

*Transportation Analysis*

# **Highway 5 Business Center DRI #3589**

City of Douglasville, Douglas County, Georgia

April 2022

Revised – April 13, 2022

*Prepared for:*

Taylor & Mathis

*Prepared by:*

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**Kimley»Horn**

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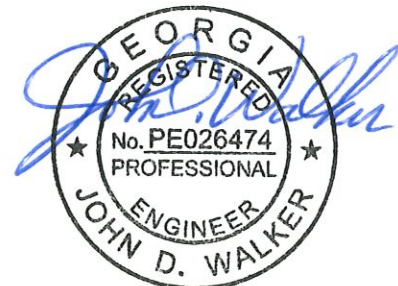
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### **Available Upon Request**

Raw Traffic Count Data  
*Synchro* Capacity Analyses

## EXECUTIVE SUMMARY

This report presents the analysis of the anticipated traffic impacts of the proposed *Highway 5 Business Center* development located in the City of Douglasville, Douglas County, Georgia. The approximate 64.67-acre site is located in the northeast quadrant of the intersection of Bill Arp Road (SR 5) at Bright Star Connector/Rose Avenue. The site is currently vacant.

The proposed development will consist of the following land uses and densities contained in **Table 1**. The project is expected to be completed by 2023 (approximately 1 year).

Table 1: Proposed Land Use and Density	
Warehousing	737,200 SF

The DRI analysis includes an estimation of the overall vehicle trips projected to be generated by the development, also known as gross trips. Mixed-use and pass-by reductions to gross trips are not included in the trip generation, as outlined in the Georgia Regional Transportation Authority (GRTA) Letter of Understanding (dated February 23, 2022).

Capacity analyses were performed for the study intersections under the Estimated 2021 conditions, the Projected 2023 No-Build conditions, and the Projected 2023 Build conditions.

- Estimated 2021 conditions represent current traffic volumes that were collected in May of 2021 (Intersection 1) and September 2021 (Intersections 2 – 4). (NOTE: Traffic Count methodology was outlined in a memo approved by GRTA in March 2022).
- Projected 2023 No-Build conditions represent the Estimated 2021 traffic volumes grown for two (2) years using a 1.0% per year growth rate, plus the addition of the project trips associated with the *Bright Star Connector DRI #3027* and the *Bright Star Road Clarion* development.
- Projected 2023 Build conditions represent the Projected 2023 No-Build conditions plus the addition of the project trips that are anticipated to be generated by the *Highway 5 Business Center* development.

### ***Projected No-Build 2023 (System Improvements)***

The signalized intersections of Bill Arp Road (SR 5) at Rose Avenue/Bright Star Connector (Intersection 2), Bill Arp Road (SR 5) at I-20 WB Ramps (Intersection 3), and Bill Arp Road (SR 5) at I-20 EB Ramps (Intersection 4) are projected to operate at an acceptable overall LOS under the Projected No-Build 2023 conditions. However, the eastbound and westbound sidestreet approaches (Intersection 2), and the eastbound or westbound sidestreet approaches (Intersection 3 and Intersection 4) operate at LOS E or F under Projected 2023 No-Build conditions at each intersection.

Per GRTA's DRI guidelines, an improvement should be considered if either the overall intersection, or an individual approach operates at a failing LOS.

In order to improve the approach LOS under the No-Build 2023 conditions, Kimley-Horn considered the following system improvement (shown in red on **Figure 14** and **Figure 15**):

- Bill Arp Road (SR 5) at I-20 WB Ramps (Intersection 3)
  - Install an additional westbound left-turn lane along the I-20 westbound exit ramp.
    - Construct an additional westbound left-turn lane creating three (3) westbound left-turn lanes along I-20 westbound exit ramp.

### ***Projected Build 2023 (Site Access Improvements)***

The signalized intersections of Bill Arp Road (SR 5) at Rose Avenue/Bright Star Connector (Intersection 2), Bill Arp Road (SR 5) at I-20 WB Ramps (Intersection 3), and Bill Arp Road (SR 5) at I-20 EB Ramps (Intersection 4) are projected to operate at an acceptable overall LOS under the Projected Build 2023 conditions. However, the eastbound and westbound approaches (Intersection 2), and the eastbound or westbound approaches (Intersection 3 and Intersection 4) operate at LOS E or F under Projected 2023 Build conditions at each intersection. The considered system improvement under Projected 2023 No-Build conditions is not recommended to be conditioned due to existing signal timing along the SR 5 corridor (long cycle length results in expected sidestreet delay). Therefore, under Build 2023 conditions, the intersections will continue to operate at an acceptable overall LOS.

In order to serve the Site Driveway A, additional intersection or site access improvements are needed (shown in blue on **Figure 15**):

- Bill Arp Road (SR 5) at Site Driveway A (Intersection 5)
  - Construct one (1) ingress lane entering the site, and two (2) egress lanes exiting the site.
  - Restripe existing center two-way left-turn lane along Bill Arp Road (SR 5) at Site Driveway A.
  - Extend existing northbound right-turn lane along Bill Arp Road (SR 5) into Site Driveway A.

### Bill Arp Road (SR 5) at I-20 WB Ramps (Intersection 3)

Overall LOS Standard: D  
Approach LOS Standard: D

		Bill Arp Road (SR 5)			Bill Arp Road (SR 5)						I-20 WB Exit Ramp		
		Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R				L	T	R
NO-BUILD IMPROVED (SIGNAL)	AM	Overall LOS	C (28.8)										
		Approach LOS	A (7.8)			C (21.3)						E (69.9)	
		Storage	320					450					190
		50th Queue	34	105			275	5			186	184	117
		95th Queue	48	112			294	18			227	257	165
	PM	Overall LOS	D (39.9)										
		Approach LOS	C (21.6)			C (27.7)						E (64.4)	
		Storage	320					450					190
		50th Queue	161	31			814	58			342	335	318
		95th Queue	427	56			966	134			414	457	409
BUILD IMPROVED (SIGNAL)	AM	Overall LOS	C (29.8)										
		Approach LOS	A (7.9)			C (21.6)						E (71.0)	
		Storage	320					450					190
		50th Queue	34	105			276	5			188	185	161
		95th Queue	46	112			296	18			229	259	212
	PM	Overall LOS	D (41.0)										
		Approach LOS	C (22.3)			C (29.6)						E (65.4)	
		Storage	320					450					190
		50th Queue	214	32			837	63			357	350	333
		95th Queue	305	56			1,041	137			432	476	429

The system improvement is not recommended to be conditioned, as the LOS E is due to existing signal timing. The additional left-turn lane provides marginal benefit to the approach delay and may not be feasible, as the additional left-turn lane would require widening the bridge over I-20 to provide an additional receiving lane. SR 5 is a freight and commuter corridor between I-20 and Veterans Memorial Highway (US 78/SR 8) in Douglas County. The intersection operates at an acceptable overall LOS, and existing signal timings and cycle lengths prioritize vehicular progression on the mainline (SR 5) at the expense of sidestreet operations.

### Impacted Queue Lengths Exceeding Storage

Intersection	Movement	Storage Length	Projected Build Queue Length (AM / PM)	Recommendation
3. Bill Arp Road (SR 5) at I-20 WB Ramps	WBR*	190	161 / 335 (50 <sup>th</sup> ) 212 / 428 (95 <sup>th</sup> )	No-Build (System Improvement): Not recommended to be conditioned. Queue length due to existing signal timing.

\* Exceeds available storage in Existing 2021 conditions

Other movements where the projected queueing exceeds the available storage are not impacted by the proposed development traffic.

