

# ABERNATHY ROAD AT ROSWELL ROAD

## Evaluation of Grade Separation Alternatives

January 24, 2017

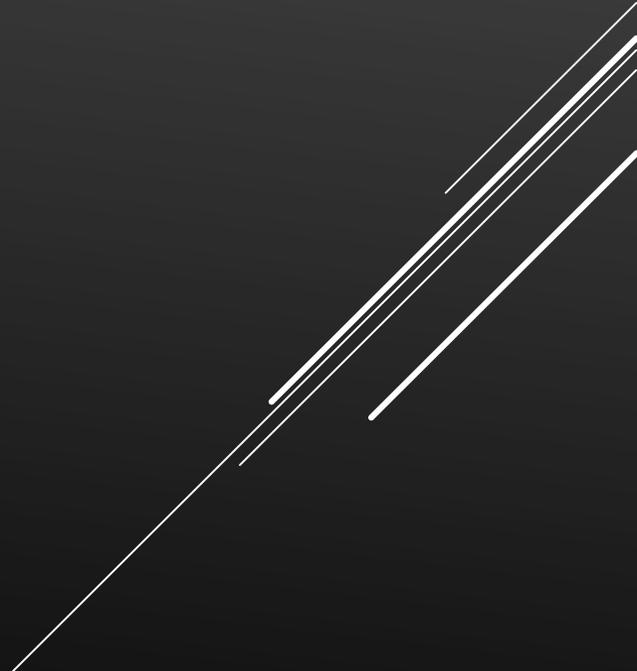
Sandy Springs Council Retreat

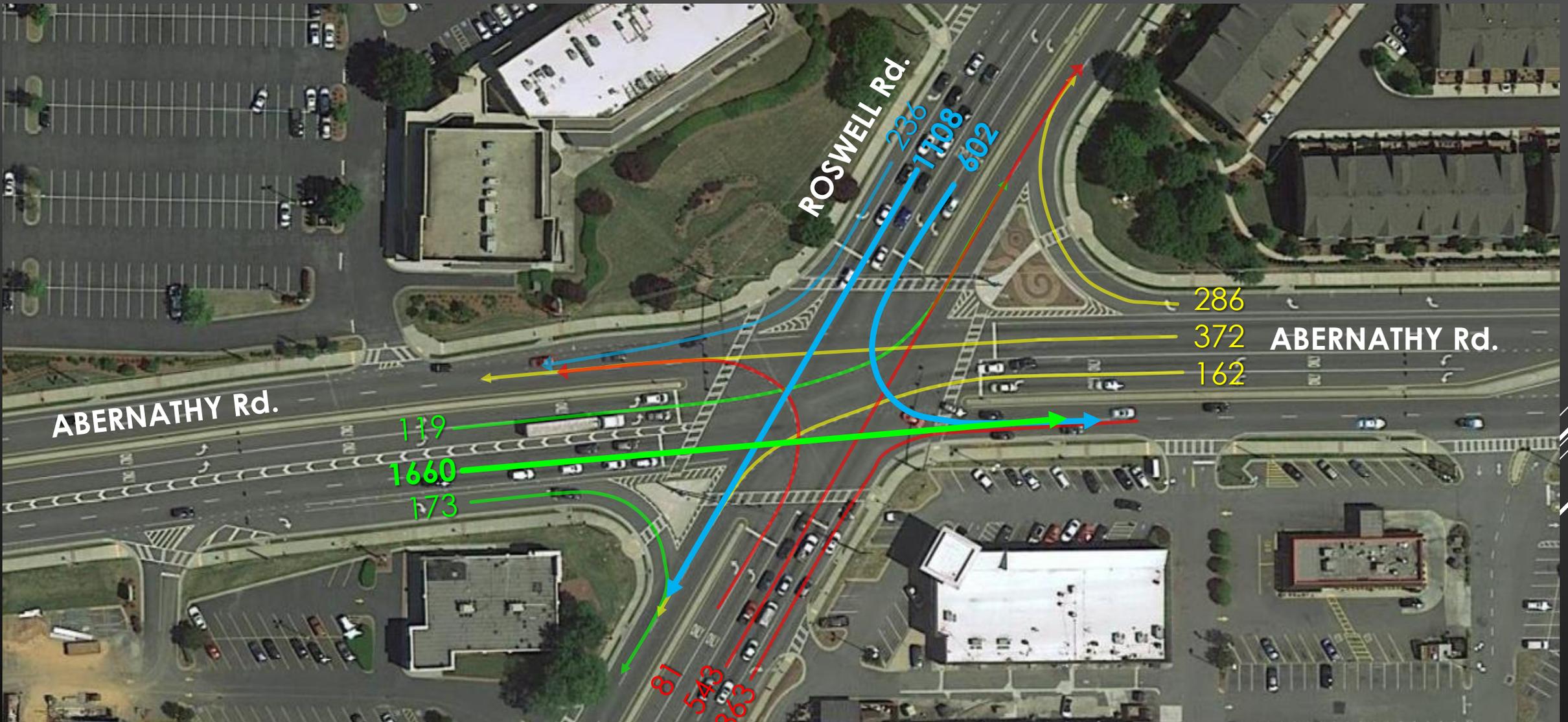


# STUDY GOALS

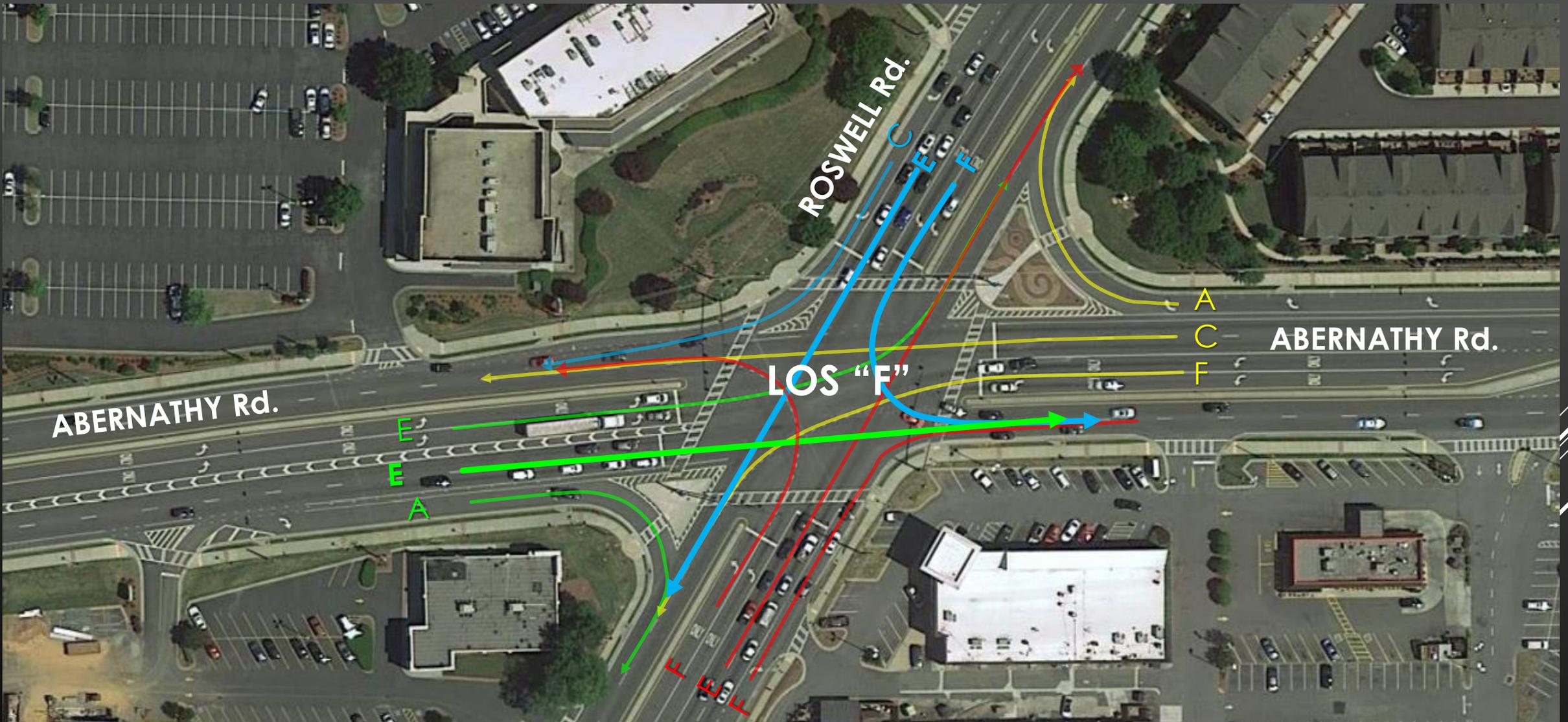
- ❖ Improve the intersection operations for Roswell Road at Abernathy Road
  - ❖ Explore grade separation alternatives to improve traffic flow
  - ❖ Determine traffic and right-of-way improvement constraints
  - ❖ Provide a concept plan for recommended alternative on aerial photography
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# STUDY METHODOLOGY

