Norfolk “Tide” LRT System
Weaving Transit in Downtown Norfolk

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Norfolk Tide LRT Alignment
Norfolk Tide LRT Alignment

• Key issues
  - Pre-Revolutionary War city with narrow roadways
  - Limited opportunity for transportation expansion
  - Traffic congestion in downtown
  - Limited areas for development
  - City not wanting to take land for parking
  - Engineering challenges
  - Environmental challenges
  - Historical challenges
Norfolk Tide LRT
System Characteristics

• 7.4 mile corridor with 11 stations
• $338 million capital cost
• 9 low-floor ADA compliant LRT vehicle
• Mostly at-grade operation
  – Downtown Norfolk (3 miles)
  – Abandoned Norfolk Southern freight line (4.4 miles)
Norfolk Tide LRT
Project History

• 1994
  – Began work with MIS on 18 mile alignment through Virginia Beach to Atlantic Ocean
• 2000
  – Minimal Operable Segment
• 2003
  – Supplemental DEIS completed
• October 2005 and April 2006
  – Final EIS completed and ROD
• October 1, 2007
  – Full Funding Grant Agreement
• January 2008
  – Construction started
• March 2011
  – Planned revenue operation
Norfolk Tide LRT
City Planning and Traffic Coordination

• LRT alignment in downtown constructed on lowest ADT roadways
• Early and often coordination with City of Norfolk staff
• Much of the success was due to no turnover of Norfolk planning and transportation staff
• City planned for implementation of the LRT project early
• Frequent meetings during planning and design resulted in a plan that was built around consensus
Norfolk Tide LRT
City Planning and Traffic Coordination

- Utilized multiple tools to define impacts to the downtown Norfolk street and parking system as well as development activities
  - Tools became more robust as the project went from planning to PE to final design to construction
- Sponsored trips to other LRT system cities
  - Similar LRT characteristics
  - Discuss LRT operation with transit agency and city staff
  - Baltimore, Denver, Salt Lake City, Portland
Norfolk Tide LRT
City Planning and Traffic Coordination

• City wanted to maintain as much access to parking and developments as possible while keeping the area safe for all users

• Fully documented all assumptions and decisions within meeting reports, field reviews, technical memoranda, and reports used during preliminary engineering, final design, and construction
Norfolk Tide LRT
Diagnostic Grade Crossing Safety Review

- Conducted grade crossing safety diagnostic review with city, state, and federal agencies
  - Recommended by FHWA as the preferred methodology but the process needed to be developed
  - Safety review initiated during Final Design
  - Office and field review of each crossing over a 6 month period
  - Preliminary design changed with review
Norfolk Tide LRT
Diagnostic Grade Crossing Safety Review

- Goals of the grade crossing safety diagnostic review
  - Provide all agencies and stakeholders with an opportunity to discuss potential grade crossing treatments and develop consensus on the design and protection recommendations
  - Provide recommendations to incorporate into the final design for each LRT grade crossing

- Safety diagnostic team continues to meet as the project is built and safety concerns arise
Medical Center Area

- EVMC - 20,000 employees
- Fort Norfolk - 700,000 sf commercial / 2,000 residential units
- Brambleton Ave. - 35,000 ADT
Medical Center Area

Direct skywalk connection to EVMC

Safe pedestrian / bus connection with walkway to station

Reconfiguration of intersection for safer pedestrian crossings and vehicular movement efficiency
Medical Center Area
York Street Area

Walk-on station with no bus facilities adjacent to historic district with bike path parallel to the LRT tracks

New developments being built around future LRT station means increased pedestrian activities
York Street Area

Close off through street and make more pedestrian friendly while still allowing access to residential and commercial land uses with “backage” streets.

Active warning devices for pedestrians installed along sidewalks and near station and street crossings.
York Street Area
York Street Area
York Street Area
Monticello Avenue Area

Monticello Avenue ADT approximately 4,500 per day

Front entrance to MacArthur Regional Mall with significant pedestrian crossing Monticello Avenue

Monticello Avenue also has theaters, arena, federal courthouse, community college, and new developments along the length of the street
Station designed to “push” transit riders to the nearest intersection and cross at designated crossings along with active warning devices.
Monticello Avenue Area

Need to allow vehicles to cross tracks to access parking garages and adjacent land uses.
Monticello Avenue Area
Plume Street Area

LRT to cross through Norfolk’s “busiest” intersection
Plume Street Area

Need to make transit riders follow walkways to the nearest intersection and cross at designated crossings along with active warning devices.
Plume Street Area
Plume Street ADT is about 3,000 vehicles per day

Need to allow vehicles to cross tracks to access parking garages and adjacent land uses
Government Center Area

LRT to cross Government Center Plaza
Government Center Area

Plaza area designed to “push” transit riders to designated crossing areas along with active warning devices.

Low clearance issue with OCS wire needed to be resolved with no trucks allowed and warning device.

Crossing of St. Pauls Boulevard must be at-grade while still allowing LRVs to cross and other vehicles not be caught on LRT tracks.
Harbor Park Area

AAA Orioles stadium seating about 14,000 persons

Major park-and-ride facility for the city with about 1,100 spaces

Active warning devices and police enforcement during game times
Harbor Park Area
Norfolk State University Area

Pedestrian connection to NSU and surrounding neighborhoods on east side of Brambleton Avenue

Grade separation recommended

Access to LRT Yard and Shop Facility
Norfolk State University Area
Norfolk State University Area
Ingleside Area

Walk-on station with no bus facilities adjacent to residential neighborhood

Ingleside Avenue ADT about 500 vehicles per day
Ingleside Area

Gated crossings and active warning devices added after meetings with neighborhood representatives.
Ingleside Area
Norfolk Tide LRT
Steps Completed During Construction

• Continue to work with the City of Norfolk staff to implement traffic engineering plans
• Manage traffic impacts in downtown during construction
• Testing of traffic and safety system before and after revenue operation
• Work on extensions to the Norfolk Tide LRT system
  – Virginia Beach
  – Norfolk Navy Base