



County of Fairfax, Virginia

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# American Society of Highway Engineers (*ASHE*) Transportation Project Development A Locality's Perspective

Presented by

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Chief, Transportation Design Division (TDD)

Fairfax Count Dept. of Transportation (FCDOT)

February 8, 2023

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# Transportation Project Development A Locality's Perspective

## Agenda

- Brief Program Update
- Consultant Selection
- Project Development Issues – QA/QC
- Project Overview- Richmond Highway Bus Rapid Transit (BRT)

**If we have time!**



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# Transportation Project Development A Locality's Perspective

- Delays in Program Implementation
  - COVID – funding stream uncertainty; not what we expected
  - Inflation – significant impact
  - Overruns and ‘overcommitment’ particularly on Bike/Ped Program
  - Deferred/delayed implementation of a number of ‘approved’ projects
- Examples:
  - Old Courthouse Road/Besley Road
    - Original project estimate was \$3.3M
    - Current estimate is \$18M



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# Transportation Project Development A Locality's Perspective

- Aggressively pursuing other funding sources
  - Approx. 2,500 unfunded Bike/Ped projects alone
  - RAISE Grants – unsuccessful on 1<sup>st</sup> attempt
  - Safe Streets for All (SS4A) - \$30M/year for up to 5 years (unsuccessful)
  - NVTA – Awarded \$336.2M in FY2022-2027 SYP for 6 projects (4 already underway)
  - SmartScale – Round 5 pending CTB
- Board of Supervisors Approved \$100M in General Fund \$ for bicycle and pedestrian projects countywide - \$30M already appropriated
  - Includes some funds for Maintenance and Safety
  - Initial List of 18 new Projects approved by BOS – “Quick hit” projects
  - Working on list of 30+ new Projects and Funding for March BOS Meeting



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# Transportation Project Development A Locality's Perspective

- NVTAs Awards - \$336.2M
  - Fairfax County Parkway Widening – Nomes Ct. to Route 123- \$108M (VDOT)
  - Route 1 Widening – Mt. Vernon Mem. Highway to Sherwood Hall Lane - \$60.207M (VDOT)
  - Richmond Highway Bus Rapid Transit - \$80M (FCDOT)
  - Soapstone Drive Extension – Sunrise Valley Dr. to Sunset Hills - \$73.79M (VDOT)
  - Seven Corners Ring Road (Phase I) - \$4.2M **(NEW) (FCDOT?)**
  - 8 Battery Electric Buses for Fairfax Connector - \$10M **(NEW)**



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# Transportation Project Development A Locality's Perspective

- Program Implementation – Consultant Services/Contracts
- 95%+ of Design performed by On-Call Consultants
  - Transportation Design Division (TDD)
    - Nine (9) On-Call Firms – in 3<sup>rd</sup> year of 5-year term
    - 3<sup>rd</sup> year expires October 2023
  - Anticipate issuing RFQ for next TDD On-Call in early Spring 2025
  - Pending Standalone Contracts
    - Route 1 Bus Rapid Transit – Pre-Award Engineering Support, Independent Assurance (IA), Verification, Sampling and Testing (VS&T) services (essentially QA services during construction)
    - Anticipate RFQ in Winter 2024/2025



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# Transportation Project Development A Locality's Perspective

- Capital Projects and Transportation Planning Divisions (CPTED/TPD)
  - Nine (9) On-Call Firms – in 5<sup>th</sup> year of 5-year term
  - Transportation Planning, Design and Engineering
    - Transportation Planning and Analysis (9)
    - Transportation Design and Engineering (8)
    - Transit Planning and Analysis (7)
  - 4<sup>th</sup> Year expired on 2/5/23
  - Anticipate RFP/RFQ for next CPTED/TPD On-Call in Spring/Summer 2023



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# Transportation Project Development A Locality's Perspective

- Major Projects in Current Program:
  - Route 28 Widening (Design-Build) (LAP) – Prince William County Line to Route 29 - \$78.8M (CN Underway)
  - Lincoln Street – Magarity Road to Old Meadow Road - \$48M (Prelim. Design)
  - Shirley Gate Road Extension – Fairfax County Parkway/Pope's Head Road Interchange to New Braddock Road – \$29M (Prelim. Design)
  - Balls Hill Road/Old Dominion Drive - \$21M (Prelim. Design)
  - Wiehle Ave./W&OD Trail Grade Separation (LAP) - \$14.3M (CN Awarded)
  - Cinder Bed Road Bikeway (LAP) - \$15M (RW underway)
  - Mount Vernon Memorial Highway Walkway - \$9.9M (CN underway)
  - Innovation Station Neighborhood Access - \$8.1M (RW Phase pending)





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# Transportation Project Development



