# Dealing with Curve Balls

Lessons learned from the Prince William Parkway/Old Bridge Intersection and 495NEXT Projects


RINKER DESIGN ASSOCIATES




**Best I can do is I like Traffic Engineering and VASITE Conferences**

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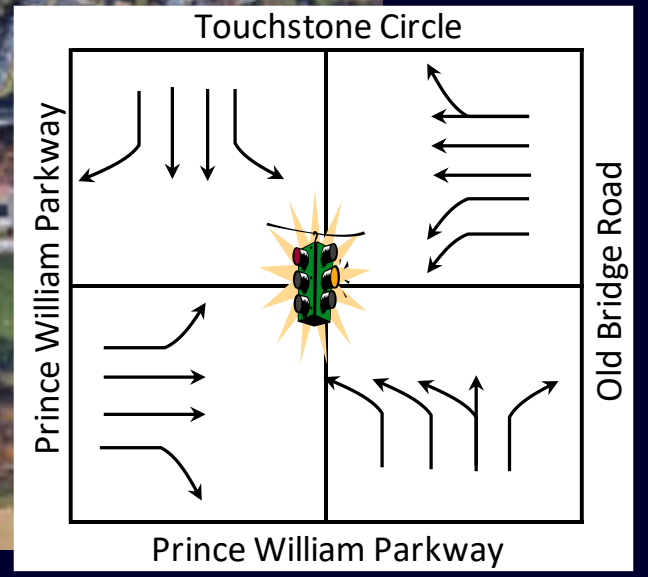
# Prince William Parkway/Old Bridge Rd

# Prince William Parkway/Old Bridge Rd

## STARS Study Completed August 2020

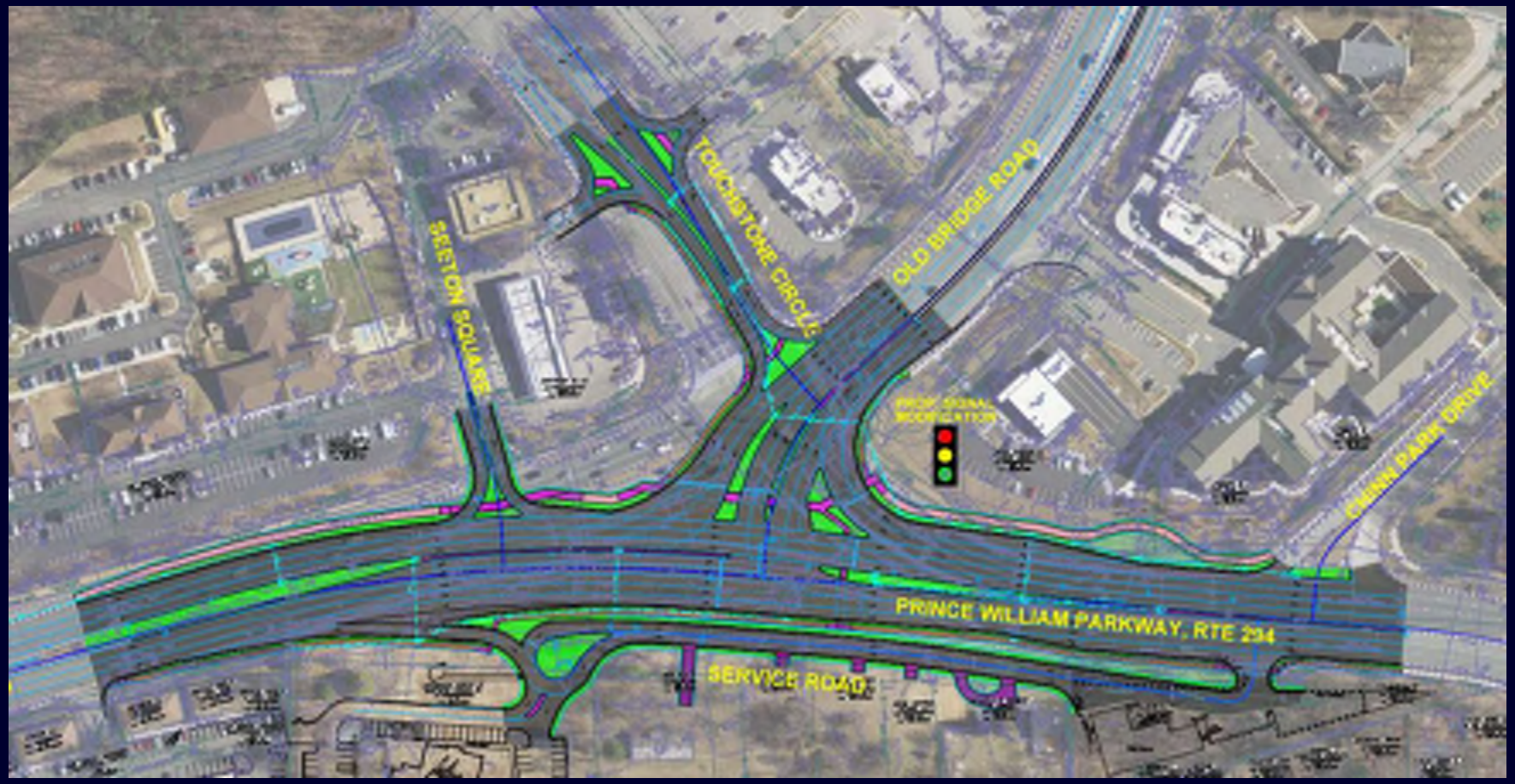
4 Alternative Intersections Analyzed

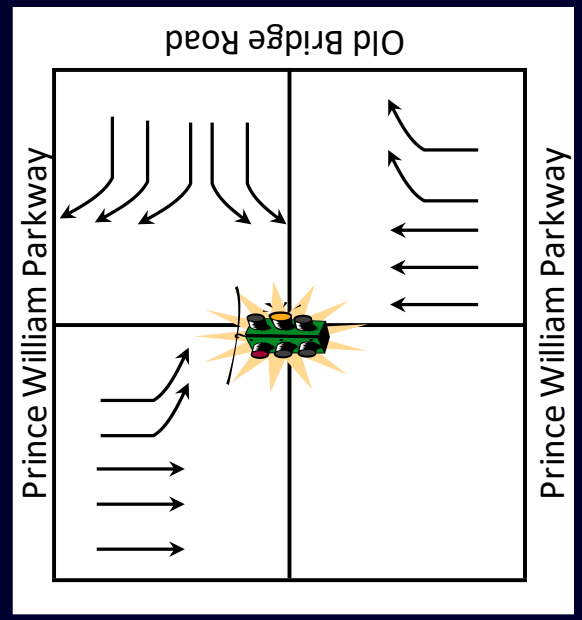
- T-Intersection
- Thru-Cut
- Roundabout
- Flyover Interchange