## 1.0 PROJECT DESCRIPTION

### 1.1 Introduction

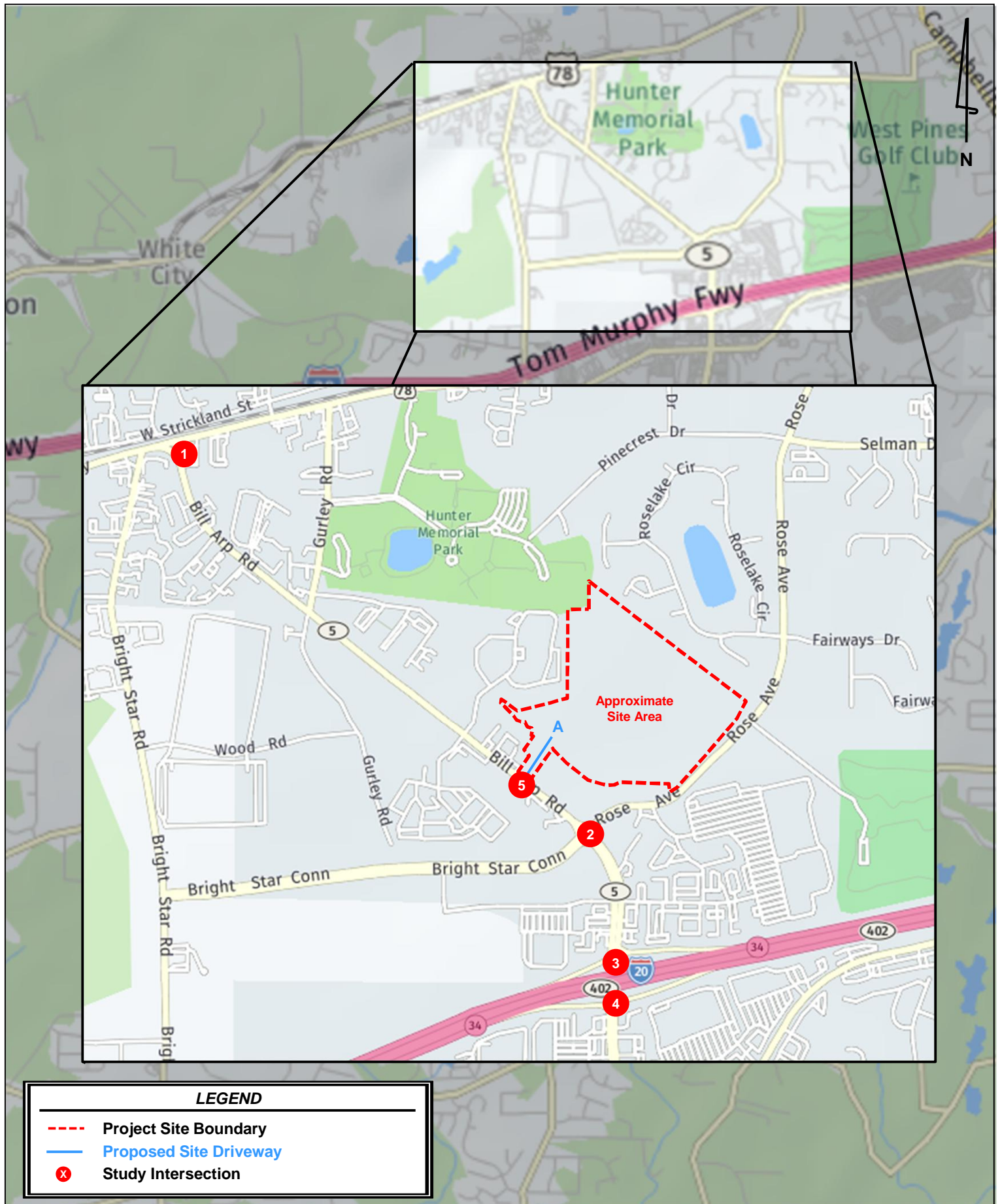
This report presents the analysis of the anticipated traffic impacts of the proposed *Highway 5 Business Center* development located in the City of Douglasville, Douglas County, Georgia. The approximate 64.67-acre site is located in the northeast quadrant of the intersection of Bill Arp Road (SR 5) at Bright Star Connector/Rose Avenue. The project site is currently zoned GC (General Commercial). The site is proposed to be rezoned to L-I (Light Industrial), and the rezoning application was filed on January 31, 2022. **Figure 1** provides a location map of the project site. **Figure 2** provides an aerial view of the project site and surrounding area.

The site is currently undeveloped. The proposed development will consist of the following land uses and densities contained in **Table 2**. The project is expected to be completed by 2023 (approximately 1 year).

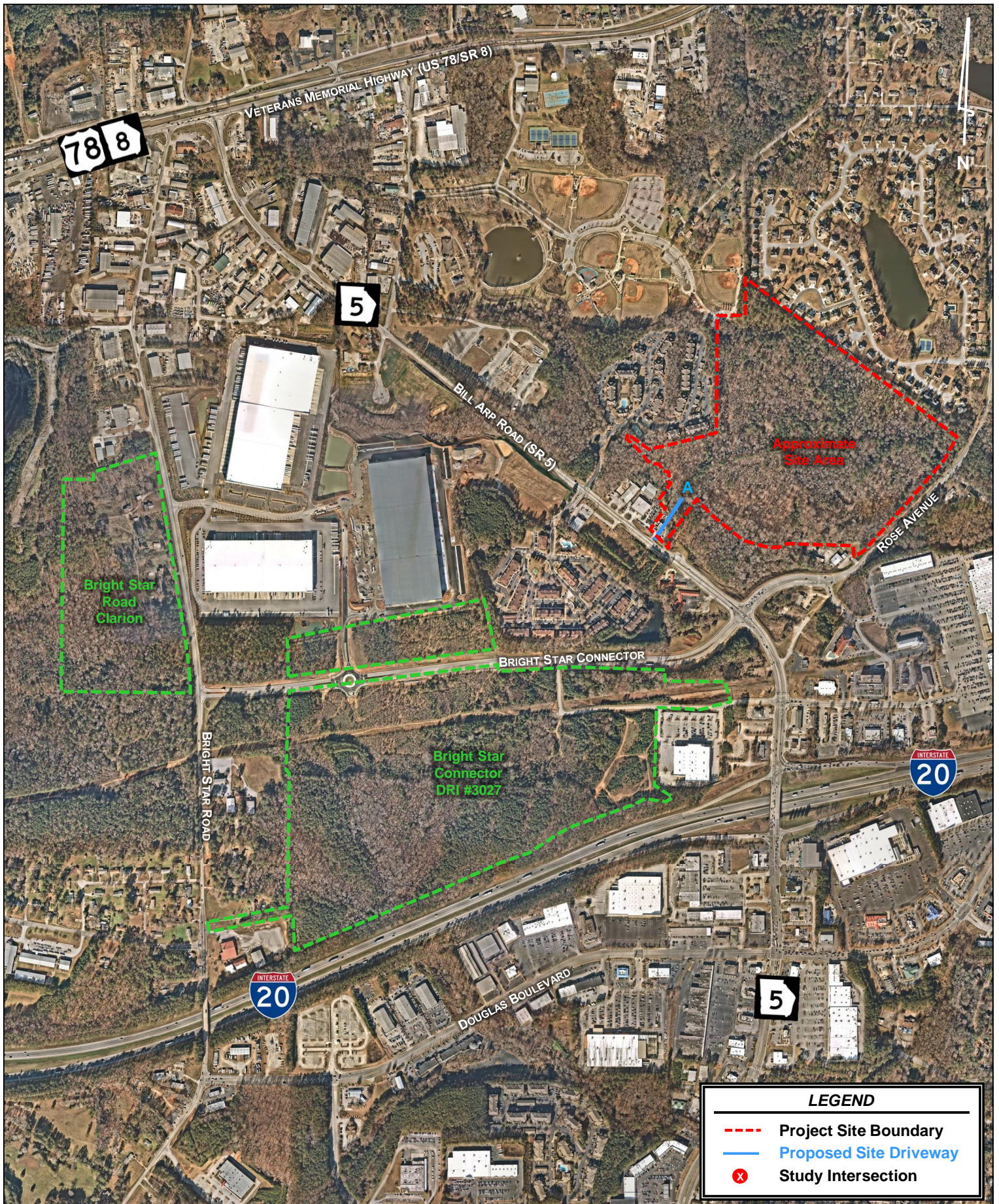
Table 2: Proposed Land Use and Density	
Land Use	Proposed
Warehousing	737,200 SF

A reference of the proposed site plan is provided in **Appendix A**. A full-sized site plan consistent with GRTA's Site Plan Guidelines is also being submitted as part of the review package.

The project is considered a Development of Regional Impact (DRI) and is subject to Georgia Regional Transportation Authority (GRTA) and Atlanta Regional Commission (ARC) review due to the project size exceeding 500,000 SF in a new industrial development. The DRI was formally triggered with the filing of the Initial DRI Information (Form 1) on January 31, 2022 by Douglas County. This transportation analysis includes all inputs and methodologies discussed at the DRI Methodology Meeting with GRTA, ARC, and other stakeholders. The inputs and methodologies are outlined in the GRTA Letter of Understanding (LOU) dated February 23, 2022.









