ITEM # 12

2014 Freeway Congestion Monitoring Program
1-Second Time Lapse Aerial Photo (TLAP) Pilot Study

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TPB Technical Committee

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1-Sec Time Lapse Aerial Photo (TLAP) -Pilot

- **Traditional Survey**
  - Fly in an airplane and take overlapping pictures using single camera
  - Density from Pictures
  - Speeds , flow, LOS estimated
  - Regional study
- **1-Sec Time Lapse Aerial Photo Pilot Study**
  - Use a stationary helicopter
  - 3 camera setup
  - Area coverage ~ 1.5 mile x 3.5 mile (can be customized)
  - Pictures stitched together to create a single wide area shot
  - One second pictures joined to create a video
  - Detailed study of traffic operations in the box

1-Sec Time Lapse Aerial Photo (TLAP) -Pilot

- Pilot Study
  - Demonstration of technique
  - 9 locations selected in consultation with MOITS
  - Freeways and urban arterial studied
  - 20 minutes of coverage in AM and PM
  - Linear and Area configuration used
  - Results indicated are of a “sample” nature
  - Caveat: Data have not been studied or verified in conjunction with other state or local engineering studies or data collection efforts in these particular locations/corridors
  - All results should be considered DRAFT at this time

1-Sec Time Lapse Aerial Photo (TLAP) -Pilot

- Data
  - Traffic flow, Density, and operations
  - Volume entering, volume exiting
  - Origin Destination (OD)
  - Weaving Characteristics
  - Observing movement of specific vehicles/vehicle types (e.g., trucks)

1-Sec Time Lapse Aerial Photography (TLAP) -Pilot

- Uses
  - Explanation for policy makers and public
  - Identifying potential low cost solutions
  - Credible data for Macro and Microscopic models
  - Video/visualization of Traffic operation dynamics
  - Archive of detailed information for future reference
  - Promising for agency/local uses

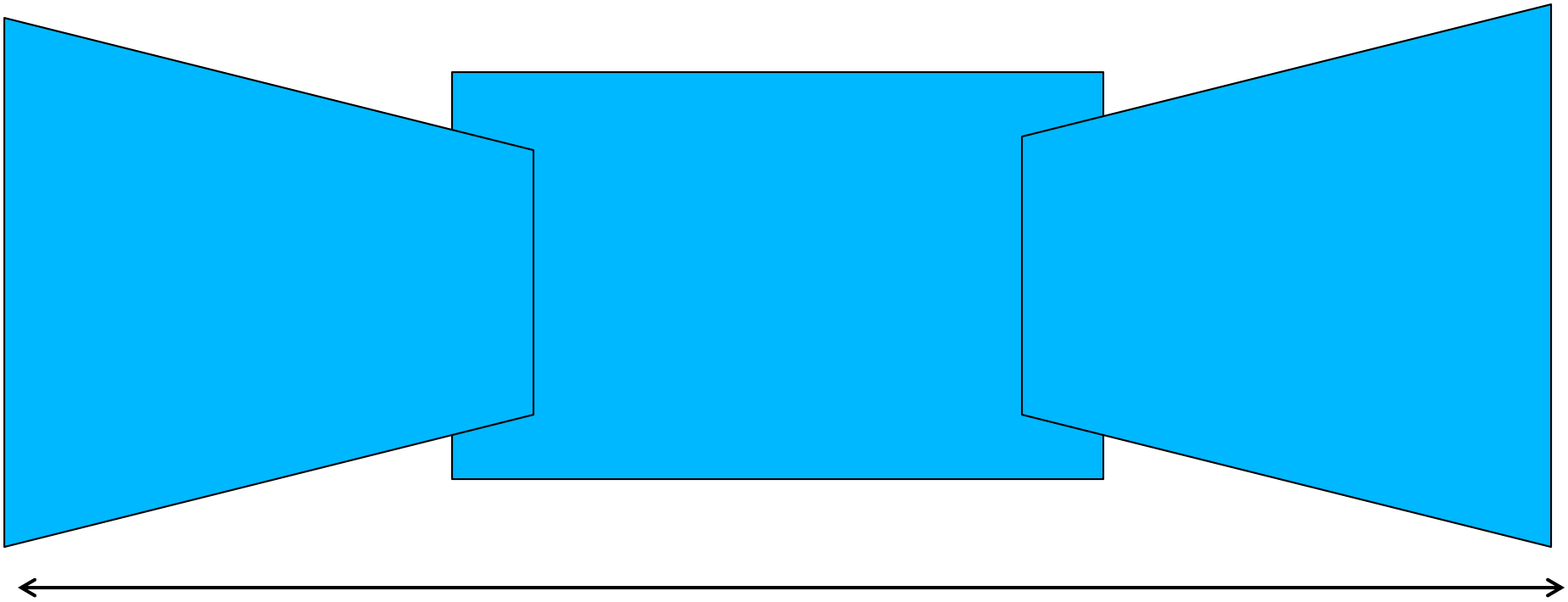
1-Sec Time Lapse Aerial Photography (TLAP) -Pilot