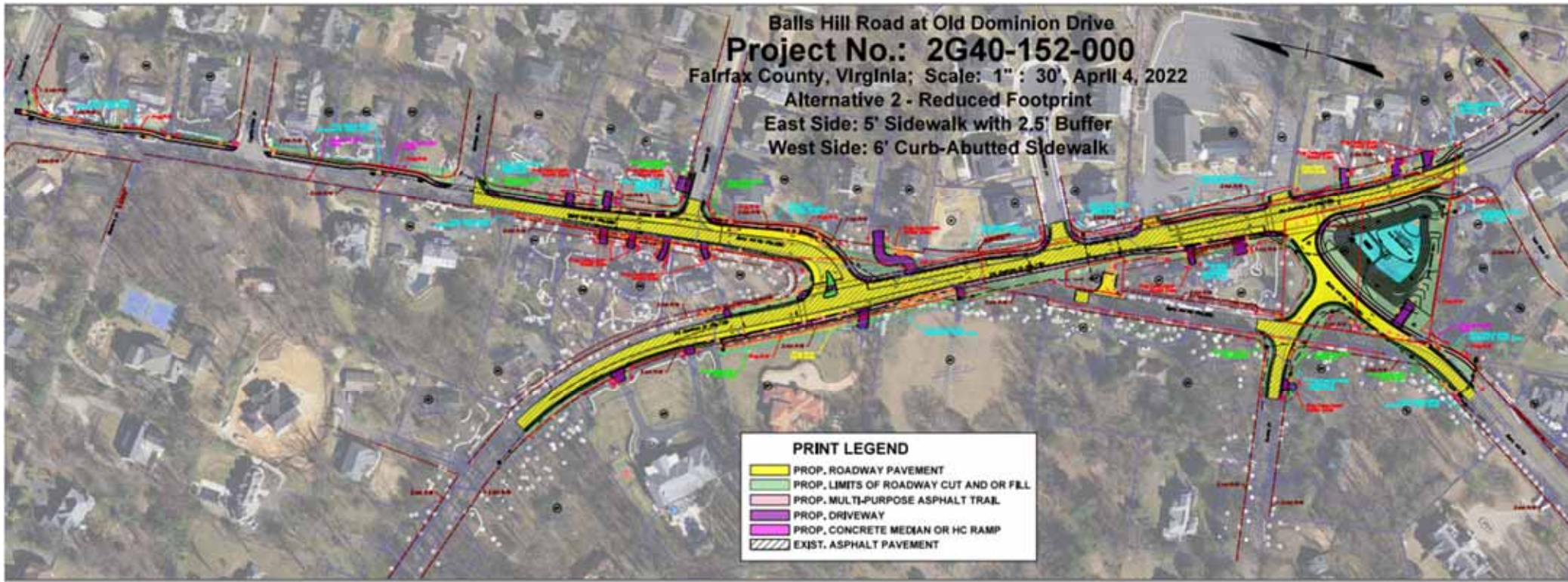
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Rendering of Proposed Pedestrian Bridge Over Wiehle Avenue  
Looking North from Sunset Hills Road

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# Transportation Project Development



## Innovation Station North Neighborhood Access

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# Transportation Project Development A Locality's Perspective

- Challenges Ahead:
  - Funding
  - Pressure to complete projects quickly
  - Staffing (TDD Only)
    - 8 Existing Vacancies – 5-PM Eng. III's; 1-Sr. PM Eng. III; 2-Sr. PM Eng. IV's
    - 4 Pending Retirements – Division Chief; 1 Eng. V Section Chief; 1 Eng. IV; 1 Planner II;
  - FCDOT Director retiring May 3, 2023!
  - New Political Climate – at least 2 new Board members come November 2023!



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# Transportation Project Development A Locality's Perspective

- Challenges Ahead:



**Northern Long-Eared Bat**

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# CONSULTANT SELECTION

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# Transportation Project Development A Locality's Perspective Consultant Selection

- Process
  - Professional Services - Standard Qualifications Based Process
    - Defined by State Code - Architecture, Engineering and Surveying
    - SF-330 Parts I & II
    - Request for Qualifications (RFQ) – VDOT Template(s)
  - Non-Professional/Consultant Services
    - Planning is considered a Consultant Service (Traffic Engineering is a Professional service)
    - Can/Could include price-based selection criteria





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# Transportation Project Development A Locality's Perspective

- What We (“I”) Look for:
  - VDOT Experience – particularly w/NOVA District
    - You are not just working for FCDOT, but for VDOT as well!
  - VDOT Locally Administered Project (LAP) Experience
    - In NOVA District in particular!
    - Personnel with VDOT LAP and Environmental Certifications
  - Technical Expertise of Personnel/Team
    - Matches FCDOT's Program and/or Project needs
  - Experience on projects that include:
    - Fairfax County SWM Ordinance and requirements
    - Land Development Services (LDS) review and approval processes



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# Transportation Project Development A Locality's Perspective

- What We (“I”) Look for (cont.):
  - Include Specific Roles and Responsibilities of Personnel and Firm
    - Resumes and sample Projects **Don't be George Santos!**
  - Well thought out Organization Chart
    - Don't just throw lots of staff/sub-consultants and resumes into the SF-330
  - We Select People – not just ‘Firms’



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# Transportation Project Development A Locality's Perspective

- How we Distribute Work to On-Calls
  - Unique Aspects of the project Scope of Work
    - Technical requirements of the project
  - Familiarity with Project Area
    - Completed projects in vicinity of Project before
    - Familiar with anticipated project Stakeholders
  - Performance on Previous Task Orders
  - Workload
    - \$ of Task Orders to date
    - # of Task Orders to date



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# PROJECT DEVELOPMENT ISSUES QA/QC



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# Transportation Project Development A Locality's Perspective

- Project Development Issues - QA/QC
  - FCDOT does not have technical experts in all fields
    - Ex: No Geotechnical or Structural Engineer on staff in FCDOT
  - We heavily rely on Consultants for QA/QC
  - Plan Development/Presentation should follow VDOT Standards
    - CADD Standards
    - Plan Assembly
    - Geometric Design Guidelines
    - Road Design Manual
    - Instructional & Information Memoranda (IIM's), etc.



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# Transportation Project Development A Locality's Perspective

- Project Development Issues - QA/QC (cont.)
  - Avoid Plan Clutter
  - Requesting additional \$ to complete standard design tasks
    - AutoTurn, sight-distance, and/or stopping sight distance exhibits
  - Comment Resolution
    - Backcheck comment resolution form and actual plan sheets
    - Responses to comments are inadequate, unclear or lack sufficient detail
    - Comment resolution forms submitted AFTER the plan submittal
  - Erosion and Sediment Control
    - Reviewed and Approved by FCDOT (VDOT does not review)
    - Prepared Signed and Sealed by certified Consultant staff
    - E&S Phases – should have same # of Phases as the MOT



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# Transportation Project Development A Locality's Perspective

- Project Development Issues - QA/QC (cont.)
  - Curb Ramp Design & Details (CG-12's)
    - Follow VDOT I&IM/RDM requirements
    - Pedestrian vs. Bicycle wants and needs often conflict
  - Utilities
    - Test pit data on storm drain profiles and x-sections
    - Adding test pit data when additional test pits are required
    - Utility Service Lines
      - Water, Gas, Sanitary Sewer Laterals!!



