

Operational Improvement Potential Project

SR-21 at I-95

Date Presented:
March 2013

GDOT District:	District 5	County:	Chatham
Project Type:	Interchange/Freeway Improvement	City:	Port Wentworth

Description of the Problem:

It was observed that:

- NB off-ramp traffic from I-95 to SR-21 backs up on I-95 mainline creating blocking on I-95 in the NB direction.

As part of evaluation with project PI#0008480, an analysis was performed to improve the current capacity for the NB off-ramp which could include triple lefts going NB into Effingham county. A request was made to evaluate a diverging diamond interchange as an alternate to improve the operational conditions of the interchange.

Proposed Improvement:

Three proposed build alternatives were evaluated:

Alternate 1:

Alternate 1 is a 4-lane diverging diamond interchange with three through lanes and one turn-lane in each direction underneath I-95 bridge over SR-21. SR-21 underneath I-95 bridge currently has 48 feet of pavement in both directions. Widening is required to accommodate the fourth lane in both directions on SR-21. Additional northbound lane widening ends at intersection with SR-30 in the north side and with Hendley Road in the south side. In addition to that, this concept assumes triple lefts from I-95 off-ramp going NB into Effingham county. Also, dual rights are assumed for I-95 SB traffic on SR-21 going EB into City of Savannah.

Alternate 2:

Alternate 2 assumes triple lefts from I-95 off-ramp going NB into Effingham county. Also, dual rights are assumed for I-95 SB traffic on SR-21 going EB into City of Savannah. Widening is required to accommodate the fourth lane in northbound direction on SR-21. Additional northbound lane widening ends at intersection with SR-30 in the north side and with Hendley Road in the south side.

Right of Way acquisition required?

None Minimal Yes, 4+ parcels

Initial Environmental Concerns? Yes If yes, describe:
 No

Other programmed projects in the area:

Traffic Volume	Year	AADT
Existing Conditions		
Open Year	2015	See Attached Sheets for ADT and DHV volumes
Design Year	2035	See Attached Sheets for ADT and DHV volumes
Pedestrian Activity?		

Initial Project Cost Estimate (\$):

Alternate 1					
PE:	\$464,715	ROW:	\$0	CST:	\$3,442,330
Alternate 2					
PE:	\$277,969	ROW:	\$0	CST:	\$1,544,271

Anticipated Benefits Table: (LOS, Delay Reduction, Modeling output, etc.)

Travel Time

Segment	AM Peak Hour			PM Peak Hour		
	Travel Time (min)			Travel Time (min)		
	No-Build (2025)	Alt 1 (2025)	Alt 2 (2025)	No-Build (2025)	Alt 1 (2025)	Alt 2 (2025)
I-II	1.4	1.3 (-7%)	1.4 (0%)	1.4	1.2 (-14%)	1.4 (0%)
II-I	1.3	1.2 (-8%)	1.4 (8%)	2.6	3.0 (15%)	2.3 (-12%)
III-I	10.5	2.8 (-73%)	10.5 (0%)	4.9	3.9 (-20%)	4.4 (-10%)

Note: Percent reduction in travel time as compared to no-build scenario is listed in parenthesis next to the actual travel time. For segment locations, refer to Image below.