Location	Data
1) 11th Street Bridge/I-695	D, V, OD, W
2) Memorial Bridge/GW Parkway	D, V, OD, W
3) Virginia Approach to W. Wilson Bridge	D,V, W
4) I-66 Between VA 123 and US 50	D,V, W
5) 16th Street Between Military and Spring Rd.	D,V, T
6) I-495 and Hot Lane Merge	D, V, OD, W
7) I-495 Between I-270 to Cabin John Parkway	D, V, OD
8) I-70 at US 340/I-270	D, V, OD , W
9) I-495 near US 1 interchange in MD	D, V, OD, W

D=Density; V=Flow; OD=Origin Destination; W=Weaving; T= Transit

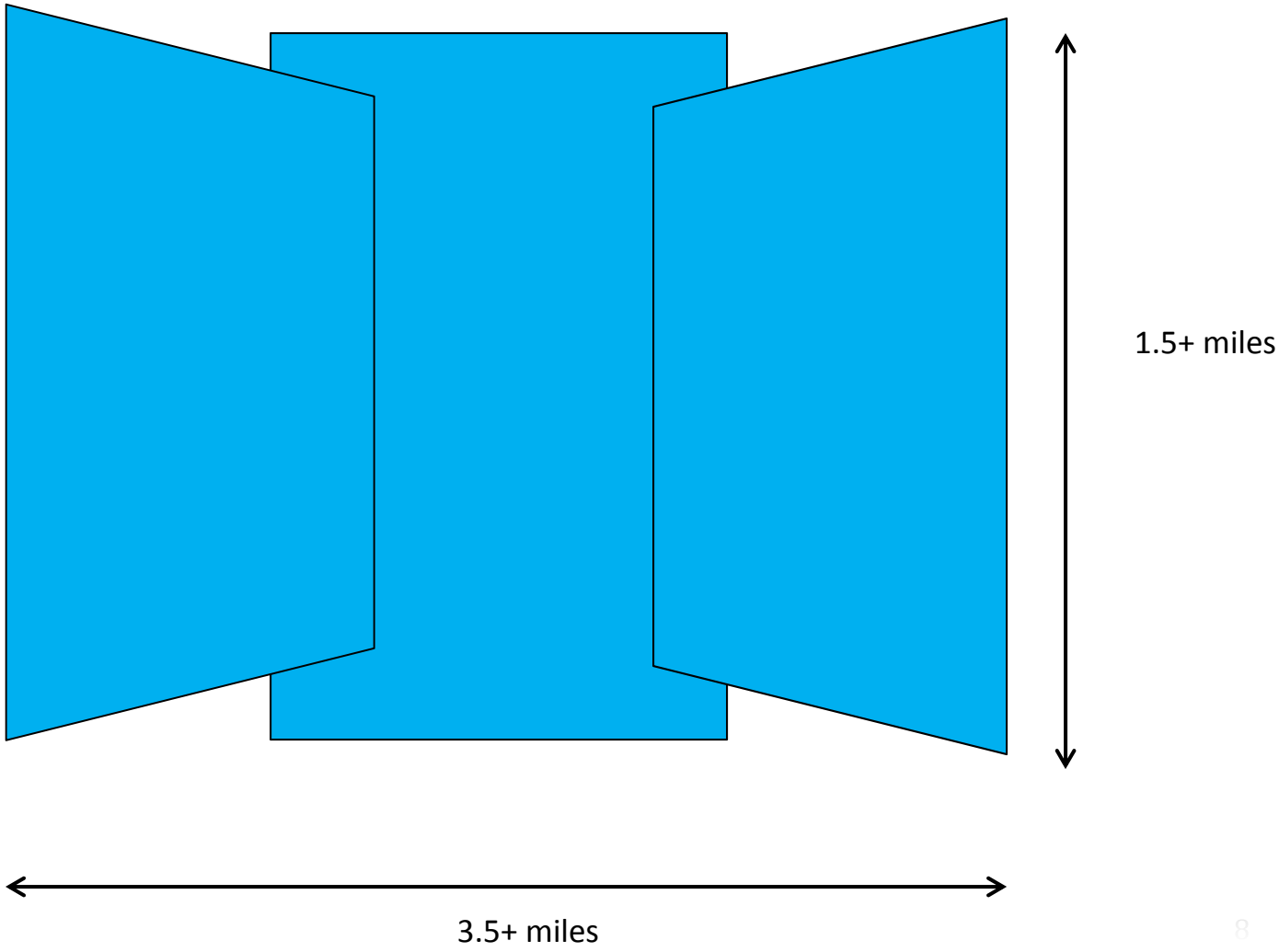
1-Sec Time Lapse Aerial Photo (TLAP)- Pilot

