



CSX East-West Rail Feasibility Study

SAC Meeting # 2

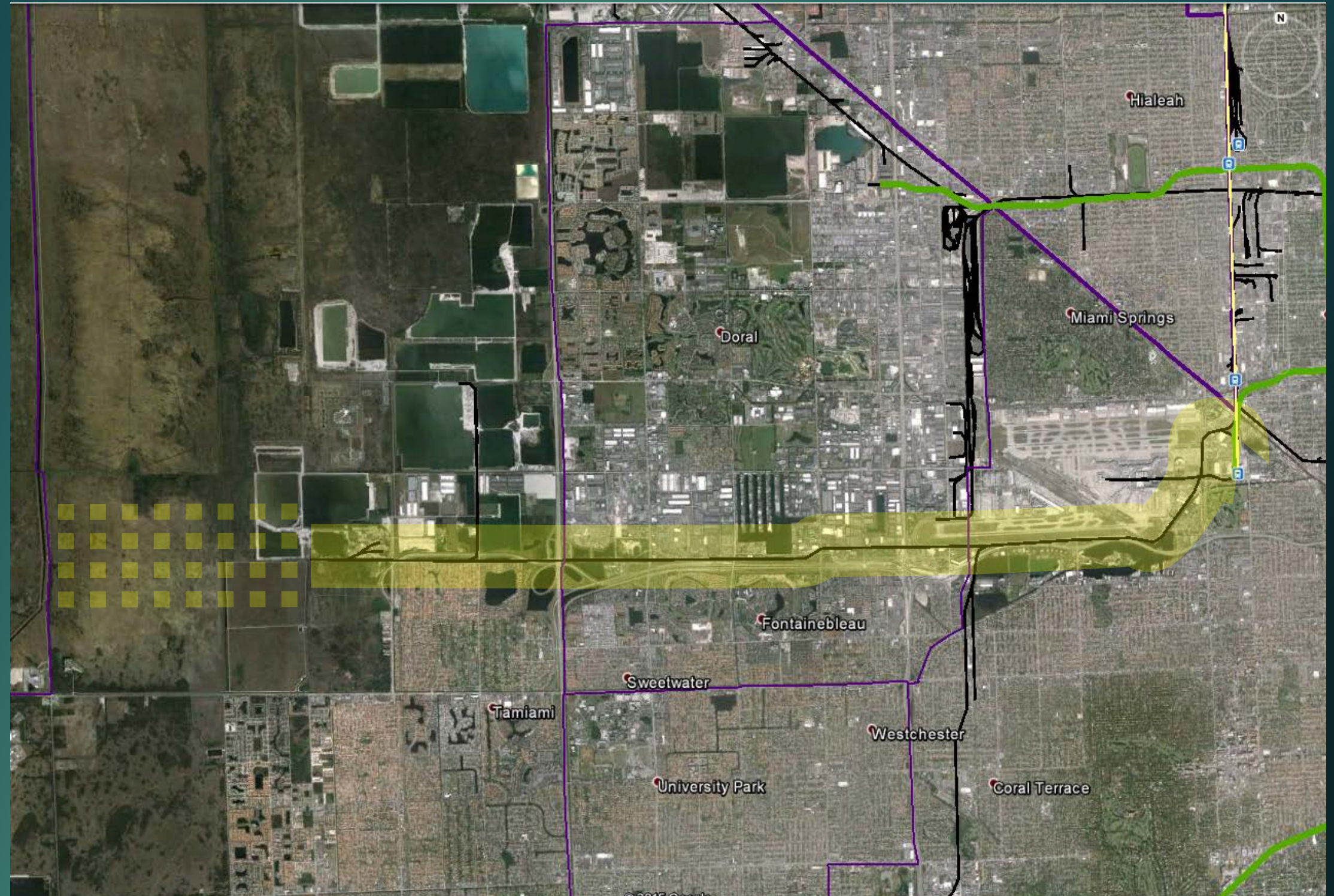
Thursday July 16, 2015

JACOBS

SAC Meeting # 1 Recap

Right-of-Way

- 100' Width
- CSX Ownership
- FDOT Ownership
- Multiple Grade Crossings
- Freight Operations



Initial Alternatives Discussion



Study Phasing

Phase 1 - Focus on Evaluating Potential Start- Up Service

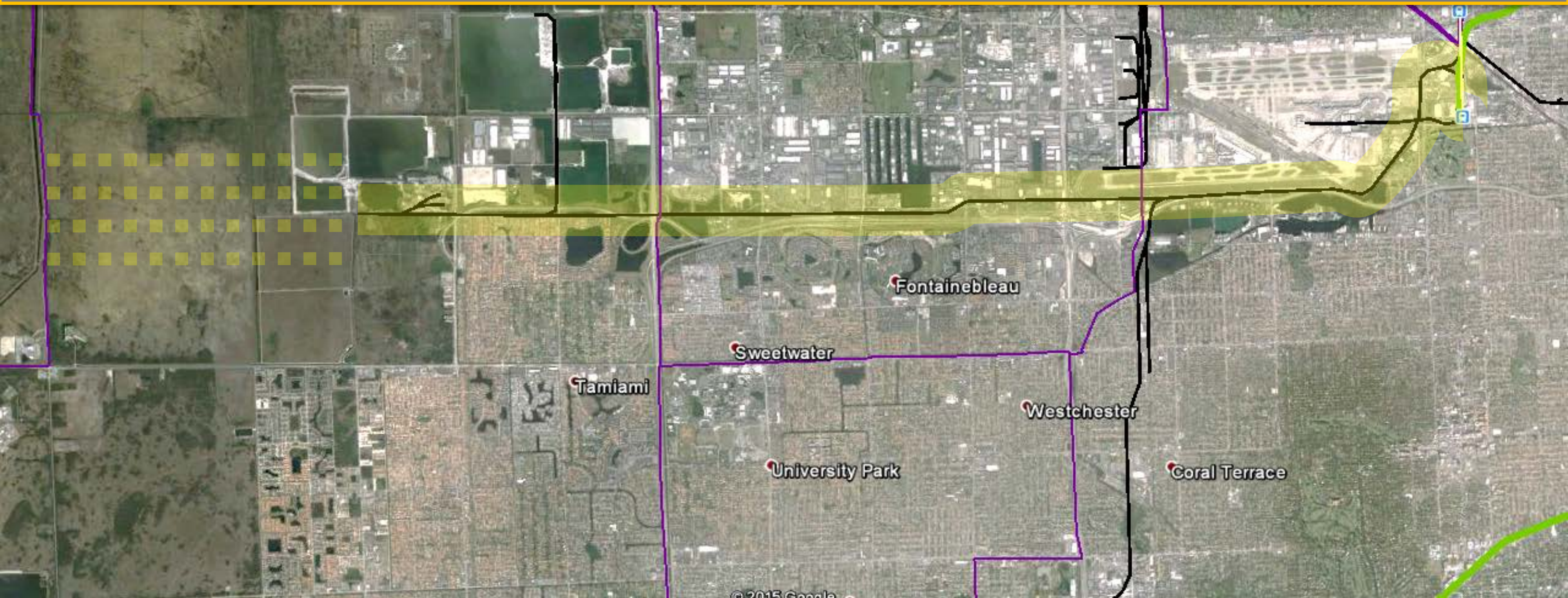
- Stations
- Operations
- Ridership
- Infrastructure Needs
- Costs