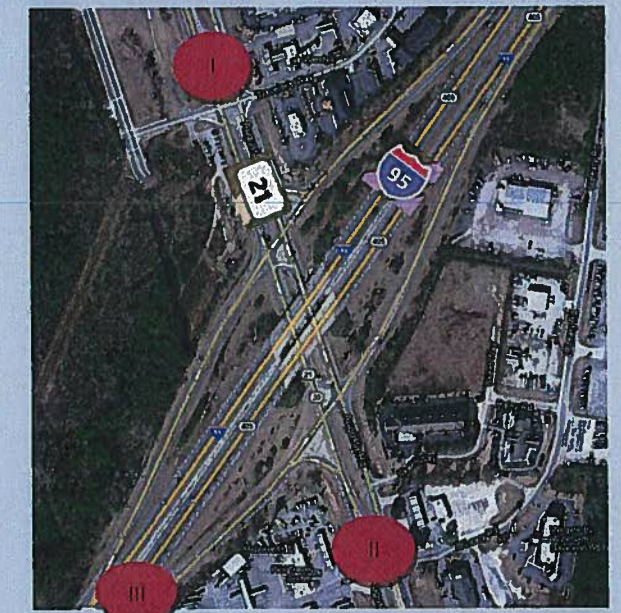
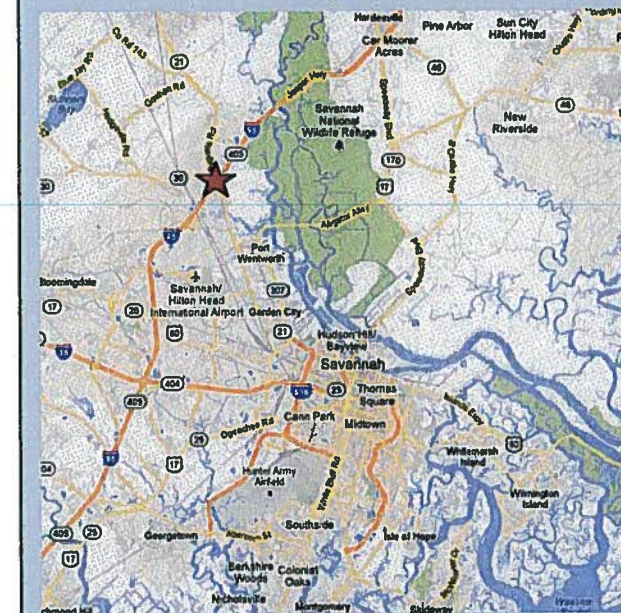
Overall Intersection Delay and Level of Service (LOS)

Intersection	AM Peak Hour			PM Peak Hour		
	Intersection Delay (sec/veh) and LOS			Intersection Delay (sec/veh) and LOS		
	No-Build (2025)	Alt 1 (2025)	Alt 2 (2025)	No-Build (2025)	Alt 1 (2025)	Alt 2 (2025)
NB ramp	147 (F)	20 (B)	149 (F)	108 (F)	79 (E)	73 (E)
SB ramp	72 (E)	20 (B)	79 (E)	55 (E)	19 (B)	54 (D)

95 Percentile Queue Length

Segment	AM Peak Hour			PM Peak Hour		
	95 Percentile Queue Length (ft)			95 Percentile Queue Length (ft)		
	No-Build (2025)	Alt 1 (2025)	Alt 2 (2025)	No-Build (2025)	Alt 1 (2025)	Alt 2 (2025)
III-I	1,659	167	1,660	1,643	438	729

Location: (Attach Map, Image or Sketch):

