

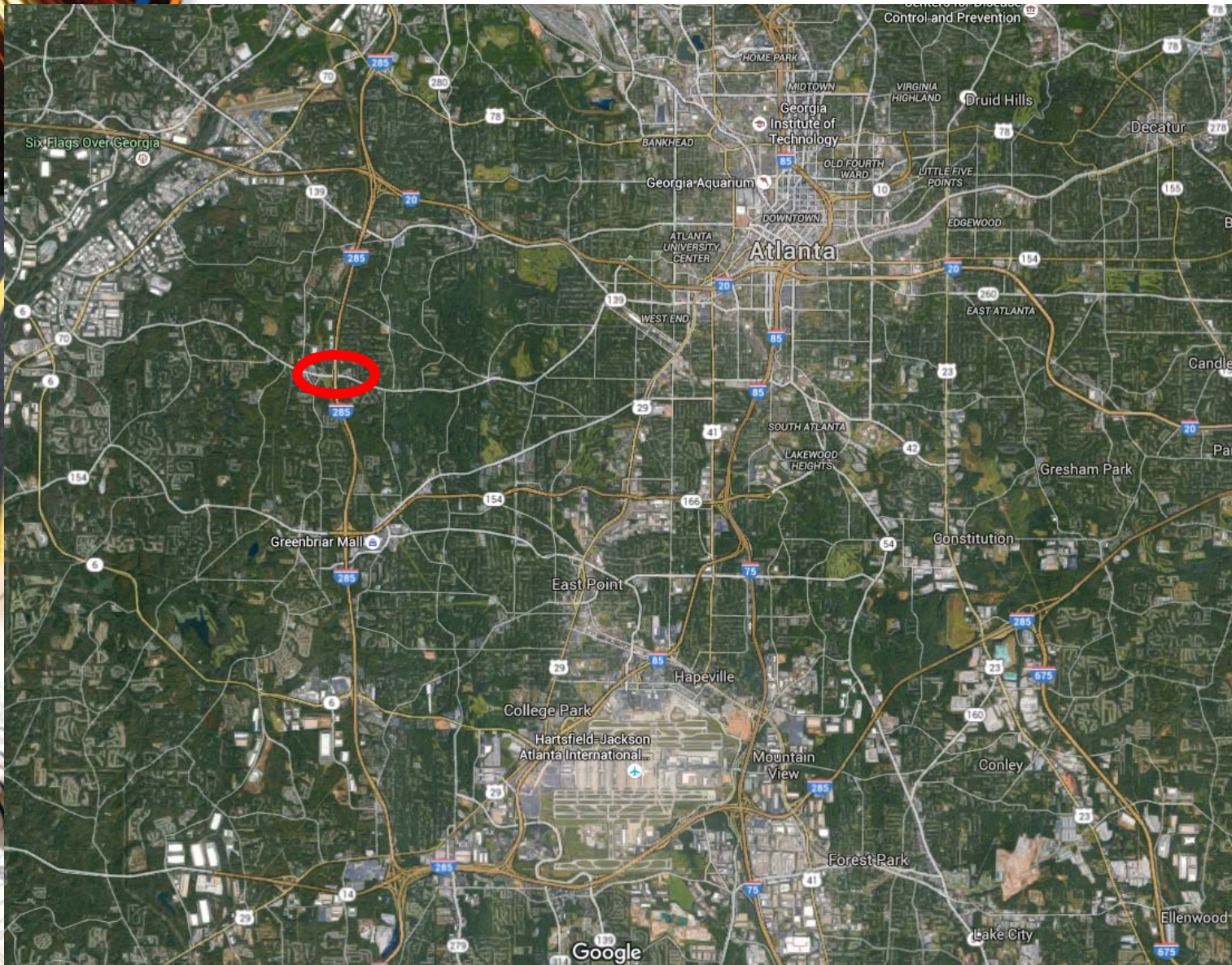
# Cascade Road / I-285 Interchange Modification Study

April 20, 2016





# Location







## Background

- I-285 service interchange with a County Road
- No major mainline or ramp issues
- Cascade Road experiences traffic congestion today and is expected to worsen as traffic volumes grow
- Not a GDOT priority
- County wanted to do something



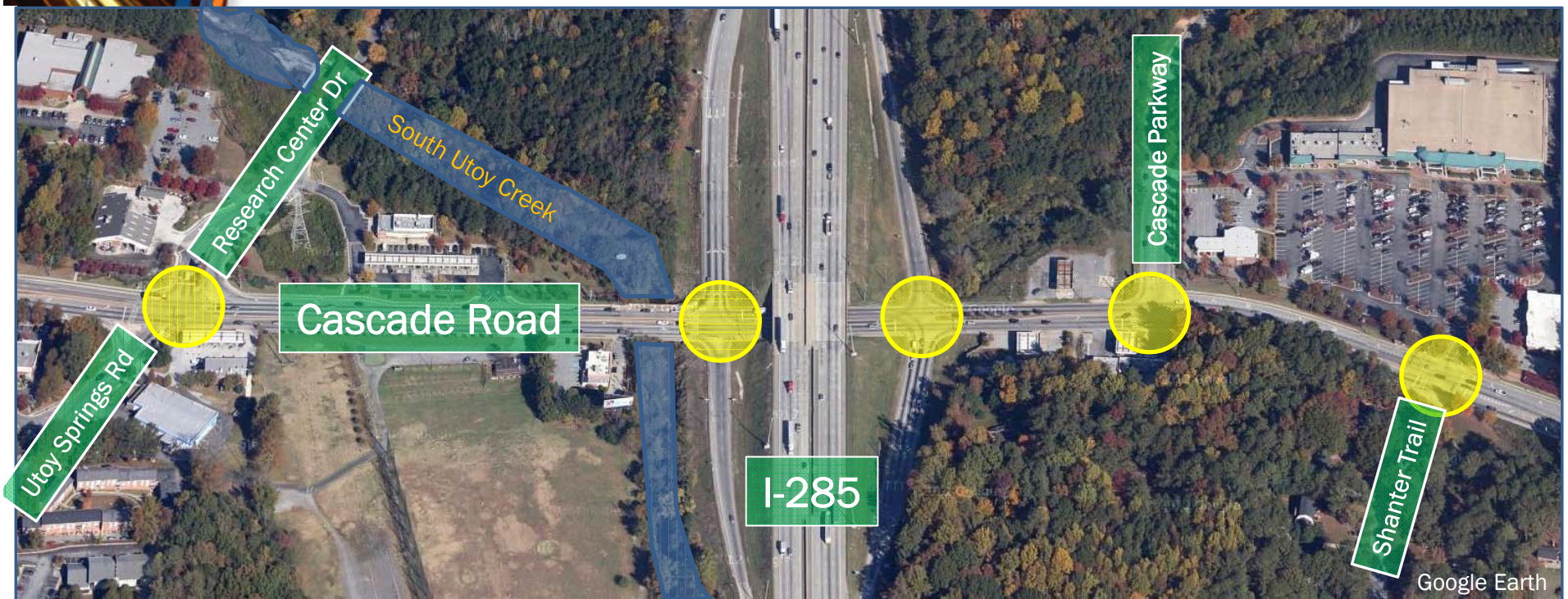


## Background

- Client – Fulton County, GA
- Identify and examine alternatives to alleviate congestion and safety concerns along Cascade Road
- No impacts to existing I-285 bridges!
- Deliverable = Interchange Modification Report to GDOT (Similar to IAJR)
- Goal = Get funding for the project



# I-285/Cascade Road Interchange Study Area



## Intersections on Cascade Road include:

- Utoy Springs Road/Research Center Drive
- SB I-285 ramp terminal
- NB I-285 ramp terminal
- Cascade Parkway
- Shanter Trail



# Existing Conditions West Section

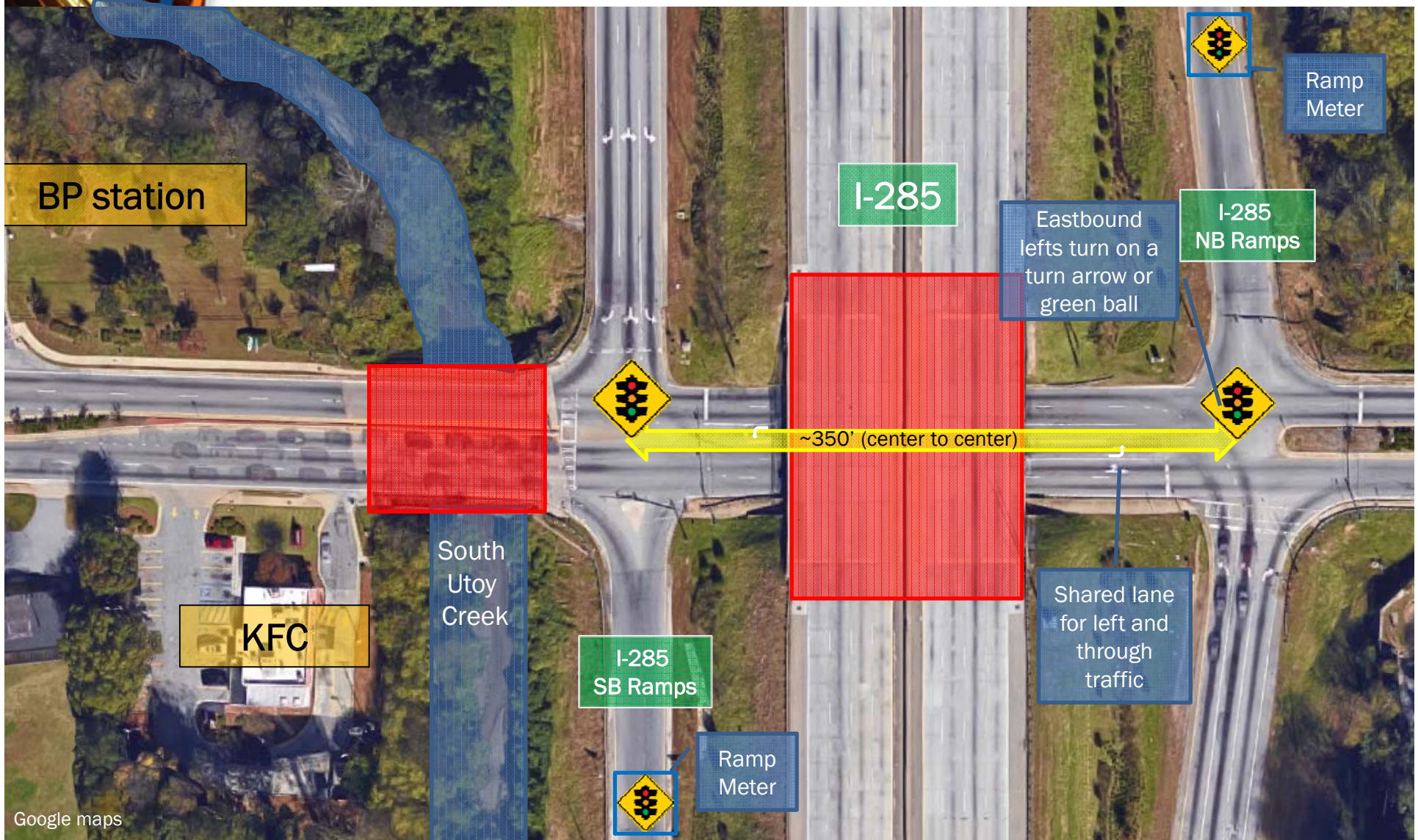
## I-285/Cascade Road Interchange Study Area





