus Terminal
					Ad Mail Bus Terminal
					Ad Mail Bus Terminal
					Ad Mail Bus Terminal
					Ad Mail Bus Terminal

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MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/Miami Design District

Alternatives Workshop Comment Sheet

Please check one box to indicate the meeting you have attended.

[X] **Meeting Location**
New World Center
500 17th St., Miami Beach, FL 33139
Meeting Date
Thursday, September 12, 2019

[ ] **Meeting Location**
Miami Marriott Biscayne Bay
1633 North Bayshore Dr., Miami, FL33132
Meeting Date
Monday, September 16, 2019

Please Write Comments Below

Best option = Elevated
stops - 2 needed NOT one
1) Residential -> don't want to be in Tourism area
2) Tourists -> don't need to be wandering through residential -

Name: Ana Velasco Address:
Phone Number: 3055214394 Email: execdirector@oceandrivemb.com

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/Miami Design District

Alternatives Workshop Comment Sheet

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1633 North Bayshore Dr., Miami, FL33132
Meeting Date
Monday, September 16, 2019

Please Write Comments Below

Hi all,

Did any one came up with Idea about going under ground like subway system and using under water Tunel cross RT 395.

Thanks.

Name:

Address:

Phone Number:

Email: Justiceissa@verizon.net

If you have any questions or comments, please contact the Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov.**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

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Meeting Date
Monday, September 16, 2019

Please Write Comments Below

Please expedite and implement projects ASAP
instead of workshops/survey

Name: PRAKASH KUMAR Address:

Phone Number: 305 803 7759 Email: Parkku55 @ hotmail Com

If you have any questions or comments, please contact the Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov.**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

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Please Write Comments Below

MY PREFERRED OPTION WOULD BE ~~[illegible]~~ APM CONNECTING MIDTOWN TO SOUTH BEACH AND THEN DEDICATED BUS LANE TO CONVENTION CENTER. WITH THE LIGHT RAIL I AM CONCERNED ABOUT THE NOISE LEVEL AT GROUND LEVEL. IT'S ESSENTIAL FOR BUS LANES TO BE DEDICATED.

Name: YURI REBELLO

Address: 18071 BISCAYNE BLVD # 1902 AVENTURA FL 33160

Phone Number: 305-733-1779

Email: YURI.REBELLO@NWS.EDU

If you have any questions or comments, please contact the Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov.**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

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Please Write Comments Below

① APM choices made for analysis were poor. Why do i need bigger cars? Because 10 min headway. $\frac{3600 \text{ pph}}{6 \text{ v/hr}}$ = 600 people/veh. Why not operate more frequently (automated) with smaller cars?

② Only consider automated options - APM + Monorail

③ Washington + 5th stations should integrate the mode transfer. Not separate APM/Monorail + Bus stations with a walk + street crossing between.

Name: Steve Hamilton

Address: 961 SW 174 Ave. Pembroke Pines, FL

Phone Number:

Email: stephen@citytram.org

If you have any questions or comments, please contact the Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov.**

MIAMI-DADE COUNTY

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Please Write Comments Below

METROMOVER EXTENSION! APM! PLEASE!!

I WOULD MUCH RATHER HAVE APM INTERCONNECTED WITH THE EXISTING SYSTEM THAN BRT/LRT/"MONORAIL"

Name: ALEJANDRA AGREDO Address: 3381 SW 24 TER

Phone Number: 786-309-2055 Email: ALEJANDRA@CYBERSCAPE.CO

If you have any questions or comments, please contact the Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov.**

MIAMI-DADE COUNTY

Departamento de Transporte y Obras Públicas

Proyecto de Transporte Rápido para el Corredor de la Playa

Conectando el area del Centro de Convenciones de Miami Beach con el Downtown de Miami y el Midtown/Distrito de Diseño de Miami

Hoja de Comentarios Sobre Taller de Alternativas

Por favor, marque una casilla para indicar el taller de alternativas a la cual asistió.

☑ **Lugar de Reunión**
New World Center
500 17th St., Miami Beach, FL 33139
Fecha de Reunión
Jueves 12 de septiembre del 2019

☐ **Lugar de Reunión**
Miami Marriott Biscayne Bay
1633 N. Bayshore Dr., Miami, FL 33132
Fecha de Reunión
Lunes 16 de septiembre del 2019

Escriba Sus Comentarios a Continuación

APM - METROMOVER -
ESTE SISTEMA ES EL MAS APROPIADO -
SE INTEGRA PERFECTAMENTE CON LO EXISTENTE
EN MIAMI - EL MISMO FUNCIONA MAGNIFICA-
MENTE - TAMBIEN AL INTEGRARSE CON
EL SISTEMA EXISTENTE FACILITA ENORME-
MENTE EL MANTENIMIENTO PREVENTIVO Y

Nombre: ESTEBAN PORCELLI Dirección: 3411 INDIAN CREEK Dr. MB

Número de Teléfono: 917-294-3511 Correo Electrónico: esporcelli@yahoo.com

Si usted tiene preguntas o comentarios, por favor contacte a la Oficial de Información Pública al **786-476-2852**, o por correo electrónico a **SMARTBeach@miamidade.gov.**

CORRECTIVO, REDUCIENDO COSTOS
DE PARTES Y PERSONAL.

MIAMI-DADE COUNTY

Department of Transportation and Public Works

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☐ **Meeting Location**
Miami Marriott Biscayne Bay
1633 North Bayshore Dr., Miami, FL33132
Meeting Date
Monday, September 16, 2019

Please Write Comments Below

Any technology chosen should minimize required transfers between systems. The APM + the LRT have the best chances of capturing the most riders. The infrastructure and necessary lane dedications (LRT) should not be deterrants from choosing these techs. Congestion and sustainability will only improve w/ truly premium transit. Otherwise, let's just dedicate a lane for the "S" + "120" the county's best buses!

Name: Ryan Shedd
Address: 1621 Bay Rd
Phone Number: 484-881-2625
Email: rymshedd@gmail.com

Don't be afraid to dedicate ROW to transit!!

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/Miami Design District

Alternatives Workshop Comment Sheet

Please check one box to indicate the meeting you have attended.

☒ **Meeting Location**
New World Center
500 17th St., Miami Beach, FL 33139
Meeting Date
Thursday, September 12, 2019

☐ **Meeting Location**
Miami Marriott Biscayne Bay
1633 North Bayshore Dr., Miami, FL33132
Meeting Date
Monday, September 16, 2019

Please Write Comments Below

I belive the aereal monorail would be best because it wouldn't be part of traffic (aka: faster) and if for any reason, roads are closed (accident, etc.), the transportation wouldn't be afected.

I understand this is more expensive, but in the long run, it will be more cost effective ⇒

Name: Valerie Navarrete
Address: 1441 Lenox(?) Ave Rd. 201
Phone Number: 786-546-2422
Email: VAL_SOBE@yahoo.com

If you have any questions or comments, please contact the Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov.**

and would be a better alternative to people leave their cars home or public parking near the stations.

Thank you!

1

Beach Corridor Rapid Transit Project

Alternatives Workshop Speaker Request Card

☑ Thursday, September 12, 2019
☐ Monday, September 16, 2019

PLEASE PRINT:

Name: NOAH JOLLEY
First Last

Address: 5 ISLAND AVE 3F
Street
MIAMI BEACH, FL 33139
City State Zip Code

Email: –

Telephone: –

Representing: Self X Firm/Agency ______

Government Agency ______

Civic Organization ______

Homeowner Association ______

Other ______

2

Beach Corridor Rapid Transit Project

Alternatives Workshop Speaker Request Card

☒ Thursday, September 12, 2019
☐ Monday, September 16, 2019

PLEASE PRINT:

Name: Doug Hanks
First Last

Address: 3050 SW 27th Ave
Street
Miami FL 33133
City State Zip Code

Email: DHanks@MiamiHerald.com

Telephone: 305-376-365

Representing: Self ______ Firm/Agency Miami Herald

Government Agency ______

Civic Organization ______

Homeowner Association ______

Other ______

3

Beach Corridor Rapid Transit Project
Alternatives Workshop Speaker Request Card

☐ Thursday, September 12, 2019
☐ Monday, September 16, 2019

PLEASE PRINT:

Name: DAVID ________ P ________
First Last

Address: ______________________
Street

____
City State Zip Code

Email: ______________________

Telephone: ______________________

Representing: Self ________ Firm/Agency ________

Government Agency ________

Civic Organization ________

Homeowner Association ________

Other________

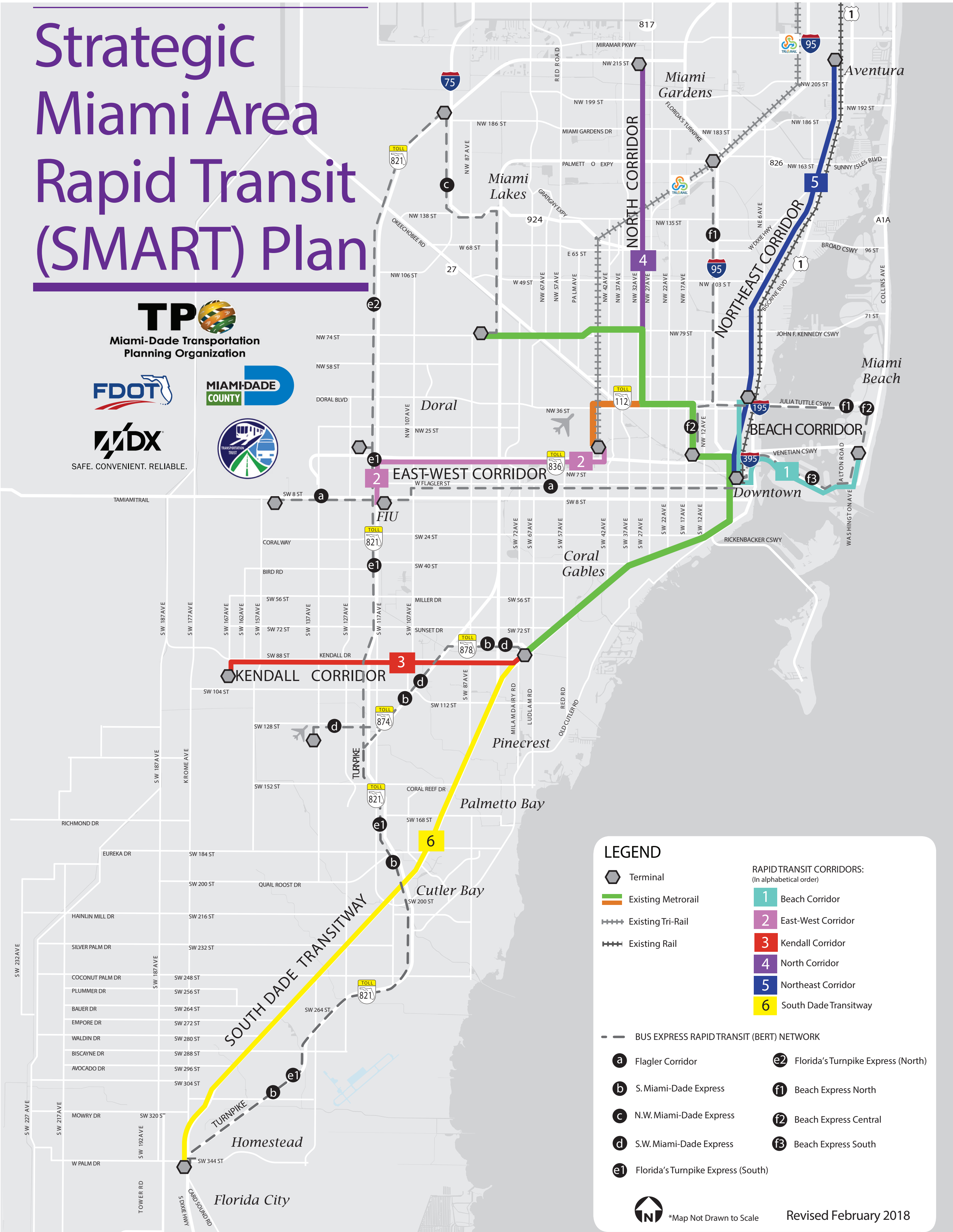
APPENDIX B-2

Fact Sheets

Strategic Miami Area Rapid Transit (SMART) Plan

TPO Miami-Dade Transportation Planning Organization

FDOT · MIAMI-DADE COUNTY · MDX SAFE. CONVENIENT. RELIABLE.



#MiamiSMARTplan www.MiamiSMARTplan.com

MIAMI-DADE COUNTY **Department of Transportation and Public Works**

Beach Corridor Rapid Transit Project FACT SHEET

FALL 2018

#MiamiSMARTplan www.miamismartplan.com

SMARTbeach@miamidade.gov

MIAMI-DADE COUNTY

Beach Corridor Rapid Transit Project | FACT SHEET

Project Overview and Limits

The Miami-Dade County Department of Transportation and Public Works (DTPW) is conducting a Project Development and Environment (PD&E) Study of rapid transit options along the Beach Corridor. The Beach Corridor connects the Miami Design District at or near NE 41st Street and NE 2nd Avenue to the Miami Beach Convention Center. The Beach Corridor is one of the six rapid transit corridors in the Strategic Miami Area Rapid Transit (SMART) Plan.

Project Objective

This study will examine various rapid transit systems to connect major centers of population, tourism and economic growth in Miami-Dade County. The focus will be on evaluating various transit modes, technologies and alignments which may result in one or multiple rapid transit options that can be implemented along the corridor.

Project Goals

- Connect to and provide direct, convenient and comfortable rapid transit service to serve existing and future planned land uses.
- Provide enhanced interconnections with Metrorail, Tri-Rail, Brightline, Metromover, Metrobus routes, Broward County Transit (BCT) bus routes, Miami and Miami Beach circulators, jitneys, shuttles, taxis, Transportation Network Companies (TNC's) and/or other supporting transportation services.
- Promote pedestrian and bicycle-friendly solutions in the corridors of the study area.

What is Rapid Transit?

Characteristics of rapid transit include faster speeds and more frequent service operating along an exclusive guideway and various passenger amenities at stations (both with and without park-and-rides) and in the vehicles. Examples of rapid transit modes include Bus Rapid Transit (BRT), Streetcar or Light Rail Transit (LRT), Automated Guideway Transit (AGT) such as Metromover and Heavy Rail Transit (HRT) like Metrorail.

Tier 1 Alternatives Evaluation

Seven rapid transit modes we analyzed in Tier 1 of the study. The following modes have been moved forward to Tier 2 for further analysis:

Monorail: Recommended for study of alignment alternatives in the Design District, Downtown Miami, and Bay Crossing segments.

Metromover: Recommended for study of alignment alternatives in all segments.

BRT/Express Bus: Recommended for BRT and/or Express Bus from Downtown to Convention Center and Express Bus only along a freeway loop alignment using I-95, I-195, I-395 in Miami and 5th street, Washington and Alton Roads in the Miami Beach segment.

LRT/Streetcar: Recommended for study of alignment alternatives in the Design District, Bay Crossing, and Miami Beach segments.

Personal Rapid Transit: Added as an additional mode for evaluation in all segments.

Public Engagement

As a member of the community, your participation is vital. A comprehensive Public Involvement Program is a key component of this study. Public involvement includes formal and informal meetings with the general public, government agencies, elected officials, municipal staff, local transportation providers and other interested stakeholders throughout the community.

Project Schedule*

Miami Corridor Analysis Fall 2018

- Kickoff Summer 2017
- ~~Public Information Workshops Summer 2018~~
- Alternatives Workshops ~~Winter 2018~~ Summer 2019
- Public Hearing/ Selection of Locally Preferred Alternative ~~Summer 2019~~ Spring 2020

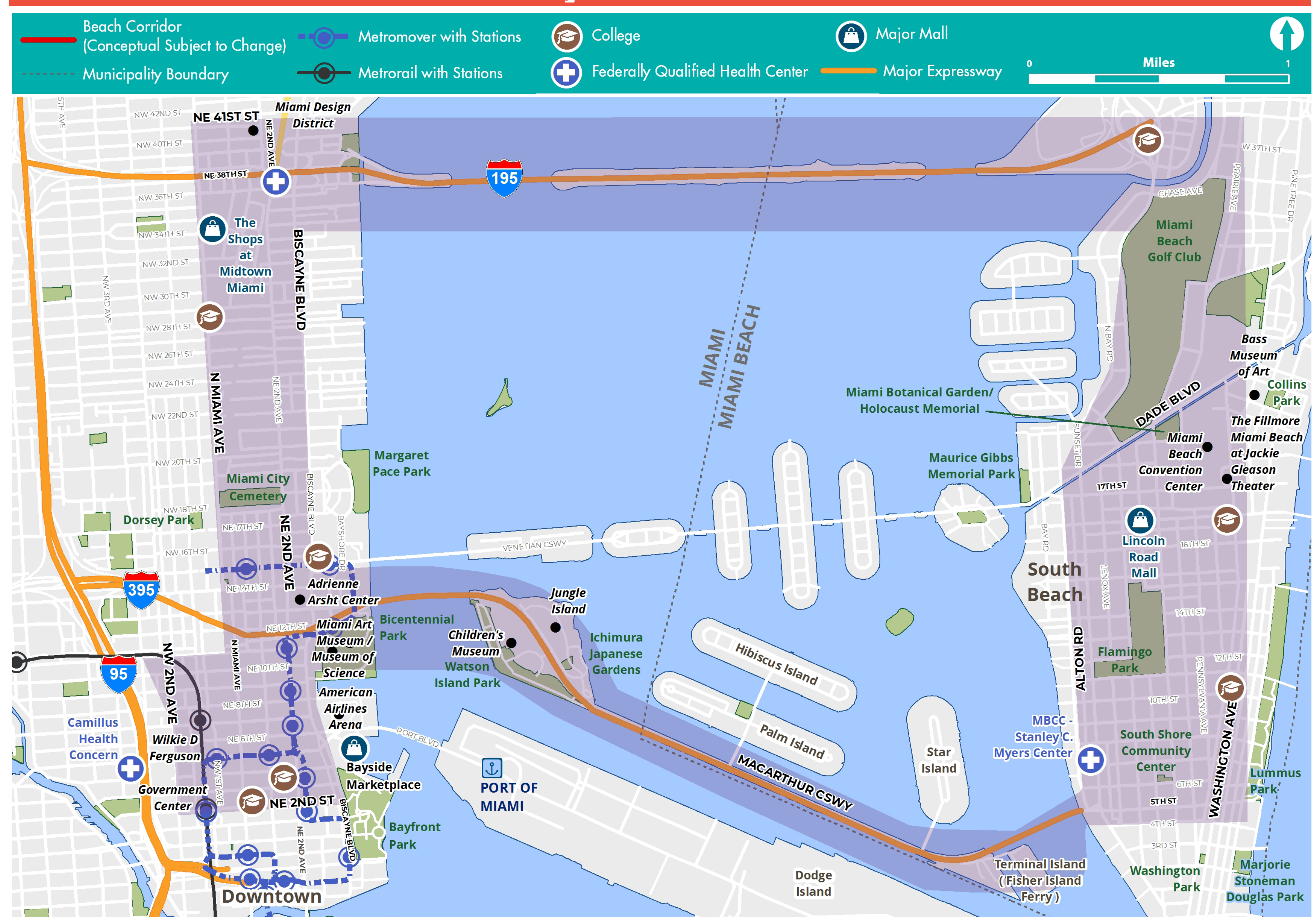
*Assumes an Environmental ~~Assessment (EA)~~ Impact Statement Document

Stay Informed/Be Involved

For more information, contact Public Information Officer Yvette Holt at 786-476-2852 or by email at SMARTBeach@miamidade.gov

#miamiSMARTplan www.miamismartplan.com

Project Location



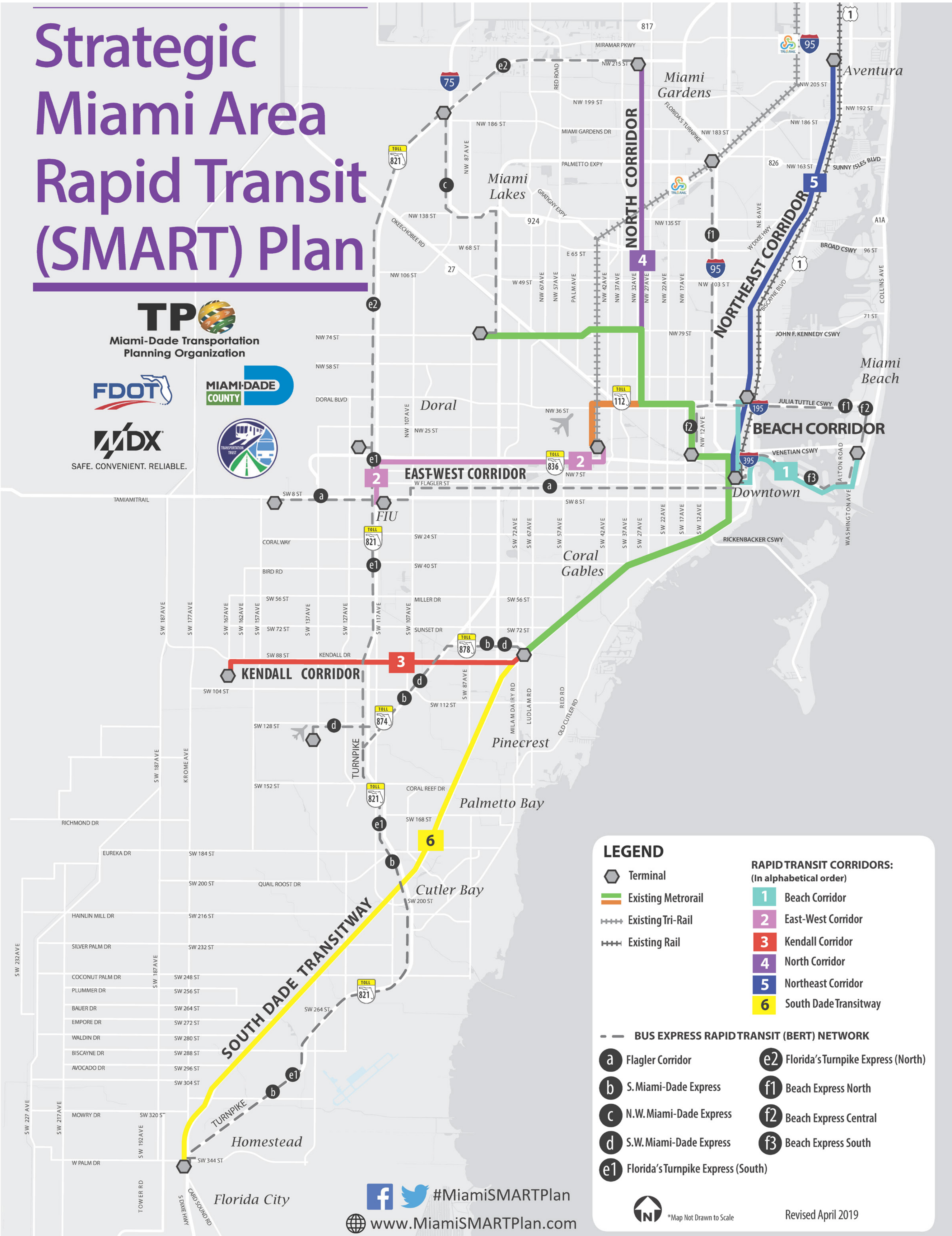
Strategic Miami Area Rapid Transit (SMART) Plan

TPO Miami-Dade Transportation Planning Organization

FDOT

MIAMI-DADE COUNTY

MDX SAFE. CONVENIENT. RELIABLE.



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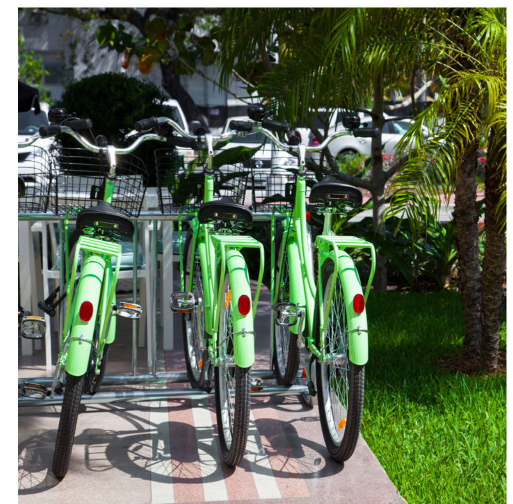
MIAMI-DADE COUNTY

Department of Transportation and Public Works

Automated Guideway Transit (AGT) - Metromover

Light Rail Transit (LRT) - Modern Streetcar

Personal Rapid Transit (PRT)



Bike/Pedestrian Accessibility

Beach Corridor Rapid Transit Project FACT SHEET

SPRING 2019

Bus Rapid Transit (BRT) - Express Bus

Monorail

Autonomous Vehicles

@GoMiamiDade #MiamiSMARTPlan www.miamismartplan.com

MIAMI-DADE SMART PLAN

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Project Overview and Status

The Miami-Dade County Department of Transportation and Public Works (DTPW) is conducting a Project Development and Environment (PD&E) Study of rapid transit options along the Beach Corridor. The Beach Corridor connects the Miami Design District/Midtown to Downtown Miami and Miami Beach. The Beach Corridor is one of the six rapid transit corridors in the Strategic Miami Area Rapid Transit (SMART) Plan.

The project began in 2017 with a series of kickoff meetings and a technical analysis of seven rapid transit modes with several alignments. After an analysis of transit demand, environmental impacts, engineering and social considerations, four alternatives remain under evaluation. The remaining alternatives include Automated Guideway Transit (AGT), such as Metromover; Monorail; Light Rail Transit, such as a streetcar; and Bus Rapid Transit (BRT). All include pedestrian and bicycle-friendly considerations. Additionally, while there is a draft alignment for each mode, the evaluation process will consider opportunities for hybrid alternatives. For example, a Metromover extension may be applicable in Miami, Monorail along the MacArthur Causeway and BRT along Miami Beach.

AGT-Metromover

The AGT alignment would connect N. Miami Ave. with existing Metromover. Another line would connect Miami across MacArthur Causeway to Miami Beach at Washington Ave.

Monorail

The alignment would connect with the existing Metromover at the Museum station area, cross the MacArthur Causeway and end at Washington Ave. in Miami Beach.

LRT - Light Rail

The alignment begins at the Design District area, connecting to a potential station at FEC and 36th St., then goes south on Miami Ave. to 11th St. and east along the MacArthur Causeway to Washington Ave. in Miami Beach.

BRT

Two alignment options - one begins from Downtown Miami, along I-95 to Julia Tuttle Causeway, south to the Convention Center area; another begins from Downtown Miami, east along the MacArthur Causeway to Washington Ave. and the Convention Center area.

Project Schedule*

1. Miami/Miami Beach Kick-off Summer 2017/Fall 2018
2. Alternatives Workshop #1 Spring 2019
3. Alternatives Workshop #2 Fall 2019
4. Identify Locally Preferred Alternative Fall 2019
5. Public Hearing (NEPA) Summer 2020

*Assumes an Environmental Impact Statement document

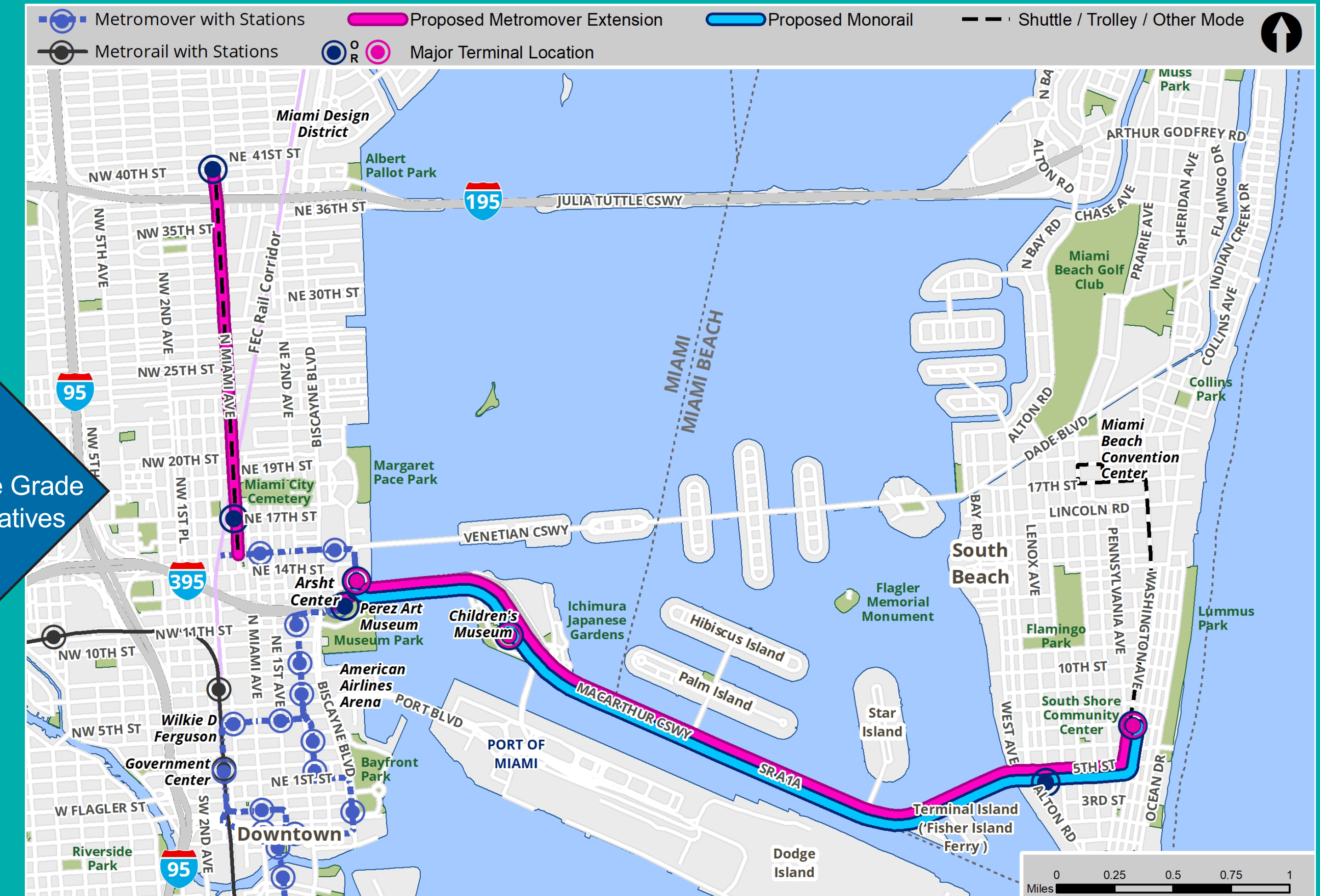
Public Engagement

As a member of the community, your participation is vital. A comprehensive Public Involvement Program is a key component of this study. Public involvement includes formal and informal meetings with the general public, government agencies, elected officials, municipal staff, local transportation providers and other interested stakeholders throughout the community.

