

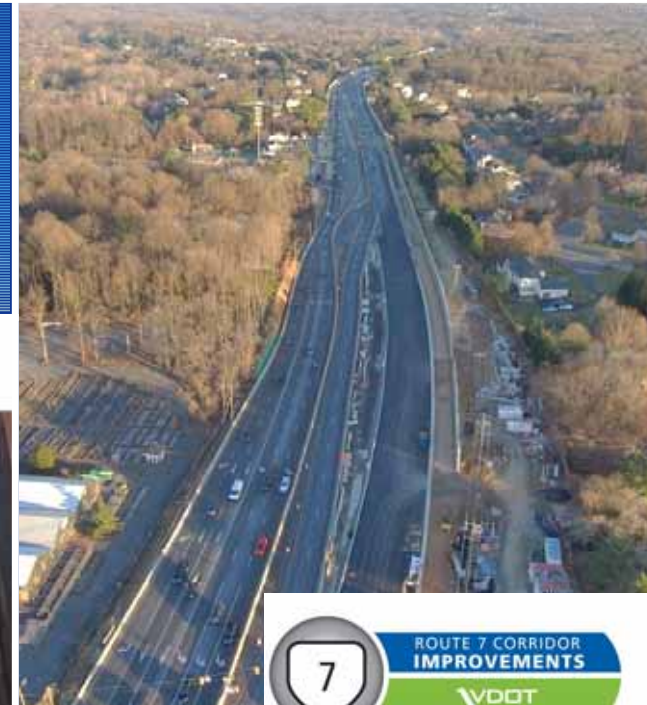
# “LIFE AND ROADWAY CONSTRUCTION ARE NOT ALWAYS LINEAR” ROUTE 7 CORRIDOR IMPROVEMENTS

Challenges of a Regionally Significant Design-Build Project with  
Extensive Right-of-Way and Utility Relocations



Aqif Karim, CMIT, DBIA  
Yan Li, PE, CCM, PMP

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# Who is CES

## Core Services

- Construction Management
- Project Controls
- Utility Management
- Engineering
- Construction at Risk

## Alternative Project Delivery

- 45+ DB and P3 projects totaling over \$10B
- QAM, QCM, OIA/IV, project controls, quality auditing, utility management

## Services for Rte 7 Corridor Improvements

- OIA/IV, project controls, utility management, drone imagery



“Life and roadway construction are not always linear!”

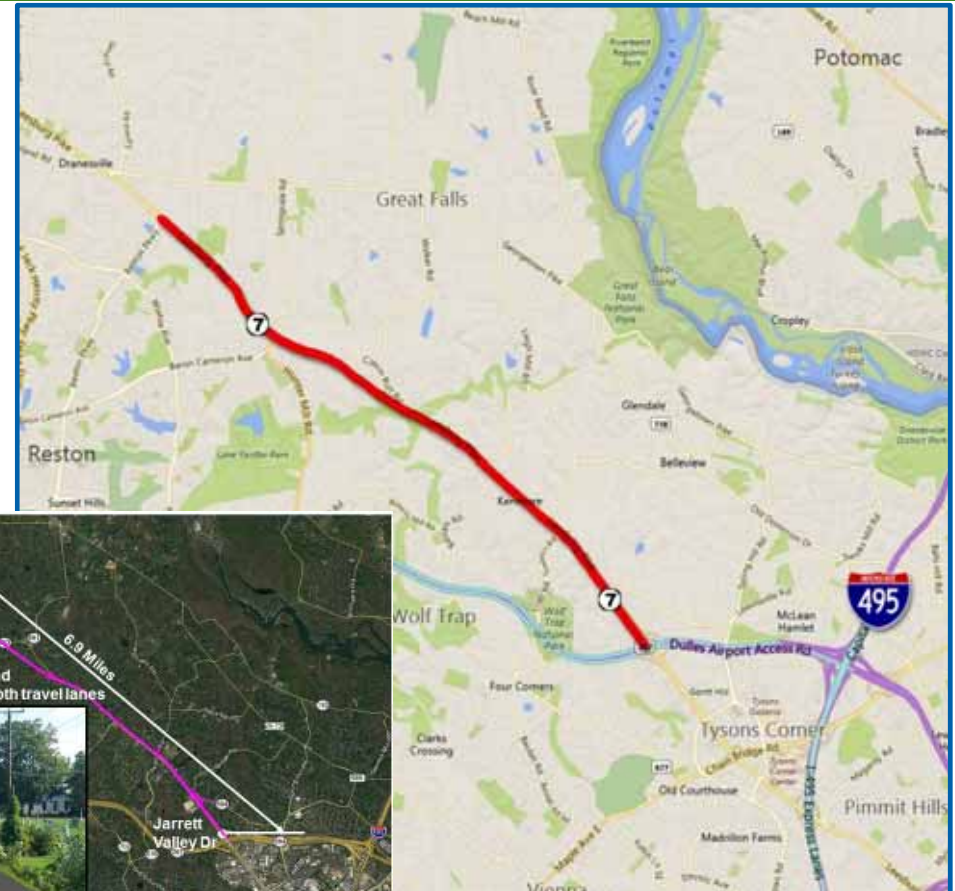




# Route 7 Corridor Improvements

## Location

- Reston Avenue to Jarrett Valley Drive
- Principal arterial
- Commuter/commercial route linking Alexandria to Winchester
- Last 4-lane segment of Route 7 between Leesburg & Capital Beltway (I-495)