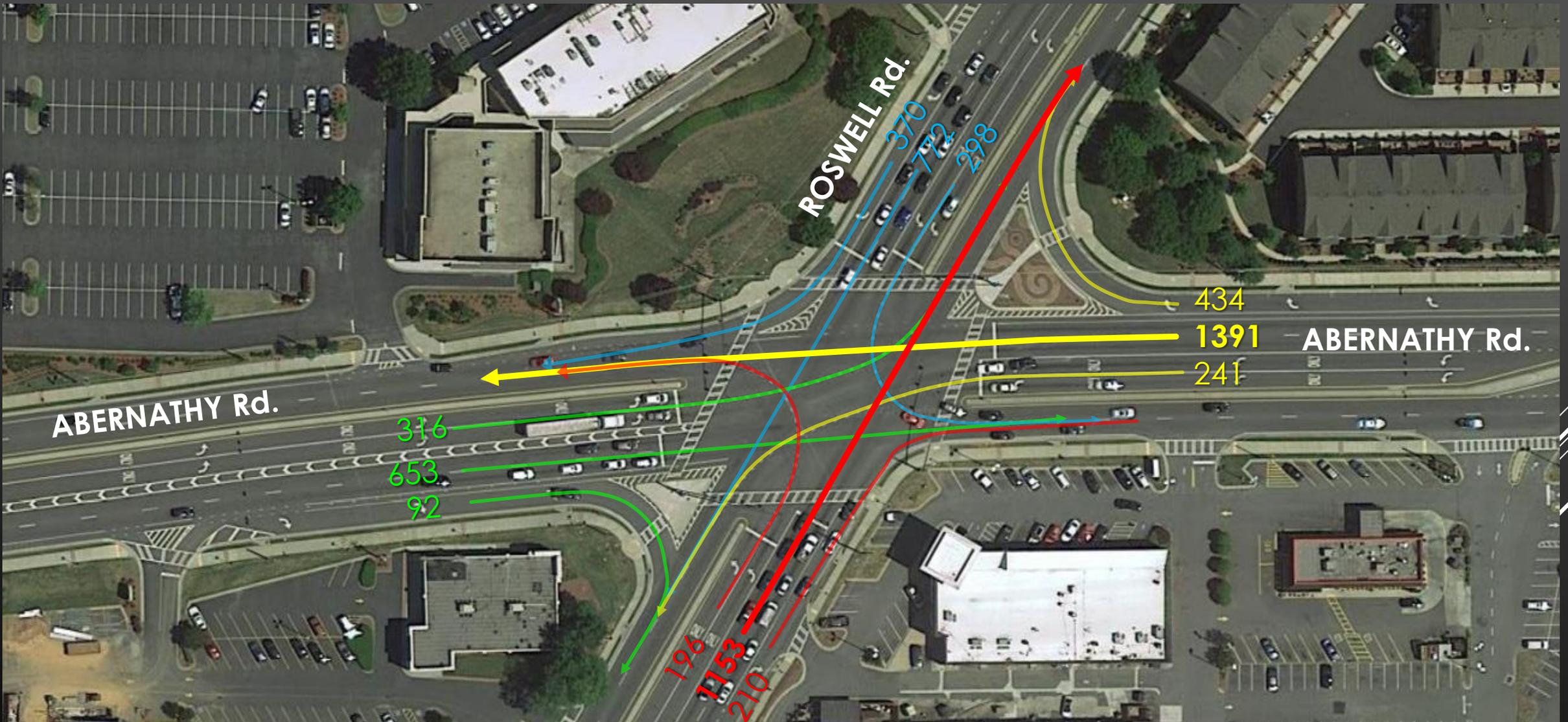
- ❖ Traffic Counts from City of Sandy Springs
  - ❖ Existing Year – Year 2015
  - ❖ SYNCHRO analysis for existing intersection operations
  - ❖ Future No-build – Year 2035
  - ❖ Growth Factor of 1.0% per year
  - ❖ Future Build – Year 2035
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- A decorative graphic consisting of several parallel white lines of varying lengths, slanted diagonally from the bottom right towards the top right, located in the lower right quadrant of the slide.



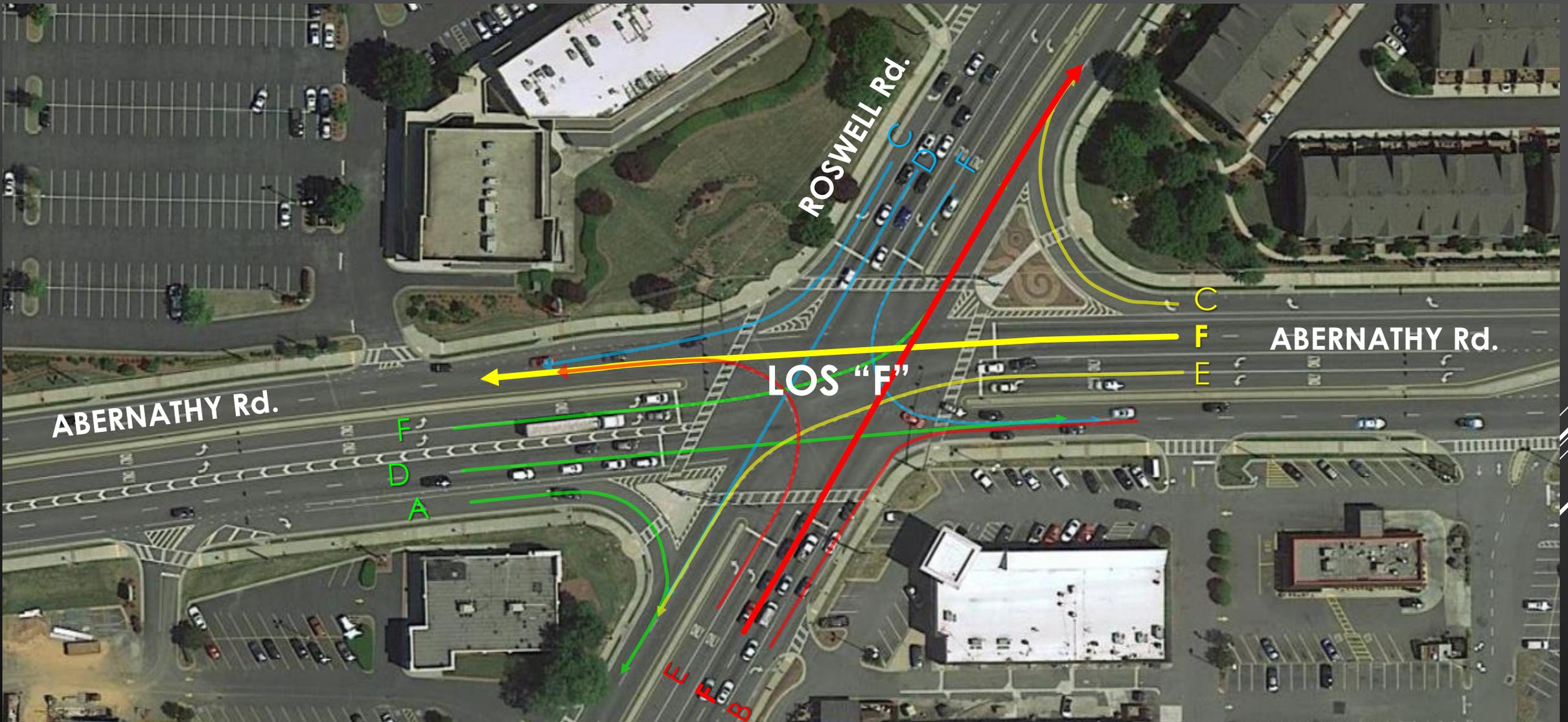
**ABERNATHY ROAD AT ROSWELL ROAD**  
 (EXISTING LAYOUT AM PEAK HOUR)