# Prince William Parkway/Old Bridge Rd


# Prince William Parkway/Old Bridge Rd

## STARS Study Recommended Alternative



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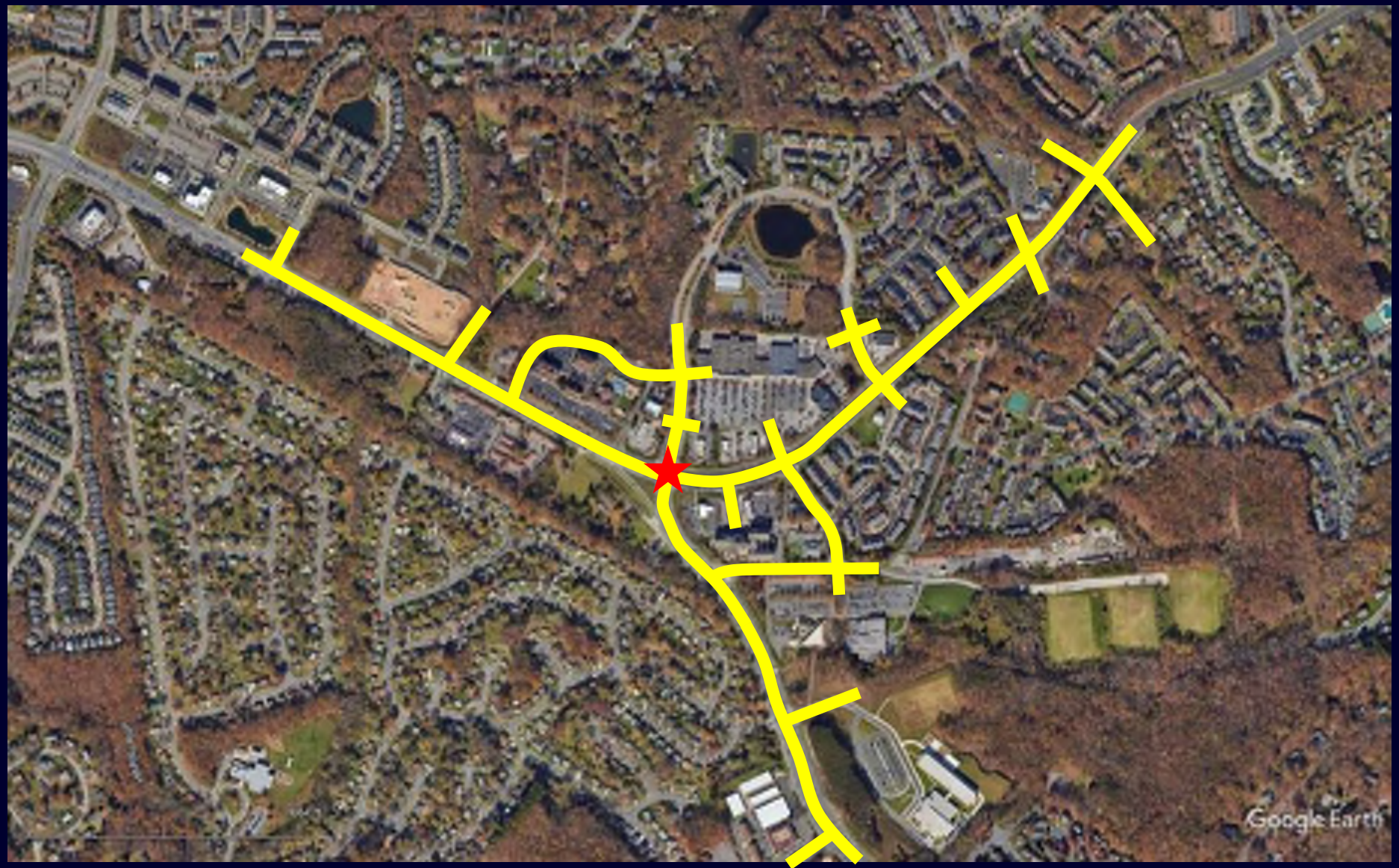

