

Mark Center (BRAC) Transportation Study

Presented to: BRAC/Mark Center
Advisory Group

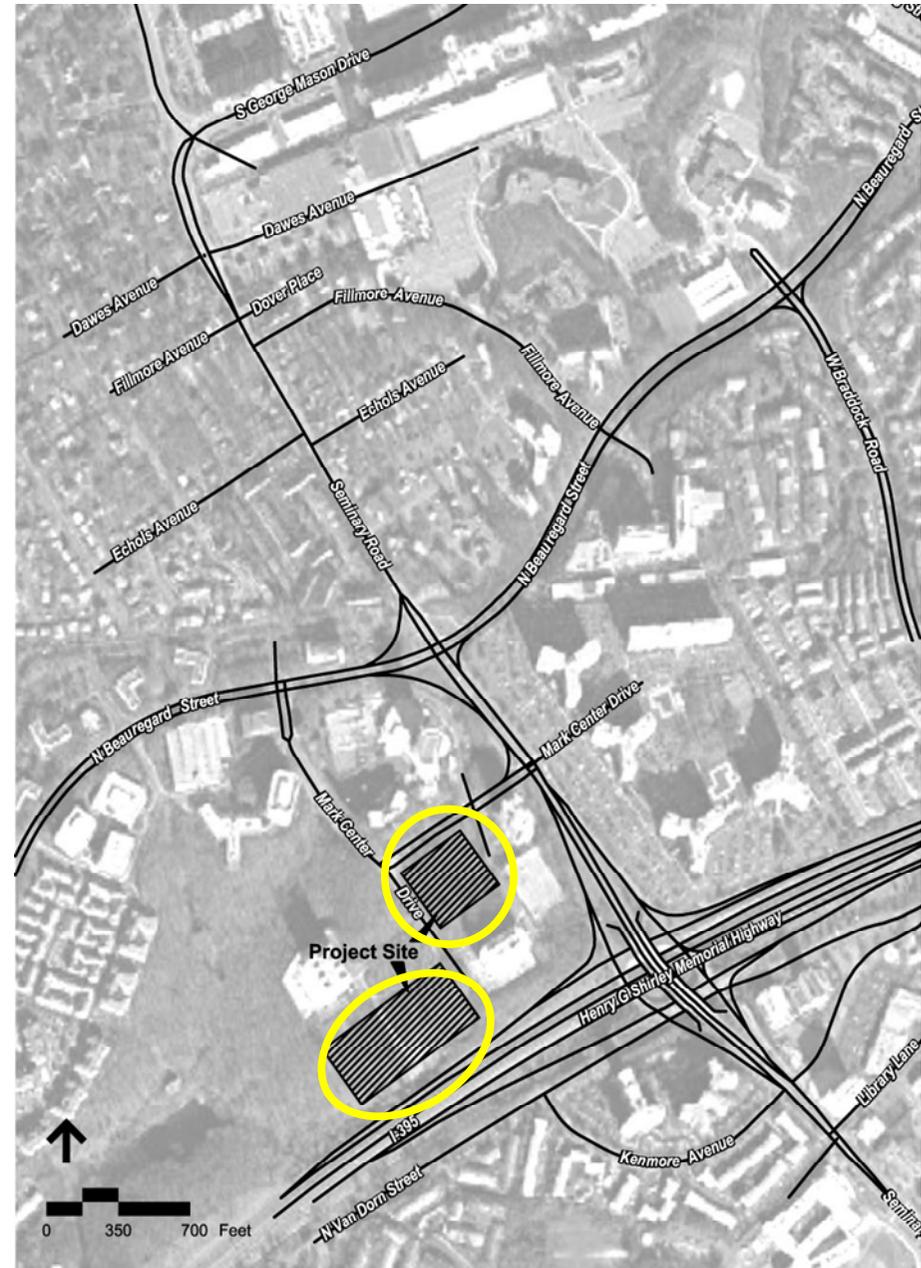
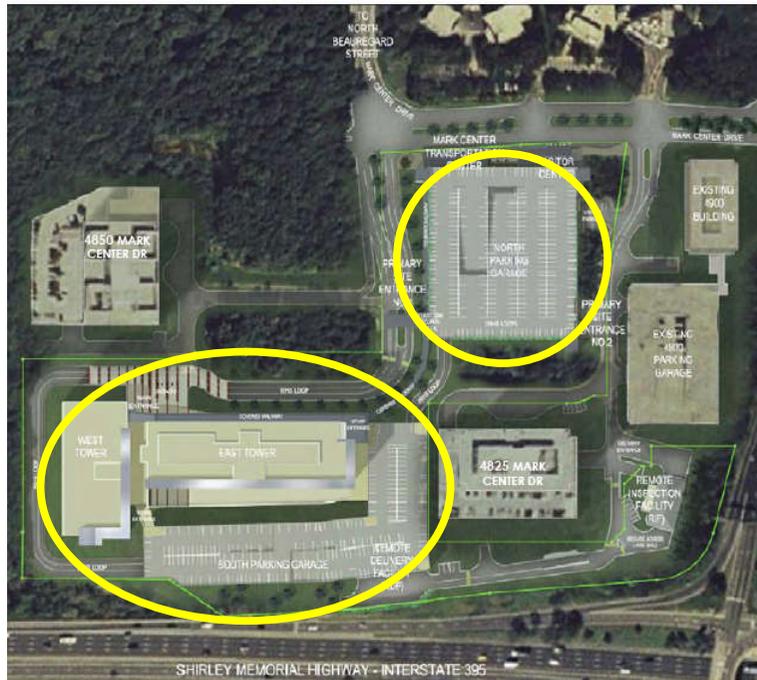
Presented by: Bob Garbacz,
City of Alexandria