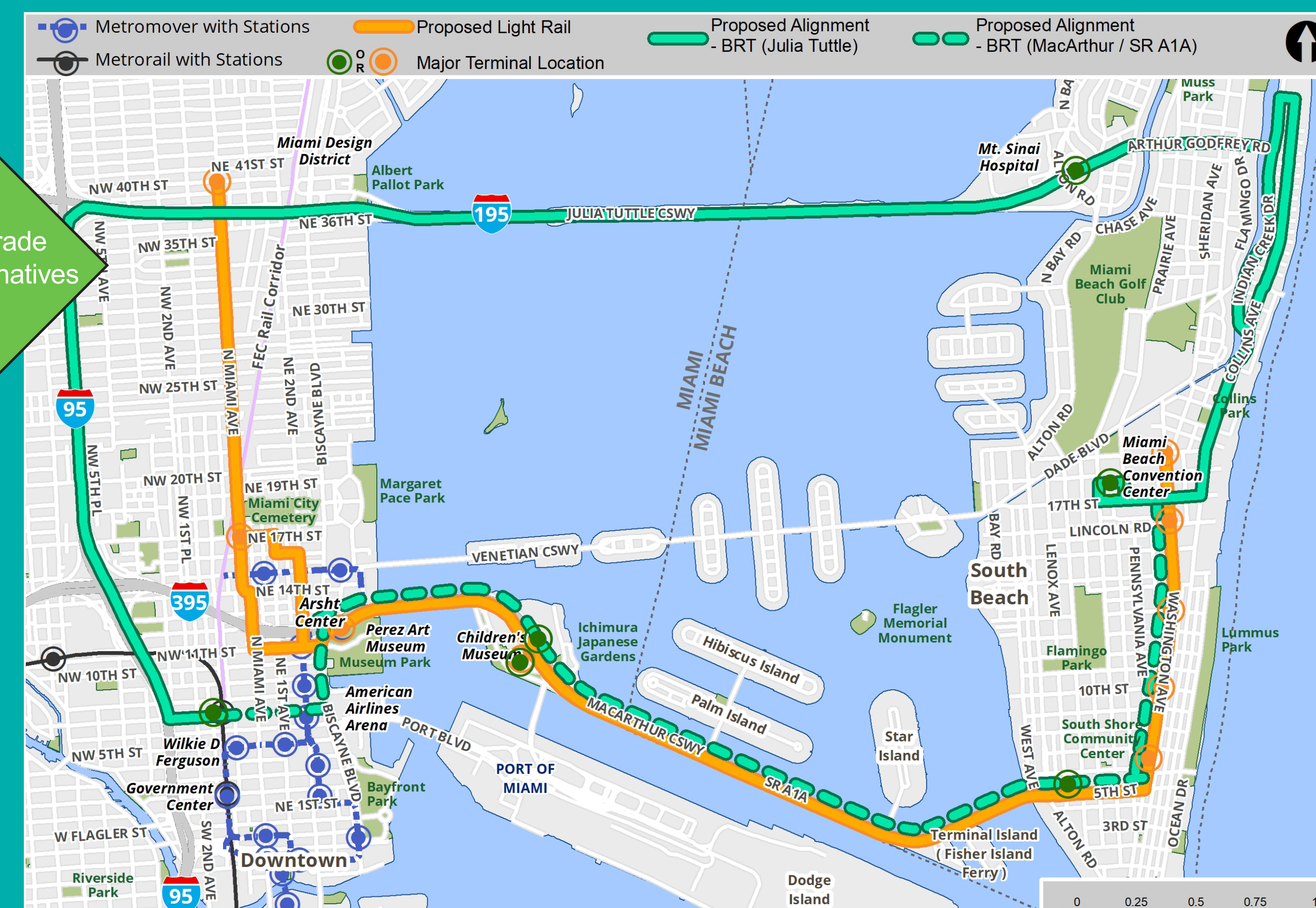
Stay Informed/Be Involved

For more information, contact Public Information Officer Yvette Holt at 786-476-2852 , or by email at: SMARTBeach@miamidade.gov.

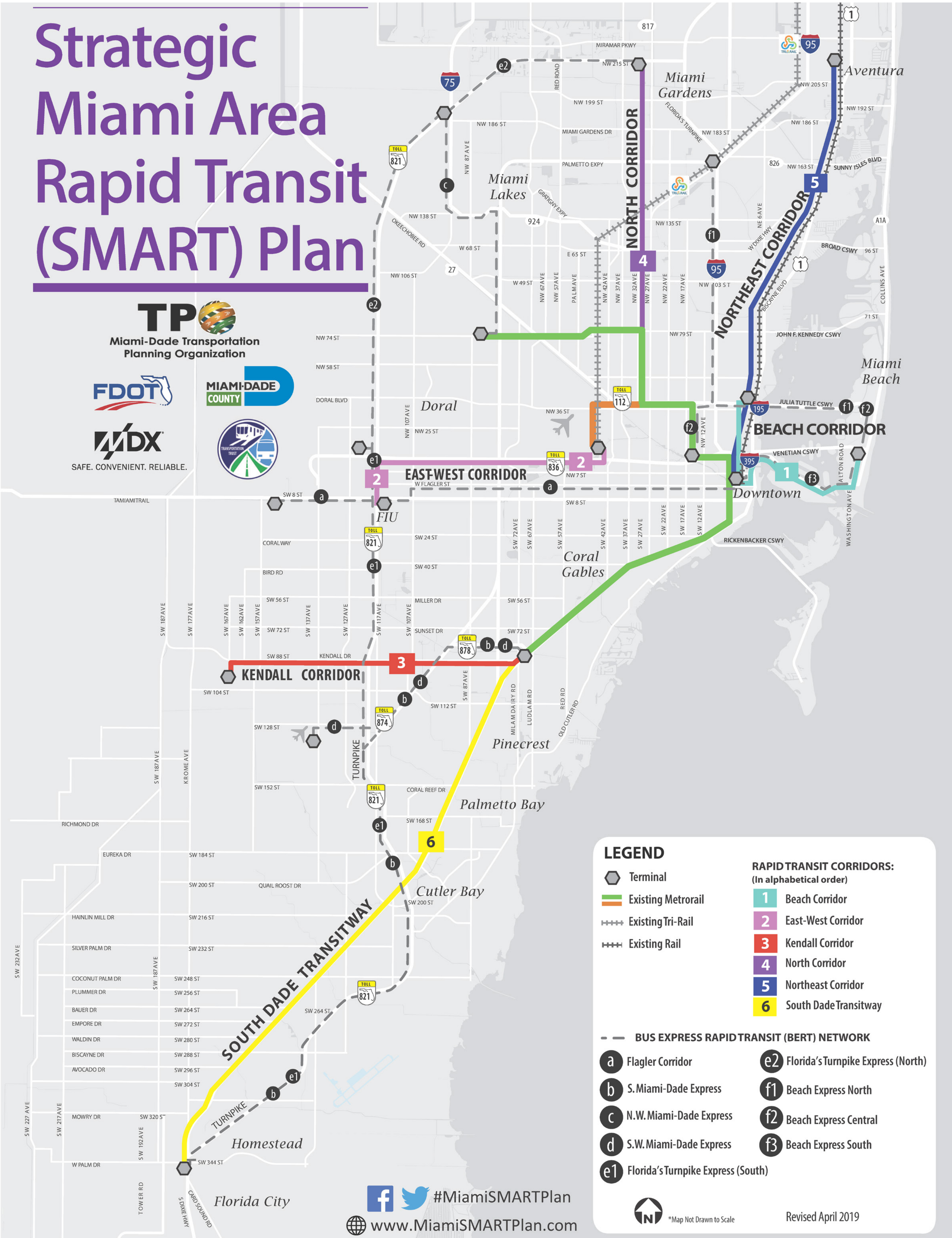
Above Grade Alternatives



At Grade Alternatives



Strategic Miami Area Rapid Transit (SMART) Plan



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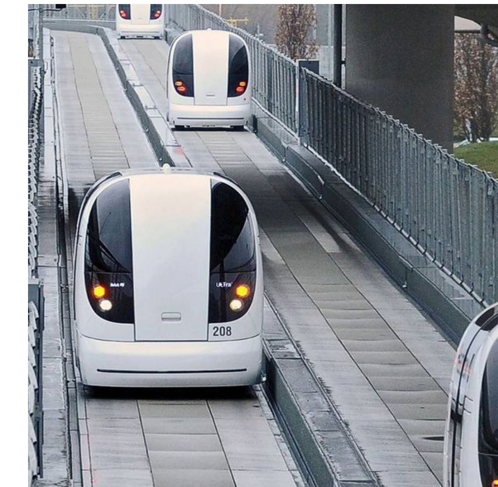
MIAMI-DADE COUNTY

Department of Transportation and Public Works


Automated People Mover (APM)


Light Rail Transit (LRT) - Modern Streetcar


Personal Rapid Transit (PRT)


Bike/Pedestrian Accessibility

Beach Corridor Rapid Transit Project FACT SHEET

Summer 2019

Bus Rapid Transit (BRT) - Express Bus


Monorail


Autonomous Vehicles

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SMART PLAN

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Project Overview and Status

The Miami-Dade County Department of Transportation and Public Works (DTPW) is conducting a Project Development and Environment (PD&E) Study of rapid transit options along the Beach Corridor. The Beach Corridor connects the Miami Design District/Midtown to Downtown Miami and Miami Beach. The Beach Corridor is one of the six rapid transit corridors in the Strategic Miami Area Rapid Transit (SMART) Plan.

The project began in 2017 with a series of kickoff meetings and a technical analysis of seven rapid transit modes with several alignments. After an analysis of transit demand, environmental impacts, engineering and social considerations, four alternatives remain under evaluation. The remaining alternatives include Automated People Mover (APM), such as Metromover; Monorail; Light Rail Transit, such as a streetcar; and Bus Rapid Transit (BRT). All include pedestrian and bicycle-friendly considerations. Additionally, while there is a draft alignment for each mode, the evaluation process will consider opportunities for hybrid alternatives. For example, a Metromover extension may be applicable in Miami, Monorail along the MacArthur Causeway and BRT along Miami Beach.

APM - Automated People Mover

The APM alignment would connect N. Miami Ave with existing Metromover. Another line would connect Miami across MacArthur Causeway into Miami Beach and end at Washington Ave.

Monorail

The alignment would connect with the existing Metromover at the Museum station area, cross the MacArthur Causeway and end at Washington Ave. in Miami Beach.

LRT - Light Rail

The alignment begins at the Design District area, connecting to a potential station at FEC and 36th St., then goes south on Miami Ave. to 11th St. and east along the MacArthur Causeway to Washington Ave. in Miami Beach.

BRT

Two alignment options - one begins from Downtown Miami, along I-95 to Julia Tuttle Causeway, south to the Convention Center area; another begins from Downtown Miami, east along the MacArthur Causeway to Washington Ave. and the Convention Center area.

Project Schedule*

1. Miami/Miami Beach Kick-off Summer 2017/Fall 2018
2. Alternatives Workshop #1 Spring 2019
3. Alternatives Workshop #2 Fall 2019
4. Identify Locally Preferred Alternative Fall 2019
5. Public Hearing (NEPA) Summer 2020

*Assumes an Environmental Impact Statement document

Public Engagement

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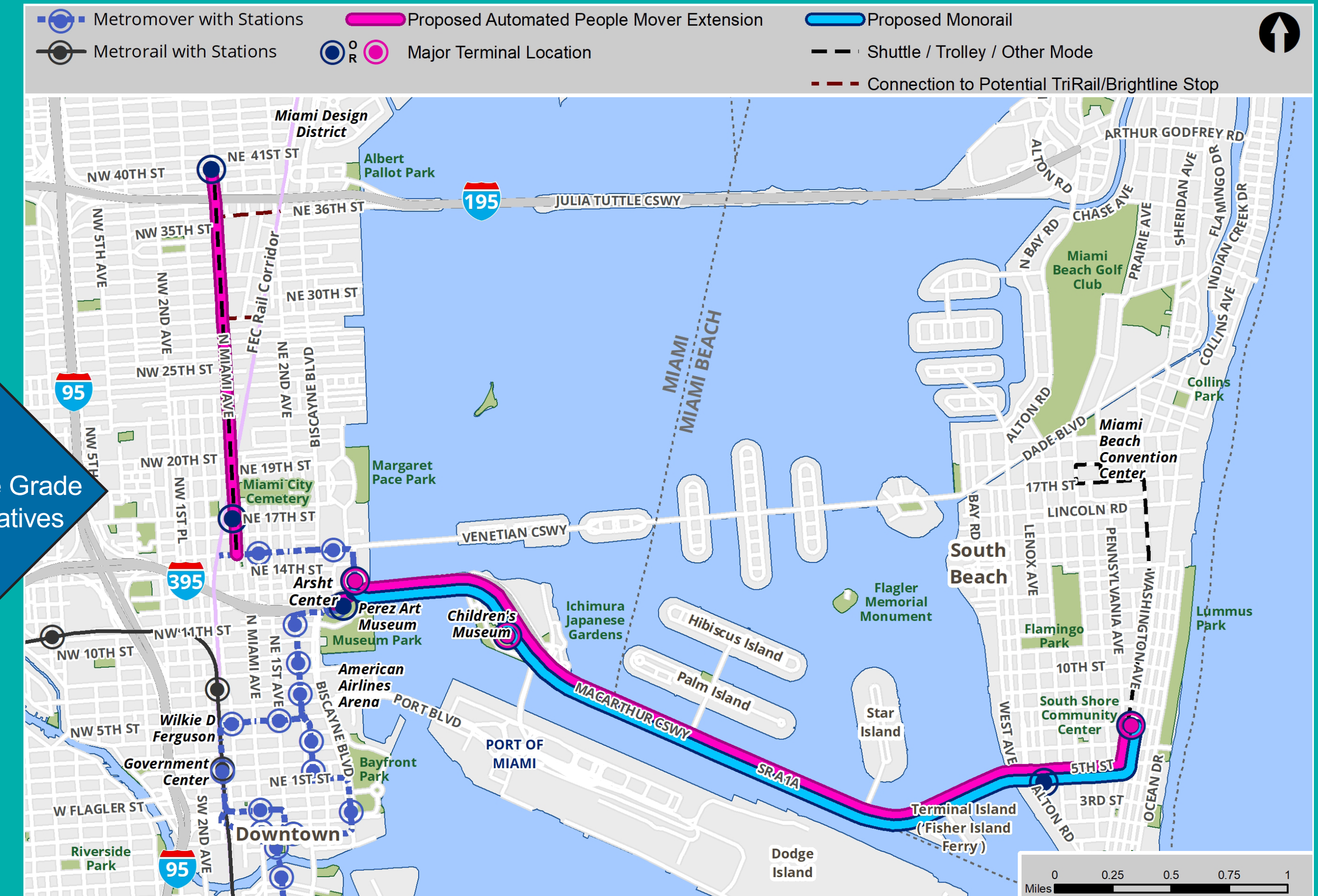
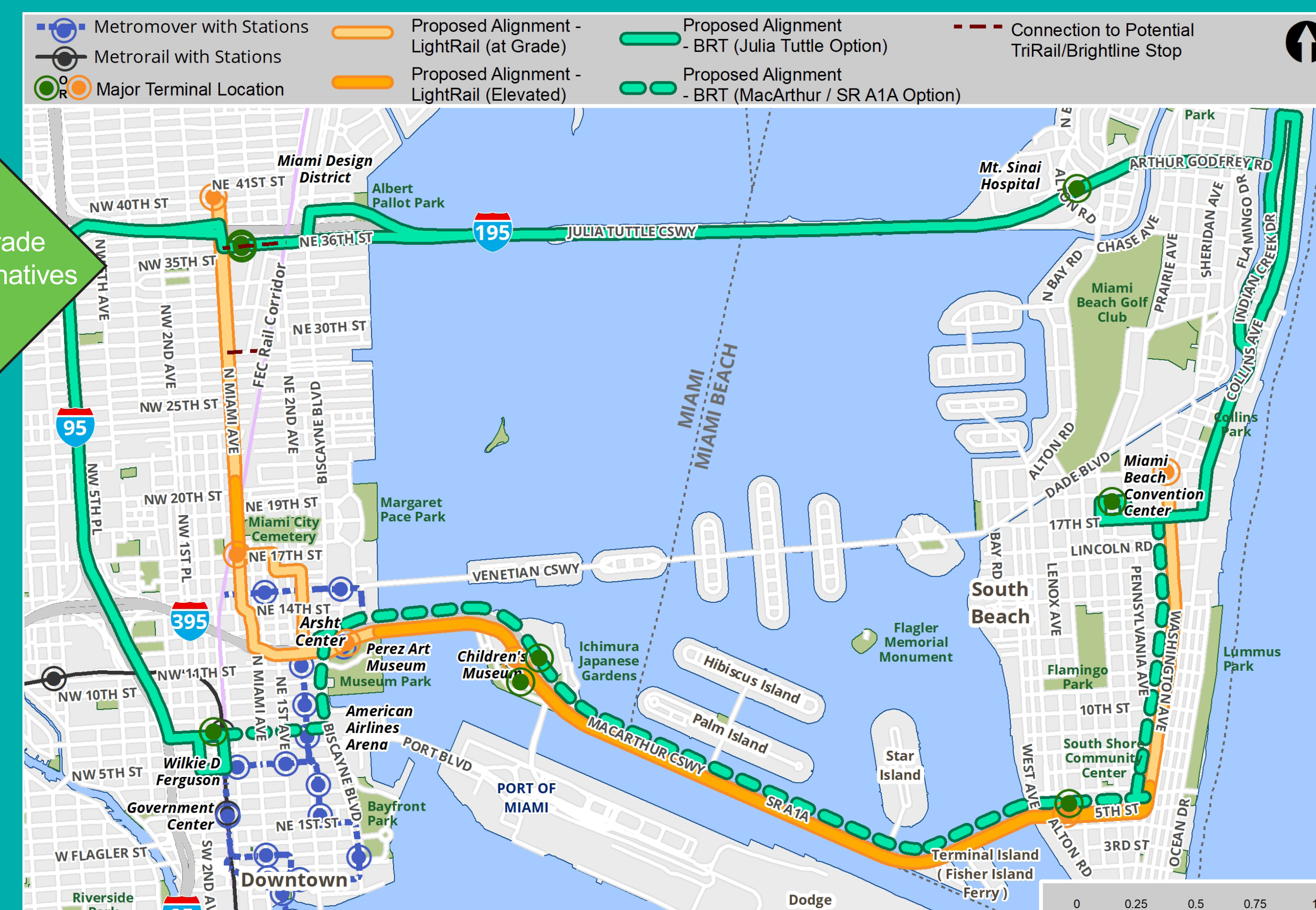
Stay Informed/Be Involved

For more information, contact Public Information Officer Yvette Holt at 786-476-2852 , or by email at: SMARTBeach@miamidade.gov.

Above Grade Alternatives



At Grade Alternatives



APPENDIX B-3

Tier 1 Kick Off Meetings – Miami & Miami Beach

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

Connecting the Miami Design District to 5th Street and Alton Road in Miami Beach

Public Meeting Comment Sheet

Please check one box to indicate the meeting you have attended

[X] **Meeting Location**
Culmer Community Action Center
1600 NW 3rd Avenue, Miami, FL 33136
Meeting Date
Tuesday, July 25, 2017

[ ] **Meeting Location**
New World Symphony
500 17th Street, Miami Beach, FL 33139
Meeting Date
Thursday, July 27, 2017

Please Write Comments Below

I dont believe that the cancelling of MDT services on the beach is in the best interest of those bus Riders working on Miami Beach needing transportation. Dade County Home Rule Charter Preamble says that all residents or taxpayers must benefit from County services. Public transportation gets people to and from Miami Beach its a benefit that should not be taken away capriciously and arbitrarily in order to use those added funds for your expansion project. Trolley services are not in a position to take on Mass transit public duties and responsibilities to a growing multicultural and internationally diversed general public. I am against the elimination of buses on Miami Beach needed for work!

Name: Rubin Young
Address: 1398 SW 1st #806
Phone Number: 786 359 6128
Email: Commthuse@yahoo.com

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

Connecting the Miami Design District to 5th Street and Alton Road in Miami Beach

Public Meeting Comment Sheet

Please check one box to indicate the meeting you have attended

☑ **Meeting Location**
Culmer Community Action Center
1600 NW 3rd Avenue, Miami, FL 33136
Meeting Date
Tuesday, July 25, 2017

☐ **Meeting Location**
New World Symphony
500 17th Street, Miami Beach, FL 33139
Meeting Date
Thursday, July 27, 2017

Please Write Comments Below

Project Advisory Group
1100 Biscayne Blvd
#4803
Miami 33132

Name: Raj Rajendran Address:

Phone Number: 561-222-6982 Email: RAJ5719@outlook.com

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

Connecting the Miami Design District to 5th Street and Alton Road in Miami Beach

Public Meeting Comment Sheet

Please check one box to indicate the meeting you have attended

☑ **Meeting Location**
Culmer Community Action Center
1600 NW 3rd Avenue, Miami, FL 33136
Meeting Date
Tuesday, July 25, 2017

☐ **Meeting Location**
New World Symphony
500 17th Street, Miami Beach, FL 33139
Meeting Date
Thursday, July 27, 2017

Please Write Comments Below

Mass Transit - fixed route & schedule - is too slow, too expensive, and too wasteful. On Demand service is needed. Personal Rapid Transit should be considered. Modutram is my recommendation - open truss elevated 2D guideway that is low cost.

Name: Stephen Hamilton

Address:

Phone Number:

Email:

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at 786-476-2852 or by email at Yvette@HoltCommunications.net

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

Connecting the Miami Design District to 5th Street and Alton Road in Miami Beach

Public Meeting Comment Sheet

Please check one box to indicate the meeting you have attended

[X] **Meeting Location**
Culmer Community Action Center
1600 NW 3rd Avenue, Miami, FL 33136
Meeting Date
Tuesday, July 25, 2017

[ ] **Meeting Location**
New World Symphony
500 17th Street, Miami Beach, FL 33139
Meeting Date
Thursday, July 27, 2017

Please Write Comments Below

Please consider leveraging existing transportation infrastructure such as municipal trolley systems and Citi Bike. This is also an opportunity to enhance bike infrastructure along the corridor as ROW improvements are made to accomodate rapid transit. I would like to be included in the PAG. Thank you all for your time tonight.

Name: Joe Eisenberg

Address: 1250 S Miami Ave

Phone Number:

Email: OPNJoe@Yahoo.com

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Agency/Elected Official Kick-Off Meeting - Elected Official Sign In

Project	Meeting Location	Meeting Date & Time
Beach Corridor Rapid Transit Project Connecting the Miami Design District to 5th Street and Alton Road in Miami Beach	Culmer Community Action Center 1600 NW 3rd Avenue, Miami, FL 33136	Tuesday, July 25, 2017 **6 p.m. to 8 p.m.**

CHECK IN	NAME	REPRESENTED BY	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
	Rep. David Richardson	Roberto Alvarez	1701 Meridian Ave Suite 402A	305-535-5426	Roberto.Alvarez@myfloridahouse.gov

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Public Kick-Off Meeting - Agency/Project Team Sign In

Project

Beach Corridor Rapid Transit Project
Connecting the Miami Design District to 5th Street and Alton Road in Miami Beach

Meeting Location

Culmer Community Action Center
1600 NW 3rd Avenue, Miami, FL 33136

Meeting Date & Time

Tuesday, July 25, 2017
6 p.m. to 8 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
Adebayo Coker	H2C Eng	13155 SW 134th Street, Ste 207	305 232 7932	acoker@h2cengineering.com
NADIA Locke	EScience	224 SE 9 St Ft Lauderdale 33312	954-484-8500	NLocke@escienceinc.com
Jeannine Gaslonde	TPO			Jeannine.Gaslonde@mdtpo.org.
Cynthia Perez	Holt Communications	3105 NW 107 Ave	786-575-9239	cynthia@holtcommunications.net
John Izquierdo	Gannett Fleming	7800 Corporate Center Drive	(757) 339 5835	j.izquierdo@gfnet.com
PETER HALBURTON	CAMBRIDGE SYSTEMATICS			phalburton@camsys.com
Collin Worth	City of Miami	444 SW 2nd Ave	305-416-1022	CWORTH@miamigov.com
John Kulpa	AECOM	7650 NW 19 St MIA	786 682 4965	JOHN.KULPA@AECOM.com

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Public Kick-Off Meeting - Agency/Project Team Sign In

Project

Beach Corridor Rapid Transit Project
Connecting the Miami Design District to 5th Street and Alton Road in Miami Beach

Meeting Location

Culmer Community Action Center
1600 NW 3rd Avenue, Miami, FL 33136

Meeting Date & Time

Tuesday, July 25, 2017
6 p.m. to 8 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
Odaly Delgado	Parsons			odaly.delgado@parsons
Mark Pistines	Parsons			mark.pistines@parsons.com
Pat Brizzio	Parsons			patrick.brizzio@parsons.com
Karla Damian	DTPW			kdamian@miamidade.gov
Greg Harleston	Holt			Gregory@holtcommunications.net
Elizabeth Rockwell	Miami-Dade TPO			elizabeth.rockwell@mdtpo.org
Paul Chance	"			paul.chance@mdtpo.org
Christian Mulaire	Parsons			christian.mulaire@parsons.com

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Public Kick-Off Meeting - Agency/Project Team Sign In

Project

Beach Corridor Rapid Transit Project
Connecting the Miami Design District to
5th Street and Alton Road in Miami Beach

Meeting Location

Culmer Community Action Center
1600 NW 3rd Avenue, Miami, FL 33136

Meeting Date & Time

Tuesday, July 25, 2017
6 p.m. to 8 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
WIATT BOWERS	Atkins	7406 Fullerton St. Jax FL 32256	904.363.6100	wiatt.bowers@atkinsglobal.com
Sophia Saportas	Atkins		407-865-2767	sophia.saportas@atkinsglobal.com
MARY TERT VILCHES	MIAMI-DADE TPO			MARIA.VILCHES@MDTPO.ORG

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

Department of Transportation and Public Works

MIAMI-DADE COUNTY

Public Kick-Off Meeting - General Public Sign In

Project	Meeting Location	Meeting Date & Time
Beach Corridor Rapid Transit Project Connecting the Miami Design District to 5th Street and Alton Road in Miami Beach	Culmer Community Action Center 1600 NW 3rd Avenue, Miami, FL 33136	Tuesday, July 25, 2017 **6 p.m. to 8 p.m.**

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS	HOW DID YOU HEAR ABOUT THIS MEETING? Please check one box
Emanuel Washington	Community Work Training Program	Miami, FL 33136 1490 N.W. 3 Ave Suite 106	305-761-7443	cwtp@cwtpinc.com	☐ Ad ☐ Mail ☐ Bus ☐ Terminal OTHER
Marc Golob			786-562-4832	mgolobind@gmail.com	☐ Ad ☐ Mail ☐ Bus ☐ Terminal other
Ren Smaah					☐ Ad ☐ Mail ☐ Bus ☐ Terminal
Raymond Saavedra	KKCS	201 S. Biscayne blvd Miami	305.537-0027	Raymond.Saavedra@kkcsworld.com	☒ Ad ☐ Mail ☐ Bus ☐ Terminal
Rajendran	—	1100 Biscayne blvd #4503	561-222-6952	RAJ5719@outlook	☐ Ad ☐ Mail ☐ Bus ☒ Terminal
Steve Hamilton	Citytram.org	961 SW 17th Ave	305-954-7880	stephen@citytram.org	☐ Ad ☒ Mail ☐ Bus ☐ Terminal
Doug Hanks	Miami Herald	3511 NW 91st St	305-376-3605	DHanks@miamiherald...	☐ Ad ☐ Mail ☐ Bus ☐ Terminal Media
Pierre Crevaux	Libertarian Party		305 898 1796	DIRECTOR@LPMDADE.ORG	☐ Ad ☐ Mail ☐ Bus ☐ Terminal

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Public Kick-Off Meeting - General Public Sign In

Project
Beach Corridor Rapid Transit Project
Connecting the Miami Design District to 5th Street and Alton Road in Miami Beach

Meeting Location
Culmer Community Action Center
1600 NW 3rd Avenue, Miami, FL 33136

Meeting Date & Time
Tuesday, July 25, 2017
6 p.m. to 8 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS	HOW DID YOU HEAR ABOUT THIS MEETING? Please check one box
Sue Trone		444 SW 2 AVE Miami 33130		strone@miamigov.com	☐ Ad ☒ Mail ☐ Bus ☐ Terminal
Joe Eisenberg		1250 S. Miami Ave		OPNJoe@yahoo.com	☒ Ad ☐ Mail ☐ Bus ☐ Terminal
Matt Lamb		1010 MARINE TRAIL	321.356.1139	matt.lamb@ch2m.com	☒ Ad ☐ Mail ☐ Bus ☐ Terminal
Victory miller		219 NW 16th street			☐ Ad ☐ Mail ☒ Bus ☐ Terminal
Raquel Caballero		11685 Canal Dr. #101	3/878 7606	riquel.caballero@gmail.com	☐ Ad ☐ Mail ☒ Bus ☐ Terminal
RuBin Young		1398 SW 1 St	7863596128	Commbus@yahoo.com	☐ Ad ☐ Mail ☒ Bus ☐ Terminal
					☐ Ad ☐ Mail ☐ Bus ☐ Terminal
					☐ Ad ☐ Mail ☐ Bus ☐ Terminal

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

1

Beach Corridor Rapid Transit Project
Public Kick-Off Meeting Speaker Request Card
☐ Tuesday, July 25, 2017 | ☐ Thursday, July 27, 2017

PLEASE PRINT:

Name: Reverand Lincoln
First Last

Address: 210 NW 16th M FL-
Street

Miami 33136
City State Zip Code

Email:

Telephone:

Representing: Self ______ Firm/Agency People Helping People
Government Agency ______
Civic Organization ✓
Homeowner Association ______
Other______

Department of Transportation and Public Works

Agency/Elected Official Kick-Off Meeting - Elected Official Sign In

Project

Beach Corridor Rapid Transit Project
Connecting the Miami Design District to
5th Street and Alton Road in Miami Beach

Meeting Location

Culmer Community Action Center
1600 NW 3rd Avenue, Miami, FL 33136

Meeting Date & Time

Tuesday, July 25, 2017
3 p.m. to 5 p.m.

