



ATCS

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INTERNATIONAL

Fontaine Ave & US 29 Interchange Stakeholder Meeting

November 17, 2023

Agenda

- **Introductions**
- **Study Purpose**
- **Schedule**
- **Current Design Overview**
- **Issues/Challenges**
- **Alternatives Development**
- **Open Discussion**
- **Safety Evaluation (time permitting)**

Introductions

Study Purpose

- **Alleviate congestion at the Fontaine Interchange**
- **Improve Safety**
- **Maintain proposed shared use path**

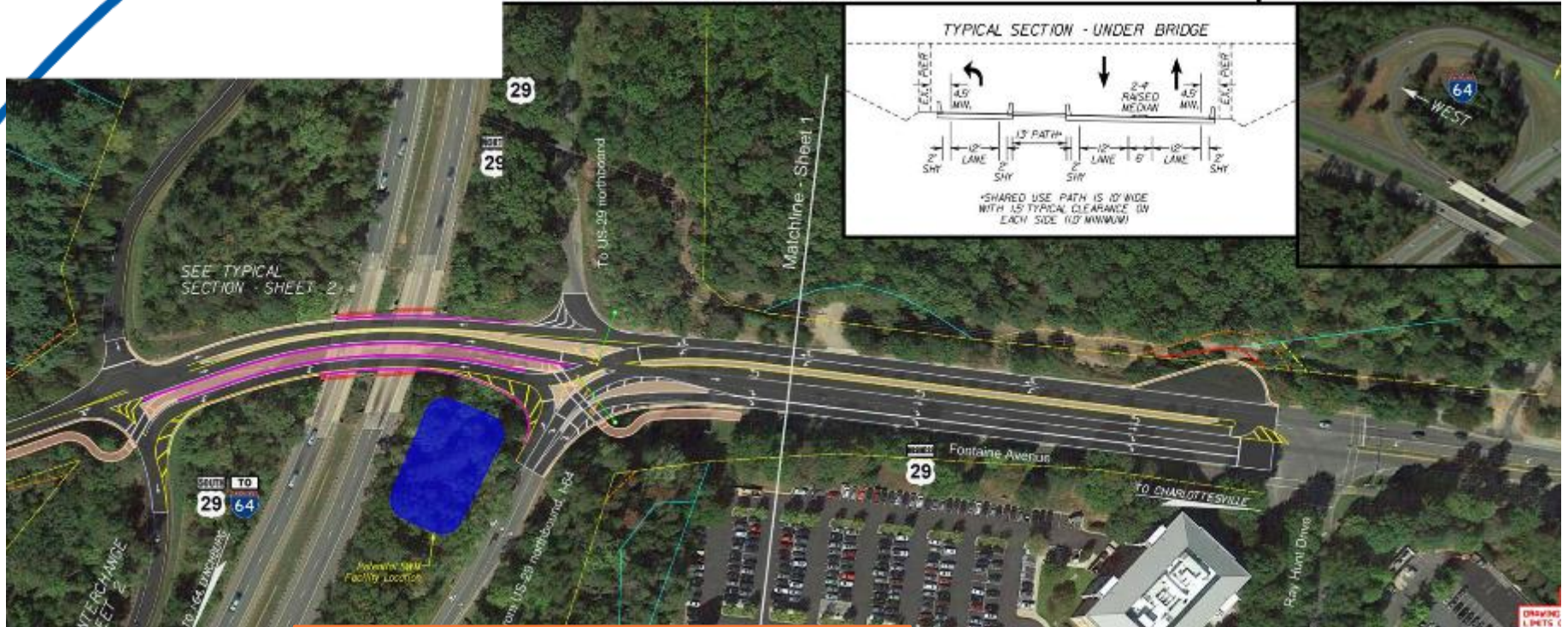
Schedule

Subtask 1 – Project Management and Coordination	Ongoing
Subtask 2 – Review and validate previous work and assumptions	Complete
Subtask 3 – Field Visit	Complete
Subtask 4 – Safety Evaluation	11/17/2023
Subtask 5 – Screen additional preliminary alternatives	11/17/2023
Subtask 6 – Finalize potential Alternative Technical Concepts	1/26/2024
Subtask 7 – Sensitivity Analysis	1/26/2024
Subtask 8 – Documentation	2/23/2024

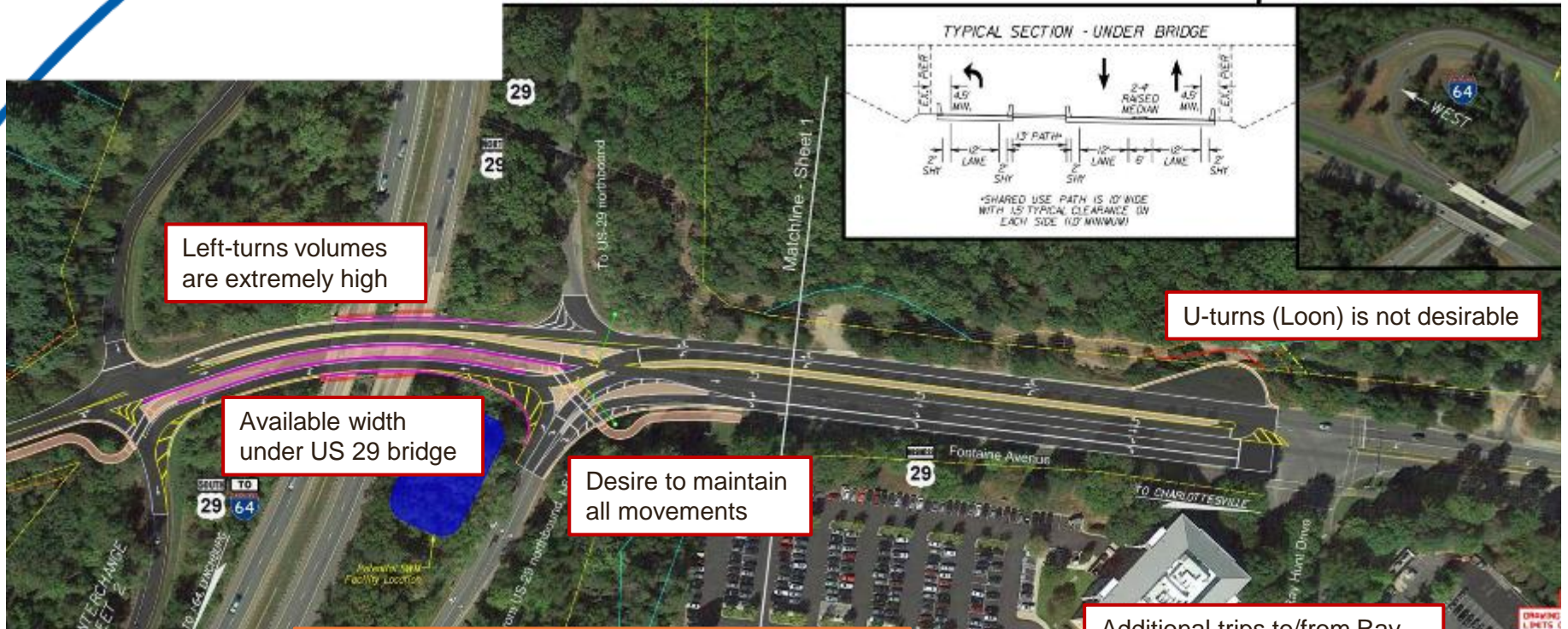
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Current Design