Linear configuration



4-5 miles

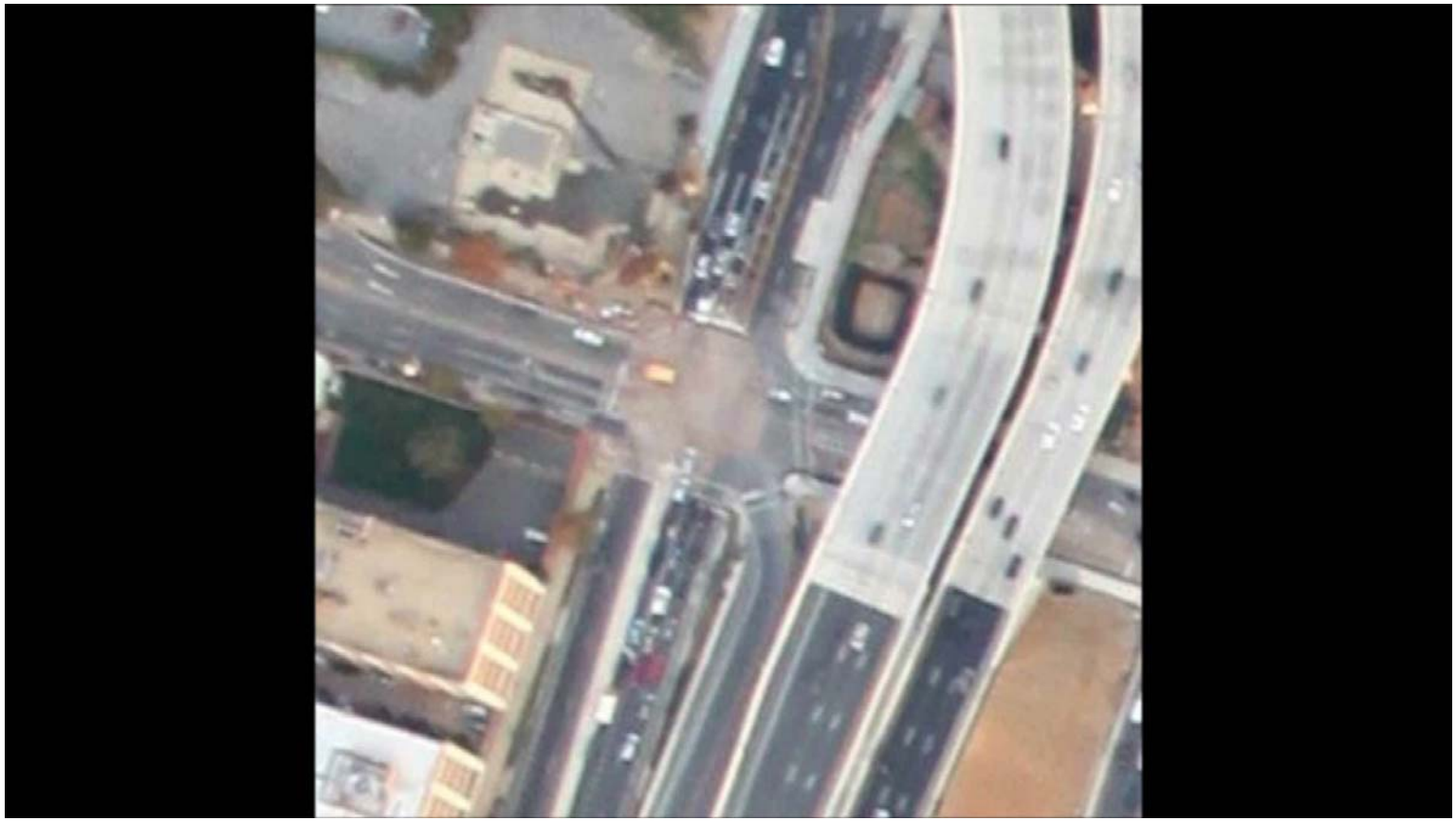
1-Sec Time Lapse Aerial Photo (TLAP)- Pilot Area configuration