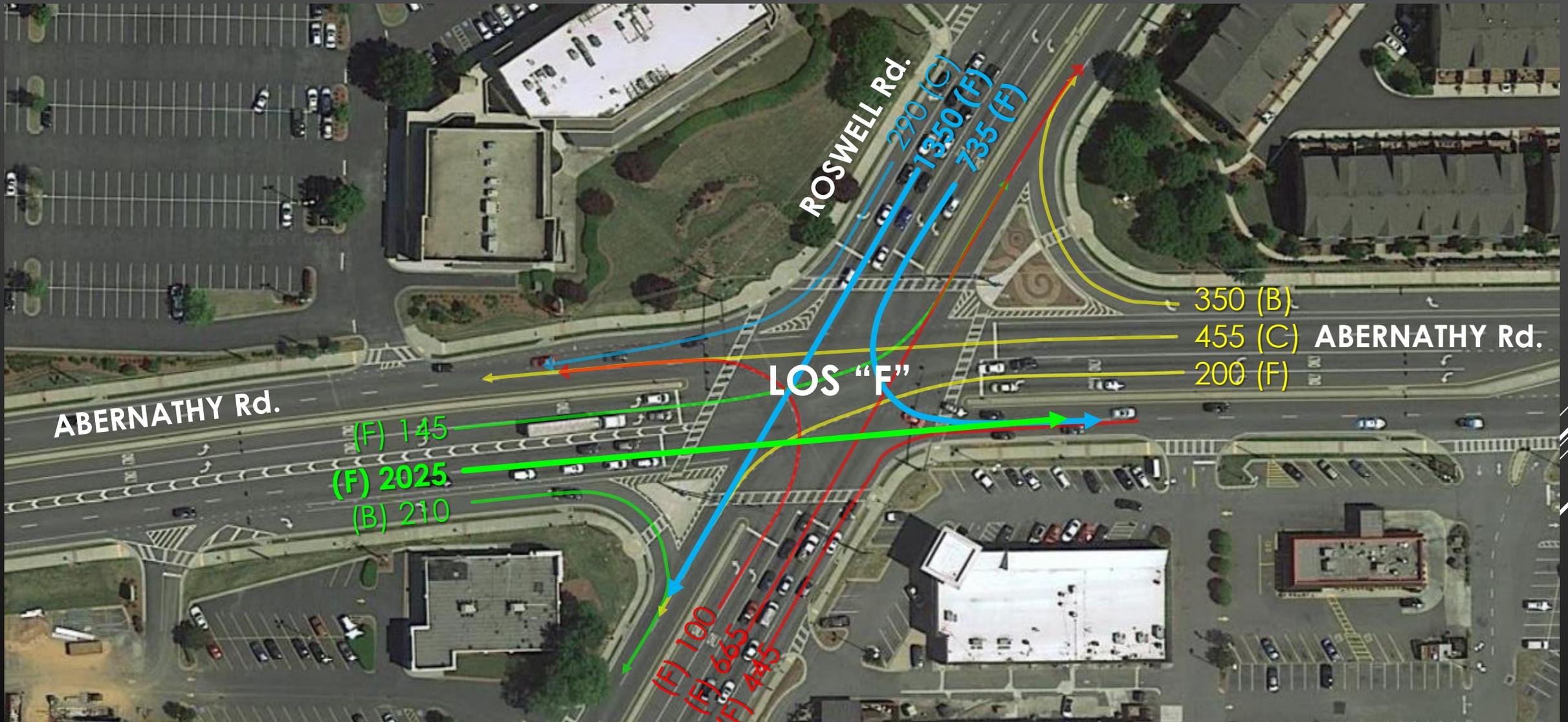
ABERNATHY ROAD AT ROSWELL ROAD  
(EXISTING LAYOUT, AM PEAK HOUR)



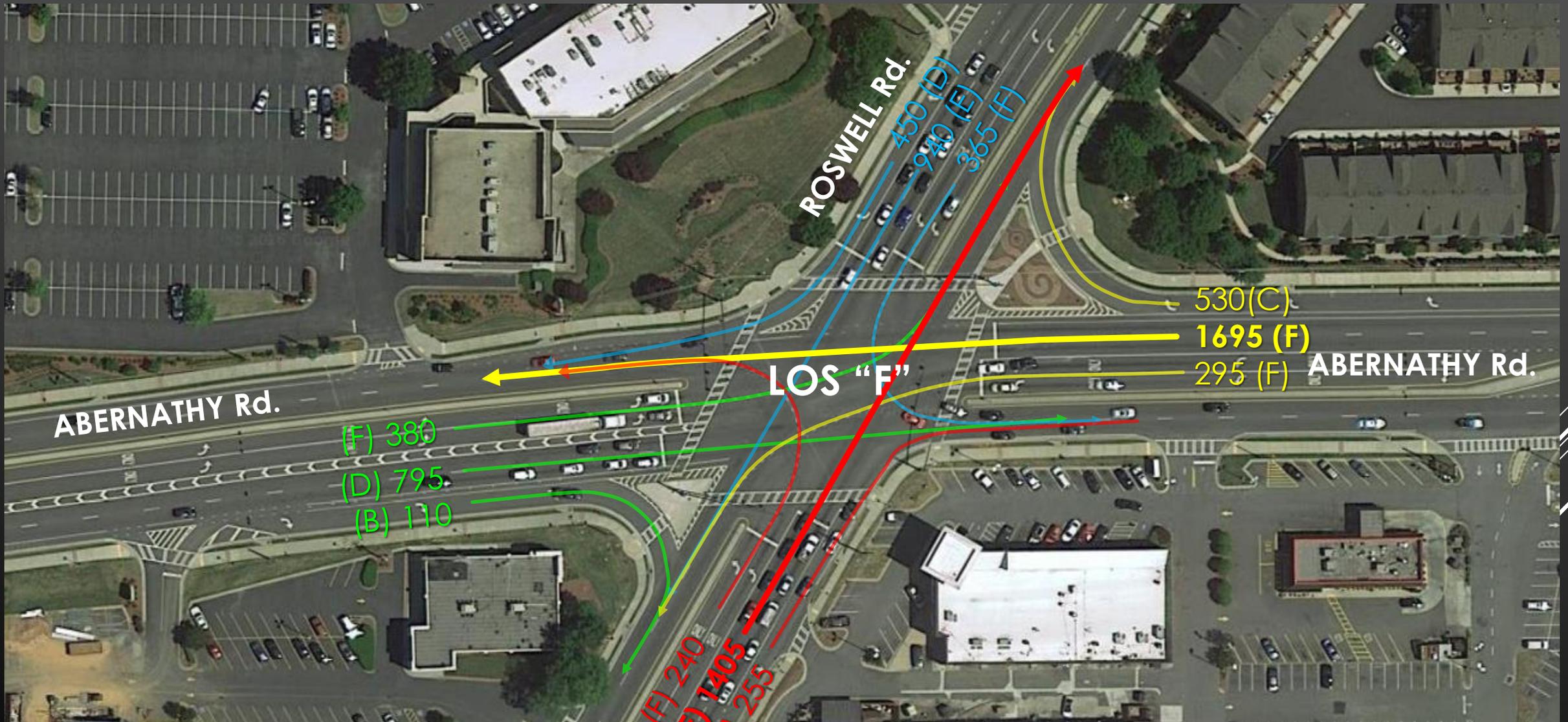
**ABERNATHY ROAD AT ROSWELL ROAD**  
 (EXISTING LAYOUT, PM PEAK HOUR)