Issues/Challenges



Left-turns volumes are extremely high

Available width under US 29 bridge

Desire to maintain all movements

U-turns (Loon) is not desirable

Additional trips to/from Ray Hunt Dr due to development



Maintain existing left turn from NB US 29 to WB I-64

Alternatives Development

Interchange

**Engineering and
lane alignments**

**Operational
analyses and
testing**



Alternatives Development

Interchange

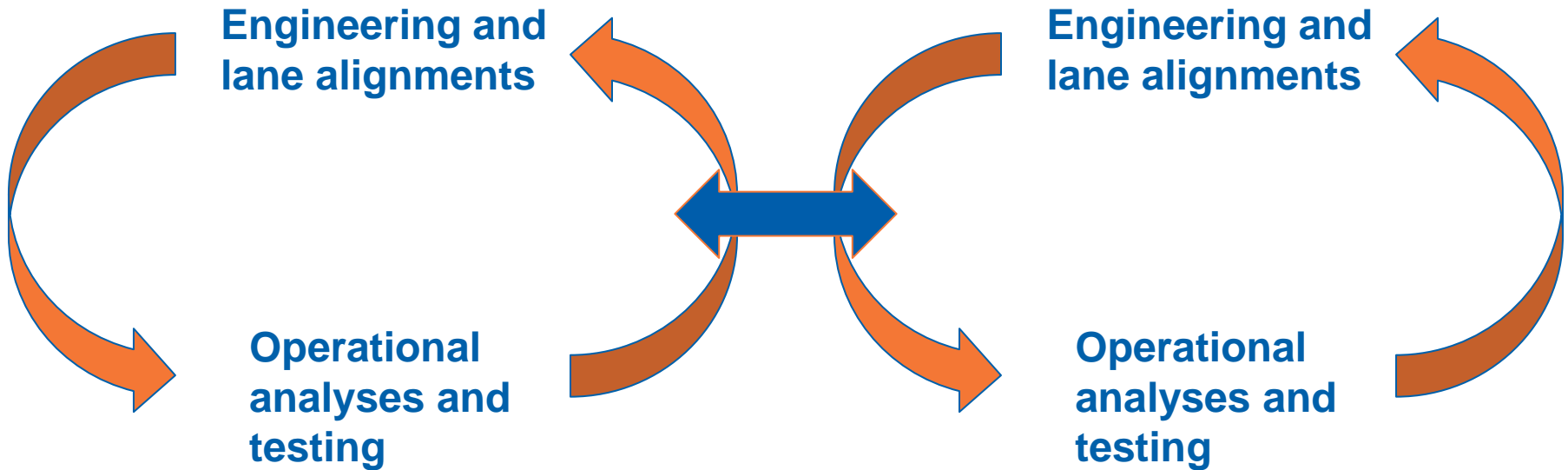
Engineering and
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Operational
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Ray Hunt Dr

Engineering and
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Operational
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Alternatives Development

Interchange

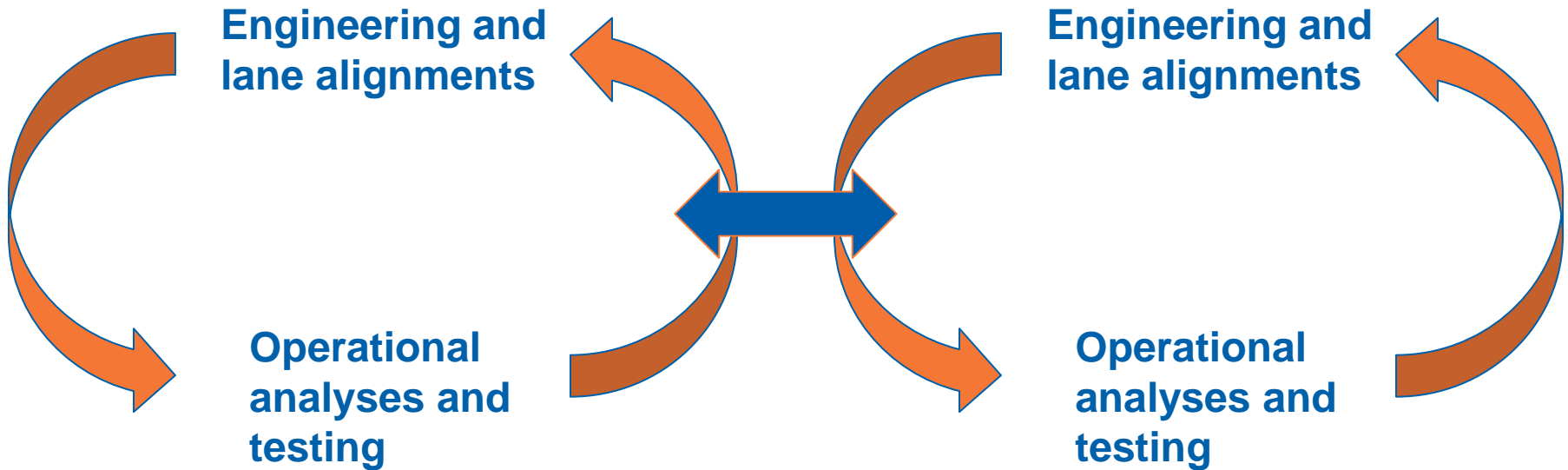
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Engineering and
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***Maintain similar cost of Smart Scale Project and keep shared use path**