# Existing Conditions - Middle Section

## I-285/Cascade Road Interchange Study Area



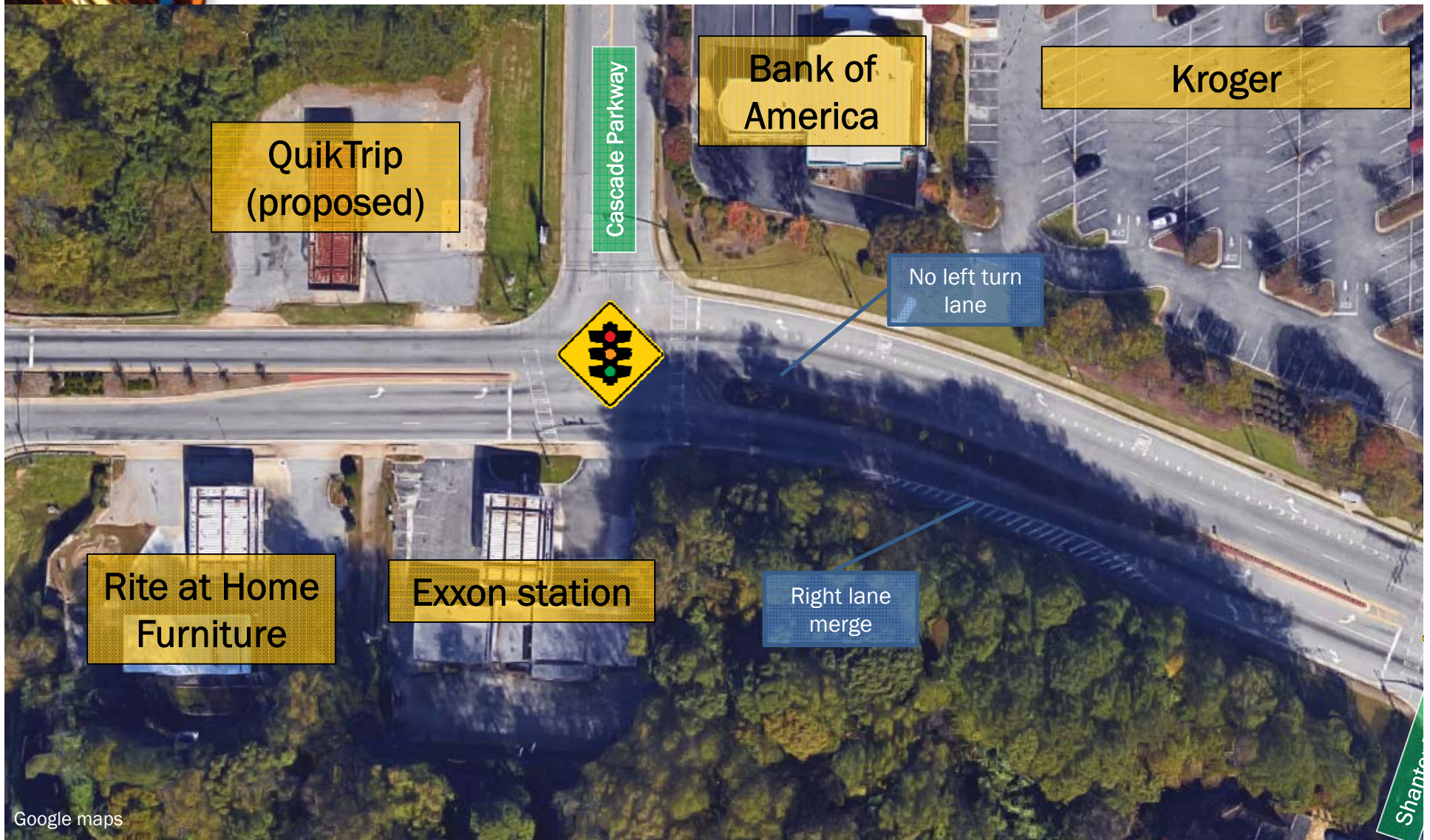


## Existing Conditions - Middle Section I-285/Cascade Road Interchange Study Area



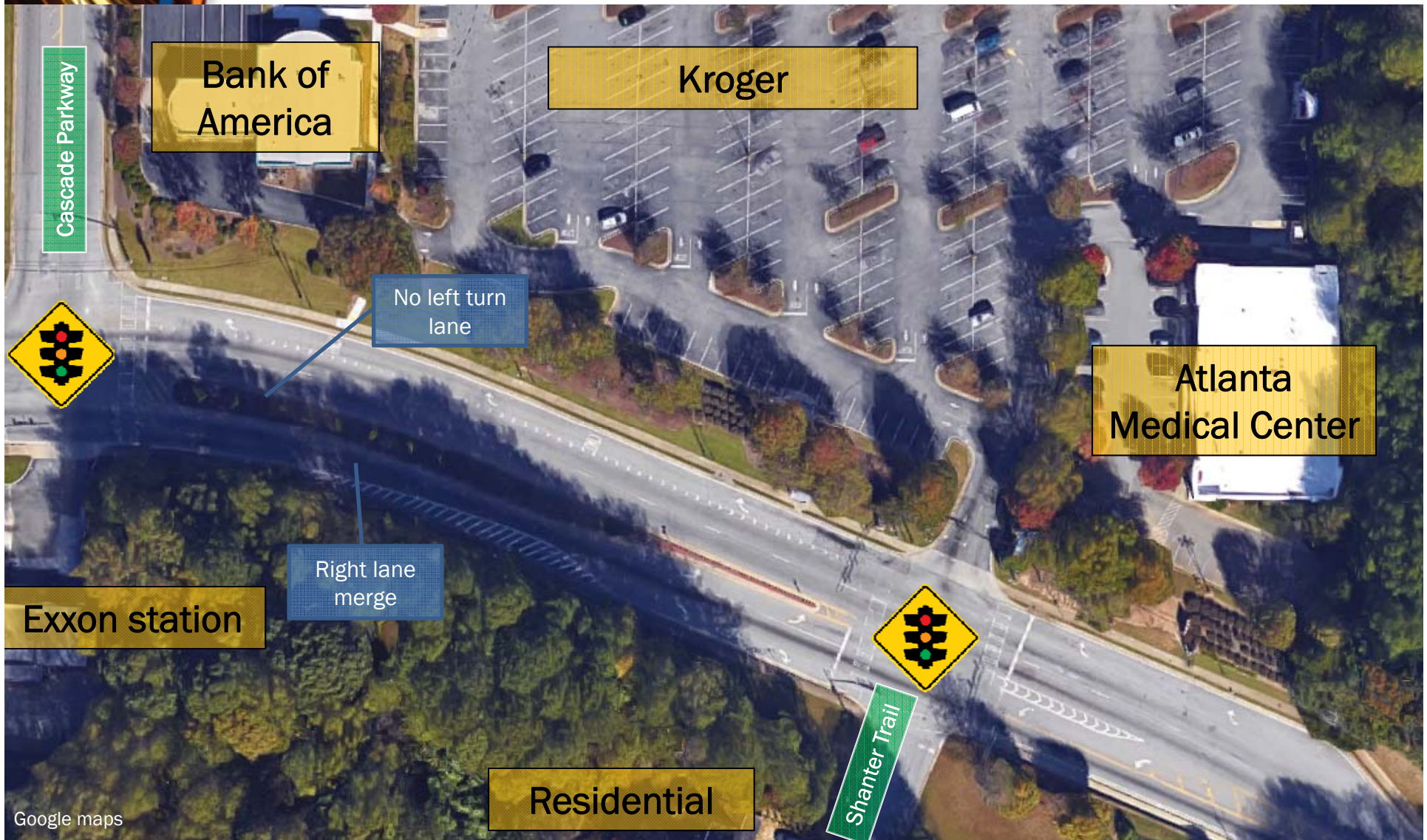


# Existing Conditions – Eastern Section I-285/Cascade Road Interchange Study Area





# Existing Conditions – Eastern Section I-285/Cascade Road Interchange Study Area





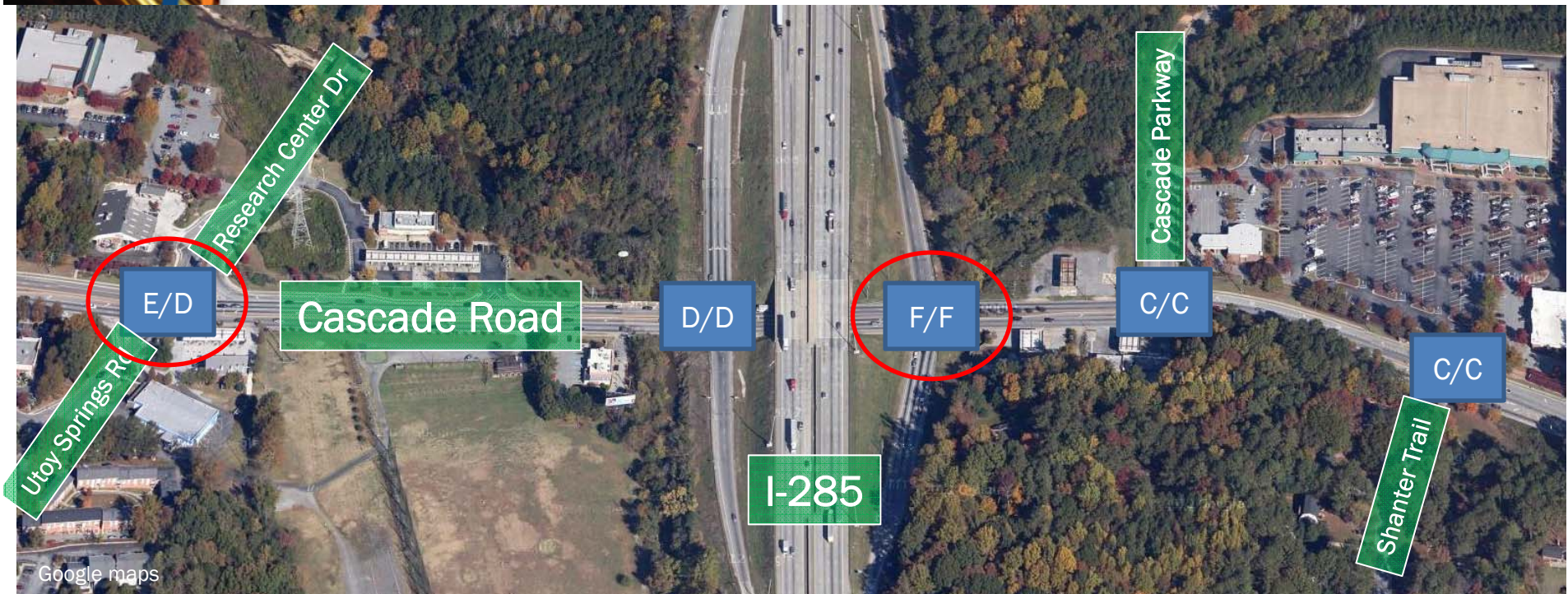
# Existing Traffic Conditions





# Existing Traffic Conditions

## - Year 2015



AM/PM

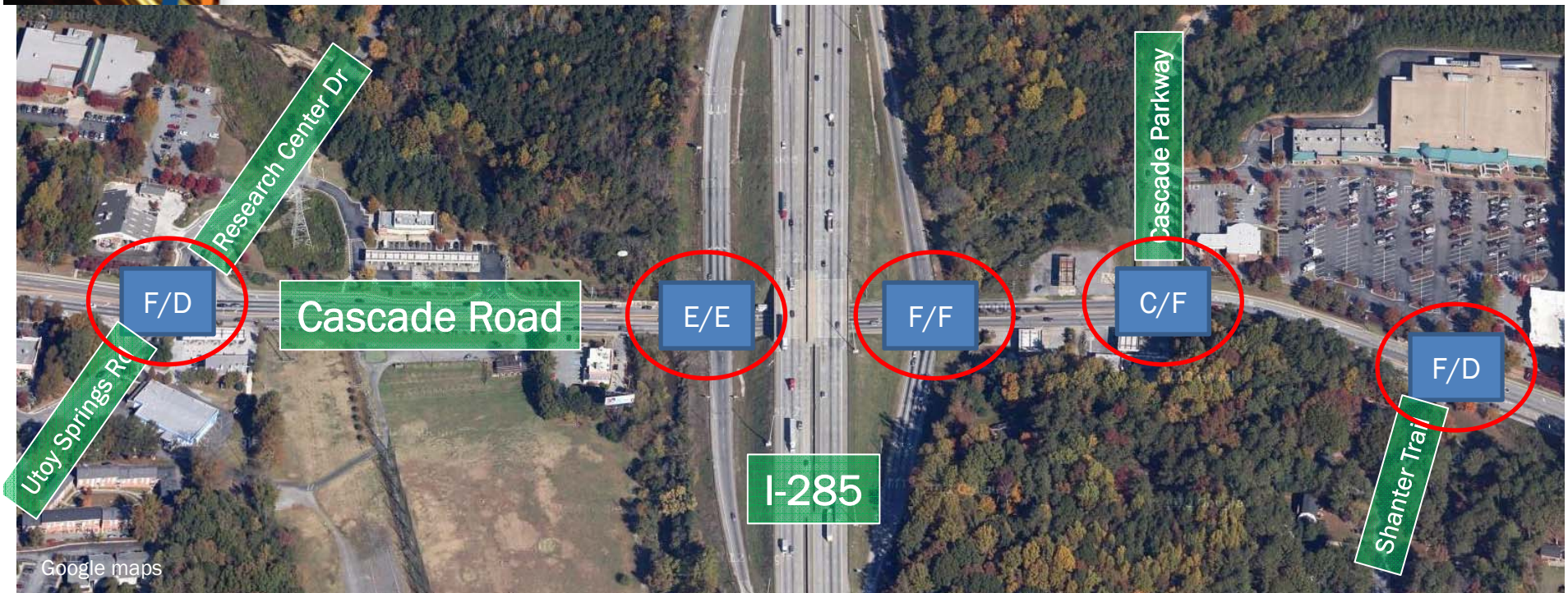
Quality of Traffic Movement in AM & PM Peak Hours  
Graded 'A' to 'F', 'A' = Best, 'D' and above is an acceptable level  
Lowest vehicle movement grade at an intersection shown  
Using HCM 2010





# Future Traffic Conditions

- Year 2030 (with existing roadway)



AM/PM

Quality of Traffic Movement in AM & PM Peak Hours

Graded 'A' to 'F', 'A' = Best, 'D' and above is an acceptable level

Lowest vehicle movement grade at an intersection shown

Using HCM 2010







## Other Traffic Issues

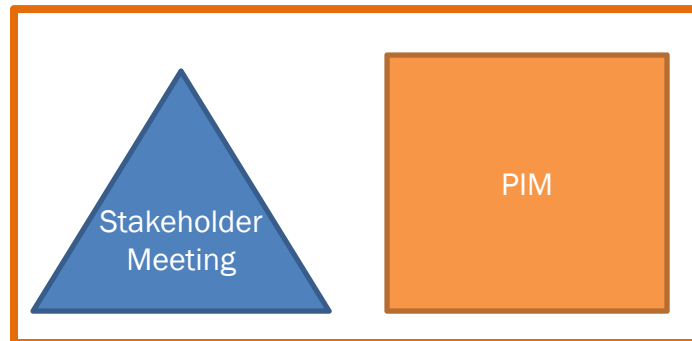
- Back-ups within the interchange and west of the Utoy Springs Rd.
- Crash problem on Cascade Road between and at the ramps
  - Sideswipe same direction
  - Rear-end
  - Left-turn
- Lack of appropriate bicycle and pedestrian accommodations
  - Existing sidewalk on one side of road