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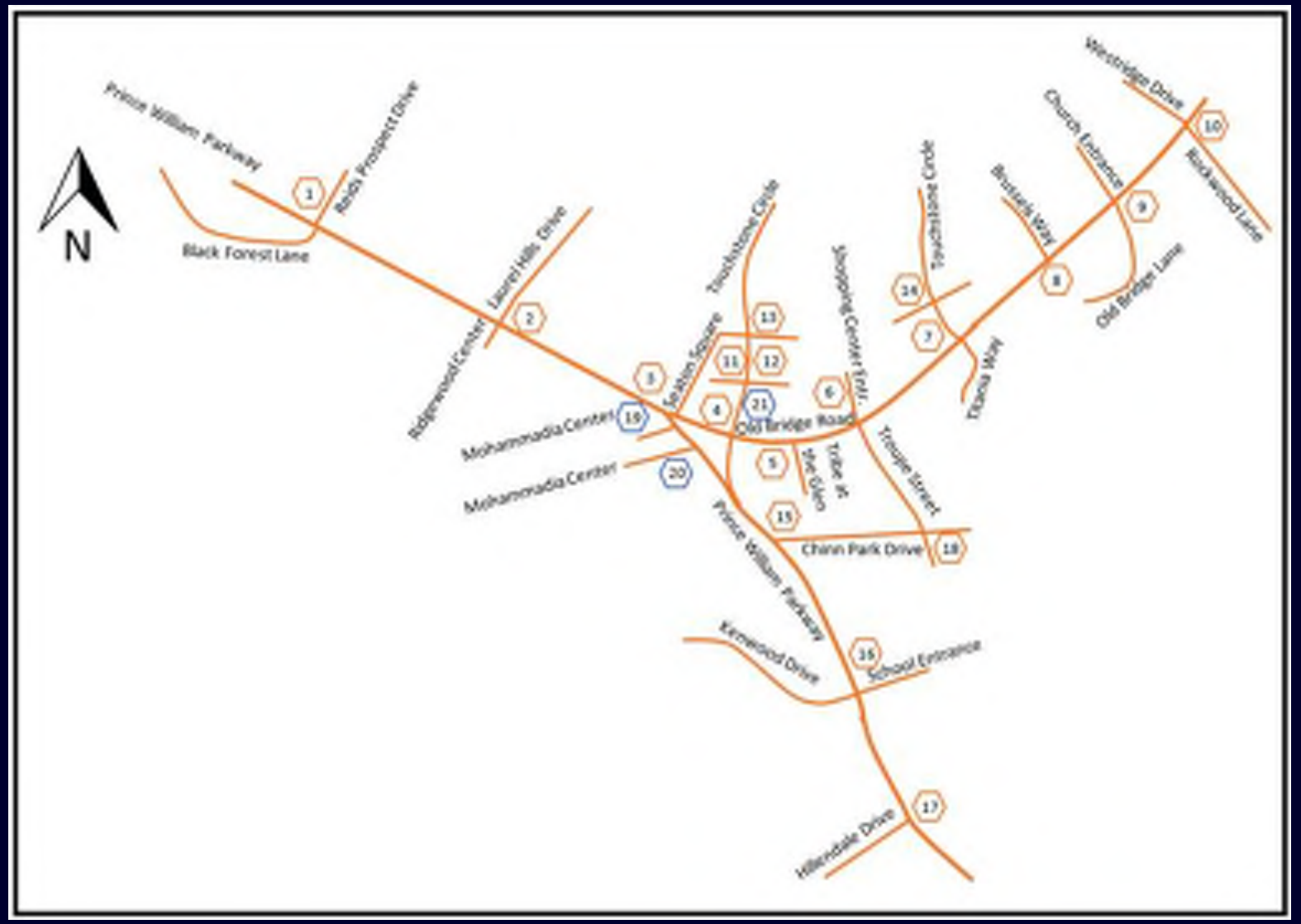

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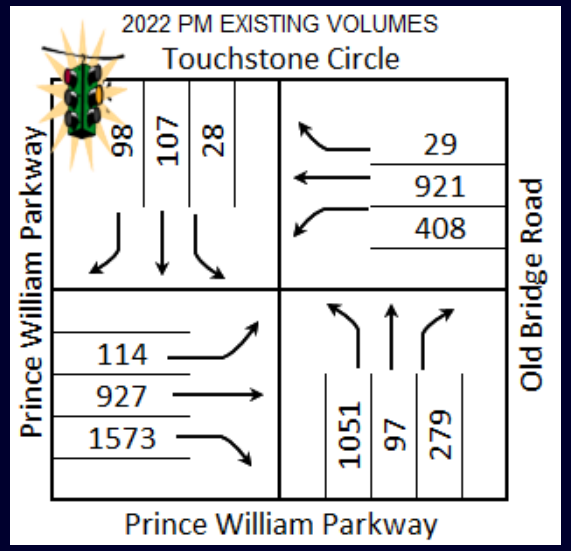