September 16, 2009



Study Area

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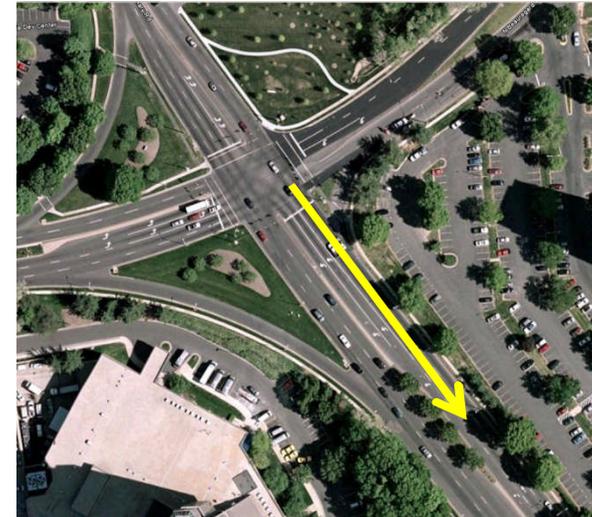
Scenarios Evaluated

- 2011 Conditions
- 2013 Conditions

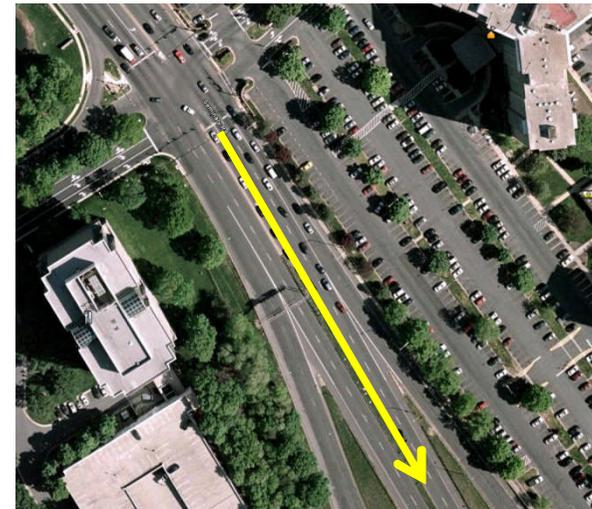
2011 Potential Interim Solution I

Lengthening of the Storage Bays

- Seminary Rd / N. Beauregard St :
Increase westbound Seminary Rd left
turn storage length.

