Richmond Highway Bus Rapid Transit

Executive Committee Meeting #14

January 21, 2022

The Richmond Highway BRT project is funded in part by the Northern Virginia Transportation Authority.
County of Fairfax, Virginia

Agenda

• National Environmental Policy Act (NEPA)
• Updated Cost Estimate
• Request to Enter New Starts Engineering
• Right-of-Way Acquisition
• Public Involvement
• Turn Lane Analysis
• Station Design
  – Community Charm elements
  – Cladding material options
• 12-Month Outlook
NEPA Status

• FTA signed the Categorical Exclusion on January 7
• Key accomplishment of New Starts project development phase
• Allows right-of-way acquisition to commence
• Allows Ft. Belvoir to develop Record of Environmental Consideration (REC)
• Future re-evaluations expected to accommodate battery electric bus charging facilities and other design changes
Capital Cost Estimate Update Process

- **20% Design Estimate**
  - July 2019
- **30% Design Estimate**
  - (Up to $845M)
  - Early 2021
- **Cost Reduction Analysis**
  - Spring 2021
- **Value Engineering**
  - Summer 2021
- **50% Design Estimate**
  - December 2021

$730 million → $795 million
Key Causes of Increase

• Escalation due to schedule extension to accommodate VDOT widening project, right-of-way acquisition & utility relocation
  - 20% estimate YOE ➔ 2025-27
  - 50% estimate YOE ➔ 2030
• Active real estate market
• Switch to battery electric buses & charging equipment*
• Global construction materials markets**

Note: *Full evaluation still under investigation
**Impact of prevailing wages to be determined
Request to Enter New Starts Engineering

- Request submitted January 14, 2022
- Request includes:
  - Completed environmental document
  - Design plans
  - Project Management Plan
  - Cost estimate
  - Progress on third party agreements
  - Financial plan
  - Preliminary project rating
- Regular meetings with FTA & Program Management Oversight Consultant (PMOC) are on-going
  - KKCS World has been assigned as the PMOC
  - PMOC makes recommendation to FTA on “readiness” for engineering
- Entry expected fall 2022
Right-of-Way Status

- Process to begin Spring 2022
- Permission of Access letters to be sent to the property owners
- Whole Parcel Acquisitions are first due to complexity, relocation needs & schedule risk
  - Meeting held in October 2021 to discuss process.
  - Information can be found on BRT website
  - Additional meetings can be scheduled to assist property owners during the process
Public Involvement

• Right-of-Way public meeting held October 25, 2021
  • Acquisition process
  • Relocation benefits
  • Schedule

• Branding Reveal – February/March 2022
• Community Charm Conversations – Starting Spring 2022
• Turn Lane Analysis – Spring 2022
• Community pop-ups -- On-going
Turn Lane Analysis

• Board of Supervisors Design Endorsement included direction to review certain intersections for opportunities to reduce left and right turn lanes

• Analysis of turn lanes underway to determine if left/right turn lanes can be reduced

• Turn lane analysis will include:
  − Impacts to BRT & traffic operations
  − Opportunities to improve pedestrians/bike safety
  − VDOT coordination

Technical Analysis
October- End of January 2022

County Leadership Briefings
February/March 2022

Public Information Meeting
March/April 2022

BRT Executive Committee
April/May 2022

Public outreach to present findings & recommendations
Community Charm

Reflect the history, identity and character of the neighborhoods surrounding each station area.

Implement community representation by incorporating artwork from local high school students and/or artists.

Integrate artwork in each station that meets design parameters for an overall unified experience.
Background (Survey Results)

- Survey conducted in two segments from November 2020 to March 2021
  - Where should neighborhood identity elements be included at or near the station?
  - What neighborhood features do you think should be highlighted for each station area?
- Windscreen design (42%) was the most chosen station component to display community charm
  - Sculpture or panel (36%) came second
- Direction from BRT Executive Committee (04/16/21) was to focus on windscreen and plaza/art panel
  - Agreed on overall topics for stations (shown on next slide)
Survey Results for Station Focus Areas

- History of Richmond Highway, diverse culture, gateway to FFX and Old Town Alexandria, nature, Metro
- History & culture, nature, community crossroads
- Historic airport, view
- History & culture, Huntley Meadows Park
- History & culture, nature, Huntley Meadows Park
- Gum Springs/African American history

Legend:
- Orange: Richmond Highway BRT Project Limits
- Red: Richmond Highway BRT Stations
- Purple: Community Business Centers (CBCs)

- Original Mt. Vernon HS, County government
- History (Mt. Vernon, Woodlawn)
- Military culture & history
Recommendation for Windscreen

- Staff recommendation is to implement community ‘charm’ features in each station’s windscreen/backscreen and incorporated as part of the project.