Phase 2 – Expanded Services Building Off Start-Up Service

- FIU
- Krome Avenue
- Kendall
- Improvements to Start-up Service



Potential Start-up Concepts



Start-up Objectives

- Minimal lead time starter service
- Serve two key markets
 - West Dade commuters to destinations on the MDT Metrorail
 - Travelers to FIU and Doral
- Starter service designed for future refinements improving
 - Service velocity
 - Service directness
 - Service to additional submarkets for travel to the east and west.
- 20-minute maximum travel time from Turnpike to MIC
- Coordinated timed transfers to and from Metrorail at the MIC
- Minimum 30-minute service levels

Assumptions

- Access to CSX-owned right of way
- CSX continues to serve freight customers
- Starter service uses surplus conventional locomotive hauled push-pull trainsets from Tri-Rail
- No more than two train sets in peak service
- No changes to existing Metrorail schedules
- At least six minutes allowed for transfer at MIC
- At least eight minutes to turn a train at the end of its one way trip
- Store and maintain rolling stock at existing Hialeah Yard

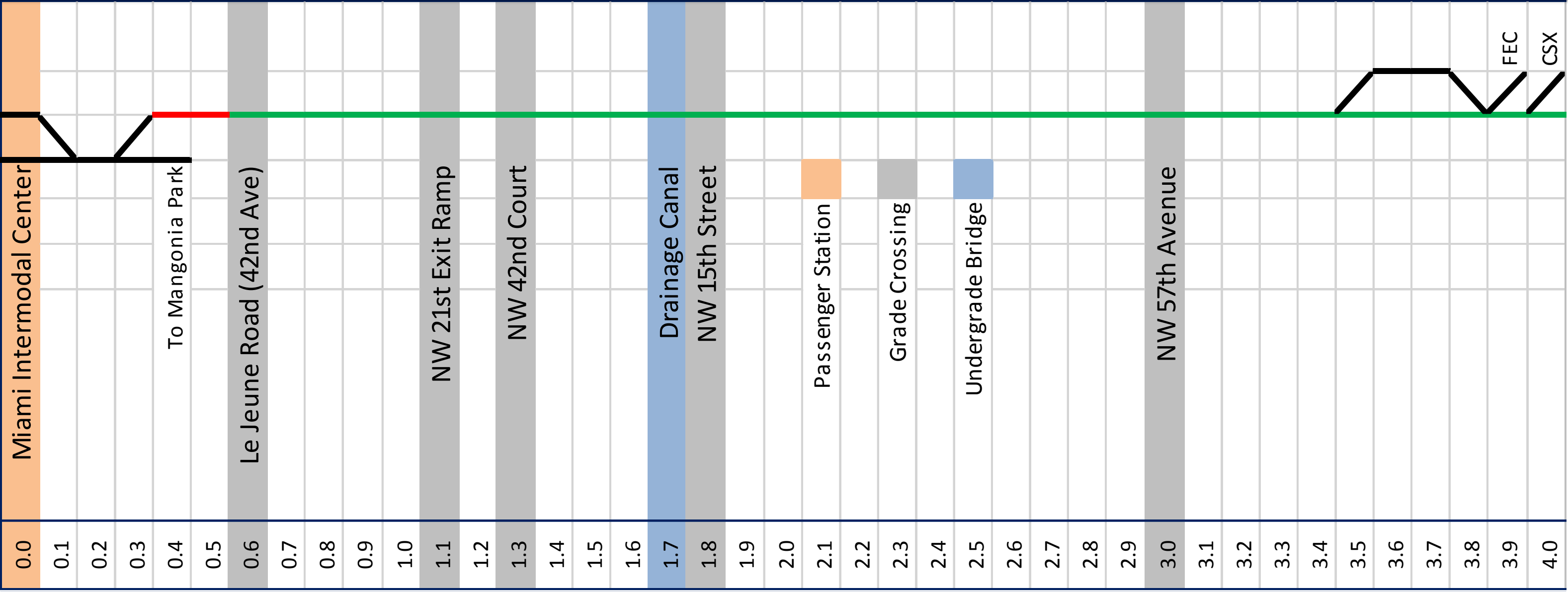
Minimum Operable Segment (MOS) - MIC to 132nd Avenue