# Public Involvement Process



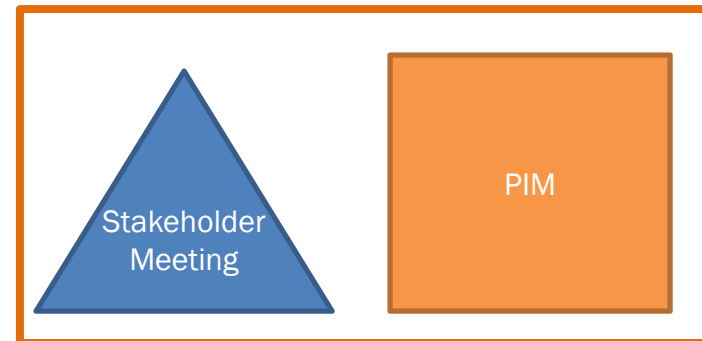
## Listening Sessions Facts Presented



Aerials with  
Post-it Notes  
for issues

Presented pictures  
of potential alts  
\*Nothing drawn yet

## Alternatives Presented



Roll Plots  
Vissim Simulations



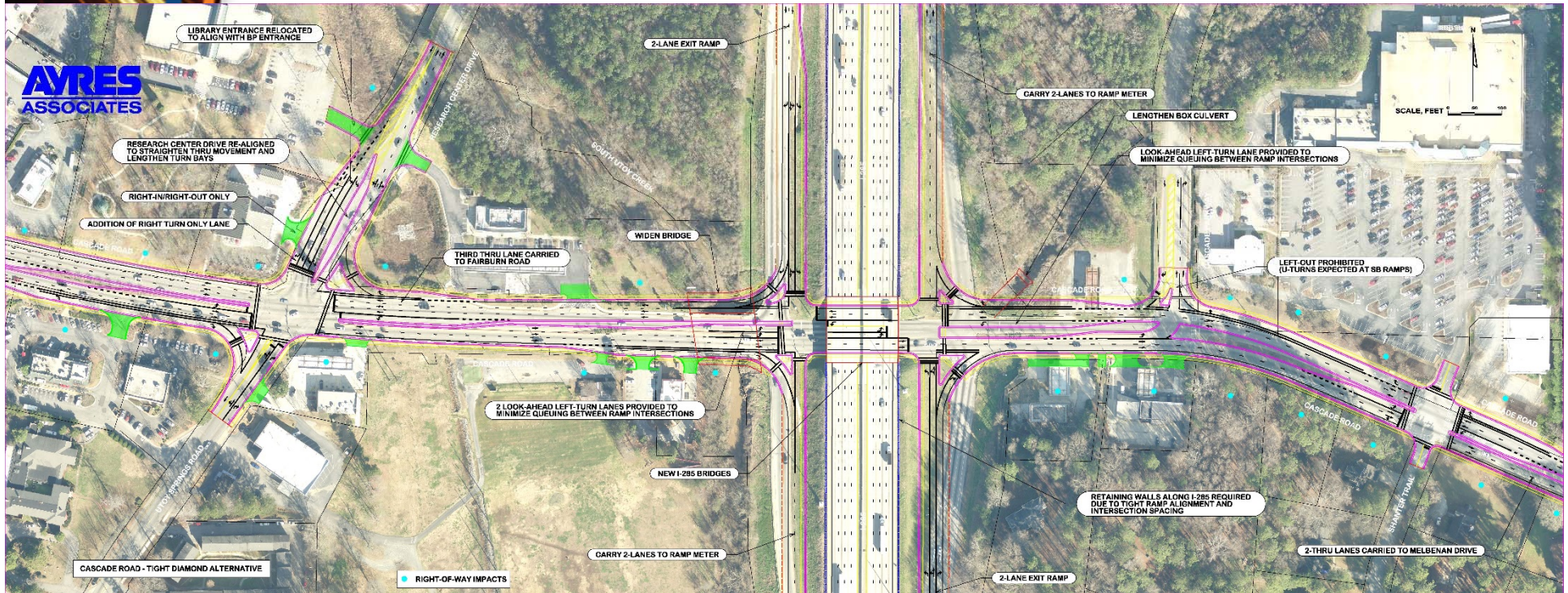


# Alternatives Presented

- Conventional diamond interchange with traffic signals
- Conventional diamond interchange with roundabouts
- Diverging diamond interchange with traffic signals