“Life and roadway construction are not always linear!”





# Route 7 Corridor Improvements

## Feature Highlights

- Widening from 4 to 6 lanes
- 6.8 miles long; 14 miles of barrier walls
- Continuous shared use paths, both directions
- Widening & elevating Route 7 over Difficult Run Bridge
- Colvin Run (stream) relocation
- First displaced left turn intersection in the NOVA District
- A pedestrian underpass near the Colvin Run Mill

**User-Cost Benefit - \$55K per day**



Pedestrian Underpass Near Colvin Run Mill



Route 7 Lewinsville Road Displaced Left Turn Intersection



Route 7 Bridge over Difficult Run

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# Roadway Construction is Not Always Linear

## Complications

### Key Dates

Description	Date
Contract Execution	July 30, 2018
Notice to Proceed	August 14, 2018
Construction Started	May 07, 2019
No Excuses Incentive Date*	September 25, 2023 (311 days prior to the final completion date)
Final Completion	July 31, 2024

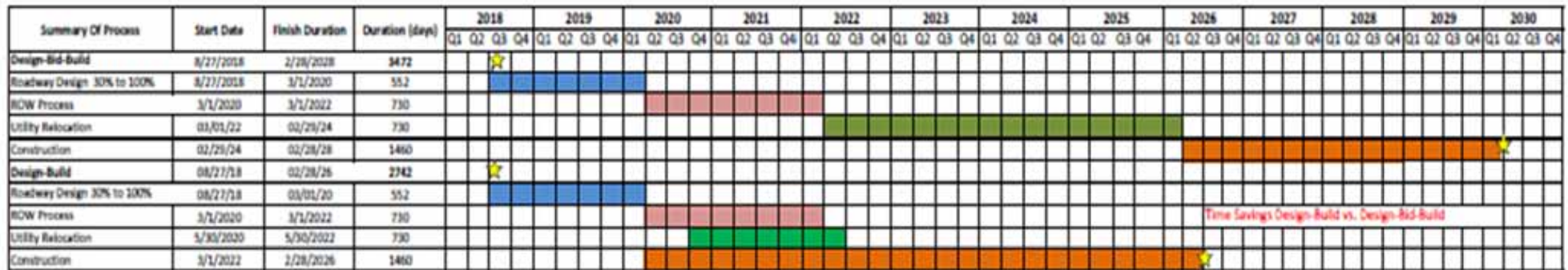
Task	Date	2018				2019				2020				2021				2022				2023				2024			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Contract Execution	July 30, 2018			★																									
Design	Summer 2018 to Spring 2020																												
Right-of-Way	Summer 2019 to Spring 2022																												
Utility Relocation	Winter 2020 to Spring 2023																												
Construction	Spring 2019 to Summer 2024																												
Project Complete	July 31, 2024																												★
Washington Gas	Fall 2018 to Spring 2024																												

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# Roadway Construction is Not Always Linear