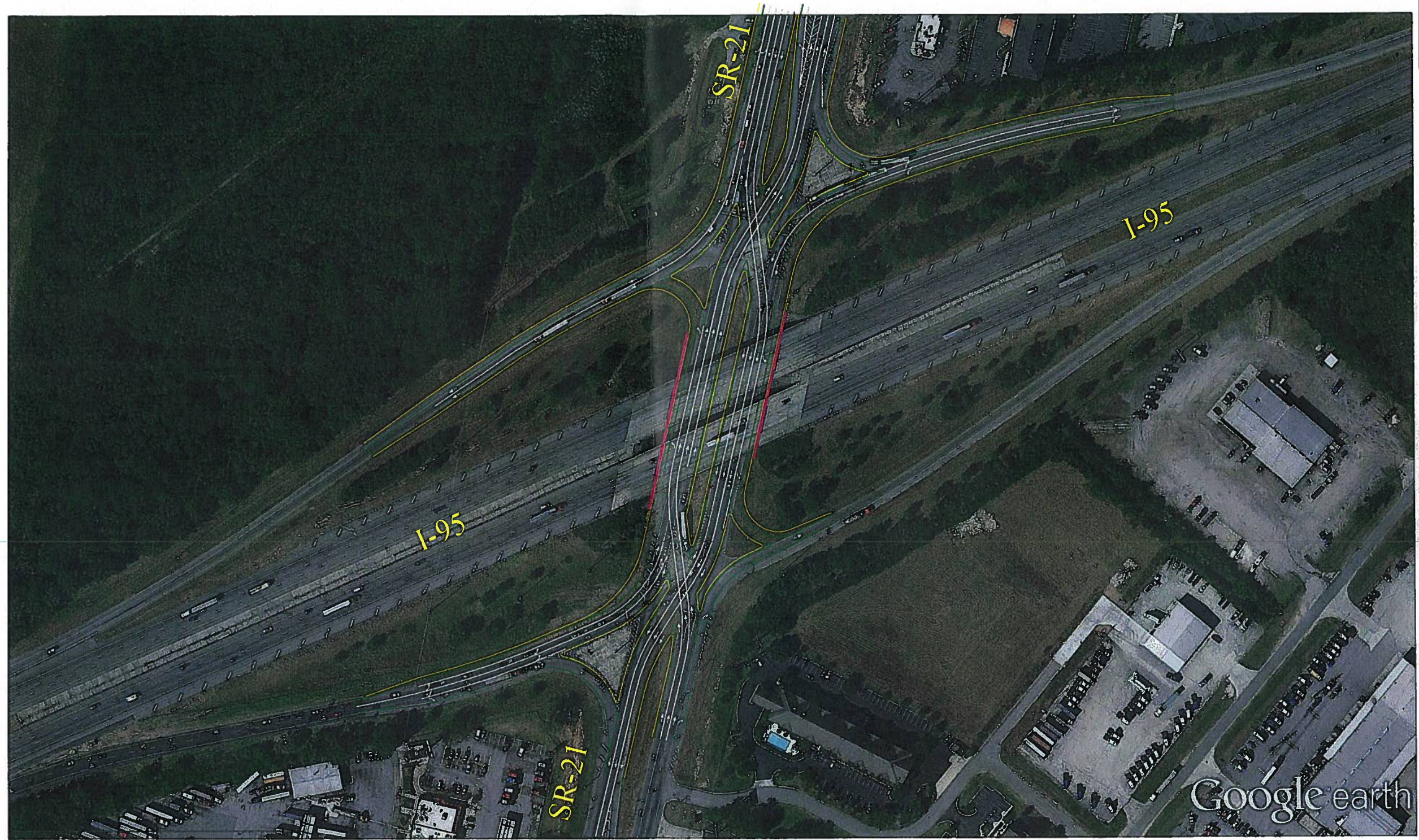


Proposed Improvement: (Attach Map, Image or Sketch):

- See Attached Sheets

ADDITIONAL NORTHBOUND LANE WIDENING
ENDS AT INTERSECTION WITH SR 30

ALTERNATE 1







ADDITIONAL NORTHBOUND LANE WIDENING
BEGINS AT INTERSECTION WITH HENDLEY ROAD

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
INTERCHANGE
IMPROVEMENTS
AT I-95 AND SR-21