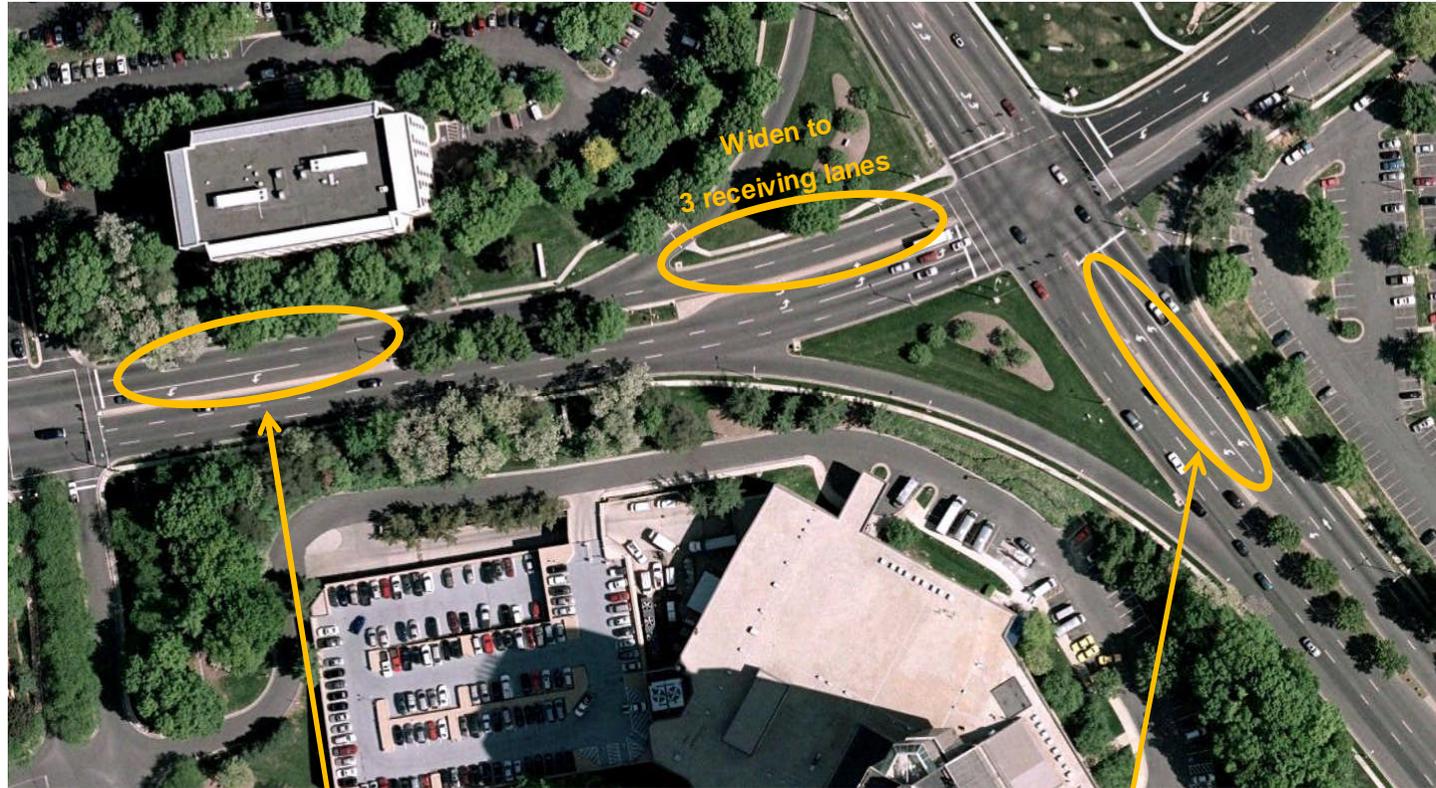


- Seminary Rd / Mark Center Dr :
Increase westbound Seminary Rd left
turn storage length.



2011 Potential Interim Solution II

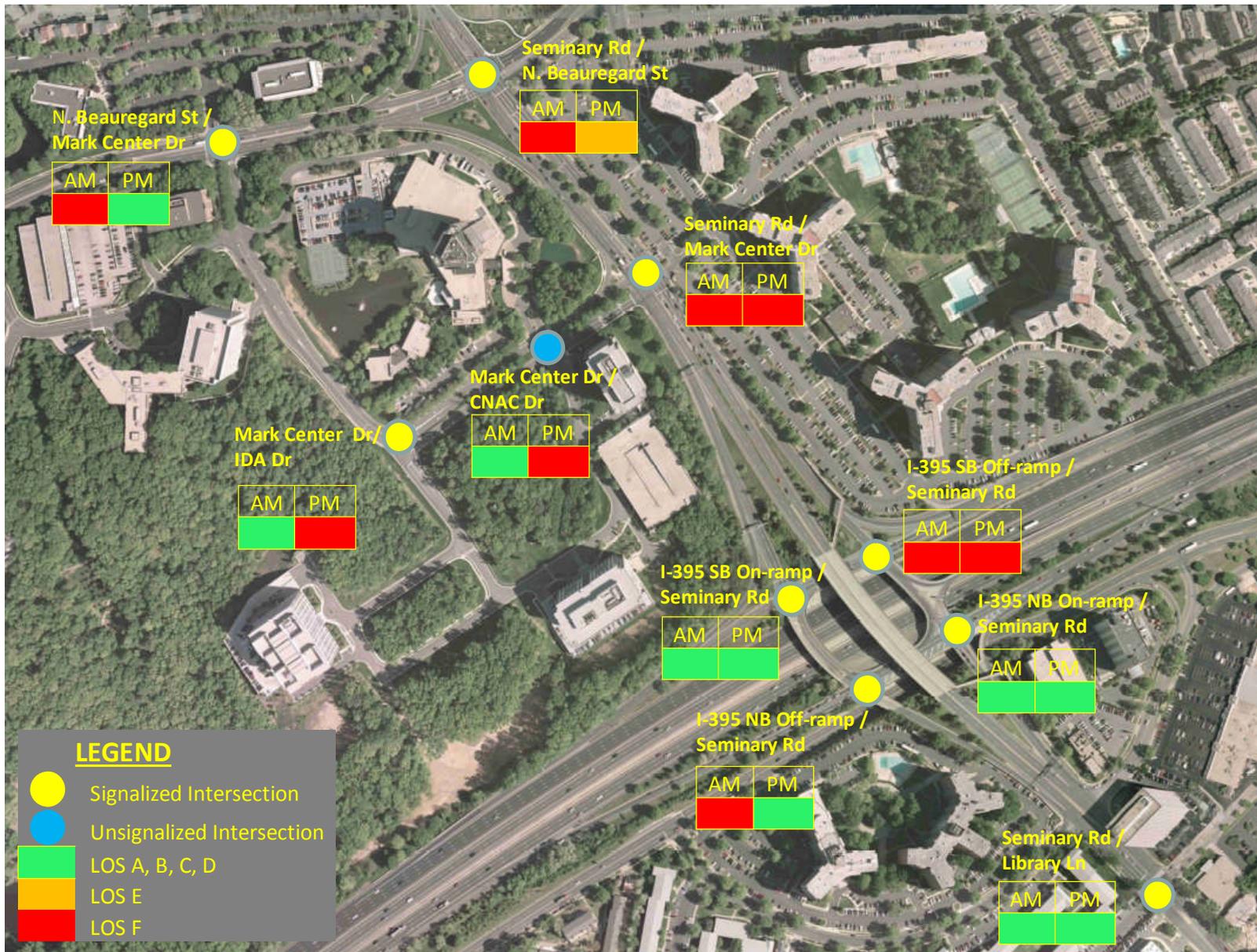
Addition of Left Turn Lanes



- N.Beauregard St / Mark Center Dr : southbound left-turn lane along N.Beauregard St from a single to a dual left turn lane