CHECK IN	NAME	REPRESENTED BY	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
	Mayor Gimenez		111 NW 1st Street, 29th Floor Miami, FL 33128	305-375-5071	mayor@miamidade.gov
	Commissioner Jordan		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-5694	district1@miamidade.gov
	Commissioner Monestime		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-4833	district2@miamidade.gov
	Commissioner Edmonson		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-5393	district3@miamidade.gov
	Commissioner Heyman	Margie Amador Robinson	111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-5128	district4@miamidade.gov
	Commissioner Barreiro		111 NW 1st Street, Suite 220 Miami, FL 33128	305-643-8525	district5@miamidade.gov
	Commissioner Sosa		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-5696	district6@miamidade.gov

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Agency/Elected Official Kick-Off Meeting - Elected Official Sign In

Project	Meeting Location	Meeting Date & Time
Beach Corridor Rapid Transit Project Connecting the Miami Design District to 5th Street and Alton Road in Miami Beach	Culmer Community Action Center 1600 NW 3rd Avenue, Miami, FL 33136	Tuesday, July 25, 2017 **3 p.m. to 5 p.m.**

CHECK IN	NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
	Mayor Levine		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7030	philiplevine@miamibeachfl.gov
	Commissioner Steinberg		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7030	mickeysteinberg@miamibeachfl.gov
	Commissioner Grieco		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7030	michaelgrieco@miamibeachfl.gov
	Commissioner Malakoff		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7030	joymalakoff@miamibeachfl.gov
	Commissioner Gonzalez		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7030	kristen@miamibeachfl.gov
	Commissioner Arriola		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7030	rickyarriola@miamibeachfl.gov
	Commissioner Aleman	Cilia Maria Ruiz-Paz	1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7030	johaleman@miamibeachfl.gov

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

Department of Transportation and Public Works

Agency/Elected Official Kick-Off Meeting - Agency/Project Team Sign In

Project

Beach Corridor Rapid Transit Project
Connecting the Miami Design District to
5th Street and Alton Road in Miami Beach

Meeting Location

Culmer Community Action Center
1600 NW 3rd Avenue, Miami, FL 33136

Meeting Date & Time

Tuesday, July 25, 2017
3 p.m. to 5 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
Mary Teri Vilches	Miami Dade TPO			Maria.Vilches@mdtpo.org
Jeannine Gaslonde	TPO			Jeannine.Gaslonde@mdtpo.org
Monica Cesas	DTPW			monica.cejas@miamidade.gov
Albert Hernandez	DTPW	701 NW 1st Ct		aah@miamidade.gov
Kathie Brooks	City of Miami Beach		(305) 673-7010	Kbrooks@miamibeachfl.gov
Christian Mulaire	Parsons			christian.mulaire@parsons.com
Joshua Rak	BA	2601 S. Bayshore Dr	(305) 896-3766	jrak@bermelloajamil.com
Patrice Gillespie Smith	Miami DDA	200 SE Biscayne #2929	(305) 579-6675	PGSmith@miamidda.com

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Agency/Elected Official Kick-Off Meeting - Elected Official Sign In

Project

Beach Corridor Rapid Transit Project
Connecting the Miami Design District to
5th Street and Alton Road in Miami Beach

Meeting Location

Culmer Community Action Center
1600 NW 3rd Avenue, Miami, FL 33136

Meeting Date & Time

Tuesday, July 25, 2017
3 p.m. to 5 p.m.

CHECK IN	NAME	REPRESENTED BY	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
	JOHN CARPENTER	→ Rodolfo Llanes, Chief	400 NW 2 AVE Miami FL	305 216 1494	0867@miamipolice.org
	State Senator José Javier Rodriguez	Luisana Pérez	2100 Coral Way, Miami Fl 3314[illegible]	3/854 0365	perezluisana@flsenate.gov
	Mirtha Ramos - chief		9105 NW 25 St		mramos@mdpd.com

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MIAMI-DADE COUNTY

Department of Transportation and Public Works

Agency/Elected Official Kick-Off Meeting - Agency/Project Team Sign In

Project
Beach Corridor Rapid Transit Project
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Meeting Location
Culmer Community Action Center
1600 NW 3rd Avenue, Miami, FL 33136

Meeting Date & Time
Tuesday, July 25, 2017
3 p.m. to 5 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
Wiltsome Bauer	City of Miami Bch			
Lynda Weston	"			

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Agency/Elected Official Kick-Off Meeting - Agency/Project Team Sign In

Project

Beach Corridor Rapid Transit Project
Connecting the Miami Design District to
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Meeting Location

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1600 NW 3rd Avenue, Miami, FL 33136

Meeting Date & Time

Tuesday, July 25, 2017
3 p.m. to 5 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
Alyce Robertson	Miami DDA	200 S. Biscayne Blvd	3055796675	robertson@miamidda.com
JOSÉ R. GONZALEZ	CITY OF MIAMI BEACH	1688 MERIDIAN AVE #801	(305) 673-7514	JOSEGONZALEZ@MIAMIBEACHFL.GOV
GREG HARLESTON	HOLT COMM			GREGORY@HOLTcommunications.net

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MIAMI-DADE COUNTY

Department of Transportation and Public Works

Agency/Elected Official Kick-Off Meeting - Agency/Project Team Sign In

Project

Beach Corridor Rapid Transit Project
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Meeting Location

Culmer Community Action Center
1600 NW 3rd Avenue, Miami, FL 33136

Meeting Date & Time

Tuesday, July 25, 2017
3 p.m. to 5 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
Odalys Delgado	Parsons			odalys.delgado@parsons
Pat Porzillo	Parsons			patrick.porzillo@parsons.com
Yvette Holt	Holt Communications			
merri starr	Holt Communication			merri@holtcommunications.net
Cynthia Perez	Holt Communications			cynthia@holtcommunications.net
Alfredo C. Sanchez	Parsons/BEA			asanchez@beamiami.com
Nadia Locke	EScience			nlocke@esciencesinc.com
Peter Haliburton	Cambridge Systematics			phaliburton@camsys.com

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Agency/Elected Official Kick-Off Meeting - Agency/Project Team Sign In

Project

Beach Corridor Rapid Transit Project
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Meeting Location

Culmer Community Action Center
1600 NW 3rd Avenue, Miami, FL 33136

Meeting Date & Time

Tuesday, July 25, 2017
3 p.m. to 5 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
Raymond Saavedra	KKCS	201 S. Biscayne Blvd 29th Fl	305-537-0027	Raymond.Saavedra@kkcsworld.com

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Agency/Elected Official Kick-Off Meeting - General Public Sign In

Project

Beach Corridor Rapid Transit Project
Connecting the Miami Design District to
5th Street and Alton Road in Miami Beach

Meeting Location

Culmer Community Action Center
1600 NW 3rd Avenue, Miami, FL 33136

Meeting Date & Time

Tuesday, July 25, 2017
3 p.m. to 5 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS	HOW DID YOU HEAR ABOUT THIS MEETING? Please check one box
MARK BLANCHARD	AECOM	800 DOUGLAS CORAL GABLES	954-662-1601	MARK.BLANCHARD@AECOM.COM	☐ Ad ☑ Bus ☐ Mail ☐ Terminal
PETE HERNANDEZ	"	" "	786-255-5745	PEDRO.HERNANDEZ@AECOM.COM	☐ Ad ☑ Bus ☐ Mail ☐ Terminal
Renam LINCOLN					☐ Ad ☐ Bus ☐ Mail ☐ Terminal
Lance Decuir	WSP			lance.decuir@wsp.com	☐ Ad ☐ Bus ☐ Mail ☐ Terminal
					☐ Ad ☐ Bus ☐ Mail ☐ Terminal
					☐ Ad ☐ Bus ☐ Mail ☐ Terminal
					☐ Ad ☐ Bus ☐ Mail ☐ Terminal
					☐ Ad ☐ Bus ☐ Mail ☐ Terminal

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2

Beach Corridor Rapid Transit Project
Public Kick-Off Meeting Speaker Request Card
☐ Tuesday, July 25, 2017 | ☐ Thursday, July 27, 2017

PLEASE PRINT:

Name: RAJ Rajendran
First Last

Address: 1100 Biscayne Blvd #4503
Street

Miami FL 33132
City State Zip Code

Email: RAJ5719@outlook.com

Telephone: 561-222-6952

Representing: Self ✓ Firm/Agency ____

Government Agency ____

Civic Organization ____

Homeowner Association ____

Other ____

3

Beach Corridor Rapid Transit Project

Public Kick-Off Meeting Speaker Request Card

☑ Tuesday, July 25, 2017 | ☐ Thursday, July 27, 2017

PLEASE PRINT:

Name: Stephen Hamilton
First Last

Address: 961 SW 176 Ave
Street

Pembroke Pines FL 33029
City State Zip Code

Email:

Telephone: 954-801-7880

Representing: Self ✓ Firm/Agency

Government Agency

Civic Organization

Homeowner Association

Other

4

Beach Corridor Rapid Transit Project
Public Kick-Off Meeting Speaker Request Card

☑ Tuesday, July 25, 2017 | ☐ Thursday, July 27, 2017

PLEASE PRINT:

Name: Marc (First) Golob (Last)

Address: [redacted] (Street)

[redacted] (City) (State) (Zip Code)

Email: mgolobind@gmail.com

Telephone: 786-562-4832

Representing: Self ✓ Firm/Agency ____

Government Agency ____

Civic Organization ____

Homeowner Association ____

Other ____

5

Beach Corridor Rapid Transit Project

Public Kick-Off Meeting Speaker Request Card

☐ Tuesday, July 25, 2017 | ☐ Thursday, July 27, 2017

PLEASE PRINT:

Name: Pierre-Alexandre Crevaux
First Last

Address: ____________________
Street

____
City State Zip Code

Email: DIRECTOR@LPMDADE.ORG

Telephone: (305) 898-1796

Representing: Self ________ Firm/Agency ________

Government Agency ________

Civic Organization ________

Homeowner Association ________

Other Libertarian Party

6

Beach Corridor Rapid Transit Project

Public Kick-Off Meeting Speaker Request Card

☐ Tuesday, July 25, 2017 | ☐ Thursday, July 27, 2017

PLEASE PRINT:

Name: Riquet Caballero
First Last

Address: ______________________
Street

____
City State Zip Code

Email: riquet.caballero@gmail.com

Telephone: 3187827606

Representing: Self ____________ Firm/Agency ____________

Government Agency ____________

Civic Organization ____________

Homeowner Association ____________

Other____________

1

Beach Corridor Rapid Transit Project
Public Kick-Off Meeting Speaker Request Card
☐ Tuesday, July 25, 2017 | ☐ Thursday, July 27, 2017

PLEASE PRINT:

Name: Patrice Gillespie Smith
First Last

Address: 200 SE ~~[illegible]~~ Biscayne #2929
Street

City State Zip Code

Email:

Telephone: 305-579-6675

Representing: Self ______ Firm/Agency Miami DDA

Government Agency

Civic Organization

Homeowner Association

Other

MIAMI-DADE COUNTY

Department of Transportation and Public Works

TITLE VI Comment Card
Beach Corridor Rapid Transit Project

Name: Susan R. Weitz
(Nombre)

Zip Code (Codigo postal): 33141

Race (Raza):

- ☑ White (Blanco)
- ☐ Black/ African American (Afro-Americano)
- ☐ Hispanic/ Latino (Hispano)
- ☐ Asian (Asiático)
- ☐ American Indian (Indio Americano)
- ☐ Other (Otro)

Preferred language: English
(¿Que idioma prefiere?)

Do you speak English? Yes ☑ No ☐
(¿Habla Inglés?) (Si) (No)

or autonomous - totally for it.

Comment (Comentario) Totally against rail to Miami Beach. FOR: smaller, electric buses running frequently to all Miami Beach including North Beach!

Requested information is optional and will be used to address the transportation needs of our community.
(La información que aquí se solicita sera utilizada para mejorar las condiciones del transporte publico en nuestra comunidad y es opcional proporcionarla).

#miamiSMARTplan www.miamismartplan.com

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

Connecting the Miami Design District to 5th Street and Alton Road in Miami Beach

Y

Public Meeting Comment Sheet

Please check one box to indicate the meeting you have attended

☐ **Meeting Location**
Culmer Community Action Center
1600 NW 3rd Avenue, Miami, FL 33136
Meeting Date
Tuesday, July 25, 2017

☒ **Meeting Location**
New World Symphony
500 17th Street, Miami Beach, FL 33139
Meeting Date
Thursday, July 27, 2017

PAG

Please Write Comments Below

Why DO all Bus's Come at Same Time?

airport Longer Hours
Build up above Hyway
A Transporter TO Carry 20 Cars or more
I would Like To be Involved In other Studies

Name: Barbara J. Masres

Address: 2800 Collins ave #304 Miami Beach 33140

Phone Number: 786-554-2222

Email: BJMakemeover22@AOL.Com

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at 786-476-2852 or by email at Yvette@HoltCommunications.net

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

Connecting the Miami Design District to 5th Street and Alton Road in Miami Beach

Public Meeting Comment Sheet

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Meeting Date
Tuesday, July 25, 2017

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New World Symphony
500 17th Street, Miami Beach, FL 33139

Meeting Date
Thursday, July 27, 2017

Please Write Comments Below

* INTERESTED IN BEING A
VOLUNTEER FOR ~~PGA~~. PAG.

Name:

Address:

Phone Number:

Email:

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

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New World Symphony
500 17th Street, Miami Beach, FL 33139
Meeting Date
Thursday, July 27, 2017

Please Write Comments Below

I would like to be on the advisory committee.

Name: Susan B. Weitz

Address: 7441 Wayne Ave #11-R 33141

Phone Number: 305-864-0473

Email: susan.weitz@gmail.com

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

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New World Symphony
500 17th Street, Miami Beach, FL 33139

Meeting Date
Thursday, July 27, 2017

Please Write Comments Below

ADVISORY BOARD

Wanda Mouzon

wanda@mouzon.com

786-256-8880

Miami Beach resident

urban planner

Name:

Address:

Phone Number:

Email:

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

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500 17th Street, Miami Beach, FL 33139
Meeting Date
Thursday, July 27, 2017

Please Write Comments Below

Am very interested in P3 components of transit and other public projects. Also very interested in aerial transit (ACT) as it is interesting, less expensive and less intrusive.

Name: Eric Swanson

Address: 730 Via Genova, Deerfield Bch 33442

Phone Number: 305-216-2110

Email: eswanson@tficapital.com

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

Connecting the Miami Design District to 5th Street and Alton Road in Miami Beach

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Meeting Date
Thursday, July 27, 2017

Please Write Comments Below

EXPEDITE THE PROJECT ASAP

Either BRT OR Beach Corridor which has high demand for
OR
Metro Mover
OR
Light Rail

Creating Employment

Name: PRAKASH KUMAR CITT member
Address: at #5

Phone Number: 305 803 7759

Email: Parku 55@yahoo.com

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

Connecting the Miami Design District to 5th Street and Alton Road in Miami Beach

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500 17th Street, Miami Beach, FL 33139

Meeting Date
Thursday, July 27, 2017

Please Write Comments Below

Please make sure bicycle needs are included in all plans
Any form of mass transit needs to move bikes, but also ideally
bike parking, repair stands, other facilities wherever possible

Name: Ken Bereski

Address: 1525 Penn Ave #12 MB 33139

Phone Number: 786 548 2453

Email: KRB+MDT@bikeanotherday.com

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

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Meeting Date
Thursday, July 27, 2017

Please Write Comments Below

Am interested in PAB!

I would like to know better about the proposed route/right-of-way, the logic behind the origin and destination of the corridor, proximity and redundancy with the NE corridor.

Finally, how or when this process gets integrated into extant systems and MDT organizational planning.

Name: Prem Barbosa

Address: 1501 NE 191st St. C214, MD County 33179

Phone Number: 305-982-7736

Email: PremLeeBarbosa@gmail.com

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

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Please Write Comments Below

Please to hear other residents ~~to~~ including I 195 as best location for Miami Beach connection to system.

Would like to be on citizen advisory group

Name: Ted Berman Address: Biscayne Point MB 33141

Phone Number: 305-205-7809 Email: ted@tedbermanllc.com

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

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Please Write Comments Below

Provide semi-dedicated RW for streetcars/LL.

I'm open to being on the citizen committee.

Name: Derrick Chan Address: 300 S. Pointe Dr

Phone Number: 415 556 2907 Email: dcsfcaw@gmail.com

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

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New World Symphony
500 17th Street, Miami Beach, FL 33139

Meeting Date
Thursday, July 27, 2017

Please Write Comments Below

I believe its a great idea to increase public transportation

Name: Veronica Llaneza

Address: 2800 Pinetree Drive

Phone Number:

Email:

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

Connecting the Miami Design District to 5th Street and Alton Road in Miami Beach

Public Meeting Comment Sheet

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- [ ] **Meeting Location**
  Culmer Community Action Center
  1600 NW 3rd Avenue, Miami, FL 33136
  Meeting Date
  Tuesday, July 25, 2017

- [x] **Meeting Location**
  New World Symphony
  500 17th Street, Miami Beach, FL 33139
  Meeting Date
  Thursday, July 27, 2017

Please Write Comments Below

- It is NOT smart to invest in rail - (climate change, changing real estate of Miami)
- Dedicated lanes, (bus, Lyft, 3+ passenger)
- fitney-like more frequent small vehicles
- hard-wired rail will be obsolete
- I travel (Paris Tokyo NY) + take public transport - America's rates an F

Name: Clotilde Luca
Address: 301 Ocean Dr
Phone Number: 305 538 6707
Email: clluca@bellsouth.net

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

MIAMI-DADE COUNTY **Department of Transportation and Public Works**

Beach Corridor Rapid Transit Project

Connecting the Miami Design District to 5th Street and Alton Road in Miami Beach

Public Meeting Comment Sheet

Please check one box to indicate the meeting you have attended

☐ **Meeting Location**
Culmer Community Action Center
1600 NW 3rd Avenue, Miami, FL 33136
Meeting Date
Tuesday, July 25, 2017

☒ **Meeting Location**
New World Symphony
500 17th Street, Miami Beach, FL 33139
Meeting Date
Thursday, July 27, 2017

Please Write Comments Below

More funding for these projects. Charge cars at true cost. MDX money, high gas taxes, and expensive parking can all fund transit AND reduce driving.

Also, shift the congestion discussion. It is a car centric talk. Don't widen lanes, don't fund more streetlights. Instead fund transit. Walkability + density will increase when driving is more difficult.

Name: Tyler Garzo

Address: 1521 Alton Road #318 MB 3313[illegible]

Phone Number:

Email: Tyler@sondroyo.com

If you have any questions or comments, please contact Public Information Officer Yvette Holt by telephone at **786-476-2852** or by email at **Yvette@HoltCommunications.net**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Public Kick-Off Meeting - Elected Official Sign In

Project

Beach Corridor Rapid Transit Project
Connecting the Miami Design District to 5th Street and Alton Road in Miami Beach

Meeting Location

New World Symphony
500 17th Street, Miami Beach, FL 33139

Meeting Date & Time

Thursday, July 27, 2017
6 p.m. to 8 p.m.

CHECK IN	NAME	REPRESENTED BY	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
	Mayor Gimenez		111 NW 1st Street, 29th Floor Miami, FL 33128	305-375-5071	mayor@miamidade.gov
	Commissioner Jordan		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-5694	district1@miamidade.gov
	Commissioner Monestime		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-4833	district2@miamidade.gov
	Commissioner Edmonson		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-5393	district3@miamidade.gov
	Commissioner Heyman		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-5128	district4@miamidade.gov
✓	Commissioner Barreiro	Marlene Avalo-Gonzalez Alice Gonzalez	111 NW 1st Street, Suite 220 Miami, FL 33128	305-643-8525	district5@miamidade.gov
	Commissioner Sosa		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-5696	district6@miamidade.gov

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CHECK IN	NAME	REPRESENTED BY	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
	Mayor Levine		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7030	philiplevine@miamibeachfl.gov
	Commissioner Steinberg		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7030	mickeysteinberg@miamibeachfl.gov
	Commissioner Grieco		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7030	michaelgrieco@miamibeachfl.gov
	Commissioner Malakoff		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7030	joymalakoff@miamibeachfl.gov
✓	Commissioner Gonzalez	Kristen Rosen Gonzalez	1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7030	kristen@miamibeachfl.gov
	Commissioner Arriola		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7030	rickyarriola@miamibeachfl.gov
	Commissioner Aleman		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7030	johaleman@miamibeachfl.gov

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MIAMI-DADE COUNTY

Department of Transportation and Public Works

Public Kick-Off Meeting - Agency/Project Team Sign In

Project	Meeting Location	Meeting Date & Time
Beach Corridor Rapid Transit Project Connecting the Miami Design District to 5th Street and Alton Road in Miami Beach	**New World Symphony** 500 17th Street, Miami Beach, FL 33139	**Thursday, July 27, 2017** **6 p.m. to 8 p.m.**

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
Lynda Westin	Miami Beach	1688 Meridian Miami Beach, FL 33139	31673-7000 x 6693	LyndaWestin@miamiBeachfl.gov
Winsome Bowen	City of Miami Bch	"	" 6953	Winsomebowen@miamibeachfl.gov
[illegible]				
Adam Old	Miami Omni CRA	1401 N Miami Ave	305 679-6866	
Adebayo Coker	HBL	"	3052327432	acoker@hbcengineeringco.com

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Department of Transportation and Public Works

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NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
Elizabeth Rockwell	Miami-Dade TPO			elizabeth.rockwell@mdtpo.org
Joshua Rak	B&A	2001 S. Bayshore		jrak@bermelloajamil.com
Claudia Rodriguez	City of Miami Beach	1700 Convention Center Drive	305.673.7575	ClaudiaRodriguez@miamibeachfl.gov
Kevin Pulido	City of Miami Beach	1700 Convention Center Drive	305.673.7575	KevinPulido@miamibeachfl.gov
Wilson Fernandez	Miami-Dade TPO	111 NW 1 St Ste 920	305.375.1886	wilson.fernandez@mdtpo.org
Levi Stewart	CMB Transportation			levistewart@miamibeachfl.gov
Alex David	Calvin Giordano South Dade Corridor	10800 Biscayne Blvd Suite 950 Miami, Fl 33161	786 514-0121	adavid@cgasolutions.com

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NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
PAT PORZILLO	PARSONS		202-679-8237	PATRICK.PORZILLO@PARSONS.COM
Cynthia Perez	Holt Communications	3105 NW 107 Ave	786-575-9239	cynthia@holtcommunications.net
Odalys Delgado	Parsons			odalys.delgado@parsons.com
MARIO NUEVO	PARSONS	7600 Corporate Ct Dr.	305 619 1922	mario.nuevo@parsons.com
Christian Mulaire	Parsons	"		christian.mulaire@parsons
Merri Starr	Holt Communications	~		merri@holtcommunications.net
Yvette Holt	Holt Communications		305 335-0924	Yvette@HoltCommunications.net

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MIAMI-DADE COUNTY

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Justin Freedman	E Sciences	224 SE 9th Street, Fort Laud.	954-484-8500	jfreedman@escienceinc.com
Alan Brick-Turin	FDOT	1000 N 111th Ave	305-470-5102	alan.brick-turin@fdot
Regina Serrano	TPO	111 NW 1st St.	305 375 1522	regina.serrano@mdtpo.org
Peter Haliburton	Cambridge Systematics.			phaliburton@camsys.com
Mark Pistiner	Parsons		305 507 5590	mark.pistiner@parsons.com
Mary Teri Vilches	Miami Dade TPO			Maria.Vilches@mdtpo.org
Jeannine Gaslonde	TPO		305-375 1739	Jeannine.Gaslonde@mdtpo.org

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NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
Tyler Peter	FDOT	1000 NW 111 Ave	305 470 5393	tyler.peter@dot.state.fl.us
ALBERT HERNANDEZ	DTPW	701 NW 1ST CT MIAMI	786 469 5444	aak@miamidade.gov
Patrice Rosemond	Transportation Trust	111 NW 1st #1010	305-375-1095	aros@miamidade.gov
JOHN KULPA	AECOM	7650 NW 19ST MIAMI	786 682 4965	JOHN.KULPA@AECOM.COM
JEANETTE BERK	GANNETT Fleming	10161 CENTURION PARKWAY JAX, 32256	904-254-8624	JEANETTEBERK@GFNET.COM
Ryan Shedd	City of Miami P+Z	444 SW 2 Ave	305-416-1315	rshedd@miamigov.com

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MIAMI-DADE COUNTY

Department of Transportation and Public Works

Public Kick-Off Meeting - General Public Sign In

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NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS	HOW DID YOU HEAR ABOUT THIS MEETING? Please check one box
IAN Corp			786-540-3151	ian@gazitu.com	☒ Ad ☐ Mail ☐ Bus ☐ Terminal
S. [illegible]			[illegible]	[illegible]	☒ Ad ☐ Mail ☐ Bus ☐ Terminal
Veronica Llanza			561-281-6841	veronica.llanza@gmail	☐ Ad ☐ Mail ☐ Bus ☐ Terminal
Clotilde Luce				clluce@bellsouth.net	☐ Ad ☐ Mail ☐ Bus ☐ Terminal
					☐ Ad ☐ Mail ☐ Bus ☐ Terminal
					☐ Ad ☐ Mail ☐ Bus ☐ Terminal
					☐ Ad ☐ Mail ☐ Bus ☐ Terminal
					☐ Ad ☐ Mail ☐ Bus ☐ Terminal

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NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS	HOW DID YOU HEAR ABOUT THIS MEETING? Please check one box
Mike Rotbart	"	1675 Cleveland	305 479 8001	mike@rotbart.com	☐ Ad ☐ Mail ☐ Bus ☐ Terminal
Susan R Weitz		7441 Wayne Ave #11-R	305.864.0473	susan.weitz@gmail	☐ Ad E ☑ Mail ☐ Bus ☐ Terminal
Harvey Burstein		1775 Washington Ave P113		harvey.burstein@gmail.com	☐ Ad ☐ Mail ☐ Bus ☐ Terminal
Laura Dominguez		10 Venetian Way 1502	305 764 5089	LauraDGrove@gmail.com	☐ Ad ☐ Mail ☐ Bus ☐ Terminal
Charles Poitras	"	1441 Lincoln Rd #408	786 366 8398	charlespoitras@hotmail	☐ Ad ☐ Mail ☑ Bus ☐ Terminal
[illegible]		6051 [illegible]	305 [illegible]		☐ Ad ☐ Mail ☐ Bus ☐ Terminal
					☐ Ad ☐ Mail ☐ Bus ☐ Terminal
					☐ Ad ☐ Mail ☐ Bus ☐ Terminal

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NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS	HOW DID YOU HEAR ABOUT THIS MEETING? Please check one box
Barbara J Morris	Bjmakemore22 @ AOL.COM	2800 Collins Ave # 304	786-554 2222		☐ Ad ☐ Mail ☐ Bus ☐ Terminal
Stephen Hamilton	self	961 SW 176 Ave		stephen@citytram.org	☐ Ad ☒ Mail ☐ Bus ☐ Terminal
RICHARD STREIM		460 W. DILIDO		RSTREIM @AOL	☐ Ad ☐ Mail ☐ Bus ☐ Terminal
Mark Samuelson	Campaign	10 Venetian Way			☐ Ad ☐ Mail ☐ Bus ☐ Terminal
Ron Starkman	SOFNA	300 S Pointe Dr			☐ Ad ☐ Mail ☐ Bus ☐ Terminal
NEAL SKLAR	Self	1 SE 3rd Ave			☐ Ad ☐ Mail ☐ Bus ☐ Terminal
Janice Kaufman		2401 Collins	305 [illegible]		☐ Ad ☐ Mail ☐ Bus ☐ Terminal
Derrick Chan	—	300 S. Pointe Dr	4155962907	dcsfcauj@gmail.com	☐ Ad ☐ Mail ☐ Bus ☐ Terminal