Potential Starter Stations

SW 137th Avenue	11.1	Park and Ride Station with access from residential communities to the south. Primarily auto access.
132nd Avenue – No. Tamiami	10.5	Walk/Bike Station and Park and Ride Station from Residential community to the south. 55,000 people in 7.5 square miles
122nd Avenue - Turnpike	9.4	Park and Ride station available for local residents but primarily for commuters coming from the Turnpike (Up to 1000 parking spaces provided by others)
Malls-FIU @ 107th Ave (SW Doral)	8.0	Primarily a destination station served by connecting buses to provided by the Malls and an FIU shuttle. (assume 0 parking spaces)
Fontainebleau @97th Ave	7.0	Bike and Park and Ride Gateway to Fontainebleau neighborhood to the south (60,000 people 4.5 square miles) and access to warehouse and industrial employment to the north (assume 300 spaces)
82nd Avenue (SE Doral)	5.5	Walk/Bike and Park and Ride for Residential community to the south and to intense industrial and warehousing employment to the north (assume 300 spaces)
Miami Intermodal Center	0.0	Transfer to Metrorail Orange Line

Proposed Track Configuration

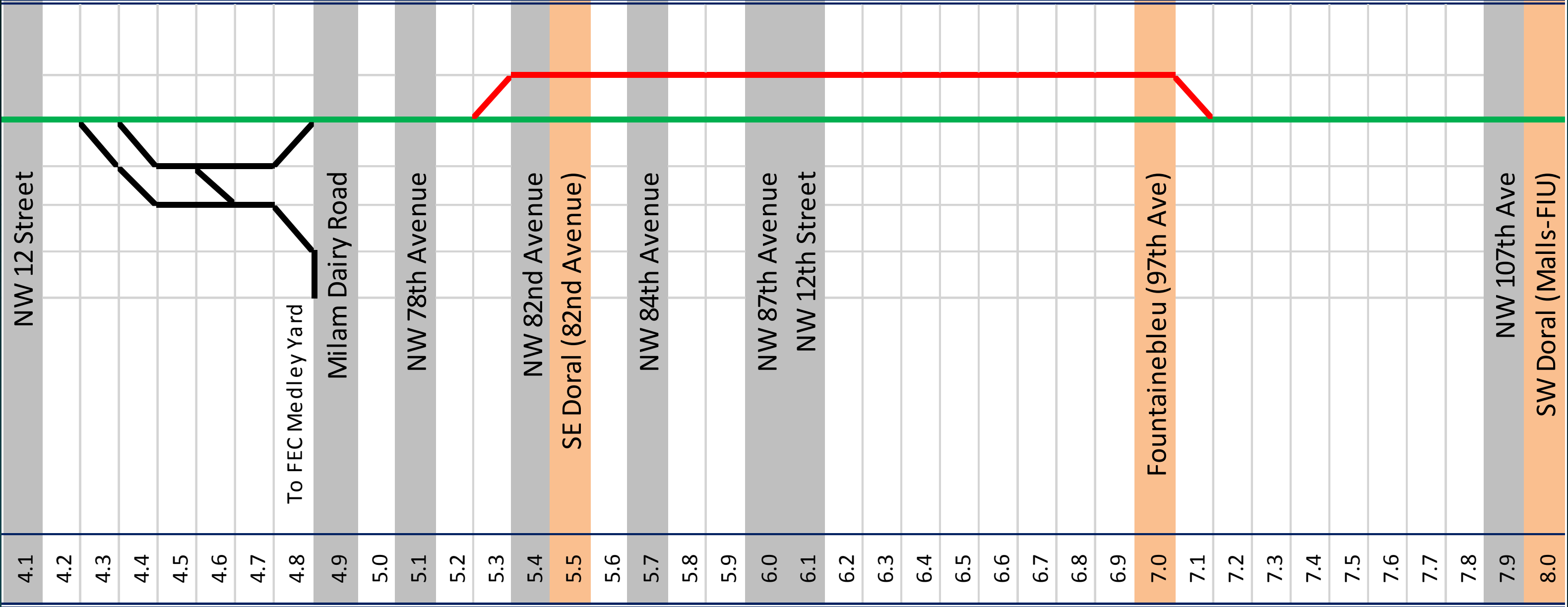


Green represents refurbished track

Red represents new track

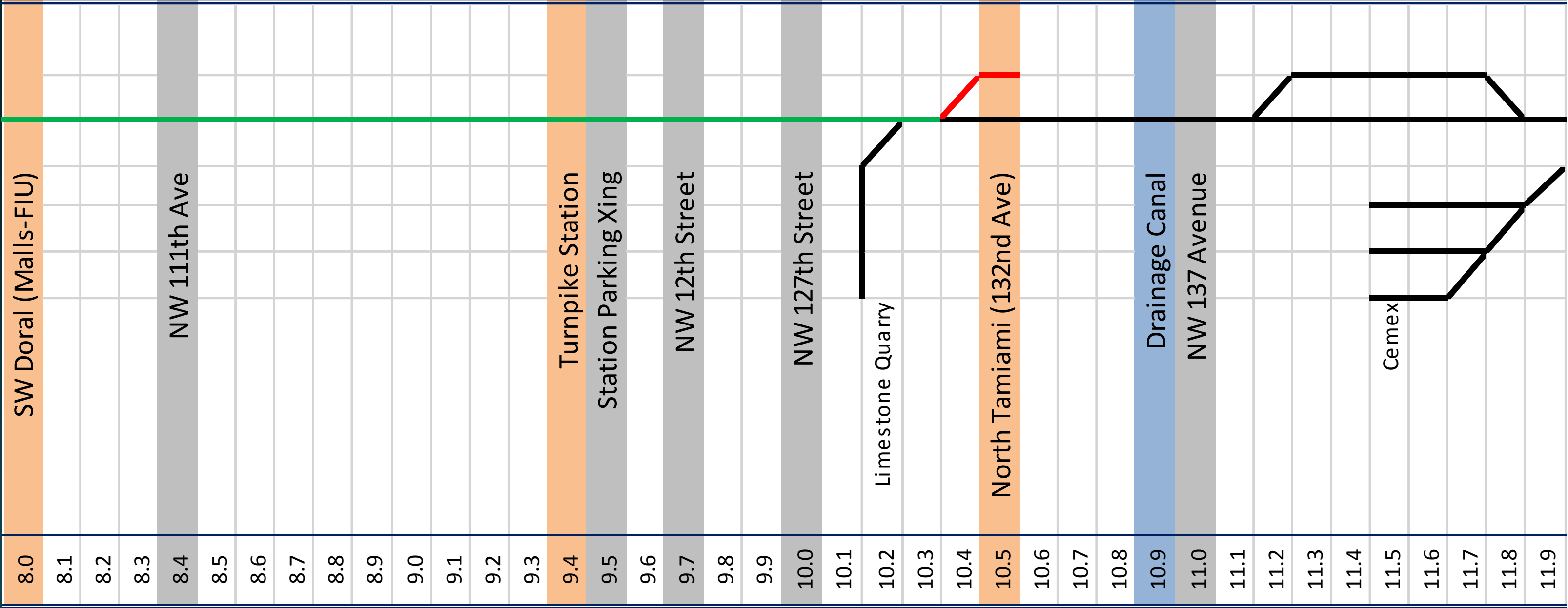
Black represents existing track unchanged