Alternatives Development

Considered Alternatives

- **Roundabouts**
- **Diverging Diamond Interchange (DDI)**
- **Displaced Left Turn (DLT)**
- **Continuous Green-T (CGT)**
- **Conventional Intersection**

*The list above includes previously considered alternatives

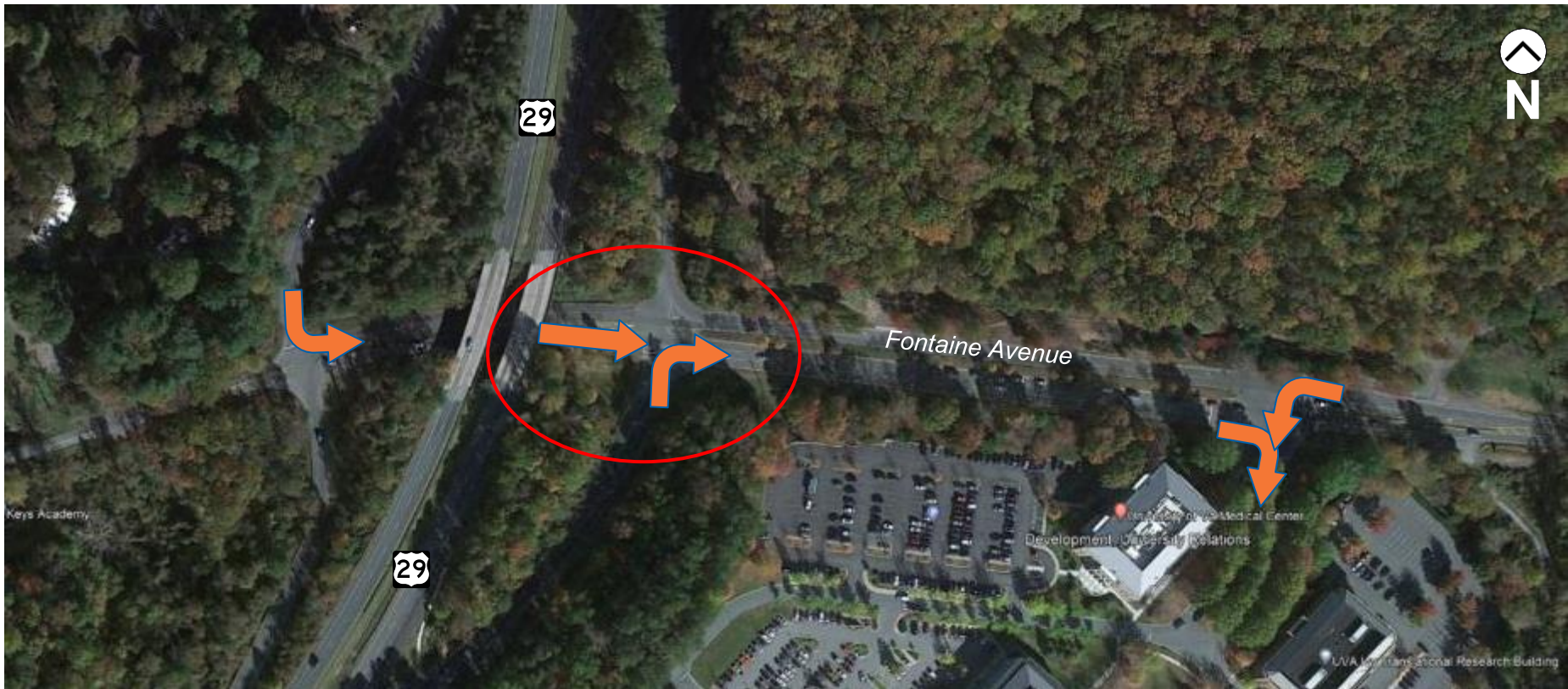
Alternatives Development

Considered Alternatives

- **Roundabouts** **Cost, Operations**
- **Diverging Diamond Interchange (DDI)** **Cost**
- **Displaced Left Turn (DLT)** **Currently under consideration**
- **Continuous Green-T (CGT)** **Cost, Operations**
- **Conventional Intersections** **Currently under consideration**

*The list above includes previously considered alternatives

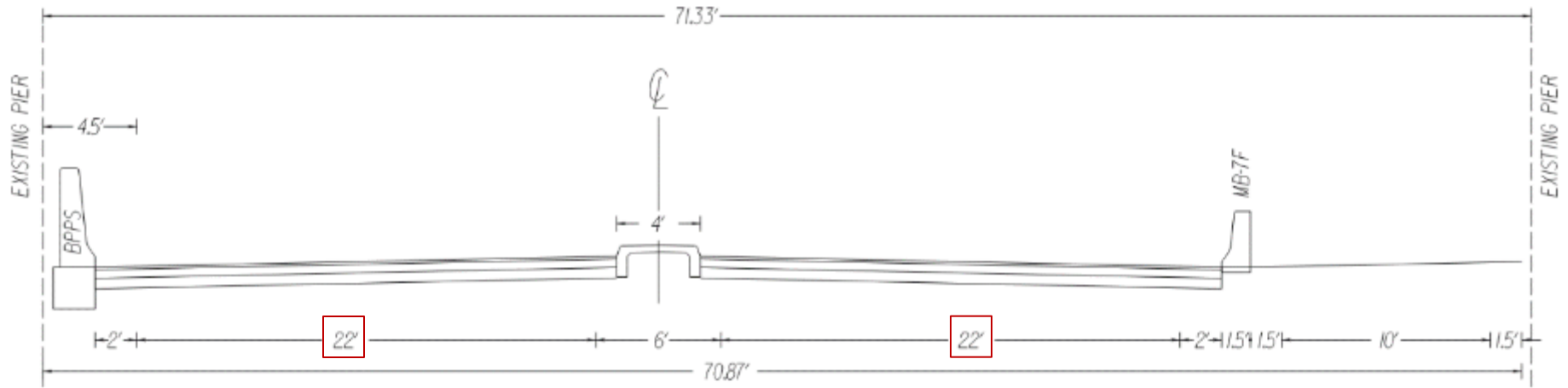
Alternatives Development AM Critical Movements