## 1.2 Site Access

As currently envisioned, the proposed development will be accessible via one (1) new access point:

1. **Site Driveway A** – a proposed, full-movement driveway located along Bill Arp Road (SR 5) that will operate under side-street stop control. Site Driveway A will provide vehicular access to all buildings in the development. Internal, private roadways throughout the site provide access to the building and parking facilities.

## 1.3 Internal Circulation Analysis

Internal, private roadways throughout the site provide access to the building and parking facilities.

## 1.4 Parking

The current number of total site parking spaces to be provided are listed below in **Table 3**.

Table 3: Proposed Parking			
Land Use	Minimum	Maximum	Proposed
Warehousing	737 1 per 1,000 SF of GFA	N/A	*616 employee spaces

\* Variance or other relief will be requested through the rezoning process.

Additional parking details are provided on the proposed site plan in Appendix A.

## 1.5 Alternative Transportation Facilities

Pedestrian sidewalk facilities are currently provided along all site frontages. Additionally, there are two (2) Connect Douglas Fixed Route bus routes within the vicinity of the project site. The routes are located within one mile of the site and provide fixed service from the Connect Douglas MMTC to the Arbor Place Mall and the West Douglas Park & Ride. No shelters or benches are currently provided.

## 1.6 Dense Urban Environments Enhanced Focus Area

Per Section 3.2.4.2 of the GRTA *Development of Regional Impact Review Procedures* the *Highway 5 Business Center* development does not qualify for a “Dense Urban Environment Enhanced Focus Area” review, due to its location in the City of Douglasville.

## 1.7 Heavy Vehicle Enhanced Focus Area

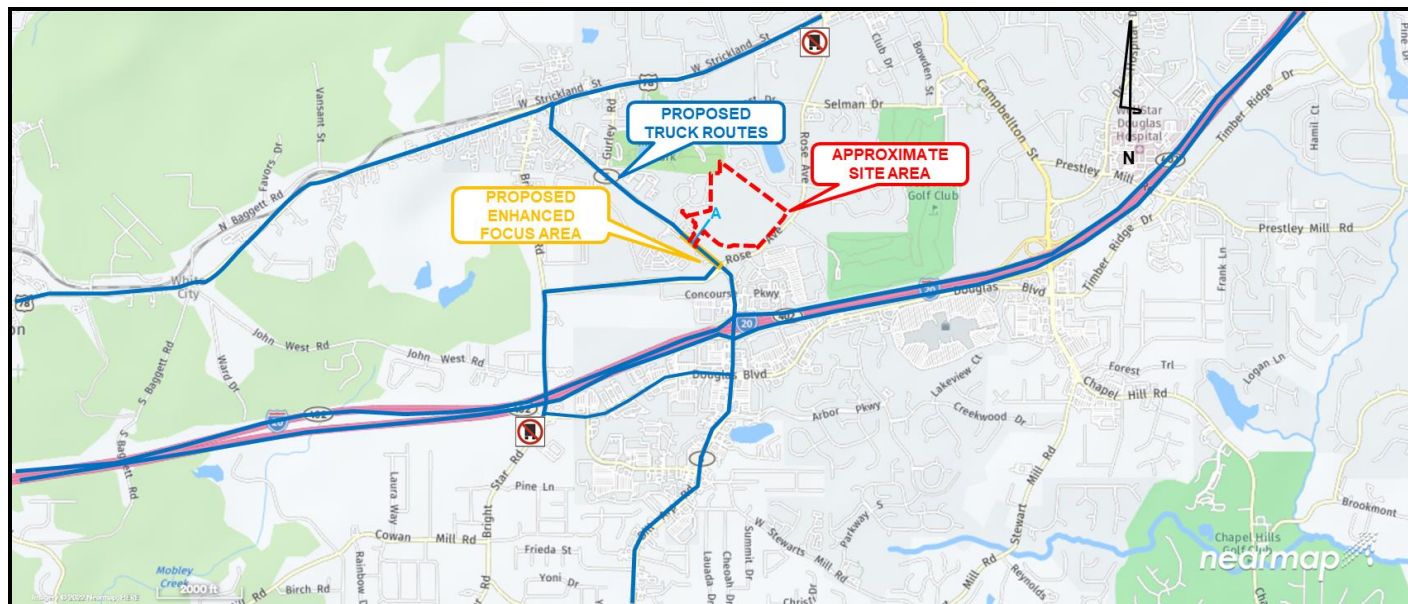
Per Section 3.2.4.1 of the GRTA *Development of Regional Impact Review Procedures*, the *Highway 5 Business Center* development qualifies for a “Heavy Vehicle Enhanced Focus Area” review, due to the development generating heavy vehicles.



### 1.7.1 Heavy Vehicle Routing

**Figure 3** depicts the proposed truck routes that will serve project traffic (highlighted blue). The following segments are included in the Enhanced Focus Area (highlighted yellow):

- Bill Arp Road (SR 5) from Rose Avenue/Bright Star Connector to Site Driveway A



**Figure 3: Heavy Vehicle Routing**

### 1.7.2 Pavement Condition

A site visit was conducted on March 25, 2022. Pavement conditions within the Enhanced Focus Area were noted during the site visit. Pavement in the Heavy Vehicle focus area is generally in good condition. Pavement distress was observed in two (2) locations, as outlined in **Table 4**. **Figure 4** shows the pavement warping along southbound Bill Arp Road (SR 5), approximately 90 feet north of Rose Avenue/Bright Star Connector. **Figure 5** shows the pavement cracking along northbound Bill Arp Road (SR 5), approximately 360 feet north of Rose Avenue/Bright Star Connector.

**Table 4: Pavement Condition Observations**

Number	Roadway	Location	Observed Distress
1	Bill Arp Road (SR 5)	90 feet north of Rose Avenue/Bright Star Connector	Pavement Warping
2	Bill Arp Road (SR 5)	360 feet north of Rose Avenue/Bright Star Connector	Pavement Cracking



**Figure 4: Southbound Bill Arp Road (SR 5) Pavement Warping**



**Figure 5: Northbound Bill Arp Road (SR 5) Pavement Cracking**

### 1.7.3 Roadway Width

The lane widths for the Enhanced Focus Area are shown in **Table 5**. The Douglas County roadway width standards were taken from the [City of Douglasville Unified Development Ordinance](#) document, which notes that “the minimum roadway width, measured from back of curb to back of curb (or edge of pavement to edge of pavement...), shall be as follows in Table 11-5.” A Local street and 2-lane no median street have a minimum roadway width of 24 feet, while a 4-lane 12-foot median has a minimum roadway width of 60 feet. Roadways with arterial classifications, such as Bill Arp Road (SR 5) use the minimum roadway width per GDOT standards. Roadways with the collector classification have a minimum roadway width of 40 feet.

Lane width dimensions were measured on NearMap.

Table 5: Roadway Widths		
Roadway	Lane Width	Lane Width Standard (City of Douglasville)
Bill Arp Road (SR 5)	12 ft	12 ft desirable
Rose Avenue	12 ft	12 ft desirable
Bright Star Connector	12 ft	12 ft desirable

### 1.7.4 Corner Radii

The corner radii of one (1) study intersection was analyzed along the Enhanced Focus Area:

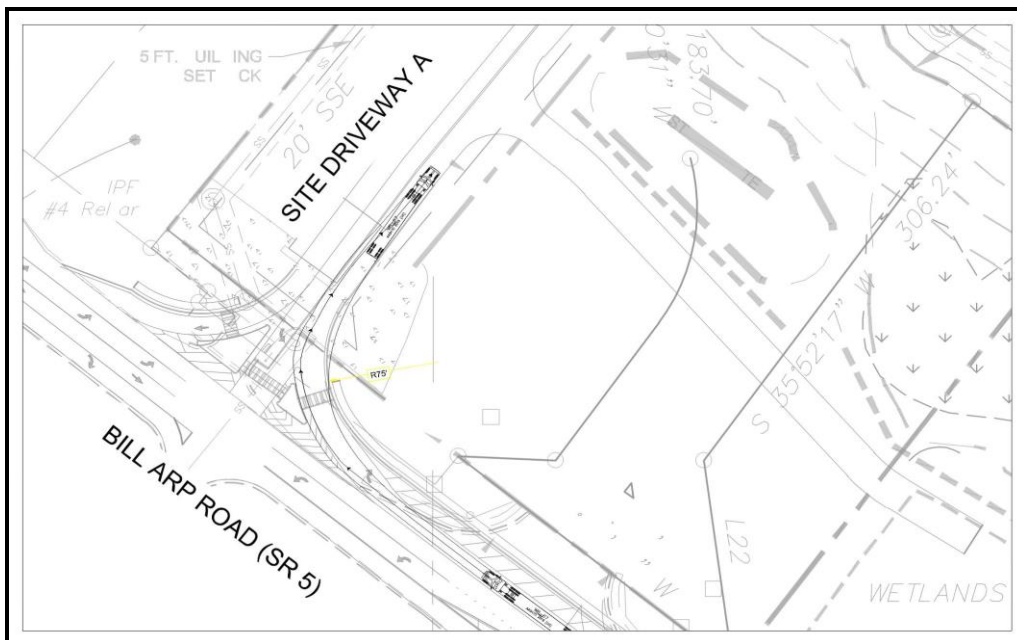
1. Bill Arp Road (SR 5) at Site Driveway A

Note: The *GDOT Regulations for Driveway and Encroachment Control* outlines minimum corner radii for trucks as 75 feet.