Proposed Track Configuration



Green represents refurbished track
Red represents new track
Black represents existing track unchanged

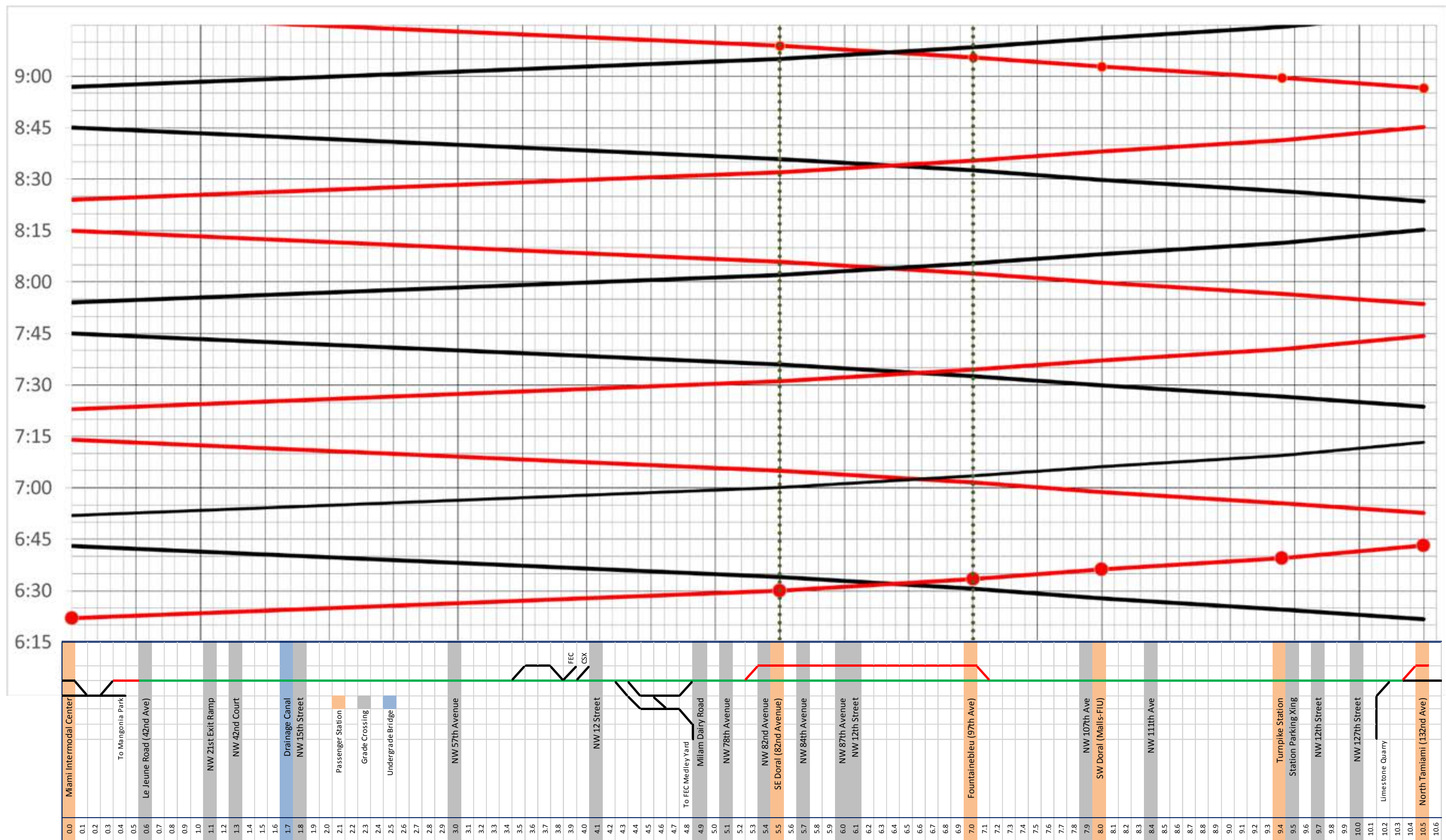
Proposed Track Configuration



Green represents refurbished track

Red represents new track

Black represents existing track unchanged



1.5 mile long passing siding allows passenger trains to meet and pass in opposite directions
Storage track at 132nd or 137th allows freight trains to pass standing passenger trains