## Design-Bid-Build

- Linear process, start to finish

## Design-Build

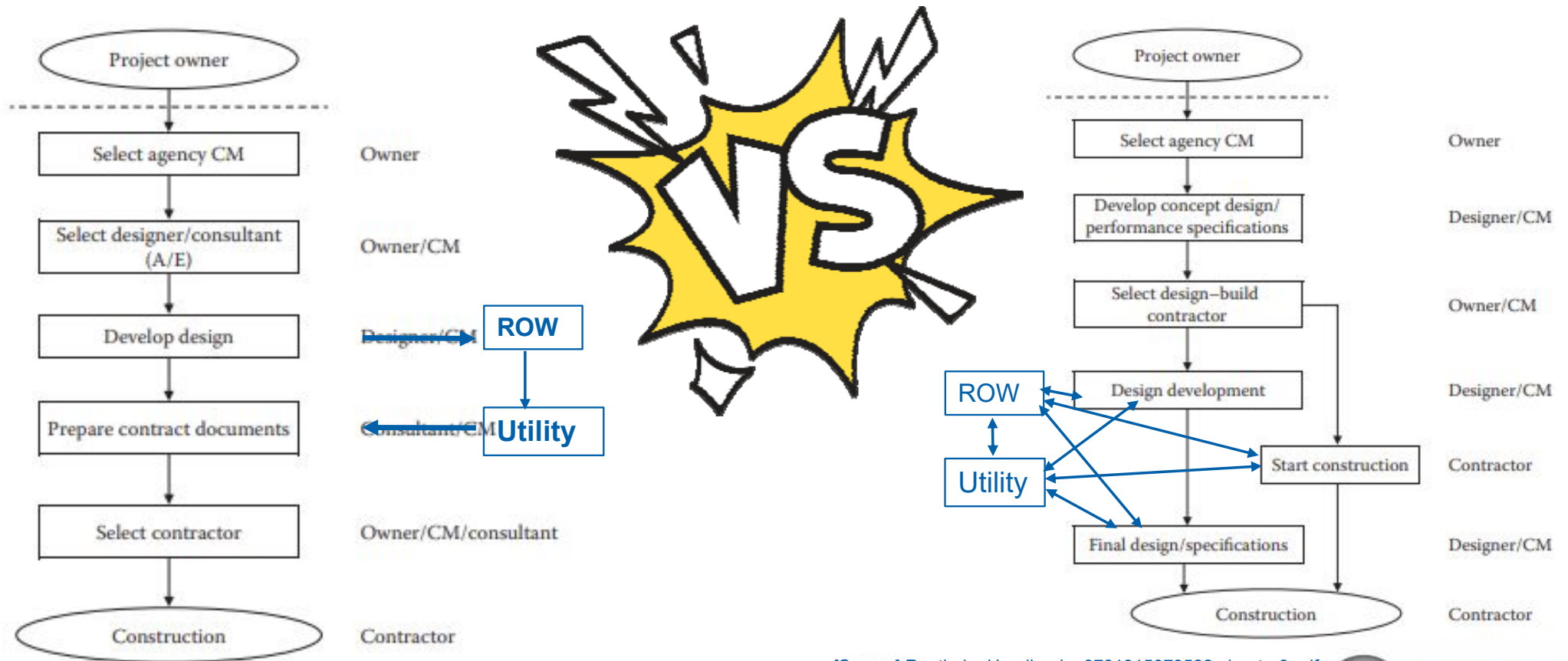
- Non-linear process
- Concurrent activities
- Completion sooner

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# Roadway Construction is Not Always Linear

## Complications



[Source]:RoutledgeHandbooks-9781315373522-chapter3.pdf

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# Roadway Construction is Not Always Linear

## Complications

### Utility Providers

- 19 utility providers
- 3 public water and sewer
- 1 electric
- 3 gas and petroleum
- 10 communications

### Utility Statistics

- 225 Dominion power poles
- 100 Verizon poles
- 70,000 LF U/G communications
- 1,500 LF of 54-in water
- 7,000 LF 8-in to 24-in water
- 9,000 LF gas distribution

### Right of Way Acquisitions

- 235 parcels
- First NTCC issued on July 9, 2019
- Last NTCC issued on March 09, 2022



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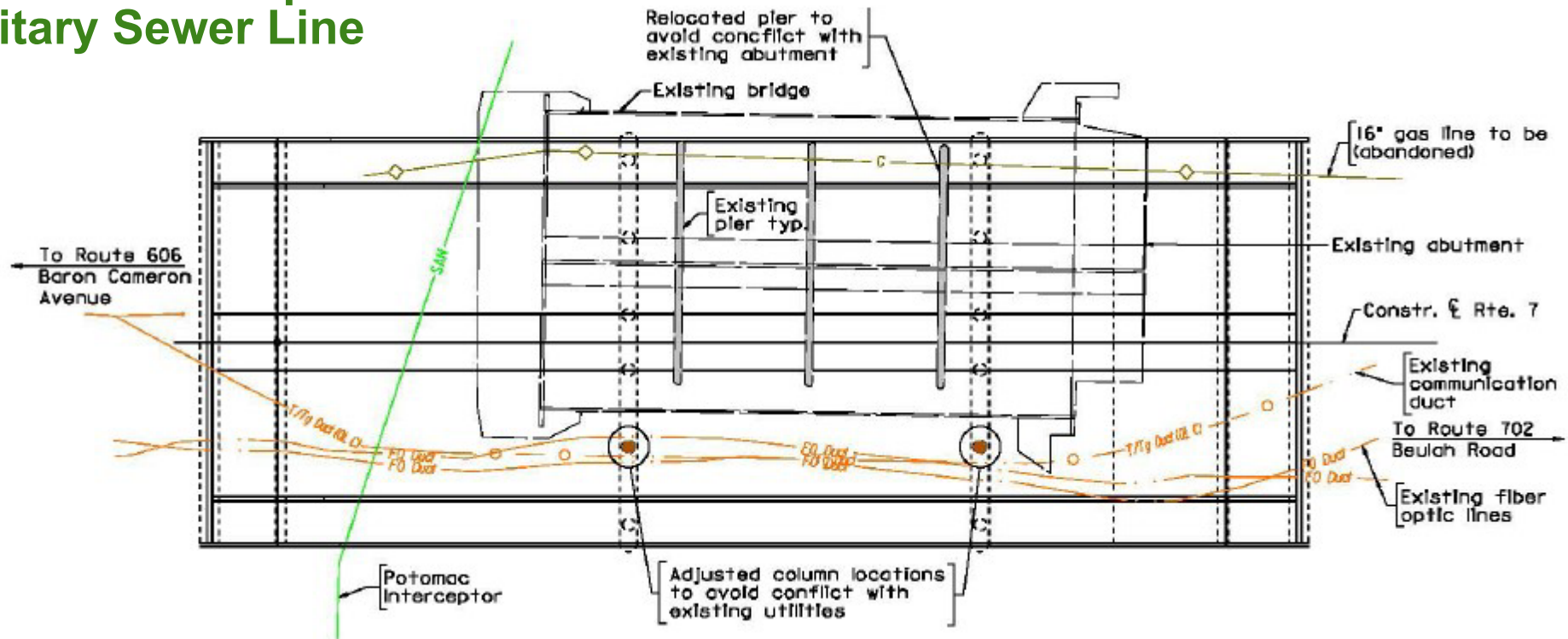