Alternatives Development PM Critical Movements

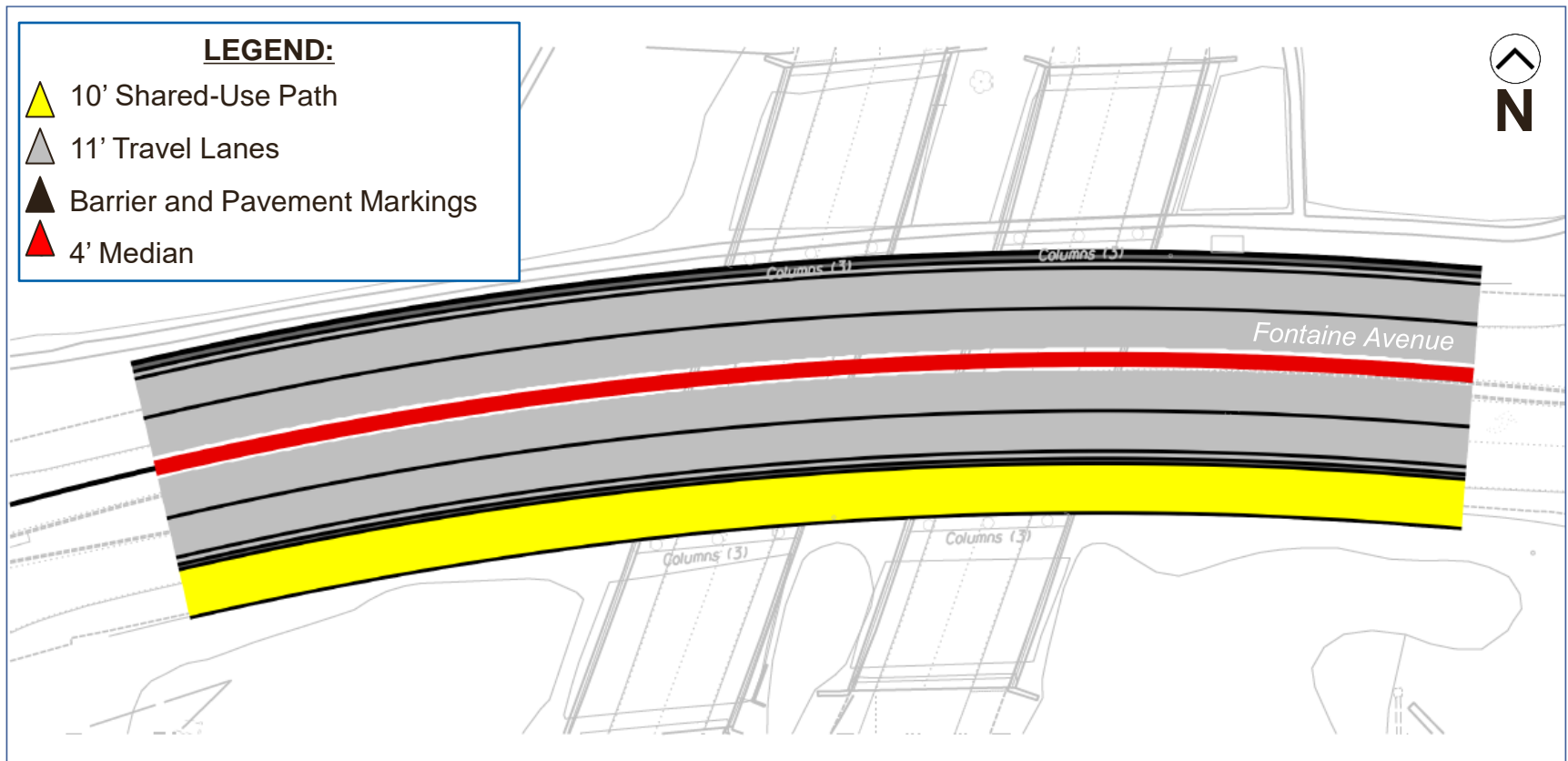


Alternatives Development Under Bridge



SECTION UNDER BRIDGE

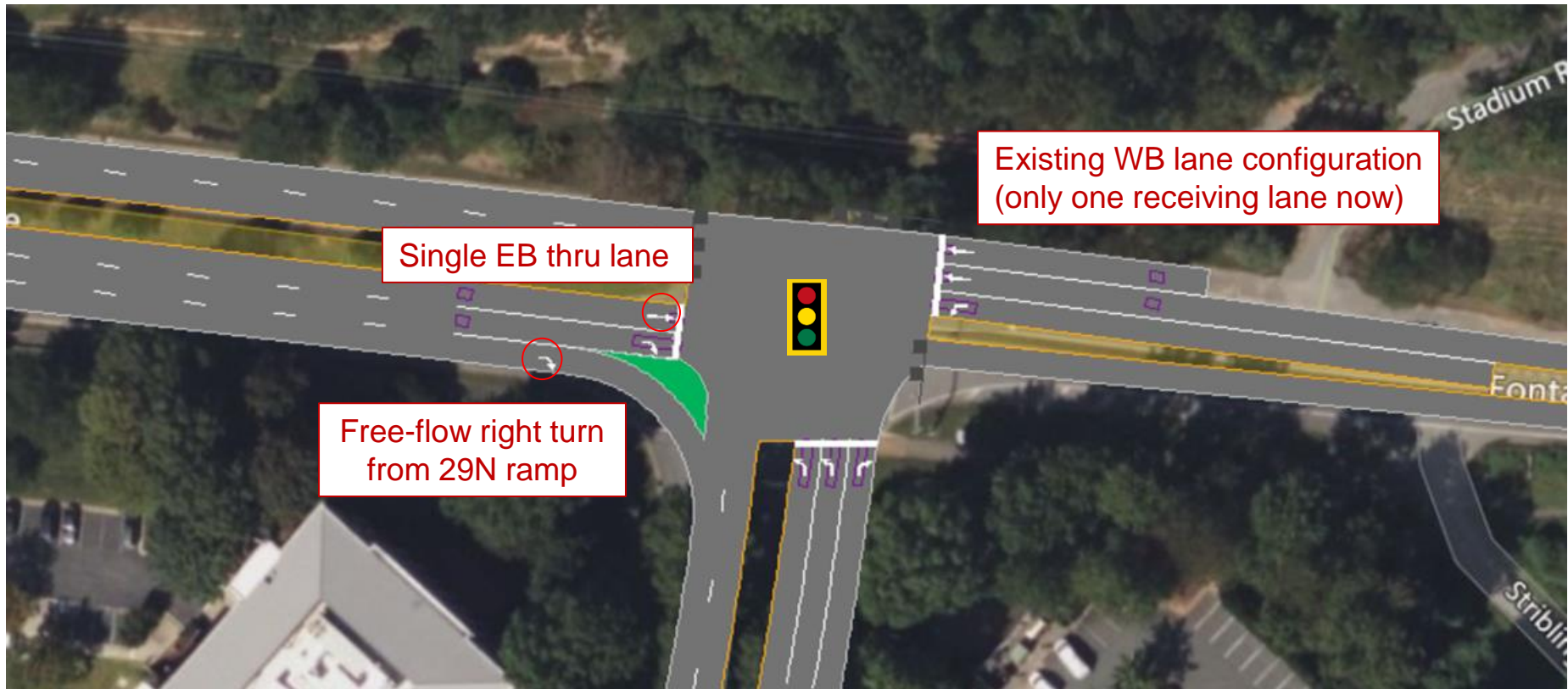
Alternatives Development Under Bridge



Alternatives Development Base Concept



Alternatives Development Base Concept



Alternatives Development

Base Concept – 2045 Prelim AM Queues

(SimTraffic max queue) of (Available storage)