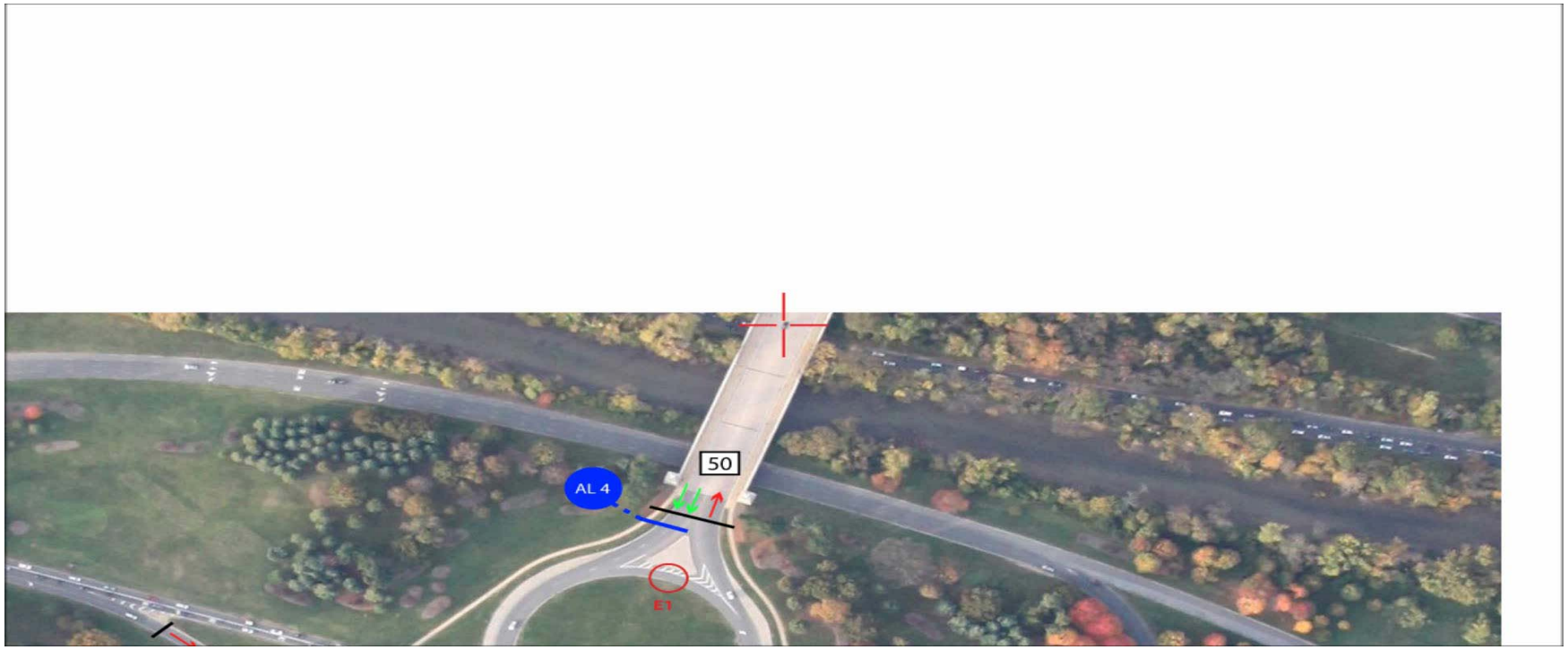
1-Sec Time Lapse Aerial Photo (TLAP) -Pilot