# Roadway Construction is Not Always Linear

## Complications – Utility Relocations

### Potomac Interceptor Sanitary Sewer Line



Pier location optimization and location of Potomac Interceptor

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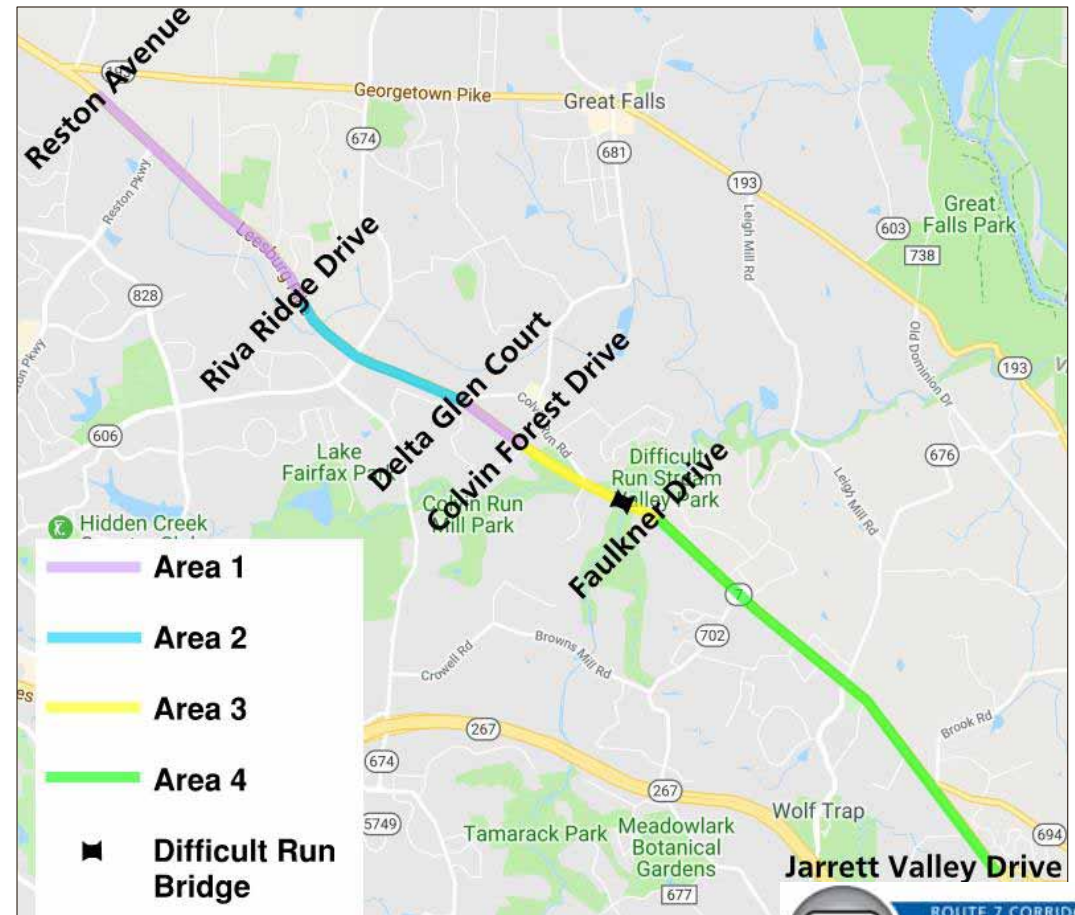