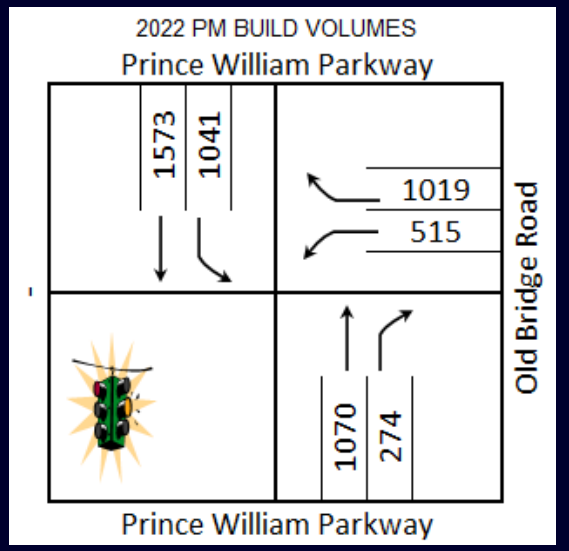


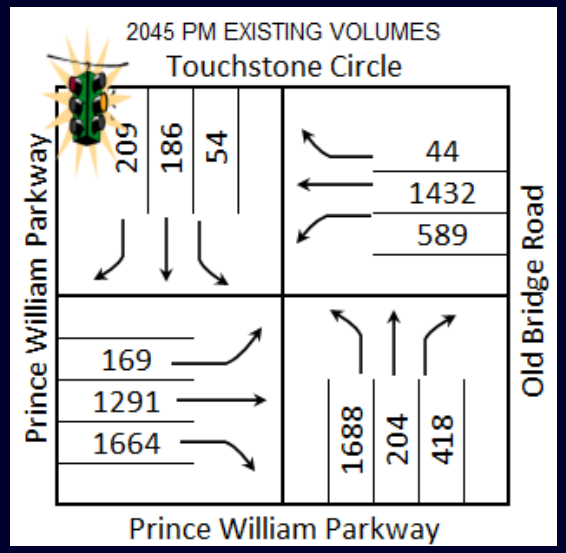


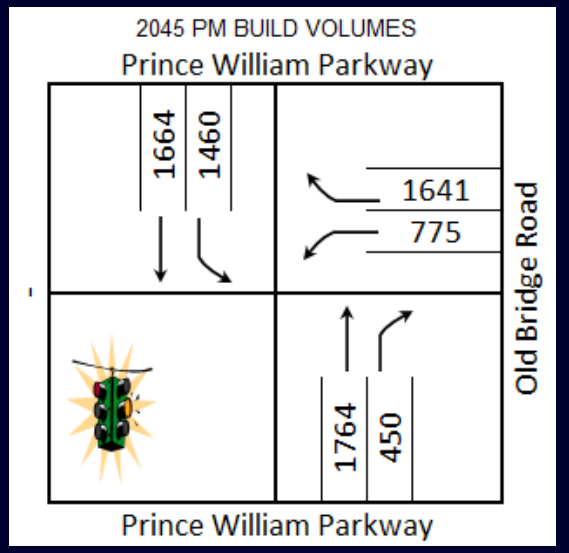

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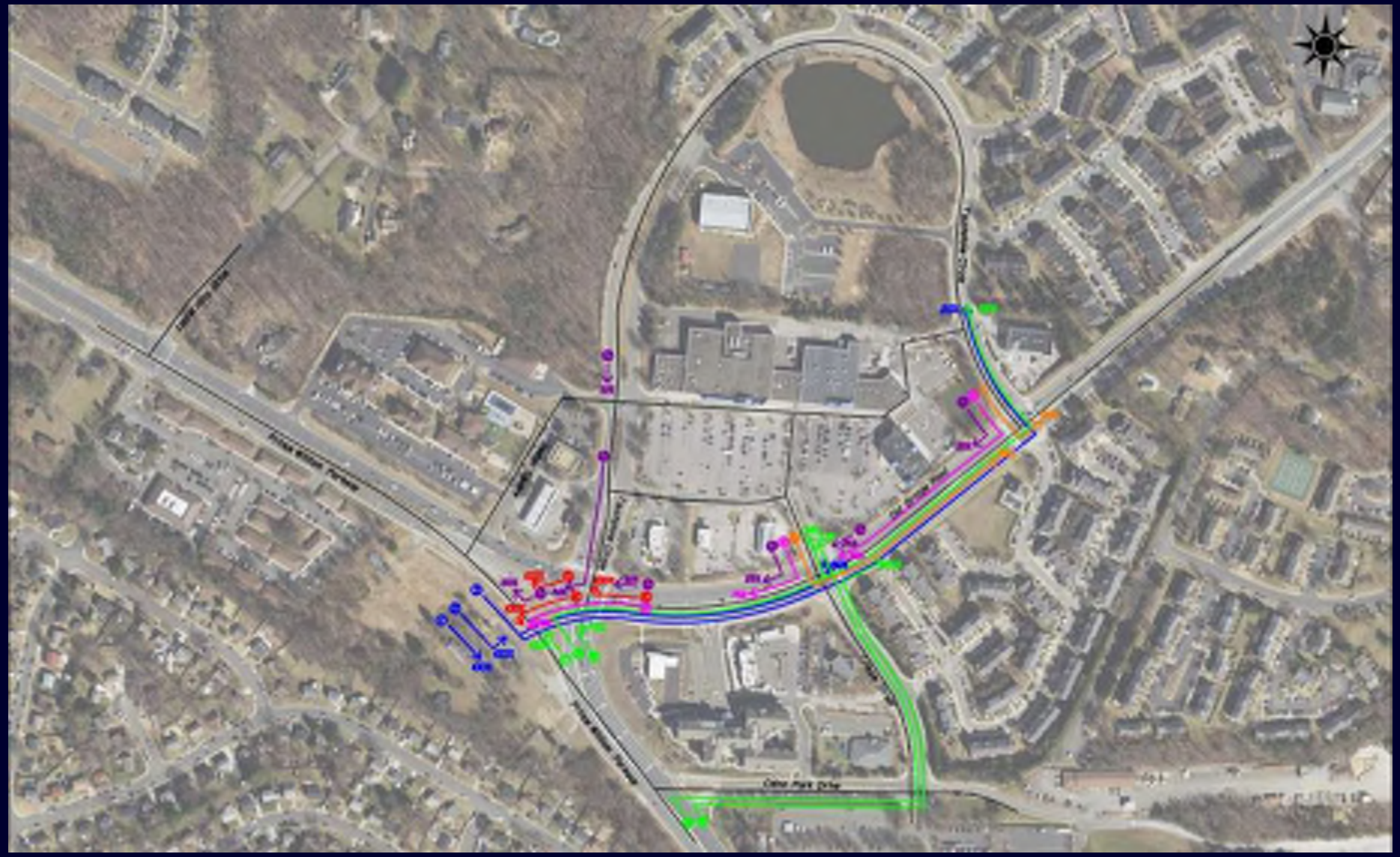


# Prince William Parkway/Old Bridge Rd

## STARS Alternative Analysis Results

- SBL and NBT movements:
  - V/C ratio over 0.8
  - Queue exceeds storage length

| Intersection | Approach | PM No-Build LOS (Delay (s/veh)) | PM Alternative 1 LOS (Delay (s/veh)) |
|---|---|---|---|
| Prince William Parkway and Old Bridge Road | Prince William Parkway (EB/SB) | F (180.5) | F (80.5) |
| | Old Bridge Road (WB) | F (104.40 | E (69.7) |
| | Prince William Parkway (NB) | F (139.1) | F (100.9) |
| | Touchstone Circle (SB) | F (146.0) | N/A |
| | Overall | F (147.1) | F (84.3) |

| 2045 PM Build Results | | | | | | |
|---|---|---|---|---|---|---|
| MOVEMENT | VOLUME | LOS | DELAY | V/C | QUEUE | |
| | | | | | DESIGNED | 95TH SIM TRAFFIC |
| SBL | 1460 | F | 139.6 | 1.183 | 340 | 316 |
| SBT | 1664 | A | 4.9 | 0.427 | 1333* | 140 |
| NBT | 1764 | D | 38.5 | 0.991 | 475* | 314 |
| NBR | 450 | A | 0.7 | 0.195 | 200 | 316 |
| WBL | 775 | C | 27 | 0.478 | 800* | 194 |
| WBR | 1641 | A | 2.7 | 0.553 | 800* | 231 |
| OVERALL | | D | 39.4 | | | |