### 1. Bill Arp Road (SR 5) at Site Driveway A (Entering)

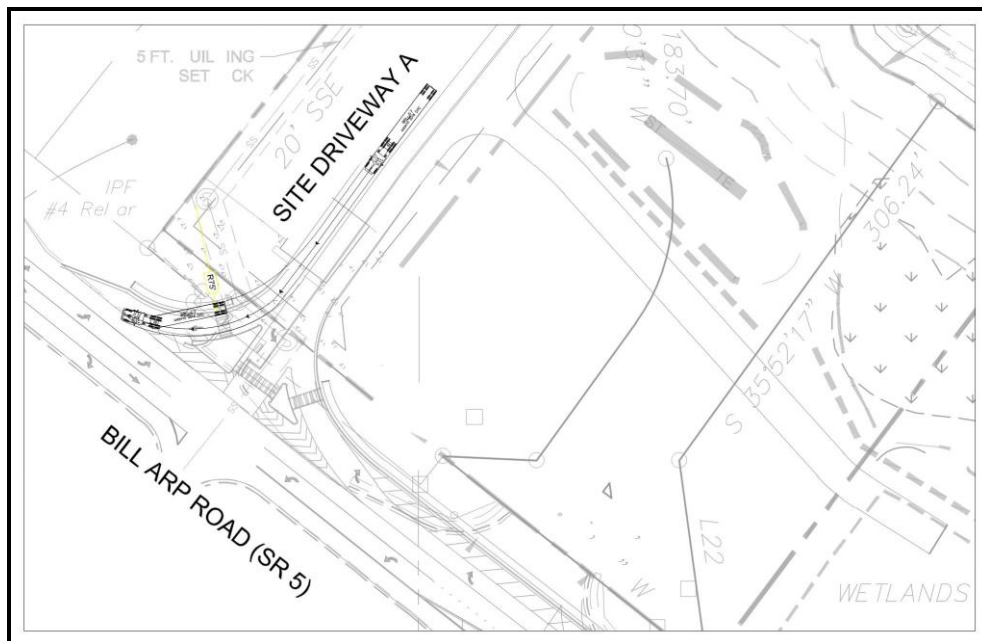
**Figure 6** outlines the anticipated wheel-path for a WB-67 vehicle entering the site by making a northbound right-turn from Bill Arp Road (SR 5) onto Site Driveway A. The proposed curb radius is approximately 75 feet. The WB-67 truck does not impede with the southbound traffic along Site Driveway A to make the maneuver.



**Figure 6: Bill Arp Road (SR 5) at Site Driveway A – Northbound Right (Entering Truck)**

### 2. Bill Arp Road (SR 5) at Site Driveway A (Exiting)

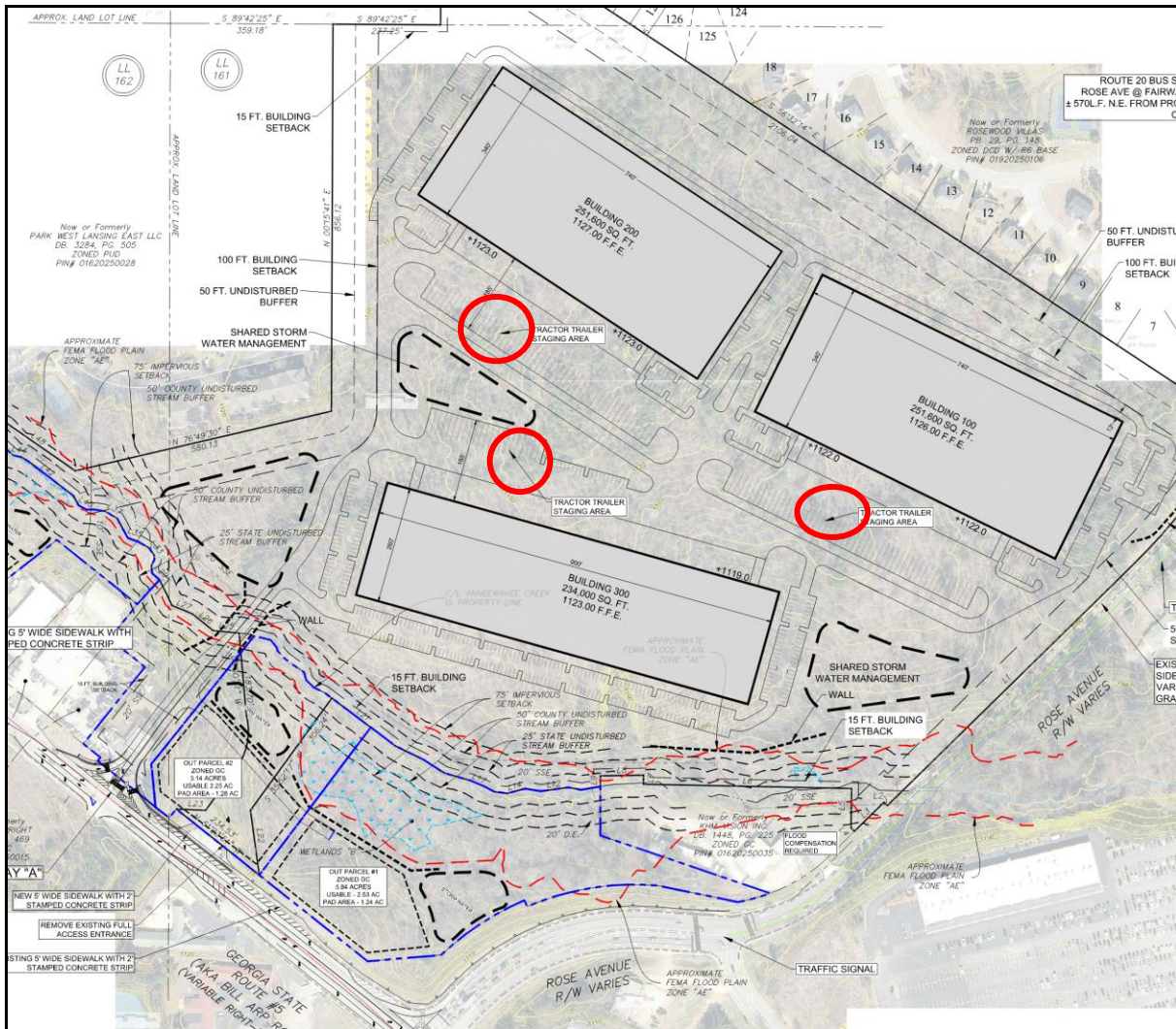
**Figure 7** outlines the anticipated wheel-path for a WB-67 vehicle exiting the site by making a westbound right-turn from Site Driveway A onto Bill Arp Road (SR 5). The proposed curb radius is approximately 75 feet. The WB-67 truck will not impede with traffic exiting westbound left along Site Driveway A to make the maneuver.



**Figure 7: Bill Arp Road (SR 5) at Site Driveway A – Westbound Right (Exiting Truck)**

### 1.7.5 Heavy Vehicle Staging

The site plan includes a designated truck court to accommodate heavy vehicle queueing, staging, and overflow. **Figure 8** indicates the designated truck staging/overflow areas on the site plan.



**Figure 8: Heavy Vehicle Staging**

### 1.7.6 Pedestrian Safety

The proposed development retains the minimum 5' sidewalk along Bill Arp Road (SR 5) and Rose Avenue, per the City of Douglasville Code. ADA compliant curb ramps with detectable warning strips will be located on either side of the driveway at the crosswalk. Sidewalks will also be provided adjacent to the buildings and will connect both accessible and non-accessible spaces to the building entrances.