# Roadway Construction is Not Always Linear

## Complications

### Roadway Widening Challenge

- 7 miles
- 4 construction segments
- Several construction phases within each segment
- Each phase has a major traffic control sequence
- Maximizes construction while minimizing traffic impacts



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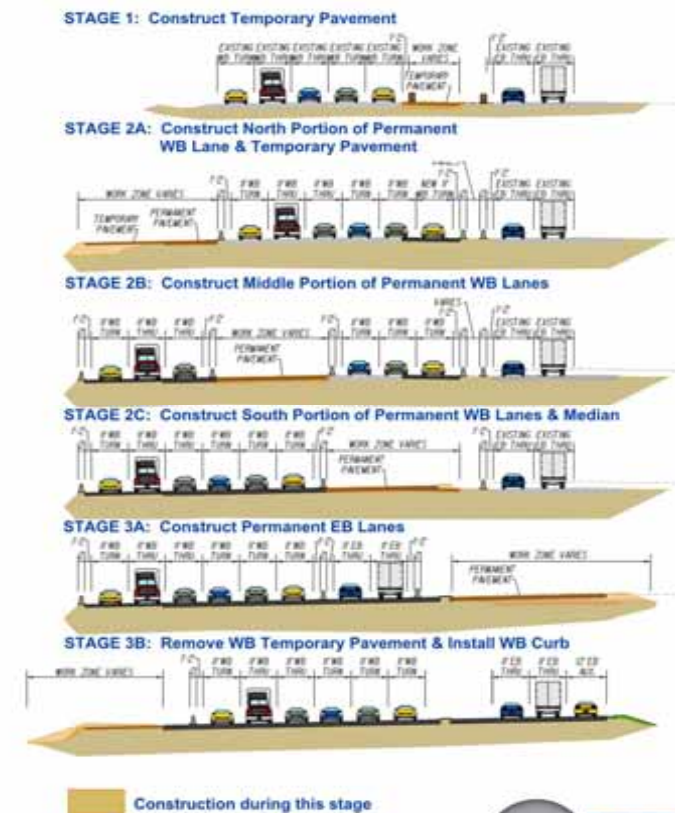
# Critical Project Impacts

## Traffic Switches

Linear Project Traffic Switches = 8 Traffic Switches

	2018		2019				2020				2021				2022				2023				2024			
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	
Utility Relocations-All Areas																										
<b>AREA 1</b>																										
Stage 1A																										
Stage 1B																										
Stage 2																										
Stage 3A																										
Stage 3B																										
Finishes																										
<b>AREA 2</b>																										
Stage 1																										
Stage 2A																										
Stage 2B																										
Stage 2C																										
Stage 3A																										
Stage 3B																										
Finishes																										
<b>AREA 3</b>																										
Stage 1A																										
Stage 2 - Stream Relocation																										
Stage 2 - Bridge Construction																										
Stage 3A - Bridge Construction																										
Stage 3B																										
Finishes																										
<b>AREA 4</b>																										
Stage 1																										
Stage 2																										
Stage 3A																										
Stage 3B																										
Finishes																										

Example: Area 2



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# Critical Project Impacts

## Traffic Switches

**Non-Linear Project Traffic Switches = 30 Traffic Switches**

2020	2021	2022
1. Rte 7 WB lane shifts	1. Rte 7 EB traffic shift	1. Rte 7 EB lane shift between Lucky Estates Drive and Lewinsville Road, Dec. 6
2. Rte 7 WB lane shifts	2. Rte 7 WB traffic shift	2. Rte 7 EB lane shift between Middleton Ridge Road and Atwood Road, Dec. 8,
3. Rte 7 lane shifts	3. Rte 7 EB traffic shift	3. Rte 7 EB right-turn lane shift at Baron Cameron Avenue begins Nov. 29
4. Rte 7 lane shifts begins Aug 3 (Jan 13)	4. Rte 7 EB lane shift between Forestville Drive and Lewinsville Road	4. Rte 7 WB lane shift and median crossover closure on Nov. 10, Colvin Run Road/Carpers Farm Way to Springvale Road/Baron Cameron Avenue (Nov. 2,)
5. Rte 7 lane shifts	5. Rte 7 traffic shift between Serenity Woods Lane and Lewinsville Road	5. WB Rte 7 lane shift , detours – Aug. 11 and Aug. 15
6. Rte 7 WB lane shifts begins July 28 (Jan 13)	6. Rte 7 EB lane shift between Lewinsville Road and Lewinsville Road	6. Rte 7 traffic shifts to new Difficult Run Bridge starting July 21
7. Rte 7 WB lane shifts	7. Rte 7 EB lane shift between Lewinsville Road and Lewinsville Road	7. Rte 7 WB traffic shift between Laurel Hill Road and Lewinsville Road begins Feb. 10
8. Rte 7 lane shifts	8. Rte 7 traffic shift between Lewinsville Road and Lewinsville Road	8. Rte 7 WB traffic shift between Carpers Farm Way and Colvin Forest Drive begins Feb. 3
9. Rte 7 traffic shift	9. Rte 7 traffic shift between Lewinsville Road and Lewinsville Road	
10. Reminder: Rte 7 lane shifts	10. Rte 7 EB lane shifts and traffic changes begins Jan 19 (Jan 13)	
11. Rte 7 lane shifts		
12. Rte 7 EB lane shift begins Apr 15 (Apr 9)		

