

COUNTY OF YORK

MEMORANDUM

DATE: February 21, 2024
TO: York County Board of Supervisors
FROM: Mark L. Bellamy, Jr., County Administrator 
SUBJECT: Staffing Study

During your Board Retreat held on February 2, 2024, the Board discussed the desire for a staffing study for all County departments with a projected completion date in the fall of 2024. The objective of the study would be to analyze and advise the appropriate staffing levels and structure to maintain sufficient staff to provide an acceptable level of service the citizens of the County.

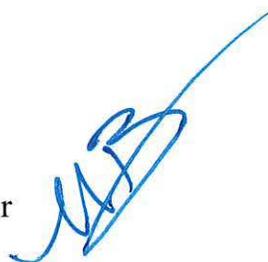
We anticipate these contracted services would cost less than \$50,000 and will proceed with the appropriate procurement process. In the event we determine the costs will exceed the \$50,000 threshold, we will seek approval from the Board.

Copy to: Brian Fuller, Deputy County Administrator
Rose McKinney, Director of Human Resources
Theresa Owens, Director of Finance

COUNTY OF YORK

MEMORANDUM

DATE: February 23, 2024
TO: York County Board of Supervisors
FROM: Mark L. Bellamy, Jr., County Administrator
SUBJECT: VDOT Project Pipeline Updates



Background:

Virginia Department of Transportation (VDOT) routinely provides updates to County staff about ongoing safety evaluations. The Department of Public Works Engineering staff recently received evaluations about two projects:

- HR09 - Rt. 17 from Denhigh Blvd. to Cook Rd. Proposed improvements and modifications are being considered.
- HR10 - Intersection of Rt. 17 and Victory Blvd. Options are being evaluated to reduce issues that drivers experience at this intersection.

Attached, are the evaluations. VDOT will request public input on these projects, and the links for comment will be included on our County webpage. At the end of this process, VDOT will provide York County with recommendations for improvements. It will be up to York County at that time whether to apply for funding for these projects. Should there be questions, Engineering Beth Mertz-Guinn can be reached at 757-890-3785 or Elizabeth.Mertz-Guinn@yorkcounty.gov to discuss the details.

Attachments:

- HR09
- HR10



PROJECT PIPELINE

YORK COUNTY

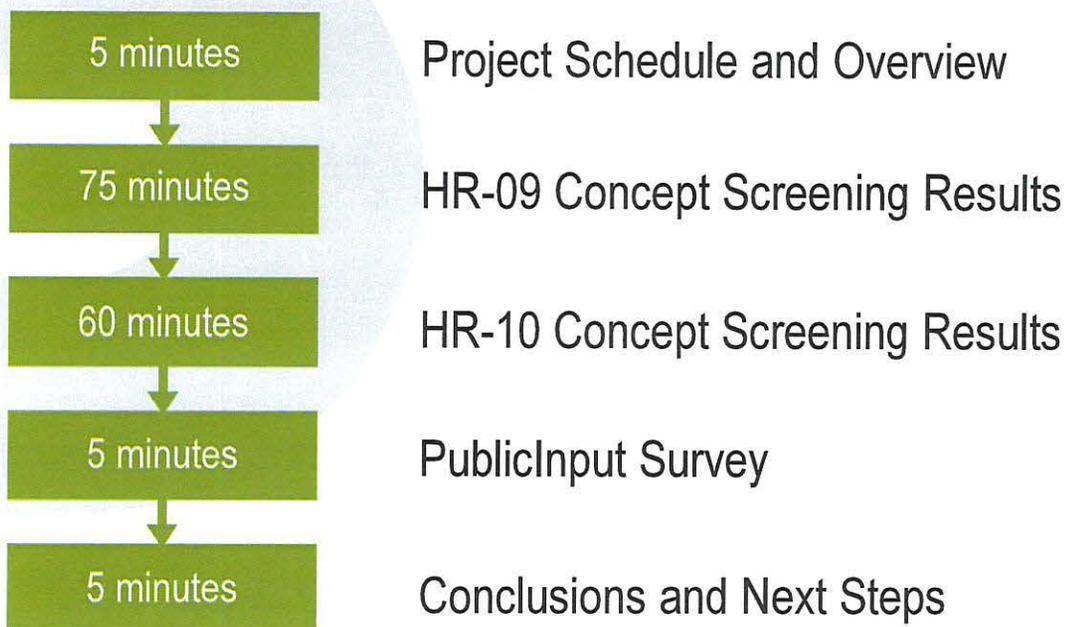
Phase 2 Concept Screening

HR-23-09 – US 17 (George Washington Highway) Denbigh Blvd to Cook Rd

HR-23-10 – US 17 (George Washington Highway) at Victory Blvd



Agenda



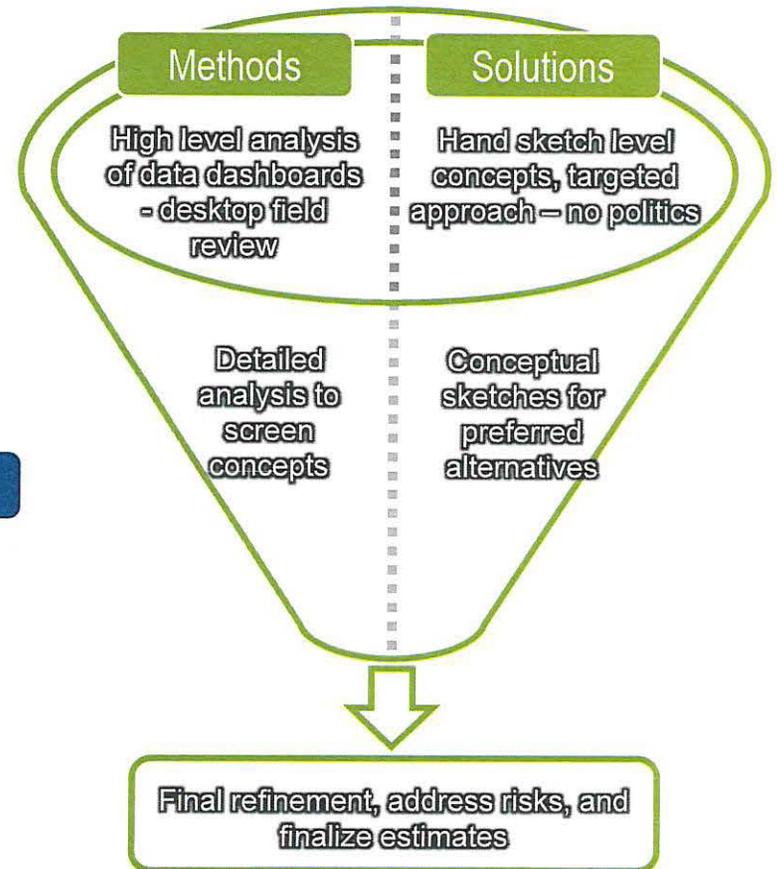
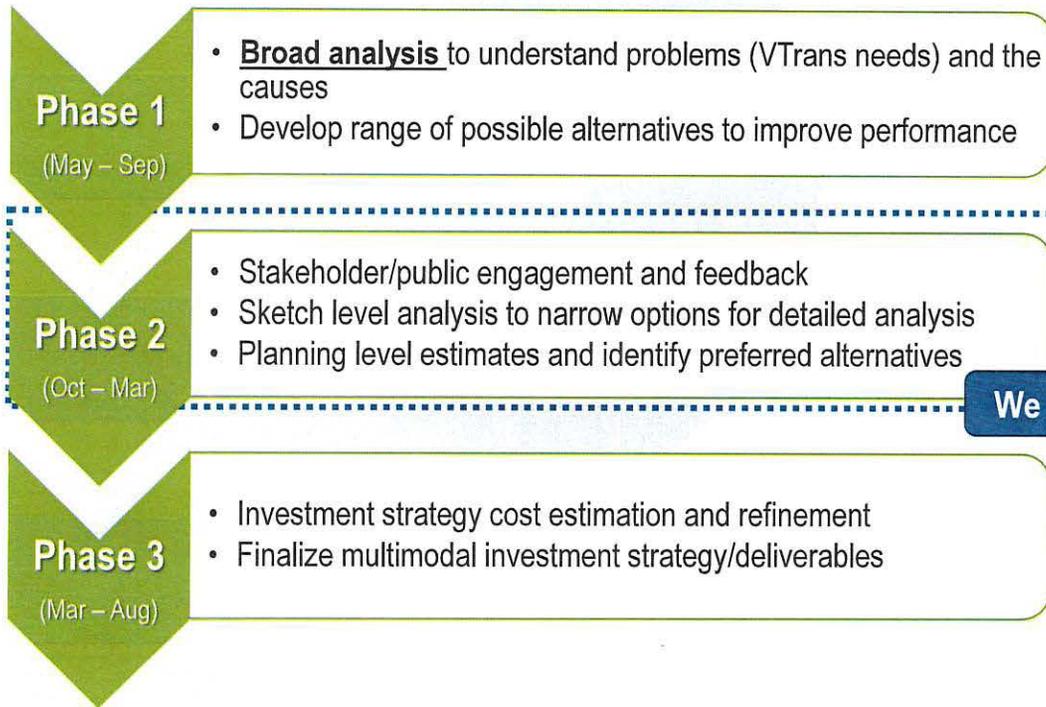
Meeting Purpose

- Review the results of the Concept screening.
- Decide which alternatives to share with the public in the Phase 2 survey.

Phased Approach to Study Process



PROJECT PIPELINE



Overall Schedule and Major Milestones

- **Completed to-date:** Preliminary Concept Development and Screening
- **January – February:** Concept Screening and Refinement
 - Full Study Work Group meeting (today)
 - Public Input Survey – opening early March 2024
- **February – March:**
 - Complete detailed Existing and No Build traffic operations analysis
 - Public Input Survey results and preferred alternative selection
 - Full Study Work Group meeting in mid-March 2024
 - Draft study summary of Phase 2
 - One-page preliminary draft summary sheets of preferred alternatives
 - Investment strategies and Phase 3 scope outline



HR-09 Concept Screening Results

- US 17 & Cook Rd/York-Warwick Dr
- US 17 & Clairmont Way/Battle Rd
- US 17 & Fort Eustis Blvd
- US 17 & Old York-Hampton Hwy/Faulkner Rd

Concept Screening Analysis Assumptions

- **Analysis Periods**

- AM peak hour (7:00-8:00am)
- PM peak hour (4:30-5:30pm)

- **Analysis Tools and Measures of Effectiveness**

- Preliminary screening using VJuST
- Traffic Analysis
 - Synchro 11 (control delay, Level of Service, 95th percentile queue length)
- Crash Analysis
 - Latest five years (2018-2022)
 - F+I CMFs from SMART SCALE Planning, Virginia State Preferred, and Clearinghouse CMF lists

LOS	Signalized Intersection Criteria
A	Delay ≤ 10 sec/veh
B	10 sec/veh < Delay ≤ 20 sec/veh
C	20 sec/veh < Delay ≤ 35 sec/veh
D	35 sec/veh < Delay ≤ 55 sec/veh
E	55 sec/veh < Delay ≤ 80 sec/veh
F	Delay > 80 sec/veh

US 17 & Cook Rd/York Warwick Dr

Concepts for Screening:

1. Unsplit Side-Street Signal Phasing
2. Thru-Cut
3. Partial Median U-Turn
4. RCUT



US 17 & Cook Rd/ York Warwick Dr Concept Screening Summary

Pedestrian & Bike Accommodations Compared to No-Build	
-	Negative Impact
0	Neutral Impact
+ to ++	Positive Impact

Alternative		Estimated 5-Year Crash Reduction ⁽¹⁾	Pedestrian & Bike ⁽³⁾	Construction Cost ⁽⁴⁾	Difference in Overall Intersection Delay from 2045 Base (seconds)	
					AM	PM
1	Unsplit Side-Street Signal Phasing	2.9	++	\$2.4M - \$3.1M	+15.2	+7.3
2	Thru-Cut	1.4	++	\$8.1M - \$10.5M	-8.6	-16.3
3	Partial Median U-Turn	4.5 ⁽²⁾	++	\$8.2M - \$10.7M	-11.6	-23.0
4	RCUT	3.3	+	\$9.4M - \$12.3M	-8.1	-13.0

⁽¹⁾ Based on Crash Modification Factors (CMFs).

⁽²⁾ CMF is for Full Median U-Turn. No CMF exists for Partial Median U-Turn.

⁽³⁾ RCUT has + because pedestrian crosswalk is longer to navigate than other alternatives.

⁽⁴⁾ 2024 Construction Cost (Non-inflated) does not include RW and PE.



Change in Delay from 2045 Base (seconds)

US 17 at Cook Rd/York Warwick Dr

	US 17 Northbound		US 17 Southbound		York Warwick Dr Eastbound		Cook Rd Westbound		Intersection Overall Average	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
ALT1: Conventional w/ unsplit signal	23.8	8.8	14.1	-6.2	-24.1	-11.6	-91.6	56.0	15.2	7.3
ALT2: Thru-cut	-2.8	-19.8	-11.8	-10.4	-15.8	-1.7	-12.3	-18.1	-8.6	-16.3
ALT3: Partial median u-turn	-4.6	-30.5	-14.9	-24.0	-25.0	-11.8	-22.5	35.1	-11.6	-23.0
ALT4: RCUT	-1.3	-21.1	-15.6	-15.0	2.4	71.1	29.1	24.3	-8.1	-13.0

US 17 & Cook Rd/ York Warwick Dr

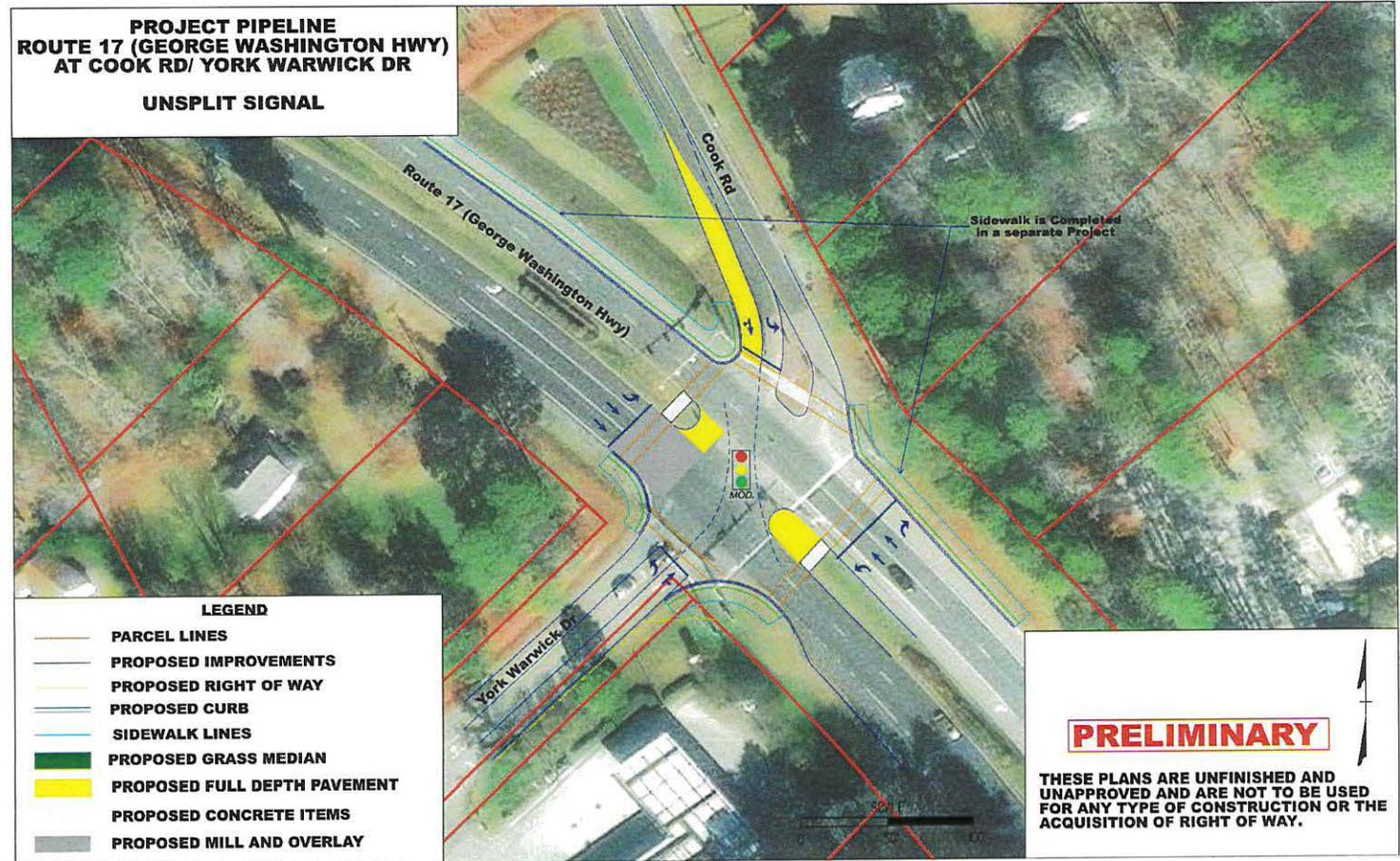
Concept 1: Unsplit Side-Street Signal Phasing



PROJECT PIPELINE

General Concept

- New left turn lane at Cook Rd
- Change to York Warwick Drive approach laneage
- Marked crosswalks across all four intersection legs



2/9/2024

US 17 & Cook Rd/ York Warwick Dr

Concept 1: Unsplit Side-Street Signal Phasing



PROJECT PIPELINE

Design Considerations

- **Scope**
 - Modifications to side-street approaches, median noses, signal phasing
 - Pedestrian crosswalks and pedestrian signals
- **Access management – None**
 - No changes to access points
- **ROW Impacts – Minimal**
 - Very minor impact for curb ramp construction
- **Feasibility/Constructability – Low Complexity**
 - Off-peak lane closures and night-time construction

CMF: 0.81

5-Year F+I Crash Reduction = 2.9 crashes

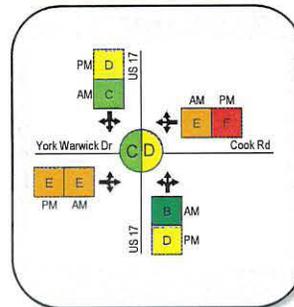
Stage 1 Cost Estimate Range (Construction):
\$2.4 M – \$3.1 M

Overall Intersection (Δ delay)

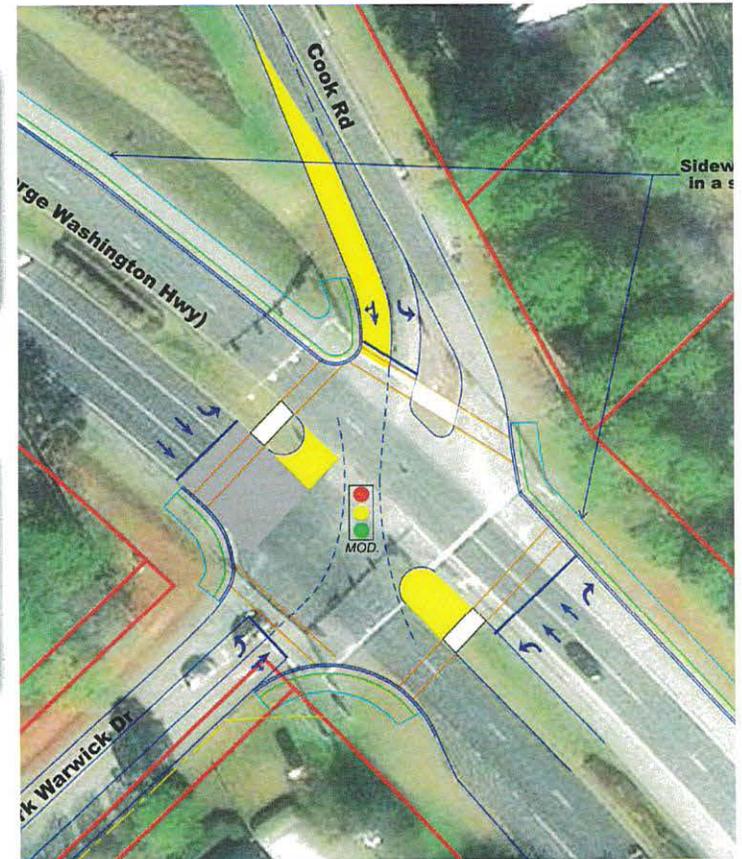
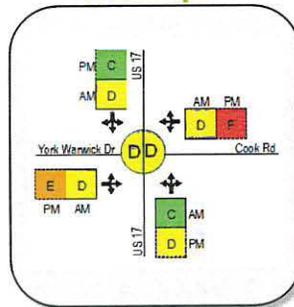
AM: +15.2 seconds

PM: +7.3 seconds

2045 Baseline



Concept 1

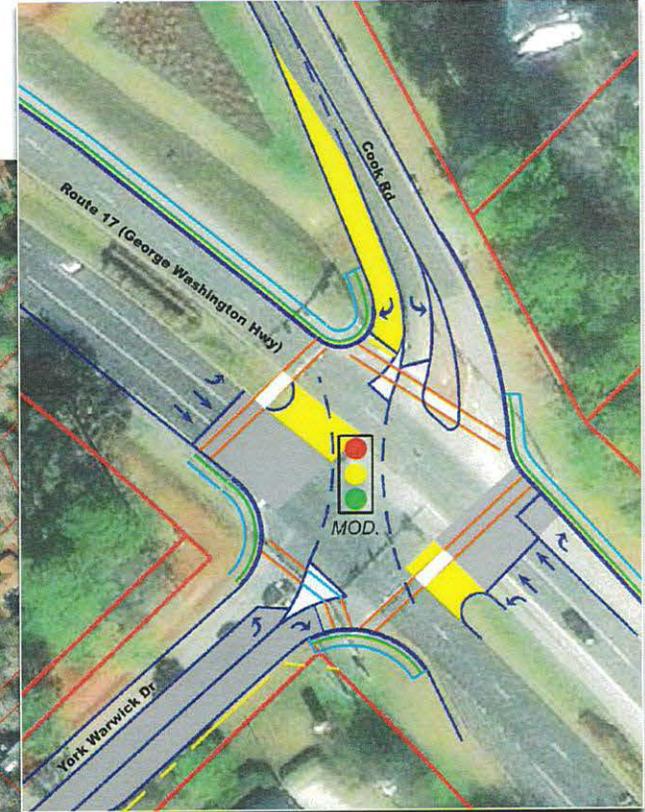


US 17 & Cook Rd/ York Warwick Dr

Concept 2: Thru-Cut



**PROJECT PIPELINE
ROUTE 17 (GEORGE WASHINGTON HWY)
AT COOK RD/ YORK WARWICK DR
THRU-CUT**



- LEGEND**
- PARCEL LINES
 - PROPOSED IMPROVEMENTS
 - PROPOSED RIGHT OF WAY
 - PROPOSED CURB
 - SIDEWALK LINES
 - PROPOSED GRASS MEDIAN
 - PROPOSED FULL DEPTH PAVEMENT
 - PROPOSED CONCRETE ITEMS
 - PROPOSED MILL AND OVERLAY

PRELIMINARY

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THESE PLANS ARE UNFINISHED AND UNAPPROVED AND ARE NOT TO BE USED FOR ANY TYPE OF CONSTRUCTION OR THE ACQUISITION OF RIGHT OF WAY.