## 2.0 TRAFFIC ANALYSES, METHODOLOGY AND ASSUMPTIONS

### 2.1 Study Network Determination

The study area was determined at the methodology meeting with input from GRTA, ARC, and other local agency stakeholders. The study includes the following four (4) off-site intersections described in **Table 6** and shown visually in **Figure 9**.

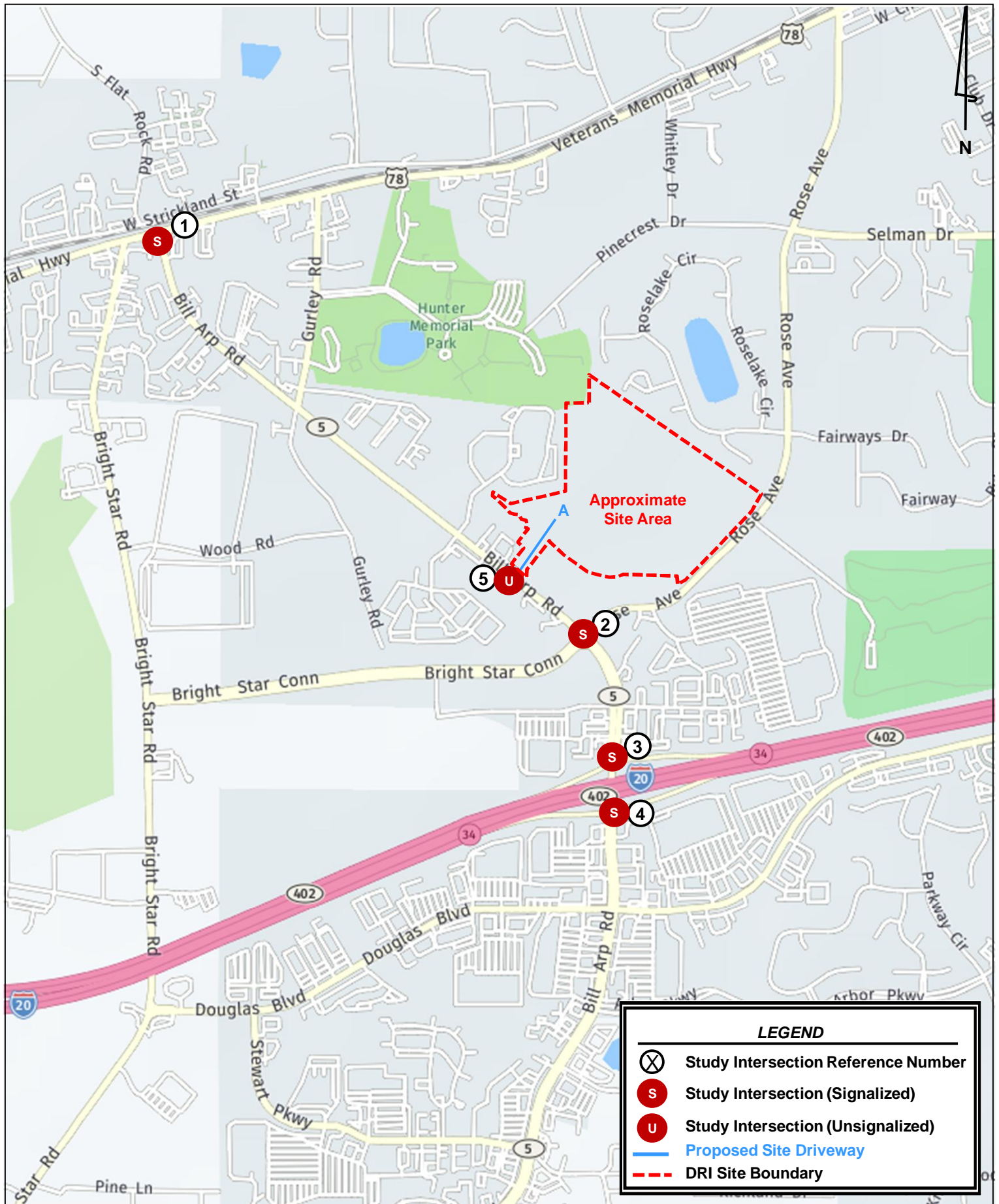
<b>Table 6: Intersection Control Summary</b>		
<b>Intersection</b>	<b>Jurisdiction</b>	<b>Control</b>
1. Bill Arp Road (SR 5) at Veterans Memorial Highway (US 78/SR 8)	GDOT	Signalized
2. Bill Arp Road (SR 5) at Rose Avenue/Bright Star Connector	GDOT	Signalized
3. Bill Arp Road (SR 5) at I-20 WB Ramps	GDOT	Signalized
4. Bill Arp Road (SR 5) at I-20 EB Ramps	GDOT	Signalized

### 2.2 Existing Roadway Facilities

Roadway classification descriptions and estimated Annual Average Daily Traffic (AADT) for roadway segments within the study network are provided in **Table 7** (bolded roadways are adjacent to the site).

<b>Table 7: Roadway Classifications</b>				
<b>Roadway</b>	<b>Lanes</b>	<b>Posted Speed Limit</b>	<b>AADT</b>	<b>GDOT Functional Classification</b>
<b>Rose Avenue</b>	<b>2</b>	<b>35 MPH</b>	<b>11,100</b>	<b>Major Collector</b>
<b>Bill Arp Road (SR 5)</b>	<b>2</b>	<b>45 MPH</b>	<b>10,700</b>	<b>Minor Arterial</b>
Bill Arp Road (SR 5)	4	45 MPH	10,700	Minor Arterial
Bright Star Connector	4	45 MPH	-	Local
I-20	6	70 MPH	62,200	Interstate
Veterans Memorial Highway (US 78/SR 8)	2	45 MPH	8,430	Minor Arterial





## 2.3 Traffic Data Collection and Calibration

Traffic counts were collected at all four (4) existing study intersections on Thursday, May 13, 2021. More recent traffic counts were collected by Douglas County on Tuesday, September 28, 2021 at three (3) existing study intersections. The May 2021 collected turning movement counts were then compared to the September 2021 turning movement counts in order to determine which counts would present a more conservative analysis (more vehicles).

Given that September 2021 counts were higher than May 2021 counts, it was determined that no COVID adjustment factors were required to adjust traffic volumes on Bill Arp Road (SR 5) and the I-20 Ramps. Based on a further review of count data at the intersection of Bill Arp Road (SR 5) at Rose Avenue/Bright Star Connector, no AM peak hour adjustment was needed. It was determined that a PM peak hour adjustment factor of 1.35 should be used for eastbound and westbound counts along Rose Avenue/Bright Star Connector. Traffic counts from May 2021 were used at Bill Arp Road (SR 5) at Veterans Memorial Highway (US 78/SR 8) (Intersection 1), while the September 2021 counts were used at the remaining intersections. The methodologies used in this analysis for traffic count calibration were approved by GRTA and ARC.

Traffic count peak hours for all the study intersections are shown in **Table 8**.

Table 8: Traffic Count Summary				
Intersection		Count Date	AM Peak Hour	PM Peak Hour
1.	Bill Arp Road (SR 5) at Veterans Memorial Highway (US 78/SR 8)	5/2021	7:15 AM – 8:15 AM	5:00 PM – 6:00 PM
2.	Bill Arp Road (SR 5) at Rose Avenue/Bright Star Connector	9/2021	7:30 AM – 8:30 AM	5:00 PM – 6:00 PM
3.	Bill Arp Road (SR 5) at I-20 WB Ramps	9/2021	7:45 AM – 8:45 AM	4:45 PM – 5:45 PM
4.	Bill Arp Road (SR 5) at I-20 EB Ramps	9/2021	7:45 AM – 8:45 AM	4:45 PM – 5:45 PM

The collected peak hour turning movement traffic counts are available upon request.

## 2.4 Background Growth

Background traffic is defined as expected traffic on the roadway network in future year(s) absent the construction and opening of the proposed *Highway 5 Business Center* development. Background traffic can include a base growth rate based on historical count data and population growth data as well as trips anticipated from nearby or adjacent other projects.

Based on methodology outlined in the GRTA Letter of Understanding (LOU), a 1.0% per year background traffic growth rate from 2021 to 2023 (2 years) was used for all roadways.

The Projected 2023 No-Build conditions represent the Estimated 2021 traffic volumes grown for two (2) years at 1.0% per year throughout the study network, plus project trips associated with the *Bright Star Connector DRI #3027* and the *Bright Star Road Clarion* development.