- Seminary Rd / N. Beauregard St : westbound left-turn lane along Seminary Rd from a dual to triple left turn lane

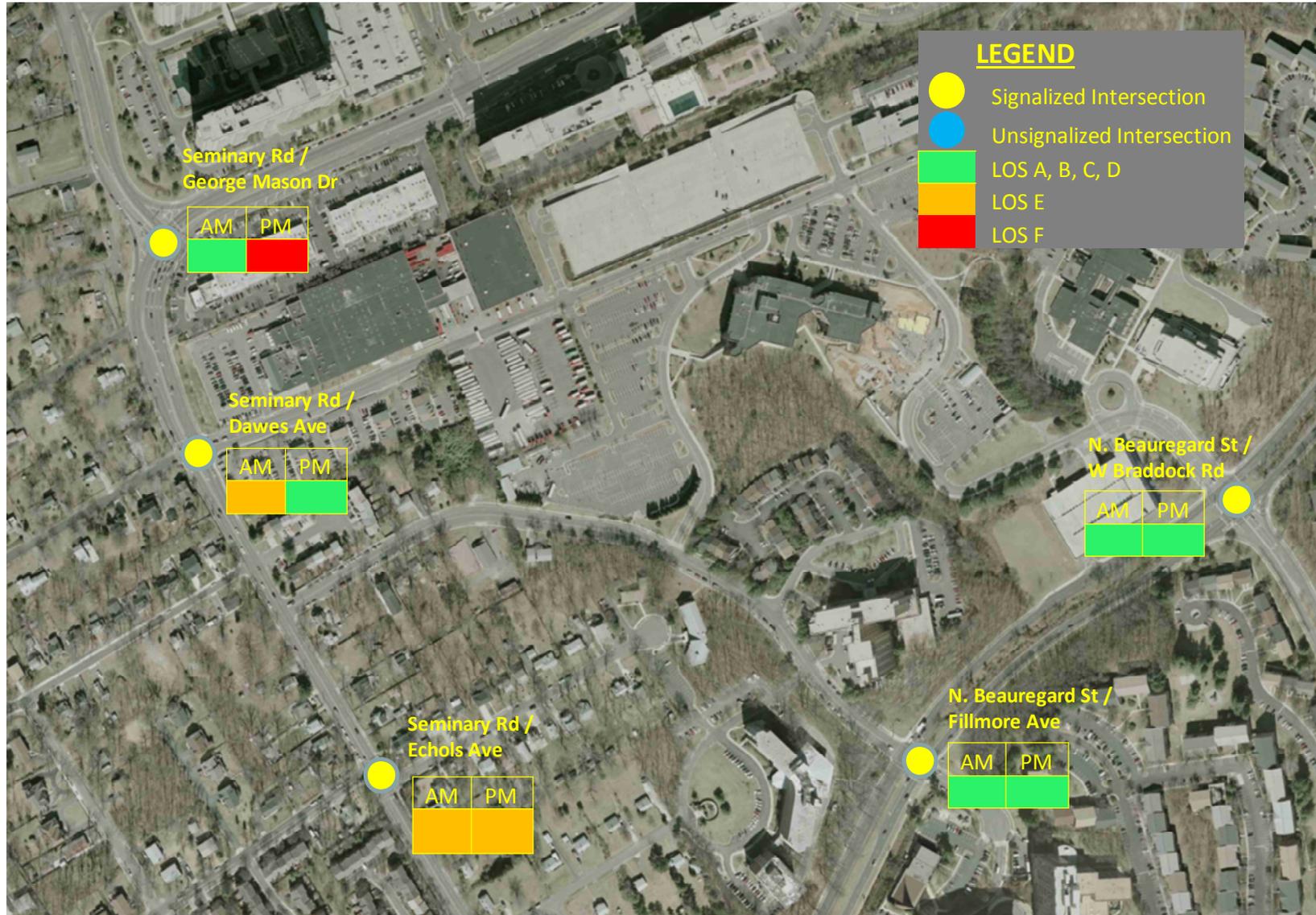
2011 Base Conditions Levels of Service





2011 Base Conditions Levels of Service

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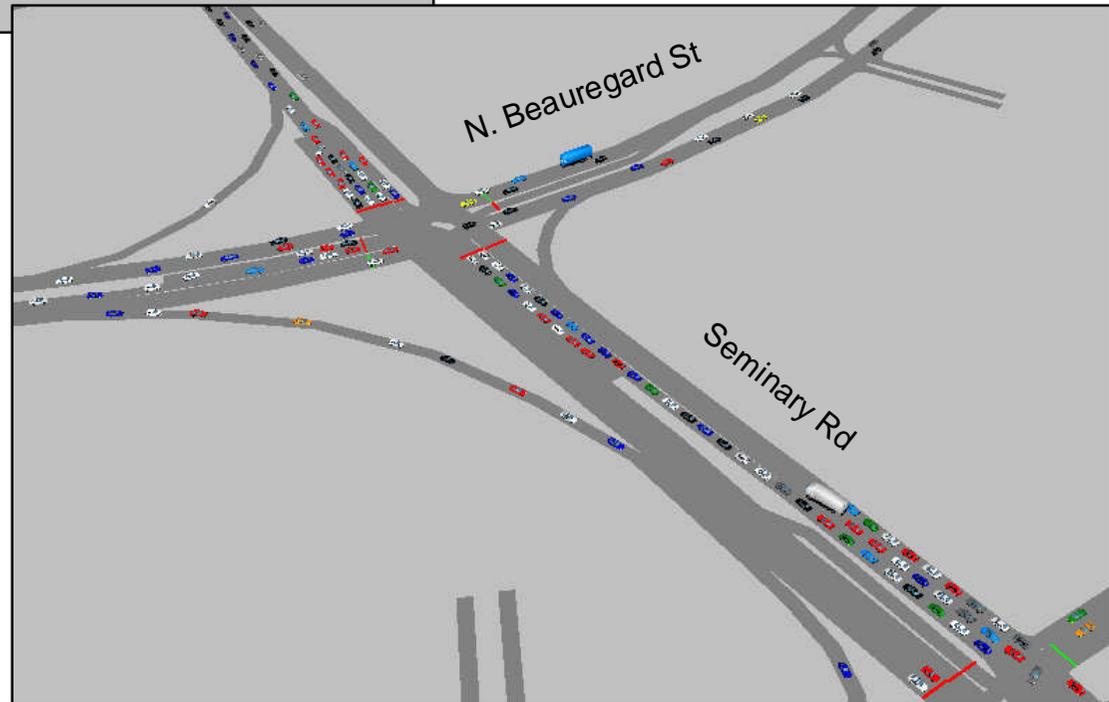
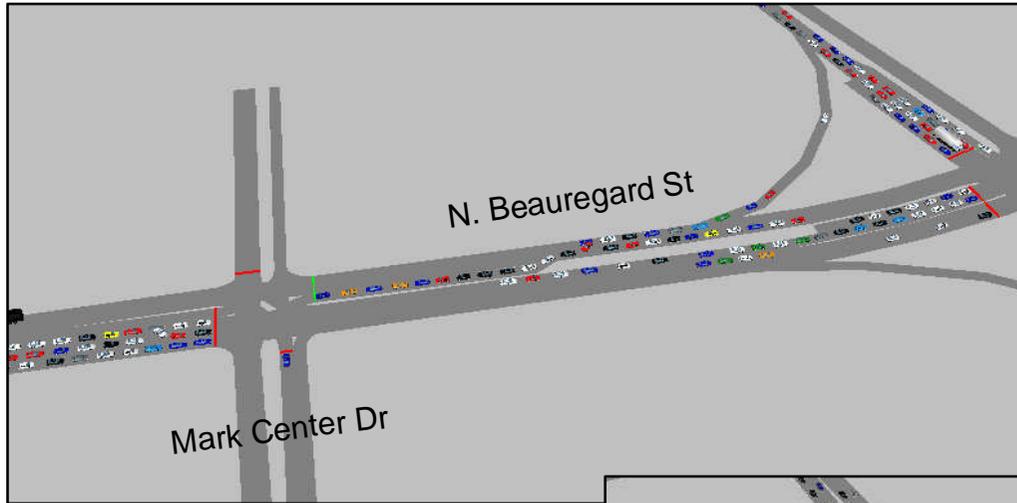




2013 Base Conditions - AM Peak Hour

VISSIM Traffic Simulation

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Scenarios Evaluated

(Synchro Analysis)

- 2013 Build Alternatives
 - New ramps to the BRAC 133 South parking garage (C1:Concept 1)
 - New ramps to Mark Center (C2:Concept 2)
 - New ramps to South parking garage & Mark Center (C3:Concept 3)
 - Additional left turn lanes only with no new ramps (C4:Concept 4)