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# Critical Project Impacts

## Traffic Switches

### Non-Linear Project Traffic Switches

- Construction plans are issued assuming ROW is available
- The EOR does not know the ROW schedule -- parcels may take more than a year to obtain even though they are parcels
- Staggered ROW being obtained directly impacts utility relocations



\*Example of the existing utility being in the proposed roadway segment

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# Critical Project Impacts

## Traffic Switches

### Adapting to Non-Linear Project Traffic Switches

#### 1. Flexibility to work around existing utilities

#### 2. Traffic switch prep meeting(s)

- TTC plan review (contractor/subcontractors, QA, QC, VDOT)
- Signs
- Pavement markings (traffic pattern layout)
- Signal equipment (clearance timing submission)
- Request of police assistance
- Hour by hour schedule
- Emergency contacts
- Public notifications

#### 3. During Traffic Switch

- Field condition – differences than the plan condition?
- Lane closure hours – delays?
- Safety concern – blunt ends? issue with sight distance?
- Transition areas

#### 4. Post Traffic Switches

- Drive through
- Monitor traffic conditions

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# Critical Project Impacts

## Erosion & Sediment Control

### Erosion & Sediment Control Challenges

- 200+ acres of disturbance
- 2,400+ LF of proposed permanent stream impact
- 1.3 acres of proposed permanent wetland impact
- Dog Run, Piney Run, Colvin Run, Difficult Run, numerous un-named waterways/branches
- Numerous permits:
  - CGP
  - USACE 17-SPGP-01
  - USACE IP
  - DEQ IP
  - VMRC
  - DEQ WP3



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# Critical Project Impacts

## Erosion & Sediment Control

### Erosion & Sediment Control Challenges

#### Route 7 Bridge over Difficult Run Crossing



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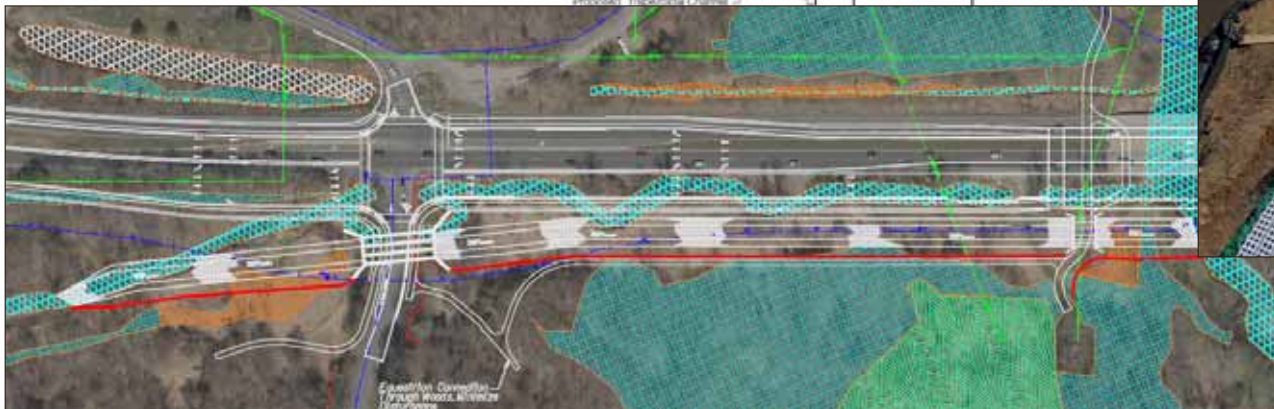
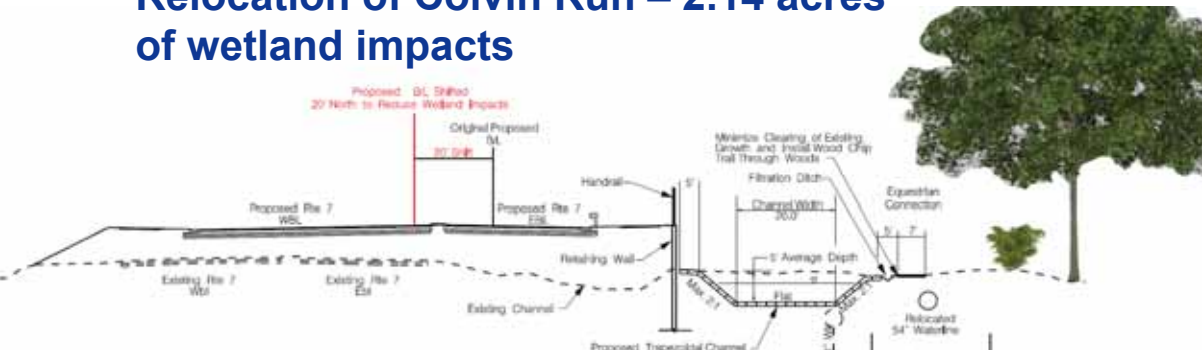