The Projected 2023 Build conditions represent the project trips generated by the *Highway 5 Business Center* development (discussed in Section 3.0 and 4.0) added to the Projected 2023 No-Build Conditions.



## 2.5 Programmed and Planned Projects

Programmed and planned projects near the project site were researched to account for any improvements or modifications within the study network before or by the build-out year of the development. The programmed and planned projects were discussed in the methodology meeting with GRTA, ARC, and other local stakeholders. No projects are currently programmed by GDOT, Douglas County, or the City of Douglasville in the vicinity of the project site.

The following projects shown in **Table 9** are planned to occur near the development.

Table 9: Planned Projects							
Project Name	From / To Points:	Sponsor	GDOT PI #	ARC ID # (TIP)	Design FY	ROW / UTL FY	CST FY
South Douglas Loop Phase 3	Bright Star Road at I-20 / Chapel Hill Road at Central Church Road	TBD	N/A	<a href="#">DO-003</a>	N/A	N/A	2040
**Interchange Improvements	Bill Arp Road (SR 5) / Bright Star Road	Douglas County / Douglasville	N/A	<a href="#">DTP-08</a>	N/A	N/A	N/A
Concourse Parkway Intersection Improvements	Bill Arp Road (SR 5) at Concourse Parkway	Douglas County	N/A	N/A	N/A	N/A	N/A

\*Project information was obtained from GeoPI (GDOT), the Atlanta Region's Plan (ARC), Douglas County Comprehensive Transportation Plan, Douglas County SPLOST, and the Douglasville Comprehensive Transportation Plan.

[Highway 5 Final Recommendations Report \(November 2021\)](#) indicates several alternatives to improve SR 5 to mitigate traffic congestion such as SR 5 widening, DDI at SR 5 bridge over I-20, SPUI, RCUT, or MUT. The various array of projects is still in planning phase with no programmed funding or final design. The projects are not yet programmed and are planned to occur beyond the build-out year of the proposed development or are not anticipated to affect the study network. Available fact sheets for projects listed in the table above can be found in **Appendix D**.

## 2.6 Level-of-Service Overview

Level-of-service (LOS) is used to describe the operating characteristics of a road segment or intersection in relation to its capacity. LOS is defined as a qualitative measure that describes operational conditions and motorists' perceptions within a traffic stream. The *Highway Capacity Manual* defines six levels-of-service, LOS A through LOS F, with A being the best and F being the worst. LOS analyses were conducted at all intersections within the study network using *Synchro 11*.

LOS for unsignalized intersections, with stop control on the minor street only, is reported for the side street approaches and the major street left-turn movements. Low LOS for side street approaches is not uncommon, as vehicles may experience delays in turning onto a major roadway.

## 2.7 Level-of-Service Standards

For the purposes of this traffic analysis, a LOS standard of D was assumed for all study intersections per section 3.2.2.1 of the GRTA *Development of Regional Impact Review Procedures* as specified in the LOU.

### 3.0 TRIP GENERATION

Gross trips associated with the proposed development were estimated using the *Institute of Transportation Engineers' (ITE) Trip Generation Manual, 10<sup>th</sup> Edition, 2017*, using equations where available. Reductions to gross trips including mixed-use reductions and alternative transportation mode reductions are not considered in the analysis based on methodology outlined in the GRTA Letter of Understanding (LOU).

**Mixed-use reductions** occur when a site has a combination of different land uses that interact with one another. For example, people living in a residential development may walk to the restaurants and retail instead of driving off-site or to the site. This reduces the number of vehicle trips that will be made on the roadway, thus reducing traffic congestion. No mixed-use reductions were taken in this analysis per the LOU.

**Alternative modes reductions** are taken when a site can be accessed by modes other than vehicles (walking, bicycling, transit, etc.). No alternative modes reductions were taken in this analysis per the LOU.

**Pass-by reductions** are taken for a site when traffic normally traveling along a roadway may choose to visit a retail or restaurant establishment that is along the vehicle's path. These trips were already on the road and would therefore only be new trips on the driveways. No pass-by trips were taken for this analysis per the LOU.

**Table 10** summarizes the gross trip generation, reductions, net trip generation, and driveway volumes for the proposed *Highway 5 Business Center* development.

Table 10: Trip Generation								
Land Use	Density	Daily Traffic			AM Peak Hour		PM Peak Hour	
		Total	Enter	Exit	Enter	Exit	Enter	Exit
150 – Warehousing	737,200 SF	1,210	605	605	88	26	31	85
<b>Gross Project Trips</b>		<b>1,210</b>	<b>605</b>	<b>605</b>	<b>88</b>	<b>26</b>	<b>31</b>	<b>85</b>
<i>Mixed-Use Reductions</i>		0	0	0	0	0	0	0
<i>Alternative Mode Reductions</i>		0	0	0	0	0	0	0
<i>Pass-By Reductions</i>		0	0	0	0	0	0	0
<b>New Trips</b>		<b>1,210</b>	<b>605</b>	<b>605</b>	<b>88</b>	<b>26</b>	<b>31</b>	<b>85</b>
<i>Employee (Car Trips)</i>		804	402	402	80	19	20	74
<i>Heavy Vehicle (Trucks)</i>		406	203	203	8	7	11	11

A more detailed trip generation analysis summary table is provided in **Appendix B**.

## 4.0 TRIP DISTRIBUTION AND ASSIGNMENT

The distribution of new project trips was based on the project land uses, a review of land use densities and road facilities in the area, engineering judgement, and methodology discussions with GRTA, ARC, and other local stakeholders.

The anticipated distribution and assignment of the trips throughout the study roadway network is shown for heavy vehicle (truck) trips in **Figure 10**. The anticipated distribution and assignment of the trips throughout the study roadway network is shown for employee (car) trips in **Figure 11**. These trip assignment percentages were applied to the net project trips expected to be generated by the development, and the volumes were assigned to the roadway network. The peak hour project trips are shown by turning movement throughout the study network in **Figure 12**.

Detailed intersection volume worksheets are provided in Appendix C.

## 5.0 TRAFFIC ANALYSIS

Capacity analyses were performed using *Synchro 11* for the AM and PM peak hours under the Estimated 2021 conditions, Projected 2023 No-Build conditions, and Projected 2023 Build conditions. The capacity analyses were performed using methodologies from the *Highway Capacity Manual (HCM)*, 6<sup>th</sup> Edition unless otherwise noted.

These analyses included existing roadway laneage for each of the scenarios. The traffic volumes and roadway laneage used for each scenario are shown visually in **Figure 13** for Estimated 2021 conditions, **Figure 14** for Projected 2023 No-Build conditions, and **Figure 15** for Projected 2023 Build conditions.

**Sections 5.1 – 5.5** provide the results of the capacity analyses are presented for each study intersection and include projected LOS, delay, and queue lengths.