Scenarios Evaluated

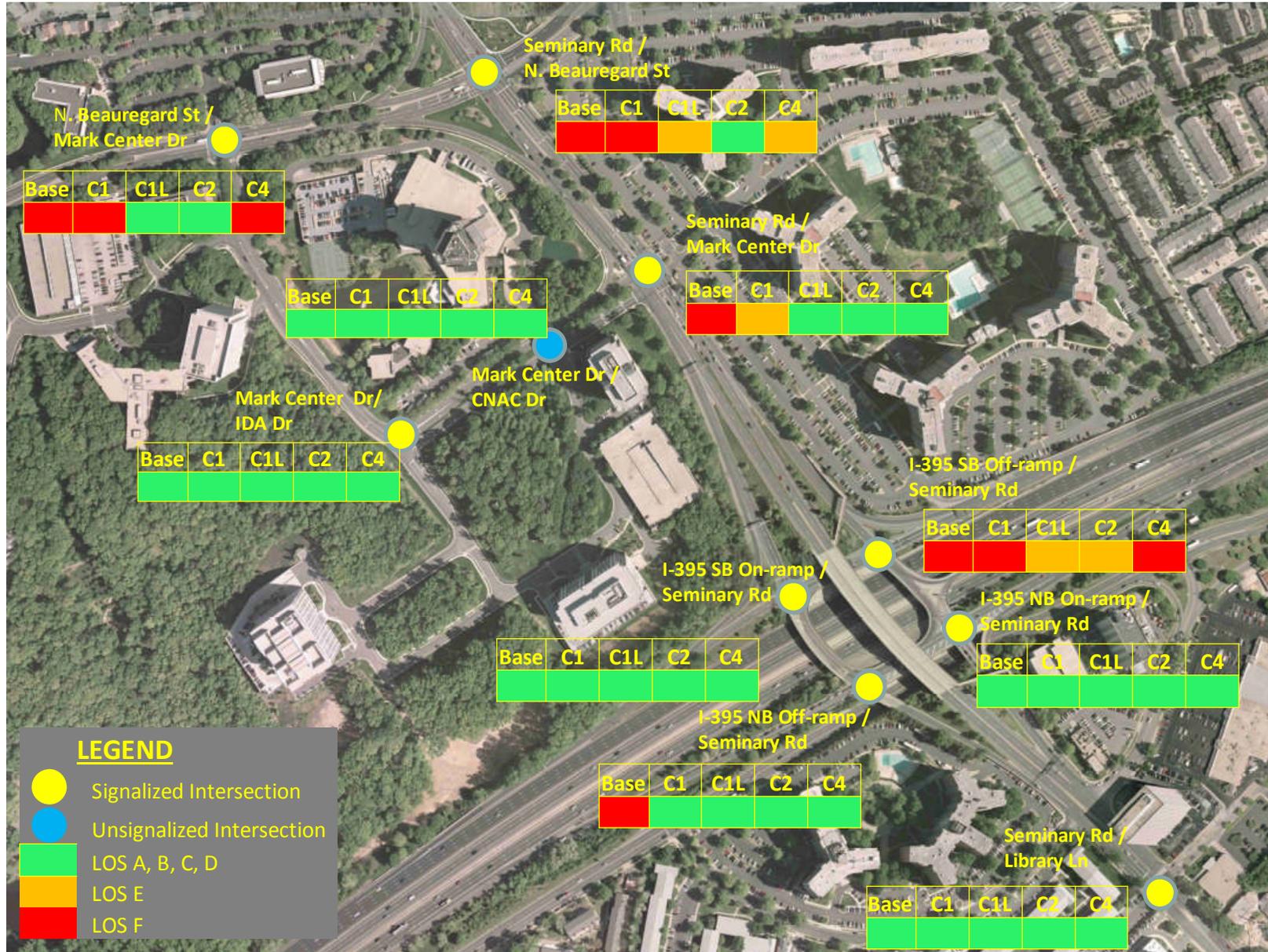
(Detailed VISSIM Analysis)

- 2013 AM Build Alternatives
 - New ramps to the BRAC 133 South parking garage w/o additional left turn lanes (C1)
 - New ramps to the BRAC 133 South parking garage with additional left turn lanes (C1L)
 - New ramps to Mark Center w/o additional left turn lanes (C2)
 - Additional left turn lanes only with no new ramps (C4)