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# Transportation Project Development A Locality's Perspective

- Project Development Issues - QA/QC (cont.)
  - Estimates
    - Earthwork Summary for Phased Construction
    - VDOT Cost Estimating Workbook (CEWB)
      - Complete (all fields filled in)
      - **Latest version (February 2023!)**
      - Schedules input for PE, RW and CN in order to compute Inflation factors
      - Assumptions noted/explained
      - Backup/details of quantity takeoff(s)
      - Backup/details on source of Unit Prices and/or how derived
      - Appropriate Inflation and Contingency Factors





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# Transportation Project Development A Locality's Perspective

- Project Development Issues - QA/QC (cont.)
  - Design Problems/Alternatives
    - You're the 'experts'
    - Propose solutions – develop alternatives/options, do the analysis, and make a recommendation
  - Design Revisions/Progression
    - Changes to one part of design not followed through or coordinated with other disciplines that are impacted by the change
    - Drainage calcs./report updated but not the plans
      - Ex. – Drainage calcs updated but Project Data Sheet not updated accordingly (nutrient credit requirements per calcs don't match plans)



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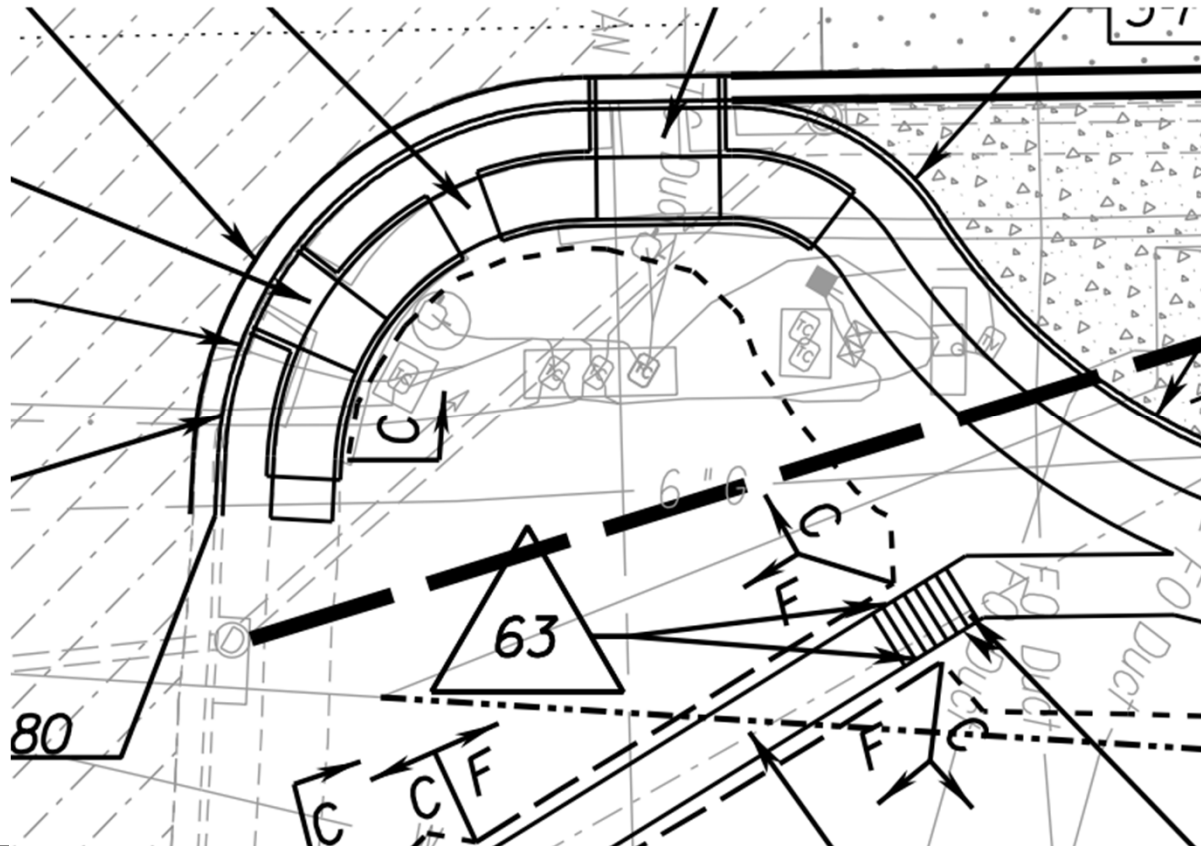
# Transportation Project Development A Locality's Perspective

- Project Development Issues - QA/QC (cont.)
  - Technical/Misc. Issues
    - Ditches at top of retaining walls in cut slopes
    - Inlets not deep enough for UD-4's to tie in where undercut is required
    - Storm Drains Systems – width of trench/work area not accounted for in setting construction limits, RW/Easement needs and/or impacts to existing features
    - Driveways
      - Slopes
      - Construction limits along driveways perpendicular to the roadway
    - Pavement sawcut lines on radii
    - Proposed fence lines on radii



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# Transportation Project Development