# Prince William Parkway/Old Bridge Rd

# Prince William Parkway/Old Bridge Rd

3 Alternative Intersections Analyzed

Green T

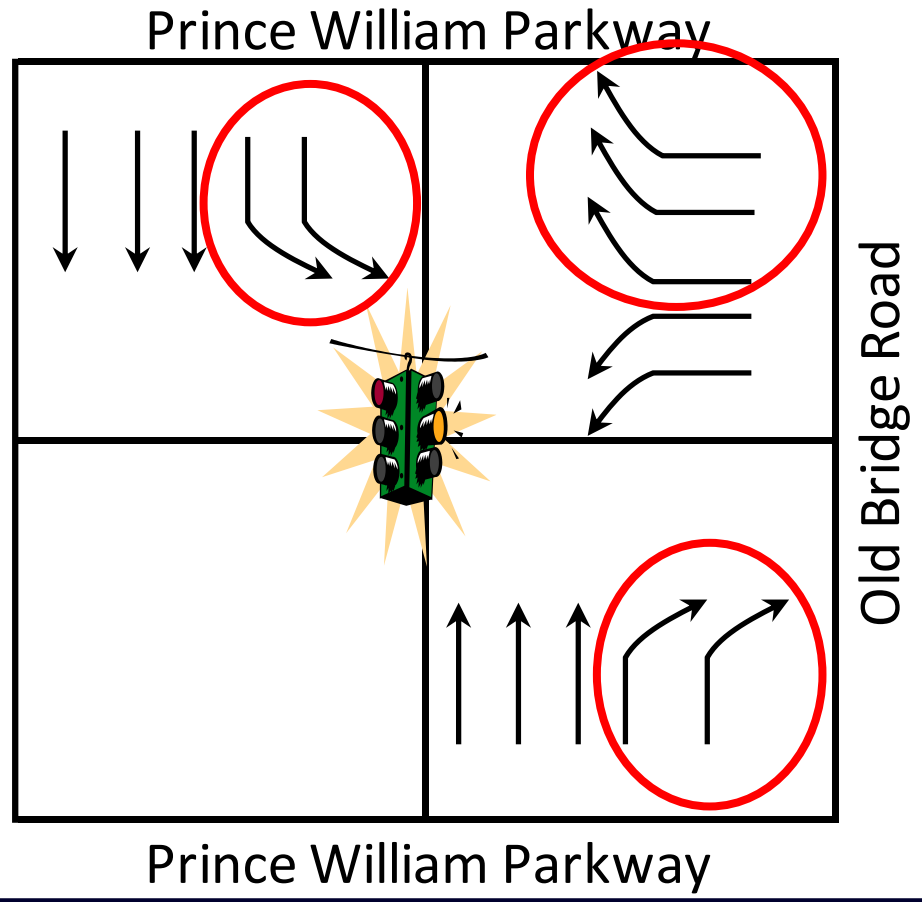
- Fails due to the high southbound left turn volume
- This creates a failure in the overall intersection that is not recoverable

Displaced left

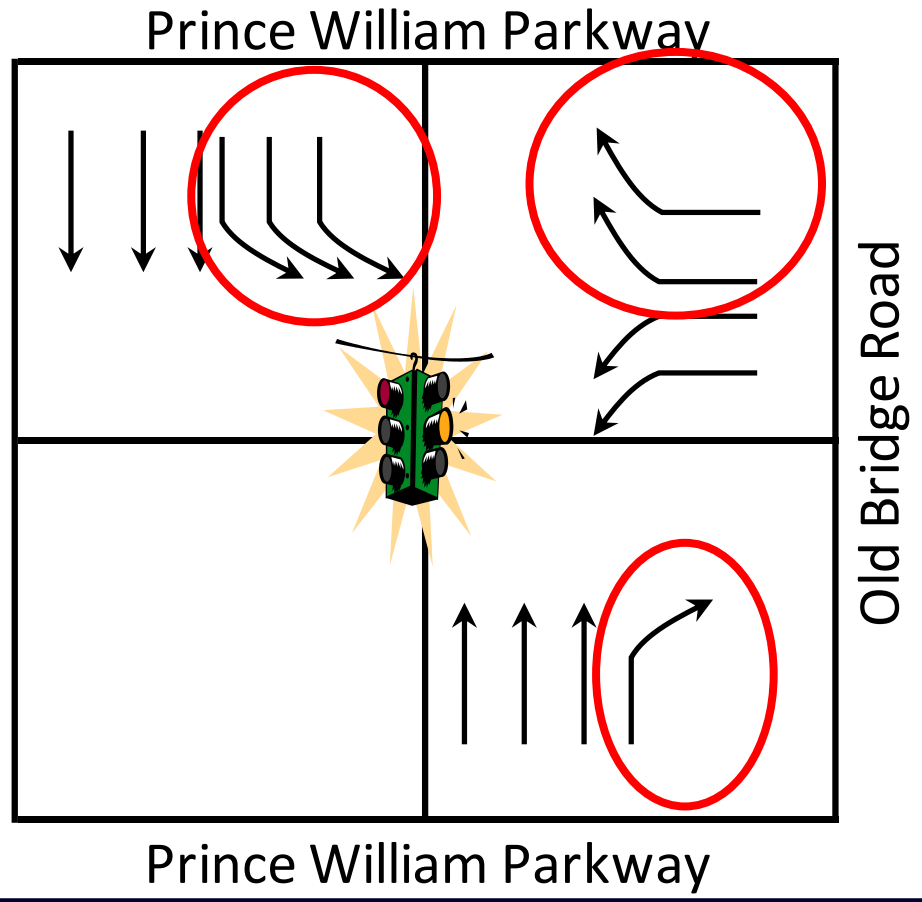
- Shows C+ LOS for all movements
- Space constraints within the existing intersection area show significant impacts