- Benefits of using windscreen for community charm
  - Maintenance
  - Part of structure (funding)

- Project team has identified space for commissioned sculptures in the plaza that can be added in the future, by interested parties.
## Recommendation on Topics

<table>
<thead>
<tr>
<th>Station Area</th>
<th>Top Chosen Theme</th>
<th>Breakdown of Some Topics Given</th>
</tr>
</thead>
<tbody>
<tr>
<td>Huntington Metro</td>
<td>History and Culture</td>
<td>Gateway/Richmond Highway, local neighborhoods, historical figures</td>
</tr>
<tr>
<td>Penn Daw</td>
<td>History and Culture</td>
<td>Local businesses and motels, African and Latino cultures</td>
</tr>
<tr>
<td>Beacon Hill</td>
<td>Airport</td>
<td>Aviation history, vintage airplanes</td>
</tr>
<tr>
<td>Lockheed</td>
<td>Nature</td>
<td>Huntley Meadows park</td>
</tr>
<tr>
<td>Hybla Valley</td>
<td>History and Culture</td>
<td>Civil rights, local neighborhoods and businesses</td>
</tr>
<tr>
<td>Gum Springs</td>
<td>History and Culture</td>
<td>African-American history in Fairfax County, historical figures</td>
</tr>
<tr>
<td>South County Center</td>
<td>History and Culture</td>
<td>Original Mt Vernon HS, Latino community</td>
</tr>
<tr>
<td>Woodlawn</td>
<td>History and Culture</td>
<td>Quaker community, architecture, anti-slavery activism, historical figures</td>
</tr>
<tr>
<td>Fort Belvoir</td>
<td>Military/Army</td>
<td>Fort Belvoir</td>
</tr>
</tbody>
</table>
Proposed Community Charm Program (Outreach)

Hold two rounds of public meetings* with community members in a pop-up and informal environment.

**Round 1:**
Present the survey results, introduce windscreens as the design element and collect more specific input on the themes.

Coordinate with DPD and the History Commission on the topic for each station. Will also collaborate with ArtsFairfax at appropriate time.

Collaborate with the art department of local high schools West Potomac, Edison, Mount Vernon and Bryant for artwork in the windscreens.

**Round 2:**
Present one design from each high school for each of the nine stations and gather comments on which fits best with the community visioning for the stations.

*In-person depending on public health conditions and guidance*
Proposed Outreach Schedule

Winter/Spring 2022
Round 1 Meetings*

Spring/Summer 2022
Collaboration with other agencies

Fall 2022
Artwork/Design Submissions

Fall 2022
Round 2 Meetings*

*In-person depending on public health conditions and guidance
## Windscreen Design Parameters

<table>
<thead>
<tr>
<th>Vertical windscreen/ backscreen</th>
<th>Planar (not sculptural)</th>
<th>Laminated in between glass and transparent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feasible per engineering and ADA design standards</td>
<td>Design does not take up entire windscreen to allow natural light</td>
<td>May be incorporated with other designs (i.e. map)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abstract vs traditional artwork design</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Windscreen Design Precedents

ABSTRACT

Harris Teeter in Meadowmont by Gabriela Amaya-Baron

South Columbia St. at UNC Health Sciences Library by Ingrid Erickson

TRADITIONAL

Ephesus Church Road at Hamlin Park by Kiara Sanders

Martin Luther King Jr. Blvd & Stateside Dr. Tarish Pipkins
Next Steps

Ask Executive Committee to vote on windscreen recommendation (today)

Continue coordinating with local high schools for interest in the design process and submission

Begin preparing for first round of public meetings
BRT Station Cladding Materials

- Design Criteria
  - Low Maintenance
  - Durability
  - Long life-cycle
  - Appearance requirements front and rear: color and finish
  - Constructability
## Options Evaluation