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Odele Pard		12405 NW 27A	VA 305:316:2918		☐ Ad ☐ Mail ☐ Bus ☐ Terminal Twitter
Ted Berman		Biscayne Point	305-205-7809	ted@tedbermanllc.com	☒ Ad ☐ Mail ☐ Bus ☐ Terminal
ERIC SWANSON		730 VIA GENOVA, D	305-216-2110	eswanson@tficapital.com	☐ Ad ☐ Mail ☐ Bus ☐ Terminal Flyer
JOSH Levy		5030 N Bay	305-299 0941	JLevyyg1@Gmail.com	☐ Ad ☐ Mail ☐ Bus ☐ Terminal
ADRIAN GONZALEZ		5000 Collevill Dr	305-2068219	[illegible]	☒ Ad ☐ Mail ☐ Bus ☐ Terminal
NORMANDO MATOS		742 12th ST. #3	305-532-8406	NSIGHT4@AOL.COM	☐ Ad ☐ Mail ☐ Bus ☐ Terminal
[illegible]		2395 LAKE PANCOAST #4	305-772-5665	BRESANO@aol.com	☐ Ad ☐ Mail ☐ Bus ☐ Terminal
MARSHA SATULOFF		460 W. DiLido Dr	516-380-8090	msatuloff111@aol.com	☐ Ad ☐ Mail ☐ Bus ☐ Terminal

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DAVID ASSOULINE	Resident	300 Meridian Av	305 794 8090		☑ Ad ☐ Mail ☐ Bus ☐ Terminal Twitter
ARTHUR LEIBELL	RESIDENT	330 W. Rivo Alto Dr	305-632-6669	AJLEIBELL@ATT.NET	☐ Ad ☐ Mail ☐ Bus ☐ Terminal email
Seth Gordon	Self	3400 S.W. 27 Ave. Miami	305-322-3121	seth@sethgordon.com	☐ Ad ☐ Mail ☐ Bus ☐ Terminal
ERNESTO MATA	SELF	6320 SW 126 TER MIAMI FL 33156	305.776 3051	EJMATA3051@YAHOO.COM	☐ Ad ☒ Mail ☐ Bus ☐ Terminal email
Robert Lansburgh	SELF	90 ALTON RD	786-344-6611	RCLMGT@GMAIL	☐ Ad ☐ Mail ☐ Bus ☐ Terminal
Wanda Mouzon	Resident	744 10th St	786-256-8880	wanda@mouzon.com	☐ Ad ☐ Mail ☐ Bus ☐ Terminal friend
GERALD GOLDSTEIN	RESIDENT	3040 ALTON RD MB FL 33140	305 JE84986	GERRY3090@AOL.COM	☐ Ad ☑ Mail ☐ Bus ☐ Terminal email
					☐ Ad ☐ Mail ☐ Bus ☐ Terminal

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PRAKASH KUMAR	CITT Member #5		305 803 7759	Parkku55@yahoo.com	☐ Ad ☒ Mail ☐ Bus ☐ Terminal
Michael Acierno	Eco-Transit		(954) 328-5673	ma@eco-transit.com	☐ Ad ☒ Mail ☐ Bus ☐ Terminal
John Pessoa	—	—	—	—	☐ Ad ☐ Mail ☐ Bus ☐ Terminal
Raul Moncarz	Be Artful Camps		—	—	☐ Ad ☐ Mail ☐ Bus ☐ Terminal
Prem Barbosa		1501 NE 191st C214, 33179	305-982-7736	Premleebarbosa@gmail.com	☐ Ad ☐ Mail ☐ Bus ☐ Terminal
					☐ Ad ☐ Mail ☐ Bus ☐ Terminal
					☐ Ad ☐ Mail ☐ Bus ☐ Terminal
					☐ Ad ☐ Mail ☐ Bus ☐ Terminal

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Gabriela Noa Betancourt	Unite Here Local 355	1525 NW 167 Ave	786 302 8378	gbetancourt@unitehere.org	☐ Ad ☐ Mail ☐ Bus ☐ Terminal Twitter
[illegible]					☐ Ad ☐ Mail ☐ Bus ☐ Terminal
JEFF CYNAMON	SELF			JCYNAMON@AOL.COM	☐ Ad ☐ Mail ☐ Bus ☐ Terminal Other
Raymond Saavedra	KKCS	201 S Biscayne blvd	305.537.0027	Raymond.Saavedra@kkcsworld.com	☒ Ad ☐ Mail ☐ Bus ☐ Terminal
Tyler GARZO	Self	Miami Beach			☐ Ad ☒ Mail ☐ Bus ☐ Terminal
Emily Rolling	Self	Miami Beach 33139		emily_rolling@yahoo.com	☐ Ad ☐ Mail ☐ Bus ☐ Terminal twitter
Ruth Klostinec	—	1555 71 street	305-588-9797	NormanDKlostinec@gmail.com	☐ Ad ☒ Mail ☐ Bus ☐ Terminal
Kathleen Vázquez	self	2001 Meridian Ave #511 33139	305-710-1115	Kay334433@yahoo.com	☐ Ad ☒ Mail ☐ Bus ☐ Terminal email

1

Beach Corridor Rapid Transit Project

Public Kick-Off Meeting Speaker Request Card

☐ Tuesday, July 25, 2017 | ☑ Thursday, July 27, 2017

PLEASE PRINT:

Name: ARTHUR LEIBELL
First Last

Address: 330 W. RIVO ALTO DR
Street
MIAMI BEACH FL 33139
City State Zip Code

Email: AJLEIBELL@ATT.NET

Telephone: 305 632-6669

Representing: Self ✓ Firm/Agency

Government Agency

Civic Organization

Homeowner Association

Other

Transit Mode Comparison

Automated People Mover (APM)

Light Rail Transit (LRT)

Heavy Rail Transit (HRT)

Bus Rapid Transit (BRT)

Aerial Cable Transit (ACT)

Monorail

Autonomous Vehicle

Please help by answering a few simple questions:

Please indicate your familiarity with each mode of public transportation.

1 = Not very familiar 5 = Very familiar

Circle one response for each mode:

Automated People Mover	1	2	3	4	5
Light Rail Transit	1	2	3	4	5
Heavy Rail Transit	1	2	3	4	5
Bus Rapid Transit	1	2	3	4	5
Aerial Cable Transit	1	2	3	4	5
Monorail	1	2	3	4	5
Autonomous Vehicle	1	2	3	4	5

Please rank the modes of public transportation you would like to see implemented in order of preference.

1 = Most preferred option 7 = Least preferred option

Number 1 through 7:

7	**Automated People Mover**
7	**Light Rail Transit**
7	**Heavy Rail Transit**
1	**Bus Rapid Transit**
7	**Aerial Cable Transit**
7	**Monorail**
1	**Autonomous Vehicle**

Depends on Site

on which

Transit Mode Comparison


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Heavy Rail Transit (HRT)


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Monorail


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Number 1 through 7:

6	**Automated People Mover**
1 ✓	**Light Rail Transit**
7	**Heavy Rail Transit**
4	**Bus Rapid Transit**
3	**Aerial Cable Transit**
2	**Monorail**
5	**Autonomous Vehicle**

Transit Mode Comparison


Automated People Mover (APM)


Light Rail Transit (LRT)


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Number 1 through 7:

4	**Automated People Mover**
1	**Light Rail Transit**
3	**Heavy Rail Transit**
2	**Bus Rapid Transit**
7	**Aerial Cable Transit**
5	**Monorail**
6	**Autonomous Vehicle**

Transit Mode Comparison


Automated People Mover (APM)


Light Rail Transit (LRT)


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Monorail


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Monorail	1	2	3	4	5
Autonomous Vehicle	1	2	3	4	5

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Number 1 through 7:

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1	**Light Rail Transit**
2	**Heavy Rail Transit**
3	**Bus Rapid Transit**
—	**Aerial Cable Transit**
—	**Monorail**
—	**Autonomous Vehicle**

Transit Mode Comparison

Automated People Mover (APM)

Light Rail Transit (LRT)

Heavy Rail Transit (HRT)

Bus Rapid Transit (BRT)

Aerial Cable Transit (ACT)

Monorail

Autonomous Vehicle

Please help by answering a few simple questions:

Please indicate your familiarity with each mode of public transportation.

1 = Not very familiar   5 = Very familiar

Circle one response for each mode:

Automated People Mover	1	2	3	4	5
Light Rail Transit	1	2	3	4	5
Heavy Rail Transit	1	2	3	4	5
Bus Rapid Transit	1	2	3	4	5
Aerial Cable Transit	1	2	3	4	5
Monorail	1	2	3	4	5
Autonomous Vehicle	1	2	3	4	5

Please rank the modes of public transportation you would like to see implemented in order of preference.

(in general or this corridor?

1 = Most preferred option   7 = Least preferred option

Number 1 through 7:

5	**Automated People Mover**
3	**Light Rail Transit**
4	**Heavy Rail Transit**
2	**Bus Rapid Transit**
6	**Aerial Cable Transit**
7	**Monorail**
1	**Autonomous Vehicle**

Transit Mode Comparison

Automated People Mover (APM)

Light Rail Transit (LRT)

Heavy Rail Transit (HRT)

Bus Rapid Transit (BRT)

Aerial Cable Transit (ACT)

Monorail

Autonomous Vehicle

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Light Rail Transit	1	2	3	4	5
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Bus Rapid Transit	1	2	3	4	5
Aerial Cable Transit	1	2	3	4	5
Monorail	1	2	3	4	5
Autonomous Vehicle	1	2	3	4	5

Please rank the modes of public transportation you would like to see implemented in order of preference.

1 = Most preferred option 7 = Least preferred option

Number 1 through 7:

1	**Automated People Mover**
1	**Light Rail Transit**
1	**Heavy Rail Transit**
1	**Bus Rapid Transit**
7	**Aerial Cable Transit**
1	**Monorail**
1	**Autonomous Vehicle**

Transit Mode Comparison


Automated People Mover (APM)


Light Rail Transit (LRT)


Heavy Rail Transit (HRT)


Bus Rapid Transit (BRT)


Aerial Cable Transit (ACT)


Monorail


Autonomous Vehicle

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Circle one response for each mode:

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Light Rail Transit	1	2	3	4	5
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Bus Rapid Transit	1	2	3	4	5
Aerial Cable Transit	1	2	3	4	5
Monorail	1	2	3	4	5
Autonomous Vehicle	1	2	3	4	5

Please rank the modes of public transportation you would like to see implemented in order of preference.

1 = Most preferred option 7 = Least preferred option

Number 1 through 7:

2 **Automated People Mover**

4 **Light Rail Transit**

5 **Heavy Rail Transit**

6 **Bus Rapid Transit**

1 **Aerial Cable Transit**

3 **Monorail**

7 **Autonomous Vehicle**

Transit Mode Comparison

Automated People Mover (APM)

Light Rail Transit (LRT)

Heavy Rail Transit (HRT)

Bus Rapid Transit (BRT)

Aerial Cable Transit (ACT)

Monorail

Autonomous Vehicle

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Circle one response for each mode:

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Light Rail Transit	1	2	3	4	5
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Bus Rapid Transit	1	2	3	4	5 5
Aerial Cable Transit	1	2	3	4	5
Monorail	1	2	3	4	5
Autonomous Vehicle	1	2	3	4	5

Please rank the modes of public transportation you would like to see implemented in order of preference.

1 = Most preferred option 7 = Least preferred option

Number 1 through 7:

1	**Automated People Mover**
____	**Light Rail Transit**
____	**Heavy Rail Transit**
1	**Bus Rapid Transit**
____	**Aerial Cable Transit**
____	**Monorail**
____	**Autonomous Vehicle**

Transit Mode Comparison

Automated People Mover (APM)

Light Rail Transit (LRT)

Heavy Rail Transit (HRT)

Bus Rapid Transit (BRT)

Aerial Cable Transit (ACT)

Monorail

Autonomous Vehicle

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Light Rail Transit	1	2	3	4	5
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Bus Rapid Transit	1	2	3	4	5
Aerial Cable Transit	1	2	3	4	5
Monorail	1	2	3	4	5
Autonomous Vehicle	1	2	3	4	5

Please rank the modes of public transportation you would like to see implemented in order of preference.

1 = Most preferred option 7 = Least preferred option

Number 1 through 7:

1	**Automated People Mover**
3	**Light Rail Transit**
7	**Heavy Rail Transit**
4	**Bus Rapid Transit**
5	**Aerial Cable Transit**
2	**Monorail**
6	**Autonomous Vehicle**

Transit Mode Comparison

Automated People Mover (APM)

Light Rail Transit (LRT)

Heavy Rail Transit (HRT)

Bus Rapid Transit (BRT)

Aerial Cable Transit (ACT)

Monorail

Autonomous Vehicle

Please help by answering a few simple questions:

Please indicate your familiarity with each mode of public transportation.

1 = Not very familiar 5 = Very familiar

Circle one response for each mode:

Automated People Mover	1	2	3	4	5
Light Rail Transit	1	2	3	4	5
Heavy Rail Transit	1	2	3	4	5
Bus Rapid Transit	1	2	3	4	5
Aerial Cable Transit	1	2	3	4	5
Monorail	1	2	3	4	5
Autonomous Vehicle	1	2	3	4	5

Please rank the modes of public transportation you would like to see implemented in order of preference.

1 = Most preferred option 7 = Least preferred option

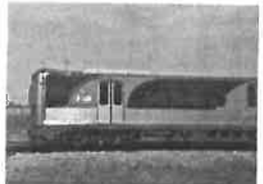
Number 1 through 7:

4	**Automated People Mover**
4	**Light Rail Transit**
4	**Heavy Rail Transit**
1	**Bus Rapid Transit**
7	**Aerial Cable Transit**
4	**Monorail**
1	**Autonomous Vehicle**

Transit Mode Comparison


Automated People Mover (APM)


Light Rail Transit (LRT)


Heavy Rail Transit (HRT)


Bus Rapid Transit (BRT)


Aerial Cable Transit (ACT)


Monorail


Autonomous Vehicle

Please help by answering a few simple questions:

Please indicate your familiarity with each mode of public transportation.

1 = Not very familiar 5 = Very familiar

Circle one response for each mode:

Automated People Mover	1	2	3	4	5
Light Rail Transit	1	2	3	4	5
Heavy Rail Transit	1	2	3	4	5
Bus Rapid Transit	1	2	3	4	5
Aerial Cable Transit	1	2	3	4	5
Monorail	1	2	3	4	5
Autonomous Vehicle	1	2	3	4	5

Please rank the modes of public transportation you would like to see implemented in order of preference.

1 = Most preferred option 7 = Least preferred option

Number 1 through 7:

2	**Automated People Mover**
3	**Light Rail Transit**
1	**Heavy Rail Transit**
6	**Bus Rapid Transit**
4	**Aerial Cable Transit**
5	**Monorail**
7	**Autonomous Vehicle**

2

Beach Corridor Rapid Transit Project
Public Kick-Off Meeting Speaker Request Card

☐ Tuesday, July 25, 2017 | ☒ Thursday, July 27, 2017

PLEASE PRINT:

Name: Kenneth Bereski
First Last

Address: 1525 Pennsylvania Ave #12
Street

Miami Beach FL 33139
City State Zip Code

Email: KRB+MDT@bikeanotherday.com

Telephone: 786 548 2453

Representing: Self ✓ Firm/Agency ______

Government Agency ______

Civic Organization ______

Homeowner Association ______

Other ______

3

Beach Corridor Rapid Transit Project

Public Kick-Off Meeting Speaker Request Card

☐ Tuesday, July 25, 2017 | ☐ Thursday, July 27, 2017

PLEASE PRINT:

Name: Emily Rolling
First Last

Address: 1207 Meridian Ave
Street

Miami Beach 33139
City State Zip Code

Email: emily_rolling@yahoo.com

Telephone: ______

Representing: Self ✓ Firm/Agency ______

Government Agency ______

Civic Organization ______

Homeowner Association ______

Other ______

4

Beach Corridor Rapid Transit Project

Public Kick-Off Meeting Speaker Request Card

☐ Tuesday, July 25, 2017 | ☒ Thursday, July 27, 2017

PLEASE PRINT:

Name: Prem (First) Barbosa (Last)

Address: 1501 NE 191 St. C214 (Street)

Miami-D.C (City) FL (State) 33179 (Zip Code)

Email: PremLeeBarbosa@gmail.com

Telephone: 305-982-7736

Representing: Self X Firm/Agency ____

Government Agency ____

Civic Organization ____

Homeowner Association ____

Other Emerge Miami

5

Beach Corridor Rapid Transit Project
Public Kick-Off Meeting Speaker Request Card

☐ Tuesday, July 25, 2017 | ☑ Thursday, July 27, 2017

PLEASE PRINT:

Name: RAY BRESLIN
First Last

Address: 2395 LAKE PANCOAST DR
Street

MB, FL 33140
City State Zip Code

Email: BRE[illegible]@aol.com

Telephone: 305-772-5615

Representing: Self ✓ Firm/Agency

Government Agency

Civic Organization

Homeowner Association COLLINS PARK, N.A.

Other

6

Beach Corridor Rapid Transit Project

Public Kick-Off Meeting Speaker Request Card

☐ Tuesday, July 25, 2017 | ☑ Thursday, July 27, 2017

mark

PLEASE PRINT:

Name: Matt Samuelson
First Last

Address: 10 Venetian Way
Street

MB FL 33139
City State Zip Code

Email: ____________________

Telephone: ____________________

Representing: Self ✓ Firm/Agency ____________________

Government Agency ____________________

Civic Organization ____________________

Homeowner Association ____________________

Other ____________________

7

Beach Corridor Rapid Transit Project
Public Kick-Off Meeting Speaker Request Card
☐ Tuesday, July 25, 2017 | ☑ Thursday, July 27, 2017

PLEASE PRINT:

Name: Tyler Garzo
First Last

Address: ______________________
Street

____
City State Zip Code

Email: ______________________

Telephone: ______________________

Representing: Self ✓ Firm/Agency ______
Government Agency ______
Civic Organization ______
Homeowner Association ______
Other ______

8

Beach Corridor Rapid Transit Project

Public Kick-Off Meeting Speaker Request Card

☐ Tuesday, July 25, 2017 | ☒ Thursday, July 27, 2017

PLEASE PRINT:

Name: Odelie Paret
First Last

Address: 12405 NW 27 Ave Apt. 103
Street

Miami FL 33167
City State Zip Code

Email:

Telephone:

Representing: Self ______ Firm/Agency ______

Government Agency ______

Civic Organization ______

Homeowner Association ______

Other Hotel Housekeeper Miami Beach

9

Beach Corridor Rapid Transit Project

Public Kick-Off Meeting Speaker Request Card

☐ Tuesday, July 25, 2017 | ☐ Thursday, July 27, 2017

PLEASE PRINT:

Name: Wanda Mouzan
First Last

Address: ______
Street

______
City State Zip Code

Email: wanda@mouzan

Telephone: 786-256-8880

Representing: Self ✓ Firm/Agency ______

Government Agency ______

Civic Organization ______

Homeowner Association ______

Other______

10

Beach Corridor Rapid Transit Project

Public Kick-Off Meeting Speaker Request Card

☐ Tuesday, July 25, 2017 | ☐ Thursday, July 27, 2017

PLEASE PRINT:

Name: GERALD GOLDSTEIN
First Last

Address: 3040 ALTON RD
Street

MB FL 33140
City State Zip Code

Email: GERRY3040@AOL.COM

Telephone: 5384986

Representing: Self ✓ Firm/Agency

Government Agency

Civic Organization

Homeowner Association

Other

11

Beach Corridor Rapid Transit Project
Public Kick-Off Meeting Speaker Request Card
☐ Tuesday, July 25, 2017 | ☐ Thursday, July 27, 2017

PLEASE PRINT:

Name: SANDRA REDDE
First Last

Address: 401 - 69 ST
Street

MIAMI BCH FL 3314
City State Zip Code

Email: BASELINENY @ AOL.COM

Telephone: 917 950 - 2352

Representing: Self ________ Firm/Agency ________

Government Agency ________

Civic Organization ________

Homeowner Association UNITE HERE

Other ________

12

Beach Corridor Rapid Transit Project
Public Kick-Off Meeting Speaker Request Card

☐ Tuesday, July 25, 2017 | ☐ Thursday, July 27, 2017

PLEASE PRINT:

Name: Barbara J Morris .
First Last

Address: 2800 Collins ave #304
Street
Miami Beach Fl 33140
City State Zip Code

Email: BJmakemoner22@AOL.Com

Telephone: 786-554-2222

Representing: Self Seniors & Firm/Agency Disabled

Government Agency

Civic Organization

Homeowner Association

Other Would Like To be Involved

13

Beach Corridor Rapid Transit Project
Public Kick-Off Meeting Speaker Request Card

☐ Tuesday, July 25, 2017 | ☐ Thursday, July 27, 2017

PLEASE PRINT:

Name: Ted Berman
First Last

Address: Biscayne Point
Street
Miami Beach, 33141
City State Zip Code

Email: ted@tedbermanllc.com

Telephone: 305-205-7809

Representing: Self ✓ Firm/Agency ______

Government Agency ______

Civic Organization ______

Homeowner Association ______

Other ______

14

Beach Corridor Rapid Transit Project
Public Kick-Off Meeting Speaker Request Card
☐ Tuesday, July 25, 2017 | ☐ Thursday, July 27, 2017

PLEASE PRINT:

Name: Mike Rotbart
First Last

Address: Biscayne Pt.
Street

MB FLA
City State Zip Code

Email: Mike Rotbart

Telephone: 305 479-8001

Representing: Self ✓ Firm/Agency

Government Agency

Civic Organization

Homeowner Association

Other

15

Beach Corridor Rapid Transit Project

Public Kick-Off Meeting Speaker Request Card

☐ Tuesday, July 25, 2017 | ☐ Thursday, July 27, 2017

PLEASE PRINT:

Name: Susan Weitz
First Last

Address: 7441 Wayne Ave # 11-R
Street

MB FL 33141
City State Zip Code

Email: susan.weitz@gmail.com

Telephone: 305-864-0473

Representing: Self ✓ Firm/Agency ______

Government Agency ______

Civic Organization ______

Homeowner Association ______

Other ______

16

Beach Corridor Rapid Transit Project

Public Kick-Off Meeting Speaker Request Card

☐ Tuesday, July 25, 2017 | ☑ Thursday, July 27, 2017

Daniel
Ciraldo

PLEASE PRINT:

Name: Daniel Ciraldo
First Last

Address: ______________________
Street

Miami Beach FL 33139
City State Zip Code

Email: daniel@mdpl.org

Telephone: ______________________

Representing: Self ✓ Firm/Agency ______

Government Agency ______

Civic Organization ______

Homeowner Association ______

Other______

17

Beach Corridor Rapid Transit Project

Public Kick-Off Meeting Speaker Request Card

☐ Tuesday, July 25, 2017 | ☐ Thursday, July 27, 2017

PLEASE PRINT:

Name: Robert Lansburgh
First Last

Address: ~~20346~~ 90 ALTON RD TH4
Street

MB FL 33139
City State Zip Code

Email: RCLMGT@GMAIL.COM

Telephone: 786-344-6611

Representing: Self ______ Firm/Agency ______

Government Agency ______

Civic Organization ______

Homeowner Association ______

Other ______

APPENDIX B-4

Tier 2 Kick Off Meetings

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

Connecting the Miami Beach Convention Center to Downtown Miami and Midtown/Miami Design District

Public Meeting Comment Sheet

Meeting Location

Miami Beach Regional Library
227 22nd Street
Miami Beach, FL 33139

Meeting Date

Monday, December 17, 2018

Please Write Comments Below

- Please address coordinating parking on mainland with the SMART plan, so that we leave cars on the mainland. What parking do you anticipate being available?

- FDOT will be improving Alton Road in 2019/2020 (?) or later. How will that affect this project? There is not enough width on Alton for another lane for SMART as well as a shared use path. Perhaps keep SMART on Washington, which is commercial (vs Alton, which is residential)

- Please keep circulator bus between Mt Sinai + Convention Center on Indian Creek

Name: Leslie Swanson

Address:

Phone Number: 305 803 4335

Email: LSGJMG@hotmail.com

If you have any questions or comments, please contact the Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov.**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

Connecting the Miami Beach Convention Center to Downtown Miami and Midtown/Miami Design District

Public Meeting Comment Sheet

Meeting Location

Miami Beach Regional Library
227 22nd Street
Miami Beach, FL 33139

Meeting Date

Monday, December 17, 2018

Please Write Comments Below

I think that the projet should go over the vehicles causeway because instead of having the corridor way to south or way to north it will be in the middle for equivelent access.

Make it at least a littlebit farther from the resedentcal area so it dosent cause complaints.

I think there should be 5 stops convention center, Miami Int airport, Midtown, Downtown and preforming arts center. thankyou for considering my request.

Name:

Address:

Phone Number:

Email:

Sasha Kravitz

If you have any questions or comments, please contact the Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov.**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

Connecting the Miami Beach Convention Center to Downtown Miami and Midtown/Miami Design District

Public Meeting Comment Sheet

Meeting Location

Miami Beach Regional Library
227 22nd Street
Miami Beach, FL 33139

Meeting Date

Monday, December 17, 2018

Please Write Comments Below

1- Mode Comparison Board in-accurately indicates PRT "line length" is limited.

2- Most of the line haul choices will be slow, especially off-peak because of wait time. CAV will be unreliable & slow due to mixed guideway. PRT best choice.

Name: Stephen Hamilton

Address: 961 SW 176 Ave
Pembroke Pines, FL

Phone Number: 954-801-7880

Email: stephen@citytram.org

If you have any questions or comments, please contact the Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov.**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

Connecting the Miami Beach Convention Center to Downtown Miami and Midtown/Miami Design District

Public Meeting Comment Sheet

Meeting Location

Miami Beach Regional Library
227 22nd Street
Miami Beach, FL 33139

Meeting Date

Monday, December 17, 2018

Please Write Comments Below

Advisory Group'

Gianfranco Puppio - Rep. Michael Grieco HD113

Gianfranco.Puppio@Myfloridahouse.Gov

786-339-5443 - 5555 Collins AVE #16R

Miami Beach, Fl 33140

Name:

Address:

Phone Number:

Email:

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

Connecting the Miami Beach Convention Center to Downtown Miami and Midtown/Miami Design District

Public Meeting Comment Sheet

Meeting Location

Miami Beach Regional Library
227 22nd Street
Miami Beach, FL 33139

Meeting Date

Monday, December 17, 2018

Please Write Comments Below

PAG

Name: MIKE ROTBART
Address: 1675 CLEVELAND RD

Phone Number: 305 479-8001
Email: MIKE@ROTBART.COM

If you have any questions or comments, please contact the Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov.**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

Connecting the Miami Beach Convention Center to Downtown Miami and Midtown/Miami Design District

Public Meeting Comment Sheet

Meeting Location

Miami Beach Regional Library
227 22nd Street
Miami Beach, FL 33139

Meeting Date

Monday, December 17, 2018

Please Write Comments Below

P.A.G.

Name: RAUL MONCARZ

Address: 2644 FLAMINGO Dr M.B 33140

Phone Number: 3055348979

Email: moncarze f.i.u.edu

If you have any questions or comments, please contact the Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov.**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

Connecting the Miami Beach Convention Center to Downtown Miami and Midtown/Miami Design District

Public Meeting Comment Sheet

Meeting Location

Miami Beach Regional Library
227 22nd Street
Miami Beach, FL 33139

Meeting Date

Monday, December 17, 2018

Please Write Comments Below

PAG

Name: Ted Berman

Address: 7910 Biscayne Point Cir, Miami Beach, 33141

Phone Number: 305-205-7809

Email: ted@tedBermanllc.com

If you have any questions or comments, please contact the Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov.**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

Connecting the Miami Beach Convention Center to Downtown Miami and Midtown/Miami Design District

Public Meeting Comment Sheet

Meeting Location

Miami Beach Regional Library
227 22nd Street
Miami Beach, FL 33139

Meeting Date

Monday, December 17, 2018

PAG **Please Write Comments Below** PA

THE HOTEL WORKERS THAT DON'T
LIVE IN THE BEACH NEEDS to BE
PRIORITY SO THEY CAN to GET to WORK
QUICKLY. WHERE THEY WILL BE
WAITING FOR THE BEACH BUS AND
EVERY HOW LONG WILL BE
RUNNING to SO THEY WILL KNOW ABOUT IT

Name: ALBERTO PEREZBERTRUDEZ Address: 7435 BYRON AVE APT # D MIAMI BEACH FL 33141

Phone Number: (305) 2021 [illegible] Email: ALBERTO 0318 70@GMAIL.COM

If you have any questions or comments, please contact the Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov.**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

Connecting the Miami Beach Convention Center to Downtown Miami and Midtown/Miami Design District

Public Meeting Comment Sheet

Meeting Location

Miami Beach Regional Library
227 22nd Street
Miami Beach, FL 33139

Meeting Date

Monday, December 17, 2018

Please Write Comments Below

HUGE FAN OF LRT/STREETCAR! THE ONE THING I HAVE MISSED FROM NYC IS THE SUBWAY SYSTEM - BUSES (SEATS ARE TOO LOW FOR TALL PEOPLE!) ARE A NIGHTMARE & THE TROLLEY CAN BE AN ABOMINATION TOO (TAKES TOO LONG TO GET TO/FROM 23/LIBERTY ⇒ 10/ALTON)

*INTERESTED IN VOLUNTEERING FOR PUBLIC BOARD - AS CMB RESIDENT WITH MOBILITY ISSUES

Name: DIANE RADOVICH

Address: 220 23 ST #104 MIAMI BEACH FL 33139

Phone Number: (305)531-2162

Email: DIRADI2@YAHOO.COM

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

Connecting the Miami Beach Convention Center to Downtown Miami and Midtown/Miami Design District

Public Meeting Comment Sheet

Meeting Location

Miami Beach Regional Library
227 22nd Street
Miami Beach, FL 33139

Meeting Date

Monday, December 17, 2018

Please Write Comments Below

Volunteer

Name: Susan Schein

Address:

Phone Number: 305-742-5968

Email: sunschein1@yahoo.com

If you have any questions or comments, please contact the Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov.**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

Connecting the Miami Beach Convention Center to Downtown Miami and Midtown/Miami Design District

Public Meeting Comment Sheet

Meeting Location

Miami Beach Regional Library
227 22nd Street
Miami Beach, FL 33139

Meeting Date

Monday, December 17, 2018

Please Write Comments Below

WOULD LIKE TO
RECEIVE INFORMATION
ABOUT FUTURE
MEETINGS

Name: Jorge [illegible] Address: 4142 N. Jefferson AVE APT 5B M Beach FL 33140

Phone Number: 305-788-4355 Email:

If you have any questions or comments, please contact the Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov.**

Department of Transportation and Public Works

MIAMI-DADE COUNTY

Public Kick-Off Meeting - Elected Official Sign In

Project

Beach Corridor Rapid Transit Project
Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District

Meeting Location

Miami Beach Regional Library
227 22nd Street, Miami Beach, FL 33139

Meeting Date & Time

Monday, December 17, 2018
6 p.m. to 8 p.m.