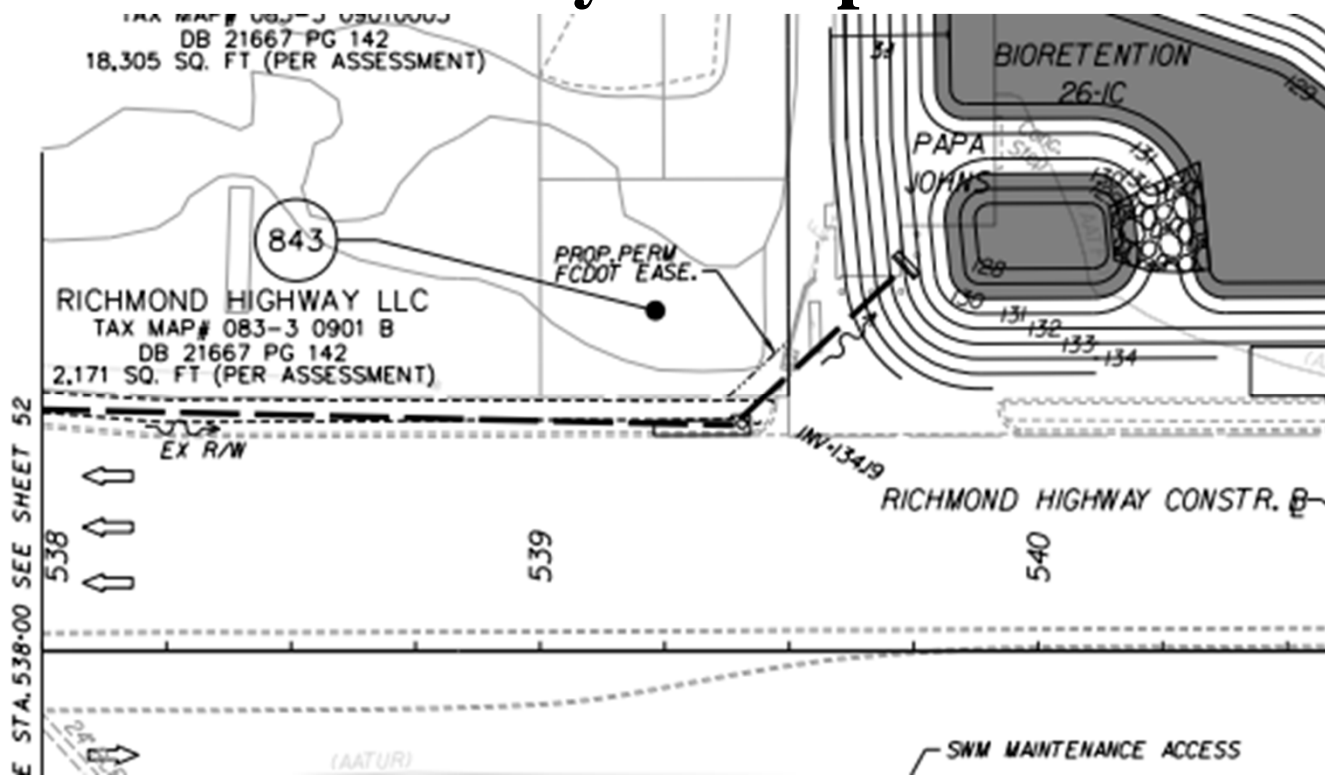
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# Transportation Project Development A Locality's Perspective

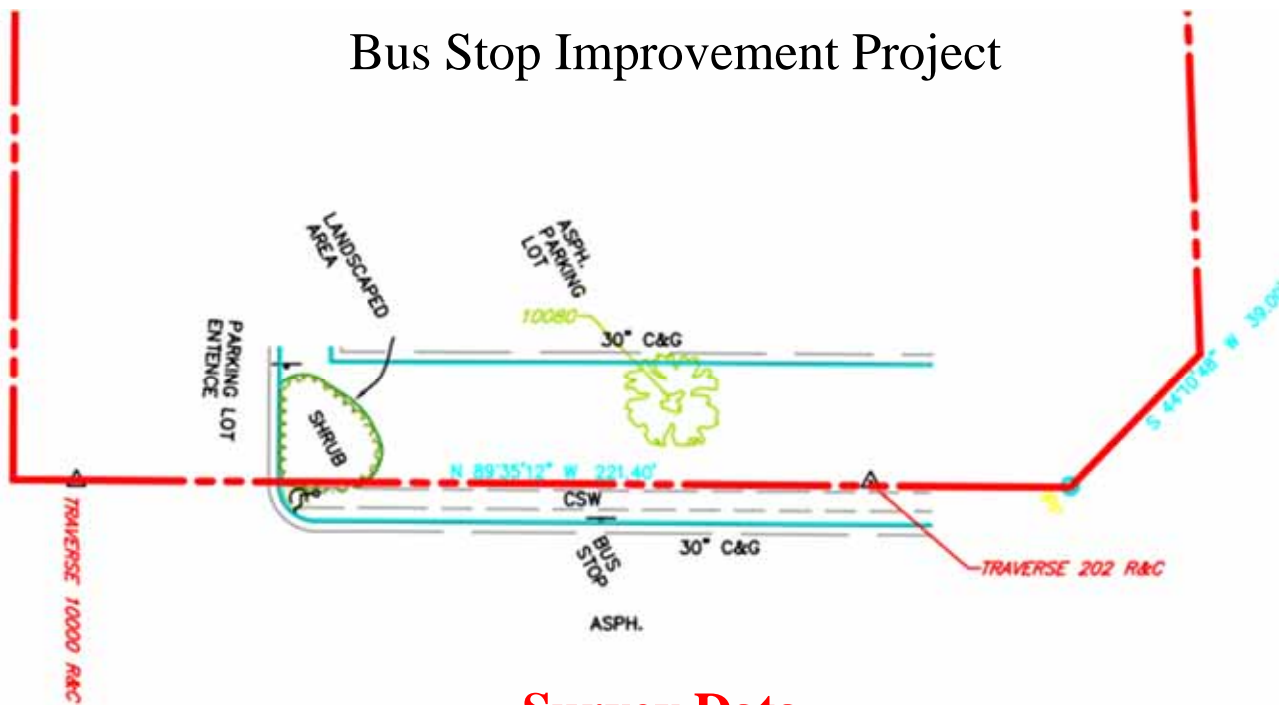




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# Transportation Project Development A Locality's Perspective