FTO No.
6009



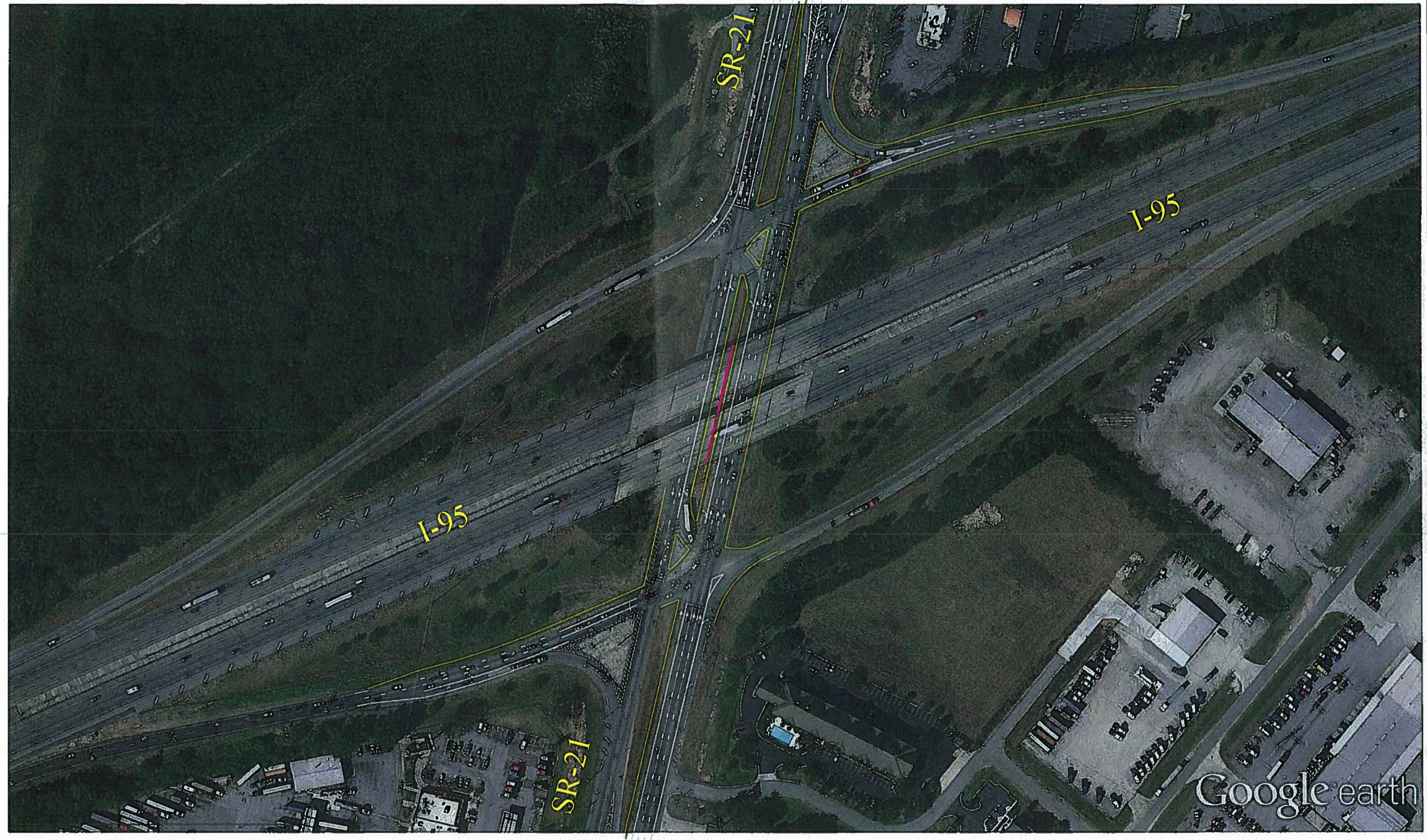
-  PROPOSED EDGE OF PAVEMENT
-  PROPOSED SHOULDER
-  PROPOSED LANE LINE
-  PROPOSED BARRIER WALL