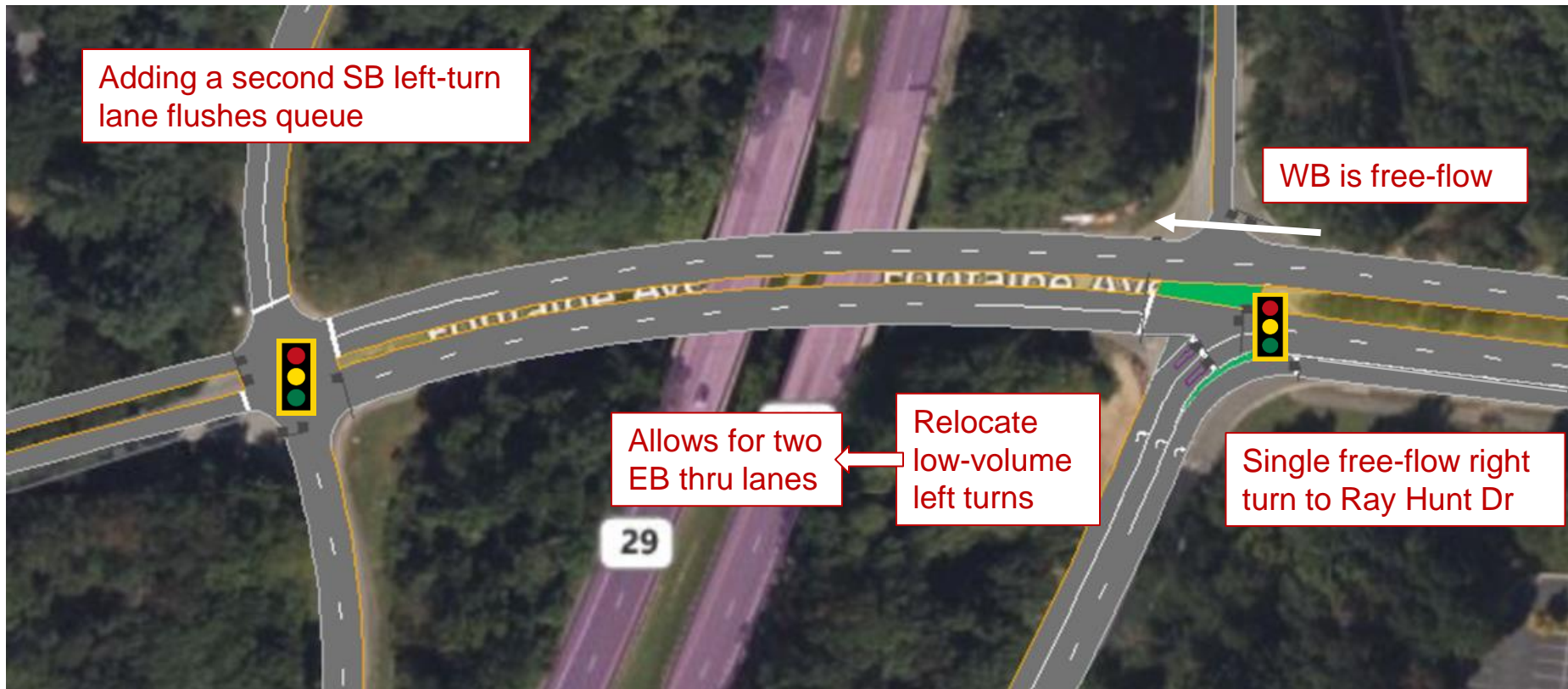
Alternatives Development

Base Concept – 2045 Prelim PM Queues

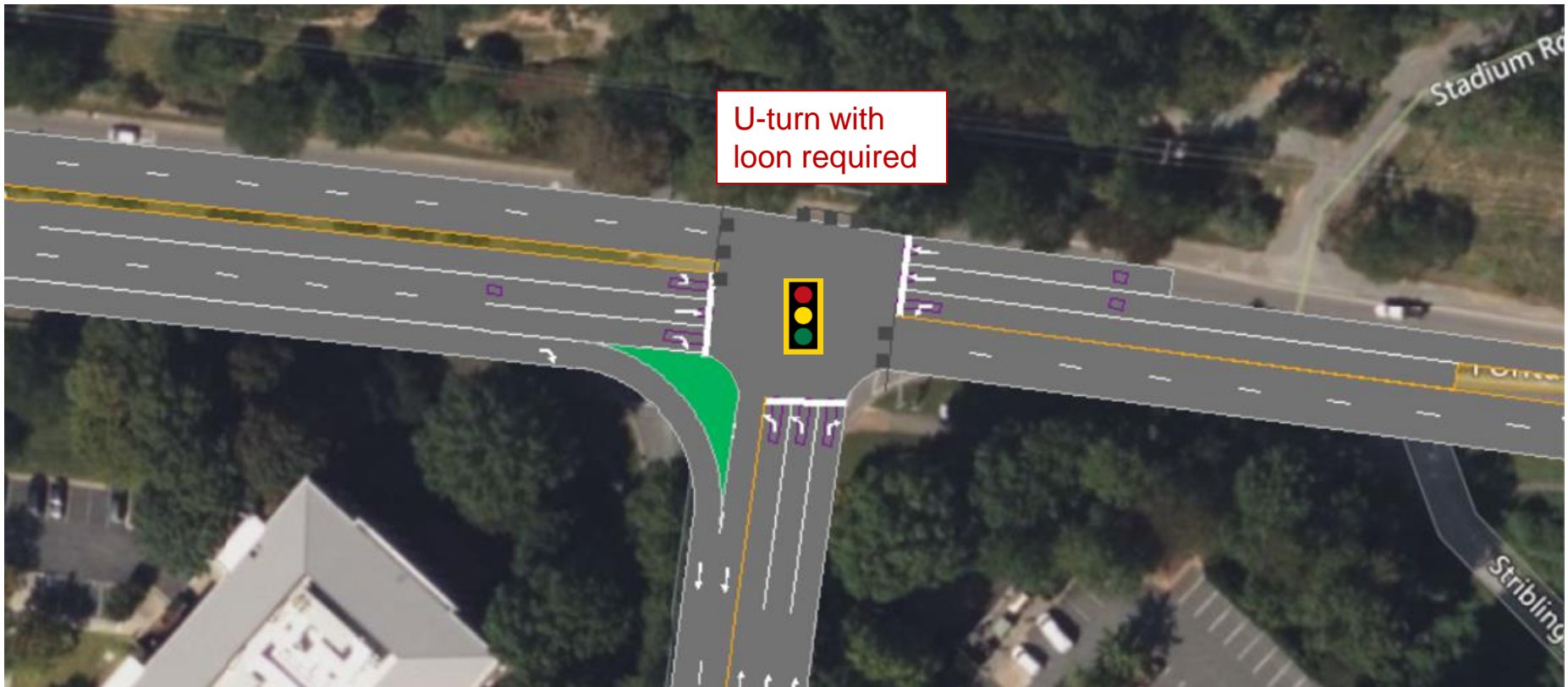
(SimTraffic max queue) of (Available storage)