### Comparative Matrix

<table>
<thead>
<tr>
<th>Material Properties</th>
<th>Aluminum Composite Material</th>
<th>High Density Fiber Cement</th>
<th>Glass Fiber Reinforced Concrete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>A rigid sheet made of two sheets of pre-finished aluminum, bonded to a polyethylene core.</td>
<td>A sheet product made of a combination of fine sand, cement, polymer, water, and cellulose fibers.</td>
<td>A cast product, combination of fine sand, cement, polymer, water, other admixtures and glass fibers.</td>
</tr>
<tr>
<td>Solid Color</td>
<td>Simulated Wood and Dark Grey-Blue</td>
<td>Warm Wood Tones and Dark Grey-Blue</td>
<td>Warm Wood Tones and Dark Grey-Blue</td>
</tr>
<tr>
<td>Wood Grain</td>
<td>Simulated Wood</td>
<td>Texture</td>
<td>Texture</td>
</tr>
<tr>
<td>Metallic</td>
<td>Navy Blue, Dark Grey</td>
<td>No, Flat only</td>
<td>No</td>
</tr>
<tr>
<td>Scratch Resistance</td>
<td>3/5</td>
<td>5/5</td>
<td>5/5</td>
</tr>
<tr>
<td>Anti Graffiti</td>
<td>5/5 Coating Needed</td>
<td>5/5 1 initial coating only</td>
<td>5/5 Coating Needed</td>
</tr>
<tr>
<td>Drip Proof</td>
<td>3.5/3</td>
<td>5/5</td>
<td>5/5</td>
</tr>
<tr>
<td>Maintenance</td>
<td>4.5/5 Annual Cleaning</td>
<td>4.5/5 Annual Cleaning</td>
<td>4/5 Coating Re-apply every 3-5 Year</td>
</tr>
<tr>
<td>Warranty</td>
<td>Std: finish - 20 yr, Panel -10 yr (can be ext'd)</td>
<td>10-15y (can be ext'd)</td>
<td>10-15y</td>
</tr>
<tr>
<td>Curve Surface</td>
<td>2D, Rolled, bent</td>
<td>No, Flat only</td>
<td>3D, Flexible</td>
</tr>
<tr>
<td>Cost+Installation</td>
<td>50-60/sf</td>
<td>45-55/sf Expose Fastener 75/sf concealed</td>
<td>70-80/sf</td>
</tr>
</tbody>
</table>
| Pros                | • Multiple color and finish choice.  
  • Light weight.  
  • Large panel size. | • Cost is relatively low.  
  • Lighter weight than GFRC.  
  • High durability. | • Very High durability.  
  • Less maintenance cost,  
  • Flexible form. |
| Cons                | Finish easy to me scratched. Curve panel and joint will be less controled. | Limited to Flat Areas. Only Matt and Satin finish | Higher intial cost. Heavier weight. Only Matt finish |
High Density Fiber Cement

Fiber cement is a composite material made of cement reinforced with cellulose fibers.

**FINISH:** Glossy to not glossy

**WEIGHT:** 3lbs/sf, Panel+frame - 7 lbs/sf

**DURABILITY:** Good, impact and scratch resistant (Comp-10,000 psi, Ten-1,600psi)

**MAINTENANCE:** Minimal maintenance needed

**LONGEVITY:** Color, finish and panel long term stability

**WARRANTY:** 10-15 year + Extension

**COST:** Material, fabrication and installation - $45-$55 (exposed), $75 (concealed)

**PROS:**
- High durability / longevity
- Resistant finish and color
- Low cost
- Light weight
- No requirement for Anti-graffiti sealer

**CONS:**
- Flat panel only
- Matt to satin finish only

Linda Ridge
Montalba Architects
Pasadena, CA, USA

Lakeside Diamond House
MOA Martin Oibascher
Austria

Airport Extension
Lucas Burgsamer
Bolzano, Italy

Metro Station
Burmeiser Arquitectos Consultores S.A
Santiago, Chile
Glass Fiber Reinforced Concrete (GFRC)

GFRC is a combination of a mixture of fine sand, cement, polymer (usually an acrylic polymer), water, other admixtures and alkali-resistant (AR) glass fibers. GFRC is known for its capability to do complicated forms, and for its high strength weight ratio.

**FINISH:** Matt

**WEIGHT:** 7-8 lbs/sf, Panel+frame-9-13 lbs/sf

**DURABILITY:** Very Good, Impact and scratch resistant (Comp-10,000 psi, Ten.1,500 psi)

**LONGEVITY:** Color, finish and panel long term stability

**MAINTENANCE:** For graffiti resistance- 3 to 5 year application of sealer

**WARRANTY:** 1 year + Extention

**COST:** Material $35-45/sf, Material+installation $70-80/sf

**PROS:** High durability / longevity Can form to radius Resistant finish and color

**CONS:** Higher initial cost Higher weight Matt finish only

Rockville Metro Station
WMATA
Rockville, MD

Crossrail Station
Atkins Architects
London, UK

The Johnson Controls Headquarters Asia Pacific
Gensler
Shanghai, China
Preferred Alternative: Fiber Cement and GFRC

Taking advantage of Fiber Cement's durability, longevity and extensive range of finishes and colors, and competitive cost, we are proposing the use of fiber cement panels for all cladding with the exception of the radius wall facing the busway. In this location, GFRC, being a cast product will provide a clean – and extremely durable surface exposed to wear, scratches, graffiti, and potential impact by users.
Station Renderings

Perspectives from Roadway
12-Month Outlook

- Branding rollout (Winter 2022)
- Bus propulsion technology review (Winter 2022)
- Complete 60% roadway & station design (Spring 2022)
- Approval to Enter FTA Engineering (Fall 2022)
- Right-of-way acquisition/demolition (Ongoing)
- Third Party coordination (Ongoing)
- Utility coordination (Ongoing)