CHECK IN	NAME	REPRESENTED BY	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
	Miami-Dade County Mayor Gimenez		111 NW 1st Street, 29th Floor Miami, FL 33128	305-375-5071	mayor@miamidade.gov
	Miami-Dade County Commissioner Jordan		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-5694	district1@miamidade.gov
	Miami-Dade County Commissioner Monestime		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-4833	district2@miamidade.gov
	Miami-Dade County Commissioner Edmonson		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-5393	district3@miamidade.gov
	Miami-Dade County Commissioner Heyman		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-5128	district4@miamidade.gov
✓	Miami-Dade County Commissioner Higgins	Rachel Cohen	111 NW 1st Street, Suite 220 Miami, FL 33128	305-643-8525	district5@miamidade.gov
	Miami-Dade County Commissioner Sosa		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-5696	district6@miamidade.gov

If you have any questions or comments, please contact Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Public Kick-Off Meeting - Elected Official Sign In

Project	Meeting Location	Meeting Date & Time
Beach Corridor Rapid Transit Project Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District	**Miami Beach Regional Library** 227 22nd Street, Miami Beach, FL 33139	**Monday, December 17, 2018** **6 p.m. to 8 p.m.**

CHECK IN	NAME	REPRESENTED BY	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
	Claudia Rodriguez	City of Miami Beach	1701 Meridian Avenue	305.673.7575	claudiarodriguez@miamibeachfl.gov
	Gianfranco Puppio Franco Puppio	State Representative Michael Grieco HD113	1666 Kennedy Csway #300	786.339.5443	Gianfranco.Puppio@Myfloridahouse.GOV

If you have any questions or comments, please contact Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Public Kick-Off Meeting - Agency/Project Team Sign In

Project	Meeting Location	Meeting Date & Time
Beach Corridor Rapid Transit Project Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District	**Miami Beach Regional Library** 227 22nd Street, Miami Beach, FL 33139	**Monday, December 17, 2018** **6 p.m. to 8 p.m.**

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
Phelyp Nepoda	Person		3057108711	
PRAKASH KUMAR	CITT dt #5		305-803-7759	pakku55@gmail.com
Karla Damian	DTPW		786-469-5420	kdamian@miamidade.gov
Jeanette Gorgas	MRG/FDOT		786-239-8862	jgorgas@mrgmiami.com
Regina Serrano	TPO		305 375-4507	regina.serrano@mdTPO.org
Kiranmai Chirumamilla	DTPW		786-469-5283	kiranmai.chirumamilla@miamidade.gov
Sophia Tingle	Quest/FDOT		305-420-8907	Sophia.Tingle@qcausa.com
Cynthia Pere	HOLT	—	—	—

If you have any questions or comments, please contact Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Public Kick-Off Meeting - Agency/Project Team Sign In

Project	Meeting Location	Meeting Date & Time
Beach Corridor Rapid Transit Project Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District	**Miami Beach Regional Library** 227 22nd Street, Miami Beach, FL 33139	**Monday, December 17, 2018** **6 p.m. to 8 p.m.**

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
Mechelle KERNS	SEARCH / DWTP		410 409-5187	Mechelle.KERNS@ Search-inc.com
John Izquierdo	FDOT - in house consultant		(757) 339-5835	John.Izquierdo@DOT.state.fl.us
[illegible]	[illegible]		305 7108711	
NADIA Locke	EScience		9544848500	nlocke@esciencesinc.com
Vince Sciullo	SFRTA		954-788-7939	sciullov@sfrta.fl.gov
MARY TERT Vilchez	MD TPO		305 315 4507	Maria.Vilchez@mdtpo.org
Shannon McMullen	DOT		305-789-0408	smcm2@fiu.edu

If you have any questions or comments, please contact Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Public Kick-Off Meeting - Agency/Project Team Sign In

Project

Beach Corridor Rapid Transit Project
Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District

Meeting Location

Miami Beach Regional Library
227 22nd Street, Miami Beach, FL 33139

Meeting Date & Time

Monday, December 17, 2018
6 p.m. to 8 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
Yvette Holt	Holt			Yvette@holtcommunications.net
Lynda West	Miami Beach			
Rachel Cohen	Commissioner Higgins			
Greg Harleston	Holt			
Merri Starr	Holt			
~~Mike Capote~~				
Albert Hernandez	DTPW			
[illegible]				

If you have any questions or comments, please contact Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Public Kick-Off Meeting - General Public Sign In

Project	Meeting Location	Meeting Date & Time
Beach Corridor Rapid Transit Project Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District	**Miami Beach Regional Library** 227 22nd Street, Miami Beach, FL 33139	**Monday, December 17, 2018** **6 p.m. to 8 p.m.**

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS	HOW DID YOU HEAR ABOUT THIS MEETING? Please check one box
Doug Hanks	Miami Herald	—	—	DHanks@ Miami Herald	☐ Ad ☒ Mail ☐ Bus ☐ Terminal
Maria L. Navas			—	1775 Washington Ave MIAMI BEACH,	☐ Ad ☒ Mail ☐ Bus ☐ Terminal
Ramses				RJ.Louis@outlook.com	☒ Ad ☐ Mail ☐ Bus ☐ Terminal
[illegible]	MYSELF				☐ Ad ☒ Mail email ☐ Bus ☐ Terminal
Steve Hamilton	self	9615 NW 176 Ave Pembroke Pines, FL.	954-801-7880	stephen@citytram.org	☒ Ad ☐ Mail ☐ Bus ☐ Terminal
Mike Capote	Self	133 NE 2nd Ave	786-205-4617	MCapote 1990@gmail.com	☒ Ad ☐ Mail ☐ Bus ☐ Terminal
Andres Althabe	BNA		917-407-0032	andres.althabe @gmail.com	☐ Ad ☒ Mail ☐ Bus ☐ Terminal
Sherri Codner	self	—	(4)964 2773	—	☒ Ad ☐ Mail ☐ Bus ☐ Terminal

If you have any questions or comments, please contact Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Public Kick-Off Meeting - General Public Sign In

Project	Meeting Location	Meeting Date & Time
Beach Corridor Rapid Transit Project Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District	**Miami Beach Regional Library** 227 22nd Street, Miami Beach, FL 33139	**Monday, December 17, 2018** **6 p.m. to 8 p.m.**

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS	HOW DID YOU HEAR ABOUT THIS MEETING? Please check one box
Joyce Rolando Barreto		P.O Box 560481 Miami 33256	305-378-1369	joyanro@gmail	☐ Ad ☒ Mail ☐ Bus ☐ Terminal
~~Kiranmai~~ Chiru					☐ Ad ☐ Mail ☐ Bus ☐ Terminal
Gabriela Noa Betancourt	Unite Here Local 355	1525 NW 167 St.	786-302-8378	gbetancourt@unitehere.org	☐ Ad ☒ Mail ☐ Bus ☐ Terminal
Alberto Bermudez		7425 Byron Ave	305-202-1557	ALBERTO0218403 GMAIL.COM	☐ Ad ☒ Mail ☐ Bus ☐ Terminal
Susan Schein					☐ Ad ☐ Mail ☐ Bus ☐ Terminal
Ray BRESLIN	CPNA	255. W. 24th St	305-772-5665	BRESARO@aol.com	☐ Ad ☐ Mail - EMAIL ☐ Bus ☐ Terminal
DIANE ROSDOVKA		220 23 ST #104	5312162	DROD12@yahoo.com	☐ Ad ☐ Mail ☐ Bus ☐ Terminal
					☐ Ad ☐ Mail ☐ Bus ☐ Terminal

If you have any questions or comments, please contact Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Public Kick-Off Meeting - General Public Sign In

Project
Beach Corridor Rapid Transit Project
Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District

Meeting Location
Miami Beach Regional Library
227 22nd Street, Miami Beach, FL 33139

Meeting Date & Time
Monday, December 17, 2018
6 p.m. to 8 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS	HOW DID YOU HEAR ABOUT THIS MEETING? Please check one box
Raymond Saavedra	KKCS	201 S. Biscayne blvd	(305) 537-0027	Raymond.Saavedra@kkcsworld.com	☐ Ad ☑ Mail ☐ Bus ☐ Terminal
R GAVIN Oddo	SBT	1776 James Ave		RGO42@atlanticbb.net	☐ Ad ☑ Mail ☐ Bus ☐ Terminal
Eleazar Melendez		1861 NW S River Dr	212-729-6612		☐ Ad ☐ Mail ☑ Bus ☐ Terminal
Raul Monzarz	FIU	[illegible]	305-5348979		☐ Ad ☐ Mail ☐ Bus ☐ Terminal
STINSON STROUP		1005 MERIDIAN			☐ Ad ☐ Mail ☐ Bus ☐ Terminal
Lawrence Yong	Miami DDA	200 S. Biscayne Blvd	305-618-2598	youngl@miamidda.com	☐ Ad ☐ Mail ☑ Bus ☐ Terminal
					☐ Ad ☐ Mail ☐ Bus ☐ Terminal
					☐ Ad ☐ Mail ☐ Bus ☐ Terminal

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Public Kick-Off Meeting - General Public Sign In

Project	Meeting Location	Meeting Date & Time
Beach Corridor Rapid Transit Project Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District	**Miami Beach Regional Library** 227 22nd Street, Miami Beach, FL 33139	**Monday, December 17, 2018** **6 p.m. to 8 p.m.**

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS	HOW DID YOU HEAR ABOUT THIS MEETING? Please check one box
Sacha Kravitz	N/a	2982 91th rd		SachaKravitz@[illegible].com	☐ Ad ☐ Mail ☐ Bus ☐ Terminal
ADAM KRAVITZ		2956 ALTON RD		ADAM@ADAMKRAVITZ.com	☒ Ad ☐ Mail ☐ Bus ☐ Terminal
					☐ Ad ☐ Mail ☐ Bus ☐ Terminal
					☐ Ad ☐ Mail ☐ Bus ☐ Terminal
					☐ Ad ☐ Mail ☐ Bus ☐ Terminal
					☐ Ad ☐ Mail ☐ Bus ☐ Terminal
					☐ Ad ☐ Mail ☐ Bus ☐ Terminal
					☐ Ad ☐ Mail ☐ Bus ☐ Terminal

If you have any questions or comments, please contact Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov**

1

Beach Corridor Rapid Transit Project
Public Kick-Off Meeting Speaker Request Card
Monday, December 17, 2018

PLEASE PRINT:

Name: RAY (First) BRESLIN (Last)

Address: 255 W. 24th St (Street)

MB (City) FL (State) 33140 (Zip Code)

Email: BRESARD @ 901 ...

Telephone: 305-772-5665

Representing: Self ✓ Firm/Agency ______

Government Agency ______

Civic Organization ______

Homeowner Association ______

Other______

2

Beach Corridor Rapid Transit Project
Public Kick-Off Meeting Speaker Request Card
Monday, December 17, 2018

PLEASE PRINT:

Name: Alberto (First) Bermudez (Last)

Address: 7435 Byron Ave (Street)

Miami Beach (City) FL (State) 33141 (Zip Code)

Email: ALBERTO 031870@ GMAIL.COM

Telephone: (305) 2021557

Representing: Self ✓ Firm/Agency ______

Government Agency ______

Civic Organization ______

Homeowner Association ______

Other______

MIAMI-DADE COUNTY

Department of Transportation and Public Works

TITLE VI Comment Card
Beach Corridor Rapid Transit Project

Name: ALBERTO PEREZ BERMUDEZ
(Nombre)

Zip Code (Codigo postal): 33141

Race (Raza):

- [ ] White (Blanco)
- [ ] Black/ African American (Afro-Americano)
- [x] Hispanic/ Latino (Hispano)
- [ ] Asian (Asiático)
- [ ] American Indian (Indio Americano)
- [ ] Other (Otro)

Preferred language: ENGLISH / SPANISH
(¿Que idioma prefiere?)

Do you speak English? Yes [x] No [ ]
(¿Habla Inglés?) (Si) (No)

Comment (Comentario) PLEASE MAKE YOU WILL DO IT FOR ALL THE MIAMI BEACH HOTELS WORKERS PLEASE.

Requested information is optional and will be used to address the transportation needs of our community.
(La información que aquí se solicita sera utilizada para mejorar las condiciones del transporte publico en nuestra comunidad y es opcional proporcionarla).

#miamiSMARTPlan www.miamismartplan.com

3

Beach Corridor Rapid Transit Project

Public Kick-Off Meeting Speaker Request Card

Monday, December 17, 2018

PLEASE PRINT:

Name: R. GAVIN Oddo
First Last

Address: 1776 James Ave PH 7C
Street
MB 33139
City State Zip Code

Email: RGO42@atlanticbb.net

Telephone:

Representing: Self ✓ Firm/Agency

Government Agency

Civic Organization

Homeowner Association

Other

4

Beach Corridor Rapid Transit Project

Public Kick-Off Meeting Speaker Request Card

Monday, December 17, 2018

PLEASE PRINT:

Name: Ted Berman
First Last

Address: 7970 Biscayne Point Cir.
Street
Miami Beach, FL 33141
City State Zip Code

Email: ted@tedbermanllc.com

Telephone: 305-205-7809

Representing: Self ✓ Firm/Agency

Government Agency

Civic Organization

Homeowner Association

Other

5

Beach Corridor Rapid Transit Project
Public Kick-Off Meeting Speaker Request Card
Monday, December 17, 2018

PLEASE PRINT:

Name: RAUL MONCARZ
First Last

Address: 2644 Flamingo Dr
Street

MB FL 33140
City State Zip Code

Email: moncarz@fiu.edu

Telephone: 305-5348979

Representing: Self ✓ Firm/Agency

Government Agency Se[illegible] Economic Develop Grant

Civic Organization

Homeowner Association

Other

6

Beach Corridor Rapid Transit Project
Public Kick-Off Meeting Speaker Request Card
Monday, December 17, 2018

PLEASE PRINT:

Name: MIKE ROTBART
First Last

Address: 1625 CLEVELAND RD
Street

M.B FL 33141
City State Zip Code

Email: MIKE@ROTBART.COM

Telephone: 305-479-8001

Representing: Self X Firm/Agency

Government Agency

Civic Organization

Homeowner Association

Other

7

Beach Corridor Rapid Transit Project
Public Kick-Off Meeting Speaker Request Card
Monday, December 17, 2018

PLEASE PRINT:

Name: Stephen (First) Hamilton (Last)

Address: 961 SW 176 Ave (Street)

Pembroke Pines (City) FL (State) 33029 (Zip Code)

Email: stephen@ ~~bc~~ citytram.org

Telephone: ~~95~~ 954-801-7880

Representing: Self ✓ Firm/Agency ______

Government Agency ______

Civic Organization ______

Homeowner Association ______

Other______

8

Beach Corridor Rapid Transit Project
Public Kick-Off Meeting Speaker Request Card
Monday, December 17, 2018

PLEASE PRINT:

Name: Susan (First) Schein (Last)

Address: ______ (Street)

______ City State Zip Code

Email: ______

Telephone: ______

Representing: Self ______ Firm/Agency ______

Government Agency ______

Civic Organization ______

Homeowner Association ______

Other______

9

Beach Corridor Rapid Transit Project
Public Kick-Off Meeting Speaker Request Card
Monday, December 17, 2018

PLEASE PRINT:

Name: Mike Capote
First Last

Address: 133 NE 2nd Ave
Street
Miami FL 33132
City State Zip Code

Email: Mcapote1990@gmail.com

Telephone: ______

Representing: Self X Firm/Agency ______

Government Agency ______

Civic Organization ______

Homeowner Association DNA

Other ______

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

Connecting the Miami Beach Convention Center to Downtown Miami and Midtown/Miami Design District

Public Meeting Comment Sheet

Meeting Location

Miami Beach Regional Library
227 22nd Street
Miami Beach, FL 33139

Meeting Date

Monday, December 17, 2018

Please Write Comments Below

Please be sure to coordinate closely with FDOT D6 regarding traffic/environmental impacts. With regard to traffic, please refer to traffic methodologies provided by FDOT Corridors for consistency and completeness. With regard to environmental reviews and timing of those reviews pls be sure to coordinate with the D6 modal Development office.

Name: Nilia Cartaya Address: 1000 NW 111 AVE 33172

Phone Number: 305-470-5351 Email: nilia.cortaya@dot.state.fl.us

If you have any questions or comments, please contact the Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov.**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Agency/Elected Official Kick-Off Meeting - Elected Official Sign In

Project

Beach Corridor Rapid Transit Project
Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District

Meeting Location

Miami Beach Regional Library
227 22nd Street, Miami Beach, FL 33139

Meeting Date & Time

Monday, December 17, 2018
3 p.m. to 5 p.m.

CHECK IN	NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
	City of Miami Beach Mayor Gelber		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7030	dangelber@miamibeachfl.gov
	City of Miami Beach Commissioner Steinberg		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7030	mickysteinberg@miamibeachfl.gov
MS	City of Miami Beach Commissioner Samuelian		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7030	marksamuelian@miamibeachfl.gov
	City of Miami Beach Commissioner Gongora		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7030	michael@miamibeachfl.gov
	City of Miami Beach Commissioner Rosen Gonzalez		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7030	kristen@miamibeachfl.gov
	City of Miami Beach Commissioner Arriola		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7030	rickyarriola@miamibeachfl.gov
	City of Miami Beach Commissioner Aleman		1700 Convention Center Drive, 4th Floor Miami Beach, FL 33139	305-673-7030	johnaleman@miamibeachfl.gov

1

Beach Corridor Rapid Transit Project
Public Kick-Off Meeting Speaker Request Card
Monday, December 17, 2018

PLEASE PRINT:

Name: COMMISSIONER EILEEN HIGGINS
First Last

Address: ____________________
Street

____
City State Zip Code

Email: ____________________

Telephone: ____________________

Representing: Self ________ Firm/Agency ________

Government Agency ________

Civic Organization ________

Homeowner Association ________

Other________

2

Beach Corridor Rapid Transit Project
Public Kick-Off Meeting Speaker Request Card
Monday, December 17, 2018

PLEASE PRINT:

Name: Spencer Pylant
First Last

Address: 1601 Bisc Blvd Ballroom level
Street

____
City State Zip Code

Email: spylant@miami chamber.c

Telephone: 305 577 5421

Representing: Self ________ Firm/Agency ________

Government Agency ________

Civic Organization ________

Homeowner Association ________

Other________

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Agency/Elected Official Kick-Off Meeting - Elected Official Sign In

Project

Beach Corridor Rapid Transit Project
Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District

Meeting Location

Miami Beach Regional Library
227 22nd Street, Miami Beach, FL 33139

Meeting Date & Time

Monday, December 17, 2018
3 p.m. to 5 p.m.

CHECK IN	NAME	REPRESENTED BY	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
	Miami-Dade County Mayor Gimenez		111 NW 1st Street, 29th Floor Miami, FL 33128	305-375-5071	mayor@miamidade.gov
	Miami-Dade County Commissioner Jordan		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-5694	district1@miamidade.gov
	Miami-Dade County Commissioner Monestime		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-4833	district2@miamidade.gov
✓	Miami-Dade County Commissioner Edmonson	Self	111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-5393	district3@miamidade.gov
	Miami-Dade County Commissioner Heyman		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-5128	district4@miamidade.gov
✓	Miami-Dade County Commissioner Higgins	Self	111 NW 1st Street, Suite 220 Miami, FL 33128	305-643-8525	district5@miamidade.gov
	Miami-Dade County Commissioner Sosa		111 NW 1st Street, Suite 220 Miami, FL 33128	305-375-5696	district6@miamidade.gov

If you have any questions or comments, please contact Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Agency/Elected Official Kick-Off Meeting - Elected Official Sign In

Project

Beach Corridor Rapid Transit Project
Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District

Meeting Location

Miami Beach Regional Library
227 22nd Street, Miami Beach, FL 33139

Meeting Date & Time

Monday, December 17, 2018
3 p.m. to 5 p.m.

CHECK IN	NAME	REPRESENTED BY	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
✓	Gordon Bello		District 3 MDC	3/299-0836	Gbello@miamidade.gov
✓	Tristan Jackson		CITY OF MIAMI MRC	305 416 1789	jonjackson@ MIAMIGOV.COM
✓	Sandra Harris		City of Miami	416-1729	Sandra Harris@ miamigov.com
✓	Rachel Cohen		Miami Dade County	786 747 2321	rachel.cohen@miamidade.gov
✓	Chris Hodtwalcker		"	"	"
✓	Lynda West		Miami Beach	31673-7000 x6693	lyndawest@miamibeachfl.gov
✓	Spencer Pylant	Greater Miami Chamber	1601 Biscayne Blvd Ballroom Level, Miami, FL	305-577-5421	spylant@miamichamber.com

If you have any questions or comments, please contact Public Information Officer by telephone at 786-476-2852 or by email at SMARTBeach@miamidade.gov

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Agency/Elected Official Kick-Off Meeting - Elected Official Sign In

Project

Beach Corridor Rapid Transit Project
Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District

Meeting Location

Miami Beach Regional Library
227 22nd Street, Miami Beach, FL 33139

Meeting Date & Time

Monday, December 17, 2018
3 p.m. to 5 p.m.

CHECK IN	NAME	REPRESENTED BY	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
	JOSE R. GONZÁLEZ		MIAMI BEACH TRANSPORTATION		
	Christina Miskis	SFRPC	cmiskis@sfrpc.com	954 985 4416	

If you have any questions or comments, please contact Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Agency/Elected Official Kick-Off Meeting - Agency/Project Team Sign In

Project

Beach Corridor Rapid Transit Project
Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District

Meeting Location

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227 22nd Street, Miami Beach, FL 33139

Meeting Date & Time

Monday, December 17, 2018
3 p.m. to 5 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
Cynthia Perez	Holt	—	—	—
Kiranmai Chirumamilla	DTPW	701 NW 1st ct, ste 1500, Miami FL	786-469-5283	Kiranmai.chirumamilla@miamidade.gov
Greg Harleston	Holt			
Yvette Holt	Holt			Yvette@HoltCommunications.net
Merri Starr	Holt			merri@holtCommun net
Monica D. Cejas	DTPW	701 NW 1st CT, Suite 1500 Miami, FL 33136	786-469-5290	Monica.Cejas@MiamiDadeGov
Mechelle Kerns	Search / DTPW		410-409-5187	Mechelle.Kerns@Searchinc.com
Ivan Jimenez	Gannett Fleming / FDOT D6	800 NW 62 Ave, Miami, FL 33126	786-973-9546	ijimenez@gfnet.com

If you have any questions or comments, please contact Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov**

Department of Transportation and Public Works

MIAMI-DADE COUNTY

Agency/Elected Official Kick-Off Meeting - Agency/Project Team Sign In

Project

Beach Corridor Rapid Transit Project
Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District

Meeting Location

Miami Beach Regional Library
227 22nd Street, Miami Beach, FL 33139

Meeting Date & Time

Monday, December 17, 2018
3 p.m. to 5 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
NADIA Locke	ESciences	224 SE 9 Street Fort Lauderdale 33312	954 484 8500	NLocke@esciencesinc.com
CAROLINA DEL BUSTO	DTPW	701 NW 1ST CT.	786-469-5266	CAROLINA@MIAMIDADE.GOV
BOBBIE CRICHTON	DTPW	701 NW 1ST CT.	786-469-5394	BLLC@MIAMIDADE.GOV
A CHAVARRIA	PTG	7600 CORPORATE CENTER	305. 507. 5589	angel.chavarria@parsons.com
Nilia Cartaya	FDOT	1000 NW 111 Ave 33172	3/470-5351	nilia.cartaya@dot.state.fl.us
ALFREDO SANCHEZ	BCIA	2601 S BAYSHORE DR	305 860 3711	ASANCHEZ@BAMIAMI.org
Mari Tery Vilchos	MDTPO	111 NW 1st	305 315 4507	Mara.Vilchos@mdtpo.org
PETER HALBURTON	CAMBRIDGE	2101 W. Commercial Blvd #3200. FT. LAUD 33309	954 331 6100	phalburton@camsys.com

If you have any questions or comments, please contact Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov**

APPENDIX B-5

Project Advisory Group Meetings

MIAMI-DADE COUNTY
miamidade.gov

TRANSPORTATION AND PUBLIC WORKS
Planning and System Development Division
Overtown Transit Village
701 N.W. 1st Court • 15th Floor
Miami, Florida 33136-3922

May 16, 2019

Ms. Myriam Marquez
Office of the Mayor
111 NW 1st Street
Miami, FL 33128
myriam.marquez@miamidade.gov

Subject: Project Advisory Group (PAG) Meeting No. 1 for the Beach Corridor Rapid Transit Project
Connecting Miami Design District/Midtown to Downtown and the Miami Beach Convention Center Area

Dear Ms. Marquez:

The Miami-Dade County Department of Transportation and Public Works (DTPW) thanks you for your willingness to serve on the Beach Corridor Rapid Transit Project as a Project Advisory Group (PAG) member. The Beach Corridor is being studied as a part of the Strategic Miami Area Rapid Transit (SMART) Plan, which identifies the development of six rapid transit corridors that directly support the mobility of our future population and employment growth.

What are the responsibilities?

The PAG's purpose is to directly engage the public in the project. As a PAG member you will be asked to review project information, participate in PAG meetings, and provide feedback at key phases of the project development process. Public input is an integral part of the transportation planning process.

What is the schedule?

There will be at least three (3) PAG meetings; the first one will be held on **Thursday, May 30, 2019 from 6 p.m. to 7:30 p.m. at Miami Marriott Biscayne Bay, 1633 North Bayshore Drive, Miami, FL 33132.** The dates and locations for future meetings will be discussed at the first meeting.

Please confirm your attendance.

Please confirm your attendance by Friday, May 24, 2019. To confirm your attendance for the first PAG meeting, please contact:

Yvette Holt, Public Information Officer
(786) 476-2852
SMARTBeach@miamidade.gov.

Your participation in this effort is encouraged and appreciated. If you have any questions concerning this matter, please do not hesitate to contact Ms. Kiranmai Chirumamilla via email at Kiranmai.Chirumamilla@miamidade.gov, or by phone at (786) 469-5283.

Sincerely,

Ch. Kiranmai.

Kiranmai Chirumamilla,
Department of Transportation and Public Works
Principal Planner, Planning & System Development

MIAMI-DADE COUNTY
miamidade.gov

TRANSPORTATION AND PUBLIC WORKS
Planning and System Development Division
Overtown Transit Village
701 N.W. 1st Court • 15th Floor
Miami, Florida 33136-3922

May 16, 2019

Mr. Dudly Paul-Etienne
18950 NW 2nd Avenue #636
Miami, FL 33169

Subject: Project Advisory Group (PAG) Meeting No. 1 for the Beach Corridor Rapid Transit Project
Connecting Miami Design District/Midtown to Downtown and the Miami Beach Convention Center Area

Dear Mr. Paul-Etienne:

The Miami-Dade County Department of Transportation and Public Works (DTPW) thanks you for your willingness to serve on the Beach Corridor Rapid Transit Project as a Project Advisory Group (PAG) member. The Beach Corridor is being studied as a part of the Strategic Miami Area Rapid Transit (SMART) Plan, which identifies the development of six rapid transit corridors that directly support the mobility of our future population and employment growth.

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Planning and System Development Division
Overtown Transit Village
701 N.W. 1st Court • 15th Floor
Miami, Florida 33136-3922

May 16, 2019

Mr. Ric Katz
rkatz@communikatz.com

Subject: Project Advisory Group (PAG) Meeting No. 1 for the Beach Corridor Rapid Transit Project
Connecting Miami Design District/Midtown to Downtown and the Miami Beach Convention Center Area

Dear Mr. Katz:

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TRANSPORTATION AND PUBLIC WORKS
Planning and System Development Division
Overtown Transit Village
701 N.W. 1st Court • 15th Floor
Miami, Florida 33136-3922

May 16, 2019

Ms. Wendy Kallergis
1688 Meridian Avenue, Suite 500
Miami Beach, FL 33139
wkallergis@gmbha.com

Subject: Project Advisory Group (PAG) Meeting No. 1 for the Beach Corridor Rapid Transit Project
Connecting Miami Design District/Midtown to Downtown and the Miami Beach Convention Center Area

Dear Ms. Kallergis:

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Planning and System Development Division
Overtown Transit Village
701 N.W. 1st Court • 15th Floor
Miami, Florida 33136-3922

May 16, 2019

Mr. Donald Estrada
donaldsf415@gmail.com

Subject: Project Advisory Group (PAG) Meeting No. 1 for the Beach Corridor Rapid Transit Project
Connecting Miami Design District/Midtown to Downtown and the Miami Beach Convention Center Area

Dear Mr. Estrada:

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TRANSPORTATION AND PUBLIC WORKS
Planning and System Development Division
Overtown Transit Village
701 N.W. 1st Court • 15th Floor
Miami, Florida 33136-3922

May 16, 2019

Mr. Bernie Navarro
7000 NW 97th Avenue, Suite 201
Miami, FL 33173
bnavarro@benworthcapital.com

Subject: Project Advisory Group (PAG) Meeting No. 1 for the Beach Corridor Rapid Transit Project
Connecting Miami Design District/Midtown to Downtown and the Miami Beach Convention Center Area

Dear Mr. Navarro:

The Miami-Dade County Department of Transportation and Public Works (DTPW) thanks you for your willingness to serve on the Beach Corridor Rapid Transit Project as a Project Advisory Group (PAG) member. The Beach Corridor is being studied as a part of the Strategic Miami Area Rapid Transit (SMART) Plan, which identifies the development of six rapid transit corridors that directly support the mobility of our future population and employment growth.