2013 AM Build Alternatives - Levels of Service

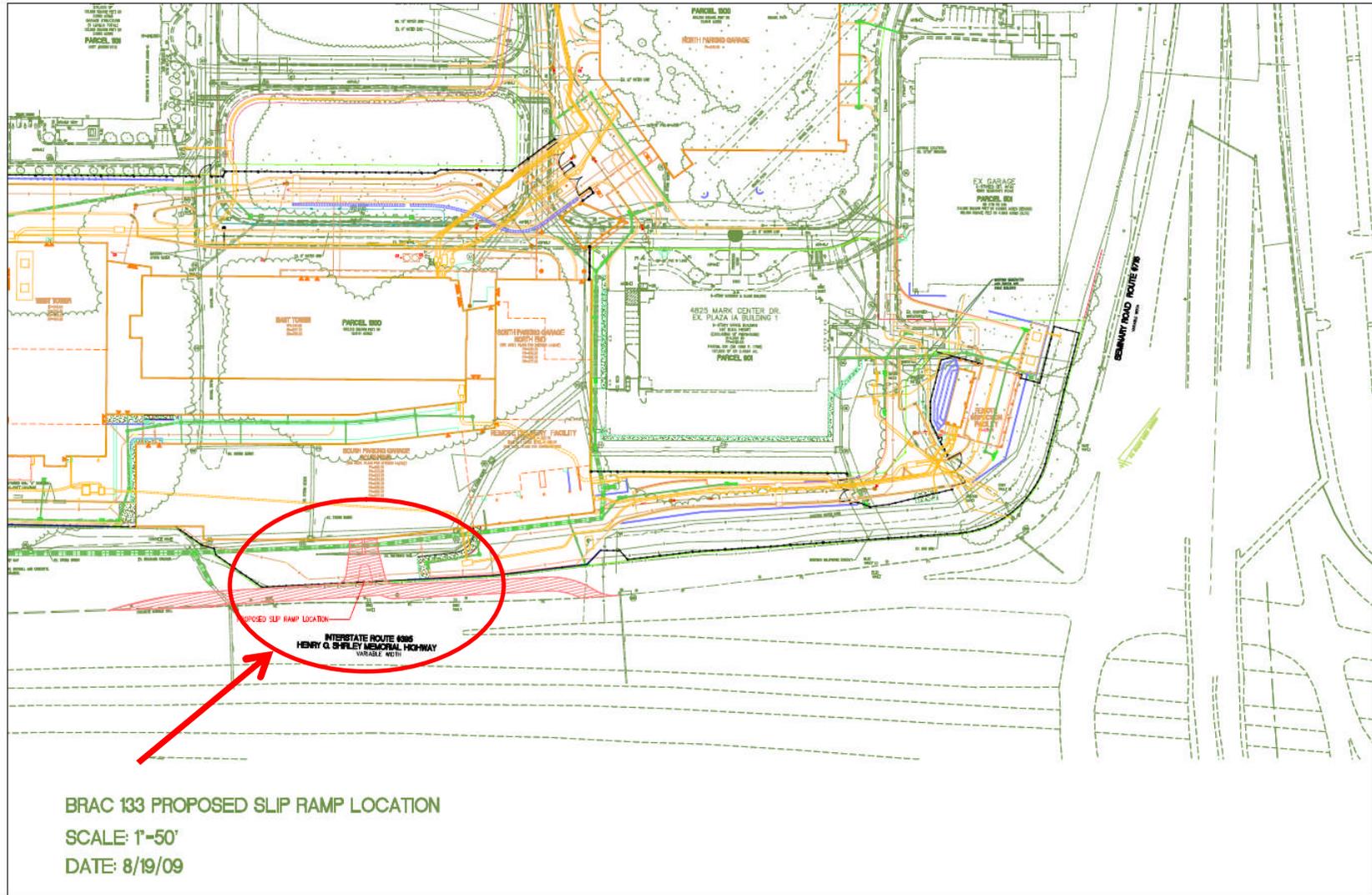
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New Direct Access Ramp – Concept 1

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Concept 1 - New Ramps to the BRAC 133 South parking garage

■ Benefits

- Improves the overall operational performance at critical intersections during AM and PM when compared to 2013 Baseline Conditions
- Does not require major reconfiguration of the geometry along existing roadways except at the new ramp