US 17 & Cook Rd/ York Warwick Dr

Concept 2: Thru-Cut

Design Considerations

- **Scope**
 - Modifications to side-street approaches, median noses, signal phasing
 - Pedestrian crosswalks and pedestrian signals
 - Unsignalized downstream U-turns with loons for heavy vehicles
- **Access management – Minimal**
 - Right turn lane for Yorktown Motor Lodge entrances
- **ROW Impacts – Minimal**
 - Very minor impact for curb ramp construction and minor widening of York Warwick Drive.
- **Feasibility/Constructability – Medium Complexity**
 - Construction in three areas of the corridor
 - Maintain business access
 - Potential stormwater implications

CMF: 0.91

5-Year F+I Crash Reduction = 1.4 crashes

Stage 1 Cost Estimate Range (Construction):
\$8.1 M – \$10.5 M

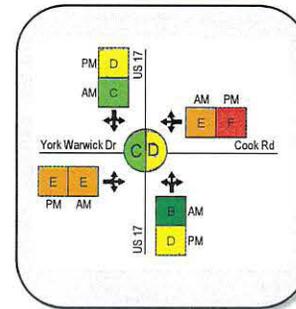
Overall Intersection (Δ delay)

AM: -8.6 seconds

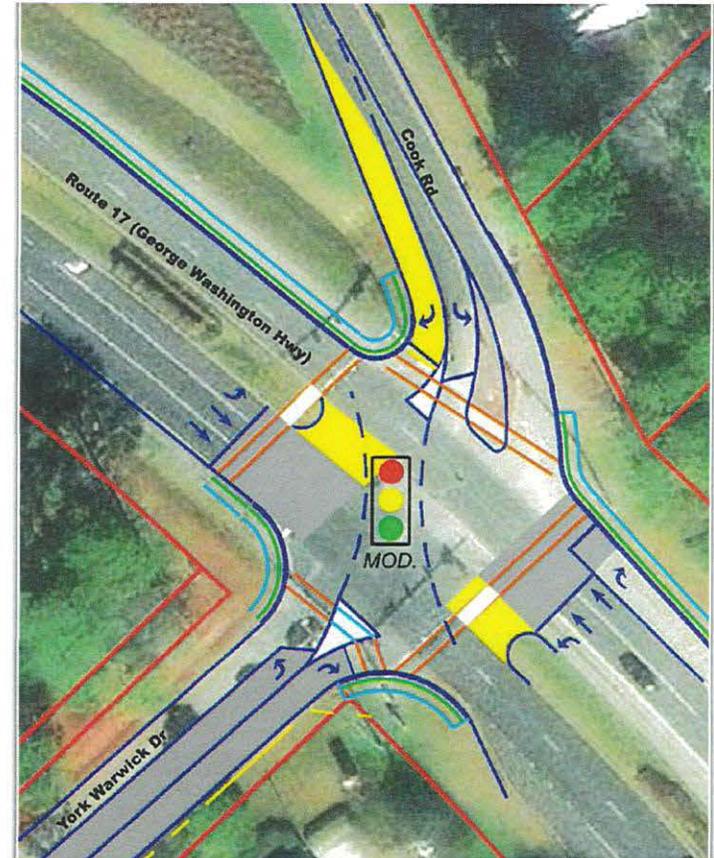
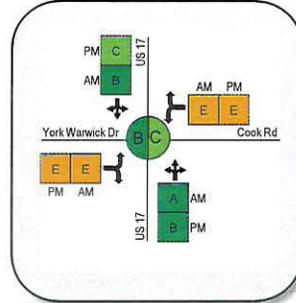
PM: -16.3 seconds



2045 Baseline



Concept 2

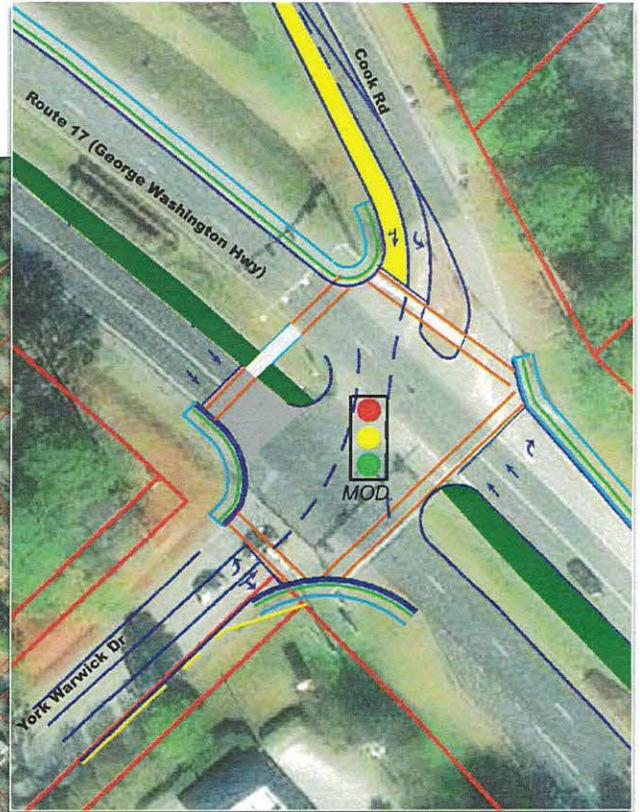


US 17 & Cook Rd/ York Warwick Dr

Concept 3: Partial Median U-Turn



**PROJECT PIPELINE
ROUTE 17 (GEORGE WASHINGTON HWY)
AT COOK RD/ YORK WARWICK DR
PARTIAL MEDIAN U-TURN**



- LEGEND**
- PARCEL LINES
 - PROPOSED IMPROVEMENTS
 - PROPOSED RIGHT OF WAY
 - PROPOSED CURB
 - SIDEWALK LINES
 - PROPOSED GRASS MEDIAN
 - PROPOSED FULL DEPTH PAVEMENT
 - PROPOSED CONCRETE ITEMS
 - PROPOSED MILL AND OVERLAY

PRELIMINARY

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US 17 & Cook Rd/ York Warwick Dr

Concept 3: Partial Median U-Turn

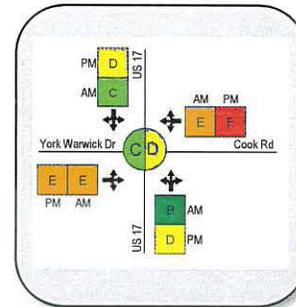


PROJECT PIPELINE

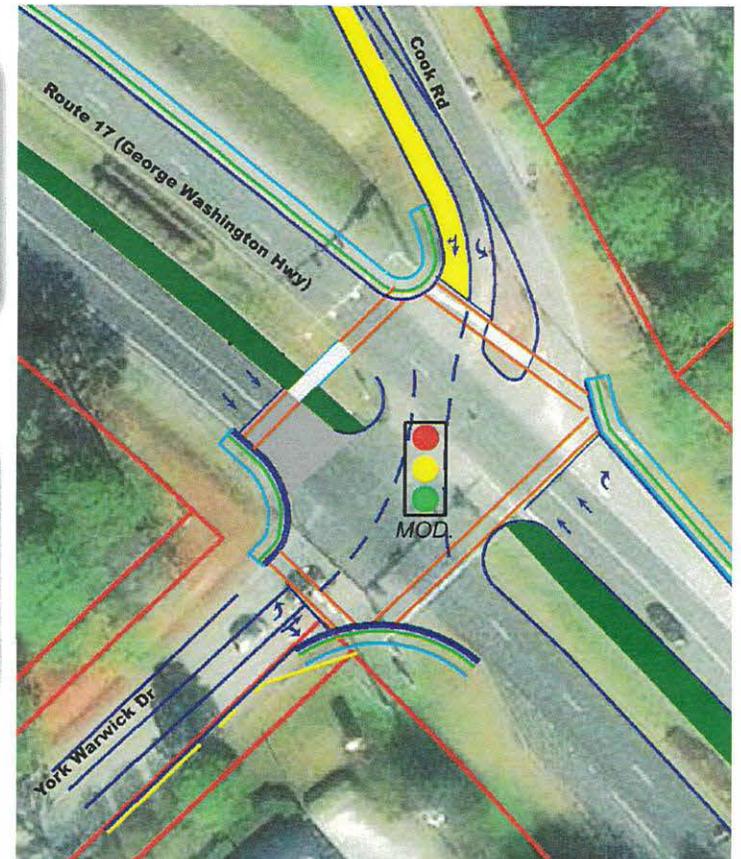
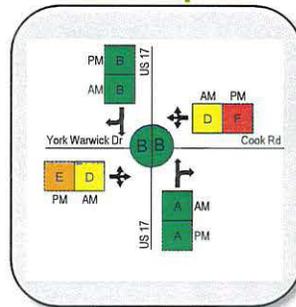
Design Considerations

- **Scope**
 - Modifications to side-street approaches and signal phasing
 - Widen median to prohibit left turns from US 17
 - Pedestrian crosswalks and pedestrian signals
 - New signal at northern median break with loons for heavy vehicles
- **Access management – Minimal**
 - Right turn lane for Yorktown Motor Lodge entrances
- **ROW Impacts – Minimal**
 - Very minor impact for curb ramp construction and minor widening of York Warwick Drive.
- **Feasibility/Constructability – Medium Complexity**
 - Construction in three areas of the corridor
 - Maintain business access
 - Potential stormwater implications

2045 Baseline



Concept 3



CMF: 0.70*

5-Year F+I Crash Reduction = 4.5 crashes*

Reduces Conflict Points from 32 to 22

Stage 1 Cost Estimate Range (Construction):

\$8.2 M – \$10.7 M

Overall Intersection (Δ delay)

AM: **-11.6** seconds

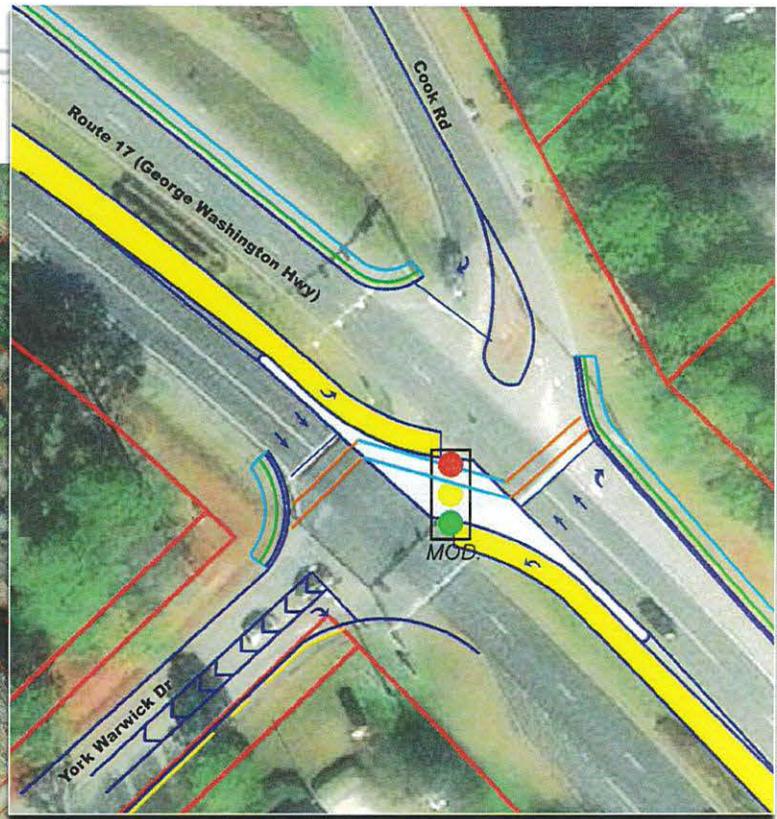
PM: **-23.0** seconds

US 17 & Cook Rd/ York Warwick Dr

Concept 4: Restricted Crossing U-Turn (RCUT)



**PROJECT PIPELINE
ROUTE 17 (GEORGE WASHINGTON HWY)
AT COOK RD/ YORK WARWICK DR
RCUT**



- LEGEND**
- PARCEL LINES
 - PROPOSED IMPROVEMENTS
 - PROPOSED RIGHT OF WAY
 - PROPOSED CURB
 - SIDEWALK LINES
 - PROPOSED GRASS MEDIAN
 - PROPOSED FULL DEPTH PAVEMENT
 - PROPOSED CONCRETE ITEMS
 - PROPOSED MILL AND OVERLAY

PRELIMINARY

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US 17 & Cook Rd/ York Warwick Dr

Concept 4: Restricted Crossing U-Turn (RCUT)

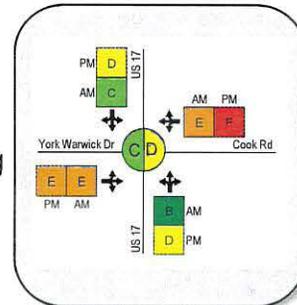


PROJECT PIPELINE

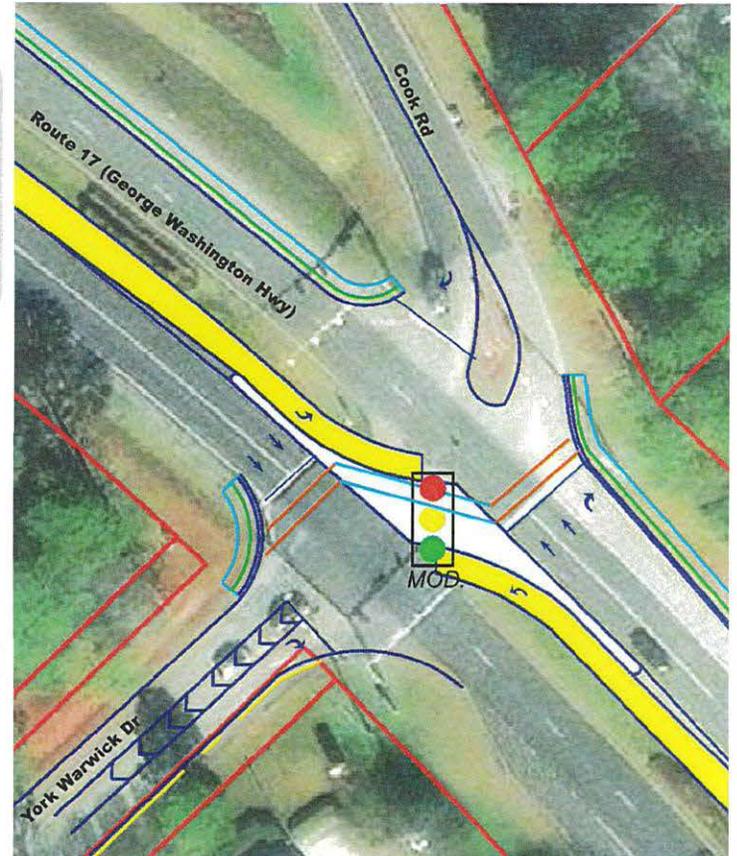
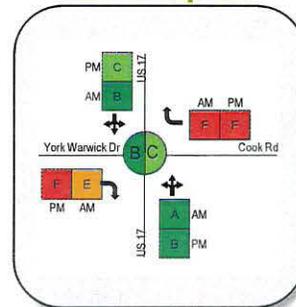
Design Considerations

- **Scope**
 - Median reconfiguration to guide all side-street traffic to turn right
 - Pedestrian crosswalks and pedestrian signals, signal phasing modifications
 - New signal at northern median break with loons for heavy vehicles
- **Access management – Minimal**
 - Right turn lane for Yorktown Motor Lodge entrances
- **ROW Impacts – Minimal**
 - Very minor impact for curb ramp construction and minor widening of York Warwick Drive.
- **Feasibility/Constructability – Medium Complexity**
 - Construction in three areas of the corridor
 - Maintain business access
 - Potential stormwater implications

2045 Baseline



Concept 4



CMF: 0.78

5-Year F+I Crash Reduction = 3.3 crashes

Stage 1 Cost Estimate Range (Construction):
\$9.4 M – \$12.3 M

Overall Intersection (Δ delay)

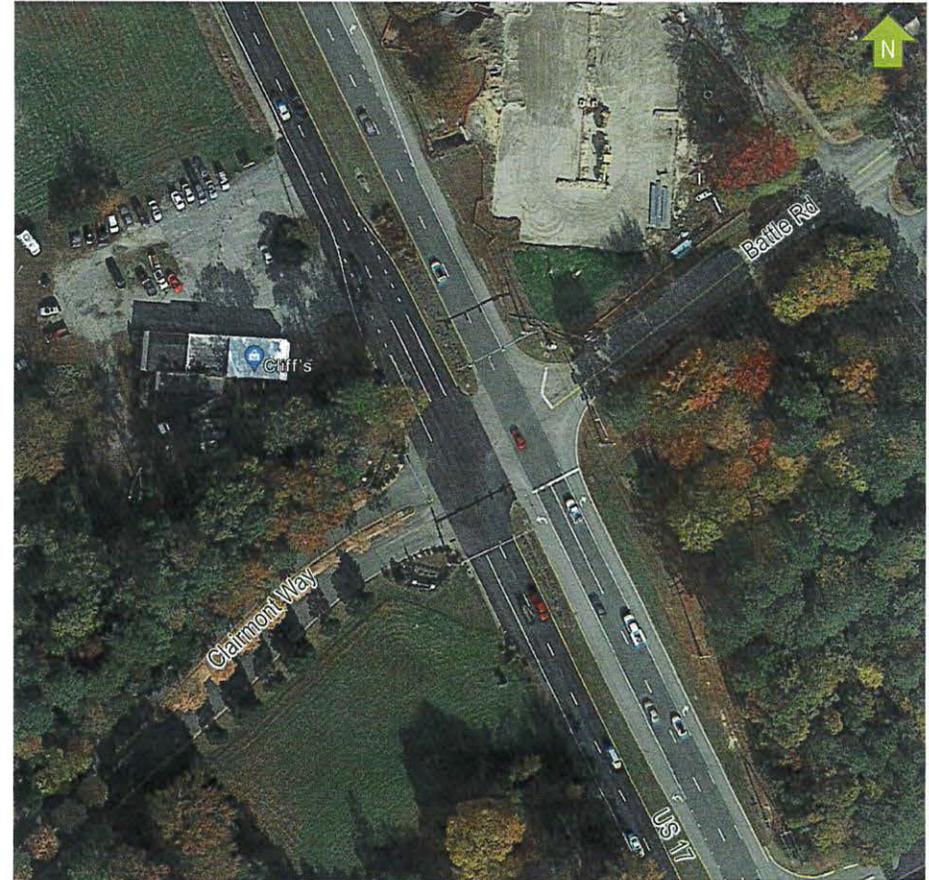
AM: -8.1 seconds

PM: -13.0 seconds

US 17 & Clairmont Way/ Battle Rd

Potential Concepts:

1. Unsplit Side-Street Signal Phasing
2. Thru-Cut
3. Full Median U-Turn
4. Partial Median U-Turn
5. RCUT



US 17 & Battle Rd/Clairmont Way Concept Screening Summary

Pedestrian & Bike Accommodations Compared to No-Build	
-	Negative Impact
0	Neutral Impact
+ to ++	Positive Impact

Alternative		Estimated 5-Year Crash Reduction ⁽¹⁾	Pedestrian & Bike ⁽³⁾	Construction Cost ⁽⁴⁾	Difference in Overall Intersection Delay from 2045 Base (seconds)	
					AM	PM
1	Unsplit Side-Street Signal Phasing	1.9	++	2.3M - \$3.0M	-15.2	+3.1
2	Thru-Cut	0.9	++	\$7.3M - \$9.6M	-16.5	-5.4
3	Full Median U-Turn	3.0	++	\$7.0M - \$9.3M	-22.4	-2.8
4	Partial Median U-Turn	3.0 ⁽²⁾	++	\$8.0M - \$10.5M	-14.0	+1.1
5	RCUT	2.2	+	\$9.4M - \$12.3M	-18.0	-1.7

⁽¹⁾ Based on Crash Modification Factors (CMFs).

⁽²⁾ CMF is for Full Median U-Turn. No CMF exists for Partial Median U-Turn.

⁽³⁾ RCUT has + because pedestrian crosswalk is longer to navigate than other alternatives.

⁽⁴⁾ 2024 Construction Cost (Non-inflated) does not include RW and PE.