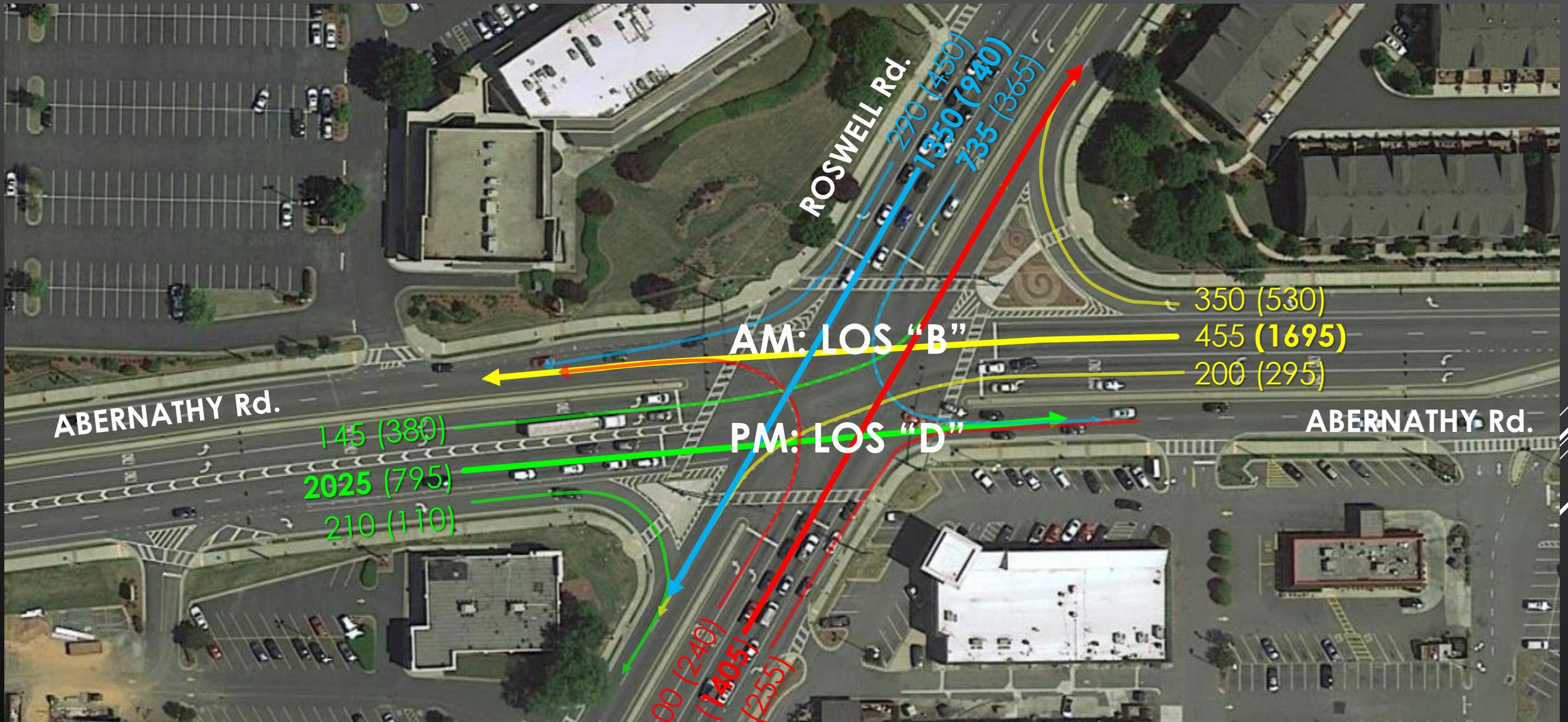
ABERNATHY ROAD AT ROSWELL ROAD  
(EXISTING LAYOUT, PM PEAK HOUR)



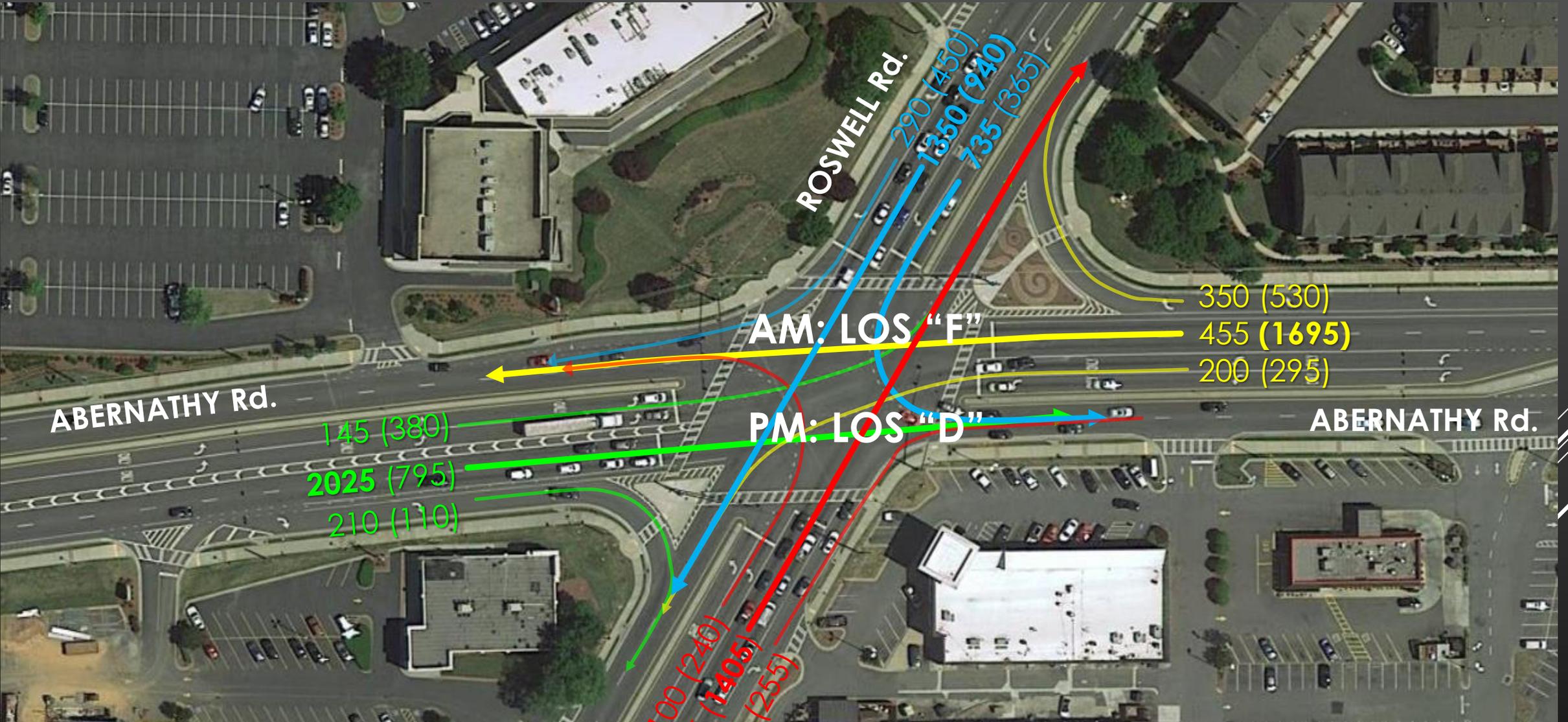
**ABERNATHY ROAD AT ROSWELL ROAD**  
 (2035 AM PEAK HOUR)



ABERNATHY ROAD AT ROSWELL ROAD  
(2035 PM PEAK HOUR)