## Bus Stop Improvement Project



### Survey Data

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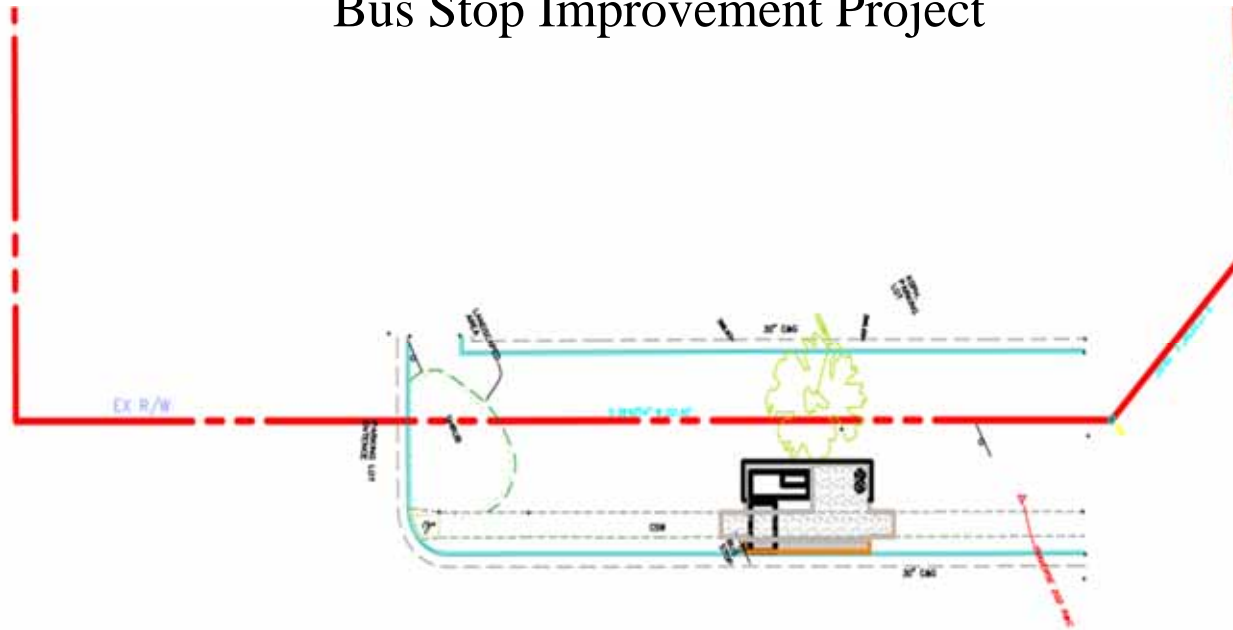




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# Transportation Project Development A Locality's Perspective

## Bus Stop Improvement Project



**Design File**

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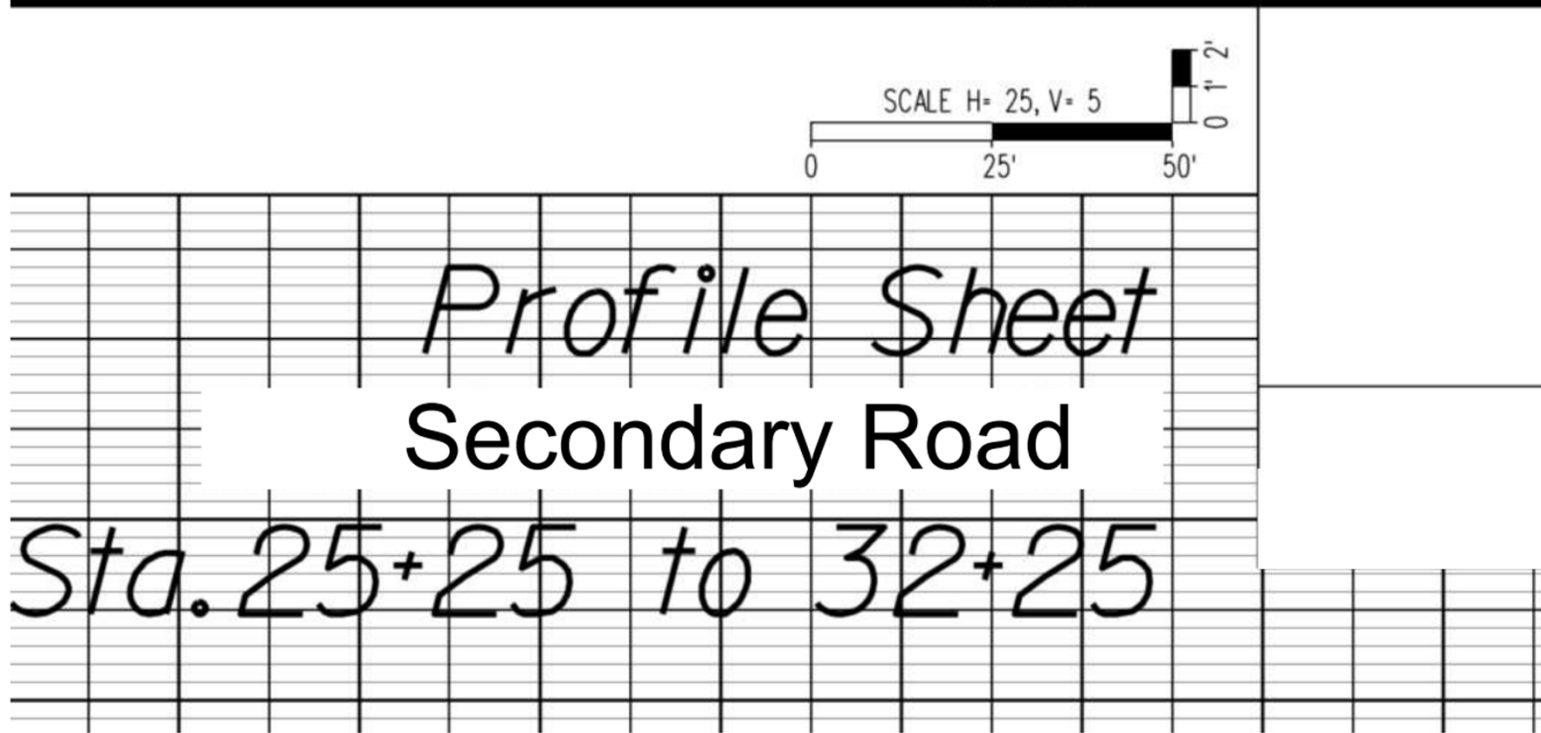




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# Transportation Project Development

LIMITED ACCESS HIGHWAY By Resolution of Highway Commission dated  
Apr. 17, 1980



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# Transportation Project Development A Locality's Perspective

Has computerization made us 'lazy' with design?