Google earth



ADDITIONAL NORTHBOUND LANE WIDENING
ENDS AT INTERSECTION WITH SR 30

ALTERNATE 2



ADDITIONAL NORTHBOUND LANE WIDENING
BEGINS AT INTERSECTION WITH HENDLEY ROAD

STATE OF GEORGIA DEPARTMENT OF TRANSPORTATION	FTO No.	6009
	INTERCHANGE IMPROVEMENTS AT I-95 AND SR-21	

SCALE IN FEET

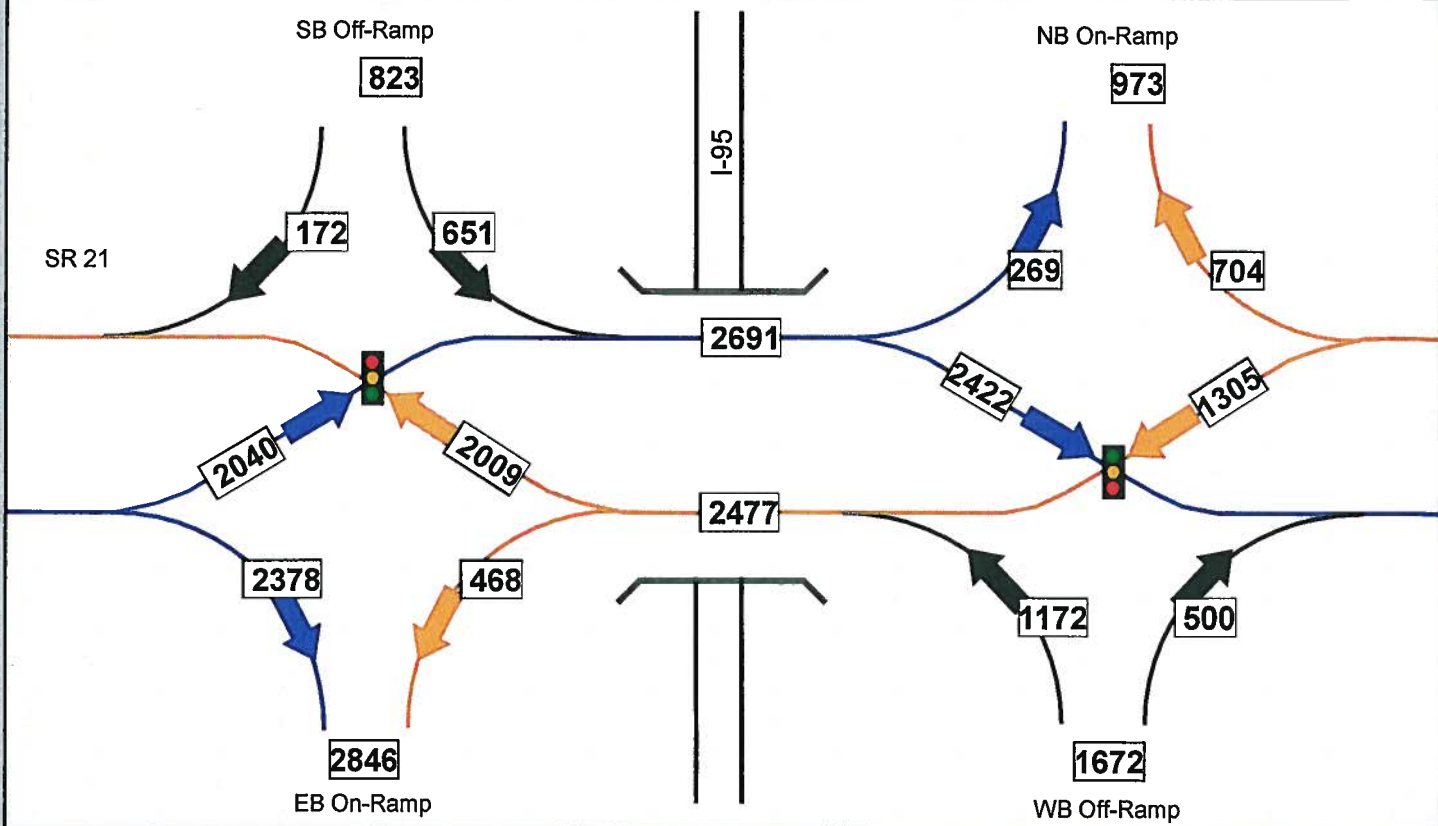
—	PROPOSED EDGE OF PAVEMENT
—	PROPOSED SHOULDER
—	PROPOSED LANE LINE
—	PROPOSED BARRIER WALL