OPTION 1 :  
 ABERNATHY RD. OVER ROSWELL RD.  
 2035 AM (PM) PEAK HOURS

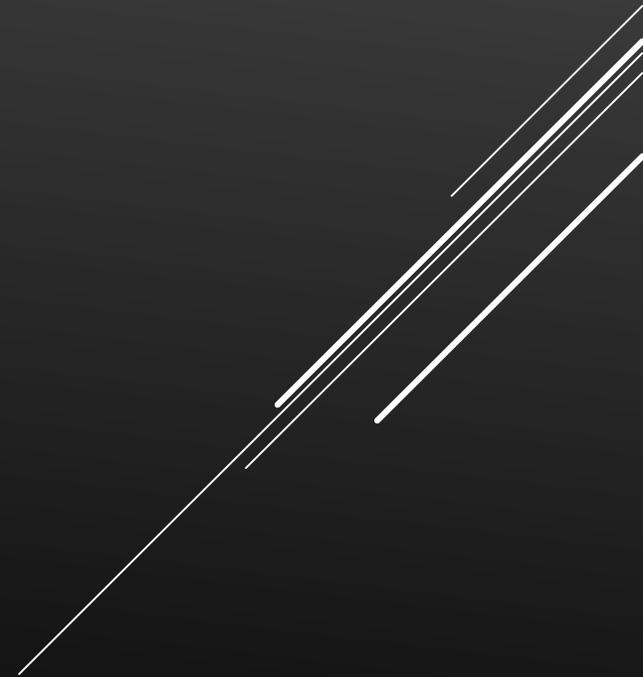


OPTION 2:  
 ROSWELL RD. OVER ABERNATHY RD.  
 AM (PM) PEAK HOURS

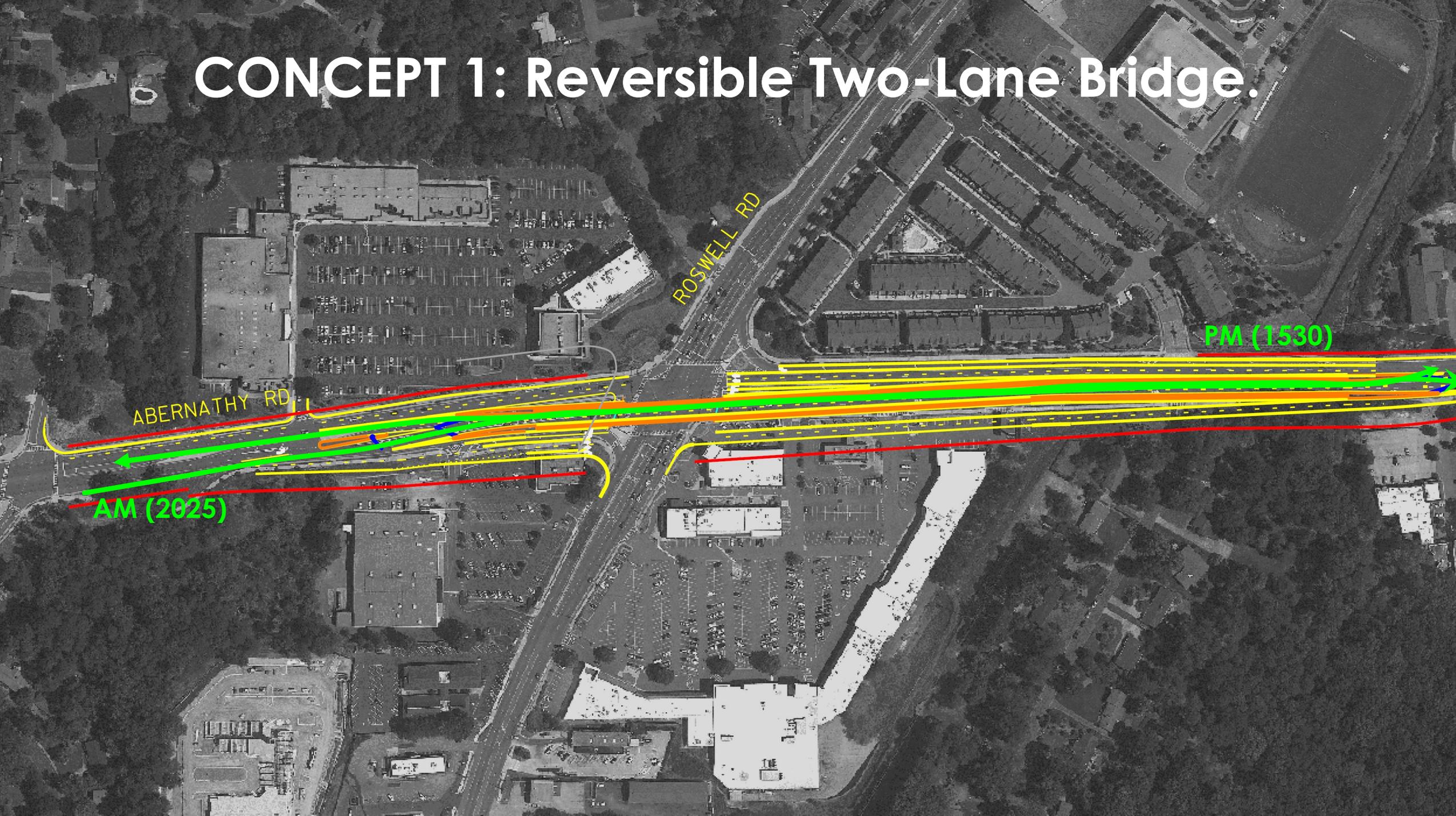
OPTION 1  
(ABERNATHY OVER ROSWELL)  
IS PREFERRED.