# Prince William Parkway/Old Bridge Rd

2045 PM BUILD LANE CONFIGURATION



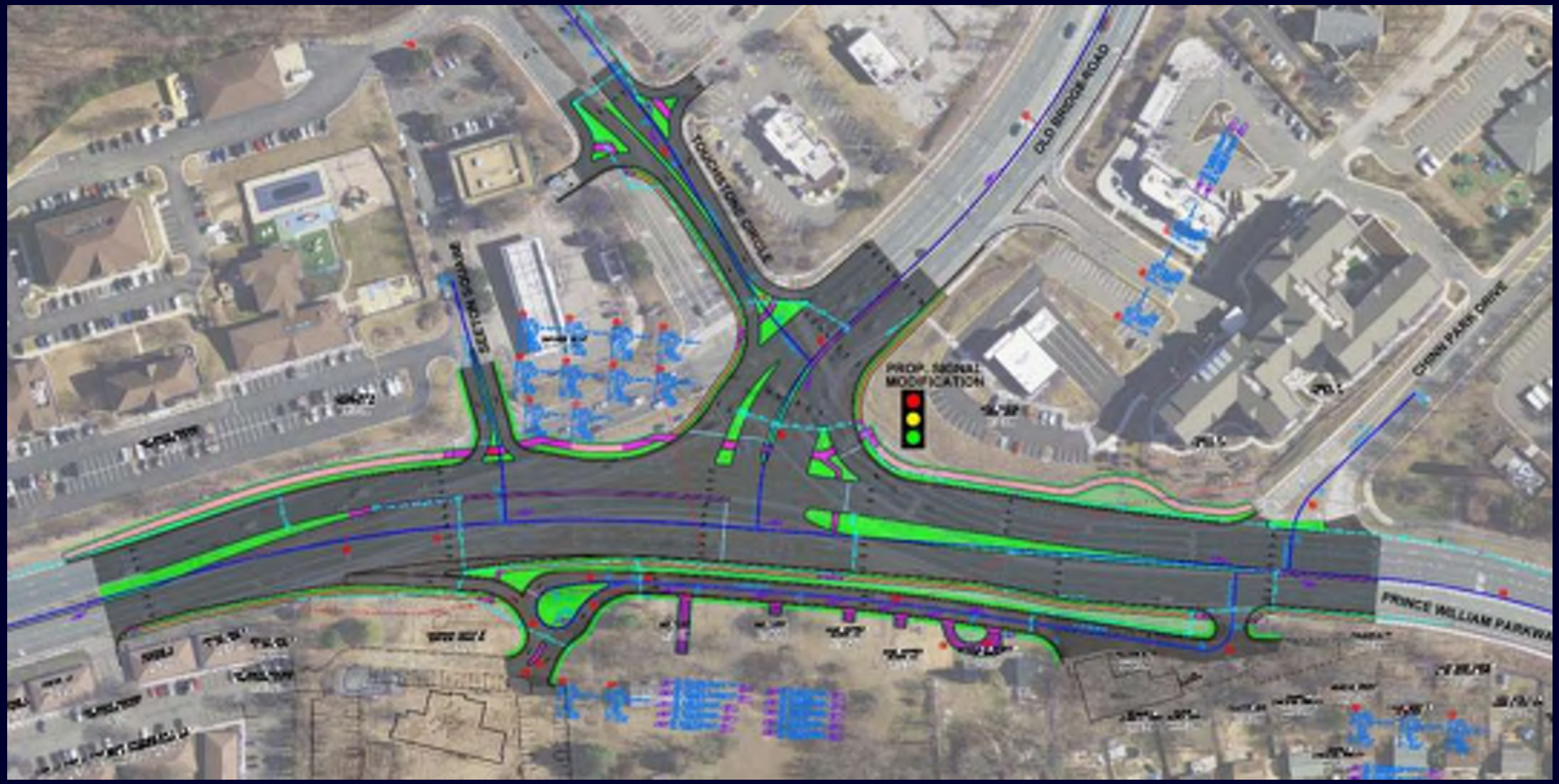

2045 PM BUILD ALTERNATIVE LANE CONFIGURATION



# Prince William Parkway/Old Bridge Rd

| Future Year (2045) Level of Service (LOS) & Delay | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Intersection | | Control Type | Approach | Lane Group | Build | | | | | | | | |
| | | | | | AM Peak | | | | PM Peak | | | | |
| 4 | Prince William Pkwy & Old Bridge Rd | Signalized | EB | Left | | | | | | | | | |
| | | | | Through | | | | | | | | | |
| | | | | Right | | | | | | | | | |
| | | | WB | Left | 6.0 | A | 2.4 | A | 27.0 | C | 13.2 | B | |
| | | | | Through-Right | 0.5 | A | | | 6.6 | A | | | |
| | | | NB | Left | | | 19.3 | B | | | 34.3 | C | |
| | | | | Through | 24.2 | C | | | 42.7 | D | | | |
| | | | | Right | 0.1 | A | | | 1.3 | A | | | |
| | | | SB | Left | 53.0 | D | 28.8 | C | 52.2 | D | 27.0 | D | |
| | | | | Through | 13.0 | B | | | 4.9 | A | | | |
| | | | | Right | | | | | | | | | |
| | | | Overall | | 19.1 | | B | | 24.8 | | C | | |