3 Photo Setup

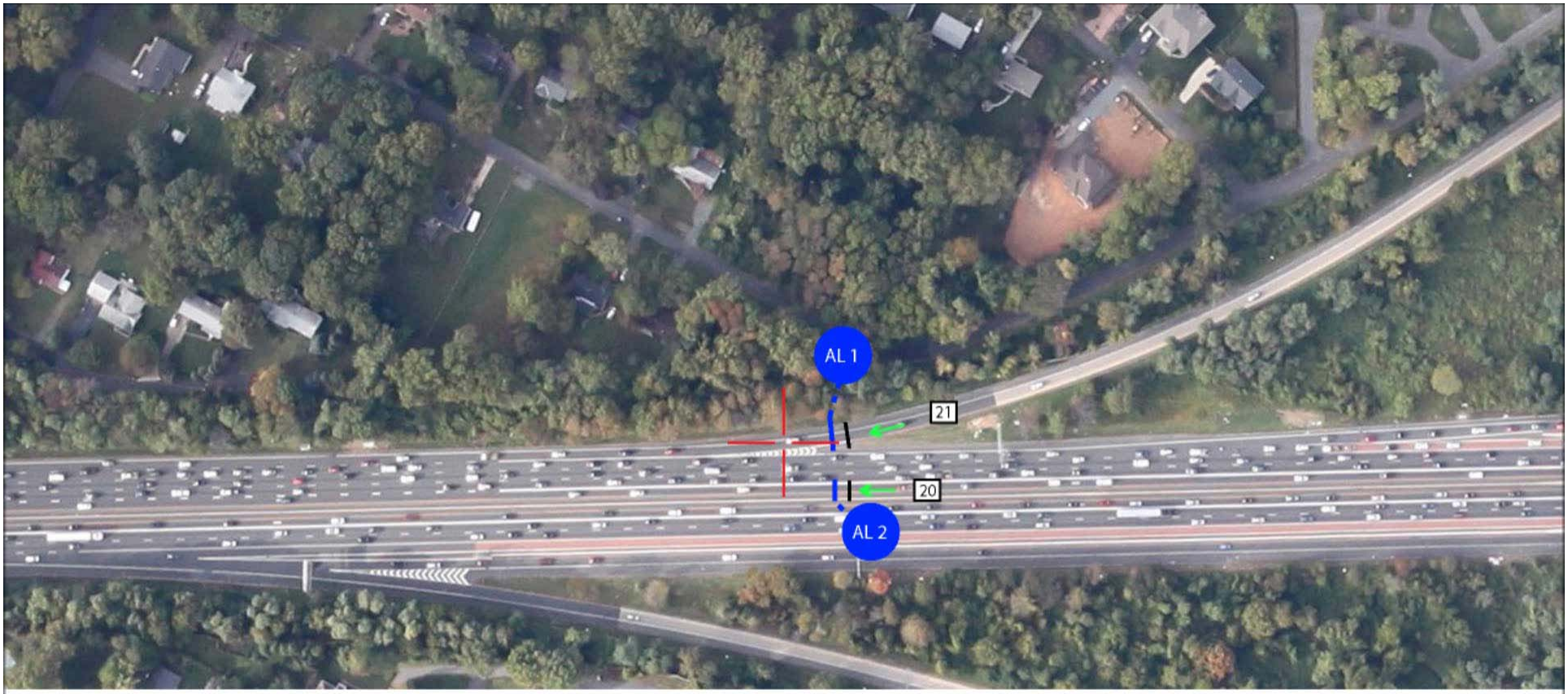
Site 1: 11th Street Bridges



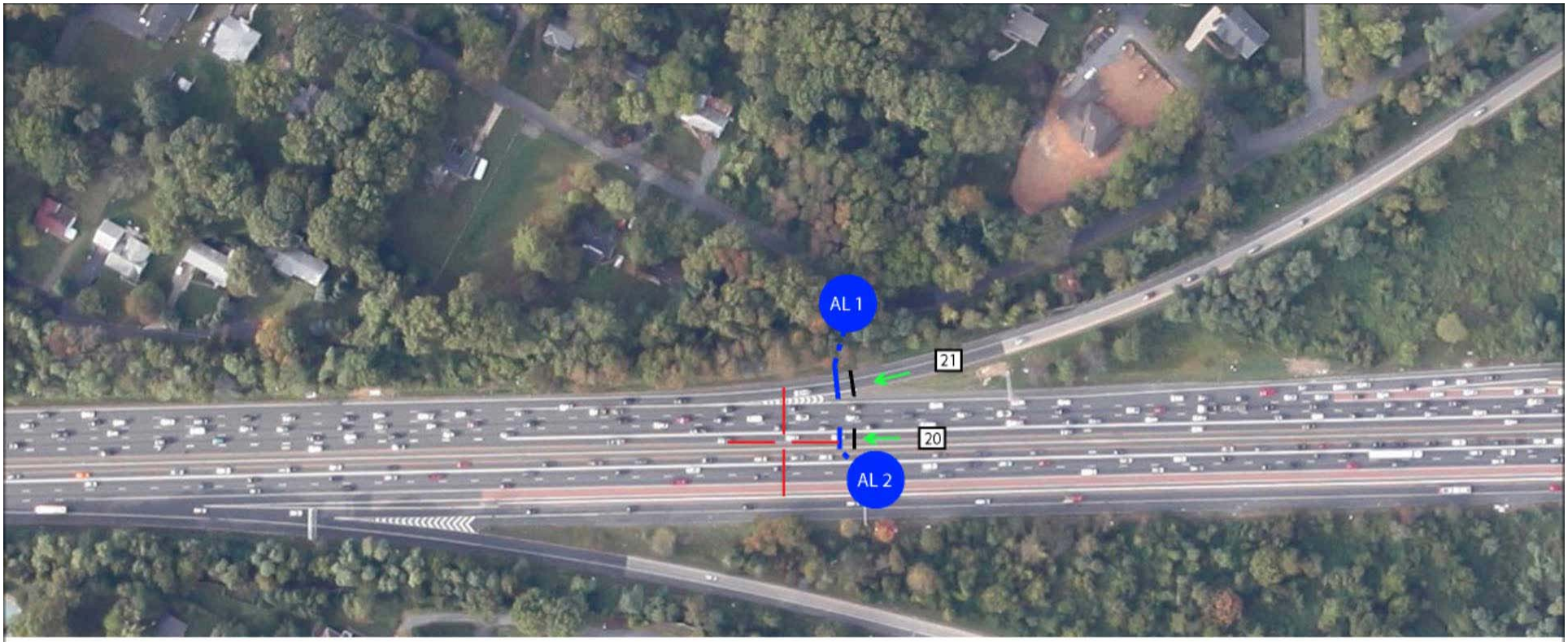
Site 2:Memorial Bridge Complex



Site 4: I-66 (Weaving from on ramp to HOV)