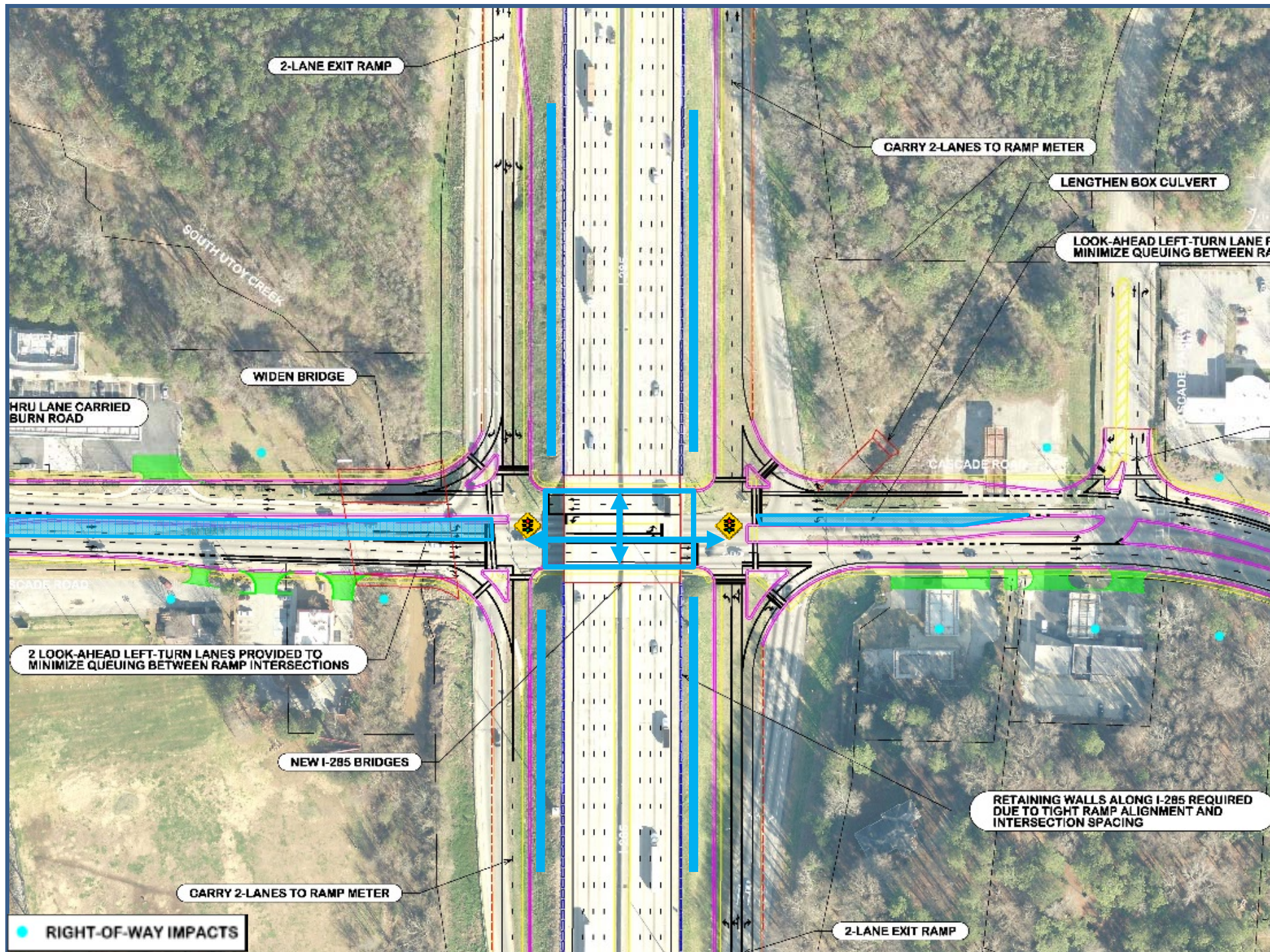


# Conventional diamond interchange with traffic signals



Tight diamond with 235 feet  
between I-285 ramp intersections







**AYRES**  
ASSOCIATES

LIBRARY ENTRANCE RELOCATED  
TO ALIGN WITH BP ENTRANCE

2-LANE EXIT RAMP

RESEARCH CENTER DRIVE RE-ALIGNED  
TO STRAIGHTEN THRU MOVEMENT AND  
LENGTHEN TURN BAYS

RIGHT-IN/RIGHT-OUT ONLY

ADDITION OF RIGHT TURN ONLY LANE

Research Center Dr

SOUTH UTOY CREEK

WIDEN BRIDGE

THIRD THRU LANE CARRIED  
TO FAIRBURN ROAD

CASCADE ROAD

CASCADE ROAD

2 LOOK-AHEAD LEFT-TURN LANES PROVIDED TO  
MINIMIZE QUEUING BETWEEN RAMP INTERSECTIONS

NEW I-285 BRIDGES

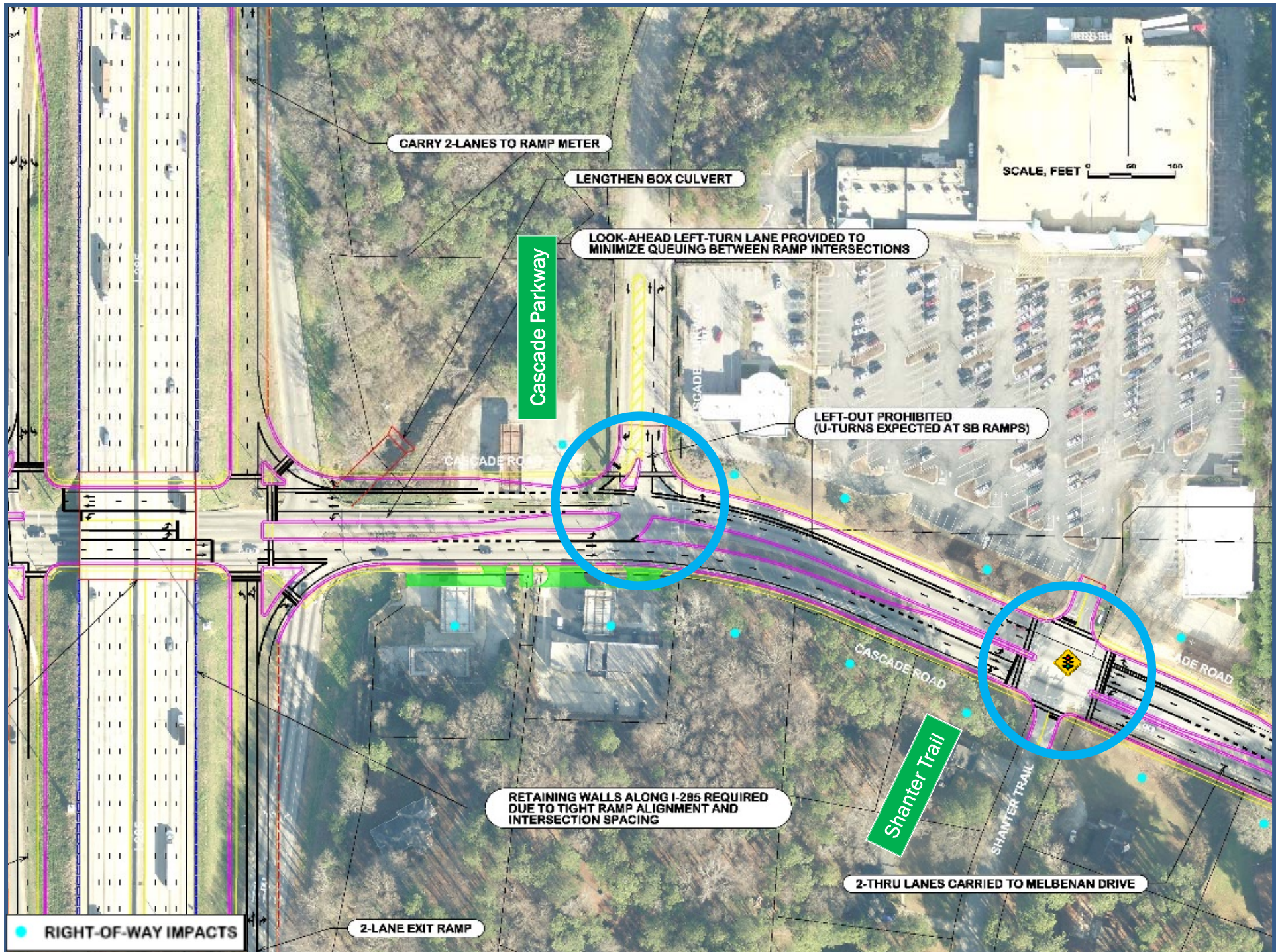
CARRY 2-LANES TO RAMP METER

Utoy Springs Rd

CASCADE ROAD - TIGHT DIAMOND ALTERNATIVE

RIGHT-OF-WAY IMPACTS

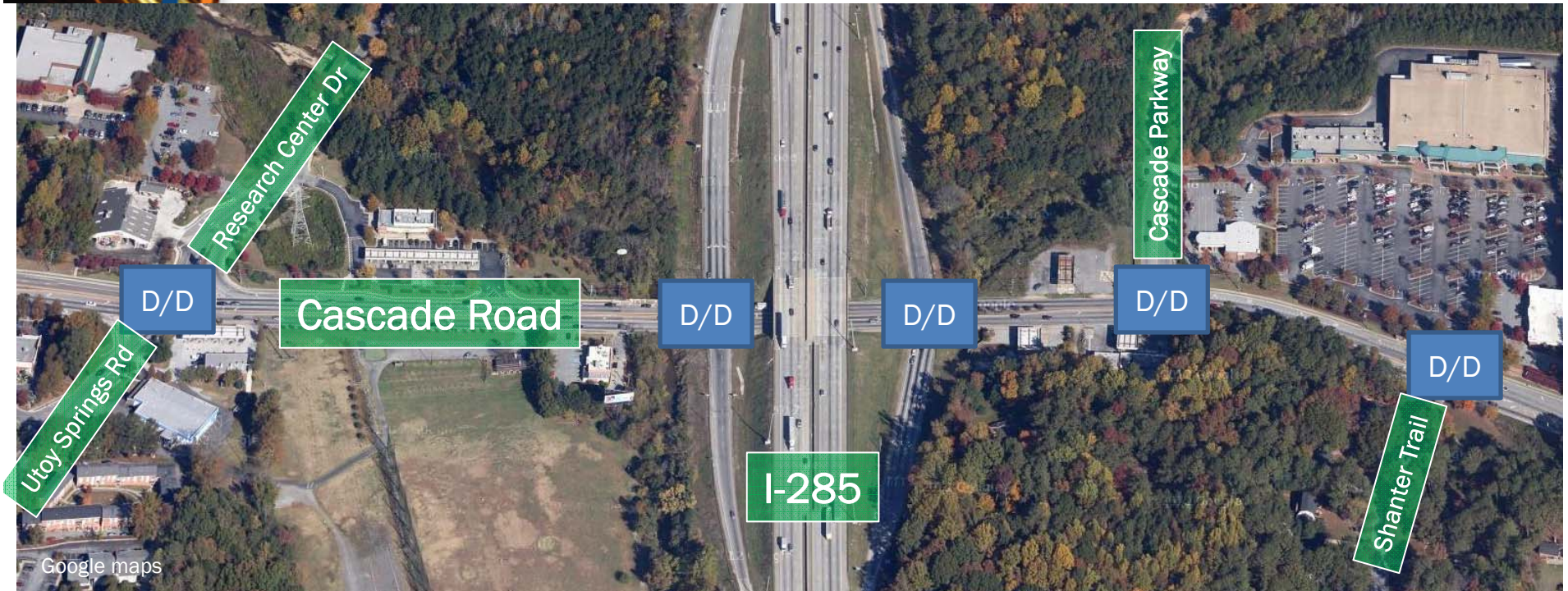