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miamidade.gov

TRANSPORTATION AND PUBLIC WORKS
Planning and System Development Division
Overtown Transit Village
701 N.W. 1st Court • 15th Floor
Miami, Florida 33136-3922

May 16, 2019

Ms. Clare McCord
claremccord@earthlink.net

Subject: Project Advisory Group (PAG) Meeting No. 1 for the Beach Corridor Rapid Transit Project
Connecting Miami Design District/Midtown to Downtown and the Miami Beach Convention Center Area

Dear Ms. McCord:

The Miami-Dade County Department of Transportation and Public Works (DTPW) thanks you for your willingness to serve on the Beach Corridor Rapid Transit Project as a Project Advisory Group (PAG) member. The Beach Corridor is being studied as a part of the Strategic Miami Area Rapid Transit (SMART) Plan, which identifies the development of six rapid transit corridors that directly support the mobility of our future population and employment growth.

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TRANSPORTATION AND PUBLIC WORKS
Planning and System Development Division
Overtown Transit Village
701 N.W. 1st Court • 15th Floor
Miami, Florida 33136-3922

May 16, 2019

Mr. Bill Talbert
Greater Miami Convention and Visitors Bureau
701 Brickell Avenue, Suite 2700
Miami, FL 33131
talbert@gmcvb.com

Subject: Project Advisory Group (PAG) Meeting No. 1 for the Beach Corridor Rapid Transit Project
Connecting Miami Design District/Midtown to Downtown and the Miami Beach Convention Center Area

Dear Mr. Talbert:

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TRANSPORTATION AND PUBLIC WORKS
Planning and System Development Division
Overtown Transit Village
701 N.W. 1st Court • 15th Floor
Miami, Florida 33136-3922

May 16, 2019

Mr. Alex Schapiro
Miami Design District
3841 NE 2nd Avenue, Suite 400
Miami, FL 33137
alex@designdistrict.net

Subject: Project Advisory Group (PAG) Meeting No. 1 for the Beach Corridor Rapid Transit Project
Connecting Miami Design District/Midtown to Downtown and the Miami Beach Convention Center Area

Dear Mr. Schapiro:

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miamidade.gov

TRANSPORTATION AND PUBLIC WORKS
Planning and System Development Division
Overtown Transit Village
701 N.W. 1st Court • 15th Floor
Miami, Florida 33136-3922

May 16, 2019

Ms. Patrice Gillespie Smith
Miami Downtown Development Authority
200 S. Biscayne Blvd., Suite 2929
Miami, FL 33131
pgsmith@miamidda.com

Subject: Project Advisory Group (PAG) Meeting No. 1 for the Beach Corridor Rapid Transit Project
Connecting Miami Design District/Midtown to Downtown and the Miami Beach Convention Center Area

Dear Ms. Gillespie Smith:

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Overtown Transit Village
701 N.W. 1st Court • 15th Floor
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May 17, 2019

Mr. Nitin Motwani
Miami World Center
Managing Principal
nitin@miamiworldcenter.com

Subject: Project Advisory Group (PAG) Meeting No. 1 for the Beach Corridor Rapid Transit Project
Connecting Miami Design District/Midtown to Downtown and the Miami Beach Convention Center Area

Dear Mr. Motwani:

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Overtown Transit Village
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May 17, 2019

Ms. Maria Lievano-Cruz
mlievanocruz@gmail.com

Subject: Project Advisory Group (PAG) Meeting No. 1 for the Beach Corridor Rapid Transit Project
Connecting Miami Design District/Midtown to Downtown and the Miami Beach Convention Center Area

Dear Ms. Lievano-Cruz:

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Planning and System Development Division
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701 N.W. 1st Court • 15th Floor
Miami, Florida 33136-3922

May 17, 2019

Mr. Steve Boucher
Svboucher2@gmail.com

Subject: Project Advisory Group (PAG) Meeting No. 1 for the Beach Corridor Rapid Transit Project
Connecting Miami Design District/Midtown to Downtown and the Miami Beach Convention Center Area

Dear Mr. Boucher:

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Overtown Transit Village
701 N.W. 1st Court • 15th Floor
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May 17, 2019

Mr. Louis Garcia
Garcia Seafood
Gfishburn23@aol.com

Subject: Project Advisory Group (PAG) Meeting No. 1 for the Beach Corridor Rapid Transit Project
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Dear Mr. Garcia:

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Planning and System Development Division
Overtown Transit Village
701 N.W. 1st Court • 15th Floor
Miami, Florida 33136-3922

May 17, 2019

Mr. Richard Florida
florida@creativeclass.com

Subject: Project Advisory Group (PAG) Meeting No. 1 for the Beach Corridor Rapid Transit Project
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Dear Mr. Florida:

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Yvette Holt, Public Information Officer
(786) 476-2852
SMARTBeach@miamidade.gov.

Your participation in this effort is encouraged and appreciated. If you have any questions concerning this matter, please do not hesitate to contact Ms. Kiranmai Chirumamilla via email at Kiranmai.Chirumamilla@miamidade.gov, or by phone at (786) 469-5283.

Sincerely,

Ch. Kiranmai.

Kiranmai Chirumamilla,
Department of Transportation and Public Works
Principal Planner, Planning & System Development

MIAMI-DADE COUNTY
miamidade.gov

TRANSPORTATION AND PUBLIC WORKS
Planning and System Development Division
Overtown Transit Village
701 N.W. 1st Court • 15th Floor
Miami, Florida 33136-3922

May 17, 2019

Mr. Mike Finney
Miami-Dade Beacon Council
President and CEO
80 SW 8th Street, Suite 2400
Miami, FL 33130
mfinney@beaconcouncil.com

Subject: Project Advisory Group (PAG) Meeting No. 1 for the Beach Corridor Rapid Transit Project
Connecting Miami Design District/Midtown to Downtown and the Miami Beach Convention Center Area

Dear Mr. Finney:

The Miami-Dade County Department of Transportation and Public Works (DTPW) thanks you for your willingness to serve on the Beach Corridor Rapid Transit Project as a Project Advisory Group (PAG) member. The Beach Corridor is being studied as a part of the Strategic Miami Area Rapid Transit (SMART) Plan, which identifies the development of six rapid transit corridors that directly support the mobility of our future population and employment growth.

What are the responsibilities?

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What is the schedule?

There will be at least three (3) PAG meetings; the first one will be held on **Thursday, May 30, 2019 from 6 p.m. to 7:30 p.m. at Miami Marriott Biscayne Bay, 1633 North Bayshore Drive, Miami, FL 33132.** The dates and locations for future meetings will be discussed at the first meeting.

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SMARTBeach@miamidade.gov.

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Sincerely,

Ch. Kiranmai C.

Kiranmai Chirumamilla,
Department of Transportation and Public Works
Principal Planner, Planning & System Development

MIAMI-DADE COUNTY
miamidade.gov

TRANSPORTATION AND PUBLIC WORKS
Planning and System Development Division
Overtown Transit Village
701 N.W. 1st Court • 15th Floor
Miami, Florida 33136-3922

May 17, 2019

Mr. Manny Gonzalez
Wynwood Business Improvement District
Executive Director
2751 North Miami Avenue, Suite 3
Miami, FL 33127
manny@wynwoodbid.com

Subject: Project Advisory Group (PAG) Meeting No. 1 for the Beach Corridor Rapid Transit Project
Connecting Miami Design District/Midtown to Downtown and the Miami Beach Convention Center Area

Dear Mr. Gonzalez:

The Miami-Dade County Department of Transportation and Public Works (DTPW) thanks you for your willingness to serve on the Beach Corridor Rapid Transit Project as a Project Advisory Group (PAG) member. The Beach Corridor is being studied as a part of the Strategic Miami Area Rapid Transit (SMART) Plan, which identifies the development of six rapid transit corridors that directly support the mobility of our future population and employment growth.

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SMARTBeach@miamidade.gov.

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Sincerely,

Ch. Kiranmai C.

Kiranmai Chirumamilla,
Department of Transportation and Public Works
Principal Planner, Planning & System Development

MIAMI-DADE COUNTY
miamidade.gov

TRANSPORTATION AND PUBLIC WORKS
Planning and System Development Division
Overtown Transit Village
701 N.W. 1st Court • 15th Floor
Miami, Florida 33136-3922

May 17, 2019

Ms. Debora Samuel
Midtown Miami Community Development District Manager
340 N Miami Avenue
2nd Floor Parking Garage, Suite 132
Miami, FL 33137
manager@midtownmiamicdd.net

Subject: Project Advisory Group (PAG) Meeting No. 1 for the Beach Corridor Rapid Transit Project
Connecting Miami Design District/Midtown to Downtown and the Miami Beach Convention Center Area

Dear Ms. Samuel:

The Miami-Dade County Department of Transportation and Public Works (DTPW) thanks you for your willingness to serve on the Beach Corridor Rapid Transit Project as a Project Advisory Group (PAG) member. The Beach Corridor is being studied as a part of the Strategic Miami Area Rapid Transit (SMART) Plan, which identifies the development of six rapid transit corridors that directly support the mobility of our future population and employment growth.

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SMARTBeach@miamidade.gov.

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Sincerely,

Ch. Kiranmai C.

Kiranmai Chirumamilla,
Department of Transportation and Public Works
Principal Planner, Planning & System Development

MIAMI-DADE COUNTY
miamidade.gov

TRANSPORTATION AND PUBLIC WORKS
Planning and System Development Division
Overtown Transit Village
701 N.W. 1st Court • 15th Floor
Miami, Florida 33136-3922

May 17, 2019

Mr. Terrance Cribbs-Lorrant
Overtown Community Oversight Board
1475 NW 74 St.
Miami, FL 33147
terranceclorrant@gmail.com

Subject: Project Advisory Group (PAG) Meeting No. 1 for the Beach Corridor Rapid Transit Project
Connecting Miami Design District/Midtown to Downtown and the Miami Beach Convention Center Area

Dear Mr. Cribbs-Lorrant:

The Miami-Dade County Department of Transportation and Public Works (DTPW) thanks you for your willingness to serve on the Beach Corridor Rapid Transit Project as a Project Advisory Group (PAG) member. The Beach Corridor is being studied as a part of the Strategic Miami Area Rapid Transit (SMART) Plan, which identifies the development of six rapid transit corridors that directly support the mobility of our future population and employment growth.

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(786) 476-2852
SMARTBeach@miamidade.gov.

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Sincerely,

Ch. Kiranmai

Kiranmai Chirumamilla,
Department of Transportation and Public Works
Principal Planner, Planning & System Development

MIAMI-DADE COUNTY
miamidade.gov

TRANSPORTATION AND PUBLIC WORKS
Planning and System Development Division
Overtown Transit Village
701 N.W. 1st Court • 15th Floor
Miami, Florida 33136-3922

May 17, 2019

Ms. Gayle Durham
West Avenue Neighborhood Association (WAvNA)
gayle@cfsystems.com
wavna305@gmail.com

Subject: Project Advisory Group (PAG) Meeting No. 1 for the Beach Corridor Rapid Transit Project
Connecting Miami Design District/Midtown to Downtown and the Miami Beach Convention Center Area

Dear Ms. Durham:

The Miami-Dade County Department of Transportation and Public Works (DTPW) thanks you for your willingness to serve on the Beach Corridor Rapid Transit Project as a Project Advisory Group (PAG) member. The Beach Corridor is being studied as a part of the Strategic Miami Area Rapid Transit (SMART) Plan, which identifies the development of six rapid transit corridors that directly support the mobility of our future population and employment growth.

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SMARTBeach@miamidade.gov.

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Sincerely,

Ch. Kiranmai.

Kiranmai Chirumamilla,
Department of Transportation and Public Works
Principal Planner, Planning & System Development

MIAMI-DADE COUNTY
miamidade.gov

TRANSPORTATION AND PUBLIC WORKS
Planning and System Development Division
Overtown Transit Village
701 N.W. 1st Court • 15th Floor
Miami, Florida 33136-3922

May 17, 2019

Mr. Bill Talbert
Greater Miami Convention & Visitors Bureau
701 Brickell Avenue, Suite 2700
Miami, FL 33131
talbert@gmcvb.com

Subject: Project Advisory Group (PAG) Meeting No. 1 for the Beach Corridor Rapid Transit Project
Connecting Miami Design District/Midtown to Downtown and the Miami Beach Convention Center Area

Dear Mr. Talbert:

The Miami-Dade County Department of Transportation and Public Works (DTPW) thanks you for your willingness to serve on the Beach Corridor Rapid Transit Project as a Project Advisory Group (PAG) member. The Beach Corridor is being studied as a part of the Strategic Miami Area Rapid Transit (SMART) Plan, which identifies the development of six rapid transit corridors that directly support the mobility of our future population and employment growth.

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Sincerely,

Ch. Kiranmai

Kiranmai Chirumamilla,
Department of Transportation and Public Works
Principal Planner, Planning & System Development

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Project Advisory Group (PAG) Meeting – Agency/Project Team Sign In

Project

Beach Corridor Rapid Transit Project
Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District

Meeting Location

Miami Marriott Biscayne Bay
1633 North Bayshore Drive
Miami, FL 33132

Meeting Date & Time

Thursday, May 30, 2019
6 p.m. to 8 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
ENEIDA MARTINEZ	PARSONS	7600 CORP. CENTER DR STE 104 MIAMI 33126	305 507 5586	eneida.martinez@parsons.com
ANGEL CHAVARRIA	PARSONS	"	305.507.5589	ANGEL.CHAVARRIA@PARSONS.COM
JUAN RAMIREZ	PARSONS	"	305.507.3839	JUAN.RAMIREZ@PARSONS.COM
ODALYS DELGADO	PARSONS	"	305.507.5583	ODALYS.DELGADO@PARSONS.COM
Yvette Holt	Holt Comm.		305 335 0924	Yvette@Holt.communications.net
Sandra Hom	City of Miami	"	305-416 1426	
Jie Bian	DTPW	701 NW 1st Ct. Miami	786-469-5245	jie.bian@miamidade.gov
Collin Worth	City of Miami	444 SW 2nd Ave	305-416-1022	CWORTH@Miamigov.com

If you have any questions or comments, please contact Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov**

Department of Transportation and Public Works

MIAMI-DADE COUNTY

Project Advisory Group (PAG) Meeting – Agency/Project Team Sign In

Project	Meeting Location	Meeting Date & Time
Beach Corridor Rapid Transit Project Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District	**Miami Marriott Biscayne Bay** 1633 North Bayshore Drive Miami, FL 33132	**Thursday, May 30, 2019** 6 p.m. to 8 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
Mechelle Kerns	Parsons/SEARCH	2028 Harrison St #201 [illegible]	410 409-5187	mechelle.kerns@searchinc.com
Greg Harrington	Holt Comm			Gregory@HoltCommunications.net
Merri Starr	Holt Comm			merri@Holtcommunications.net
Yingfei Huang	Cambridge Systematics		954-331-6111	yhuang@camsys.com
Joshua Rak	B&A	2601 S. Bayshore	305 860 3766	jrak@bermelloajamil.com
Ethan Melone	Parsons	600 University St Suite 700 Seattle WA 98101	(206) 475-4559	ethan.melone@parsons.com
Tom Waits	Parsons	2008 Lee Ave Tallahassee FL 32308	850-800-6011	thomas.waits@parsons.com
Phil Hoffmann	Parsons	1776 Lincoln St Denver, CO 80203	303-837-4020	phil.hoffmann@parsons.com

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MIAMI-DADE COUNTY

Department of Transportation and Public Works

Project Advisory Group (PAG) Meeting – Agency/Project Team Sign In

Project	Meeting Location	Meeting Date & Time
Beach Corridor Rapid Transit Project Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District	**Miami Marriott Biscayne Bay** 1633 North Bayshore Drive Miami, FL 33132	**Thursday, May 30, 2019** 6 p.m. to 8 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
Gayle Stone	E Sciences Inc	Ft. Lauderdale	954-484-8500	gstone@escienceinc.com
NADIA LOCKE	"	"	"	Nlocke@escienceinc.com
Christian Mulaire	Parsons		305-812-8196	christian.mulaire@parsons.com
Shereen Yee Fong	FDOT	Miami 1000 NW 111 Ave	305 470 5393	shereen.yeefong@dot.state.fl.us
Lynda Westin	Miami Beach	1700 Meridian, Suit 801 33139	31 673-7000 x 26693	lyndawestin@miamibeachfl.gov
~~Jorge Gonzalez~~	~~Miami World Center~~			
Wiatt Bowers	Atkins /TPO	Jax, FL	813-785-5012	wiatt.bowers@atkinsglobal.com
Cynthia Perez	Holt Comm	—	786-575-9239	cynthia@holtcommunications.net

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MIAMI-DADE COUNTY

Department of Transportation and Public Works

Project Advisory Group (PAG) Meeting – Agency/Project Team Sign In

Project	Meeting Location	Meeting Date & Time
Beach Corridor Rapid Transit Project Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District	**Miami Marriott Biscayne Bay** 1633 North Bayshore Drive Miami, FL 33132	**Thursday, May 30, 2019** 6 p.m. to 8 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
Nilia Cartaya	FDOT / MDO	1000 NW 111th Ave 33172	305-640-7557	Nilia.Cartaya@dot.state.fl.us.
MONICA CEJAS	CITT	111 NW 1ST CT #1010, MIAMI	305-375-2151	MONICA.CEJAS@MIAMIDADE.GOV
MARY TERY Vilchos	MD-TPO	111 NW 1st #920 Mia	3053154507	Maria.Vilchos@mdtpo.org
GERARD OSBORNE	HBC ENGINEERING	8935 NW 35 LN, DORAL	305-232-7932	gosborne@hbcengineeringco.com

If you have any questions or comments, please contact Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Project Advisory Group (PAG) Meeting – PAG Members Sign In

Project

Beach Corridor Rapid Transit Project
Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District

Meeting Location

Miami Marriott Biscayne Bay
1633 North Bayshore Drive
Miami, FL 33132

Meeting Date & Time

Thursday, May 30, 2019
6 p.m. to 8 p.m.

SIGNATURE	NAME	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
	Steve Boucher	1451 Ocean Drive, Suite 205 Miami Beach, FL 33139	305-535-8177; 786-525-5643	svboucher2@gmail.com; asia.t@boucherbrothers.com
	Terrance Cribbs-Lorrant	1475 NW 74th Street Miami, FL 33147	786-383-7094	terranceclorrant@gmail.com
	Gayle Durham	1455 West Avenue Miami Beach, FL 33139	305-812-5331	gayle@cfsystems.com; wavna305@gmail.com
	Donald Estrada		305-215-5371	donaldsf415@gmail.com
	Mike Finney	80 SW 8th Street, Suite 2400 Miami, FL 33130	305-607-5169	mfinney@beaconcouncil.com
	Richard Florida		202-713-8123; 647-302-4852	florida@creativeclass.com
	Louis Garcia Luis		310-869-8802	gfishburn23@aol.com
	Patrice Gillespie Smith	200 S. Biscayne Blvd., Suite 2929 Miami, FL 33131	305-379-6583	pgsmith@miamidda.com

If you have any questions or comments, please contact Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Project Advisory Group (PAG) Meeting – PAG Members Sign In

Project	Meeting Location	Meeting Date & Time
Beach Corridor Rapid Transit Project Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District	**Miami Marriott Biscayne Bay** 1633 North Bayshore Drive Miami, FL 33132	**Thursday, May 30, 2019** 6 p.m. to 8 p.m.

SIGNATURE	NAME	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
[signature]	Manny Gonzalez	2751 North Miami Avenue, Suite 3 Miami, FL 33127	786-615-8828; 305-316-8202	manny@wynwoodbid.com
Wendy Kallergis	Wendy Kallergis	1688 Meridian Avenue, Suite 500 Miami Beach, FL 33139	305-282-2812	wkallergis@gmbha.com
[signature]	Ric Katz	600 NE 52nd Terrace Miami, FL 33137	786-223-5577	rkatz@communikatz.com
[signature]	Maria Lievano-Cruz		305-520-2085; 305-525-4483	mlievanocruz@gmail.com; maria.lievanocruz@feci.com
Myriam Marquez	Myriam Marquez	111 NW 1st Street Miami, FL 33128	305-375-1545; 305-613-5060	myriam.marquez@miamidade.gov
	Clare McCord	140 Jefferson Avenue, Unit 14007 Miami Beach, FL 33139	305-772-4780	claremccord@earthlink.net; info@claremccord.com
Jorge [signature]	Jorge Gonzalez representing Nitin Motwani	100 SE 2nd Street, Suite 3510 Miami, FL 33131	347-528-7467	nitinm@miamiworldcenter.com
	Bernie Navarro	7000 NW 97th Avenue, Suite 201 Miami, FL 33173	305-445-5223	bnavarro@benworthcapital.com

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Project Advisory Group (PAG) Meeting – PAG Members Sign In

Project

Beach Corridor Rapid Transit Project
Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District

Meeting Location

Miami Marriott Biscayne Bay
1633 North Bayshore Drive
Miami, FL 33132

Meeting Date & Time

Thursday, May 30, 2019
6 p.m. to 8 p.m.

SIGNATURE	NAME	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
	Dudly Paul-Etienne	18950 NW 2nd Avenue, #636 Miami, FL 33169	305-975-3104	dudly@dudlyservices.com
	Tariq Bayzid representing Debora Samuel	340 North Miami Avenue 2nd Floor Parking Garage, Suite 132, Miami, FL 33137	305-573-3371 Ext. 103	manager@midtownmiamicdd.net
	Alex Schapiro	3841 NE 2nd Avenue, Suite 400 Miami, FL 33137	305-531-8700	alex@designdistrict.net
X	~~Alvin West representing~~ Bill Talbert	701 Brickell Avenue, Suite 2700 Miami, FL 33131	305-539-3040	talbert@gmcvb.com; dorcas@gmcvb.com

If you have any questions or comments, please contact Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov**

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Project Advisory Group (PAG) Meeting – General Public Sign In

Project	Meeting Location	Meeting Date & Time
Beach Corridor Rapid Transit Project Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District	**Miami Marriott Biscayne Bay** 1633 North Bayshore Drive Miami, FL 33132	**Thursday, May 30, 2019** 6 p.m. to 8 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
Eric Penfield	RS&H	3125 W. Commercial Blvd	954-236-7363	Eric.Penfield@RSandH.com
Al West	GMCVB		305 5393085	al@gmcvb.com
Steve Hamilton	Citytram.org	961 SW 176 Ave. Pembroke Pines	954-801-7880	stephen@citytram.org
JOSÉ R. GONZÁLEZ	CITY OF MIAMI BEACH		(305) 673-7514	JOSEGONZALEZ@MIAMIBEACHFL.GOV

If you have any questions or comments, please contact Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov**

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

Connecting the Miami Beach Convention Center Area to Downtown Miami and Midtown/Miami Design District

Project Advisory Group Meeting Comment Sheet

Meeting Location

Miami Marriott Biscayne Bay 1633 North Bayshore Drive
Miami, FL 33132

Meeting Date

Thursday, May 30, 2019
6 p.m. to 8 p.m.

Please Write Comments Below

(1) By eliminating CAV & PRT you have again chosen a line-haul solution (which has been proven thousands of times to NOT get people out of their cars).

(2) LRT & Monorail make no sense. An additional technology, additional maintenance facility & people. Passenger transfer required. Alignment challenges.

(3) BRT NOT automated, therefore expensive.

(4) AGT makes the most sense, but will be slow.

Name: Steve Hamilton

Address: 961 SW 176 Ave Pembroke Pines

Phone Number: 954-801-7880

Email: stephen@citytram.org

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Project Advisory Group (PAG) Meeting No. 2 – Agency/Project Team Sign In

Project

Beach Corridor Rapid Transit Project
Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District

Meeting Location

Miami-Dade Main Library
101 W Flagler Street
Miami, FL 33130

Meeting Date & Time

Thursday, August 29, 2019
6 p.m. to 8 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
Thalyr Rezende	Parsons		305 718 8711	
~~Dudly Paul Dem~~	~~DPS~~		3.	
Michelle Kerns	SEARCH - Parsons		410-409-5187	
Greg Harliston	HOLT			
Kiranmai Chirumamilla	DTPW	701 NW 1st Court.	786 469 5283	Kiranmai.chirumamilla@miamidade.gov
Jie Bian	DTPW	--	469 5245	jie.bian@miamidade.gov
James McCall	DTPW	701 NW 1st Court, 15 FL	786.469.5290	James.McCall@miamidade.gov.
Cynthia Perez	Holt	—	—	—

If you have any questions or comments, please contact Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov**

MIAMI-DADE COUNTY

Department of Transportation and Publi

Project Advisory Group (PAG) Meeting No. 3 – Agency/Project T

Project	Meeting Location	Meeting Dat
Beach Corridor Rapid Transit Project Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District	**Miami-Dade Main Library** 101 West Flagler Street Miami, FL 33130	**Thursday, Nove** 6 p.m. to 8

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	
Carlos Cejas	FDOT D6		305 213-1474	c
Greg Harleston	Holt		754-208-8826	G
Jeremy Braithwaite	HBC Engineering		240-423-7039	jt
Tewari Edmonson	MD TPO		(305) 375-1744	te
Gayle Stone	E Sciences		(954) 484-8500	
Yvette Holt	Holt		305 335 0924	y
Joshua Nar	B&A		305 860-3766	j
Jie Bian	DTPW		786-465-5245	ji

If you have any questions or comments, please contact Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach**

MIAMI-DADE COUNTY

Department of Transportation and Publ

Project Advisory Group (PAG) Meeting No. 3 – Agency/Proje

Project

Beach Corridor Rapid Transit Project
Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District

Meeting Location

Miami-Dade Main Library
101 West Flagler Street
Miami, FL 33130

Meeting Dat

Thursday, Novem
6 p.m. to 8 p

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER
PETER HALBURTON	CS	—	—
NADIA LOCKE	EScueros	—	—
ALAN FISHMAN	CTAC		
Lynn Hogan	Parsons		(407)702-6825
Lynda Westin	Transportation	Miami Beach	

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MIAMI-DADE COUNTY

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SIGNATURE	NAME	ADDRESS	TELEPHONE NUMBER	
	Steven Boucher	1451 Ocean Drive, Suite 205 Miami Beach, FL 33139	305-535-8177; 786-525-5643	
	Terrance Cribbs-Lorrant	1475 NW 74th Street Miami, FL 33147	786-383-7094	
Durham	Gayle Durham	1455 West Avenue Miami Beach, FL 33139	305-812-5331	
	Donald Estrada		305-215-5371	
	~~Mike Finney~~ JAAP Donath	80 SW 8th Street, Suite 2400 Miami, FL 33130	305-607-5169	jd
	Richard Florida		202-713-8123; 647-302-4852	
	Louis Garcia		310-869-8802	
	Patrice Gillespie Smith [illegible]	200 S. Biscayne Blvd., Suite 2929 Miami, FL 33131	305-379-6583	

MIAMI-DADE COUNTY

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SIGNATURE	NAME	ADDRESS	TELEPHONE NUMBER	
[illegible]	Manny Gonzalez	2751 North Miami Avenue, Suite 3 Miami, FL 33127	786-615-8828; 305-316-8202	
Wendy Kallergis	Wendy Kallergis	1688 Meridian Avenue, Suite 500 Miami Beach, FL 33139	305-282-2812	
[illegible]	Ric Katz	600 NE 52nd Terrace Miami, FL 33137	786-223-5577	
	Maria Lievano-Cruz		305-520-2085; 305-525-4483	r
	Myriam Marquez	111 NW 1st Street Miami, FL 33128	305-375-1545; 305-613-5060	my
	Clare McCord	140 Jefferson Avenue, Unit 14007 Miami Beach, FL 33139	305-772-4780	
	Jorge Gonzalez representing Nitin Motwani	100 SE 2nd Street, Suite 3510 Miami, FL 33131	347-528-7467	ni
[illegible]	Dudly Paul-Etienne	18350 NW 2nd Avenue, #636 Miami, FL 33169	305-975-3104	

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SIGNATURE	NAME	ADDRESS	TELEPHONE NUMBER	
	Tariq Bayzid	340 North Miami Avenue 2nd Floor Parking Garage, Suite 132, Miami, FL 33137	305-573-3371 Ext. 103	m
[signature]	Alex Schapiro	3841 NE 2nd Avenue, Suite 400 Miami, FL 33137	305-531-8700	
	Bill Talbert	701 Brickell Avenue, Suite 2700 Miami, FL 33131	305-539-3040	

MIAMI-DADE COUNTY

Department of Transportation and Public Works

Project Advisory Group (PAG) Meeting No. 2 – Agency/Project Team Sign In

Project

Beach Corridor Rapid Transit Project
Connecting the Miami Beach Convention Center Area to Downtown Miami and the Midtown/ Miami Design District

Meeting Location

Miami-Dade Main Library
101 W Flagler Street
Miami, FL 33130

Meeting Date & Time

Thursday, August 29, 2019
6 p.m. to 8 p.m.

NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
CARLOS CEJAS	FDOT D6 GEC		305 213-1474	ccejas@gfnet.com
Gayle Stone	E-Sciences		954-484-8500	
PETER HALLORAN	CS		954 3316100	
Alfred Sanchez	BCA		305 8603711	
Ethan Malone	PARSONS		206-475-4359	ethanmalone@live.com
Lynn Hogan	Parsons		407-702-6825	lynn.hogan@parsons.com
Yvette Holt	Holt Communications		3053350924	Yvette@HoltCommunications.net
Phil Hoffmann	Parsons		303-837-4020	phil.hoffmann@parsons.com

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MIAMI-DADE COUNTY

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NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
DR. C. A. CARNEGIE	CTAC	ON FILE	ON FILE	ON FILE
JOSÉ R. GONZÁLEZ	CITY OF MIAMI BEACH	"	(305) 673-7514	"
TRISTAN JACKSON	CITY OF MIAMI	"	305 416 1122	"
Lynda West	Miami Beach	1688 Meridian #801	305-673-7000 x 6693	on file
MONICA CEJAS	CITT	111 NW 1ST, SUITE 1010	305-375-2151	
Alice Bravo				

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MIAMI-DADE COUNTY

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NAME	REPRESENTING (Name of business or group)	ADDRESS	TELEPHONE NUMBER	EMAIL ADDRESS
A CHAVARRIA	PARSONS	7600 CORPORATE CENTER	305.507-5589	angelchavarria@parsons.com
ENEIDA MARTÍNEZ	"	"	305.507.5586	ENEIDA.MARTINEZ@PARSONS.COM
Jeannine Gaskondle	TPO		305-3751739	Jeannine.Gaskondle@mdtpo.org
JUAN RAMÍREZ	PARSONS	"	305 507 3839	juan.ramirez@parsons.com

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MIAMI-DADE COUNTY

Department of Transportation and Public Works

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	Terrance Cribbs-Lorrant	1475 NW 74th Street Miami, FL 33147	786-383-7094	terranceclorrant@gmail.com
	Gayle Durham	1455 West Avenue Miami Beach, FL 33139	305-812-5331	gayle@cfsystems.com; wavna305@gmail.com
	Donald Estrada		305-215-5371	donaldsf415@gmail.com
Michael P. Finney	Mike Finney	80 SW 8th Street, Suite 2400 Miami, FL 33130	305-607-5169	mfinney@beaconcouncil.com
	Richard Florida		202-713-8123; 647-302-4852	florida@creativeclass.com
	Louis Garcia		310-869-8802	gfishburn23@aol.com
	Patrice Gillespie Smith	200 S. Biscayne Blvd., Suite 2929 Miami, FL 33131	305-379-6583	pgsmith@miamidda.com

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WKallergis	Wendy Kallergis	1688 Meridian Avenue, Suite 500 Miami Beach, FL 33139	305-282-2812	wkallergis@gmbha.com
	Ric Katz	600 NE 52nd Terrace Miami, FL 33137	786-223-5577	rkatz@communikatz.com
	Maria Lievano-Cruz		305-520-2085; 305-525-4483	mlievanocruz@gmail.com; maria.lievanocruz@feci.com
	Myriam Marquez	111 NW 1st Street Miami, FL 33128	305-375-1545; 305-613-5060	myriam.marquez@miamidade.gov
	Clare McCord	140 Jefferson Avenue, Unit 14007 Miami Beach, FL 33139	305-772-4780	claremccord@earthlink.net; info@claremccord.com
	Jorge Gonzalez representing Nitin Motwani	100 SE 2nd Street, Suite 3510 Miami, FL 33131	347-528-7467	nitinm@miamiworldcenter.com
	Bernie Navarro	7000 NW 97th Avenue, Suite 201 Miami, FL 33173	305-445-5223	bnavarro@benworthcapital.com

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MIAMI-DADE COUNTY

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	Dudly Paul-Etienne	~~18950~~ 18350 NW 2nd Avenue, #636 Miami, FL 33169	305-975-3104	dudly@dudlyservices.com
	Tariq Bayzid	340 North Miami Avenue 2nd Floor Parking Garage, Suite 132, Miami, FL 33137	305-573-3371 Ext. 103	manager@midtownmiamicdd.net
	Alex Schapiro	3841 NE 2nd Avenue, Suite 400 Miami, FL 33137	305-531-8700	alex@designdistrict.net
	Bill Talbert	701 Brickell Avenue, Suite 2700 Miami, FL 33131	305-539-3040	talbert@gmcvb.com; dorcas@gmcvb.com

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MIAMI-DADE COUNTY

Department of Transportation and Public Works

Beach Corridor Rapid Transit Project

Connecting the Miami Beach Convention Center Area to Downtown Miami and Midtown/Miami Design District

Project Advisory Group Meeting No. 2 Comment Sheet

Meeting Location

Miami-Dade Main Library
101 W Flagler Street
Miami, FL 33130

Meeting Date

Thursday, August 29, 2019
6 p.m. to 8 p.m.

Please Write Comments Below

We think the best transit technology
would be LRT as long as it goes to the
MB Convention Center.
We also think that electric busses would
be very useful.
Very very exciting!

Name: Wendy Kallergis

Address: GMBHA
1688 Meridian Ave
Suite 500 MB, Florida 33139

Phone Number: 305-282-2812

Email: wkallergis@gmbha.com

If you have any questions or comments, please contact the Public Information Officer by telephone at **786-476-2852** or by email at **SMARTBeach@miamidade.gov.**

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6 p.m. to 8 p.m.

Please Write Comments Below

MUST Right away CONNECT $1B MB CONVention Center!
done

Name: Bill TALBERT Address:

Phone Number: 305 794 5418 Email: TALBERT @ GMCVB

If you have any questions or comments, please contact the Public Information Officer by telephone at 786-476-2852 or by email at SMARTBeach@miamidade.gov.

APPENDIX C

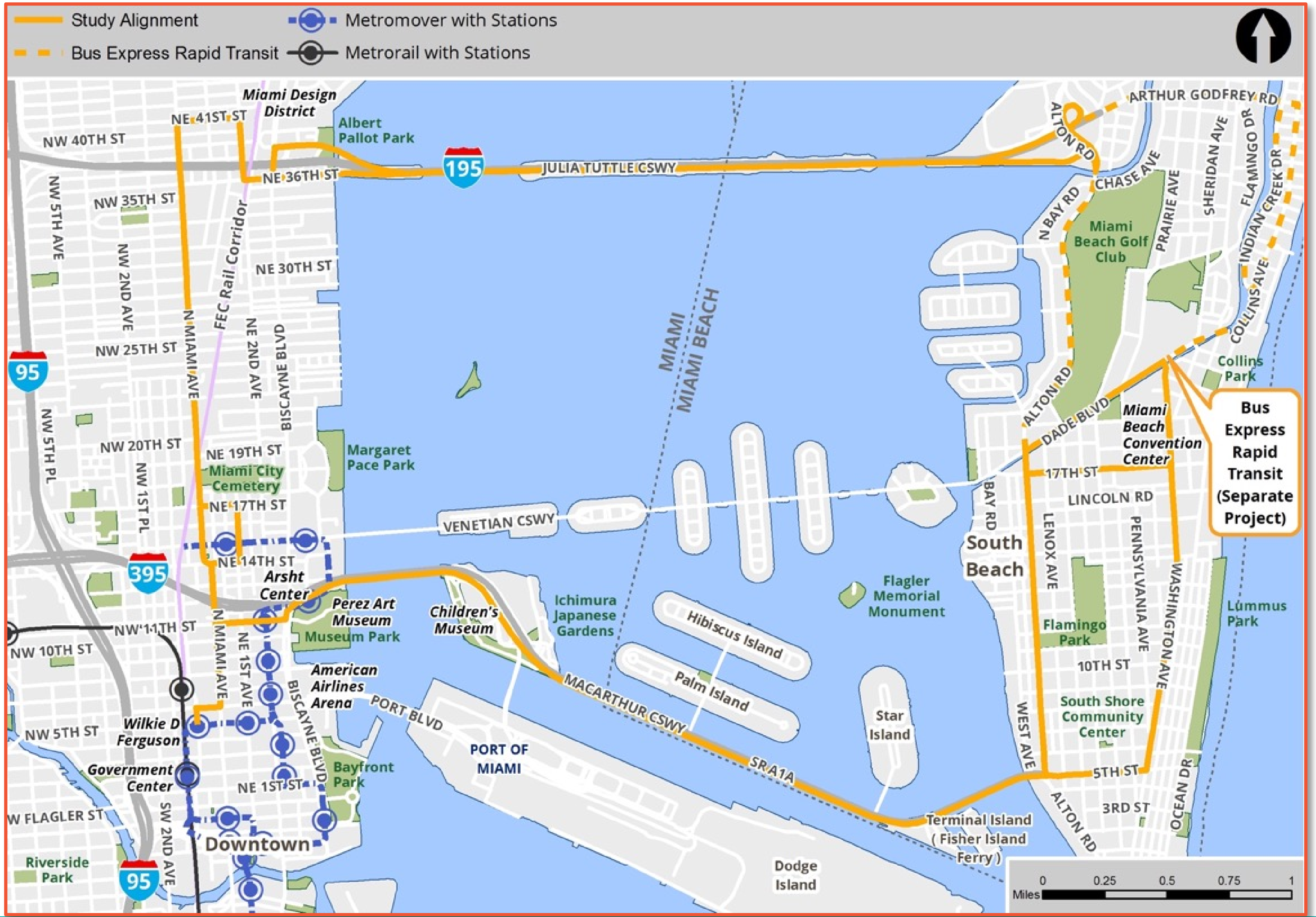
TRANSPORTATION PLANNING ORGANIZATION PRESENTATION

Department of Transportation and Public Works
Beach Corridor Rapid Transit Project
Project Development and Environment (PD&E) Study

Miami-Dade Transportation Planning Organization (TPO)

January 30, 2020

Project Overview – Project Location



Project Overview: Historical Timeline

1988
Miami Beach Light Rail Feasibility Study

1993
Transit Corridors Transitional Analysis

1995
East-West Multimodal Corridor (EIS) Study-Included LRT Miami to Miami Beach

2002
PTP ½ cent sales tax passed and Miami-Miami Beach Transportation (BayLink) Study

2003
BayLink Received LPA

2004
Phase 2 Miami-Miami Beach Transportation (BayLink) Study

2006
City of Miami Streetcar Study

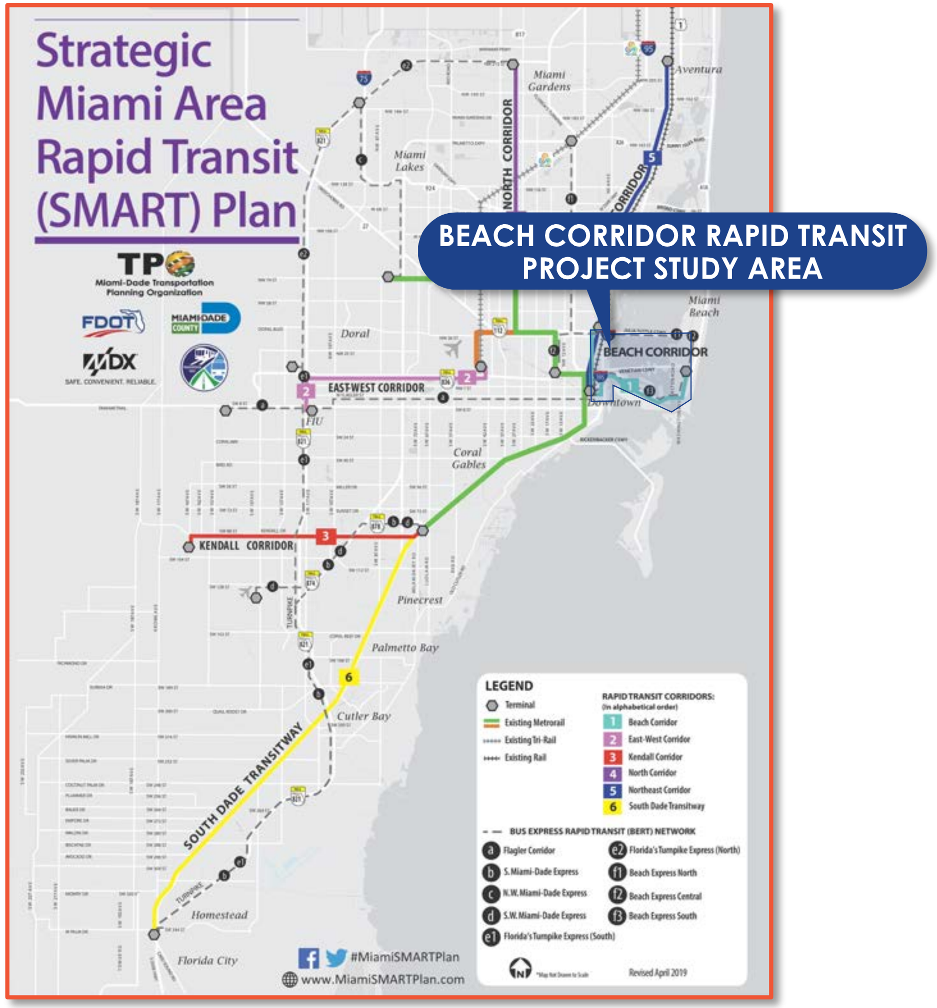
2015
Beach Corridor Rapid Transit Project

2017
Beach Corridor Transit Connection Study

Since 2004 New Issues:
*Sea Level rise regulations
*PortMiami Tunnel was constructed in median of MacArthur Bridge in previously reserved transit envelope
*Downtown Miami development boom adding to downtown congestion.

Project Overview – Purpose and Need

- Selected as one of the six SMART Plan Rapid Transit Corridors
- Major east-west connection
- High levels of traffic congestion
- Needed to serve major regional economic engines



Tier 1 Analysis Results

- Eliminated dedicated lane options south of I-395 due to congestion
- Eliminated Aerial Cable Transit, Personal Rapid Transit and Heavy Rail technologies
- Completed Corridor Analysis (Miami Avenue preferred over Biscayne or NE 2nd Avenue)
- Recommended technologies to move forward into Tier 2
  - Monorail
  - Metromover/APM
  - BRT/Express Bus
  - LRT/Streetcar

Aerial Cable Transit

Heavy Rail Transit

Personal Rapid Transit

Tier 2 Technologies –
Numbers Vary by Manufacturer and Future Specifications

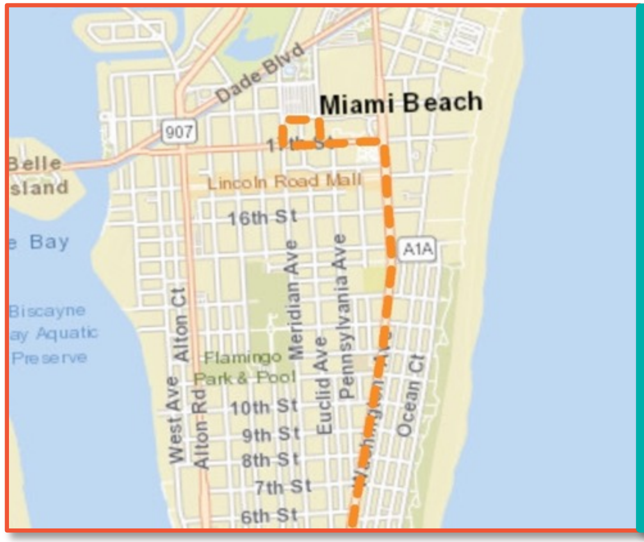
	Automated People Mover (APM)	Light Rail Transit (LRT)/Streetcar	Monorail	Bus Rapid Transit (BRT)
				
Average Operating Speed	30 MPH	20 MPH (Semi-Exclusive)/ 30 MPH (Exclusive)	30 MPH	20 MPH (Semi-Exclusive)/ 30 MPH (Exclusive)
Passenger Capacity	210-300/Train	240 / Train	180-250/Train	100 / Bus
Right of Way	Exclusive	Semi-Exclusive & Exclusive	Exclusive	Semi-Exclusive & Exclusive
Typical Stop Spacing	0 .5 1.0 1.5 0.25 - 0.75 miles	0 .5 1.0 1.5 0.25 - 0.50 miles	0 .5 1.0 1.5 0.25 - 0.75 miles	0 .5 1.0 1.5 0.25 - 1.0 miles
Guideway	Elevated Guideway	Embedded Tracks at Street Level & Elevated Guideway	Elevated Guideway	Dedicated Lanes
Other Infrastructure	Elevated Stations	Stop Platforms at Street Level & Elevated Stations	Elevated Stations	Stop Platforms at Street Level & Freeway Median Stations
System Example	Miami-Dade Metromover Jacksonville Skyway	Houston METRO Nice, France Tramway	Seattle Monorail Las Vegas Monorail	Cleveland Healthline BRT Orlando LYNX LYMMO

Tier 2 Alternatives- Trunkline and Extensions

TRUNK LINE (Bay Crossing from Herald Plaza/Museum Park Metromover station to Washington Avenue and 5th Street)

MIAMI EXTENSION From Metromover School Board Station to N. Miami Avenue and 41st Street

Express Vehicles on Existing Peoplemover



MIAMI BEACH EXTENSION From Washington Avenue and 5th Street to Convention Center area

Project Alignments – Automated People Mover (APM)

Automated People Mover (APM)

APM Miami Avenue

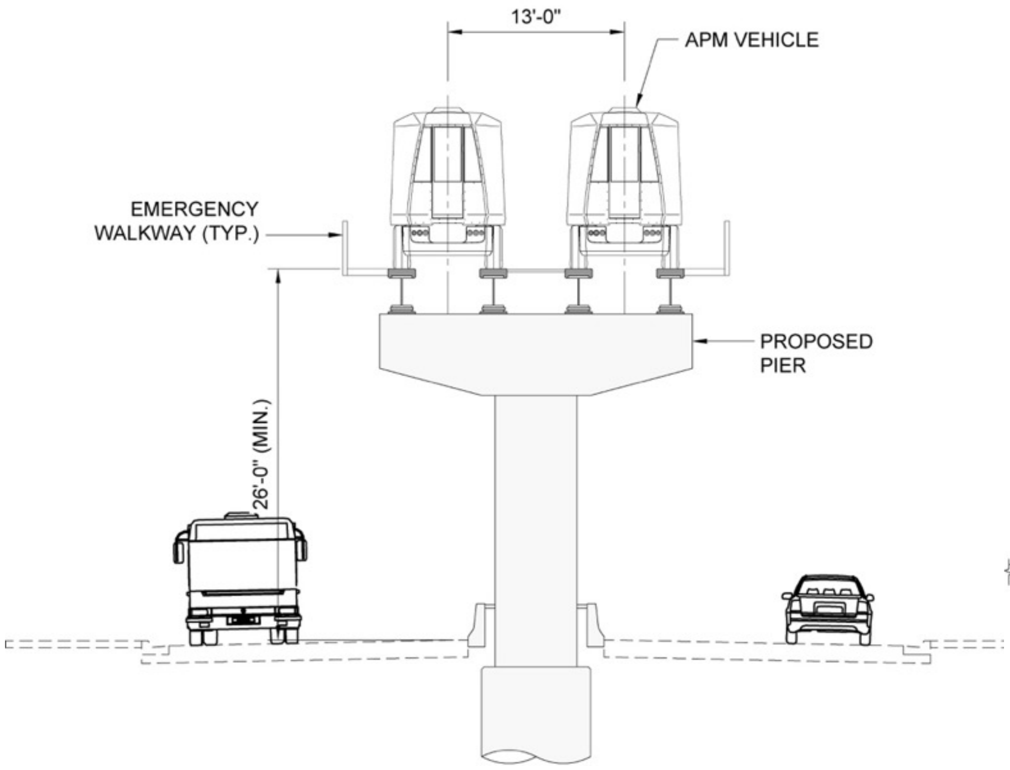
APM adjacent to I-395 West Bridge

APM Bay Crossing (MacArthur Causeway)

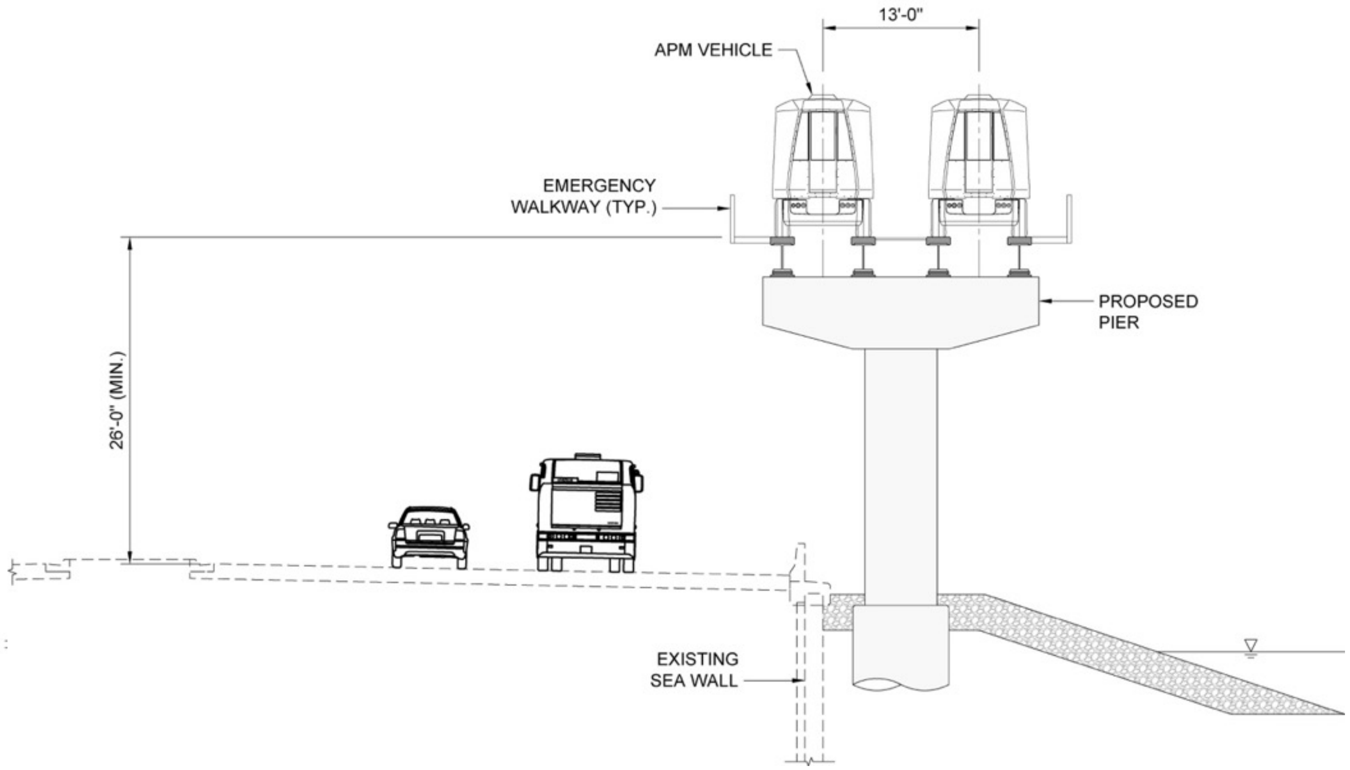
APM Miami Beach (5th Street Median)

*These renderings are representatives and not actual

Typical Sections- APM



APM - North Miami Avenue and 5th Street sections



APM – Trunkline/BayCrossing (MacArthur Causeway)

Project Alignments – Monorail

Monorail

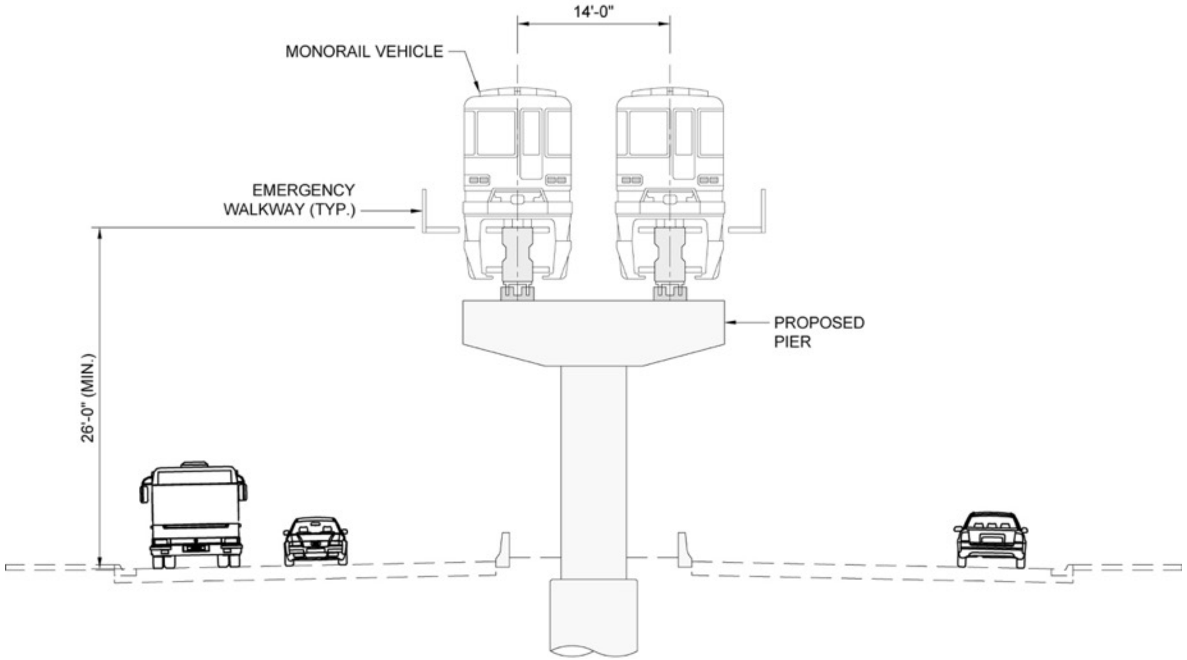
Monorail adjacent to I-395 West Bridge

Monorail Bay Crossing (MacArthur Causeway)

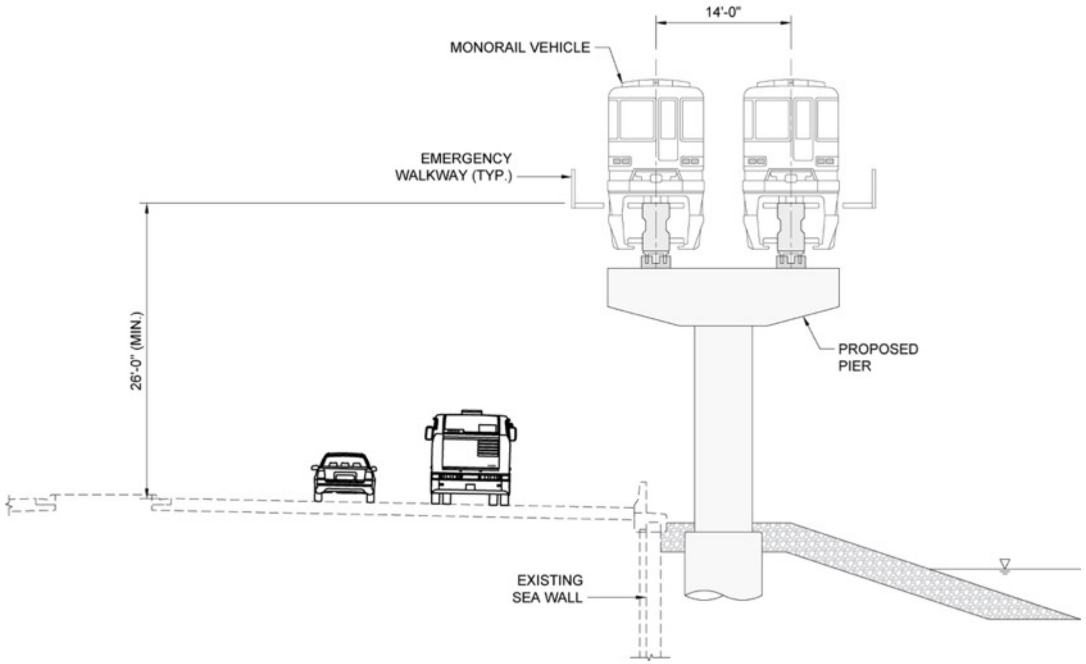
Monorail Miami Beach (5th Street Median)

*These renderings are representatives and not actual

Typical Sections- Monorail



Monorail - 5th Street section



Monorail- Trunkline/BayCrossing (MacArthur Causeway)

Project Alignments – Light Rail/Streetcar (LRT)

Light Rail Transit

LRT Miami Avenue

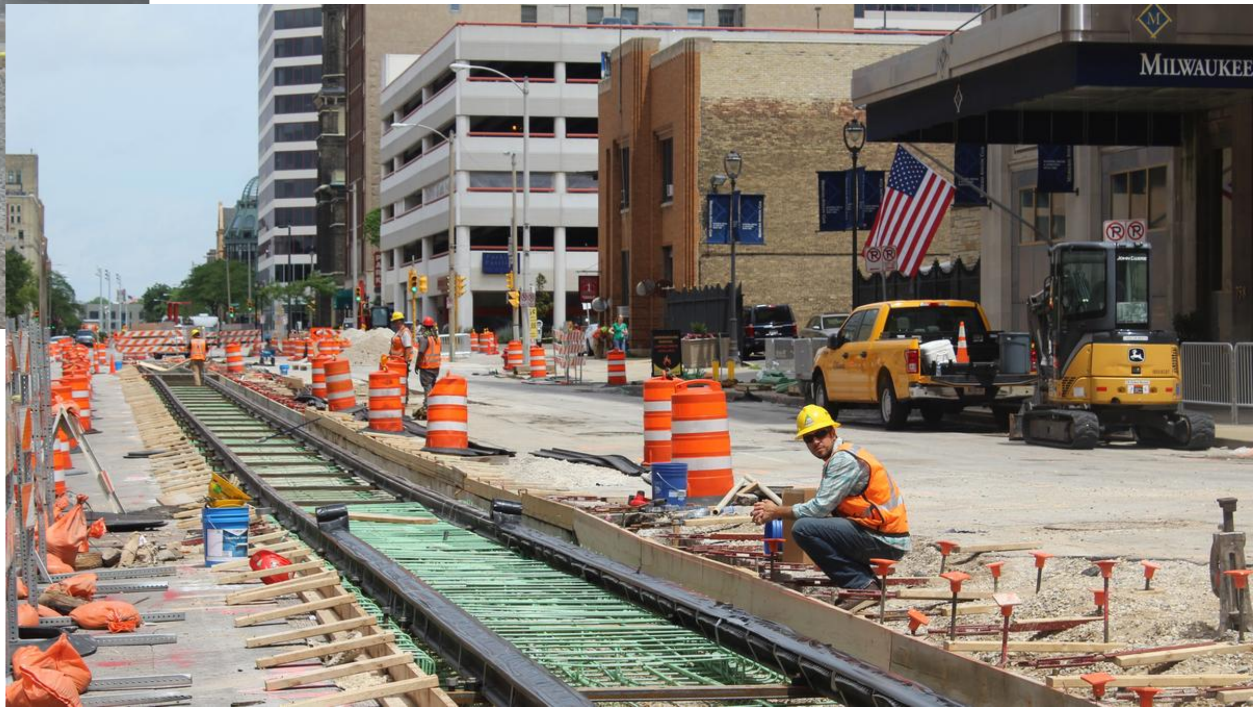
LRT adjacent to I-395 West Bridge

LRT Bay Crossing (MacArthur Causeway)