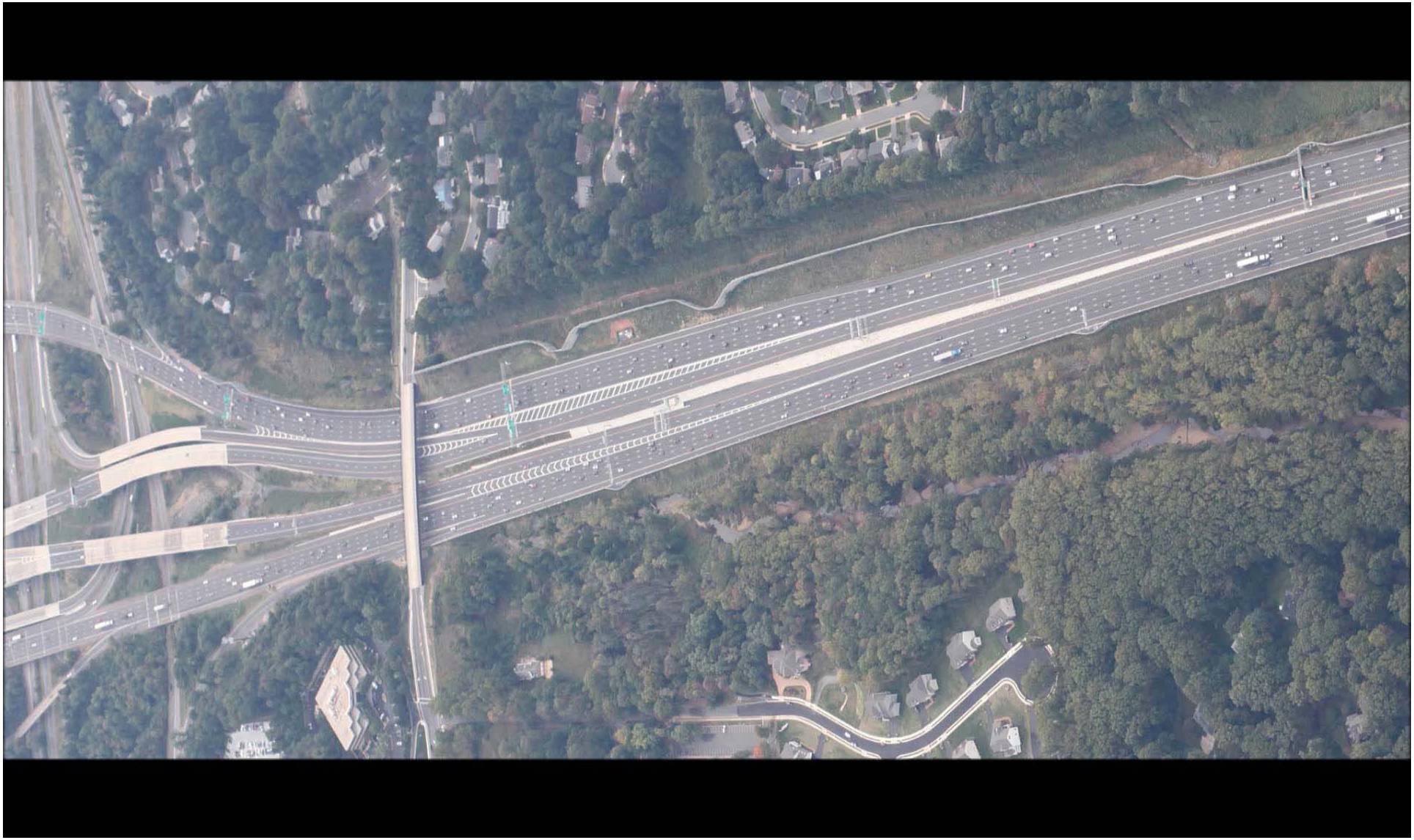


Site 4: I-66 (Weaving from HOV to Exit

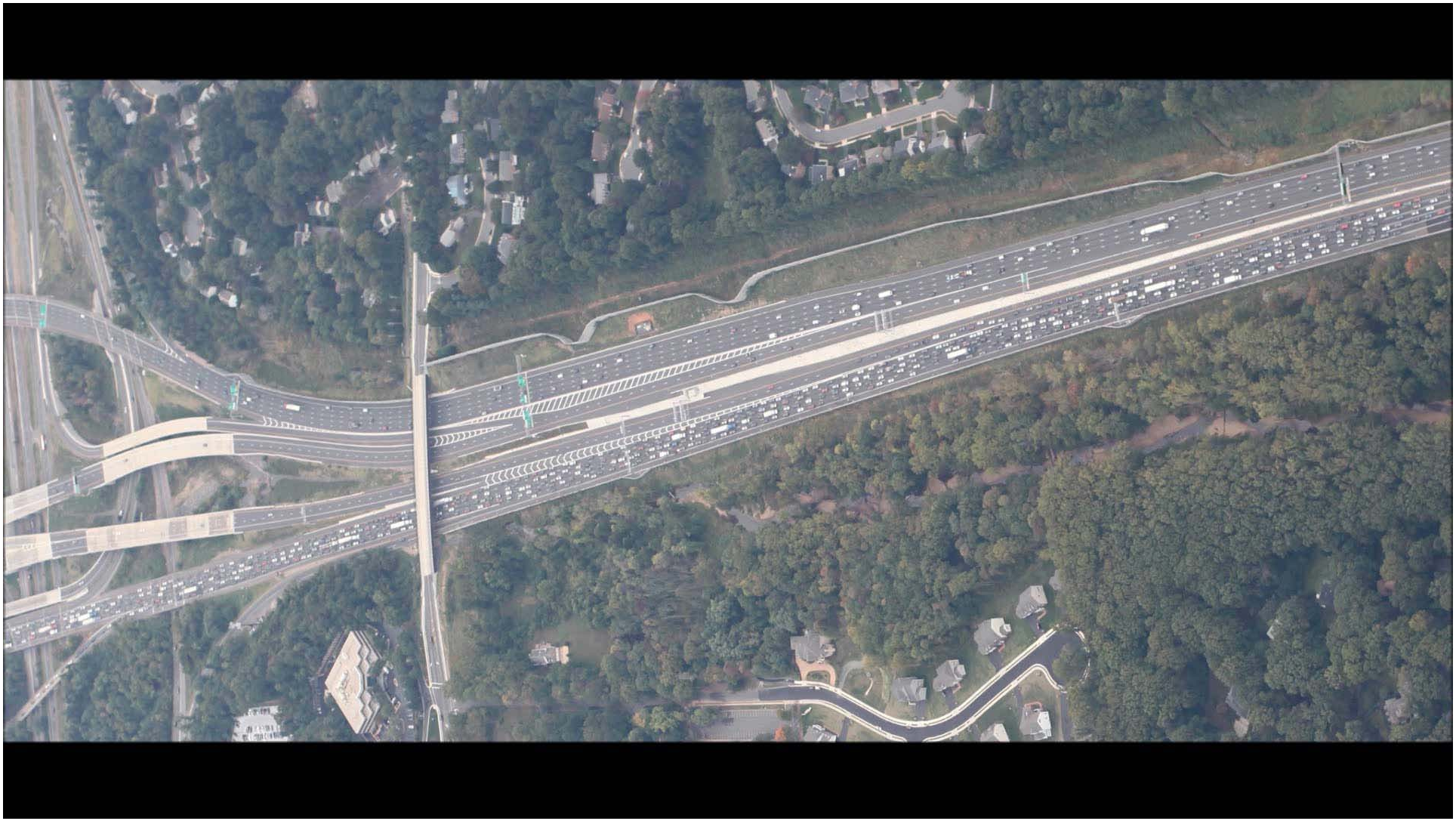


Site 5: 16th Street (Bus following)

Site 6 End of HOT Lanes, I-495 (congestion Forming)



Site 6 End of HOT Lanes, I-495 (congested)