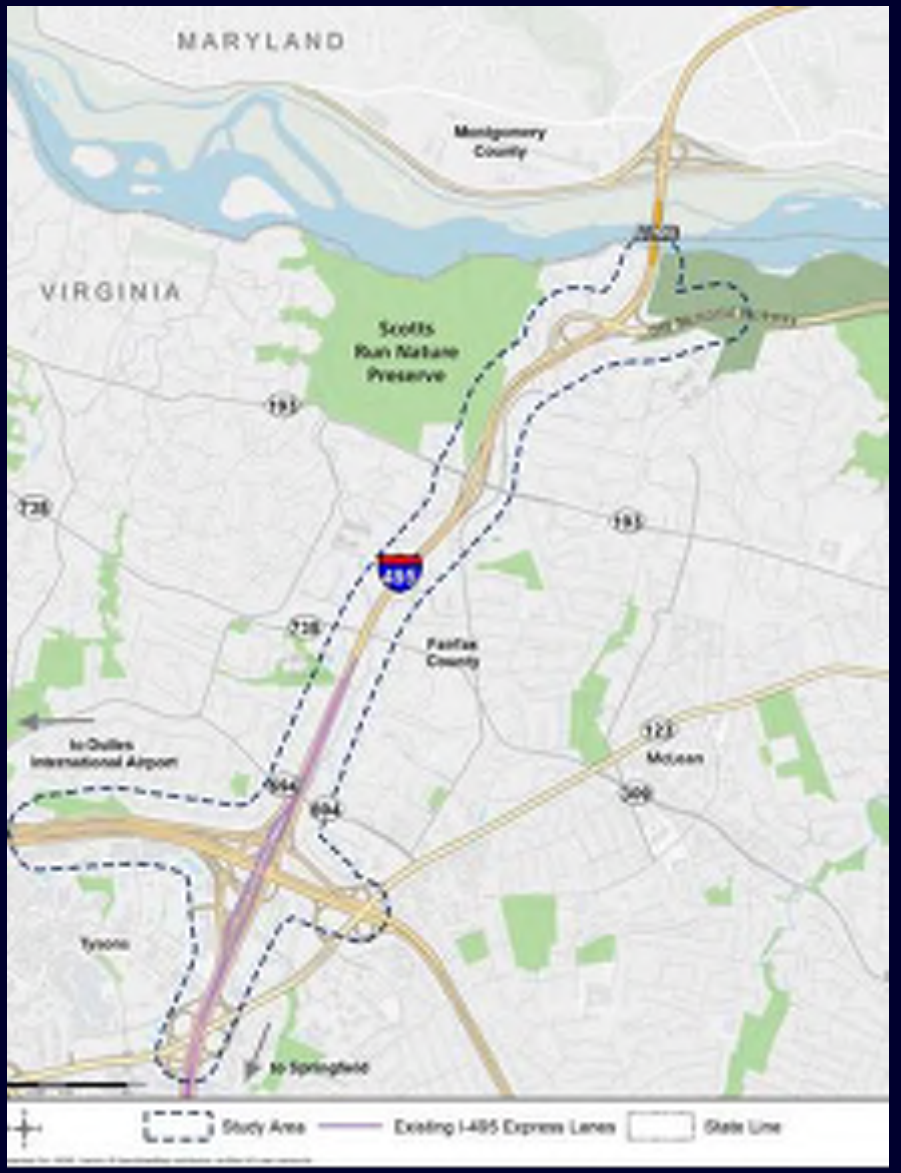
# Prince William Parkway/Old Bridge Rd



# Prince William Parkway/Old Bridge Rd

# 495NEXT Introduction

The I-495 Express Lanes Northern Extension (495 NEXT) project is a public-private partnership between the Commonwealth of Virginia and Transurban that involves extending the 495 Express Lanes north by two-and-a-half miles from the Dulles Corridor to the George Washington Memorial Parkway interchanges near the American Legion Bridge.



# 495NEXT Introduction

## ITS Scope – VDOT and Transurban

- Replace existing and install new DMS, CCTV Cameras, Microwave Vehicle Detector Systems, Automated Incident Detection Cameras

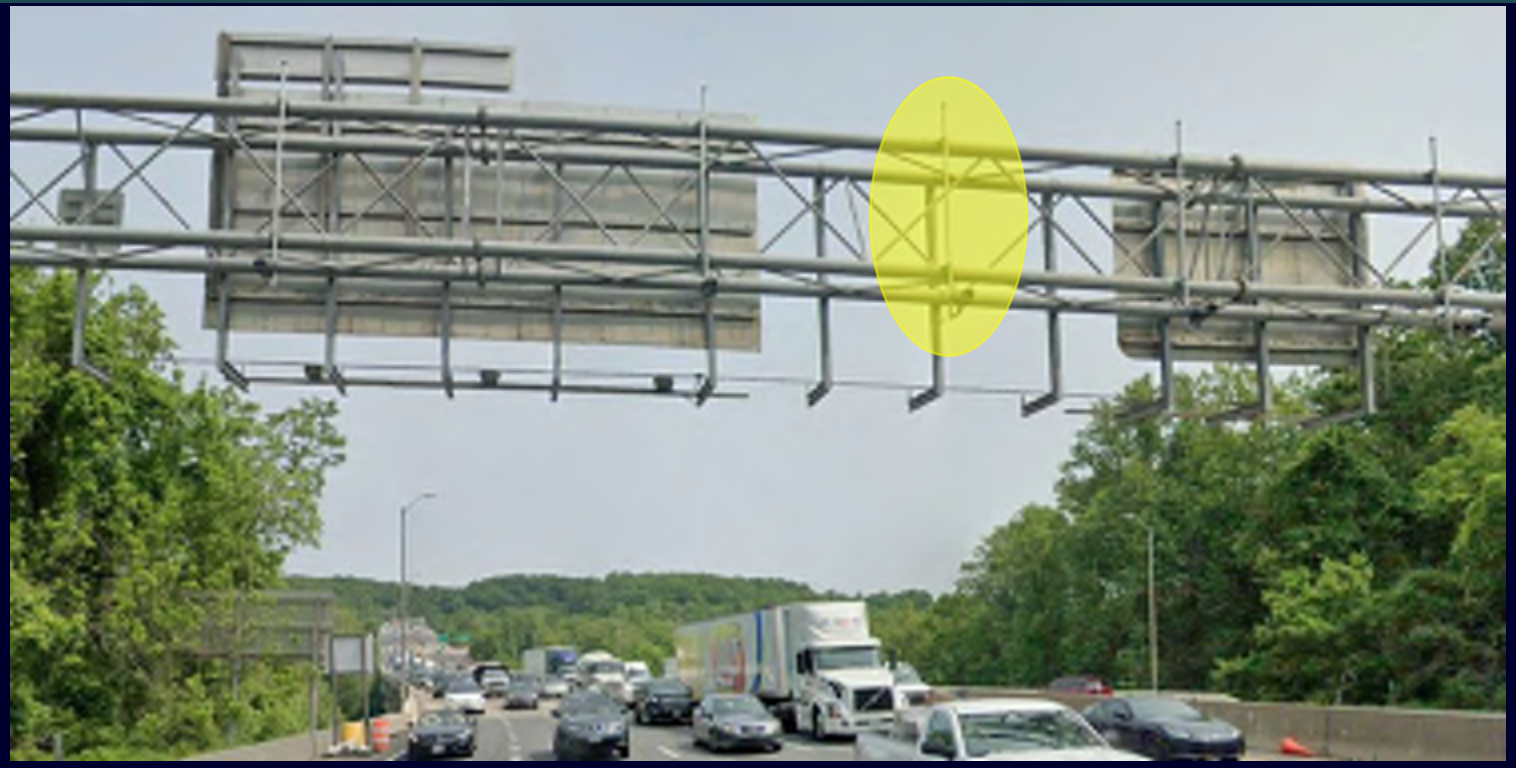
- VDOT Fiber Duct Bank along project is being replaced
- March of 2023 –
  - Infrastructure Plans are approved as noted
  - NDC to include Fiber Details is under review