Schedule Assumptions

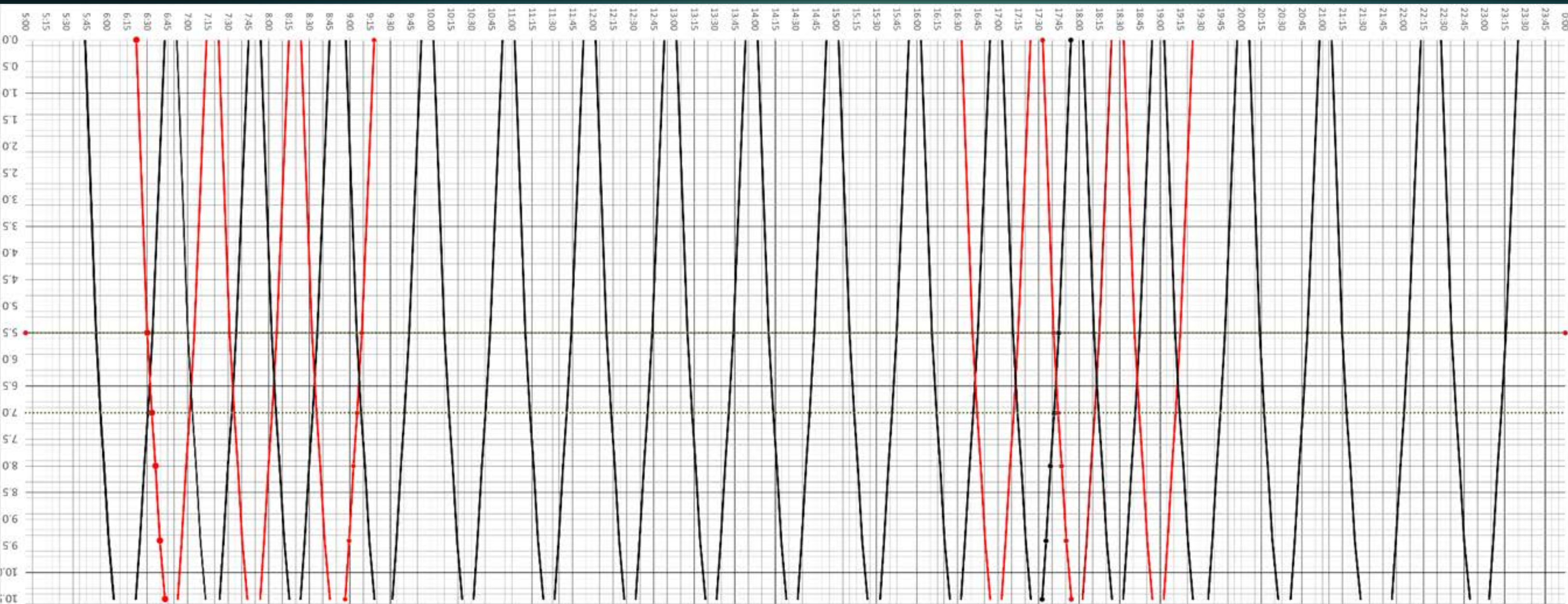
- Minimizes rolling stock and crew needs
- Assumes FRA Class 3 track: 60 mph max speed on most segments
- Service velocity limited by acceleration, braking and dwell times
- Matches existing Metrorail schedules for positive connections
- Uses only one track in the Miami Intermodal Center Station
- Requires a single passing siding that allows peak trains to pass one another

Example Weekday Schedule

Eastbound READ DOWN																								
Turntime		0:16	0:09	0:10	0:09	0:08	0:11	0:13	0:08	0:08	0:08	0:08	0:08	0:09	0:08	0:08	0:08	0:08	0:08	0:11	0:09	0:23	0:14	
Station	MP	902	904	906	908	910	912	914	916	918	920	922	924	926	928	930	932	934	936	938	940	942	944	946
132nd Avenue - North Tamiami	10.5	6:21	6:52	7:23	7:53	8:23	8:56	9:31	10:31	11:31	12:31	13:31	14:31	15:32	16:32	17:02	17:32	18:02	18:32	19:02	19:35	20:36	21:51	23:03
122nd Avenue - Turnpike	9.4	6:24	6:55	7:26	7:56	8:26	8:59	9:34	10:34	11:34	12:34	13:34	14:34	15:35	16:35	17:05	17:35	18:05	18:35	19:05	19:38	20:39	21:54	23:06
Malls-FIU @ 107th Ave (SW Doral)	8.0	6:27	6:58	7:29	7:59	8:29	9:02	9:37	10:37	11:37	12:37	13:37	14:37	15:38	16:38	17:08	17:38	18:08	18:38	19:08	19:41	20:42	21:57	23:09
Fountaineblue @97th Ave	7.0	6:30	7:01	7:32	8:02	8:32	9:05	9:40	10:40	11:40	12:40	13:40	14:40	15:41	16:41	17:11	17:41	18:11	18:41	19:11	19:44	20:45	22:00	23:12
82nd Avenue (SE Doral)	5.5	6:33	7:04	7:35	8:05	8:35	9:08	9:43	10:43	11:43	12:43	13:43	14:43	15:44	16:44	17:14	17:44	18:14	18:44	19:14	19:47	20:48	22:03	23:15
Miami Intermodal Center	0.0	6:43	7:14	7:45	8:15	8:45	9:18	9:53	10:53	11:53	12:53	13:53	14:53	15:54	16:54	17:24	17:54	18:24	18:54	19:24	19:57	20:58	22:13	23:25
MDT Orange Line MIA		6:51	7:21	7:51	8:21	8:51	9:29	9:59	10:59	11:59	12:59	13:59	14:59	16:01	17:01	17:31	18:01	18:29	18:59	19:29	20:04	21:23	22:23	23:33
MDT Orange Line Govt Center		7:06	7:36	8:06	8:36	9:06	9:44	10:14	11:14	12:14	13:14	14:14	15:14	16:16	17:16	17:46	18:16	18:44	19:14	19:44	20:19	21:38	22:38	23:48
Travel Minutes Tumpike to Govt Center		0:41	0:40	0:39	0:39	0:39	0:44	0:39	0:39	0:39	0:39	0:39	0:39	0:40	0:40	0:40	0:40	0:38	0:38	0:38	0:40	0:58	0:43	0:41
Westbound READ UP																								
Turntime		HIA	HIA	0:09	0:09	0:09	0:09	0:12	0:09	0:09	0:09	0:09	0:09	0:09	0:09	HIA	0:09	0:09	0:09	0:09	0:09	0:09	0:15	
Station	MP	901	903	905	907	909	911	913	915	917	919	921	923	925	927	929	931	933	935	937	939	941	943	945
132nd Avenue - North Tamiami	10.5	6:05	6:43	7:13	7:44	8:15	8:45	9:18	10:23	11:23	12:23	13:23	14:23	15:23	16:24	16:54	17:24	17:54	18:24	18:54	19:24	20:27	21:28	22:49
122nd Avenue - Turnpike	9.4	6:01	6:39	7:09	7:40	8:11	8:41	9:14	10:19	11:19	12:19	13:19	14:19	15:19	16:20	16:50	17:20	17:50	18:20	18:50	19:20	20:23	21:24	22:45
Malls-FIU @ 107th Ave (SW Doral)	8.0	5:58	6:36	7:06	7:37	8:08	8:38	9:11	10:16	11:16	12:16	13:16	14:16	15:16	16:17	16:47	17:17	17:47	18:17	18:47	19:17	20:19	21:20	22:41
Fountaineblue @97th Ave	7.0	5:55	6:33	7:03	7:34	8:05	8:35	9:08	10:13	11:13	12:13	13:13	14:13	15:13	16:14	16:44	17:14	17:44	18:14	18:44	19:14	20:17	21:18	22:39
82nd Avenue (SE Doral)	5.5	5:52	6:30	7:00	7:31	8:02	8:32	9:05	10:10	11:10	12:10	13:10	14:10	15:10	16:11	16:41	17:11	17:41	18:11	18:41	19:11	20:13	21:14	22:35
Miami Intermodal Center	0.0	5:44	6:22	6:52	7:23	7:54	8:24	8:57	10:02	11:02	12:02	13:02	14:02	15:02	16:03	16:33	17:03	17:33	18:03	18:33	19:03	20:06	21:07	22:28
MDT Orange Line MIA		5:38	6:16	6:43	7:13	7:43	8:13	8:43	9:53	10:56	11:56	12:56	13:56	14:56	15:56	16:23	16:53	17:23	17:53	18:23	18:54	19:56	20:56	22:18
MDT Orange Line Govt Center		5:24	6:02	6:29	6:59	7:29	7:59	8:29	9:39	10:42	11:42	12:42	13:42	14:42	15:42	16:09	16:39	17:09	17:39	18:09	18:40	19:42	20:42	22:04
Travel Minutes Tumpike to Govt Center		0:37	0:37	0:40	0:41	0:42	0:42	0:45	0:40	0:37	0:37	0:37	0:37	0:37	0:38	0:41	0:41	0:41	0:41	0:41	0:40	0:41	0:42	0:41