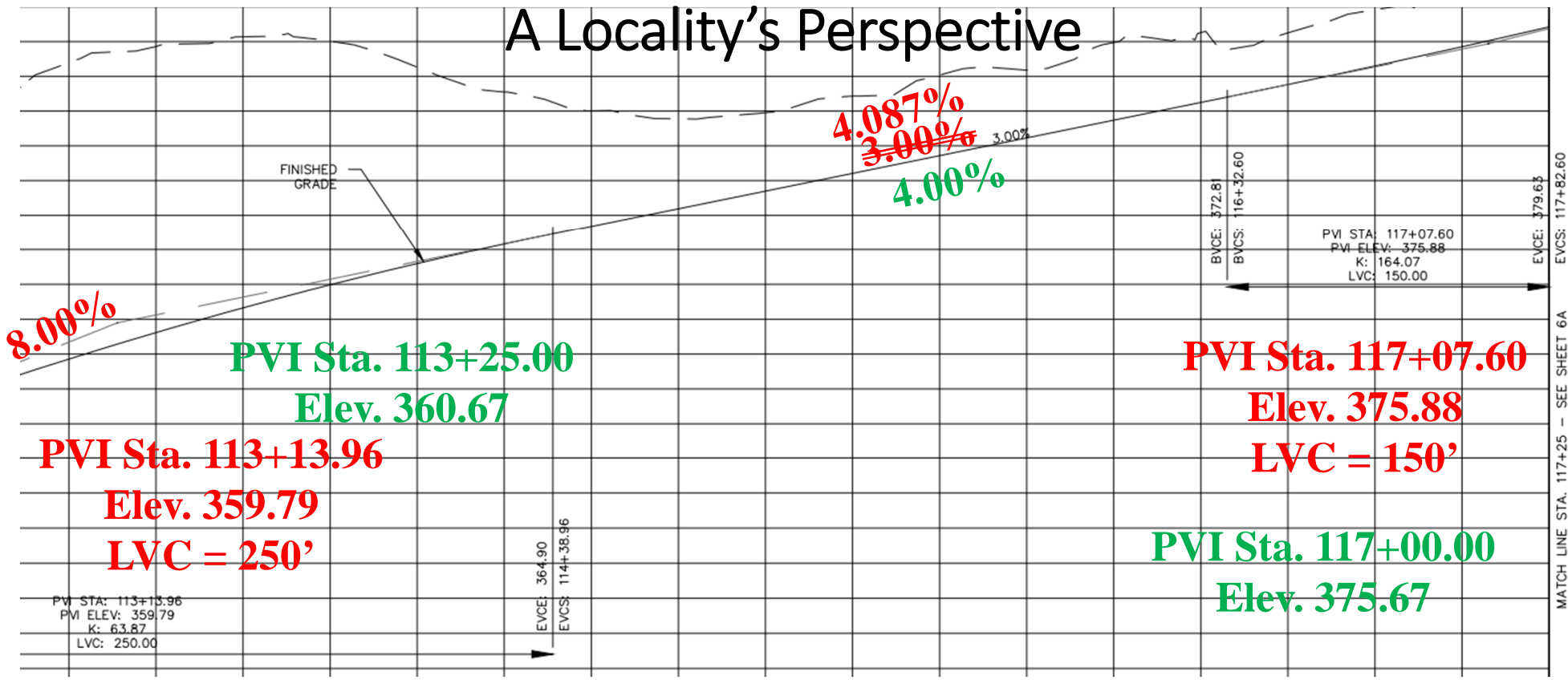
- Think before we put 'pen to paper'
- "Garbage in – Garbage Out" (GIGO)
  - Just because the computer spits out an 'answer' doesn't make it the best solution.
- VDOT Road Design Manual – Appendix A1, page A1-31  
"Gradients are to be computed to as few decimal places as possible and should be in numbers evenly divisible by four, where feasible."





# Transportation Project Development

## A Locality's Perspective





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# Transportation Project Development A Locality's Perspective

- Project Development Issues - QA/QC (cont.)
  - Contract/Task Order Issues
    - Preparation and negotiating Task Orders taking too long. What is appropriate time frame? 2 months?
    - Requesting allowances or contingency to correct sub-standard work, address design comments, and/or complete design standard tasks
    - Not keeping up with and following VDOT guidance and directives (I&IM's)
      - Sidewalks/Trails at 1.5% cross slope
      - Temp. Rumble strips on two-way two-lane flagging operations (TMP)
      - **Ped Facilities – RDM Changes App. A(1) Section 2 (June 2022)**
    - Be Proactive rather than Re-active



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# Transportation Project Development A Locality's Perspective

- Project Development Issues - QA/QC (cont.)
  - Contract/Task Order Issues
    - Multiple submittals required to complete a plan milestone
      - 2-3 submittals required to get VDOT RW Authorization
      - 4-5 submittals required before getting clearance for VDOT LUP (100% Plans)
    - We want the Consultants “A Team” designing our project
    - We recognize Consultant workload and prioritization needs and issues but if “B” or “C” team is assigned to the project, increased oversight and QA/QC is needed.  
(at no extra cost 😊)



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Questions? Comments?