# Future Traffic Conditions

- Year 2030 (with Tight Diamond)



AM/PM


Quality of Traffic Movement in AM & PM Peak Hours

Graded 'A' to 'F', 'A' = Best, 'D' and above is an acceptable level

Lowest vehicle movement grade at an intersection shown







# Conventional diamond interchange with traffic signals

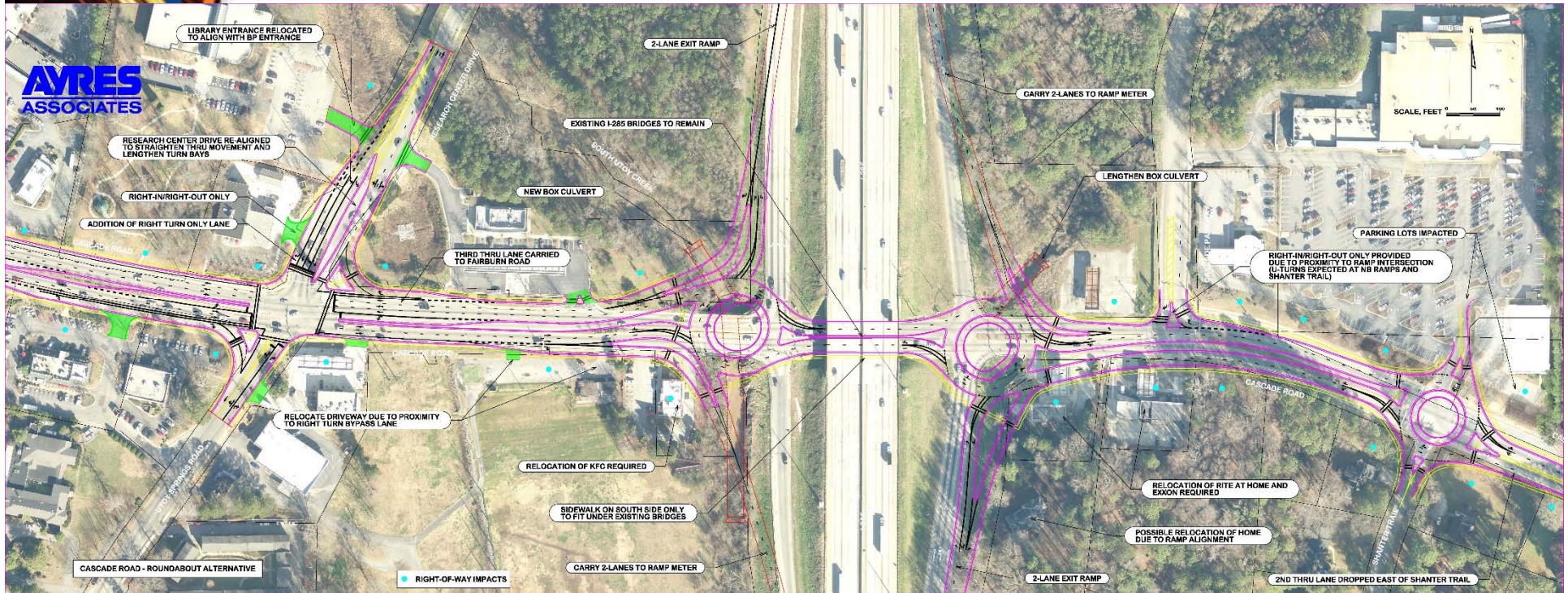


- Other Traffic Issues
  - Weaving section between Utoy Springs Rd and I-285 SB ramps – Free-flow right turn
  - Minimize queuing between ramps
  - Separated protected-only left-turn lanes on eastbound approach at I-285 NB ramps
    - Reduce sideswipe and left-turn crash issue
  - With new bridge
    - Sidewalk on both side of roadway provided
    - Bicycle lanes provided





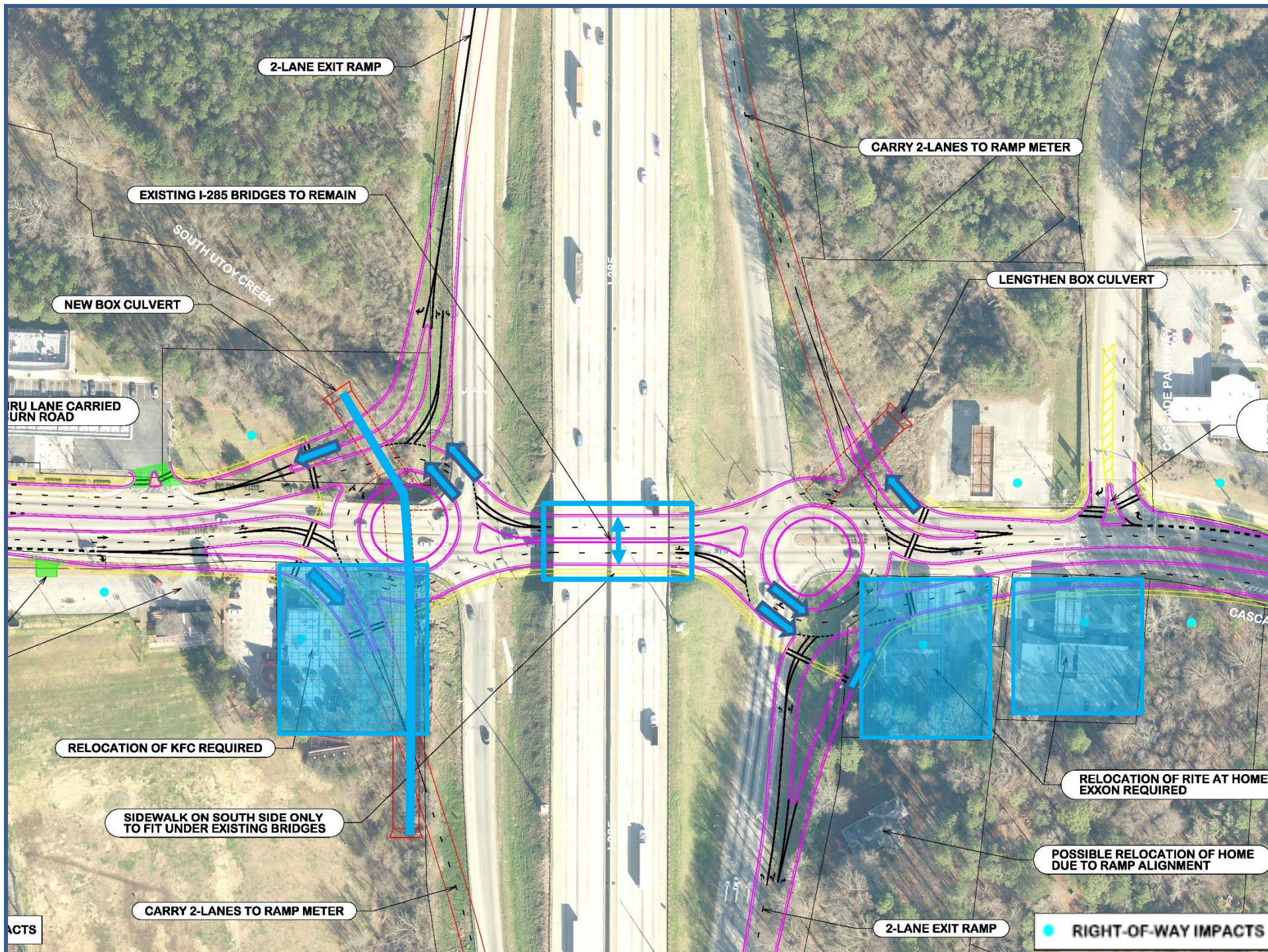
# Conventional diamond interchange with roundabouts