Change in Delay from 2045 Base (seconds)

US 17 at Battle Rd/Clairmont Way

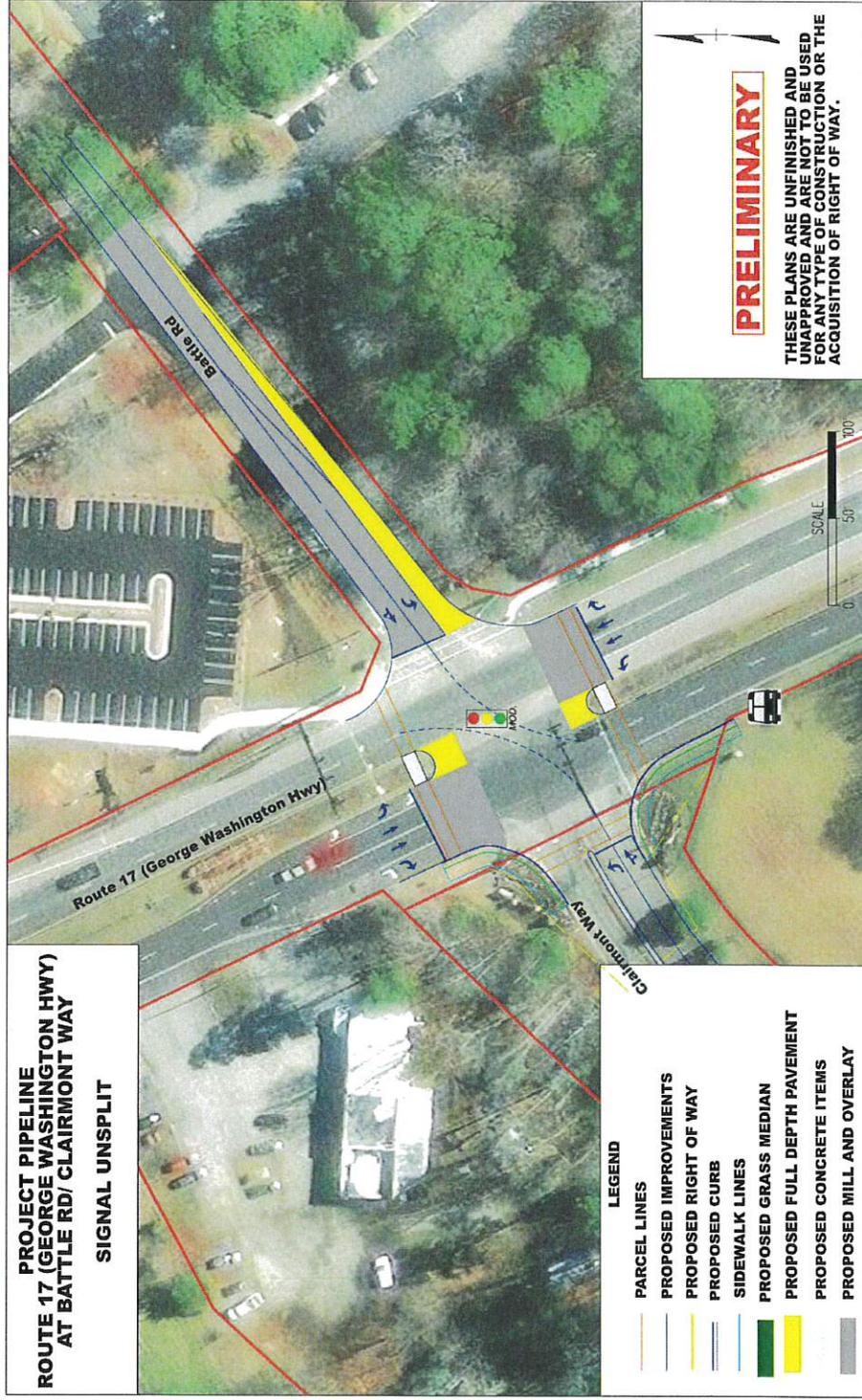
	US 17 Northbound		US 17 Southbound		Clairmont Way Eastbound		Battle Rd Westbound		Intersection Overall Average	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
ALT1: Conventional w/ unsplit signal	-3.7	6.6	-22.8	1.2	-6.4	-6.2	-22.8	-40.0	-15.2	3.1
ALT2: Thru-cut	-16.2	-6.2	-17.2	-1.3	-4.4	-6.3	-13.8	-38.2	-16.5	-5.4
ALT3: Full median u-turn	-16.5	-2.0	-28.2	-3.1	2.7	5.7	5.4	-17.4	-22.4	-2.8
ALT4: Partial median u-turn	-14.2	5.0	-13.6	-1.7	-6.4	-6.2	-22.8	-40.0	-14.0	1.1
ALT5: RCUT	-16.3	-0.4	-21.8	-2.4	4.1	12.8	29.5	-24.4	-18.0	-1.7

US 17 & Battle Rd/Clairmont Way

Concept 1: Unsplit Side-Street Signal Phasing



- General Concept
- New left turn lane at Battle Rd
 - Marked crosswalks across all four intersection legs
 - Pull median noses back to accommodate concurrent side-street left turns



2/19/2024

US 17 & Battle Rd/Clairmont Way

Concept 1: Unsplit Side-Street Signal Phasing

Design Considerations

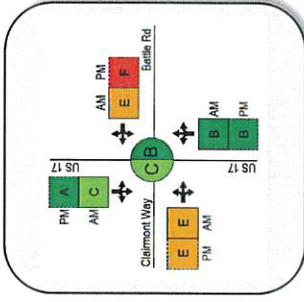
- **Scope**
 - Widening of Battle Rd to provide left turn lane
 - Modifications to median noses, signal phasing
 - Pedestrian crosswalks and pedestrian signals
- **Access management – None**
 - No changes to access points
- **ROW Impacts – None**
 - None anticipated
- **Feasibility/Constructability – Low Complexity**
 - Off-peak lane closures and night-time construction

CMF: 0.81

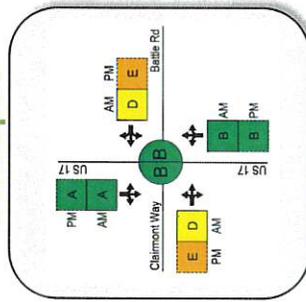
5-Year F+I Crash Reduction = 1.9 crashes

**Stage 1 Cost Estimate Range (Construction):
\$2.3 M – \$3.0 M**

2045 Baseline



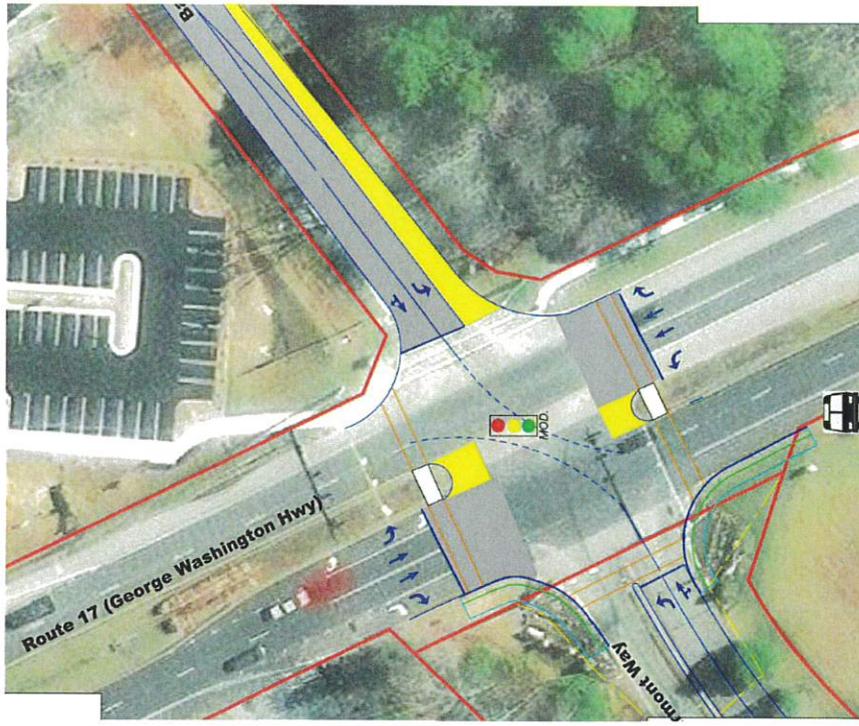
Concept 1



Overall Intersection (Δ delay)

AM: -15.2 seconds

PM: +3.1 seconds



US 17 & Battle Rd/Clairmont Way

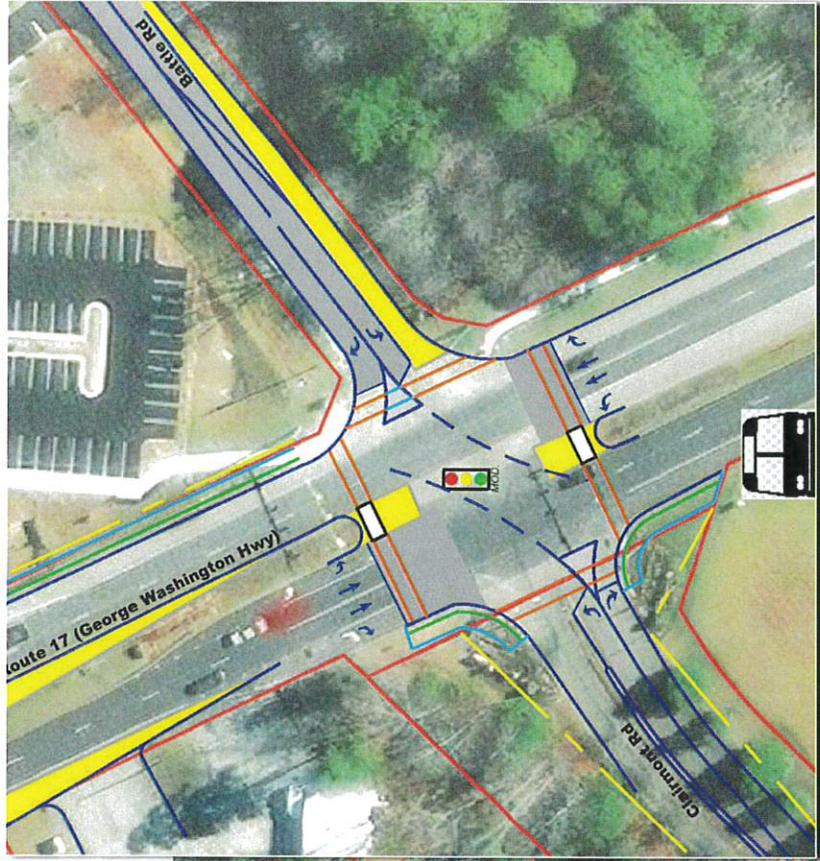
Concept 2: Thru-Cut



**PROJECT PIPELINE
ROUTE 17 (GEORGE WASHINGTON HWY)
AT BATTLE RD/CLAIRMONT WAY**
Thru-Cut



- LEGEND**
- PARCEL LINES
 - PROPOSED IMPROVEMENTS
 - PROPOSED RIGHT OF WAY
 - PROPOSED CURB
 - SIDEWALK LINES
 - PROPOSED GRASS MEDIAN
 - PROPOSED FULL DEPTH PAVEMENT
 - PROPOSED CONCRETE ITEMS
 - PROPOSED MILL AND OVERLAY



PRELIMINARY

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US 17 & Battle Rd/Clairmont Way

Concept 2: Thru-Cut

Design Considerations

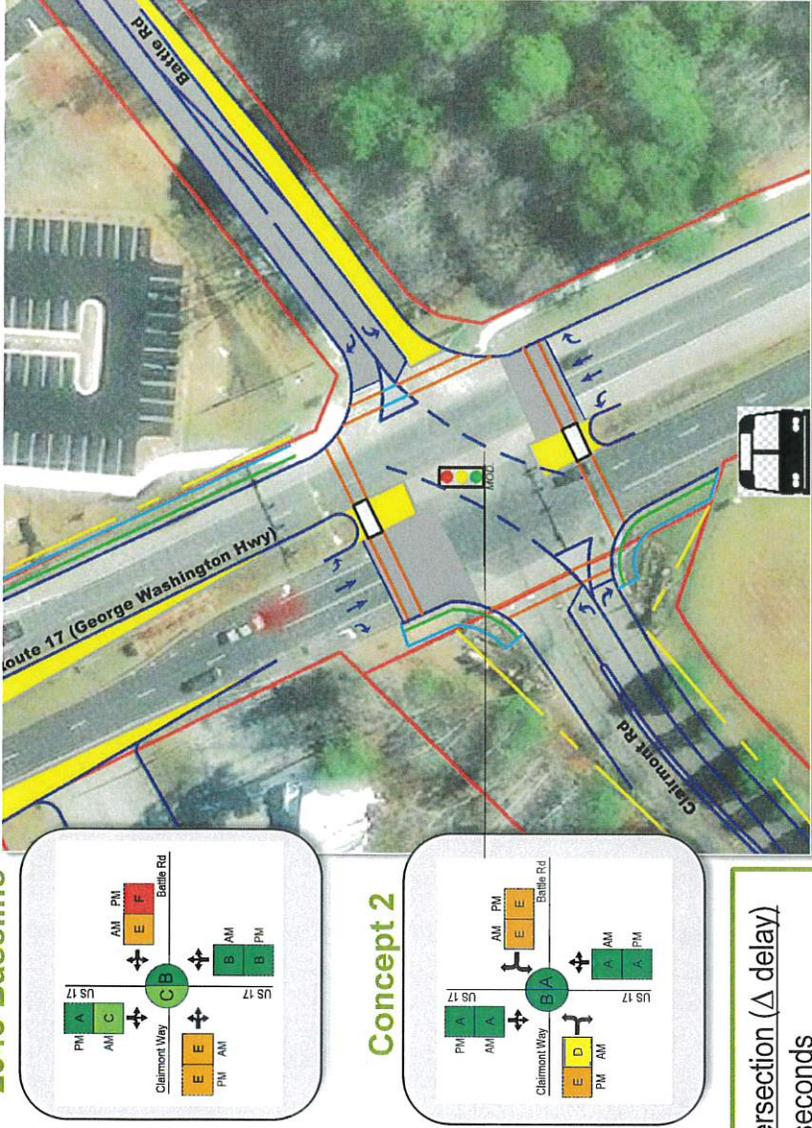
- **Scope**
 - Widening of Battle Rd to provide left turn lane
 - Modifications to median noses, signal phasing
 - Pedestrian crosswalks and pedestrian signals
 - Unsignalized downstream U-turns with loons for heavy vehicles
- **Access management – Minimal**
 - Consolidate Cliff's entrances into one
- **ROW Impacts – Moderate**
 - Southern U-turn loon requires additional ROW from Nelson's Grant development (Subway). Some loss of parking spaces.
- **Feasibility/Constructability – Medium Complexity**
 - Construction in three areas of the corridor
 - Maintain business access
 - Potential stormwater implications

CMF: 0.91

5-Year F+I Crash Reduction = 0.9 crashes

**Stage 1 Cost Estimate Range (Construction):
\$7.3 M – \$9.6 M**

2045 Baseline



Overall Intersection (Δ delay)

AM: -16.5 seconds

PM: -5.4 seconds

US 17 & Battle Rd/Clairmont Way

Concept 3: Full Median U-Turn

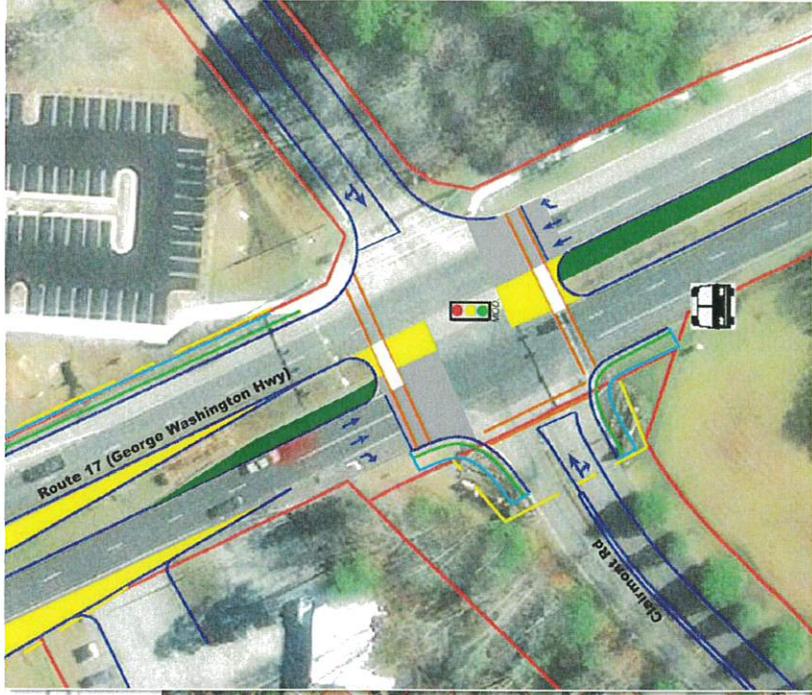


**PROJECT PIPELINE
ROUTE 17 (GEORGE WASHINGTON HWY)
AT BATTLE RD/CLAIRMONT WAY**
Median U-turn



LEGEND

- PARCEL LINES
- PROPOSED IMPROVEMENTS
- PROPOSED RIGHT OF WAY
- PROPOSED CURB
- SIDEWALK LINES
- PROPOSED GRASS MEDIAN
- PROPOSED FULL DEPTH PAVEMENT
- PROPOSED CONCRETE ITEMS
- PROPOSED MILL AND OVERLAY



PRELIMINARY
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US 17 & Battle Rd/Clairmont Way

Concept 3: Full Median U-Turn

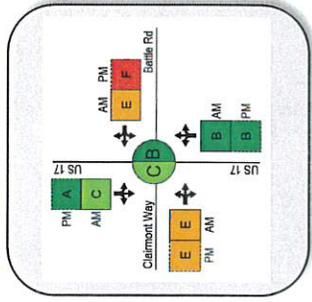
Design Considerations

- **Scope**
 - Widen median to prohibit left turns from US 17
 - Pedestrian crosswalks and pedestrian signals
 - Modifications to median noses, signal phasing
 - New signal at northern median break with loons for heavy vehicles
- **Access management – Minimal**
 - Consolidate Cliff's entrances into one
- **ROW Impacts – Moderate**
 - Southern U-turn loon requires additional ROW from Nelson's Grant development (Subway). Some loss of parking spaces.
- **Feasibility/Constructability – Medium Complexity**
 - Construction in three areas of the corridor
 - Maintain business access
 - Potential stormwater implications

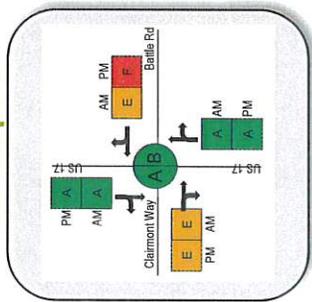
CMF: 0.70
5-Year F+I Crash Reduction = 3.0 crashes

Stage 1 Cost Estimate Range (Construction):
\$7.0 M – \$9.3 M

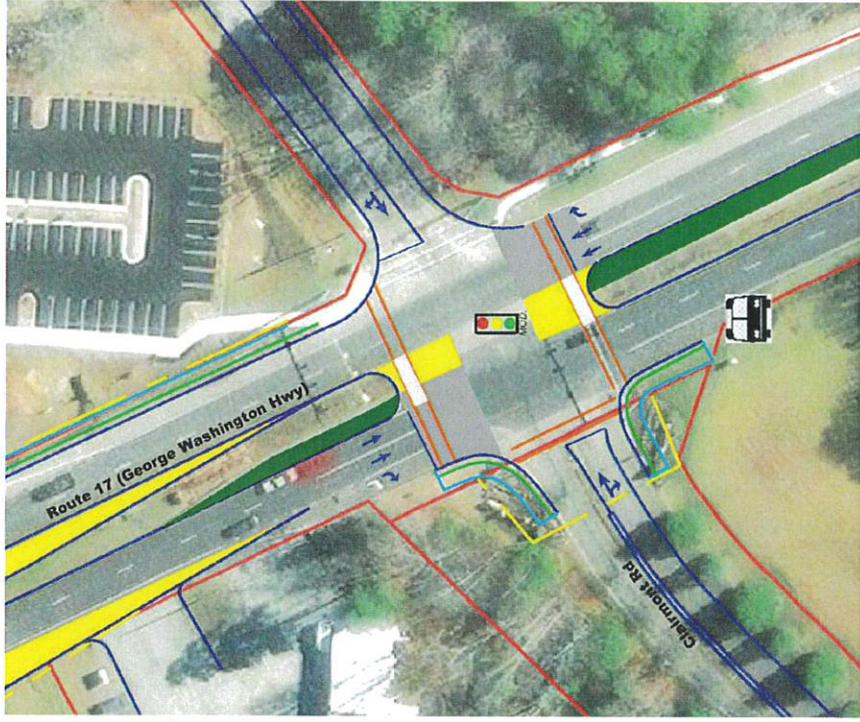
2045 Baseline



Concept 3



Overall Intersection (Δ delay)
AM: -22.4 seconds
PM: -2.8 seconds



US 17 & Battle Rd/Clairmont Way

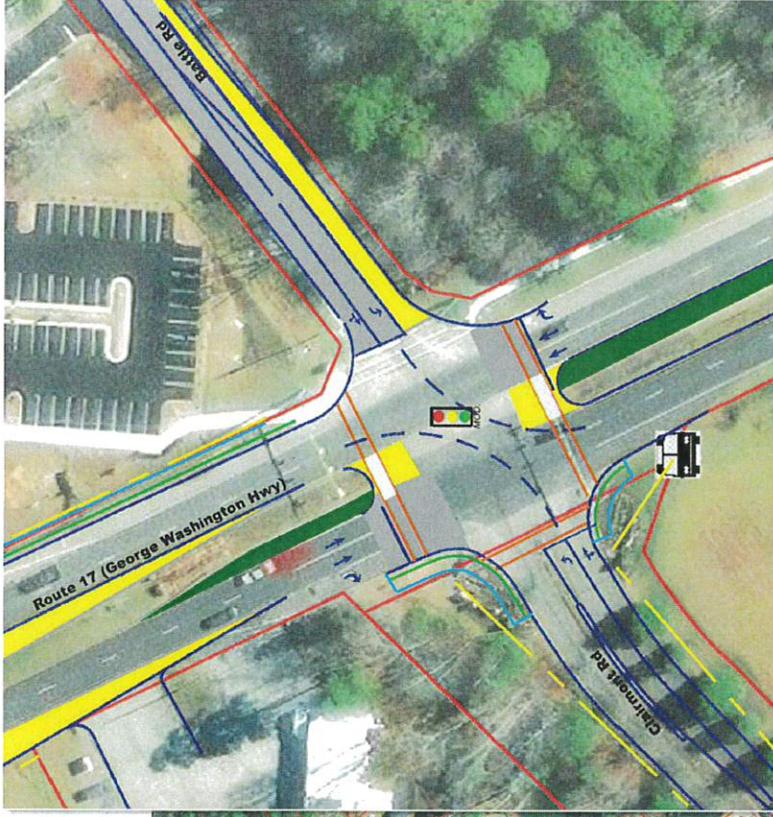
Concept 4: Partial Median U-Turn



**PROJECT PIPELINE
ROUTE 17 (GEORGE WASHINGTON HWY)
AT BATTLE RD/ CLAIRMONT WAY**
Partial Median U-Turn



- LEGEND**
- PARCEL LINES
 - PROPOSED IMPROVEMENTS
 - PROPOSED RIGHT OF WAY
 - PROPOSED CURB
 - SIDEWALK LINES
 - PROPOSED GRASS MEDIAN
 - PROPOSED FULL DEPTH PAVEMENT
 - PROPOSED CONCRETE ITEMS
 - PROPOSED MILL AND OVERLAY



PRELIMINARY
THESE PLANS ARE UNFINISHED AND
UNRECORDED. THEY SHOULD NOT BE USED
FOR ANY TYPE OF CONSTRUCTION OR THE
ACQUISITION OF RIGHT OF WAY.