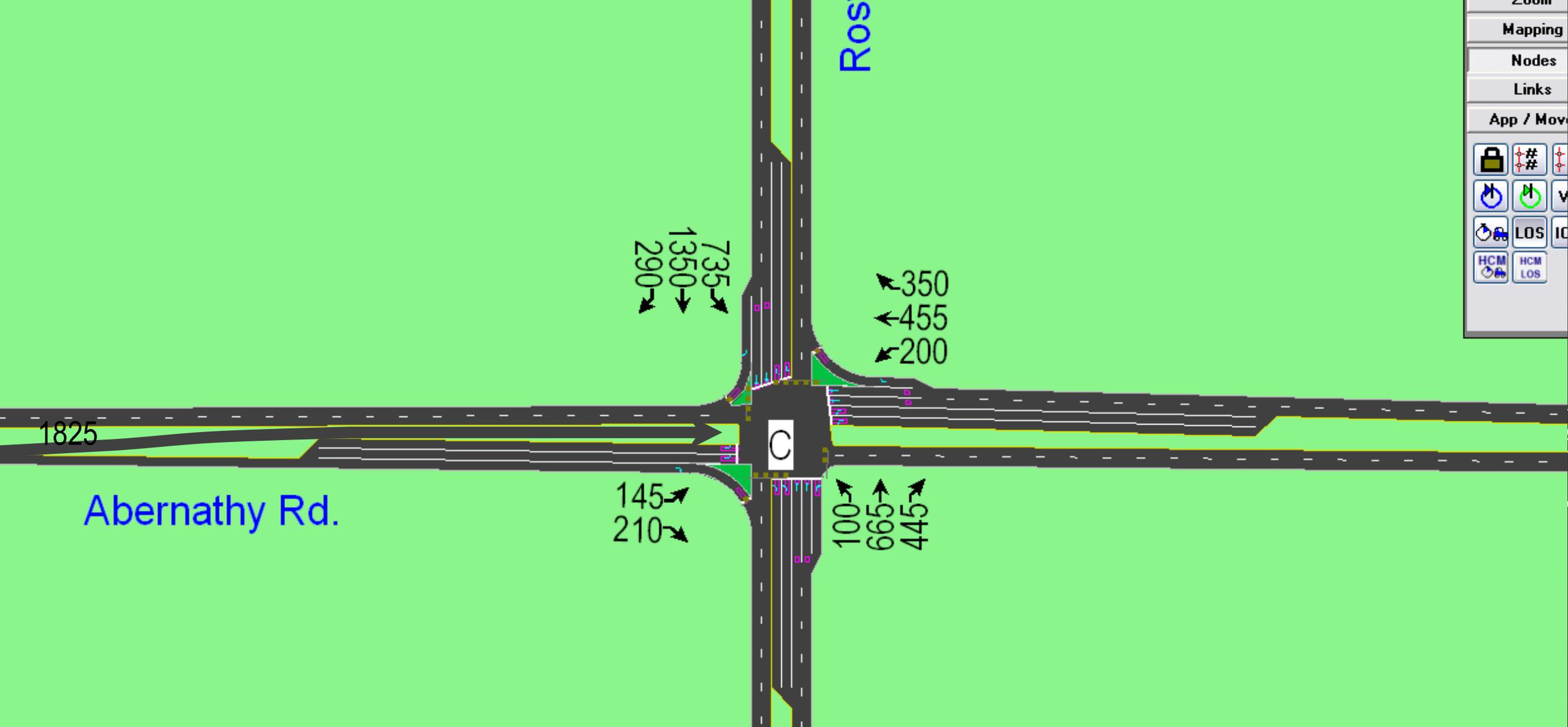


# CONCEPT ALTERNATIVES



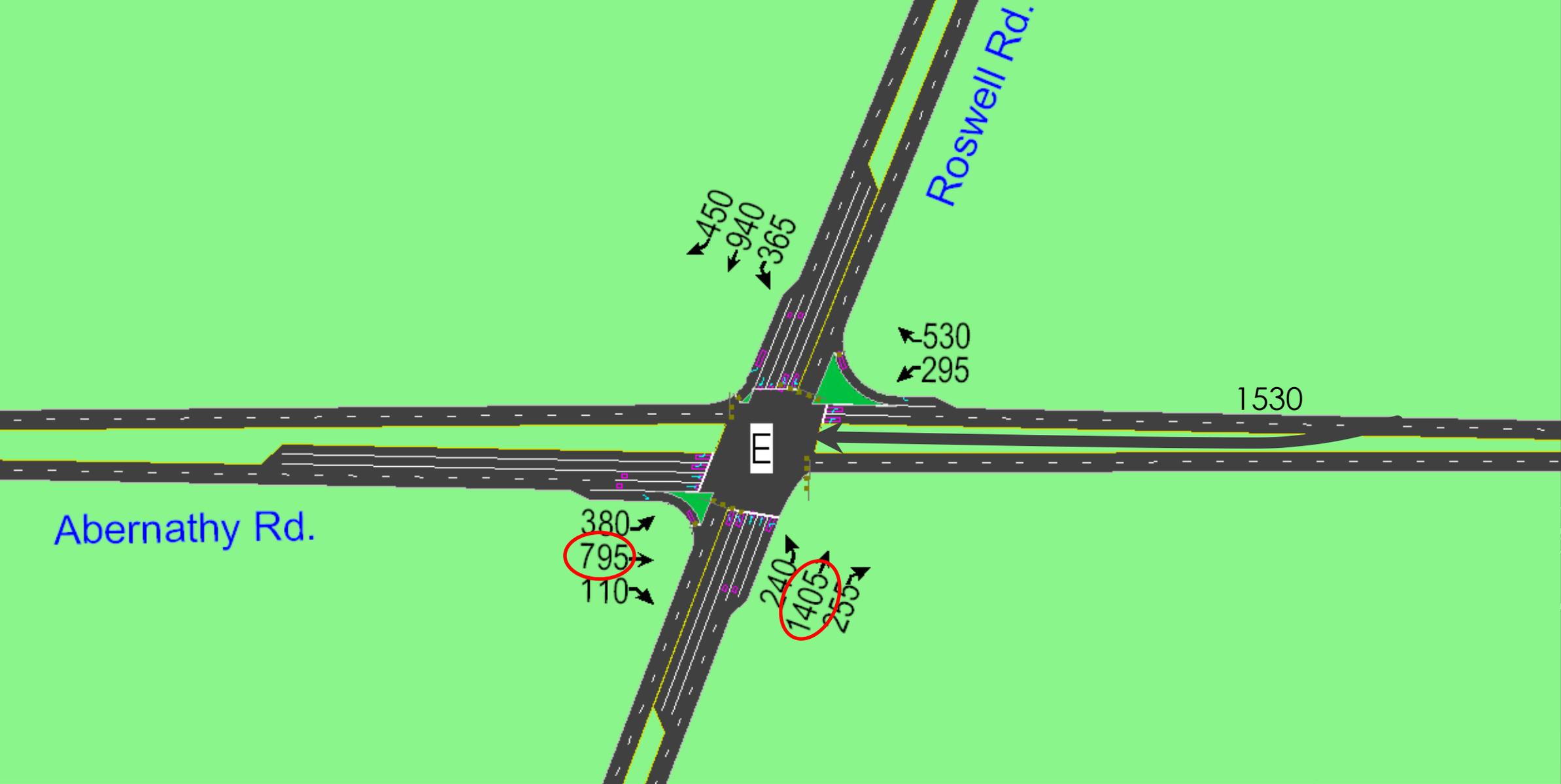
# CONCEPT 1: Reversible Two-Lane Bridge.





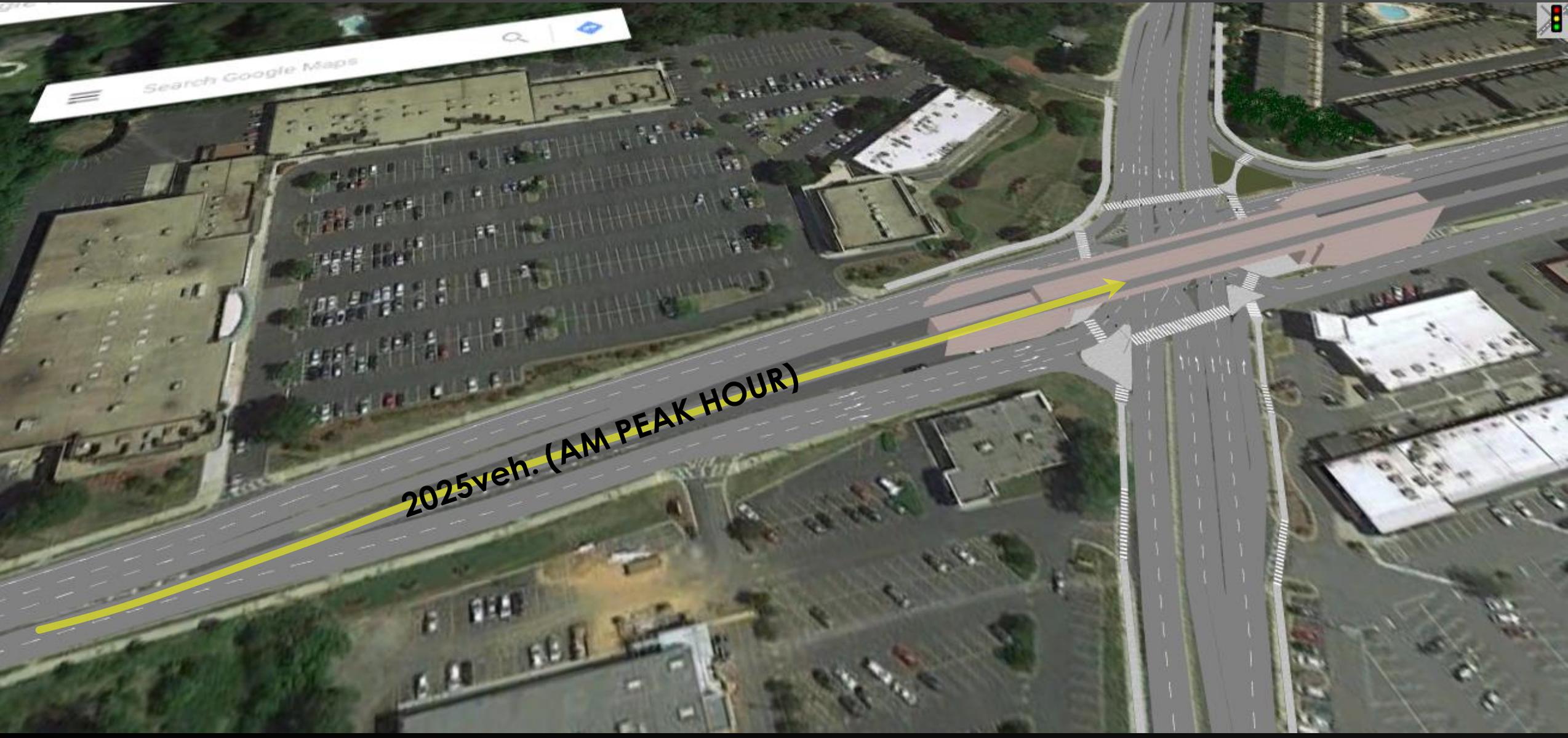
200m  
 Mapping  
 Nodes  
 Links  
 App / Mov  
 # #  
 # #  
 LOS IC  
 HCM LOS