# Critical Project Impacts

## Erosion & Sediment Control

### Erosion & Sediment Control Challenges

Relocation of Colvin Run – 2.14 acres of wetland impacts



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# Critical Project Impacts

## Erosion & Sediment Control

### Non-Linear Erosion & Sediment Control Challenges

- Construction plans are issued assuming ROW is available
- Parcels are prioritized but may still take more than a year to obtain

Example of the ROW procurement for SWM Ponds on Route 7

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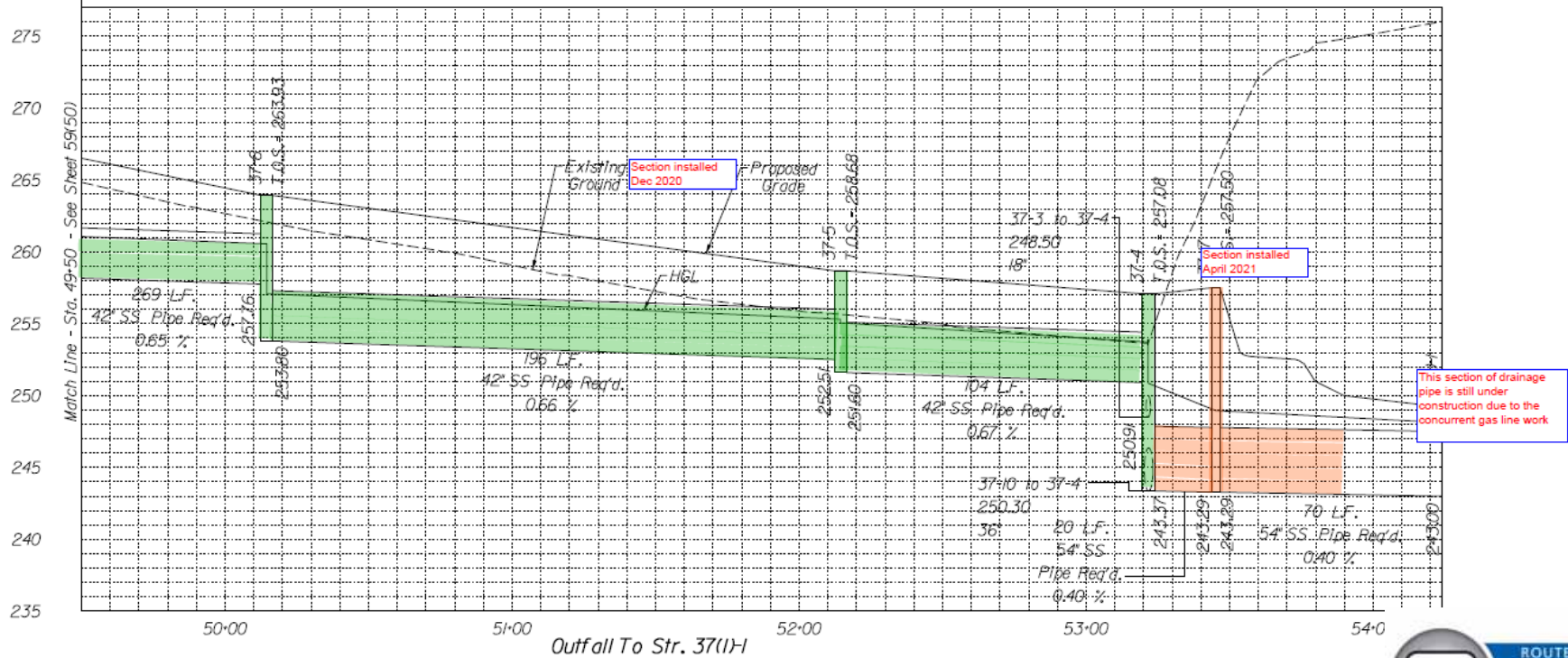
# Critical Project Impacts