**Do we have time to move on?**



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# PROJECT SPOTLIGHT

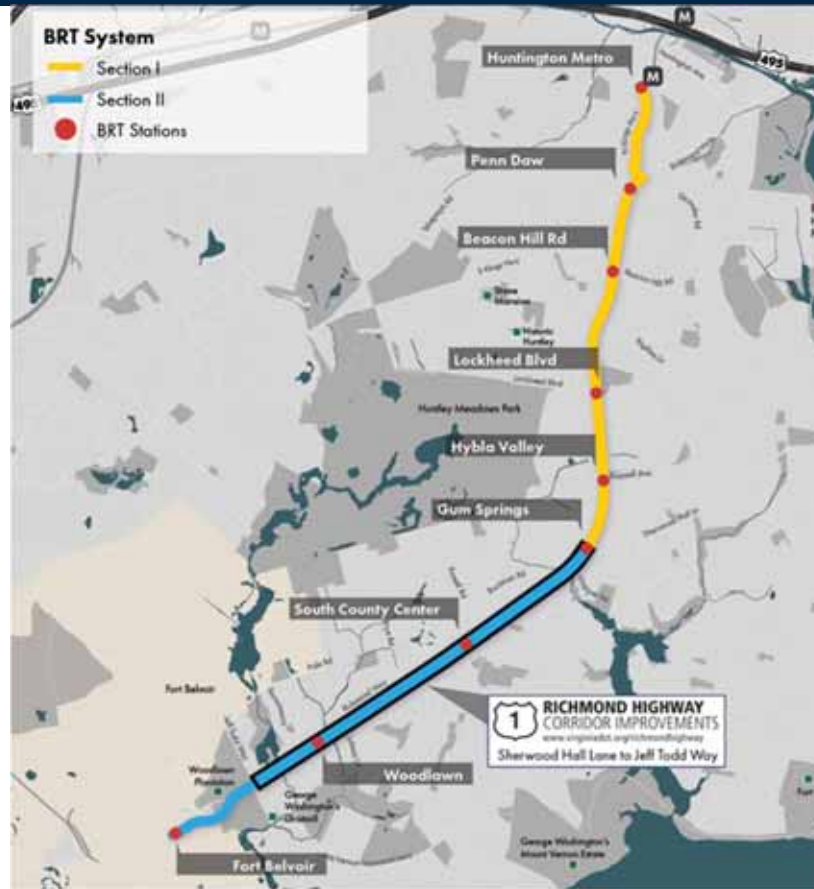
## *RICHMOND HIGHWAY BUS RAPID TRANSIT (RHBRT)*



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# Richmond Highway Bus Rapid Transit

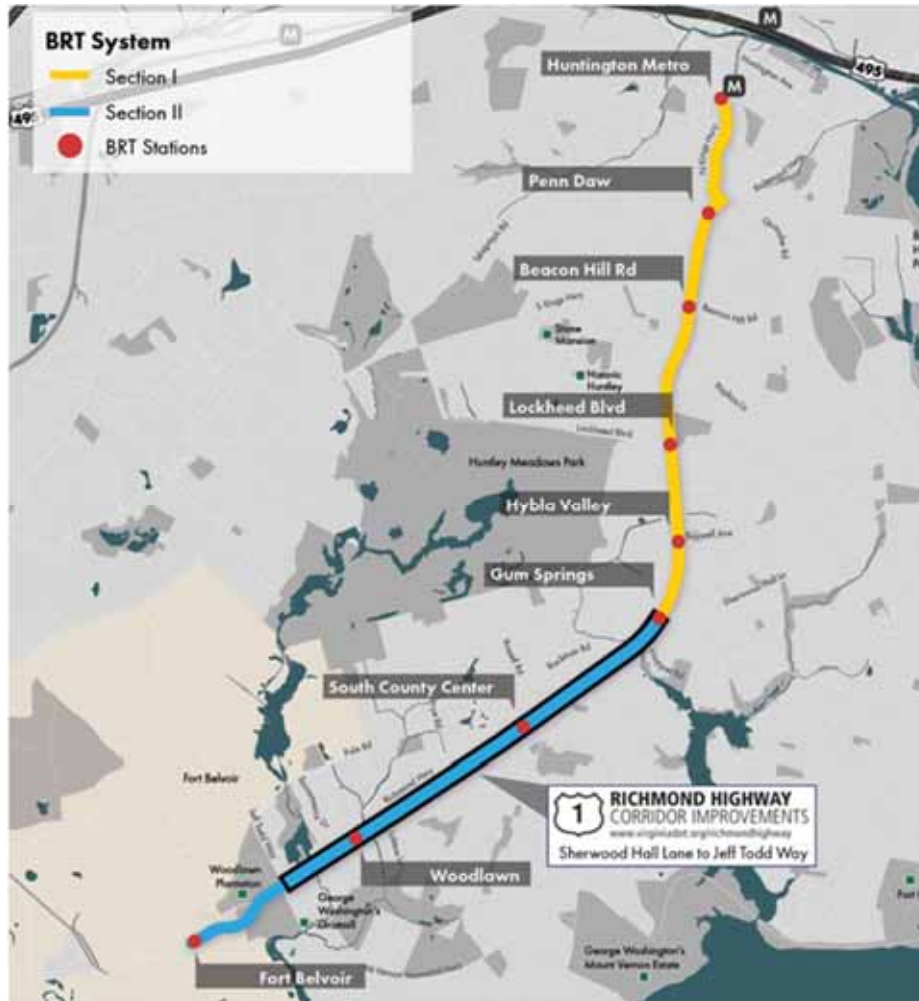


*The Richmond Highway BRT project is funded in part by the Northern Virginia Transportation Authority.*





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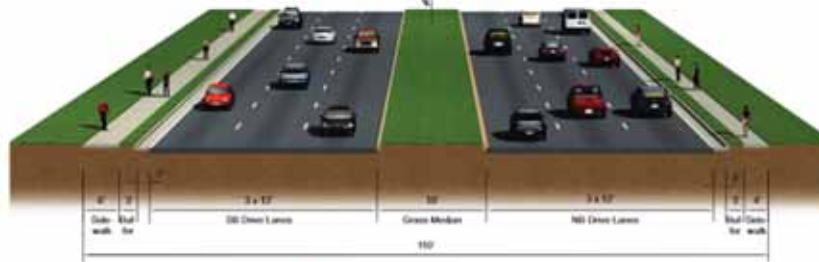
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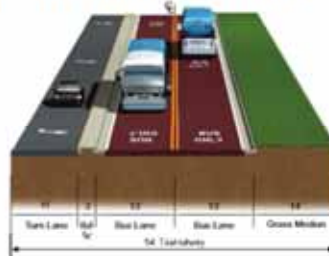
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**EXISTING CONDITION**



**PROPOSED CONDITION WITH TURN LANE**



**PROPOSED CONDITION**



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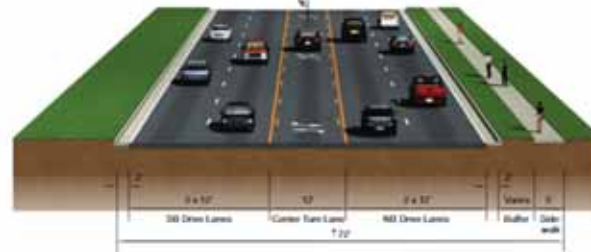