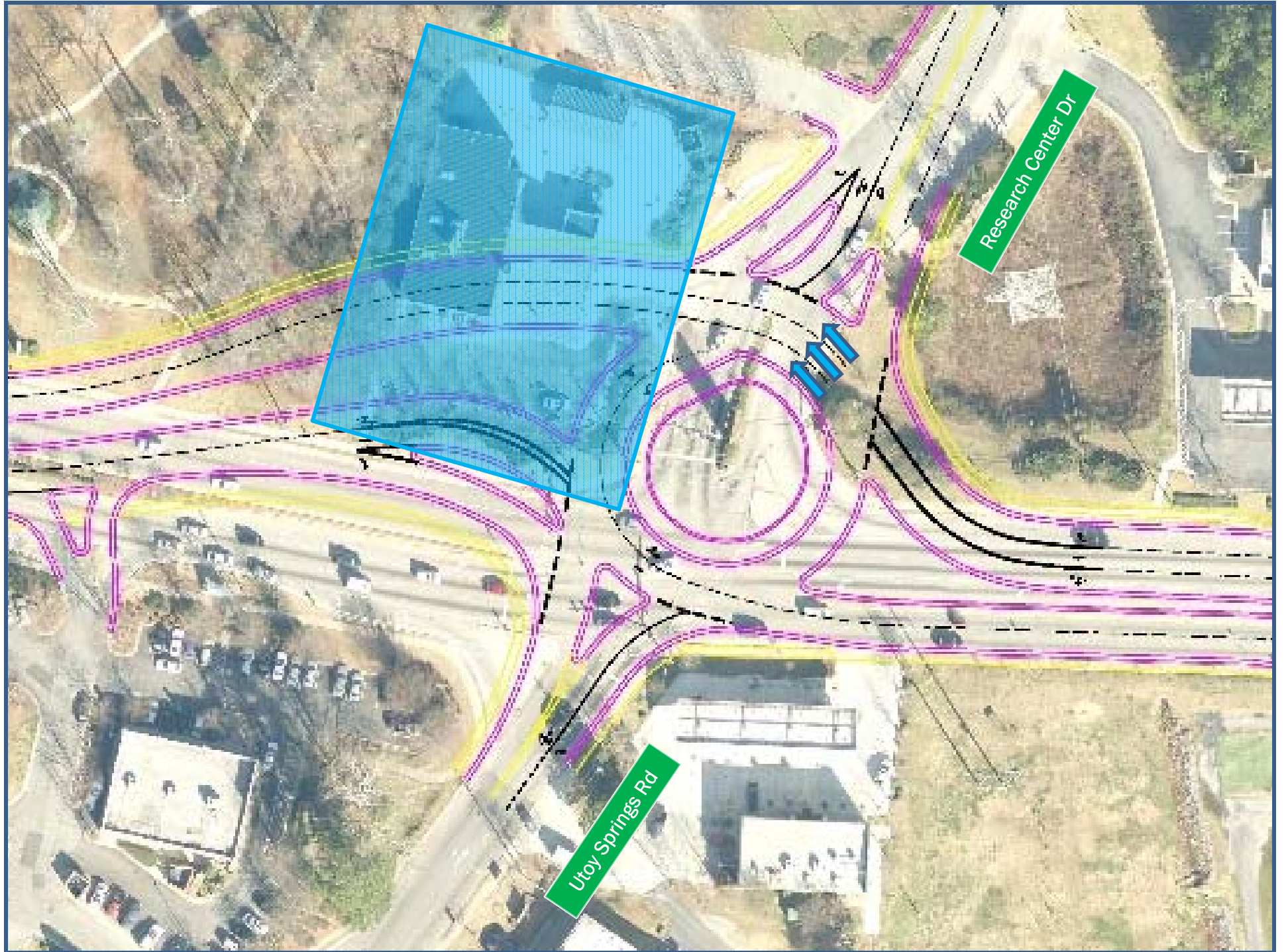
Roundabouts with 465 feet  
between I-285 ramp  
intersections