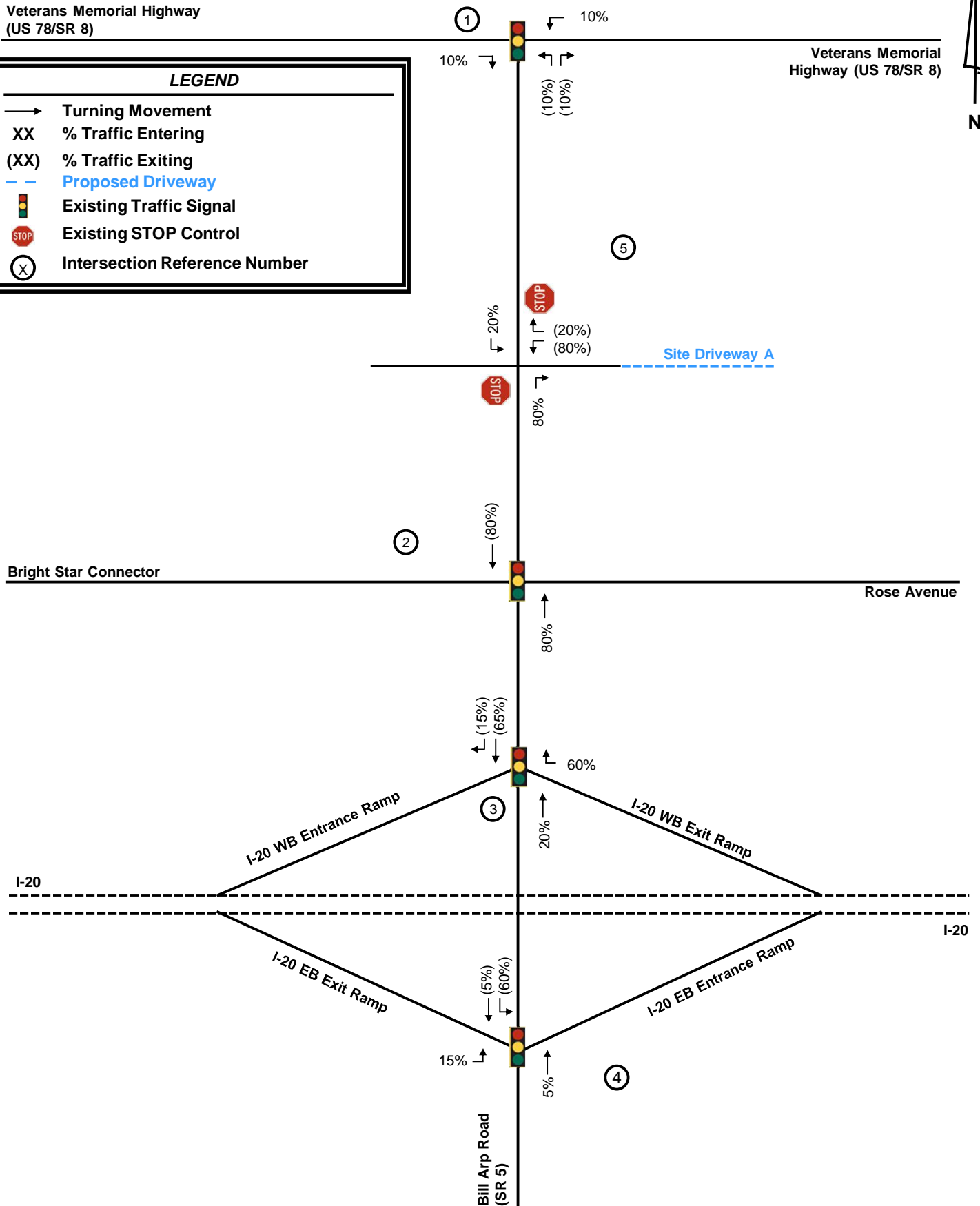
Veterans Memorial Highway  
(US 78/SR 8)

Veterans Memorial  
Highway (US 78/SR 8)

N

### LEGEND

- Turning Movement
- XX % Traffic Entering
- (XX) % Traffic Exiting
- - - Proposed Driveway
- Existing Traffic Signal
- Existing STOP Control
- (X) Intersection Reference Number



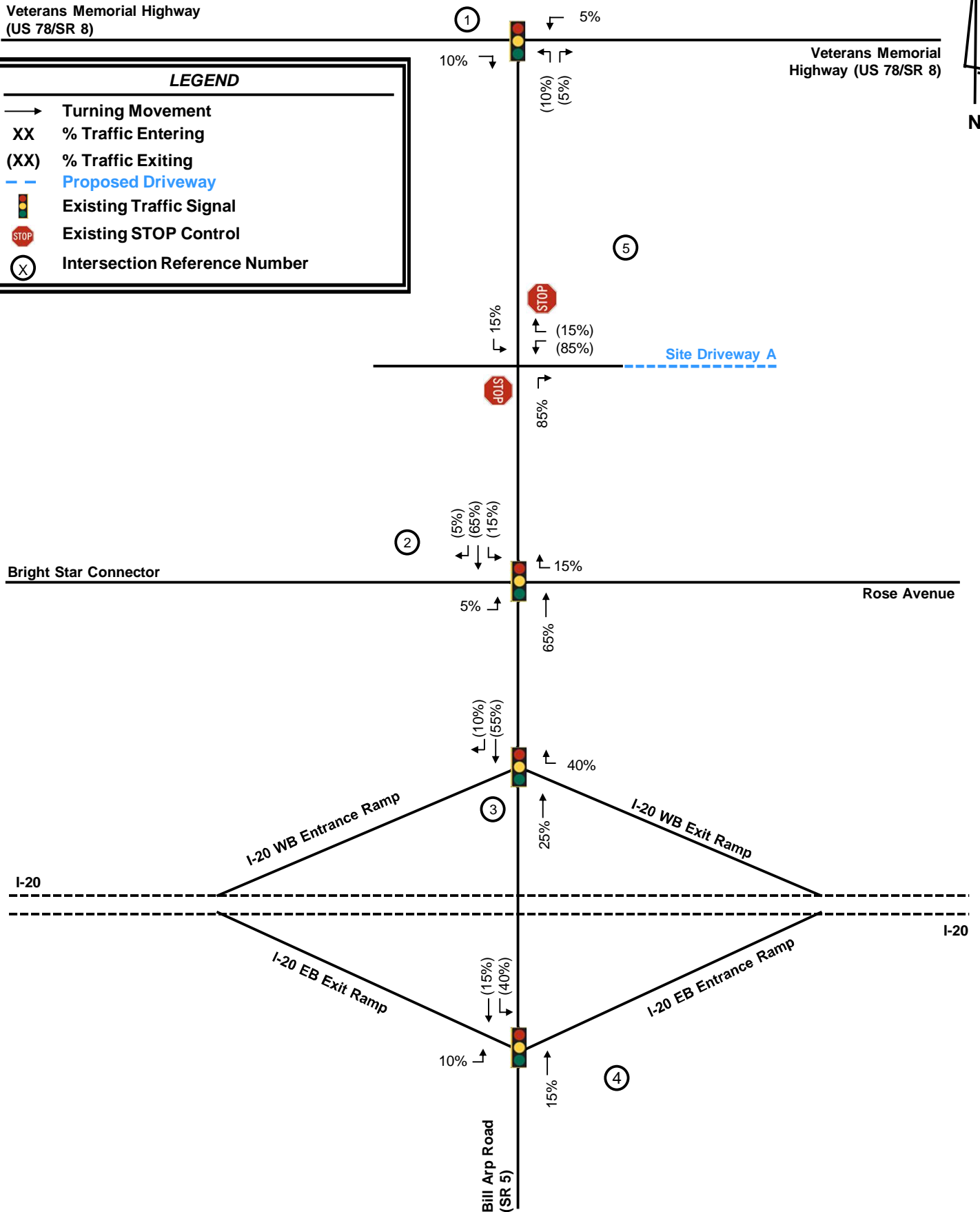
Veterans Memorial Highway  
(US 78/SR 8)

Veterans Memorial  
Highway (US 78/SR 8)

N

### LEGEND

- Turning Movement
- XX % Traffic Entering
- (XX) % Traffic Exiting
- - - Proposed Driveway
- Existing Traffic Signal
- Existing STOP Control
- (X) Intersection Reference Number





Veterans Memorial Highway  
(US 78/SR 8)

Veterans Memorial  
Highway (US 78/SR 8)



**LEGEND**

- Turning Movement
- XX AM Peak Hour Project Trips
- (XX) PM Peak Hour Project Trips
- - - Proposed Driveway
-  Existing Traffic Signal
-  Existing STOP Control
- (X) Intersection Reference Number

Bright Star Connector

Rose Avenue

I-20

I-20

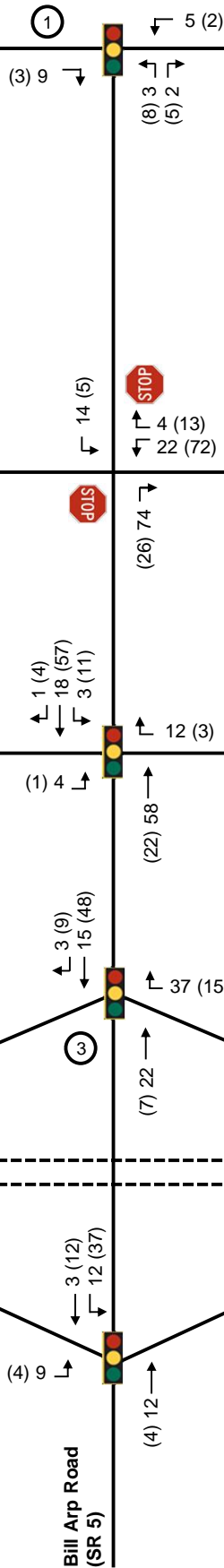
I-20 WB Entrance Ramp

I-20 WB Exit Ramp

I-20 EB Exit Ramp

I-20 EB Entrance Ramp

Bill Arp Road  
(SR 5)