US 17 & Battle Rd/Clairmont Way

Concept 4: Partial Median U-Turn

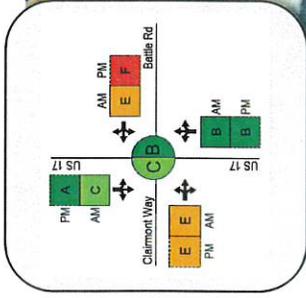
Design Considerations

- **Scope**
 - Widening of Battle Rd to provide left turn lane
 - Modifications to median noses, signal phasing
 - Widen median to prohibit left turns from US 17
 - Pedestrian crosswalks and pedestrian signals
 - Unsignalized downstream U-turns with loons for heavy vehicles
- **Access management – Minimal**
 - Consolidate Cliff's entrances into one
- **ROW Impacts – Moderate**
 - Southern U-turn loon requires additional ROW from Nelson's Grant development (Subway). Some loss of parking spaces.
- **Feasibility/Constructability – Medium Complexity**
 - Construction in three areas of the corridor
 - Maintain business access
 - Potential stormwater implications

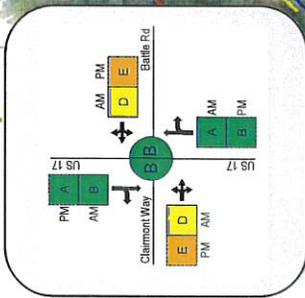
CMF: 0.70*
5-Year F+I Crash Reduction = 3.0 crashes
Reduces Conflict Points from 32 to 22

Stage 1 Cost Estimate Range (Construction):
\$8.0 M – \$10.5 M

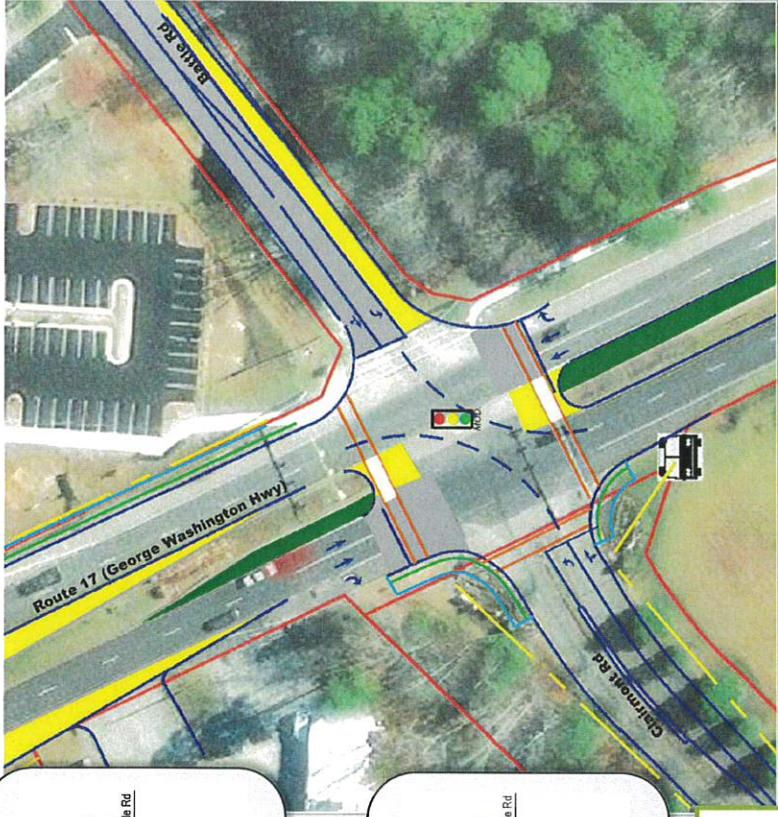
2045 Baseline



Concept 4



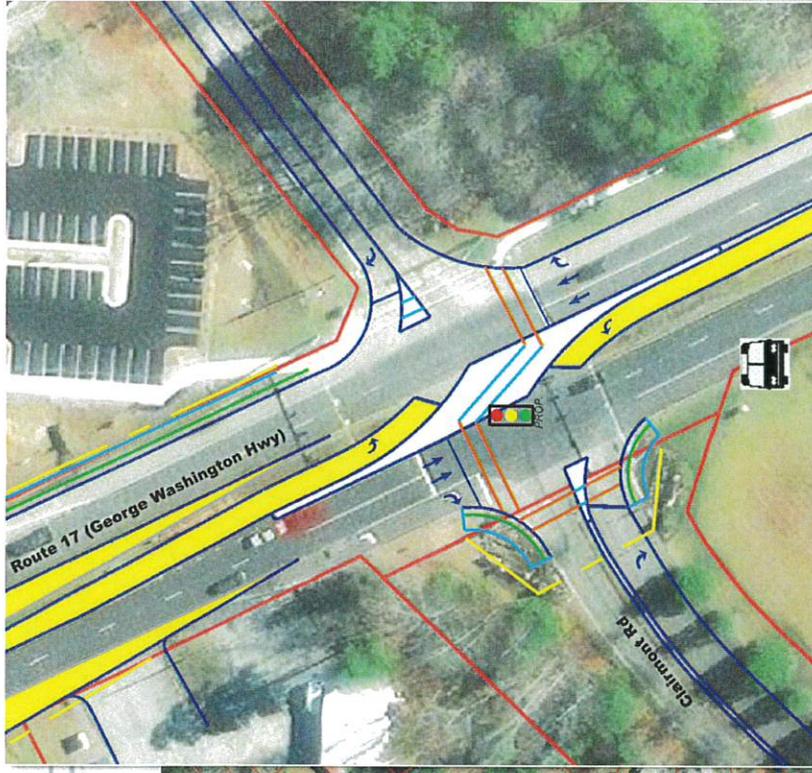
Overall Intersection (Δ delay)
AM: -14.0 seconds
PM: -1.1 seconds



*CMF for Full Median U-Turn. No CMF exists for Partial Median U-Turn.

US 17 & Battle Rd/Clairmont Way

Concept 5: Restricted Crossing U-Turn (RCUT)



**PROJECT PIPELINE
ROUTE 17 (GEORGE WASHINGTON HWY)
AT BATTLE RD/ CLAIRMONT WAY**
RCUT

- LEGEND**
- PARCEL LINES
 - PROPOSED IMPROVEMENTS
 - PROPOSED RIGHT OF WAY
 - PROPOSED CURB
 - SIDEWALK LINES
 - PROPOSED GRASS MEDIAN
 - PROPOSED FULL DEPTH PAVEMENT
 - PROPOSED CONCRETE ITEMS
 - PROPOSED MILL AND OVERLAY

PRELIMINARY

THESE PLANS ARE UNFINISHED AND UNAPPROVED AND ARE NOT TO BE USED FOR ANY TYPE OF CONSTRUCTION OR THE ACQUISITION OF RIGHT OF WAY.

US 17 & Battle Rd/Clairmont Way

Concept 5: Restricted Crossing U-Turn (RCUT)

Design Considerations

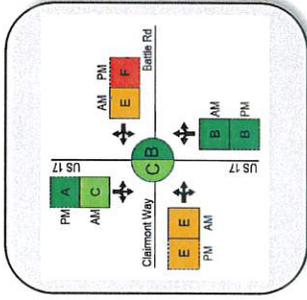
- **Scope**
 - Median reconfiguration to guide all side-street traffic to turn right
 - Pedestrian crosswalks and pedestrian signals, signal phasing modifications
 - New signal at northern median break with loons for heavy vehicles
- **Access management – Minimal**
 - Consolidate Cliff's entrances into one
- **ROW Impacts – Moderate**
 - Southern U-turn loon requires additional ROW from Nelson's Grant development (Subway). Some loss of parking spaces.
- **Feasibility/Constructability – Medium Complexity**
 - Construction in three areas of the corridor
 - Maintain business access
 - Potential stormwater implications

CMF: 0.78

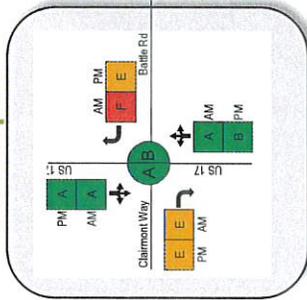
5-Year F+I Crash Reduction = 2.2 crashes

**Stage 1 Cost Estimate Range (Construction):
\$9.4 M – \$12.3 M**

2045 Baseline



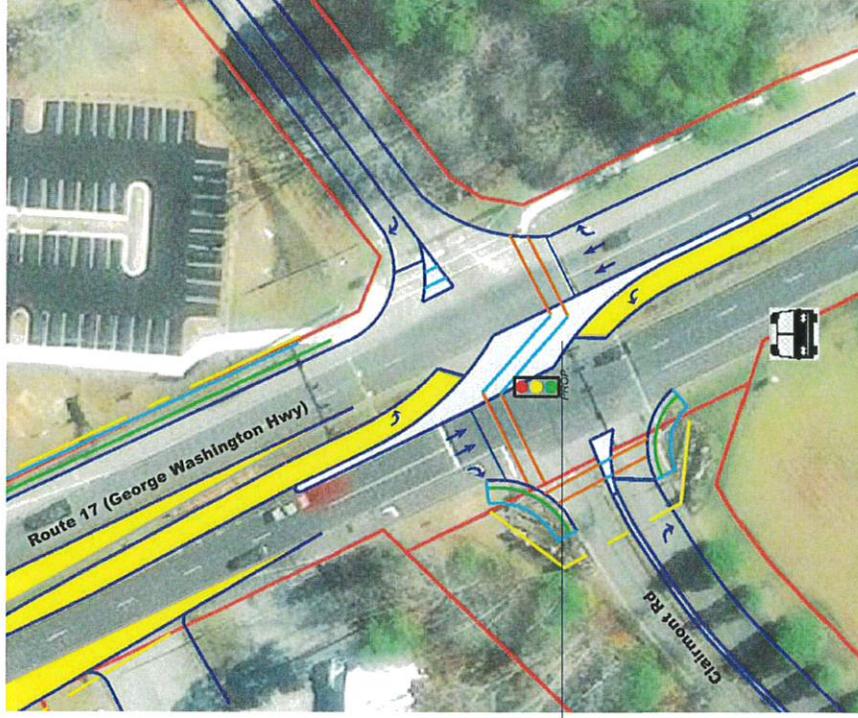
Concept 5



Overall Intersection (Δ delay)

AM: -18.0 seconds

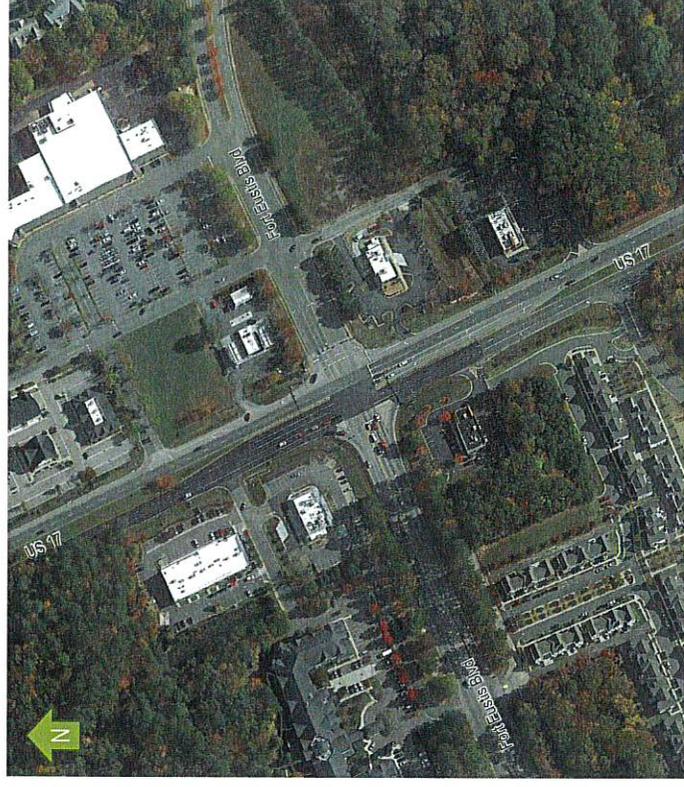
PM: -1.7 seconds



US 17 & Fort Eustis Blvd

Potential Concepts

1. Yorktown Crescent proposed improvements
2. Conventional w/ Added EB Lane
3. Quadrant Roadway
4. Partial Displaced Left Turn



US 17 & Fort Eustis Blvd Concept Screening Summary

Pedestrian & Bike Accommodations Compared to No-Build	
-	Negative Impact
0	Neutral Impact
+ to +++	Positive Impact

Alternative	Estimated 5-Year Crash Reduction ⁽¹⁾	Pedestrian & Bike ⁽²⁾	Construction Cost ⁽³⁾	Difference in Overall Intersection Delay from 2045 Base (seconds)	
				AM	PM
1 Yorktown Crescent TIA improvements	0.4	0	n/a	-2.1	-23.1
2 Conventional w/ Added EB Lane	0.7	++	\$4.5M - \$5.9M	-11.4	-9.2
3 Quadrant Roadway	Reduces conflict points from 32 to 30	+++	\$16.9M - \$22.6M	-15.0	-22.3
4 Partial Displaced Left Turn	2.1	+	\$17.0M - \$22.0M	-24.3	-52.8

⁽¹⁾ Based on Crash Modification Factors (CMFs).

⁽²⁾ Quadrant Roadway has +++ because it has the shortest crossing distances and adds new sidewalk on the new quadrant roadway. Partial Displaced Left Turn has + because it adds crosswalks that have long pedestrian crossing distances. Conventional w/ Added EB Lane has ++ because it adds crosswalks with crossing distances shorter than the Partial Displaced Left Turn and longer than the Quadrant Roadway.

⁽³⁾ 2024 Construction Cost (Non-inflated) does not include RW and PE.

Change in Delay from 2045 Base (seconds)

US 17 at Fort Eustis Blvd

	US 17 Northbound		US 17 Southbound		Fort Eustis Blvd Eastbound		Fort Eustis Blvd Westbound		Intersection Overall Average	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Concept 1: 2045 Base Plus YC Proposed Imps	-7.6	-23.0	9.2	-7.6	-27.8	-68.9	9.7	16.7	-2.1	-23.1
Concept 2: Conventional w/ unsplit signal	-0.3	6.8	-14.8	2.0	-26.8	-47.1	-6.8	1.7	-11.4	-9.2
Concept 3: Quadrant	-6.0	-3.9	-27.1	-4.6	-30.1	-86.3	25.2	25.4	-15.0	-22.3
Concept 4: Displaced Left Turn	17.1	-34.2	-45.0	-29.7	-52.3	-112.6	-22.4	-28.7	-24.3	-52.8

US 17 & Fort Eustis Blvd

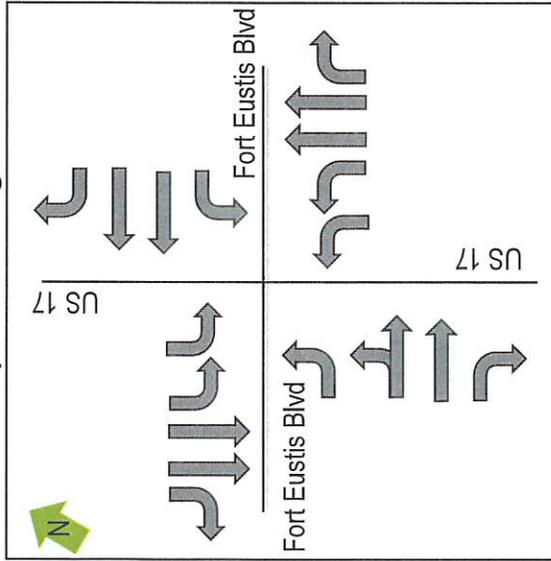
Concept 1: Yorktown Crescent Proposed Improvements



PROJECT PIPELINE

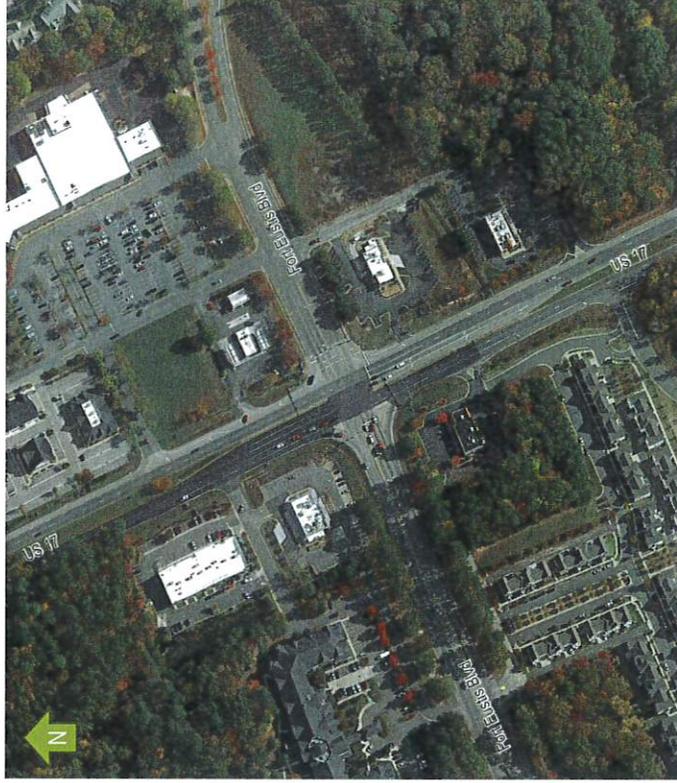
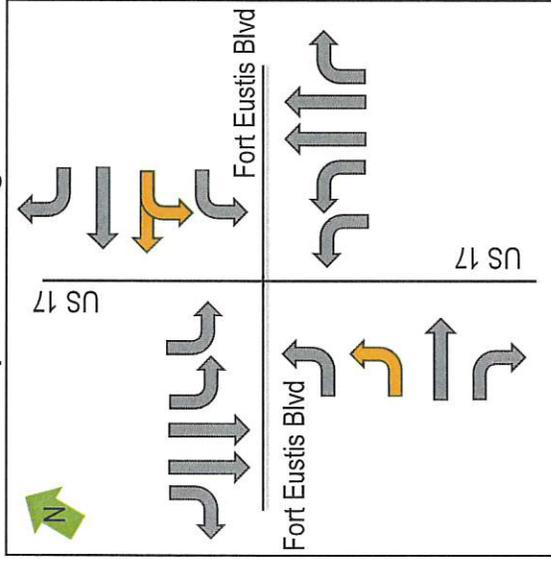
Existing Lanes on Fort Eustis Blvd approaches

Split Phasing



Proposed Configuration in Yorktown Crescent TIA

Split Phasing



US 17 & Fort Eustis Blvd

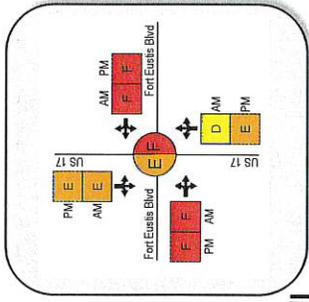
Concept 1: Yorktown Crescent Proposed Improvements

Design Considerations

- **Scope**
 - Restriping of EB and WB Fort Eustis approaches
 - Construct median on Fort Eustis Blvd east of US 17
- **Access management – Moderate**
 - New median on Fort Eustis Blvd east of US 17 will change access to Wendy's, Shell, and Food Lion
- **ROW Impacts – Minor**
 - West end of right turn lane widening
- **Feasibility/Constructability – Low Complexity**
 - Off-peak lane closures and night-time construction

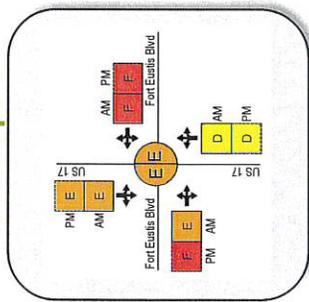
CMF: 0.97
5-Year F+I Crash Reduction = 0.4 crashes