Alternatives Development Upgrades to Base Concept



Alternatives Development Upgrades to Base Concept



Alternatives Development Upgraded Concept – 2045 AM Queues

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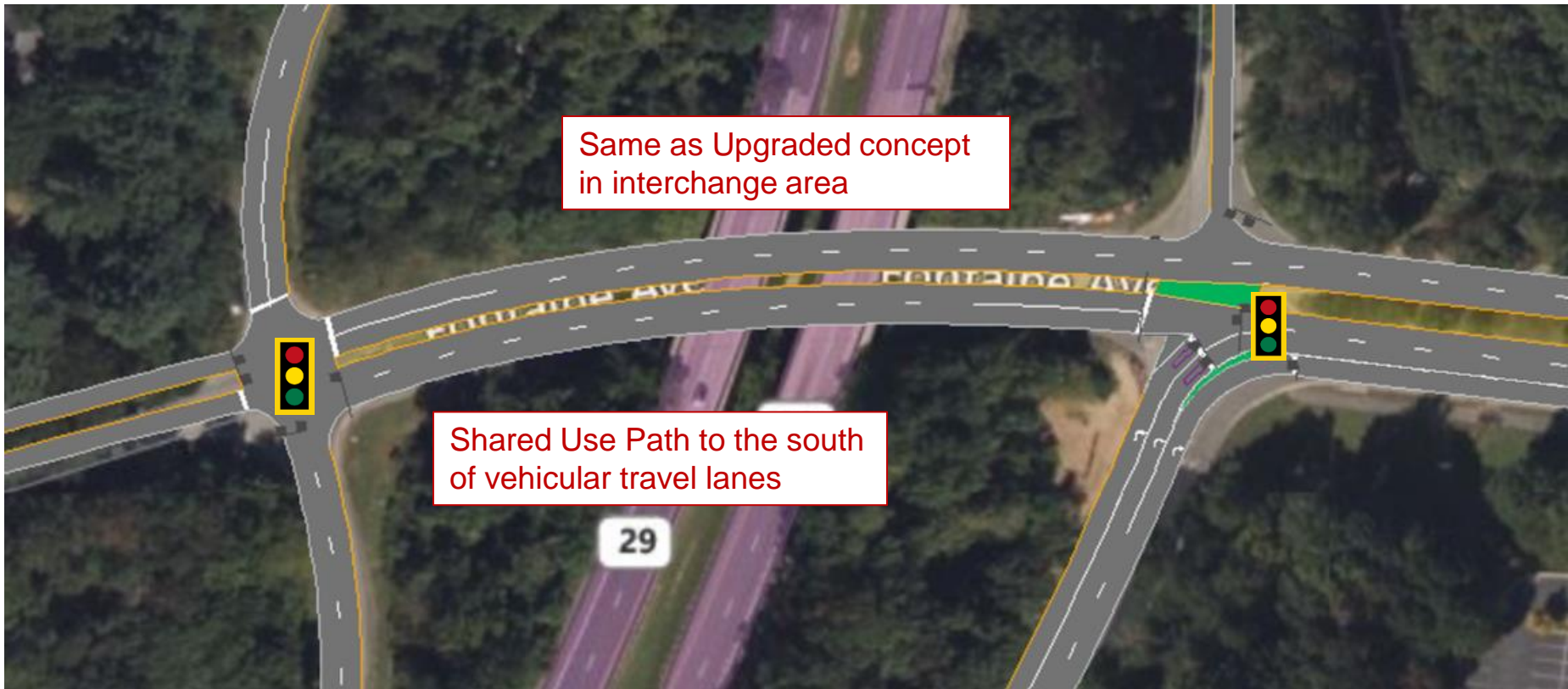


Alternatives Development Upgraded Concept – 2045 PM Queues

(SimTraffic max queue) of (Available storage)