## Erosion & Sediment Control

### Non-Linear Erosion & Sediment Control Challenges

EYED BY, Dewberry Engineers Inc., 10/18  
INUED BY Dewberry Engineers Inc. - (703) 289-4796  
SURFACE UTILITY BY, SAM, 10/18

### STORM SEWER PROFILES



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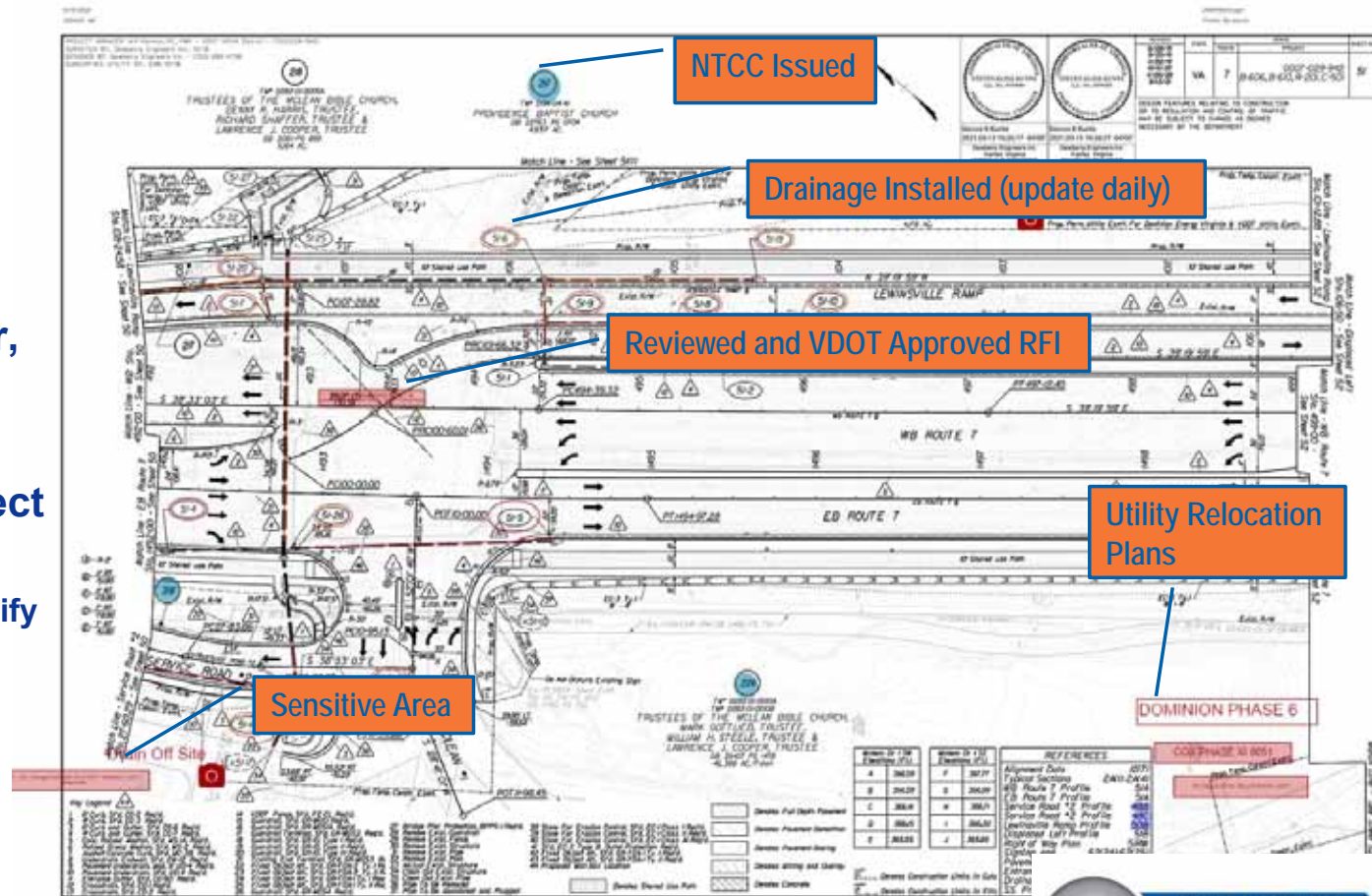


# Critical Project Impacts

## Erosion & Sediment Control

### Adapting to Non-Linear Erosion & Sediment Control Challenges

- Collaboration with Design-Builder, Designer, VDOT NPDES Program Coordinator, and construction mgt. team
- VDOT Environmental Specialist assign to the project
  - Performs C-107 inspections
  - Proactively looks ahead to identify and recommend mitigation of potential issues
- Detailed, real-time documentation - PlanGrid



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# Pictures for Discussion



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# Questions and Answers



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