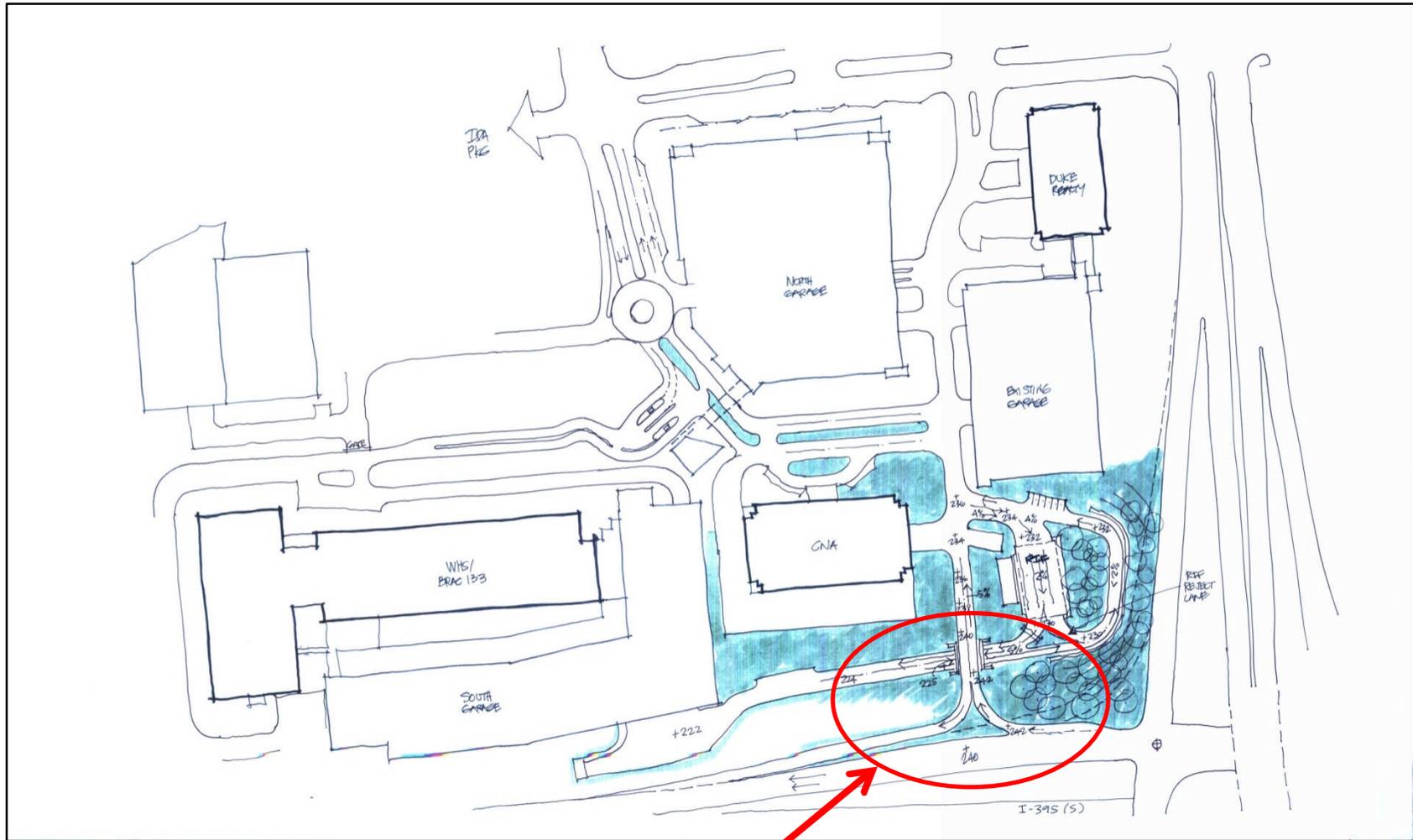
■ Disadvantages

- Involves some ROW impacts, including undergoing an interchange modification procedure for the new ramp
- Possibility of vehicle spill back, which would affect the operations along the I-395 southbound on ramp
- Not able to accommodate all the site generated project trips without additional left turn lane



New Direct Access Ramp – Concept 2

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Concept 2 - New Ramps to Mark Center

■ Benefits

- Further Improves the overall operational performance at the critical intersections during AM and PM when compared to 2013 Baseline Conditions and Concept 1
- Able to accommodate most of the site generated trips

■ Disadvantages

- Entails significant ROW impacts at the new access ramp, including undergoing an interchange modification process
- Major construction efforts would be required due to:
 - Grade separation of the access ramp under tight spacing requirements
 - Removal of free right turn lane and addition of dual right turn lanes at the intersection of I-395 southbound on ramp and Seminary Rd
- Possibility of more severe vehicle spill back along the I-395 southbound on ramp when compare to Concept 1 due to the short weaving distance

Concept 3 - New Ramps to South parking garage & Mark Center

■ Benefits

- Further Improves the overall operational performance at the critical intersections during AM and PM when compared to 2013 Baseline Conditions and Concept 1
- Additional capacity would be provided via two separate direct ramps based on the destination and less congestion will be anticipated at the direct access ramps to the Mark Center
- Able to accommodate most of the site generated trips

Concept 3 - New Ramps to South parking garage & Mark Center

■ Disadvantages

- Entails significant ROW impacts at the new access ramps, including undergoing an interchange modification process
- Major construction efforts required due to:
 - Grade separation of the access ramp under tight spacing requirements
 - Removal of free right turn lane and addition of dual right turn lanes at the intersection of I-395 southbound on ramp and Seminary Rd
 - Addition of two direct access ramps
- Possibility of more severe vehicle spill back along the I-395 southbound on ramp when compare to Concept 1 due to the short weaving distance

Concept 4 - Additional left turn lanes only with no new ramps

■ Benefits

- Improves traffic operations at the critical intersections mostly during AM peak hour conditions compared to the 2013 Baseline conditions
- Involves relatively less ROW impacts compared to the other Concepts

■ Disadvantages

- Would not provide operational benefits for the site generated trips exiting the site during PM peak hour conditions
- Requires longer crosswalks at the Seminary Rd / N. Beauregard St intersection
- Not able to accommodate all of the site generated trips

Summary of Findings

- All of the evaluated alternatives would be expected to provide operational benefits but at different levels.
- Additional left turn lanes would be needed between 2011 and 2013.
- Although Concept 1 without additional left turn lanes would serve higher number of site generated trips than under Concept 4, additional left turn lanes at the critical intersections would still be needed since the intersection is at capacity and would not serve all the site generated project demand.



Summary of Findings

- Concepts 2 and 3 would be most effective in terms improving the operations at the critical intersections but these concepts would require extensive improvement measures and face various constructability issues.
- Concept 4 would need new direct access since some of the critical intersections would operate over capacity and would not be able to accommodate significant number of the additional site generated project trip demand.
- To ensure the full operational benefits of implementing Concepts 1, 2 and 3, proper measures need to be taken to prevent any spillback onto the I-395 southbound ramp from the new direct access ramps.



Levels of Service Comparison - Concept 4

VDOT and City results (Synchro Analysis)

- Levels of Service results for Concept 4 compared with results reported in Mark Center (BRAC) Transportation Study prepared by VDOT in April 2009
- Overall the reported LOS are similar and slight discrepancies may be due to the following reason:
 - Difference in input volume
 - Difference in lane configuration modification assumed at the intersections with I-395 Northbound ramps and Seminary Road for the future condition
- Both studies confirm the findings that Concept 4 would need new direct access



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Questions & Answers