Alternatives Development Ultimate Concept



Alternatives Development Ultimate Concept



Alternatives Development

Max Queue Comparison – 2045 AM



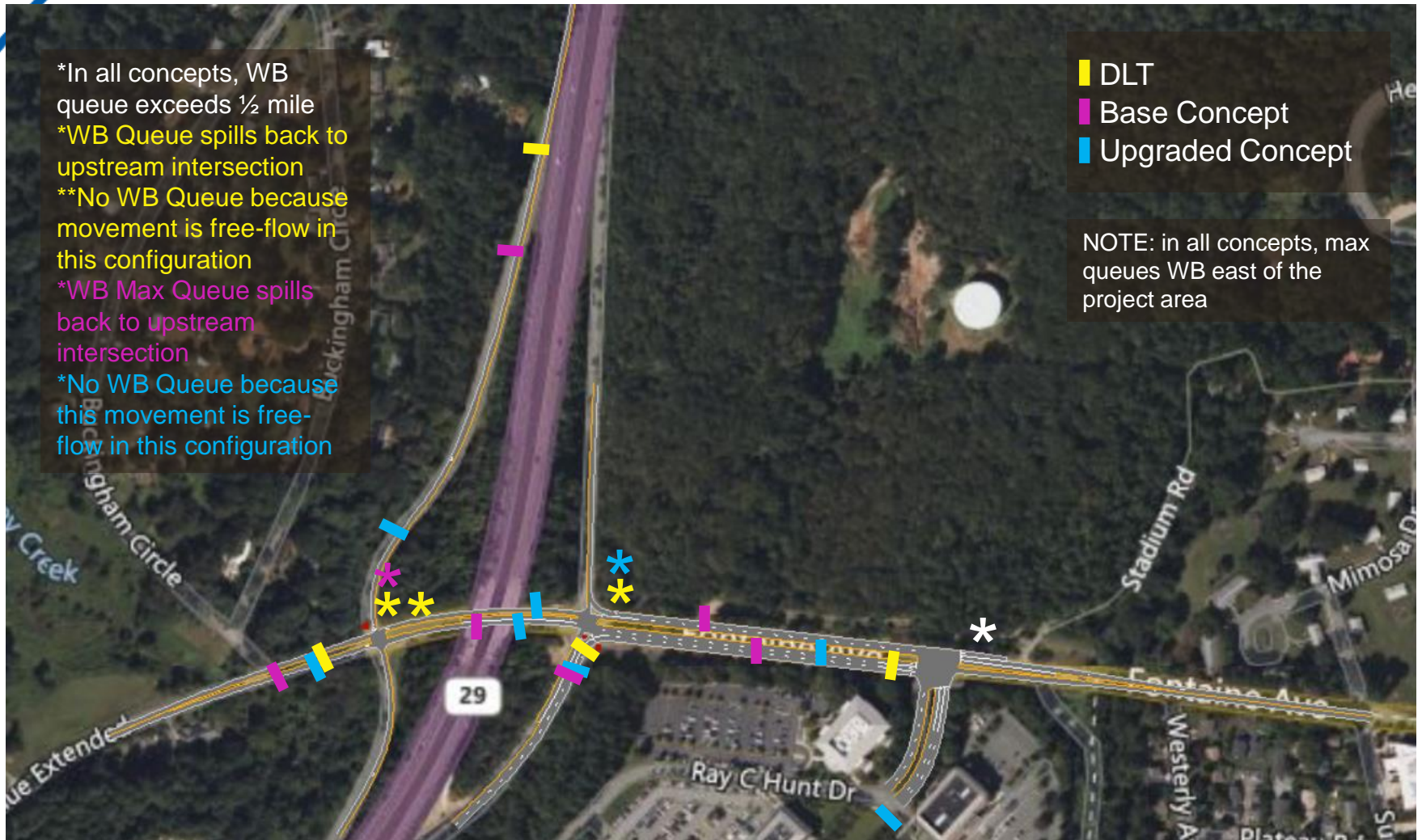
*Queue spills back to 29S
 **No WB Queue because movement is free-flow in this configuration
 *No WB Queue because this movement is free-flow in this configuration

- DLT
- Base Concept
- Upgraded Concept

NOTE: in all concepts, max queues EB on Fontaine Ave block the upstream intersection; however, the true back of these queues are reflected in max queues on the 29S off-ramp and Fontaine Ave Extended

Alternatives Development

Max Queue Comparison – 2045 PM



*In all concepts, WB queue exceeds ½ mile
 *WB Queue spills back to upstream intersection
 **No WB Queue because movement is free-flow in this configuration
 *WB Max Queue spills back to upstream intersection
 *No WB Queue because this movement is free-flow in this configuration

- DLT
- Base Concept
- Upgraded Concept

NOTE: in all concepts, max queues WB east of the project area

Alternatives Development

Other Considerations

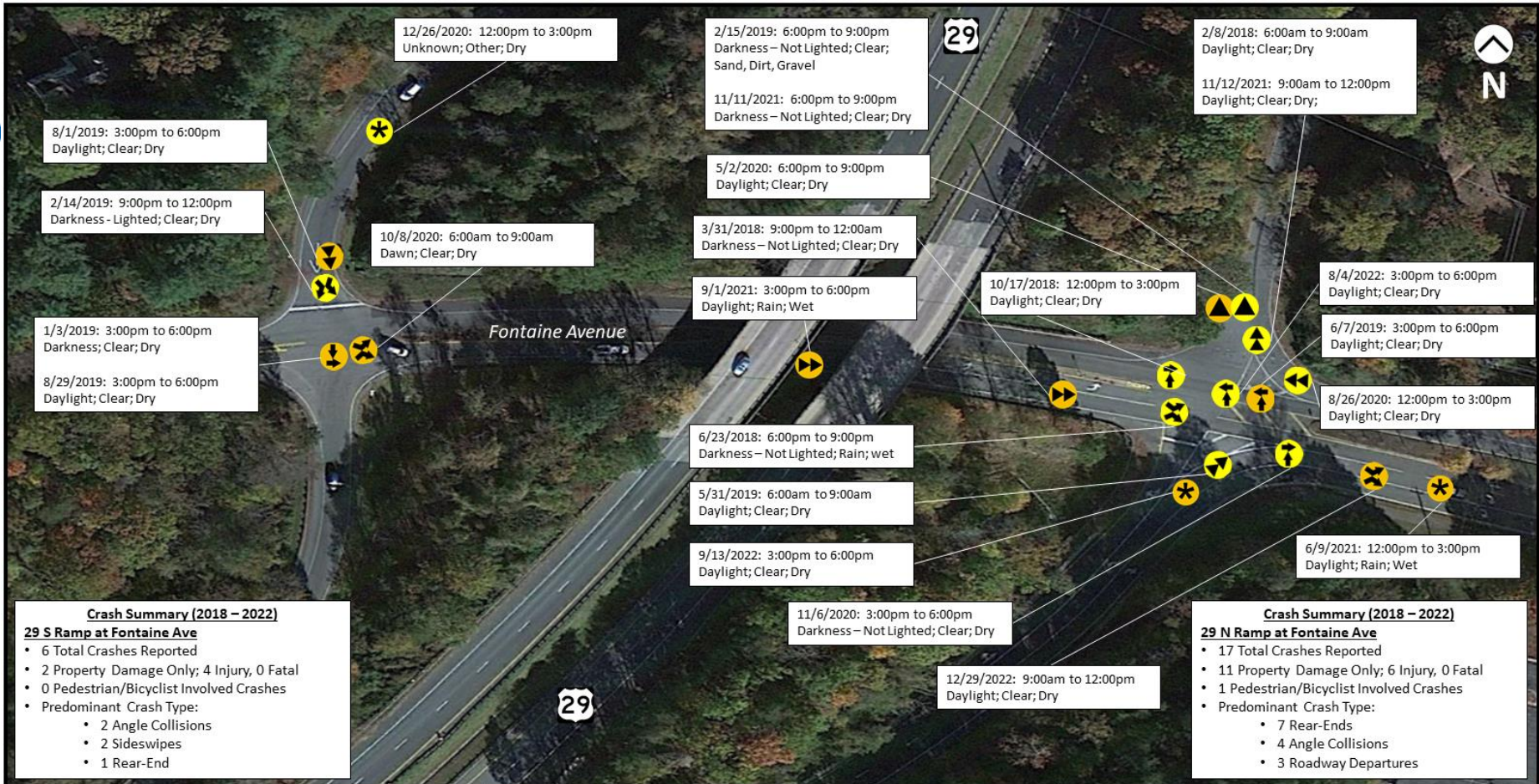
UVA development Build-out year and Project Phasing