2045 Baseline



Existing Lanes on Fort Eustis Blvd approaches
 Split Phasing

Concept 1



Proposed Configuration in Yorktown Crescent TIA
 Split Phasing

Overall Intersection (Δ delay)
 AM: -2.1 seconds
 PM: -23.1 seconds

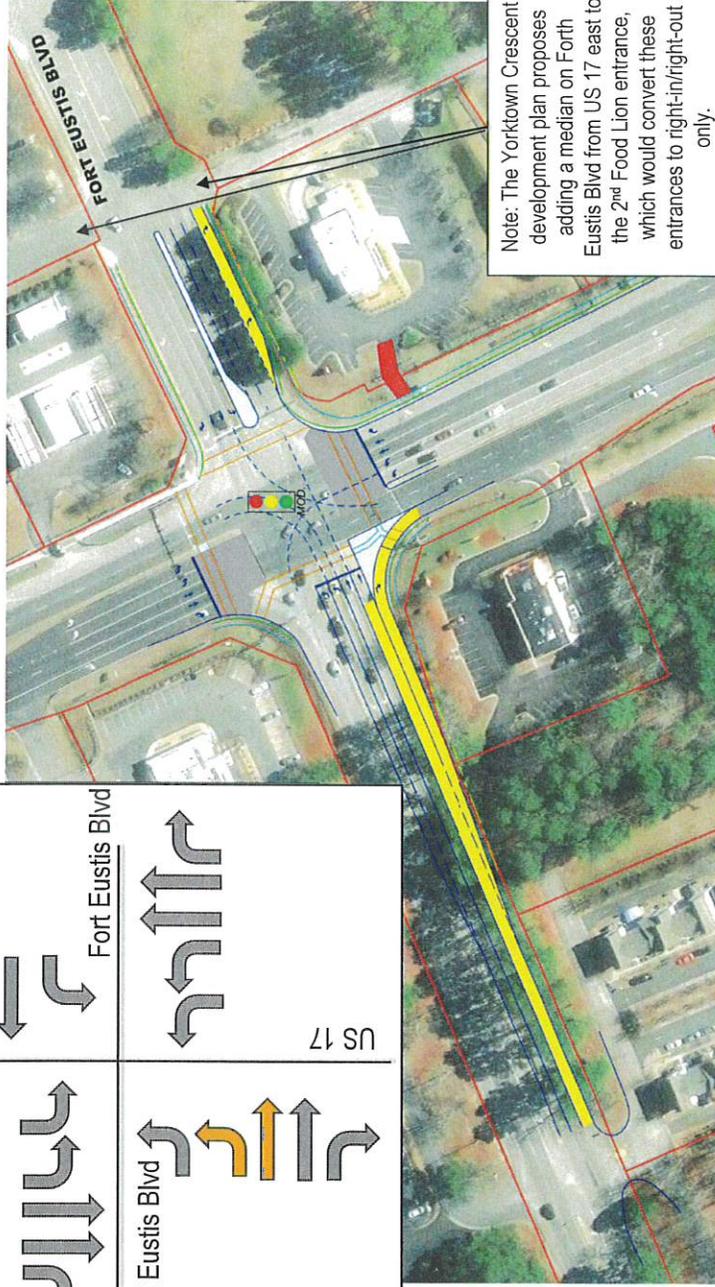
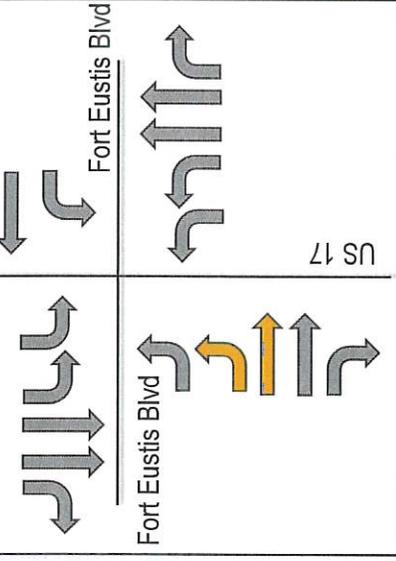
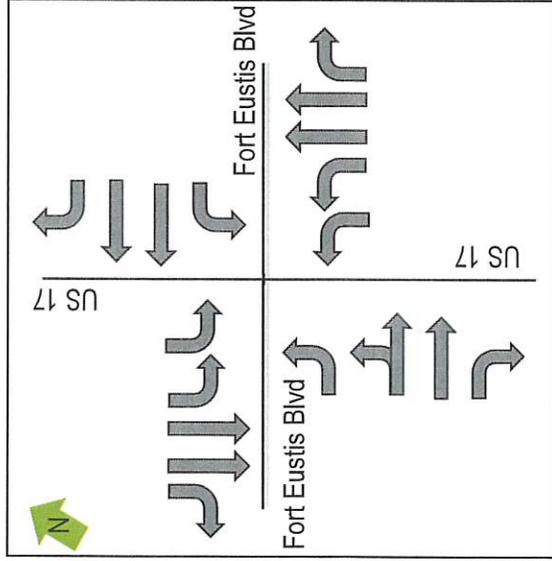
US 17 & Fort Eustis Blvd

Concept 2: Conventional with Added Eastbound Lane



Concept 2: Conventional
w/ Added EB Lane
Concurrent Left Turns

Existing Lanes on
Fort Eustis Blvd approaches
Split Phasing



US 17 & Fort Eustis Blvd

Concept 2: Conventional with Added Eastbound Lane

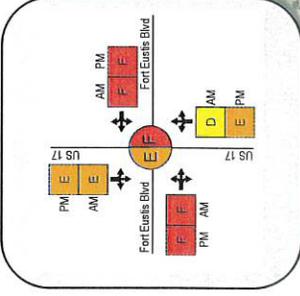
Design Considerations

- **Scope**
 - Add EB through lane
 - Extend EB right turn lane
 - Construct median on Fort Eustis Blvd east of US 17, per Yorktown Crescent TIA
- **Access management – Moderate/High**
 - Close ingress-only Wendy's entrance
 - New median on Fort Eustis Blvd east of US 17 will change access to Wendy's, Shell, and Food Lion
- **ROW Impacts – Minor**
 - West end of right turn lane widening
- **Feasibility/Constructability – Medium Complexity**
 - Off-peak lane closures and night-time construction
 - High volume intersection

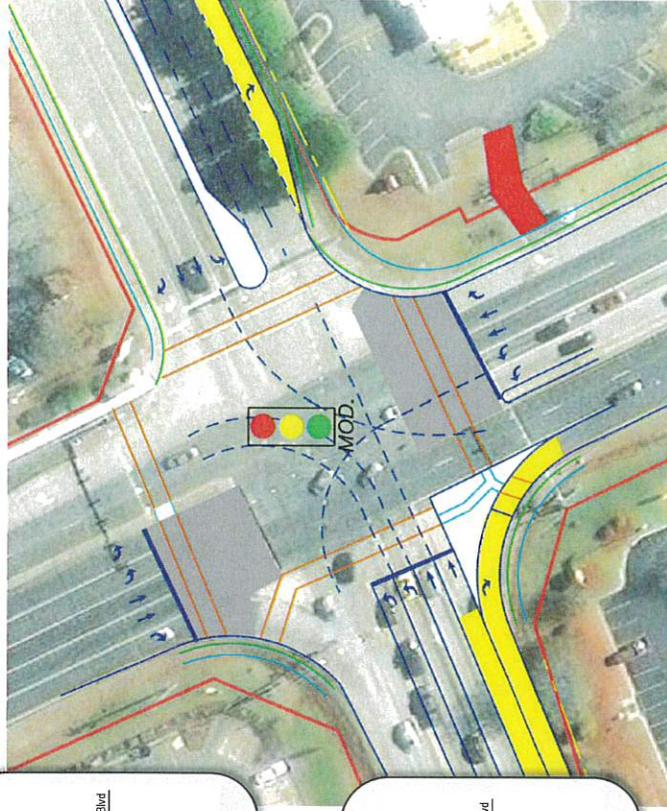
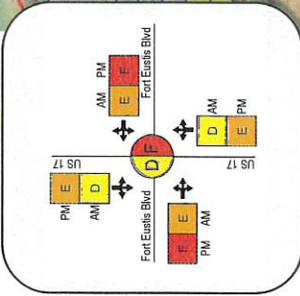
CMF: 0.85 (EB) and 0.97 (all others)
5-Year F+I Crash Reduction = 0.7 crashes

Stage 1 Cost Estimate Range (Construction):
\$4.5 M – \$5.9 M

2045 Baseline



Concept 2



Overall Intersection (Δ delay)

AM: -11.4 seconds

PM: -9.2 seconds

US 17 & Fort Eustis Blvd

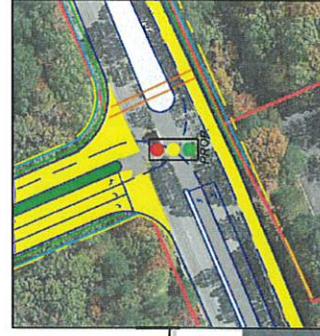
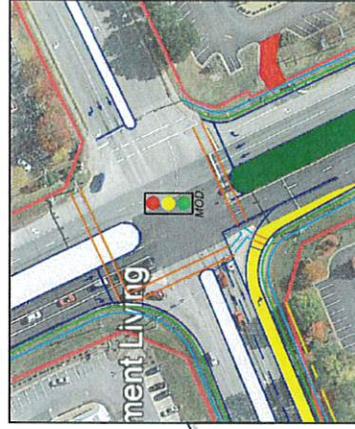
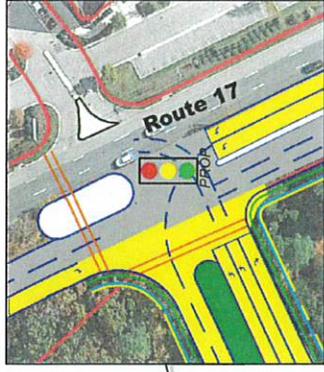
Concept 3: Quadrant Roadway

**PROJECT PIPELINE
ROUTE 17 (GEORGE WASHINGTON HWY)
AT FORT EUSTIS BLVD**

QUADRANT ROADWAY

LEGEND

- PARCEL LINES
- PROPOSED IMPROVEMENTS
- PROPOSED RIGHT OF WAY
- PROPOSED CURB
- SIDEWALK LINES
- PROPOSED GRASS MEDIAN
- PROPOSED FULL DEPTH PAVEMENT
- PROPOSED CONCRETE ITEMS
- PROPOSED MILL AND OVERLAY
- PROPOSE CLOSE ENTRANCE



US 17 & Fort Eustis Blvd

Concept 3: Quadrant Roadway

PROJECT PIPELINE



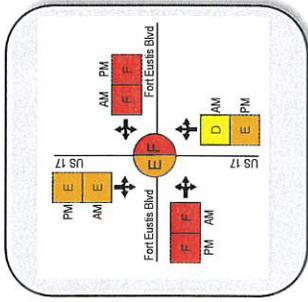
Design Considerations

- **Scope**
 - Construct new quadrant roadway behind Colonial Harbor with access to businesses
 - 2 new signalized intersections
- **Access management – High**
 - McDonald's/Starbucks and Colonial Harbor use new entrance off of new quadrant roadway
 - New median on Fort Eustis Blvd east of US 17 will change access to Wendy's, Shell, and Food Lion
 - Yorktown Arch Apartments entrance on Fort Eustis Blvd becomes right-out only
- **ROW Impacts – High**
 - Major ROW acquisition required for new roadway
- **Feasibility/Constructability – High Complexity**
 - Construction in environmentally sensitive area
 - Lane closures for widening on Fort Eustis, and median improvements

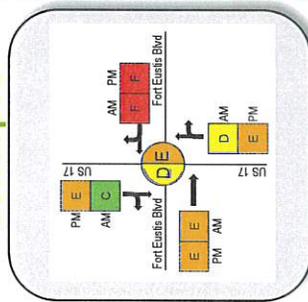
CMF: none available
Reduces Conflict Points from 32 to 30

Stage 1 Cost Estimate Range (Construction):
\$16.9 M – \$22.6 M

2045 Baseline



Concept 3

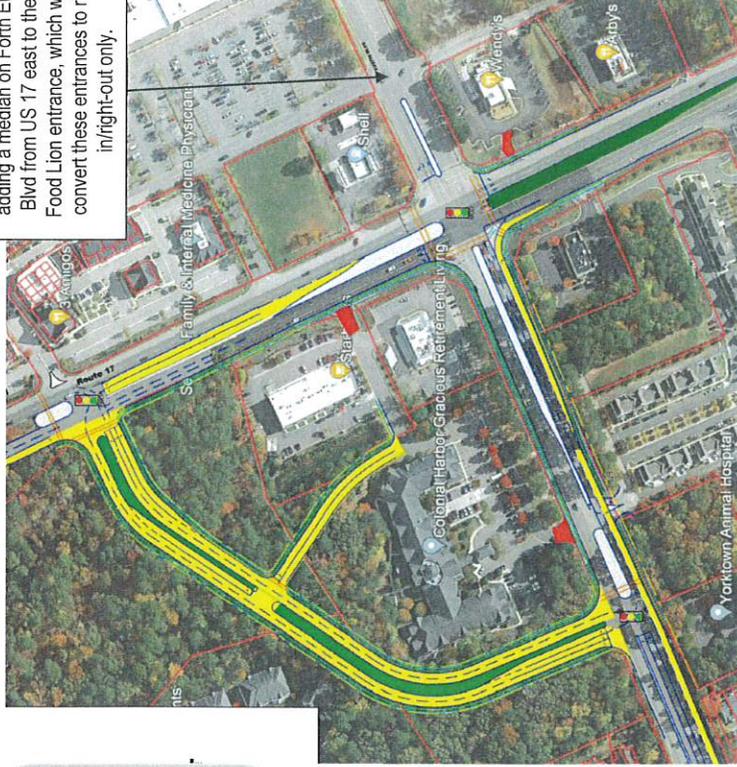


Overall Intersection (Δ delay)

AM: -15.0 seconds

PM: -22.3 seconds

Note: The Yorktown Crescent development plan proposes adding a median on Fort Eustis Blvd from US 17 east to the 2nd Food Lion entrance, which would convert these entrances to right-in/right-out only.



US 17 & Fort Eustis Blvd

Concept 4: Partial Displaced Left Turn

Note: The Yorktown Crescent development plan proposes adding a median on Fort Eustis Blvd from US 17 east to the 2nd Food Lion entrance, which would convert these entrances to right-in/right-out only.

PROJECT PIPELINE

LEGEND

- PARCEL LINES
- PROPOSED IMPROVEMENTS
- PROPOSED RIGHT OF WAY
- PROPOSED CURB
- SIDEWALK LINES
- PROPOSED GRASS MEDIAN
- PROPOSED FULL DEPTH PAVEMENT
- PROPOSED CONCRETE ITEMS
- PROPOSED MILL AND OVERLAY
- PROPOSE CLOSE ENTRANCE



PRELIMINARY

THESE PLANS ARE UNFINISHED AND UNAPPROVED AND ARE NOT TO BE USED FOR ANY TYPE OF CONSTRUCTION OR THE ACQUISITION OF RIGHT OF WAY.

US 17 & Fort Eustis Blvd

Concept 4: Partial Displaced Left Turn

Design Considerations

- **Scope**
 - Complete intersection conversion with additional lanes
 - 2 new signalized crossover intersections
- **Access management – High**
 - Close ingress-only Wendy's entrance and Shell entrance on US 17
 - New median on Fort Eustis Blvd east of US 17 will change access to Wendy's, Shell, and Food Lion
- **ROW Impacts – High**
 - Major ROW acquisition needed
- **Feasibility/Constructability – High Complexity**
 - Extensive business and access impacts
 - Length of major construction along Route 17
 - Numerous maintenance of traffic phases
 - Significant stormwater impacts
 - Possible culvert extension on south end

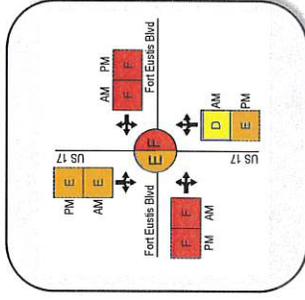
CMF: 0.85

5-Year F+I Crash Reduction = 2.1 crashes

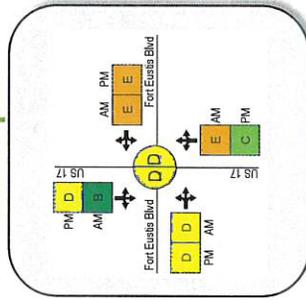
Stage 1 Cost Estimate Range (Construction):

\$17.0 M – \$22.0 M

2045 Baseline



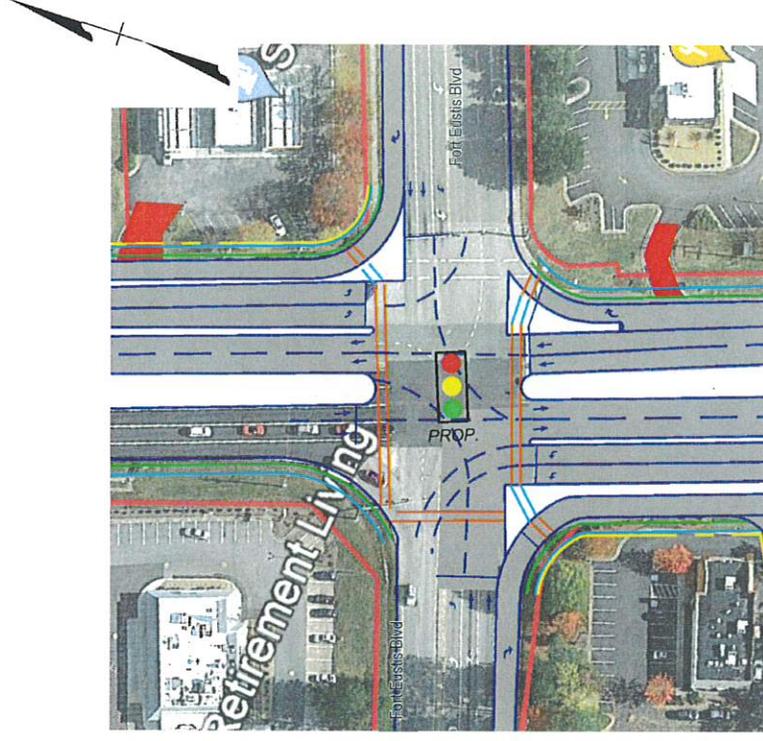
Concept 4



Overall Intersection (Δ delay)

AM: -24.3 seconds

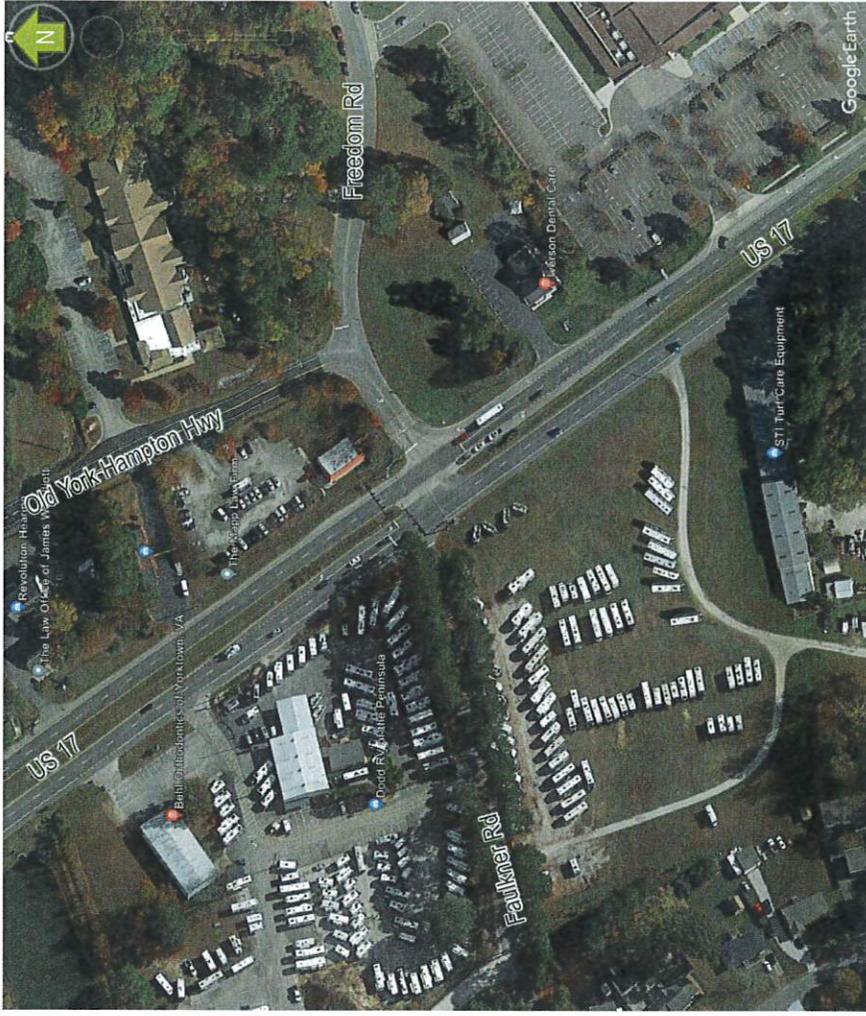
PM: -52.8 seconds



US 17 & Old York-Hampton Hwy Hwy/Faulkner Rd

Potential Concepts

1. Unsplit Side-street Signal Phasing
(Realign Faulkner Rd)
2. Continuous Green T w/ SB L
3. Continuous Green T w/out SB L
4. Partial Median U-Turn
5. Thru-Cut



US 17 & Old York-Hampton Hwy/ Faulkner Rd Concept Screening Summary

Pedestrian & Bike
Accommodations
Compared to No-Build

- Negative Impact
- 0 Neutral Impact
- + Positive Impact

Alternative	Estimated 5-Year Crash Reduction ⁽¹⁾	Pedestrian & Bike ⁽⁴⁾	Construction Cost ⁽⁵⁾	Difference in Overall Intersection Delay from 2045 Base (seconds)	
				AM	PM
1 Unsplit Side-Street Signal Phasing (Realign Faulkner Rd)	1.6	+	\$2.1M - \$2.8M	-5.4	+0.9
2 Continuous Green T w/ SB L	2.4	-	\$8.4M - \$11.0M	-9.0	-12.6
3 Continuous Green T w/out SB L	2.4 ⁽²⁾	-	\$8.4M - \$11.0M	-9.7	-12.6
4 Partial Median U-Turn	4.8 ⁽³⁾	+	\$8.5M - \$11.1M	-7.1	-9.8
5 Thru-Cut	1.4	+	\$2.9M - \$3.8M	-6.2	-9.8

⁽¹⁾ Based on Crash Modification Factors (CMFs).
⁽²⁾ CMF is for Continuous Green T. The prohibition of the SB L will further reduce conflict points with additional safety benefits that are not quantified here.
⁽³⁾ CMF is for Full Median U-Turn. No CMF exists for Partial Median U-Turn.
⁽⁴⁾ Continuous Green T alternatives have (-) because CGTs do not accommodate pedestrian crossings across the mainline, and southbound traffic will have a continuous green signal.
⁽⁵⁾ 2024 Construction Cost (Non-inflated) does not include RW and PE.