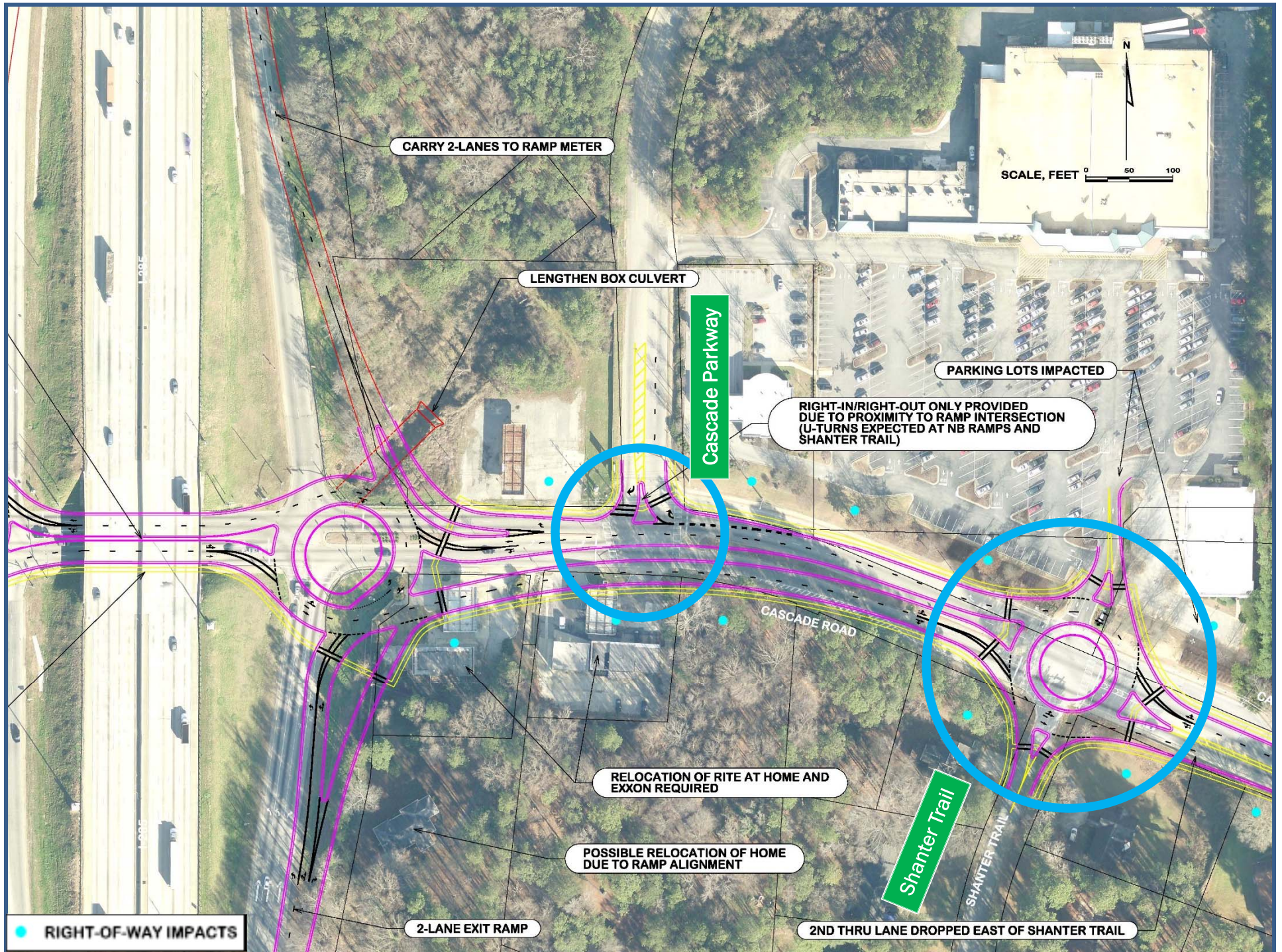








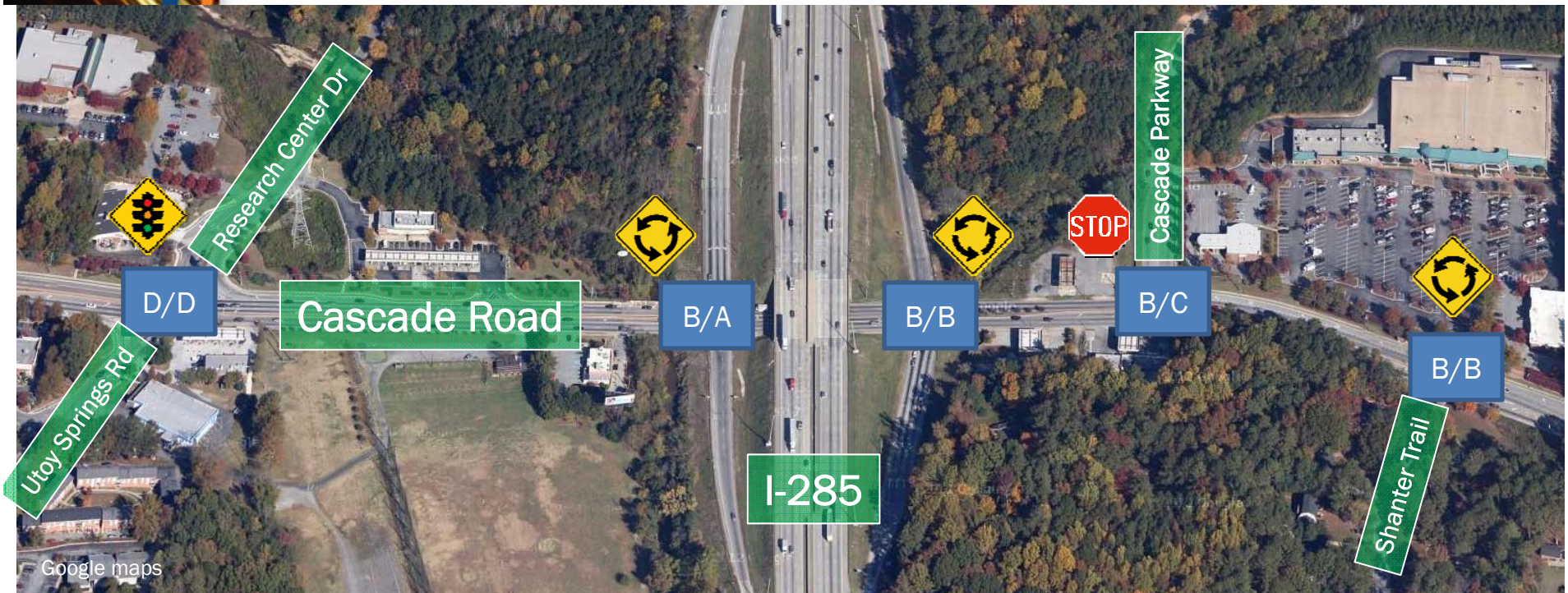






# Future Traffic Conditions

- Year 2030 (with ROUNDABOUTS)



AM/PM

Quality of Traffic Movement in AM & PM Peak Hours

Graded 'A' to 'F', 'A' = Best

Lowest vehicle movement grade at an intersection shown

'D' and above is an acceptable level

**AYRES**  
ASSOCIATES





# Conventional diamond interchange with roundabouts

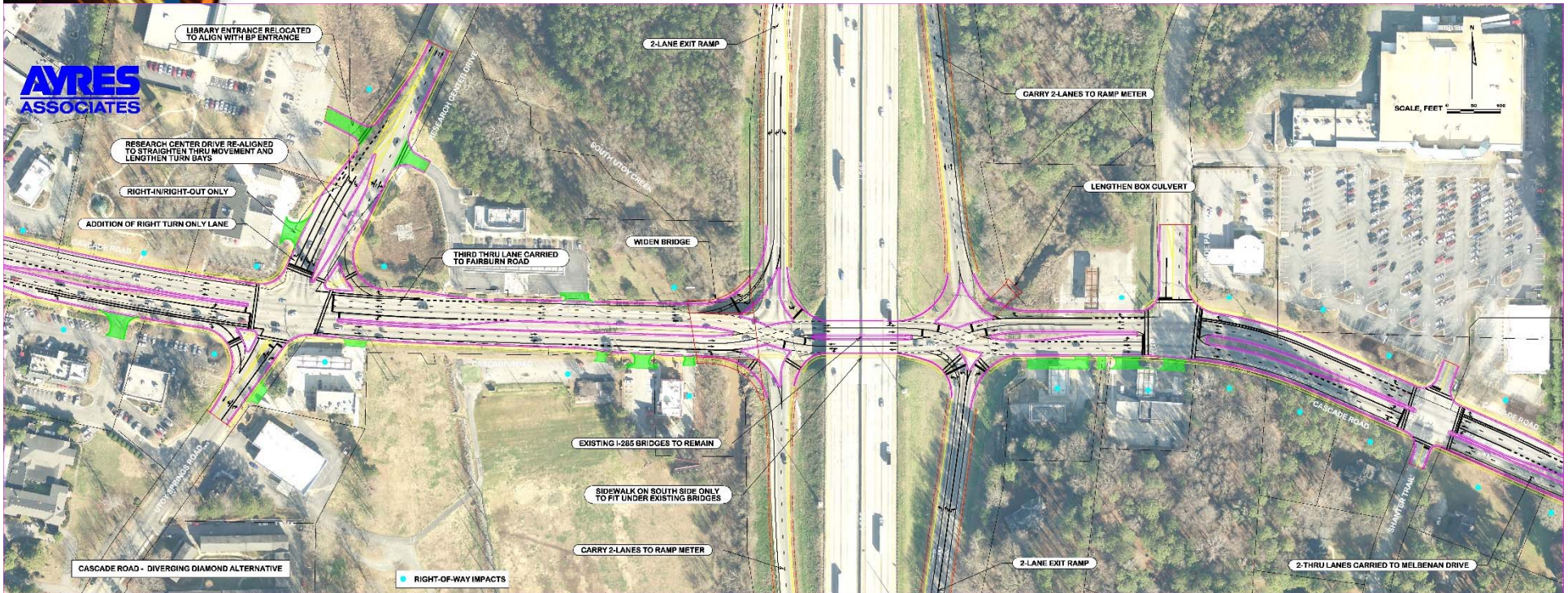


- Other Traffic Issues
  - Weaving section between I-285 SB ramps roundabout and traffic signal at Utoy Springs Rd
    - Free-flow right turn
  - Conversion from traffic signal to roundabout reduces left-turn crash issue
  - Due to existing bridge constraint
    - Sidewalk on one side of road
    - No bicycle accommodations