Google earth

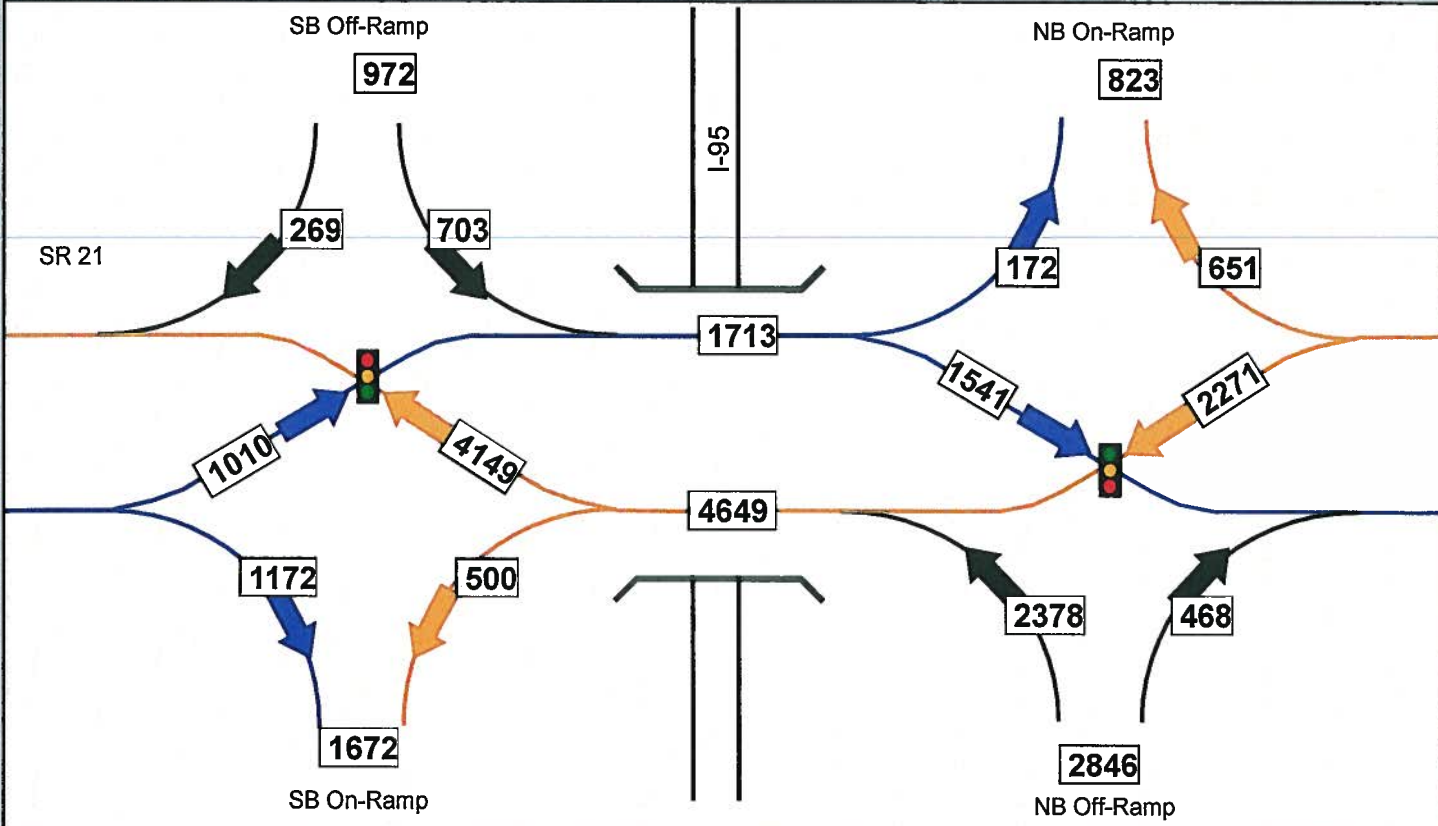
Alternate 1

Not to Scale

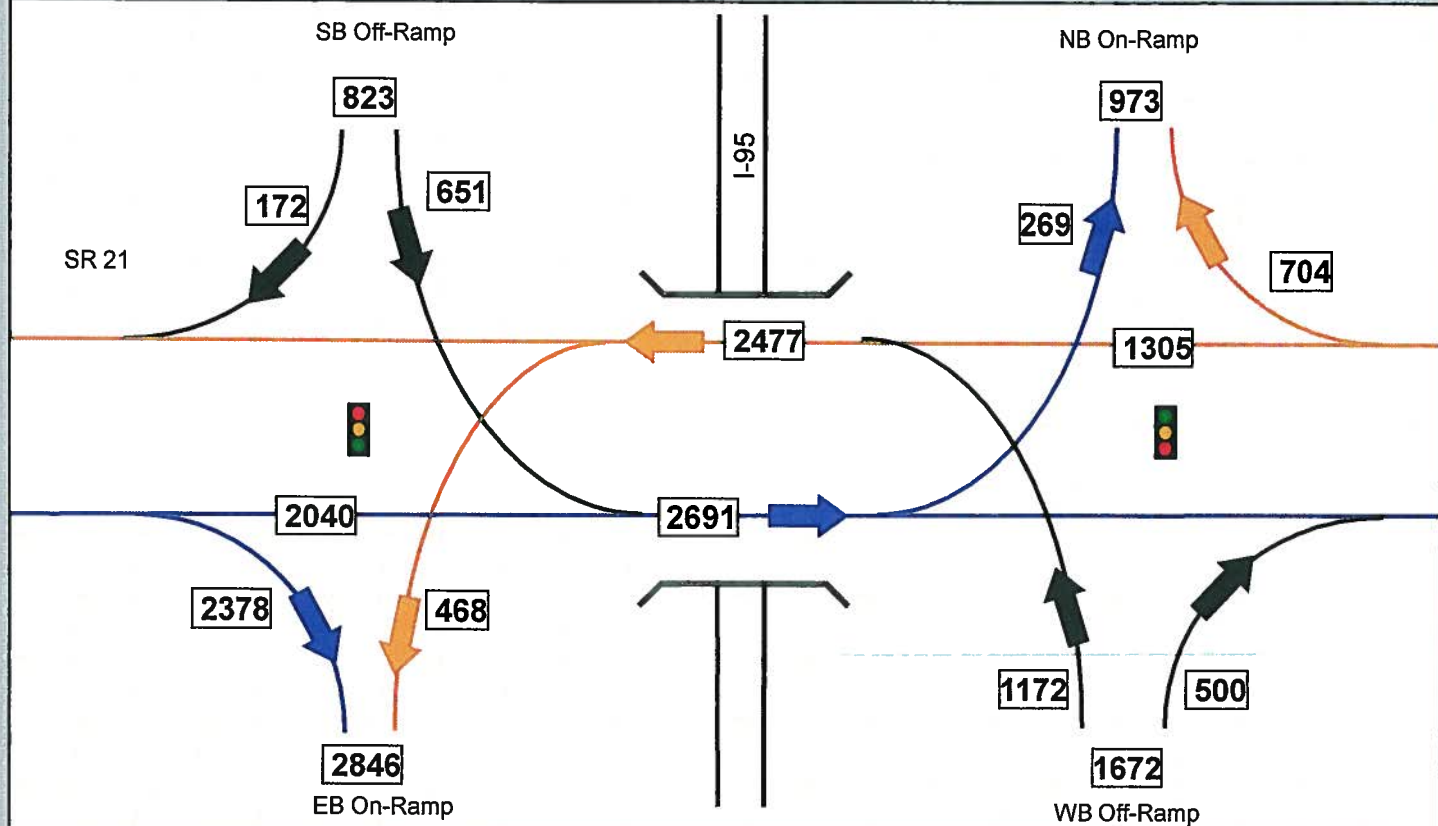