Site 6 I-495 American Legion bridge

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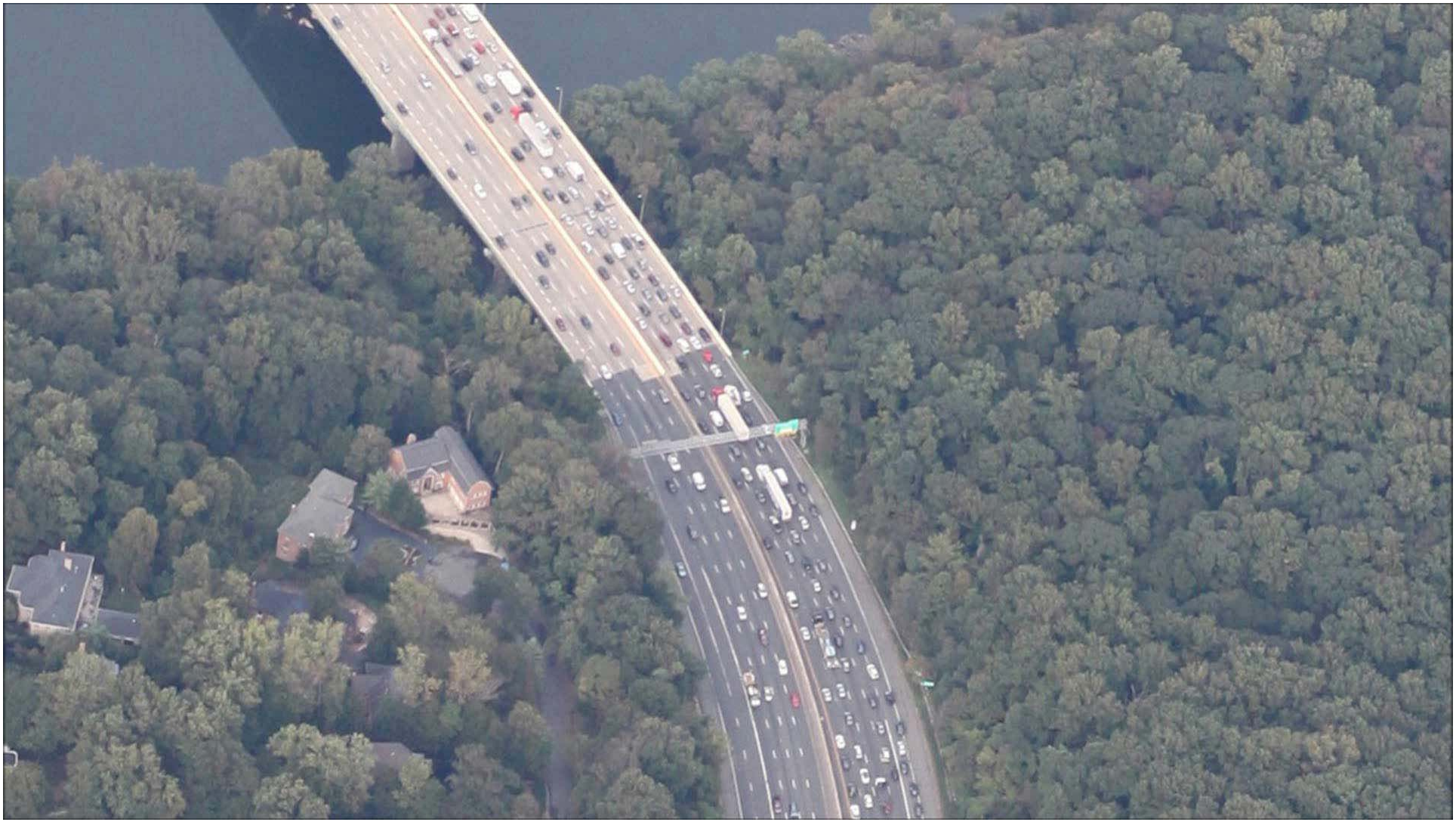
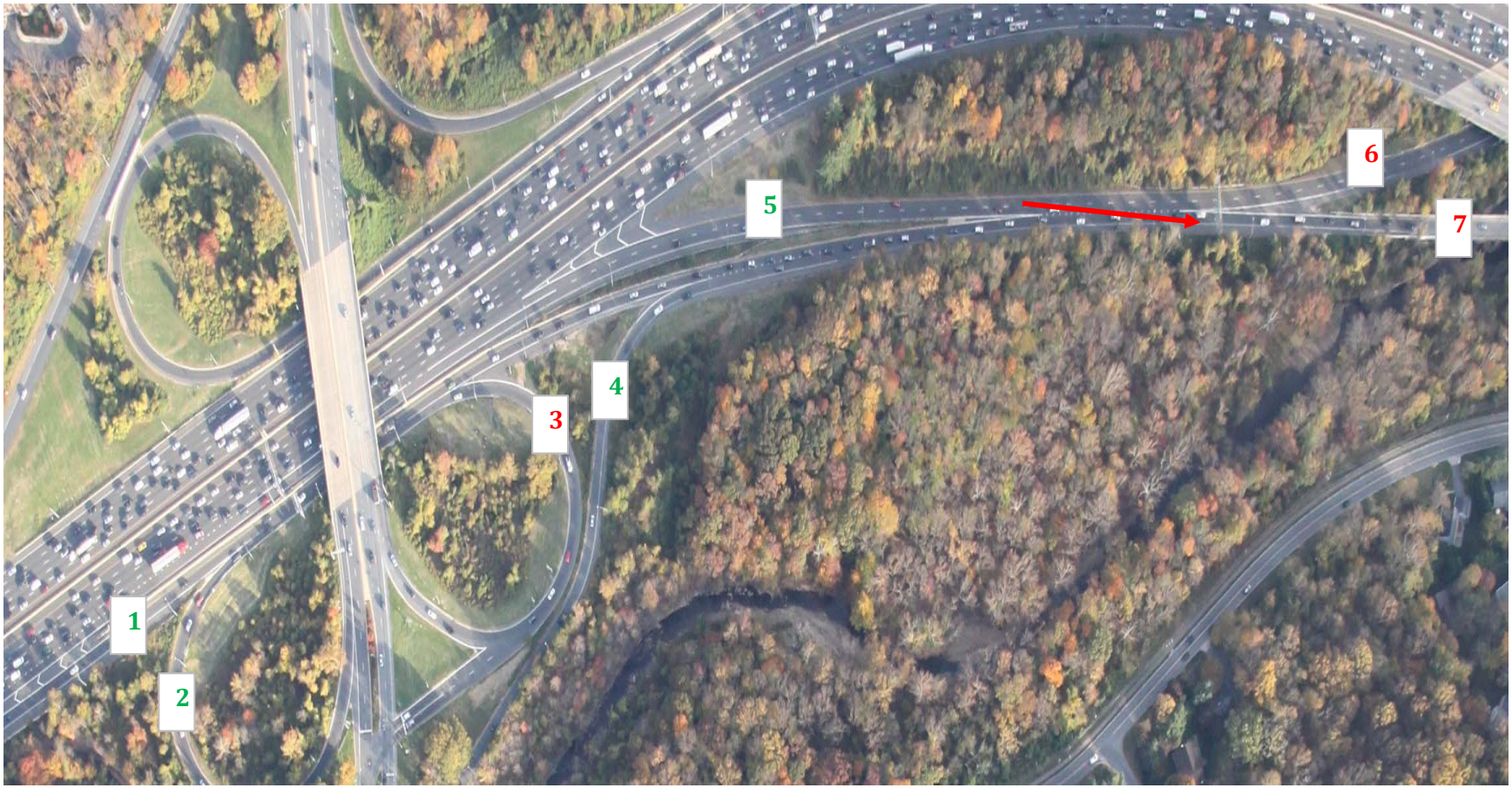


Site 7: Cabin John Pkwy Queue Bypass



1-Sec Time Lapse Photo (TLAP) -Pilot

- Findings
  - Permanent record of traffic flow conditions over a wide area
  - Understanding bottleneck operations
  - Cannot replace the regional program
  - Useful for local project planning studies
  - Useful for mezzo or micro level planning studies
  - No economy of scale advantages combining local studies to a regional program.

Questions?