# 2035 AM SYNCHRO ANALYSIS (REVERSIBLE BRIDGE)



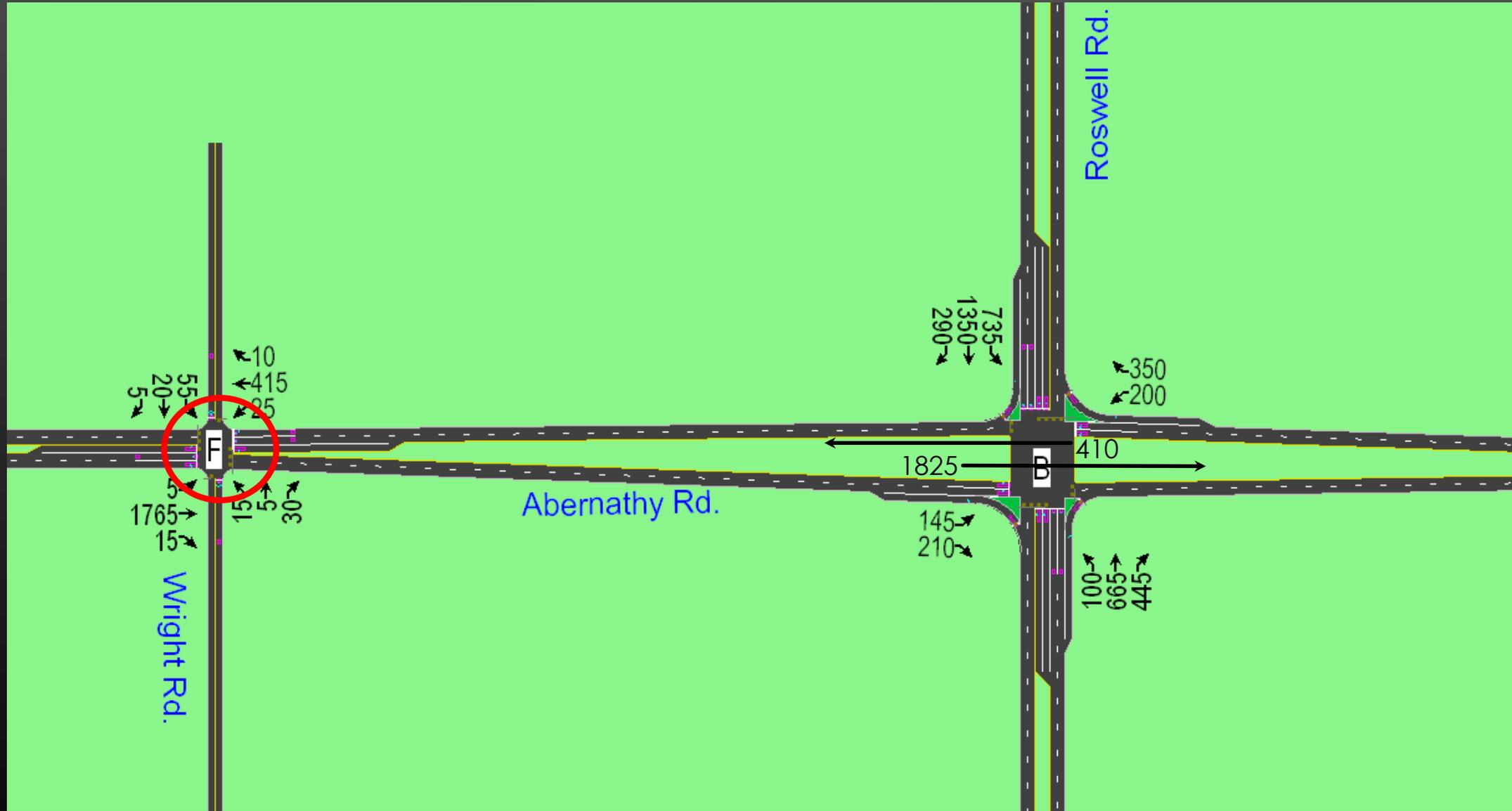
# 2035 PM SYNCHRO ANALYSIS (REVERSIBLE BRIDGE)