2025 AM



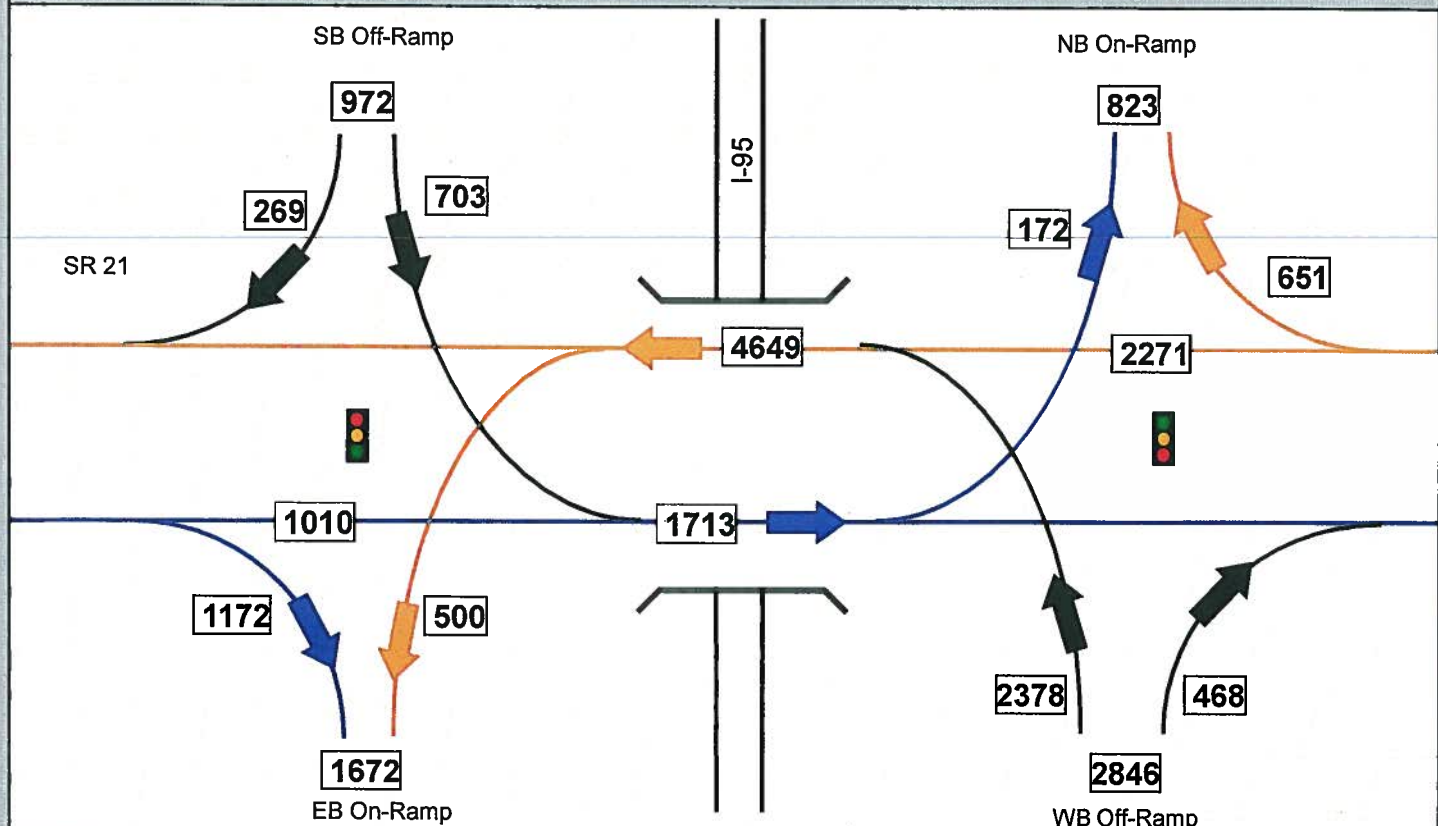
2025 PM



2025 AM



2025 PM



Alternate 2 & No-Build Conditions



FTO 6009

Traffic Volume Diagram

2025 Design Hourly Volumes

LEGEND

1631

Peak Hour Vehicles

Exhibit A