Change in Delay from 2045 Base (seconds)

US 17 at Old York-Hampton Hwy/Faulkner Rd

	US 17 Northbound		US 17 Southbound		Faulkner Rd Eastbound		Old York-Hampton Hwy Westbound		Intersection Overall Average	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
ALT1: Conventional with realigned Faulkner Rd & unsplit signal	-17.4	-3.8	-0.8	-10.3	1.2	-1.0	57.5	-142.1	-5.4	0.9
ALT2: Signalized Green-T w/ SB L	-17.0	-20.7	-2.0	-7.1	1.6	64.4	-6.9	13.6	-9.0	-12.6
ALT3: Signalized Green-T w/out SB L	-19.4	-22.5	-1.1	-4.0	4.2	139.2	-8.3	0.4	-9.7	-12.6
ALT4: Partial Median U-Turn	-18.9	-21.4	2.5	-2.4	0.8	-2.6	3.5	39.6	-7.1	-9.8
ALT5: Thru-cut	-16.9	-21.3	3.2	0.5	-8.5	1.3	-2.2	12.7	-6.2	-9.8

US 17 & Old York-Hampton Hwy/ Faulkner Rd

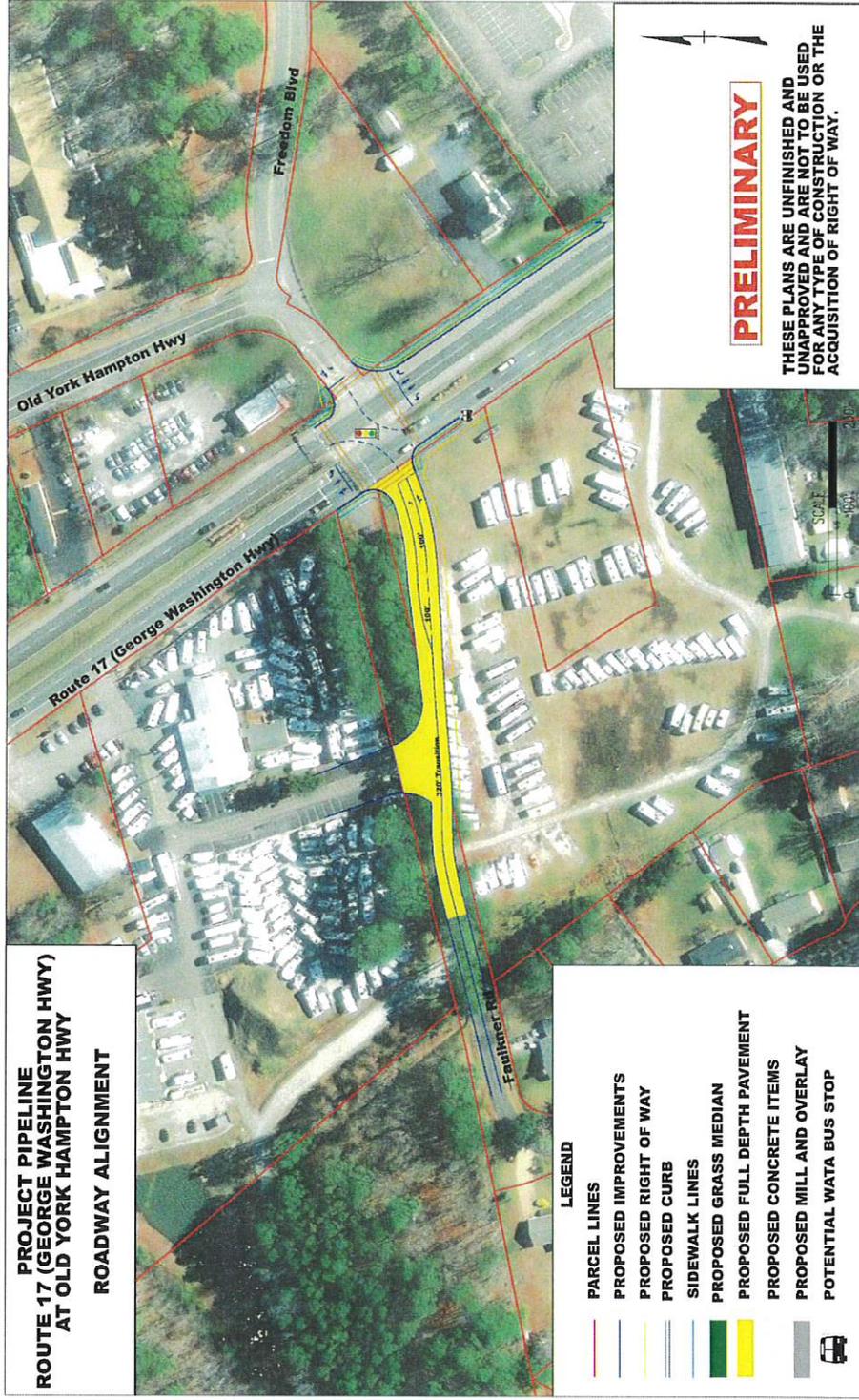
PROJECT PIPELINE



Concept 1: Unsplit Side-Street Signal Phasing (Realign Faulkner Rd)

General Concept

- Realigned Faulkner Road to directly align with Old York-Hampton Highway
- Side-street left turns run concurrently
- Marked crosswalks across all four intersection legs



US 17 & Old York-Hampton Hwy/ Faulkner Rd

Concept 1 : Unsplit Side-Street Signal Phasing (Realign Faulkner Rd)

Design Considerations

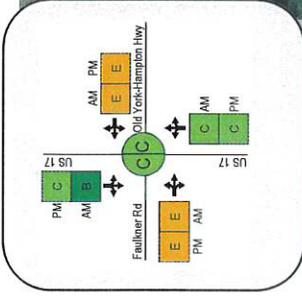
- **Scope**
 - Construct new roadway for Faulkner Rd
 - Crosswalks across all four intersection legs
- **Access management – None**
 - No access changes
- **ROW Impacts – High**
 - Major ROW acquisition needed
- **Feasibility/Constructability – Low Complexity**
 - Off-peak lane closures
 - Construction on new alignment off of Route 17

CMF: 0.90

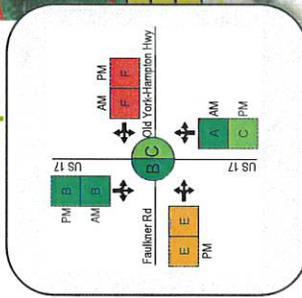
5-Year F+I Crash Reduction = 1.6 crashes

**Stage 1 Cost Estimate Range (Construction):
\$2.1 M – \$2.8 M**

2045 Baseline



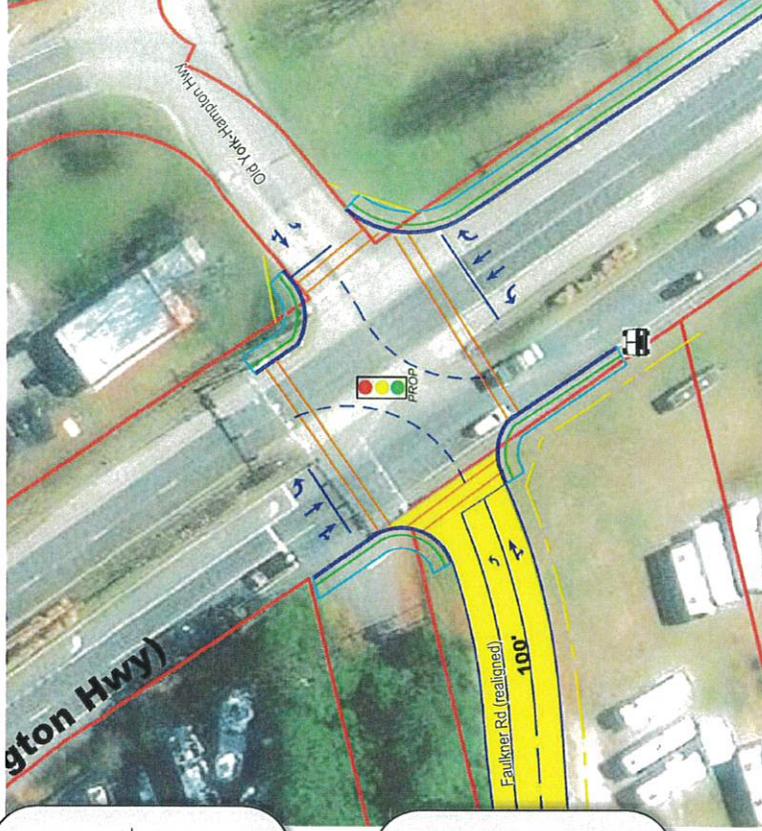
Concept 1



Overall Intersection (Δ delay)

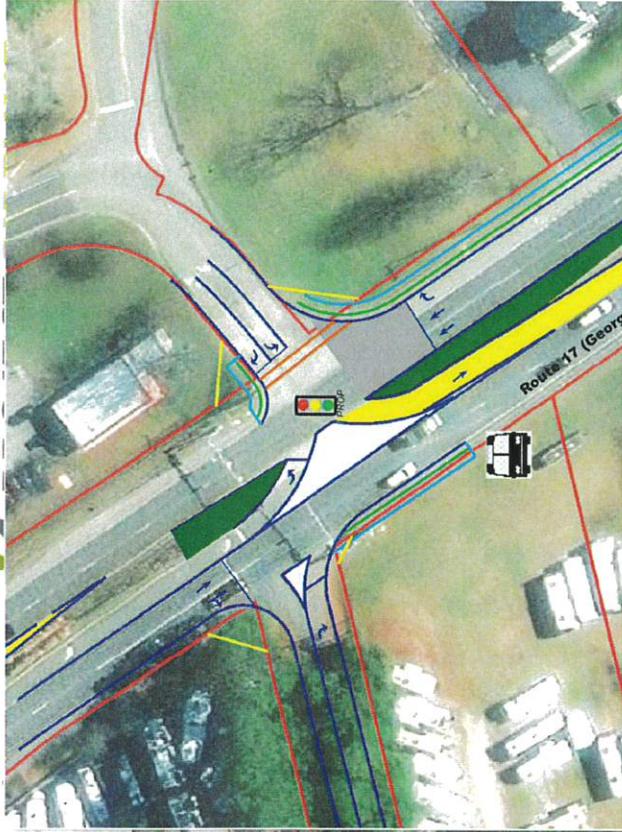
AM: **-5.4** seconds

PM: **+0.9** seconds



US 17 & Old York-Hampton Hwy/ Faulkner Rd

Concept 2: Continuous Green T w/ SB L



**PROJECT PIPELINE
ROUTE 17 (GEORGE WASHINGTON HWY)
AT OLD YORK HAMPTON HWY
SIGNALIZED GREEN-T**



LEGEND

- PARCEL LINES
- PROPOSED IMPROVEMENTS
- PROPOSED RIGHT OF WAY
- PROPOSED CURB
- SIDEWALK LINES
- PROPOSED GRASS MEDIAN
- PROPOSED FULL DEPTH PAVEMENT
- PROPOSED CONCRETE ITEMS
- PROPOSED MILL AND OVERLAY
- POTENTIAL WATER BUS STOP



PRELIMINARY

THESE PLANS ARE UNFINISHED AND UNAPPROVED AND ARE NOT TO BE USED FOR ANY TYPE OF CONSTRUCTION OR THE ACQUISITION OF RIGHT OF WAY.

US 17 & Old York-Hampton Hwy/ Faulkner Rd

Concept 2: Continuous Green T w/ SB L

Design Considerations

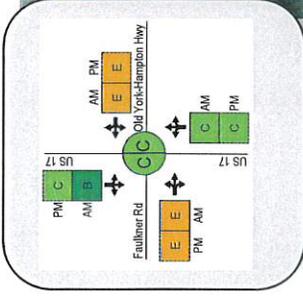
- **Scope**
 - Intersection conversion
 - Unsignalized downstream U-turn loons
 - Median changes
- **Access management – Low**
 - NB left turns must proceed through intersection and make a U-turn
- **ROW Impacts – Moderate**
 - ROW needed for loons to accommodate large vehicle U-turns
- **Feasibility/Constructability – Moderate Complexity**
 - Long work zone, construction in median
 - Maintain business access

CMF: 0.85

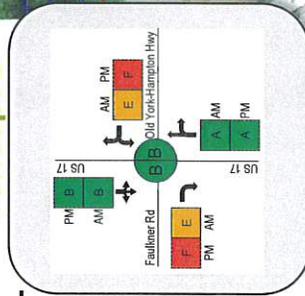
5-Year F+I Crash Reduction = 2.4 crashes

**Stage 1 Cost Estimate Range (Construction):
\$8.4 M – \$11.0 M**

2045 Baseline



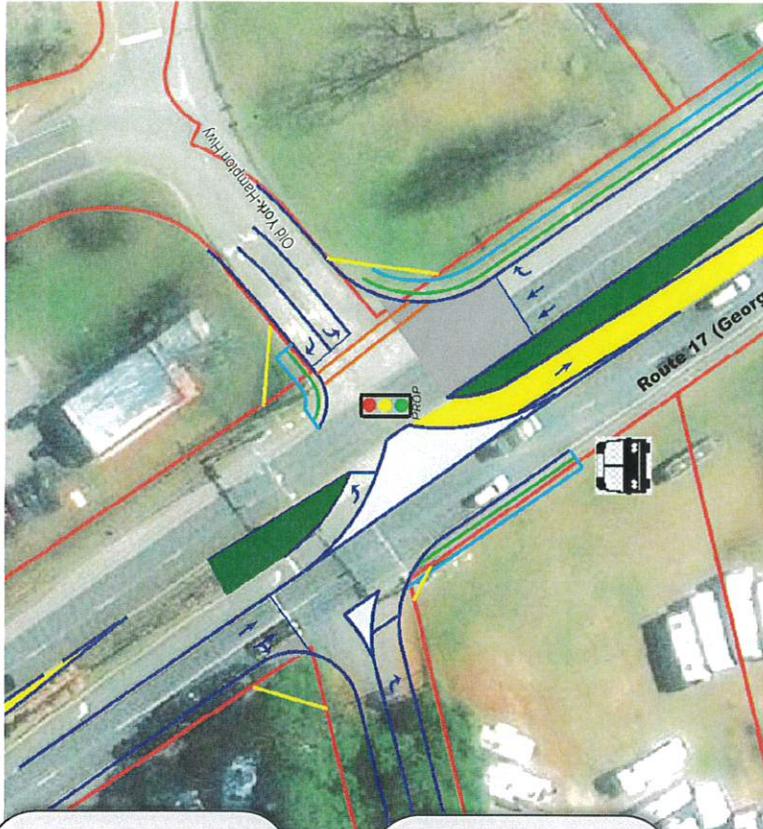
Concept 2



Overall Intersection (Δ delay)

AM: -9.0 seconds

PM: -12.6 seconds



US 17 & Old York-Hampton Hwy/ Faulkner Rd

Concept 3: Continuous Green T w/out SB L

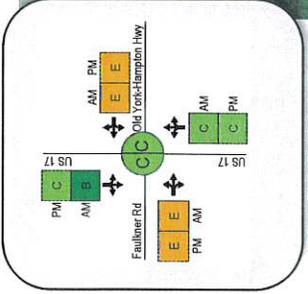
Design Considerations

- **Scope**
 - Intersection conversion
 - Unsignalized downstream U-turn loons
 - Median changes
- **Access management – Low**
 - NB and SB left turns must proceed through intersection and make a U-turn
- **ROW Impacts – Moderate**
 - ROW needed for loons to accommodate large vehicle U-turns
- **Feasibility/Constructability – Moderate Complexity**
 - Long work zone, construction in median
 - Maintain business access

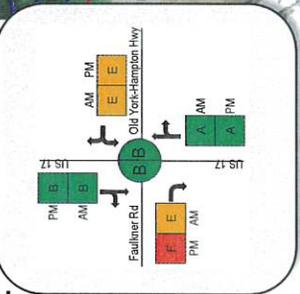
CMF: 0.85*
5-Year F+I Crash Reduction = 2.4 crashes*

Stage 1 Cost Estimate Range (Construction):
\$8.4 M – \$11.0 M**

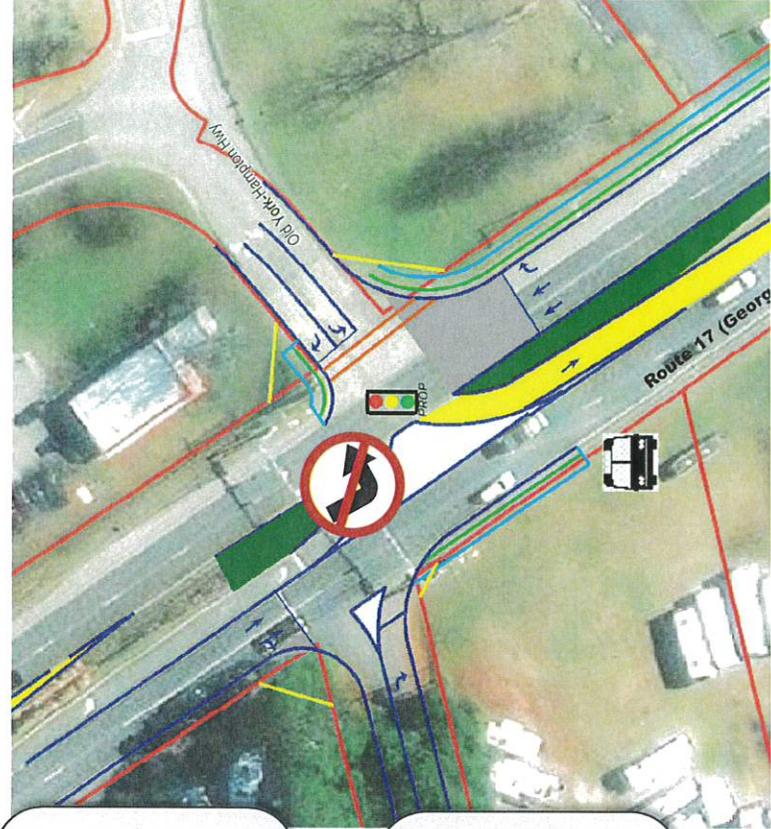
2045 Baseline



Concept 3



Overall Intersection (Δ delay)
AM: -9.7 seconds
PM: -12.6 seconds



*CMF for Continuous Green-T. Prohibition of SB left turns would further decrease conflict points, increasing safety benefits.

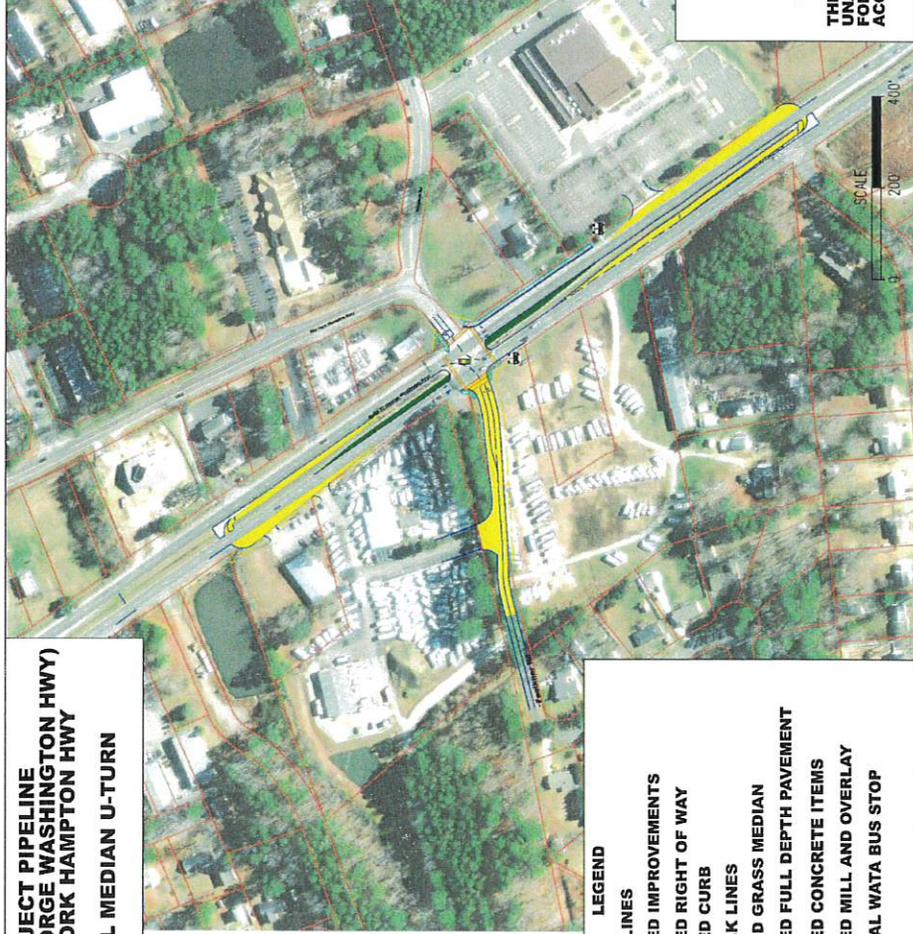
**Cost estimate reflects concept with SB left turns.

US 17 & Old York-Hampton Hwy/ Faulkner Rd

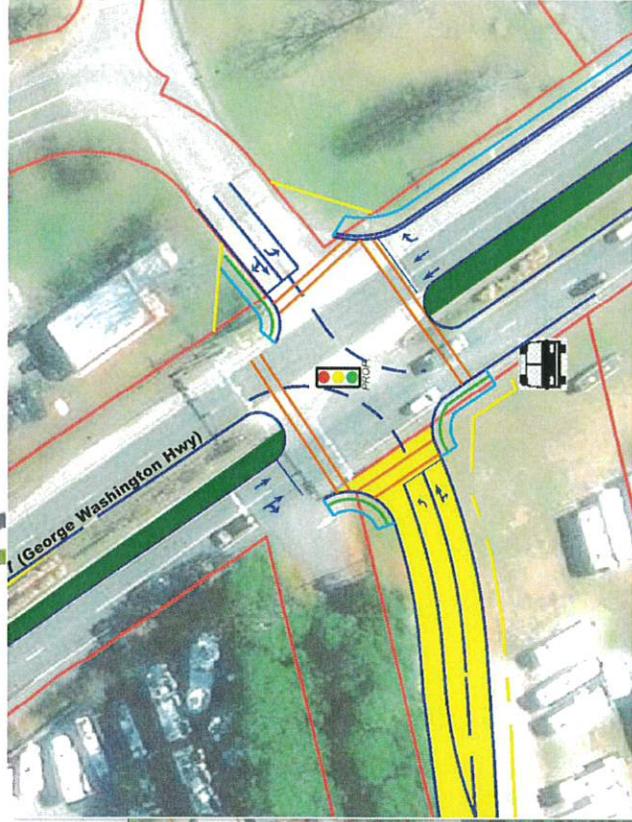


Concept 4: Partial Median U-Turn

**PROJECT PIPELINE
ROUTE 17 (GEORGE WASHINGTON HWY)
AT OLD YORK HAMPTON HWY
PARTIAL MEDIAN U-TURN**



- LEGEND**
- PARCEL LINES
 - PROPOSED IMPROVEMENTS
 - PROPOSED RIGHT OF WAY
 - PROPOSED CURB
 - SIDEWALK LINES
 - PROPOSED GRASS MEDIAN
 - PROPOSED FULL DEPTH PAVEMENT
 - PROPOSED CONCRETE ITEMS
 - PROPOSED MILL AND OVERLAY
 - POTENTIAL WATA BUS STOP



PRELIMINARY

THESE PLANS ARE UNFINISHED AND UNAPPROVED AND ARE NOT TO BE USED FOR ANY TYPE OF CONSTRUCTION OR THE ACQUISITION OF RIGHT OF WAY.