**Smart Scale Fontaine Avenue Streetscape improvements
(within City)**

Potential Fontaine Widening west of City

Safety Evaluation

Safety Evaluation

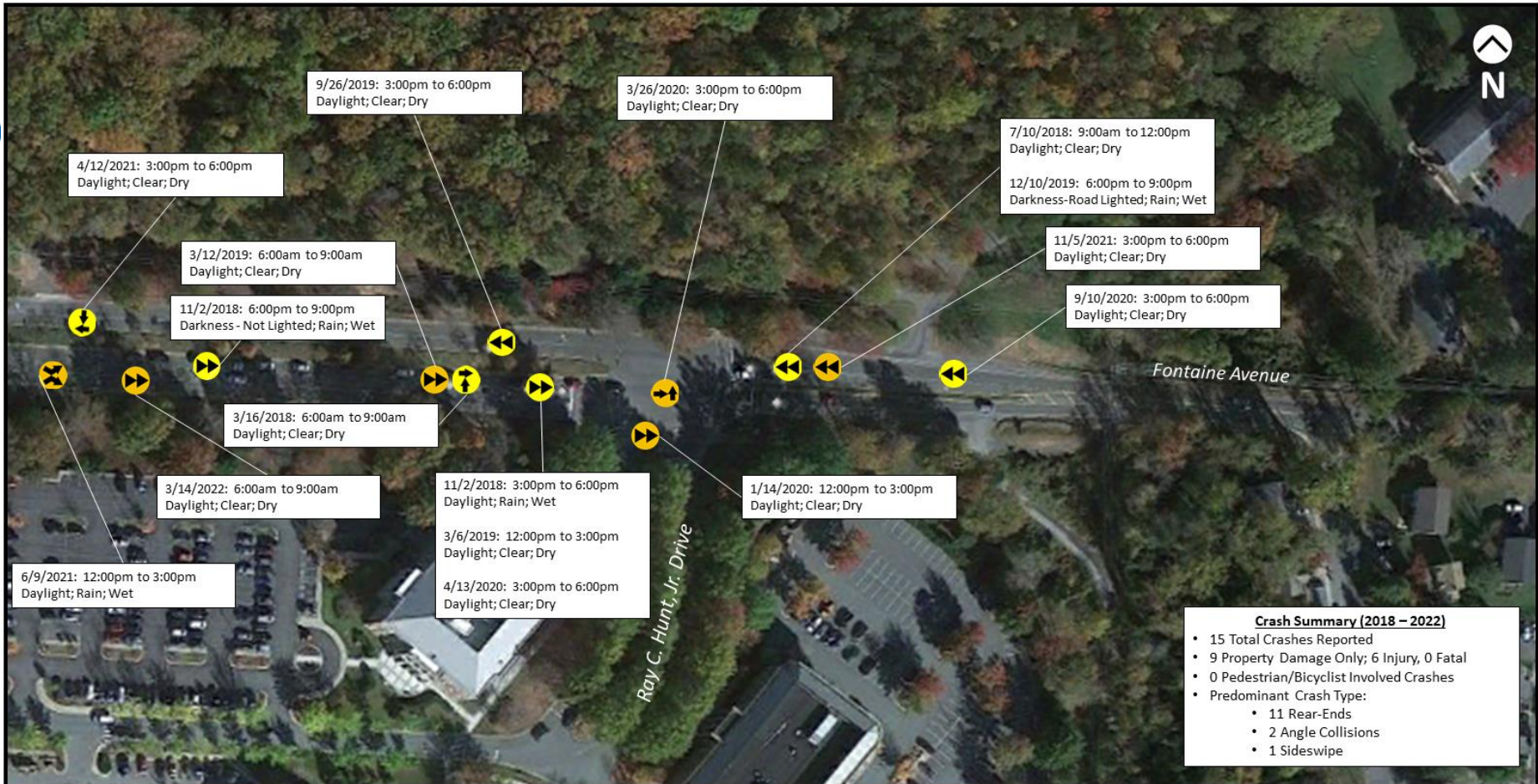


Crash Type, Severity, and Attributes

- ↔ Angle
 - ▶ Rear End
 - ✘ Sideswipe
 - ▲ Fixed Object
 - ★ Other
 - Property Damage Only
 - Injury
 - Fatal
- Crash Date: Time of Day
 Lighting; Weather; Surface Condition

Crashes, 2018 – 2022
 U.S. Route 29 and Fontaine Avenue
 Culpeper District

Safety Evaluation



Crash Summary (2018 – 2022)

- 15 Total Crashes Reported
- 9 Property Damage Only; 6 Injury, 0 Fatal
- 0 Pedestrian/Bicyclist Involved Crashes
- Predominant Crash Type:
 - 11 Rear-Ends
 - 2 Angle Collisions
 - 1 Sideswipe

Crash Type, Severity, and Attributes

↔ Angle	● Property Damage Only
▶ Rear End	● Injury
✘ Sideswipe	● Fatal
▲ Fixed Object	
★ Other	

Crash Date: Time of Day
 Lighting; Weather; Surface Condition

Crashes, 2018 – 2022
 Fontaine Avenue and Ray C. Hunt, Jr. Drive
 Culpeper District

Safety Evaluation



Crash Type, Severity, and Attributes

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Crashes, 2018 – 2022
 I-64 and U.S. Route 29
 Culpeper District

Alternatives Development Alternative Concept