LRT Miami Beach (5th Street Median)

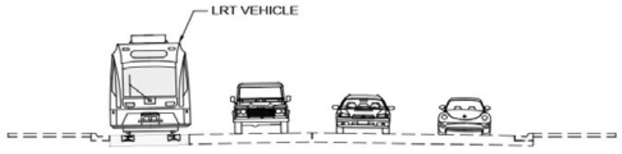
*These renderings are representatives and not actual

LRT/Streetcar construction

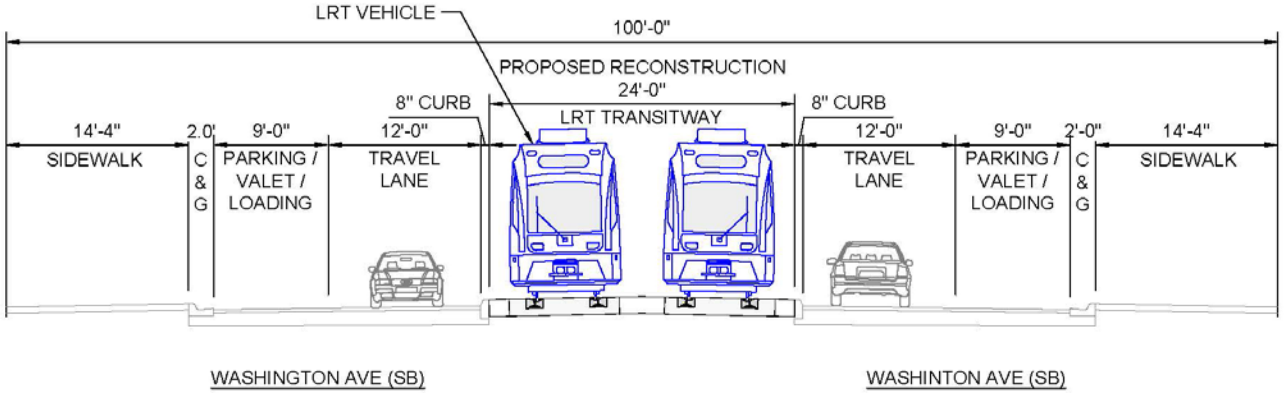


Light rail/streetcar transition (elevated to at-grade)

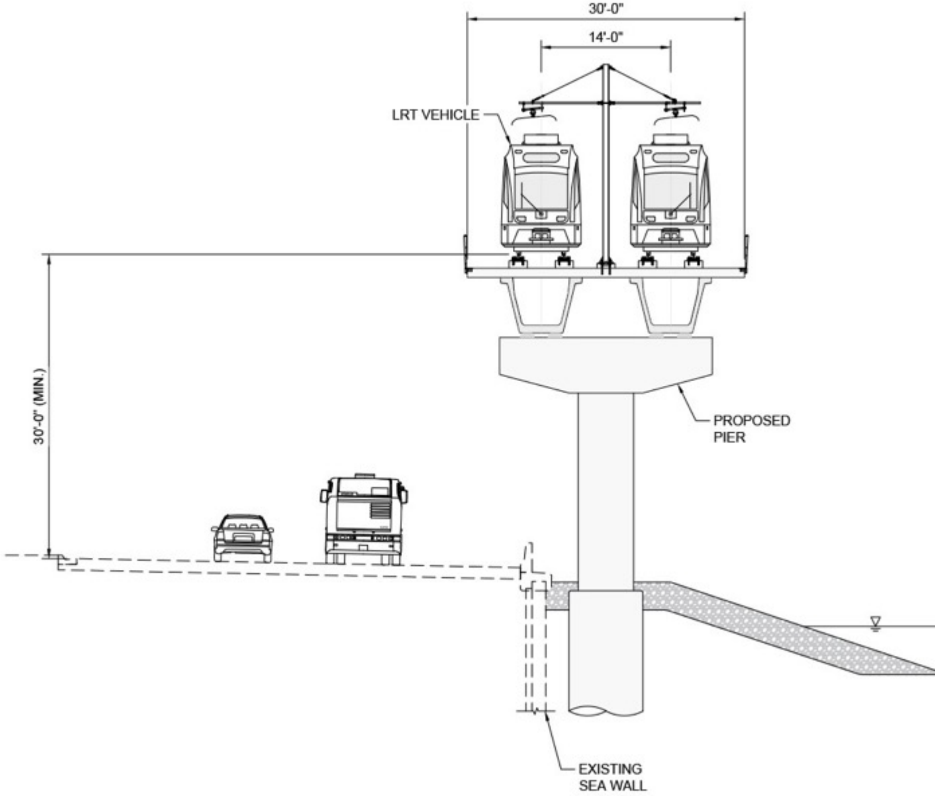
Typical Sections- LRT



LRT Section - North Miami Ave (11th to 17th)
LOOKING NORTH



LRT Section- Washington Avenue



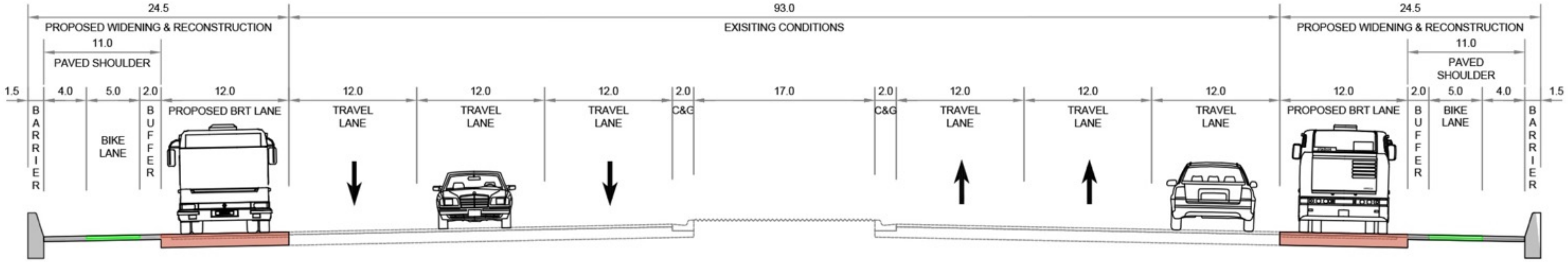
LRT Section - MacARTHUR CSWY
LOOKING EAST

Project Alignments – Bus Rapid Transit

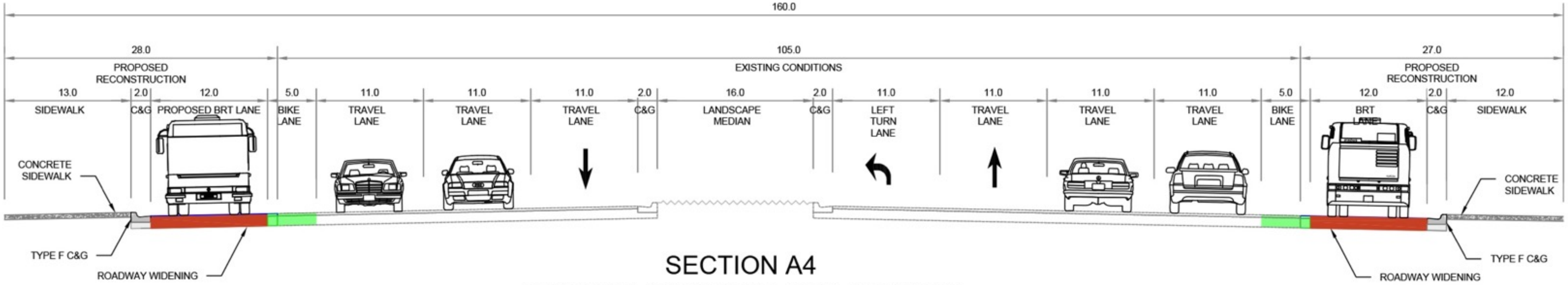
Bus Rapid Transit

I-195 option 10.8 miles/11 stations • I-395 option 6.6 miles/10 stations

Typical Sections- BRT



SECTION A2
PROPOSED TYPICAL BRT SECTION
MACARTHUR CAUSEWAY



SECTION A4
PROPOSED TYPICAL BRT SECTION
5TH STREET - (Section Looking East)

Tier 2 Evaluation Criteria

Transit and Multimodal Performance

- Ridership
- Travel Time
- Interoperability/Modal Integration
- Passenger Capacity (Secondary Measure)

Environmental Effects

- Natural Resources
- Cultural Resources (Historic/Archaeological)
- Aesthetics and Visual
- Noise and Vibration
- Traffic Impacts
- Construction Impacts (Secondary Measure)

Cost and Feasibility

- Capital Cost
- Operations and Maintenance Cost
- Lifecycle Cost (Secondary Measure)
- Resiliency (Secondary Measure)
- Time to Construct (Secondary Measure)

Evaluation Criteria

- All Criteria Rated from Lower Performing to Higher Performing
  - Lower Cost/Impact = Higher Performance
  - Higher Environmental Impact = Lower Performance
  - Higher Ridership = Higher Performance
  - Slower Travel Time = Lower Performance

Lower Performing ⟵⟶ Higher Performing				
1	2	3	4	5

Evaluation Results: Ridership

- 2040 Ridership estimated using STOPS model V2.5

Technology	Bay Crossing / Trunkline (Herald/Museum Park-Beach)	Bay Crossing+Miami Extension+Beach Extension
APM (One-Seat Ride)[1]	13,000 - 19,400	32,300 - 48,500
APM (Transfer)[1]	10,200 - 15,400	27,900 - 41,900
Monorail[1]	10,200 - 15,400	27,900 - 41,900
LRT[2]	8,000 - 12,000	24,800 - 37,200
BRT I-395[3]	N/A	11,500 - 21,400
BRT I-195[3]	N/A	11,500 - 21,400

1 May add 3,000 – 5,400 riders from parallel/duplicate routes 113, 119, 120
2 Added ridership would be lower due to walk distance from Omni/Herald bus terminal
3 See project alignment description

Evaluation Results: Transit Travel Time

	Travel Time (Minutes)**	
APM	EB	WB
Trunkline (Herald Plaza - Beach)	6	6
Beach Express (Gov Ctr - Beach)	13	13
APM	NB	SB
Miami Extension (Gov Ctr - Design District)	22	17*
Design District Express (Gov Ctr - Design District)	15	15
Monorail	EB	WB
Trunkline (Herald Plaza - Beach)	6	6
Gov Ctr – Herald Plaza (Express)	7	7
LRT	EB	WB
Design District - Bay Crossing - Beach	24	23
BRT	EB	WB
OTV - Beach via I-195	25	21
OTV - Beach via I-395	22	18

* NB follows downtown loop counterclockwise

**These times do not include transfer time. However, transfer times was included in ridership estimates

Evaluation Results: Cost and Feasibility- 2019$

		APM	LRT	Monorail	BRT I-395**	BRT I-195**
Capital Cost	Total 2019 $	$1,022,250,000	$1,136,900,000	$1,079,300,000	$366,800,000	$244,200,000
	Trunkline	APM	LRT	Monorail	N/A	N/A
	Beach Extension	Bus	LRT	Bus	N/A	N/A
	Midtown Extension	APM	LRT	APM	N/A	N/A
Operations and Maintenance Cost	Annual Total (2019 $)	$19,100,000	$17,600,000	$16,500,000	$5,500,000	$6,100,000
Lifecycle Cost	30 Year Discounted Capital, O&M & Major Maintenance	$1,444,000,000	$1,506,000,000	$1,440,000,000	$499,000,000	$392,000,000
Resiliency	Mitigation of Sea Level Rise Impacts	Elevated guideway and stations provides mitigation of predicted sea level rise.	Limited opportunity to mitigate sea level rise outside of Bay Crossing	Elevated guideway and stations provides mitigation of predicted sea level rise.	No mitigation of sea level rise risks	No mitigation of sea level rise risks
Time to Construct	Design-Bid-Build Delivery (Months)	48	54	48	33 - 36	33 - 36

*All costs include contingency 20-25%

****BRT**- Continuous BRT system from Downtown To Beach via I-395/Washington or via I-195/Collins Avenue

Evaluation Results: Project Cost 2019$- Total and Segments

O & M (millions)	APM	Monorail	LRT	BRT (I-195)	BRT (I-395)
Total	$19.1	$16.5	$17.6	$6.1	$5.5
Trunkline Only	$9.9	$7.2	$9.1	N/A	N/A

Capital Cost (millions)	No Build	APM	Monorail	LRT	BRT (I-195)	BRT (I-395)
Total	$0	$1,022.3	$1,079.3	$1,136.9	$244.2	$366.8
Trunkline Only	$0	$631.6	$671.7	$647.5/$732.3*	N/A	N/A

***Capital Cost for LRT Trunkline with and without Acquisition for Maintenance and Storage Facility (estimated Cost $85 Million – No Land Availability for 6AC)**

Evaluation Results: Environmental Effects- Total Project

		APM	LRT	Monorail	BRT-I-395	BRT-I-195
Natural Resources	Water Resources, Habitat and Animals	Direct Impacts to seagrass, coral and mangrove; small increase in impervious surface	Direct Impacts to seagrass, coral and mangrove; additional indirect (shading) impacts; greater increase in impervious surface	Direct impacts to seagrass, coral and mangroves	Significant impacts to coral. Permitting and mitigation would be challenging-significant risk to cost & duration of project.	Bridge widening on I-195 would result in seagrass impacts that would require permitting and mitigation.
Cultural Resources	# of Listed/Eligible Historic/Archaeological Resources	34	144	33	2	0
Aesthetics and Visual	Views and Streetscape	Elevated guideway / stations impact views and streetscape	Elevated guideway / stations impact views in Bay Crossing segment; less impact in at-grade segments	Elevated guideway / stations impact views and streetscape	Buses/stops will have limited impact on view shed	Buses/stops will have limited impact on view shed
Noise and Vibration	Number and Severity of Impacts by Type of Property/Use	2 Moderate Residential Impacts	5 Moderate/24 Severe Residential Impacts, 3 Moderate/3 Severe Institutional Impacts	No Impacts	9 Moderate/1 Severe Residential Impacts	No Impacts
Traffic Impacts	Impact to Existing Traffic Lanes	No impacts to at-grade traffic due to elevated guideway	At-grade segments impact traffic by dedicating lanes to transit	No impacts to at-grade traffic due to elevated guideway	Arterial segments impact traffic by dedicating lanes to traffic	Arterial segments impact traffic by dedicating lanes to traffic

Evaluation Summary-Key Differentiators

Transit and Multimodal Performance

- Rail options have similar ridership, capacity, speed and cost for Bay Crossing
- BRT options have lower ridership due to higher travel times, more traffic conflicts and attractiveness of mode
- LRT has the highest vehicle capacity and highest cost

Environmental Effects

- Monorail and APM modes are similar for the Bay Crossing (rubber tires=less noise)
- BRT on widened MacArthur Causeway has greatest impact to natural resources
- LRT has more traffic, noise and construction impacts in Miami/Midtown and Miami Beach (Multi year Roadway Impacts)
- APM and Monorail (elevated) have more visual and cultural impacts in Miami/Midtown than at-grade LRT

Cost and Feasibility

- APM and Monorail costs approximately equal
- LRT cost higher but similar range
- BRT is significantly lower cost

Key Differentiators- Elevated vs. At-grade mode

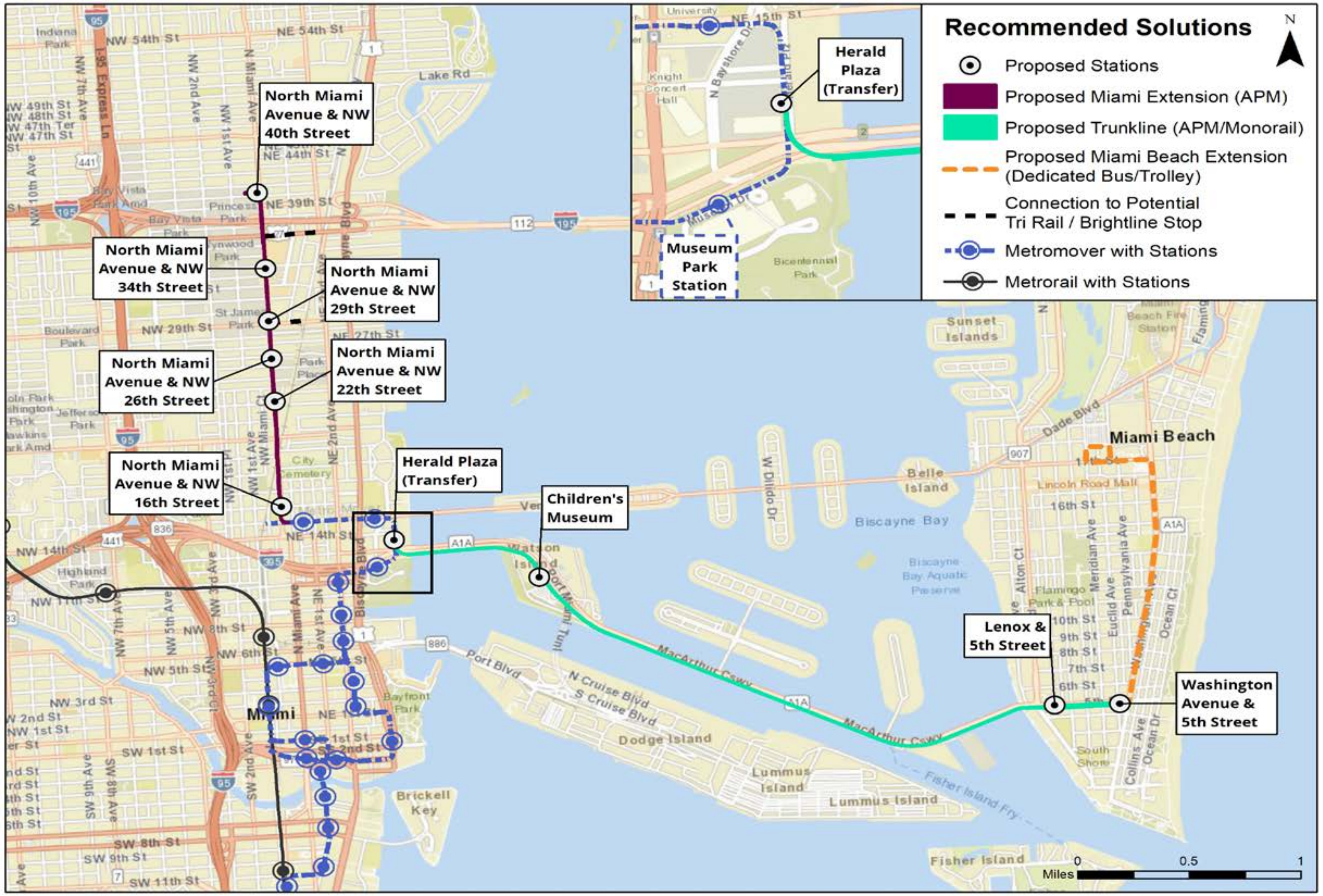
- Sea Level Rise- new ordinances require raising roadways, sidewalks, and utilities along the alignment and at all crossroads increasing cost and construction duration. Proposed transit has to be 5 feet above exiting roads.
- At-grade options more disruptive from a construction standpoint (4 years), causing potential economic impact
- LRT option higher cost, less ridership, and increased impacts to environment (seagrass, historic resources, noise, vibration)
- LRT option has more conflicts with traffic (crashes, increased travel time)

Public Engagement

- Elected Official/Agency Kick-Off (Two Meetings)
- Public Kick-Off (Three Meetings)
- Alternatives Workshops (Four Workshops)
- Live stream of public workshops reached more than 5,000 people and generated 567 engagements
- Project website, email and social media interaction
- Project Advisory Group (Three Meetings)
- City of Miami Commission and City of Miami Beach Commission (Four Presentations)
- Overtown Community Oversight Board, Downtown Development Authority and other groups (Five Presentations)
- Briefings with elected officials from the County, Miami, Miami Beach and other municipalities (More than 55 briefings)

Recommended Solutions

- Recommended solutions thru a Locally Preferred Alternative
  - APM for the Miami extension from existing Metromover at School Board station to Design District
  - Elevated rubber tire vehicle (APM/Monorail) for the Trunkline (Herald Plaza/Museum Park Metromover station to Washington and 5th Street)
  - Bus/Trolley on dedicated lanes for the Miami Beach extension from Washington and 5th Street to the Convention Center



FTA Capital Investment Grant Rating

New and Small Starts Project Evaluation and Rating

Individual Criteria Ratings

- Mobility Improvements (16%)
- Environmental Benefits (16%)
- Congestion Relief (16%)
- Cost-Effectiveness (16%)
- Economic Development (16%)
- Land Use (16%)

- Current Condition (25%)
- Commitment of Funds (25%)
- Reliability/Capacity (50%)

Summary Ratings

Project Justification
(50% of Overall Rating)

**Must be at least "Medium"*
For project to get "Medium"
Or better Overall Rating

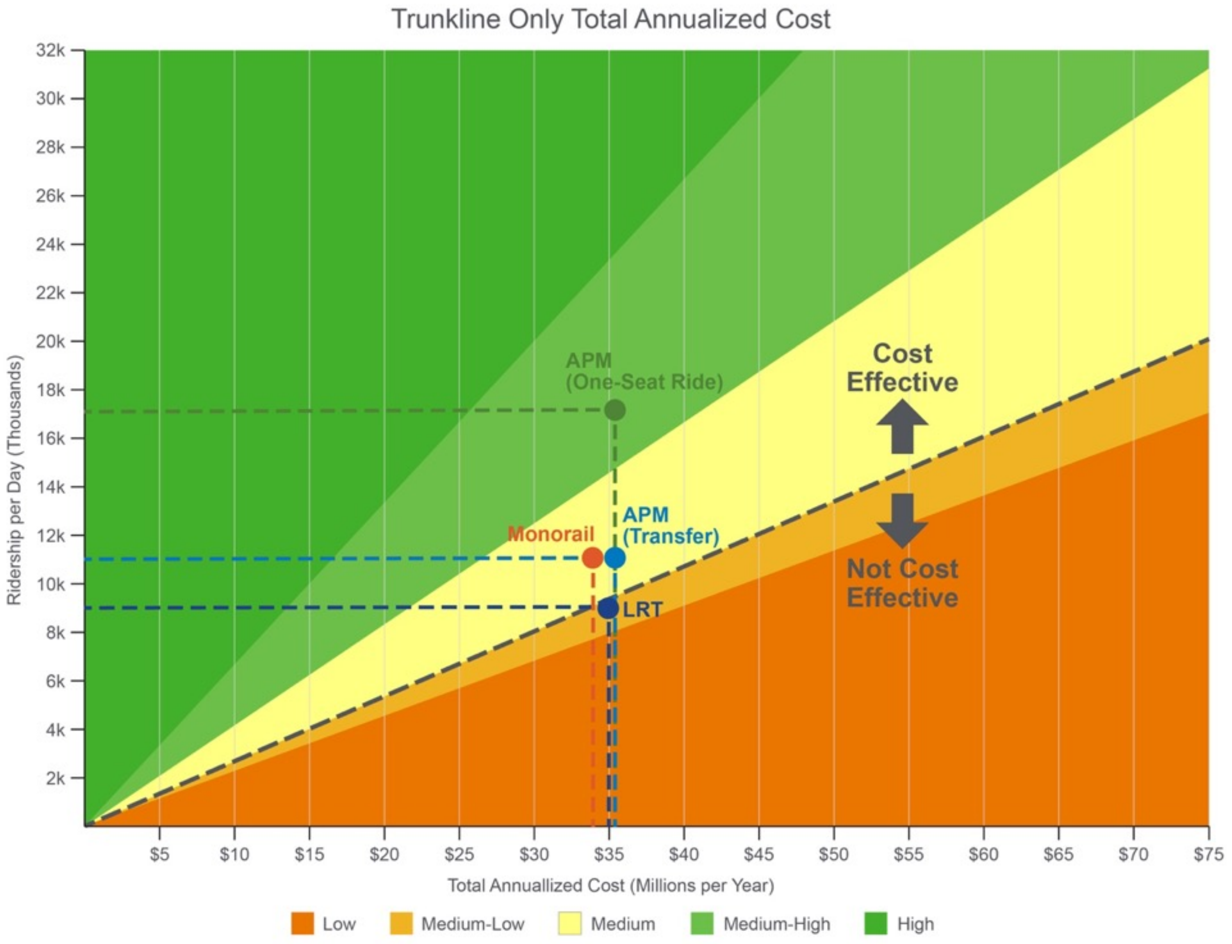
Local Financial Commitment
(50% of Overall Rating)

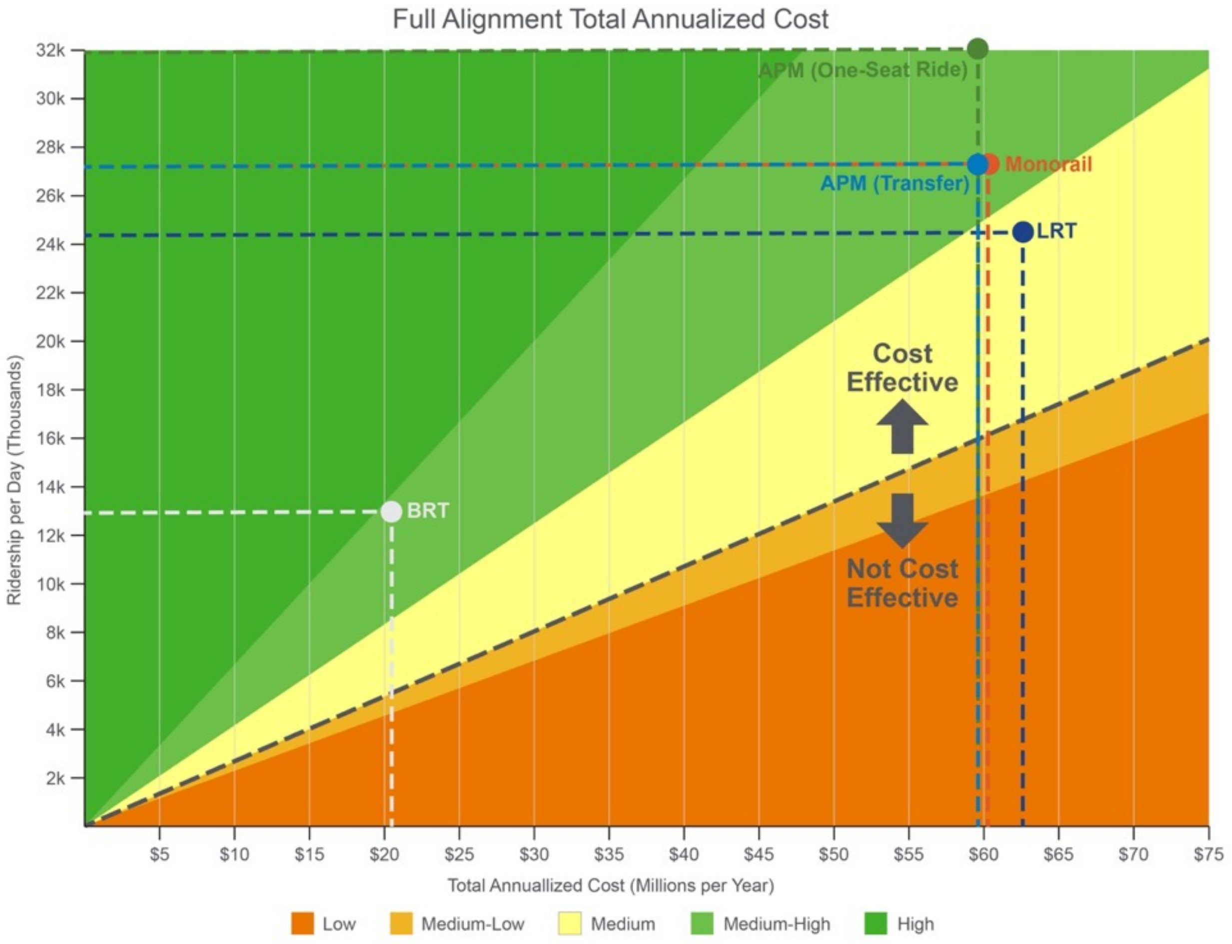
**Must be at least "Medium"*
For project to get "Medium"
Or better Overall Rating

Overall Rating

Overall Project Rating

FTA Cost Effectiveness-Total Annualized Cost (current$)





FTA Implementation Schedule