Average 40 minute scheduled travel time from Turnpike Station to MDT Government Center Station

Weekday Time Distance Diagram



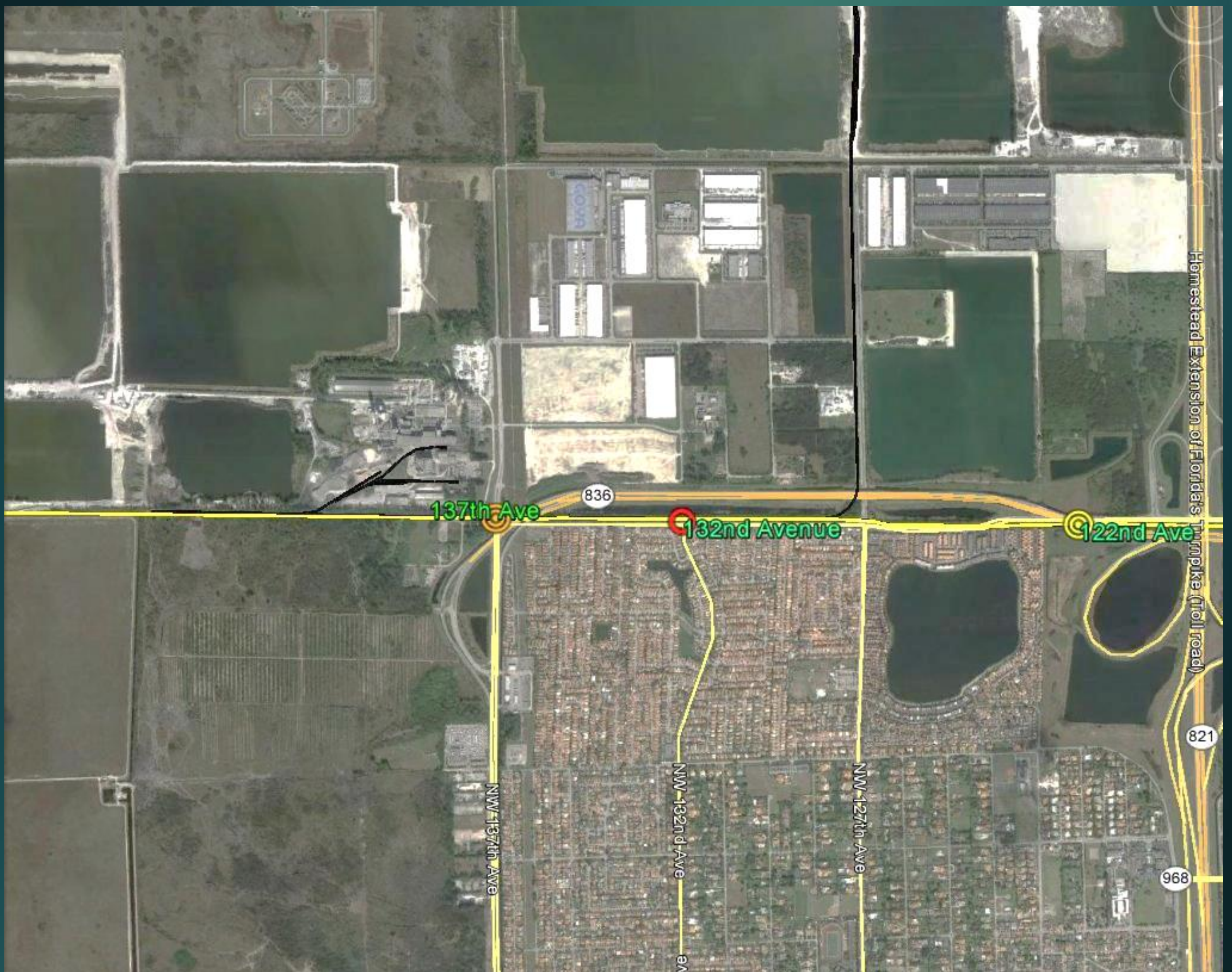
- 46 scheduled trains per weekday
- Two peak train sets
- Each train scheduled to connect with a specific MDT Orange Line trip