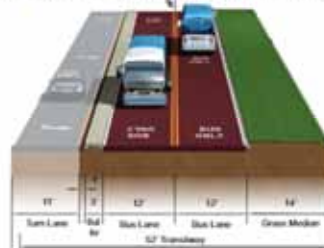
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**EXISTING CONDITION**



**PROPOSED CONDITION WITH TURN LANE**



**PROPOSED CONDITION**



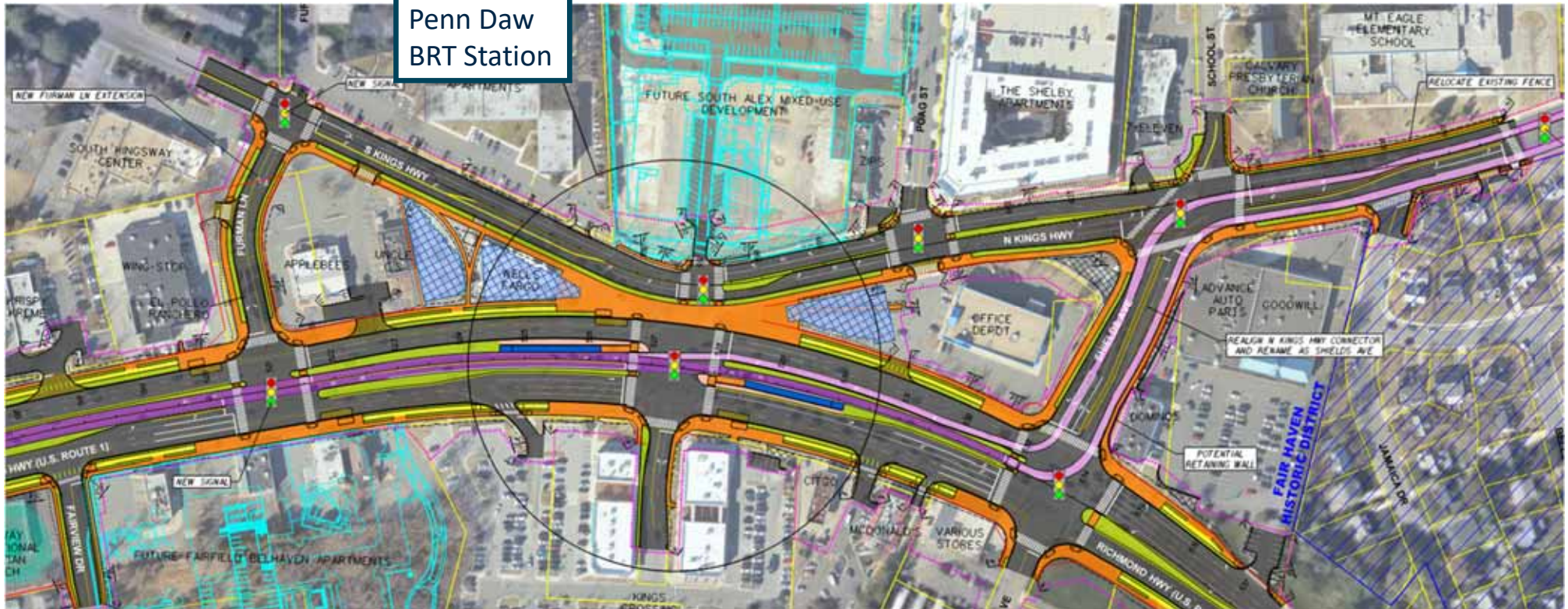
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Penn Daw  
BRT Station



## North Kings Highway Intersection Improvements (@ Shields Ave)



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## North Kings Highway Intersection Improvements (@ Shields Ave)



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## Relationship between North and Southbound BRT stations



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## TYPICAL BRT STATION



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## TYPICAL BRT STATION



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## Estimated Risk Adjusted Project Cost

<b>Management/Engineering/CM/Startup</b>		<b>\$176.06M</b>
<b>Right-of-Way Acquisition</b>		<b>\$176.87M</b>
	Land Rights	\$165.59M
	Relocation Assistance	\$8.28M
<b>Vehicles (Electric Buses)</b>		<b>\$53.02M</b>
<b>Maintenance Facility</b>		<b>\$24.78M</b>
<b>Transitway Construction</b>		<b>\$432.18M</b>
	Stations	\$57.50M
	Roadway/In-Plan Utilities	\$345.78M
	Systems	\$28.90M
<b>Unallocated Contingency</b>		<b><u>\$74.15M</u></b>
<b>Total Project Estimate</b>		<b>\$937.05M</b>



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## Design/RW Status

### • Design

- Currently in Project Development
- 60% Plans Submitted
- Anticipate “Entry into Engineering”
- 80% Design Submittal
- 100% Design/Final Plans

April 2022  
March/April 2023  
June 2023  
June 2024

### • Right-of-Way Acquisition

- Broken into Groupings
- Groups 1-PT – Total Takes and Relocations
- Groups PA-PD – Partial Takes
- RW Acquisition Complete

June 2022 – Oct. 2025  
Oct. 2023 – March 2026  
March 2026



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## Utilities

- **Sanitary Sewer**
  - 30% Design Underway
  - Separate/Advanced Construction Contract
- **Watermain Relocation – In-Plan**
  - 50% Plans under review
- **Private Utilities**
  - broke into Zones (A-F) from North to South
  - Relocation to begin in Zone A and move southward
  - Utility Relocation NTP
  - Utility Relocation Complete

March 2024  
February 2029



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## Contracting/Procurement

- **Bus Maintenance Facility**

- Bid Advertisement
- Construction NTP

October 2026

January 2027

- **Vehicle Acquisition**

- Issue Vehicle IFB
- Notice to Proceed
- Vehicle Delivery Complete

March 2028

September 2028

June 2031



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## Contracting/Procurement

- **Construction Bid Advertisement** September 2025
- **Full Funding Grant Agreement (FFGA)** June 2026
- **Construction NTP** August 2026
- **Substantial Completion** March 2030
- **Begin Revenue Service** July 2031



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