US 17 & Old York-Hampton Hwy/ Faulkner Rd

Concept 4: Partial Median U-Turn

Design Considerations

- **Scope**
 - New roadway alignment for Faulkner Rd
 - US 17 median modifications
 - Unsignalized downstream U-turn loons on US 17
- **Access management – Low**
 - NB and SB left turns must proceed through intersection and make a U-turn
- **ROW Impacts – Moderate**
 - ROW needed for loons to accommodate large vehicle U-turns
- **Feasibility/Constructability – Low Complexity**
 - Off-peak lane closures
 - Construction on new alignment off of Route 17

CMF: 0.70*

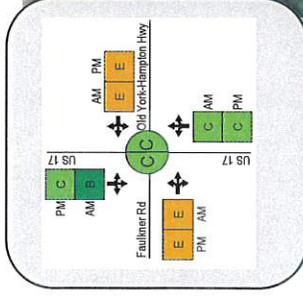
5-Year F+I Crash Reduction = 4.8 crashes
Reduces Conflict Points from 32 to 22

Stage 1 Cost Estimate Range (Construction):
\$8.5 M – \$11.1 M

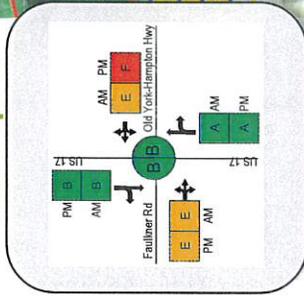
*CMF for Full Median U-Turn. No CMF exists for Partial Median U-Turn.

2/9/2024

2045 Baseline



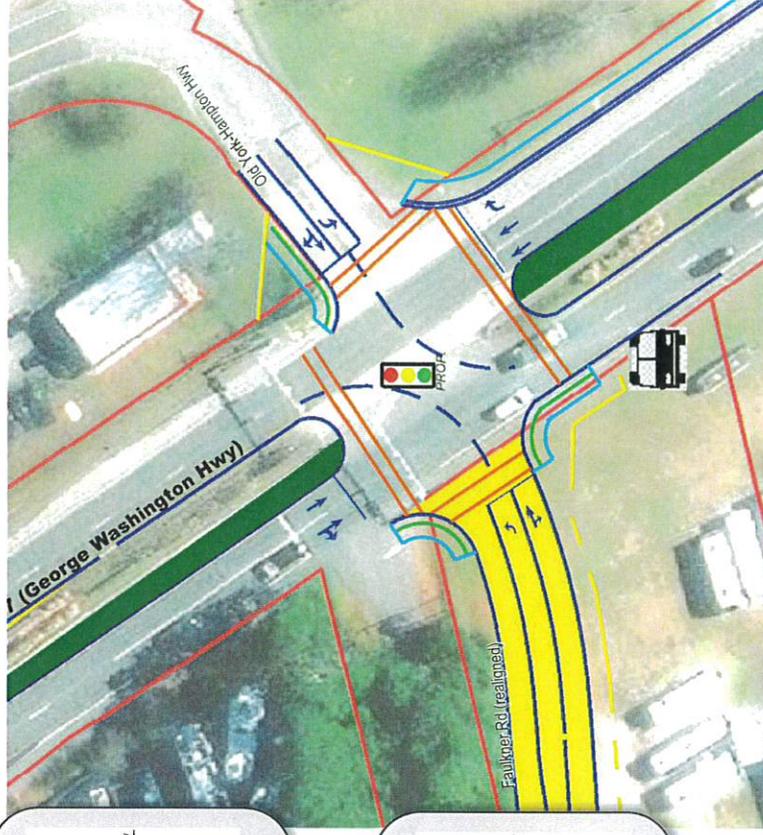
Concept 4



Overall Intersection (Δ delay)

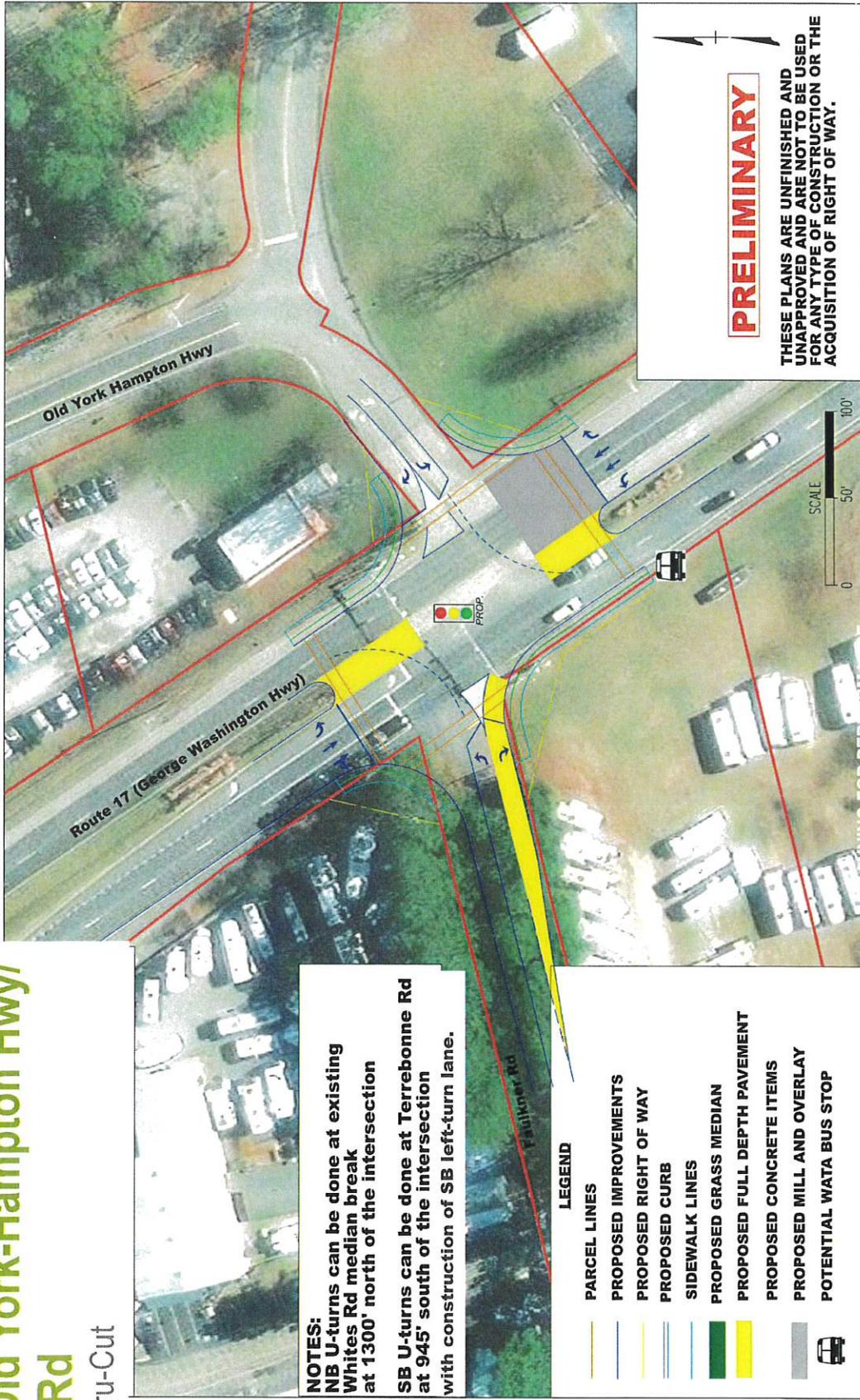
AM: -7.1 seconds

PM: -9.8 seconds



US 17 & Old York-Hampton Hwy/ Faulkner Rd

Concept 5: Thru-Cut



NOTES:
 NB U-turns can be done at existing Whites Rd median break at 1300' north of the intersection
 SB U-turns can be done at Terrebonne Rd at 945' south of the intersection with construction of SB left-turn lane.

- LEGEND**
- PARCEL LINES
 - PROPOSED IMPROVEMENTS
 - PROPOSED RIGHT OF WAY
 - PROPOSED CURB
 - SIDEWALK LINES
 - PROPOSED GRASS MEDIAN
 - PROPOSED FULL DEPTH PAVEMENT
 - PROPOSED CONCRETE ITEMS
 - PROPOSED MILL AND OVERLAY
 - POTENTIAL WATA BUS STOP

PRELIMINARY

THESE PLANS ARE UNFINISHED AND UNAPPROVED AND ARE NOT TO BE USED FOR ANY TYPE OF CONSTRUCTION OR THE ACQUISITION OF RIGHT OF WAY.

SCALE
 0 50' 100'

PLANNING FOR PERFORMANCE

US 17 & Old York-Hampton Hwy/ Faulkner Rd

Concept 5: Thru-Cut

Design Considerations

- **Scope**
 - Widen Faulkner Rd approach
 - Pull back median noses
 - Unsignalized downstream U-turn loons on US 17
- **Access management – None**
 - No access changes
- **ROW Impacts – Moderate**
 - ROW needed for loons to accommodate large vehicle U-turns
- **Feasibility/Constructability – Low Complexity**
 - Off-peak lane closures
 - Construction on new alignment off of Route 17

CMF: 0.91

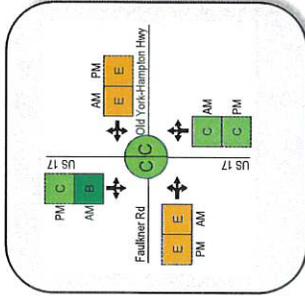
5-Year F+I Crash Reduction = 1.4 crashes

Stage 1 Cost Estimate Range (Construction):

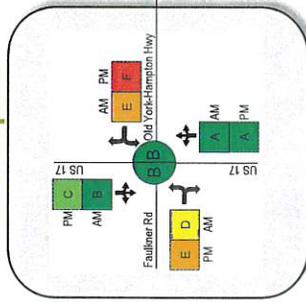
\$2.9 M – \$3.8 M



2045 Baseline



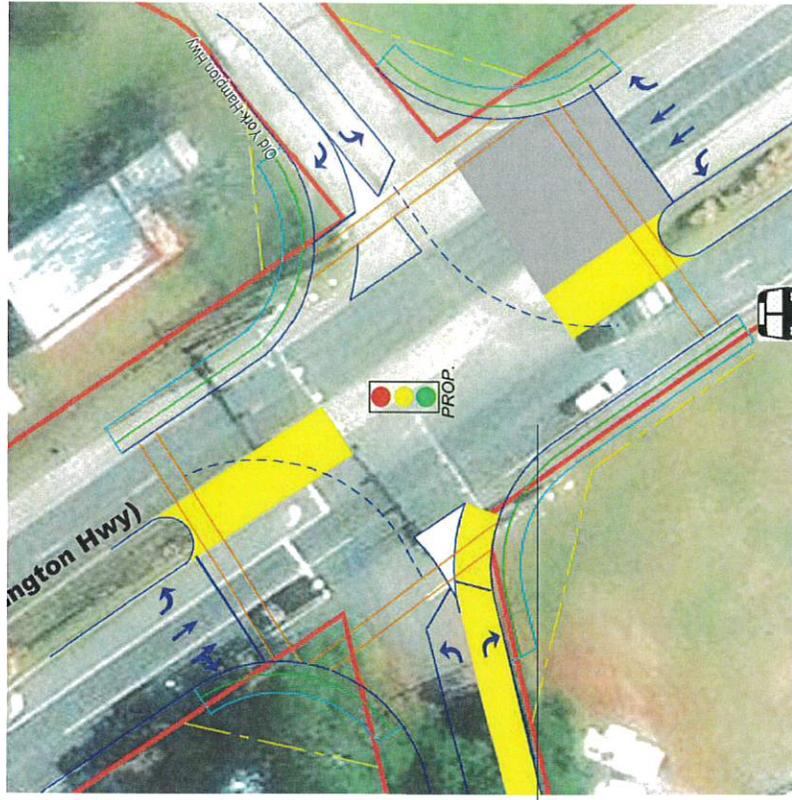
Concept 5



Overall Intersection (Δ delay)

AM: -6.2 seconds

PM: -9.8 seconds



Widening to Six Lanes

- Widening US 17 to six lanes is an option, but the operational benefits are not wildly different from many of the other screened alternatives.
- The screened alternatives represent options that would likely be less impactful than corridor-wide widening.

Overall Intersection Control Delay (sec/veh)

	US 17 at Cook Rd/York Warwick Dr		US 17 at Battle Rd/Clairmont Way		US 17 at Fort Eustis Blvd		US 17 at Old York-Hampton Hwy/Faulkner Rd	
	AM	PM	AM	PM	AM	PM	AM	PM
ALT 1*	15.2	7.3	-15.2	3.1	-2.1	-23.1	-5.4	0.9
ALT 2*	-8.6	-16.3	-16.5	-5.4	-11.4	-9.2	-9.0	-12.6
ALT 3*	-11.6	-23.0	-22.4	-2.8	-15.0	-22.3	-9.7	-12.6
ALT 4*	-8.1	-13.0	-14.0	1.1	-24.3	-52.8	-7.1	-9.8
ALT 5*	n/a	n/a	-18.0	-1.7	n/a	n/a	-6.2	-9.8
Widen to Six Lanes	-5.9	-5.9	-3.1	-5.2	-15.4	-28.3	-4.7	-10.2

*Alternatives vary for each intersection.

Speed Management Recommendations

- Other recommendations related to speed management could include:
 - Pursue lowering the posted speed limit from 50 mph to 45 mph
 - Rumble strips and speed feedback signs
 - Crepe myrtles and landscaping in the median to visually enclose the space
 - Curbed medians to reduce speed
 - Narrowing lane widths to 11-feet
- These recommendations will be explored further and incorporated where feasible and appropriate into the preferred alternative that advances into Phase 3.



HR-10 Concept Screening Results

Phase 2 Concept Screening

HR-23-10 (George Washington Highway) at Victory Blvd

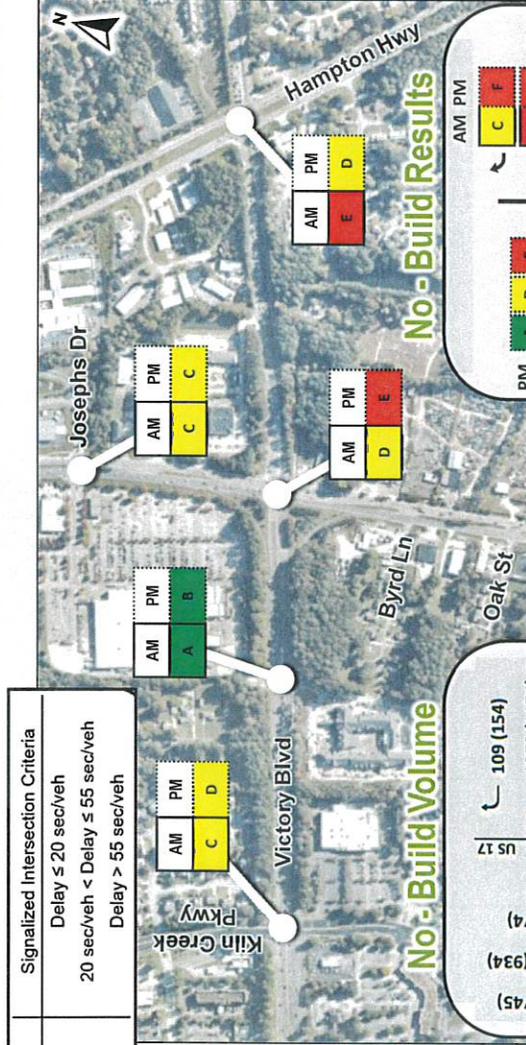
No-Build Conditions Methodology



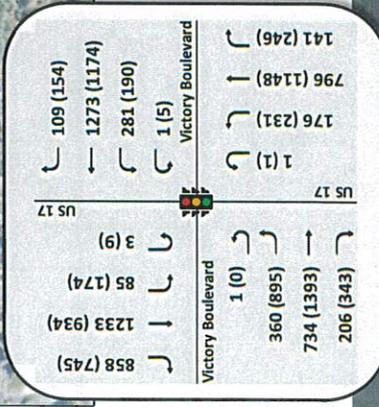
- No-Build 2045 volumes developed using agreed-upon linear growth rates

No-Build Conditions Methodology

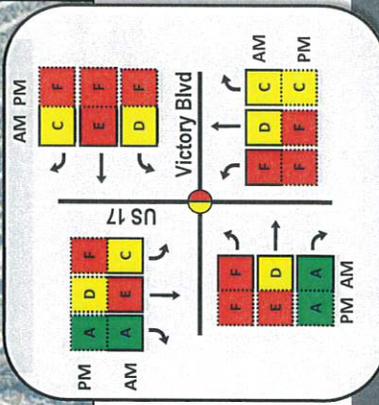
LOS	Signalized Intersection Criteria
A or B	Delay ≤ 20 sec/veh
C or D	20 sec/veh < Delay ≤ 55 sec/veh
E or F	Delay > 55 sec/veh



No-Build Volume



No-Build Results



- Optimized splits and offsets in No-Build model
- Included dual WBL lane at US 17 and Victory Blvd
- Overall intersection delays deteriorate
- Extended vehicle queue lengths and safety concerns anticipated to worsen

Intersection Concept Screening

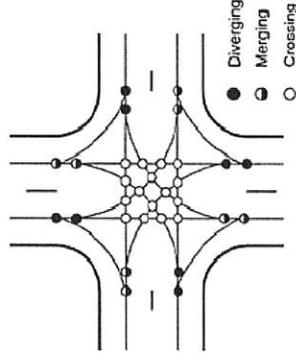
- **Conventional intersection with improvements from SMART SCALE RD4 application**
 - Add third through lane to the eastbound, northbound, and southbound approaches
 - Add third eastbound left-turn lane
- **Partial Displaced Left Turn**
 - Northbound and southbound lefts displaced
- **Full Displaced Left Turn**
 - All lefts displaced
- **Partial Median U-Turn**
 - Northbound and southbound movements rerouted

Concept Screening Analysis Assumptions

- **Analysis Periods**
 - AM peak hour (7:15-8:15am)
 - PM peak hour (4:45-5:45pm)
- **Analysis Tools and Measures of Effectiveness**
 - Traffic Analysis
 - Synchro 11
 - Control delay and Level of Service
 - Experienced travel time (ETT) reported instead of control delay for innovative intersections per TOSAM
 - Crash Analysis
 - Latest five years (2018-2022)
 - F+I CMFs from SMART SCALE Planning Level CMFs -- Round 5
 - Conflict point reduction

LOS	Unsignalized Intersection Criteria
 A or B	Delay ≤ 15 sec/veh
 C or D	15 sec/veh < Delay ≤ 35 sec/veh
 E or F	Delay > 35 sec/veh

LOS	Signalized Intersection Criteria
 A or B	Delay ≤ 20 sec/veh
 C or D	20 sec/veh < Delay ≤ 55 sec/veh
 E or F	Delay > 55 sec/veh



US 17 & Victory Blvd

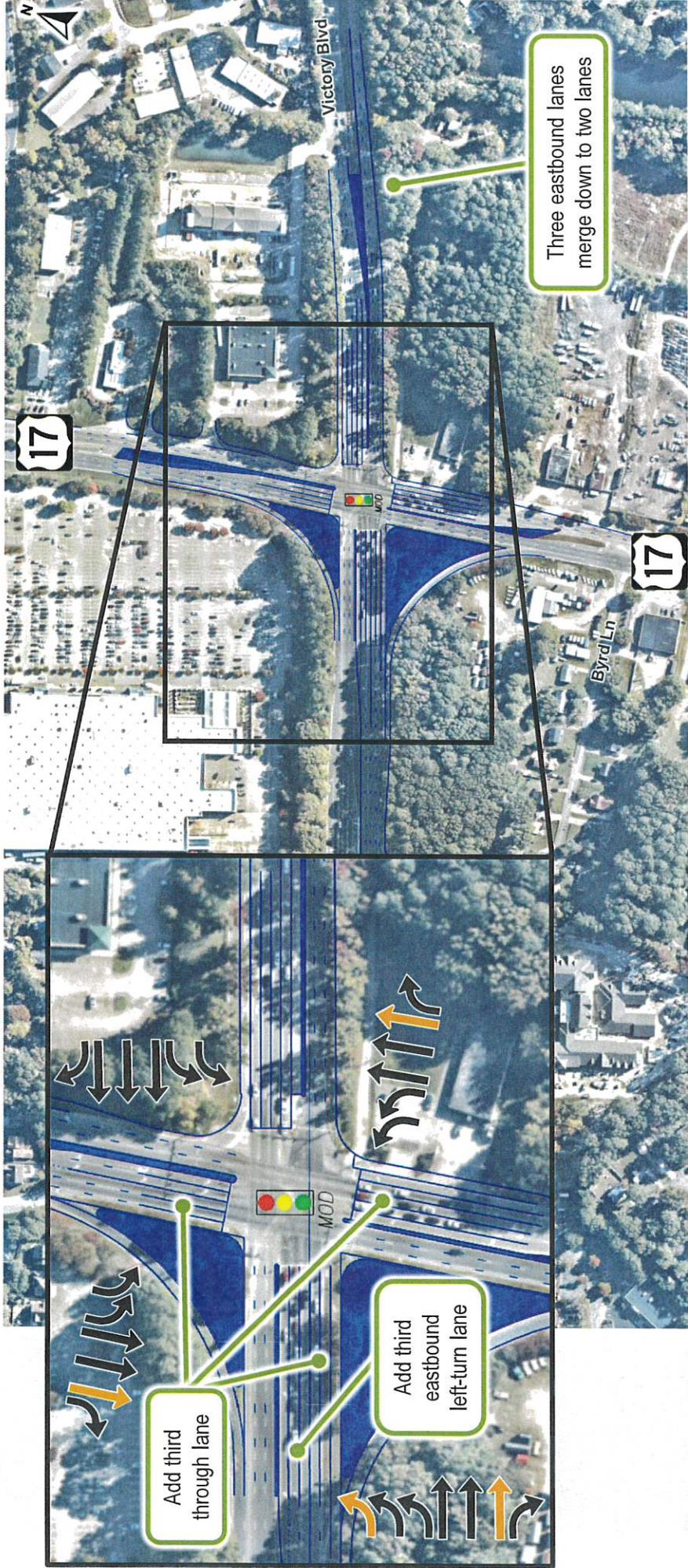
Concept 1 – Conventional

PROJECT PIPELINE

VDOT

Office of
INTERMODAL
Planning and Research

DRPT



US 17 & Victory Blvd

Concept 1 – Conventional

Design Considerations

- **Scope**
 - Add third through lane to the eastbound, northbound, and southbound approaches
 - Add a third eastbound left-turn lane