MDT-Dolphin Spur Joint Schedule

Eastward																										
Train Number													902		904		906		908		910					
Turn Time													0:16		0:09		0:10		0:09		0:08					
132nd Avenue - North Tamiami	10.5												6:21		6:52		7:23		7:53		8:23					
122nd Avenue - Turnpike	9.4												6:24		6:55		7:26		7:56		8:26					
Malls-FIU @ 107th Ave (SW Doral)	8.0												6:27		6:58		7:29		7:59		8:29					
Fontaineblue @97th Ave	7.0												6:30		7:01		7:32		8:02		8:32					
82nd Avenue (SE Doral)	5.5												6:33		7:04		7:35		8:05		8:35					
MIA Arrive	0.0												6:43	0:08	7:14	0:07	7:45	0:06	8:15	0:06	8:45	0:06				
MIA Depart			5:06	5:24	5:39	5:51	6:01	6:11	6:21	6:31	6:41	6:51	7:01	7:11	7:21	7:31	7:41	7:51	8:01	8:11	8:21	8:31	8:41	8:51	9:01	
Civic Center			5:15	5:33	5:48	6:00	6:10	6:20	6:30	6:40	6:50	7:00	7:10	7:20	7:30	7:40	7:50	8:00	8:10	8:20	8:30	8:40	8:50	9:00	9:10	
Government Center			5:21	5:39	5:54	6:06	6:16	6:26	6:36	6:46	6:56	7:06	7:16	7:26	7:36	7:46	7:56	8:06	8:16	8:26	8:36	8:46	8:56	9:06	9:16	
Bickell			5:22	5:40	5:55	6:07	6:17	6:27	6:37	6:47	6:57	7:07	7:17	7:27	7:37	7:47	7:57	8:07	8:17	8:27	8:37	8:47	8:57	9:07	9:17	
Dadeland South			5:39	5:57	6:12	6:24	6:34	6:44	6:54	7:04	7:14	7:24	7:34	7:44	7:54	8:04	8:14	8:24	8:34	8:44	8:54	9:04	9:14	9:24	9:34	
Westward																										
Train Number			901		903		905		907		909		911		913											
Turn Time			HIA		HIA		0:09	0:09			0:09		0:09		0:12											
Dadeland South			5:05	5:28	5:43	5:58	6:10	6:20	6:30	6:40	6:50	7:00	7:10	7:20	7:30	7:40	7:50	8:00	8:10	8:20	8:30	8:40	8:50	9:00	9:10	
Bickell			5:22	5:45	6:00	6:15	6:27	6:37	6:47	6:57	7:07	7:17	7:27	7:37	7:47	7:57	8:07	8:17	8:27	8:37	8:47	8:57	9:07	9:17	9:27	
Government Center			5:24	5:47	6:02	6:17	6:29	6:39	6:49	6:59	7:09	7:19	7:29	7:39	7:49	7:59	8:09	8:19	8:29	8:39	8:49	8:59	9:09	9:19	9:29	
Civic Center			5:29	5:52	6:07	6:22	6:34	6:44	6:54	7:04	7:14	7:24	7:34	7:44	7:54	8:04	8:14	8:24	8:34	8:44	8:54	9:04	9:14	9:24	9:34	
MIA Arrive			5:38	6:01	6:16	6:31	6:43	6:53	7:03	7:13	7:23	7:33	7:43	7:53	8:03	8:13	8:23	8:33	8:43	8:53	9:03	9:13	9:23	9:33	9:43	
MIA Depart	0.0		5:44		6:22	0:06	6:52	0:09	7:23	0:10	7:54	0:11	8:24	0:11	8:57	0:14										
82nd Avenue (SE Doral)	5.5		5:52		6:30		7:00		7:31		8:02		8:32		9:05											
Fontaineblue @97th Ave	7.0		5:55		6:33		7:03		7:34		8:05		8:35		9:08											
Malls-FIU @ 107th Ave (SW Doral)	8.0		5:58		6:36		7:06		7:37		8:08		8:38		9:11											
122nd Avenue - Turnpike	9.4		6:01		6:39		7:09		7:40		8:11		8:41		9:14											
132nd Avenue - North Tamiami	10.5		6:05		6:43		7:13		7:44		8:15		8:45		9:18											