# The Curve Ball

## RFI from the Field

- Existing privately owned duct bank cutover will sever VDOT line
- Project Team review shows no VDOT assets being served by line, no asset sharing agreement with utility owner

# Virginia State Police (VSP) Assets

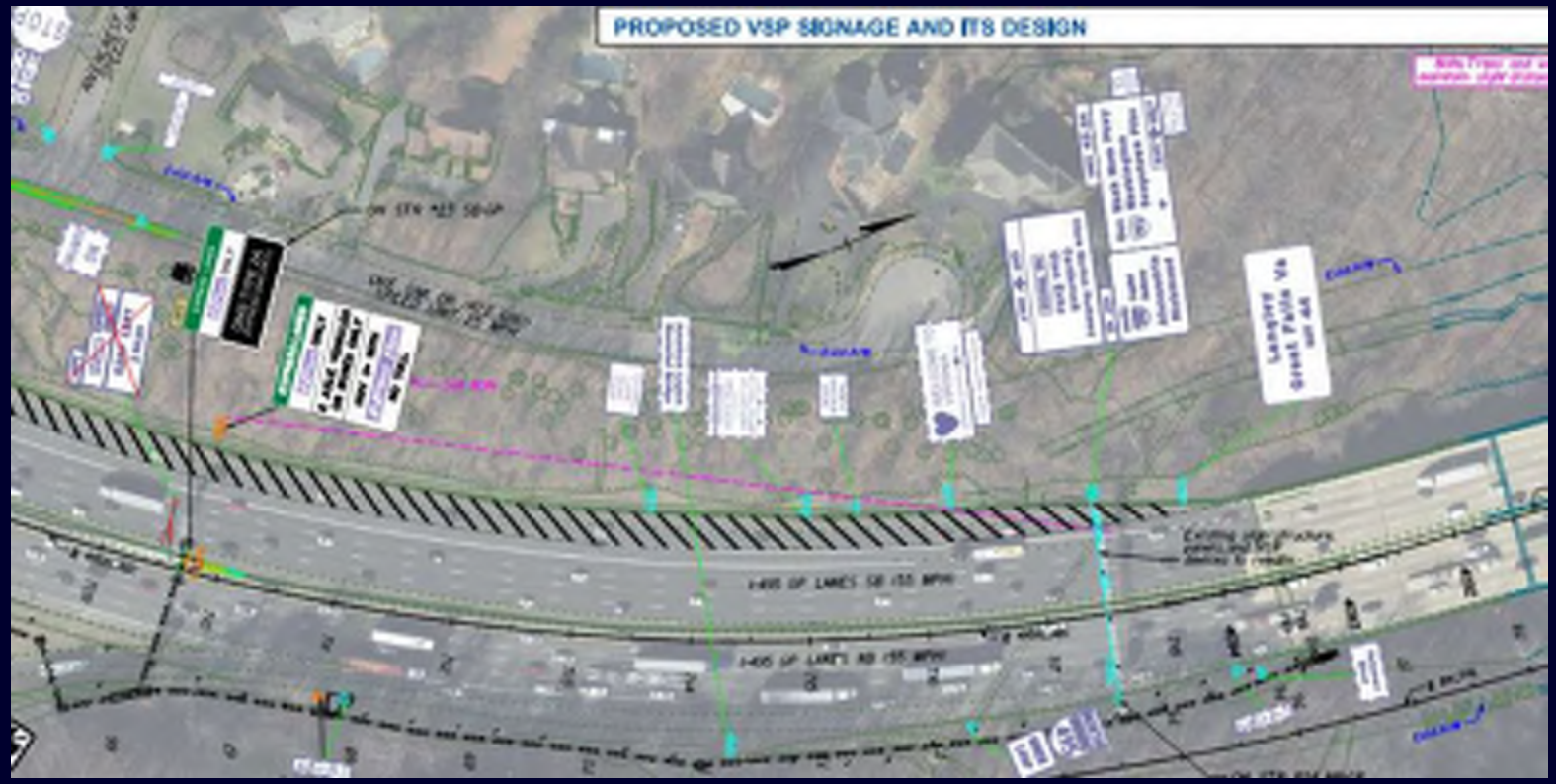


- 10 Existing Cameras at American Legion Bridge at VA/MD Border
- VDOT confirms Virginia State Police License Plate Readers (LPRs) on sign gantry. VDOT is committed to providing continued VSP support

# Impacts to VSP Cameras

- Existing sign gantry structure is planned to be removed and replaced by a southbound span and northbound cantilever structure
- Meeting with VSP held to discuss options, LPR camera angles, funding

# Scope modifications




- Proposed revision to leave existing sign structure in place, shift proposed DMS structure 800’ south
- Alleviating funding issues associated with new sign structure eased VSP coordination

# Temporary Feeds

- Coordination meeting with VSP, LPR Manufacturer's Representatives, VDOT, and Design-Build team resulting in:
    - Abandoning any idea of continuing to operate fiber in private communication
    - Procurement of forward control units and modems for temporary communications, to be replaced by ultimate condition VDOT fiber, by VSP
    - Temporary outage plan is drafted by VSP

# Lessons Learned

- Prompt, transparent communication early in process (when ball is “breaking”) is paramount
- Be prepared to think outside of the box and use all the tools you have
- Consensus driven solutions and stakeholder buy in is key
- On Design-Build projects, clearing up funding issues early in the process facilitates inter-stakeholder coordination