- **ROW Impacts - Lowest Impact**

Conflict Point Reduction: None

CMF = 0.65

5-Year F+I Crash Reduction = 9.5 crashes

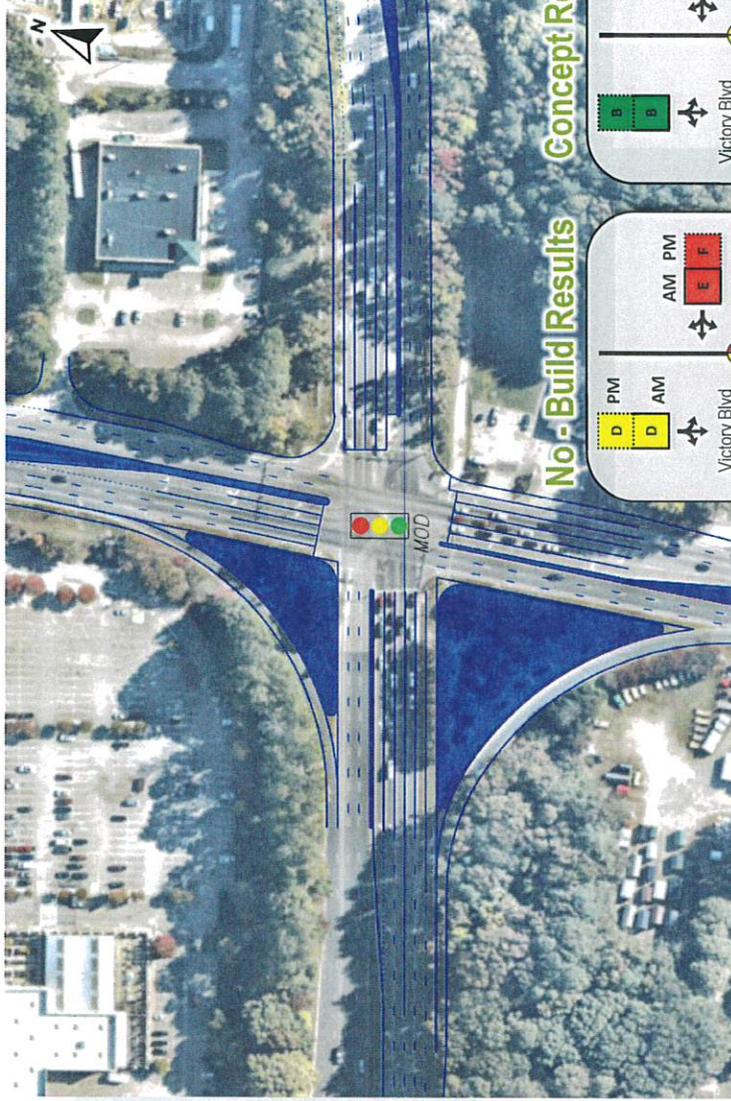
Stage 1 Cost Estimate Range (excludes RW & UT):

\$5.0M - 6.5M

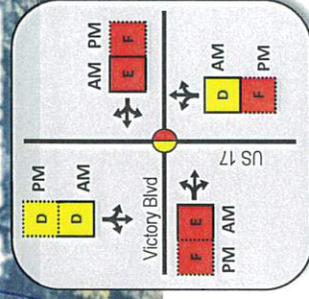
Overall Intersection (Δ delay)

AM: -28.4 seconds

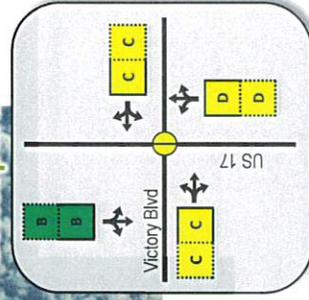
PM: -46.3 seconds



No-Build Results



Concept Results



US 17 & Victory Blvd

Concept 2 – Partial Displaced Left Turn



US 17 & Victory Blvd

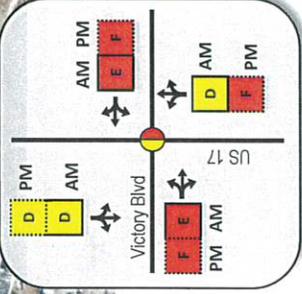
Concept 2 – Partial Displaced Left Turn

Design Considerations

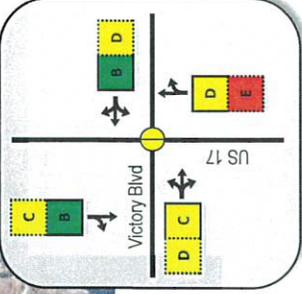
- Scope
 - Displace northbound and southbound left turns
- ROW Impacts – Moderate Impact



No-Build Results



Concept Results



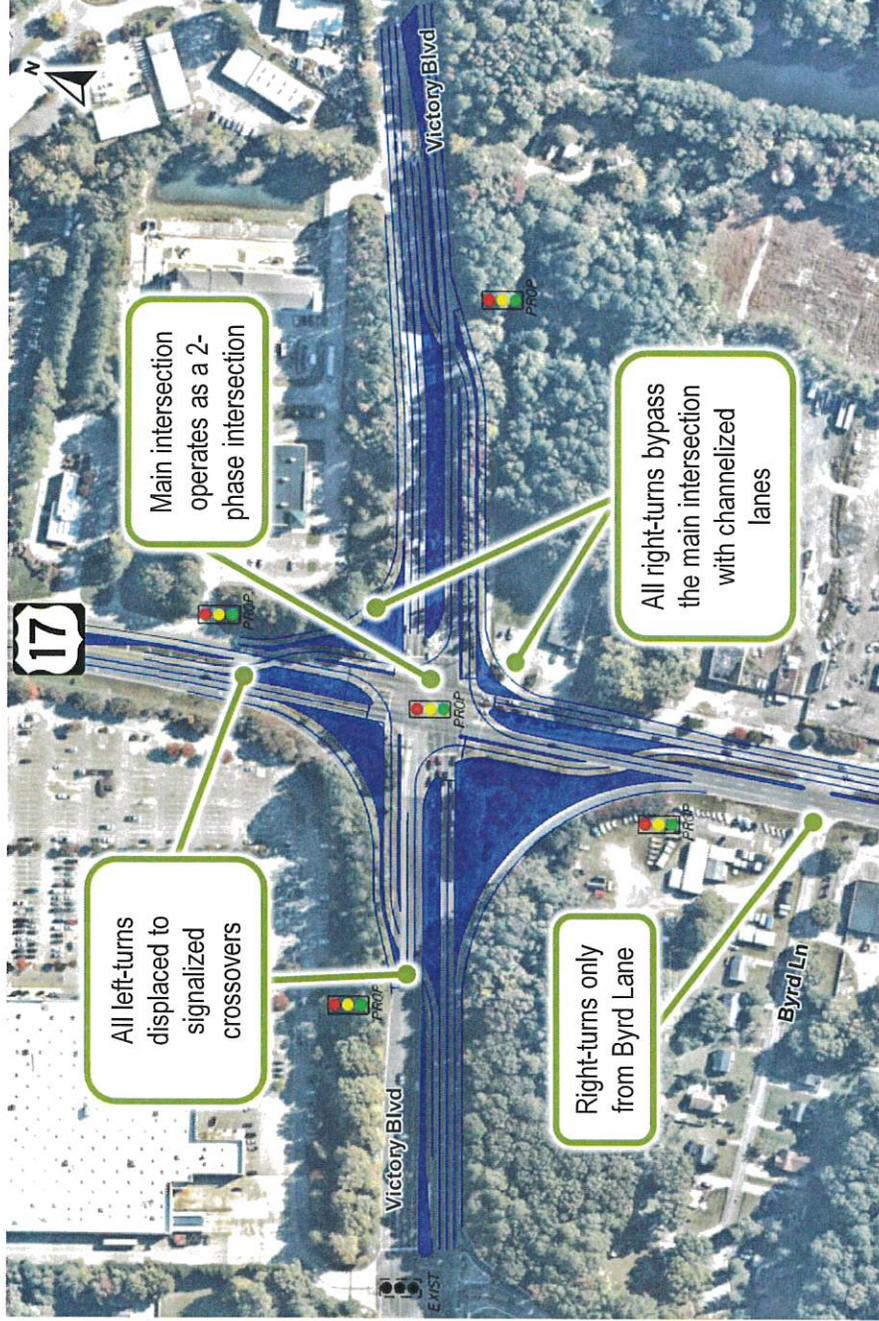
Conflict Point Reduction: 2 points
CMF = 0.85
5-Year F+I Crash Reduction = 4.1 crashes

Stage 1 Cost Estimate Range (excludes RW & UT):
\$17.0 M – \$22.0 M

Overall Intersection (Δ delay)
AM: -30.5 seconds
PM: -34.2 seconds

US 17 & Victory Blvd

Concept 3 – Full Displaced Left Turn



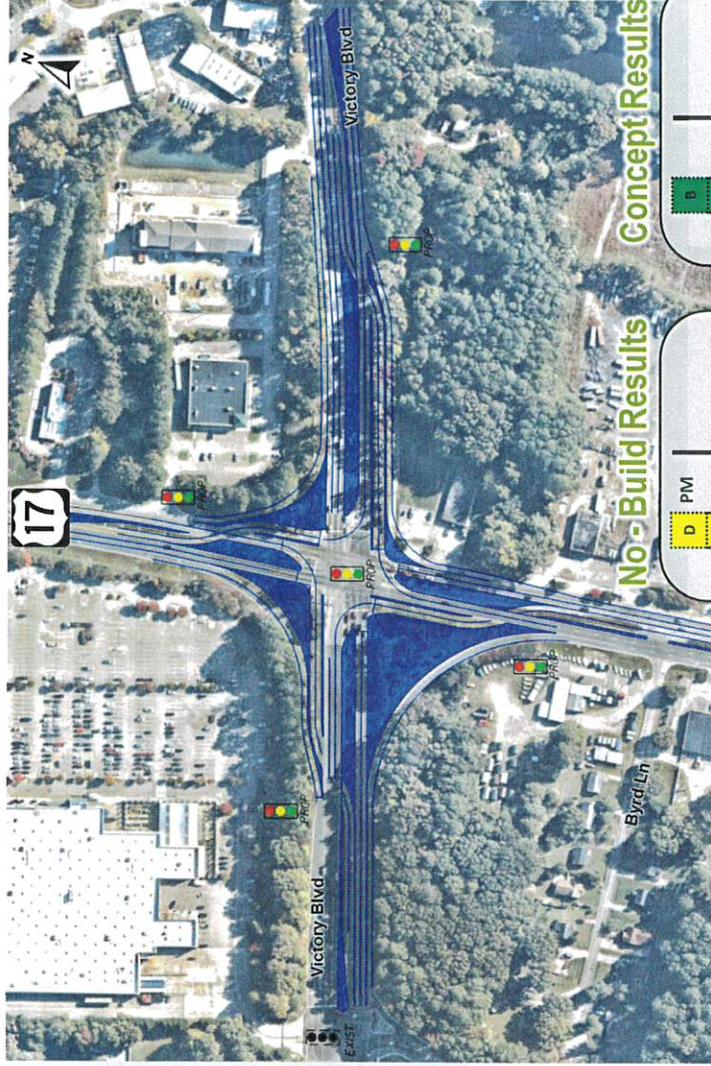
US 17 & Victory Blvd

Concept 3 – Full Displaced Left Turn

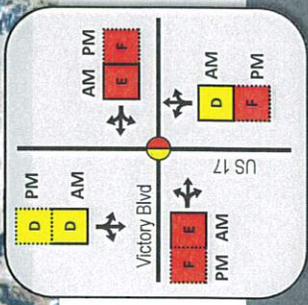
- Design Considerations**
- **Scope**
 - Displace all left turns
 - **ROW Impacts – Most Impact**

Conflict Point Reduction: 4 points
CMF = 0.80
5-Year F+I Crash Reduction = 5.4 crashes

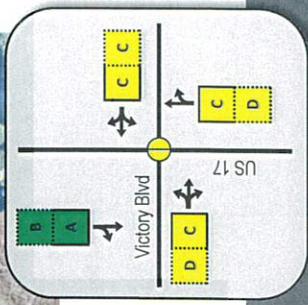
Stage 1 Cost Estimate Range (excludes RW & UT):
\$23.0 M – \$30.0 M



No-Build Results



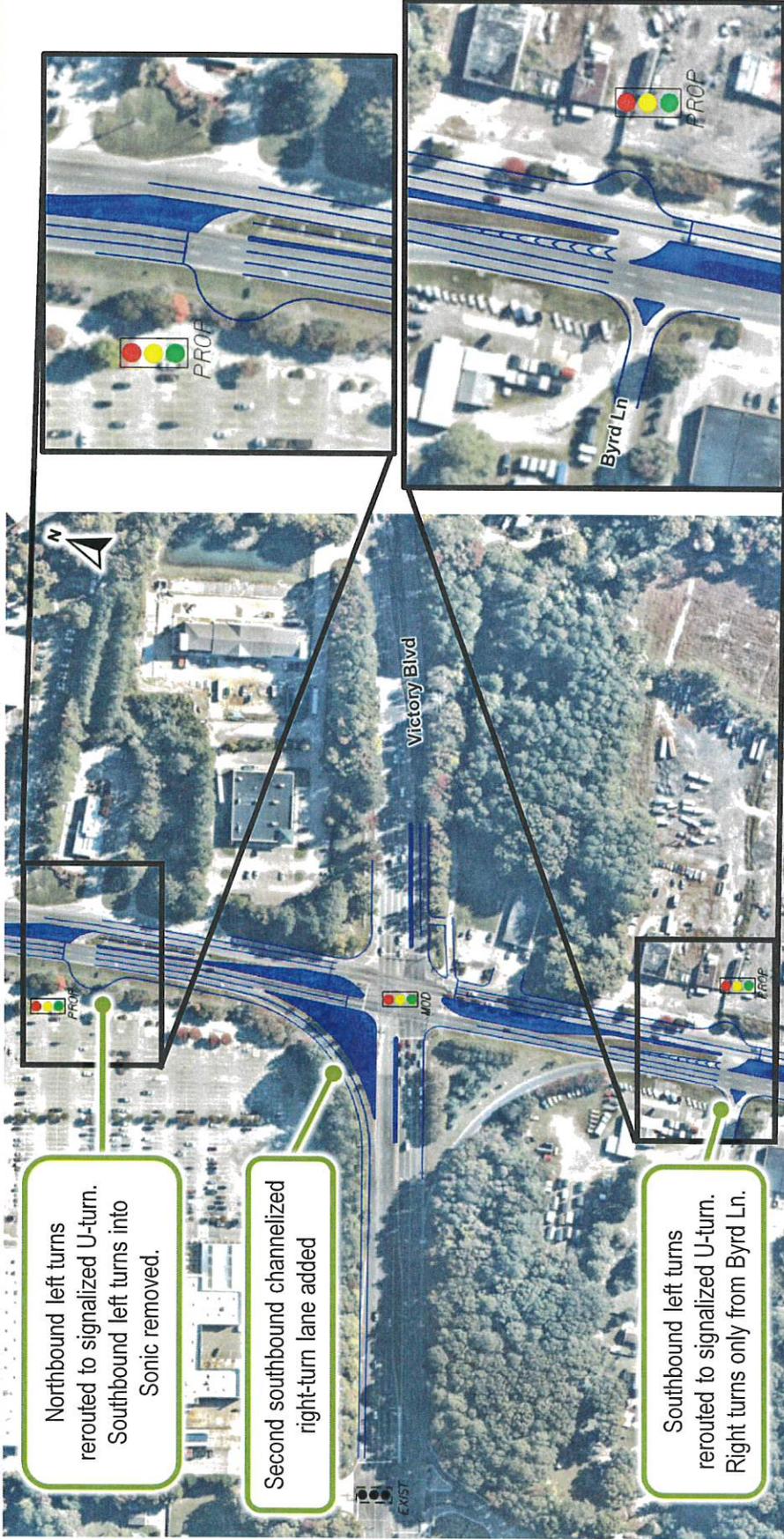
Concept Results



Overall Intersection (Δ delay)
AM: -34.3 seconds
PM: -44.1 seconds

US 17 & Victory Blvd

Concept 4 – Partial Median U-Turn



Northbound left turns rerouted to signalized U-turn.
Southbound left turns into Sonic removed.

Second southbound channelized right-turn lane added

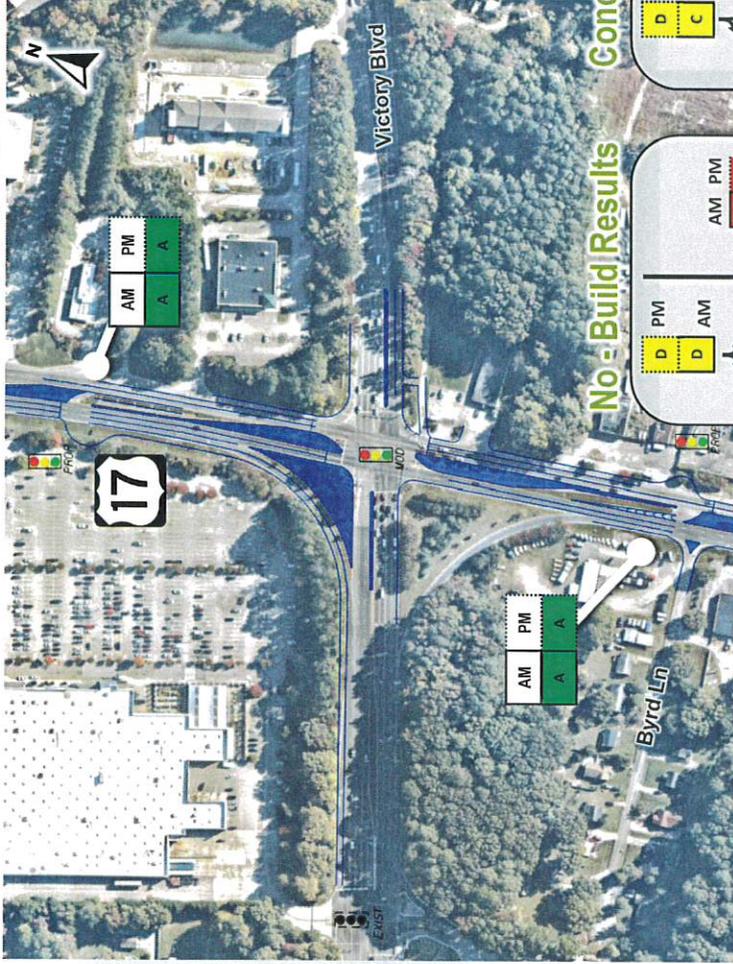
Southbound left turns rerouted to signalized U-turn.
Right turns only from Byrd Ln.

US 17 & Victory Blvd

Concept 4 – Partial Median U-Turn

Design Considerations

- **Scope**
 - Reroute northbound and southbound left turns to U-turns north and south of Victory Boulevard
 - Install signal at US 17 and Byrd Lane
- **ROW Impacts – Moderate Impact**



Conflict Point Reduction: 10 points

CMF = 0.70**

5-Year F+I Crash Reduction = 8.1 crashes**

Stage 1 Cost Estimate Range (excludes RW & UT):

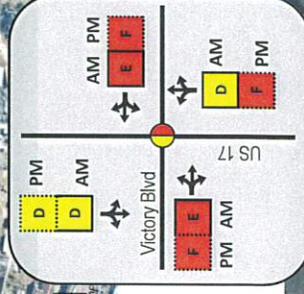
\$9.5 M – \$12.0 M

Overall Intersection (Δ delay)

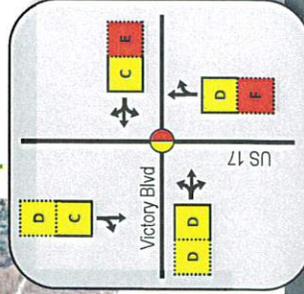
AM: -22.4 seconds

PM: -19.6 seconds

No - Build Results



Concept Results



**CMF is for a Full Median U-Turn. No CMF exists for Partial Median U-Turn.

US 17 & Victory Blvd: Concept Screening Summary



Concept	Safety		Construction Cost*	ROW Impacts	Difference in Peak Hour Delay from 2045 No-Build (seconds)		
	Conflict Point Reduction	Estimated 5-Year F+I Crash Reduction			Approach	AM Peak	PM Peak
Conventional	None	9.5 crashes	\$5.0M - 6.5M	Lowest Impact	EB	-24.1	-51.2
					WB	-40.9	-80.5
					NB	-11.6	-38.9
					SB	-29.9	-17.5
					Intersection	-28.4	-46.3
Partial Displaced Left Turn	2 points	4.1 crashes	\$17.0M - 22.0M	Moderate Impact	EB	-24.0	-36.6
					WB	-46.2	-66.8
					NB	-16.6	-22.9
					SB	-29.6	-13.9
					Intersection	-30.5	-34.2
Full Displaced Left Turn	4 points	5.4 crashes	\$23.0M - 30.0M	Most Impact	EB	-23.3	-39.1
					WB	-42.8	-85.8
					NB	-29.4	-41.8
					SB	-36.4	-19.3
					Intersection	-34.3	-44.1
Partial Median U-Turn	10 points	8.1 crashes**	\$9.5M - 12.0M	Moderate Impact	EB	-18.5	-31.1
					WB	-36.4	-42.6
					NB	-14.3	-2.9
					SB	-18.0	+1.2
					Intersection	-22.4	-19.6

* Stage 1 Cost Range; 2024 Construction Cost (Non-inflated) does not include RW and PE

**CMF is for a Full Median U-Turn. No CMF exists for Partial Median U-Turn.

2/9/2024

PLANNING FOR PERFORMANCE

Bainbridge Boulevard Bus Stop Improvements: The proposed alternative will add 5' sidewalks to connect the bus stops to the Portlock Square neighborhood, a marked crosswalk with a pedestrian refuge island, and add a bus pull-off lane with shelters and boarding pads at both bus stops.



- 1. Strongly oppose
- 2. Somewhat oppose
- 3. Neutral
- 4. Somewhat support
- 5. Strongly Support

Rate the concept on a scale of 1 to 5 (1 = Strongly oppose; 5 = Strongly support)

PublicInput Survey

- PublicInput survey will incorporate any new concepts discussed during this SWG meeting
- Draft PublicInput survey to SWG by 2/16
- PublicInput survey will be open from 3/6 to 3/20 (tentative dates)

Next Steps

- Finalize and launch PublicInput survey
 - Draft PublicInput survey to stakeholders by 2/16
 - PublicInput survey will be open from 3/6 to 3/20 (tentative dates)
- Process PublicInput results
- Preferred alternative selection SWG meeting (mid-March)
- Begin drafting Phase 2 project summary sheets
- Develop Phase 3 scope outline