# CONCEPT 2: TWO-LANE BRIDGE





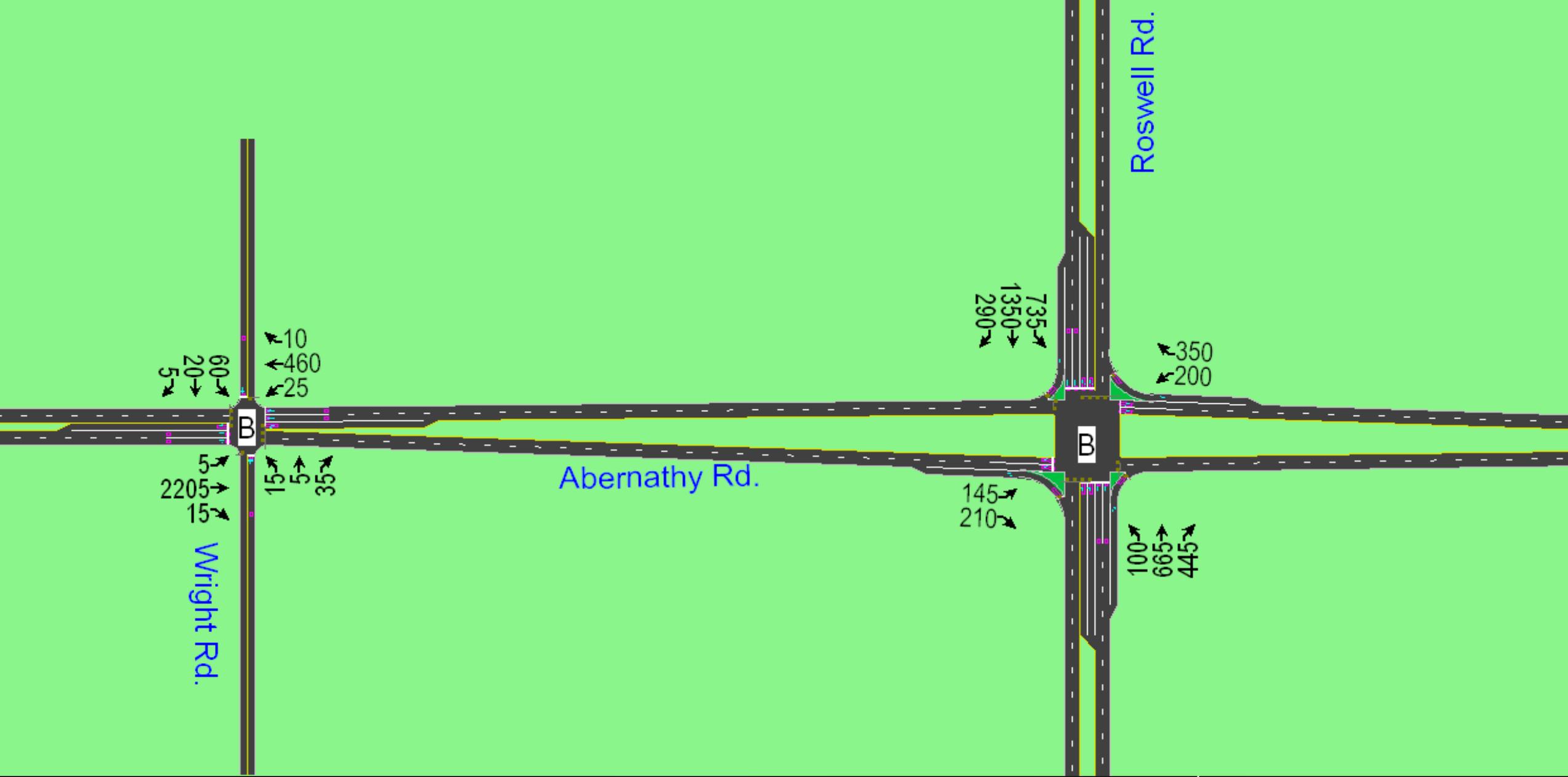
2025 VEHICLES TOWARD SINGLE-LANE BRIDGE



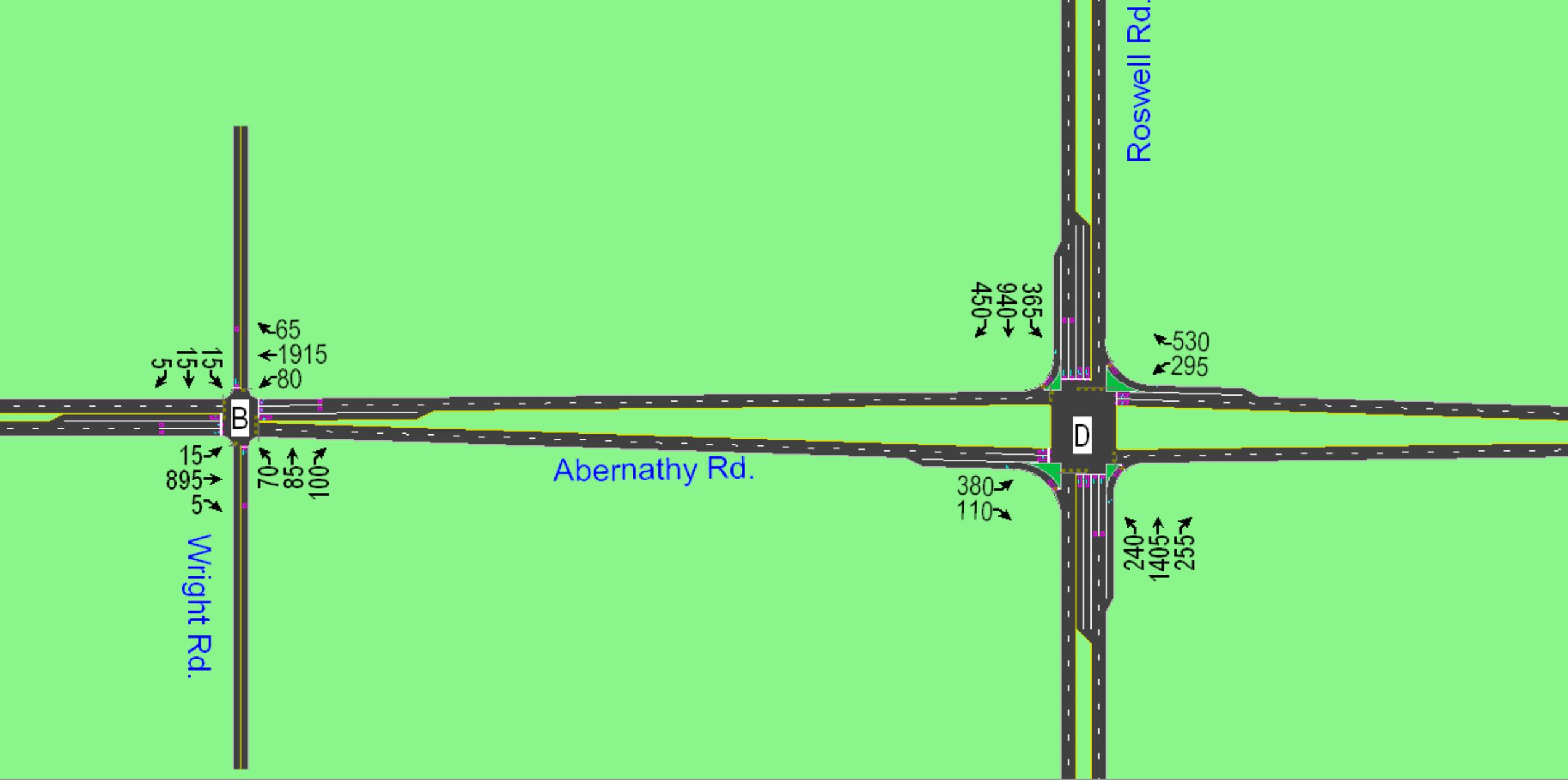
2035 AM SYNCHRO ANALYSIS (2-LANE BRIDGE)

# CONCEPT 3: 4-LANE BRIDGE

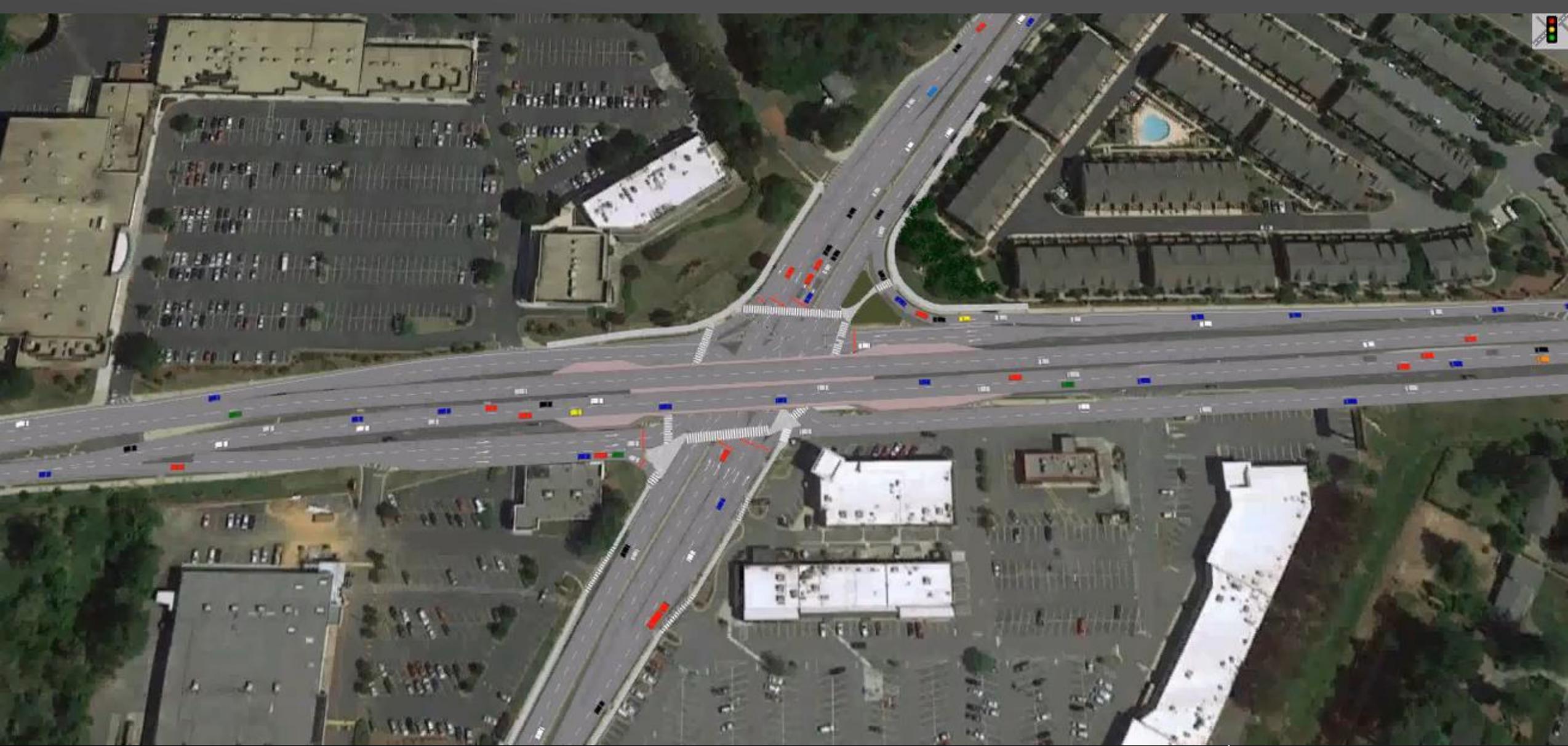




2035 AM SYNCHRO ANALYSIS (4-LANE BRIDGE)



2035 PM SYNCHRO ANALYSIS (4-LANE BRIDGE)



4-LANE BRIDGE SIMULATION (AM)



4-LANE BRIDGE SIMULATION (PM)

# RESULTS COMPARISON

	2015		No-Build		Reversible Bridge		Two-Lane Bridge		Four-Lane Bridge	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
LOS	E	E	F	F	C	E	B	D	B	D
DELAY (s)	72.8	74.7	133	125.6	34.8	63.6	18.5	44.7	17.7	44.7
NOTES	Both intersections are failing at a LOS close to F (80.0).				PM has delay of 63.6 seconds, vs. 44.7 of other bridge alternatives.		Intersection of Abernathy at Wright Rd. has a LOS F (102.1) in the AM because of the single lane bridge.		Some backups on WB right turn lane in the PM.	

# COST COMPARISON

- ▶ 4-lane bridge - Abernathy over Roswell Road - \$49.5M
  - ❖ PE - \$2.5M
  - ❖ ROW - \$20M
  - ❖ Construction, Utilities, & CEI - \$27M
  
- ▶ 2-lane bridge - Abernathy over Roswell Road - \$35.5M
  - ❖ PE - \$1.5M
  - ❖ ROW - \$15M
  - ❖ Construction, Utilities, & CEI - \$19M

**Note: The above cost estimates are conceptual planning level estimates**

# CONCLUSIONS

- ✓ Distribution of AM and PM turning movements at the intersection is conducive to grade separate Abernathy Road instead of Roswell Road.
- ✓ Directional split of traffic flow in the AM and PM hint that a reversible grade-separated lane may be an option. However, upon studying this alternative, the intersection operational results were not considered acceptable.
- ✓ A two-lane bridge (one lane in each direction) does not have sufficient capacity for 2,025 vehicles that would travel in the eastbound direction in the AM peak hour.
- ✓ **Preferred Alternative - A four-lane bridge (two lanes in each direction) would offer the best intersection improvement .**

# OTHER POTENTIAL OPTIONS

- ❖ Tunnel (Abernathy under Roswell Road)
- ❖ Roundabout
- ❖ Roundabout with Tunnel
- ❖ Quadrant Roadway (<https://mobility.tamu.edu/mip/strategies-pdfs/system-modification/technical-summary/quadrant-roadway-intersections-4-pg.pdf>)

Note: The above options need further study and are more likely to be expensive



**QUESTIONS??**