MIC to 137th Avenue Service Concept





Potential Starter Stations

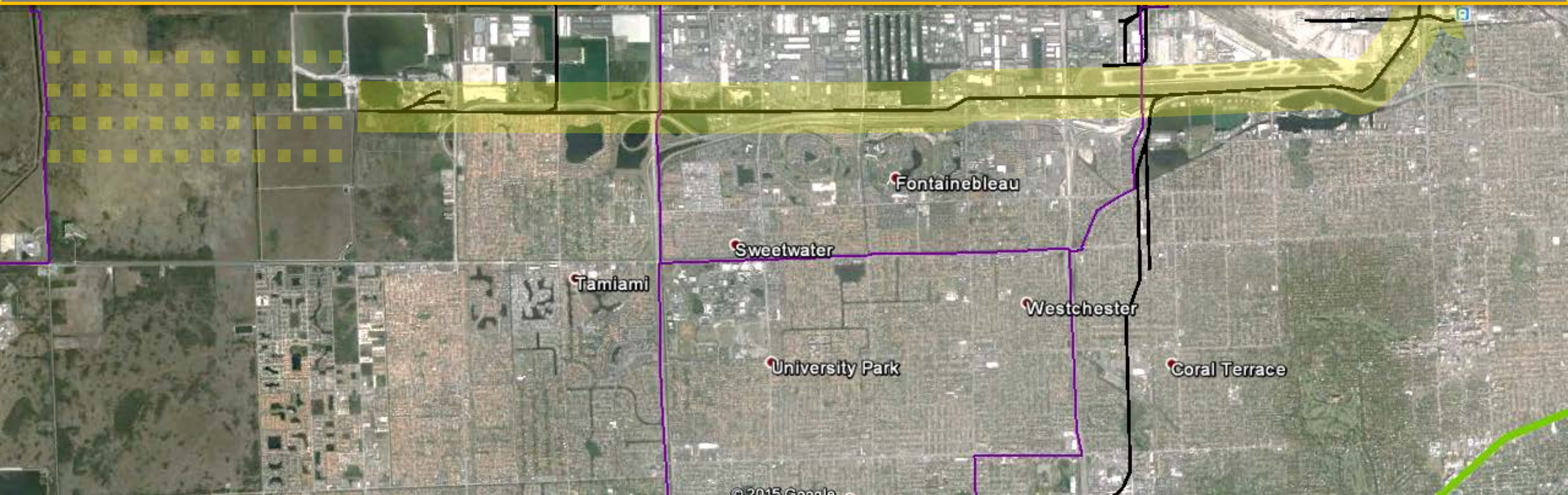
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Miami Intermodal Center	0.0	Transfer to Metrorail Orange Line

Required Infrastructure Improvements

- Renew ties and ballast on existing main tracks to FRA Class 3
- Bridge rehabilitation
- Install limited sidings where necessary for meets and overtakes
- Upgrade grade crossing warning systems
- Install CTC signal system and PTC
- Construct new stations and parking
- Passenger stations with mini-high platforms



Preliminary Cost Estimates For Start-up Concepts



Preliminary Capital Cost Estimates

- Based on FDOT Model for Tri-Rail Coastal Link
 - New track, upgrades to existing track, switch replacement
 - Signals, positive train control, grade crossing upgrades
 - Bridge rehabilitation
 - Land for stations and parking (\$20/ft² & 3.2x assemblage)
 - Assumes service will use vehicles in Tri-Rail's existing fleet
- Does NOT include:
 - Right of way from CSX
 - Parking at the proposed Turnpike Station
 - Rolling Stock: Will use Tri-Rail existing fleet

Preliminary Estimates of Operating Costs

- Based on FDOT/SFRTA Model for Tri-Rail Coastal Link
- Uses 2011 budget data
- Model update to 2015 figures underway
- Forecasts incremental cost to add service to existing Tri-Rail contracts
 - **Transportation:** crews, fuel, supervision, fare collection, passenger information
 - **Mechanical:** rolling stock maintenance parts and labor
 - **Maintenance of Way:** track, signal, stations, right of way
 - **Other:** insurance, legal, finance

Preliminary Cost Estimates

	<u>MIC to 132nd</u>	<u>MIC to 137th</u>
Track and Switches	\$14,000,000	\$15,000,000
Signals & Communications	\$8,000,000	\$8,500,000
Stations	\$13,000,000	\$11,500,000
Sitework, Utilities, Environmental & Grade Crossings	\$6,000,000	\$7,900,000
Sub-total Construction Elements	\$41,000,000	\$42,900,000
Property Acquisition (Stations and Parking)	\$28,000,000	\$26,000,000
Vehicles	\$0	\$0
Special Conditions, Mobilization, Temporary Facilities	\$4,000,000	\$4,000,000
Professional Services	\$14,000,000	\$14,500,000
Contingency	\$13,000,000	\$15,000,000
Sub-total Non-Construction Elements	\$59,000,000	\$59,500,000
Total Capital Cost	\$100,000,000	\$102,400,000
Annual O&M Costs	\$7,900,000	\$8,200,000

Terminus Station - 132nd or 137th Avenue

132nd Avenue

- ✓ Improved accessibility to residential neighborhood
- ✓ Lower Capital cost
- ✓ Lower O&M cost
- ✓ Allows for an additional intermediate station
- ✓ Better operational flexibility

137th Avenue

- ✓ Better regional accessibility
- ✓ Higher cost
- ✓ On the edge of developed area
- ✓ More reliant on auto access
- ✓ Potential operational implications



Next Steps

- August 2015 – SAC Meeting #3
- Complete Phase 1
 - Develop Ridership Forecasts
 - Refine Costs
- Phase 2 – Fall 2015
 - Develop and evaluate expansion options
 - Station Area Concept Plans
 - Visualizations
 - Recommendations

Schedule / Work Plan

Phase 1

Identify Long List
of
Alternatives

SAC
#1

Identify & Screen
Near Term
Alternative(s)

SAC
#2

Technical Studies

- Stations Locations
 - Ridership
 - Operating
 - Costs

SAC
#3

Preferred
Base
Alternative

May – June 2015

June 2015

July 2015

July 2015

July – August 2015

July 2015

August 2015

Phase 2

Identify Options
to Base Plan

Perform Technical Studies

- Station Area
Planning
- Roadway
Improvements
- Visualization

Feasible Options
Refined

Base Alternative
Refinements

SAC
#4

Draft Final Plan

SAC
#5

TPTAC
TPC
MPO Board

Detailed Analysis
on Preferred
Base Alternative

Sept. 2015

Sept./Oct 2015

Oct./Nov. 2015

Nov 2015

Dec. 2015

Jan 2016

Jan/Feb. 2016



CSX East-West Rail Feasibility Study

SAC Meeting # 2

Thursday July 16, 2015

JACOBS