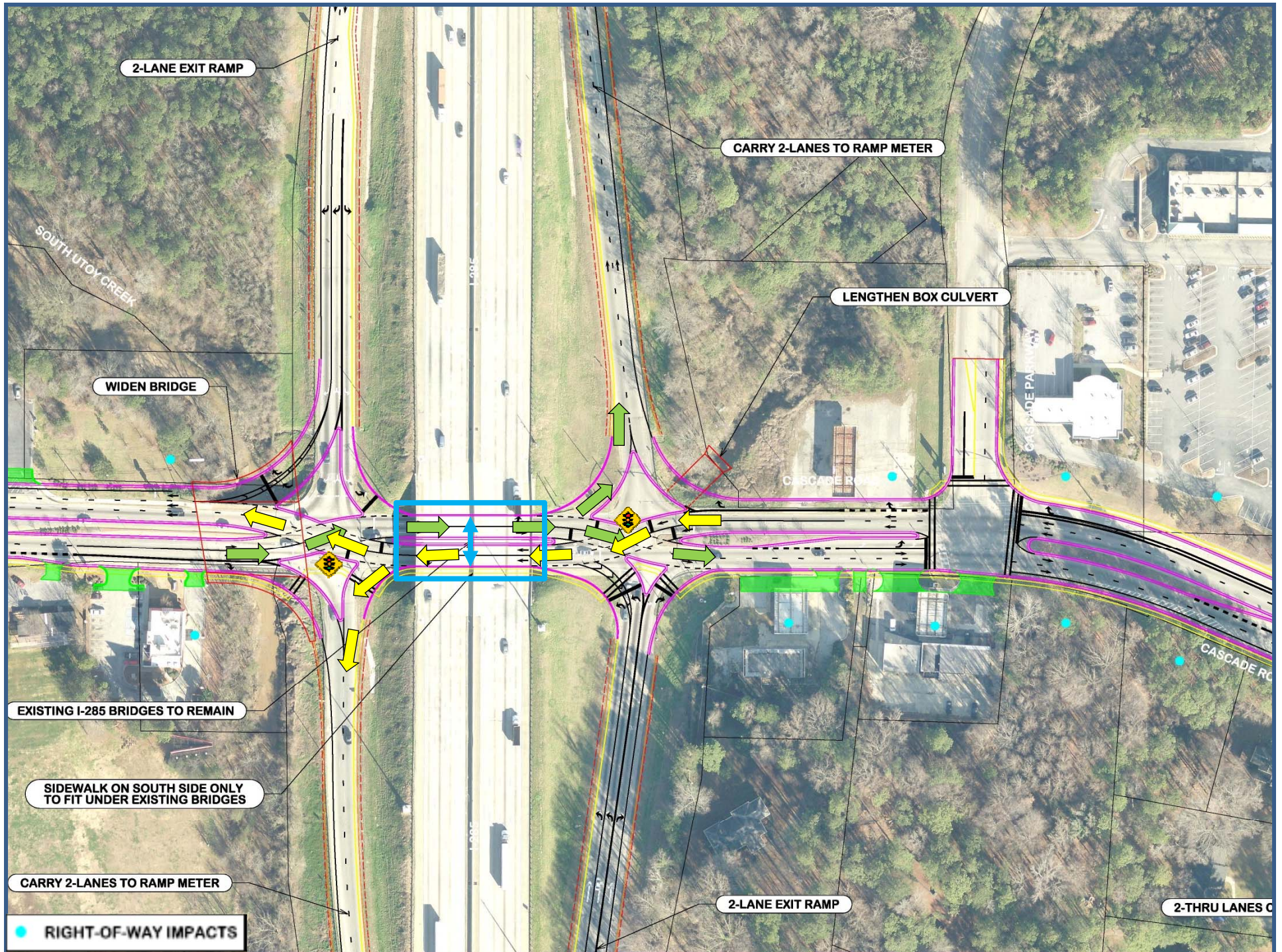


# Diverging diamond interchange (DDI) with traffic signals

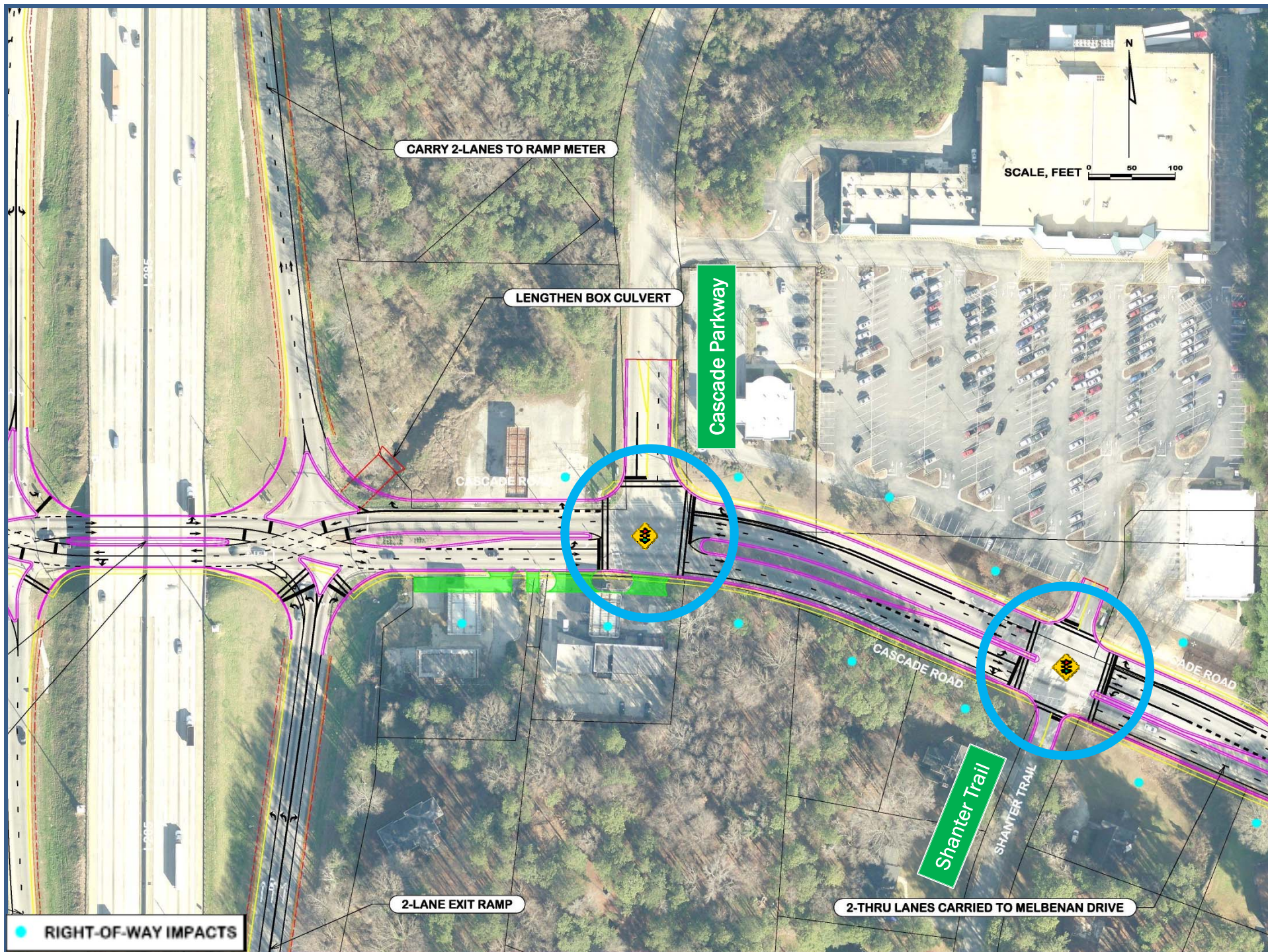


DDI with 350 feet between I-285  
ramp intersections





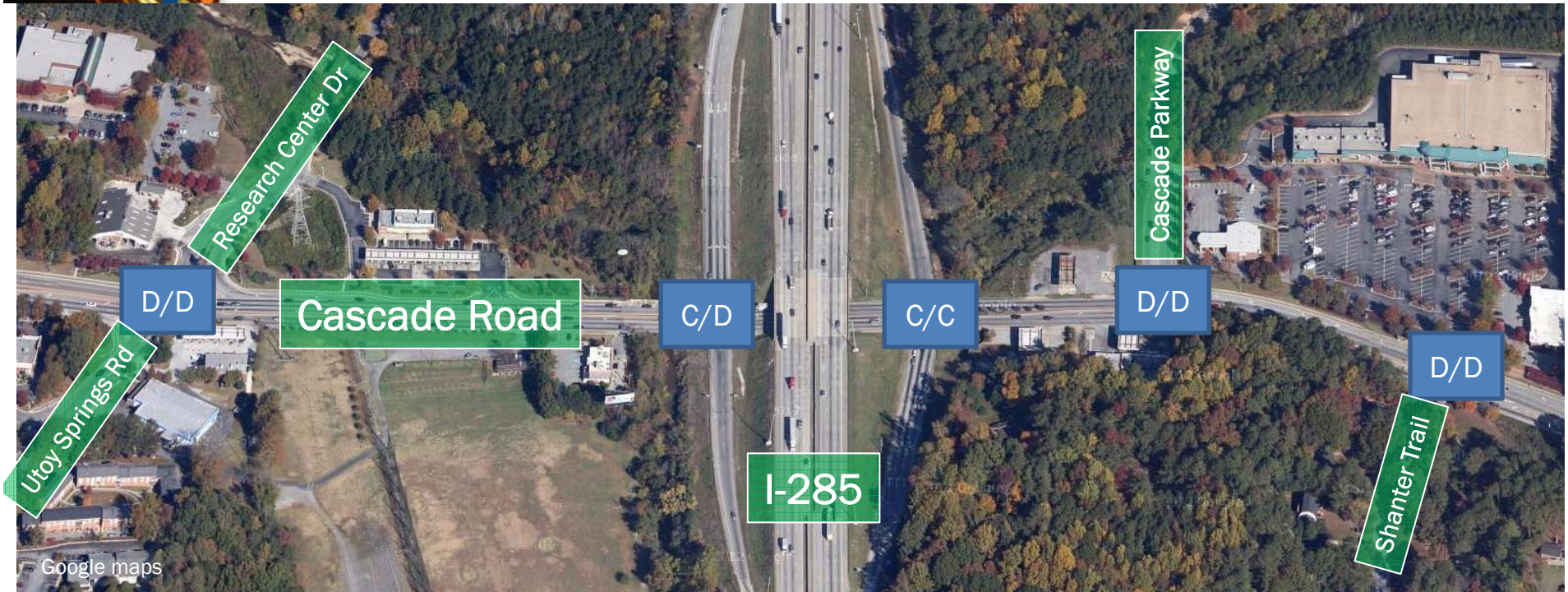






# Future Traffic Conditions

- Year 2030 (with DIVERGING DIAMOND INTERCHANGE)



AM/PM

Quality of Traffic Movement in AM & PM Peak Hours

Graded 'A' to 'F', 'A' = Best, 'D' and above is an acceptable level

Lowest vehicle movement grade at an intersection shown





# Diverging diamond interchange (DDI) with traffic signals



- Traffic Issues
  - Great design alternative for high left-turn movements
  - Weaving section removed – no more free-flow right turn from I-285 SB ramps
  - DDI removes left-turn crash problem
  - Due to existing bridge constraint
    - Sidewalk on one side of road
    - No bicycle accommodations





# Level of Service Comparison Design Year 2030



Peak Period	Interchange Alternative	Utoy Springs	I-285 SB Ramp	I-285 NB Ramp	Cascade Parkway	Shanter Trail
AM	Existing Roadway	F	E	F	C	F
	Signals	D	D	D	D	D
	Roundabouts	D	B	B	B	B
	DDI	D	C	C	D	D
PM	Existing Roadway	D	E	F	F	D
	Signals	D	D	D	D	D
	Roundabouts	D	A	B	C	B
	DDI	D	D	C	D	D

Quality of Traffic Movement in AM & PM Peak Hours  
Graded 'A' to 'F', 'A' = Best, 'D' and above is an acceptable level  
Lowest vehicle movement grade at an intersection shown



SUMMARY	#1 - Signals				#2 - Roundabouts				3 - DDI			
	Total	Utoy Springs	I-285 & Cascade Pkwy	Shanter Trail	Total	Utoy Springs	I-285 & Cascade Pkwy	Shanter Trail	Total	Utoy Springs	I-285 & Cascade Pkwy	Shanter Trail
ESTIMATED TOTAL COST	\$26.7 million	\$5.55 million	\$18.1 million	\$3.05 million	\$21.4 million	\$5.55 million	\$13.4 million	\$2.45 million	\$17.8 million	\$5.55 million	\$9.2 million	\$3.05 million
Construction Cost	\$20.9 million	\$3.9 million	\$14.7 million	\$2.3 million	\$15.7 million	\$3.9 million	\$10.0 million	\$1.8 million	\$13.6 million	\$3.9 million	\$7.4 million	\$2.3 million
Engineering	\$4.3 million	\$0.8 million	\$3.0 million	\$0.5 million	\$3.3 million	\$0.8 million	\$2.1 million	\$0.4 million	\$2.8 million	\$0.8 million	\$1.5 million	\$0.5 million
Utility	\$0.3 million	\$0.15 million	\$0.10 million	\$0.05 million	\$0.3 million	\$0.15 million	\$0.10 Million	\$0.05 million	\$0.3 million	\$0.15 million	\$0.1 million	\$0.05 million
Right of Way	\$1.2 million	\$0.7 million	\$0.3 million	\$0.2 million	\$2.1 million	\$0.7 million	\$1.2 million	\$0.2 million	\$1.1 million	\$0.7 million	\$0.2 million	\$0.2 million
R/W Impacts	28 parcels				25 parcels				28 parcels			
Relocations	None				3 to 4 parcels				None			
Operations Level of Service	D				A/B				C/D			
I-285 Bridge Impacts	New bridges; requires NEPA process				No change to existing bridges				No change to existing bridges			
South Utoy Creek Crossing Impacts	Minor bridge widening				Significant multi-cell box culvert				Minor bridge widening			
Construction Duration	3 years				2.5 years				2 years			





**Thanks for Attending!**



Questions?