## 5.1 Bill Arp Road (SR 5) at Veterans Memorial Highway (US 78/SR 8) (Intersection 1)

Overall LOS Standard: D  
Approach LOS Standard: D

			Bill Arp Road (SR 5)			Veterans Memorial Highway (US 78/SR 8)			Veterans Memorial Highway (US 78/SR 8)		
			Northbound			Southbound			Eastbound		
			L	T	R				L	T	R
EXISTING (SIGNAL)	AM	Overall LOS	A (9.8)								
		Approach LOS	C (22.1)			B (14.1)			A (5.8)		
		Storage			130			290	350		
		50th Queue	26		0			132	0	37	65
		95th Queue	78		60			269	32	74	125
	PM	Overall LOS	B (11.5)								
		Approach LOS	C (21.7)			B (14.6)			A (7.5)		
		Storage			130			290	350		
		50th Queue	50		0			126	0	27	145
		95th Queue	122		69			245	30	64	295
NO-BUILD (SIGNAL)	AM	Overall LOS	B (10.2)								
		Approach LOS	C (24.0)			B (14.9)			A (6.1)		
		Storage			130			290	350		
		50th Queue	32		0			153	0	48	75
		95th Queue	92		65			308	37	93	142
	PM	Overall LOS	B (12.5)								
		Approach LOS	C (22.6)			B (15.4)			A (8.3)		
		Storage			130			290	350		
		50th Queue	63		0			151	0	33	166
		95th Queue	150		77			284	32	74	333
BUILD (SIGNAL)	AM	Overall LOS	B (10.3)								
		Approach LOS	C (24.4)			B (15.0)			A (6.1)		
		Storage			130			290	350		
		50th Queue	33		0			155	0	49	76
		95th Queue	95		65			313	39	97	145
	PM	Overall LOS	B (12.8)								
		Approach LOS	C (22.6)			B (15.6)			A (8.5)		
		Storage			130			290	350		
		50th Queue	67		0			153	0	34	170
		95th Queue	158		77			289	33	77	341

The signalized intersection of Bill Arp Road (SR 5) at Veterans Memorial Highway (US 78/SR 8) (Intersection 1) is projected to operate at an acceptable overall LOS under the Estimated 2021, No-Build 2023, and Build 2023 conditions. Each approach of the intersection is projected to operate acceptably under all studied scenarios. No improvements are recommended to be conditioned.

## 5.2 Bill Arp Road (SR 5) at Rose Avenue/Bright Star Connector (Intersection 2)

Overall LOS Standard: D  
Approach LOS Standard: D/E

		Bill Arp Road (SR 5)			Bill Arp Road (SR 5)			Bright Star Connector			Rose Avenue		
		Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R	L	T	R	L	T	R
ESTIMATED (SIGNAL)	AM	Overall LOS	C (26.1)										
		Approach LOS	B (10.0)			B (11.0)			E (76.1)			E (77.4)	
		Storage	210		170	110		510	220			300	590
		50th Queue	22	127	0	22	229	0	29	58		100	43
		95th Queue	74	394	133	46	361	0	63	97		138	81
	PM	Overall LOS	D (36.5)										
		Approach LOS	B (14.8)			B (13.6)			F (88.2)			F (85.0)	
		Storage	210		170	110		510	220			300	590
		50th Queue	19	354	20	28	244	0	42	71		207	139
		95th Queue	34	453	63	57	383	0	83	118		259	206
NO-BUILD (SIGNAL)	AM	Overall LOS	C (27.2)										
		Approach LOS	B (10.7)			B (13.0)			E (76.6)			E (79.7)	
		Storage	210		170	110		510	220			300	590
		50th Queue	172	241	65	23	257	0	31	65		102	106
		95th Queue	260	416	133	46	377	0	66	111		143	166
	PM	Overall LOS	D (44.2)										
		Approach LOS	C (20.2)			C (20.2)			F (89.1)			F (85.4)	
		Storage	210		170	110		510	220			300	590
		50th Queue	47	404	45	35	307	0	46	176		211	146
		95th Queue	73	499	76	66	434	0	87	242		271	215
BUILD (SIGNAL)	AM	Overall LOS	C (27.2)										
		Approach LOS	B (11.1)			B (13.4)			E (76.7)			F (81.1)	
		Storage	210		170	110		510	220			300	590
		50th Queue	160	297	62	24	274	0	36	65		102	106
		95th Queue	235	478	113	47	395	0	74	111		144	168
	PM	Overall LOS	D (44.5)										
		Approach LOS	C (21.0)			C (21.5)			F (92.7)			F (85.4)	
		Storage	210		170	110		510	220			300	590
		50th Queue	46	428	45	40	366	0	47	178		211	146
		95th Queue	66	518	68	71	497	0	89	248		271	218

The intersection of Bill Arp Road (SR 5) at Rose Avenue/Bright Star Connector (Intersection 2) is projected to operate at an acceptable overall LOS under the Estimated 2021, No-Build 2023 and Build 2023 conditions. The eastbound and westbound approaches currently operate at LOS E or F under Estimated 2021, Projected 2023 No-Build and Projected 2023 Build conditions.

It should be noted that per GRTA's DRI guidelines, an improvement should be considered if an approach operates at a failing LOS, even if the overall intersection operates acceptably. Although the eastbound and westbound approaches are projected to operate at LOS F, no feasible improvements exist, as the failing LOS is due to the existing signal timing. SR 5 is a freight and commuter corridor between I-20 and Veterans Memorial Highway (US 78/SR 8) in Douglas County. The intersection operates at an acceptable overall LOS, and existing signal timings and cycle lengths prioritize vehicular progression on the mainline (SR 5) at the expense of sidestreet operations. No improvements are recommended to be conditioned.



### 5.3 Bill Arp Road (SR 5) at I-20 WB Ramps (Intersection 3)

Overall LOS Standard: D  
Approach LOS Standard: D

		Bill Arp Road (SR 5)			Bill Arp Road (SR 5)						I-20 WB Exit Ramp		
		Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R				L	T	R
EXISTING (SIGNAL)	AM	Overall LOS	C (28.3)										
		Approach LOS	A (9.5)			C (20.4)						E (73.6)	
		Storage	320					450					190
		50th Queue	39	101			239	5			262	262	5
		95th Queue	55	110			256	15			344	344	38
	PM	Overall LOS	D (40.0)										
		Approach LOS	C (20.2)			C (31.1)						E (61.4)	
		Storage	320					450					190
		50th Queue	202	297			575	52			527	529	244
		95th Queue	297	375			682	113			691	693	325
NO-BUILD (SIGNAL)	AM	Overall LOS	C (31.2)										
		Approach LOS	A (9.9)			C (21.3)						E (75.5)	
		Storage	320					450					190
		50th Queue	34	105			275	5			282	283	117
		95th Queue	48	112			294	18			405	407	165
	PM	Overall LOS	D (46.1)										
		Approach LOS	C (30.3)			D (41.7)						E (61.6)	
		Storage	320					450					190
		50th Queue	293	320			815	57			548	548	318
		95th Queue	431	56			965	130			718	718	409
BUILD (SIGNAL)	AM	Overall LOS	C (32.2)										
		Approach LOS	A (10.0)			C (21.6)						E (76.8)	
		Storage	320					450					190
		50th Queue	34	105			276	5			284	285	161
		95th Queue	46	112			296	18			416	420	212
	PM	Overall LOS	D (47.9)										
		Approach LOS	C (32.0)			D (45.4)						E (61.7)	
		Storage	320					450					190
		50th Queue	230	160			895	63			548	548	335
		95th Queue	432	58			1,041	137			718	718	428

The intersection of Bill Arp Road (SR 5) at I-20 WB Ramps (Intersection 3) is projected to operate at an acceptable overall LOS under the Estimated 2021, No-Build 2023 and Build 2023 conditions. The westbound approach operates at LOS E under Estimated 2021, Projected 2023 No-Build and Projected 2023 Build conditions.

Per GRTA's DRI guidelines, an improvement should be considered if either the overall intersection, or an individual approach operates at a failing LOS. In order to improve the approach LOS under the No-Build 2023 and Build 2023 conditions, Kimley-Horn considered the following system improvements (shown in red on **Figure 14** and **Figure 15**):

- Bill Arp Road (SR 5) at I-20 WB Ramps (Intersection 3)
  - Install an additional westbound left-turn lane along the I-20 westbound exit ramp.
    - Construct an additional westbound left-turn lane creating three (3) westbound left-turn lanes along I-20 westbound exit ramp.

The analysis results shown in the table below are for the improved conditions at Bill Arp Road (SR 5) at I-20 WB Ramps (Intersection 3), which assume the noted geometric changes.

Overall LOS Standard: D  
Approach LOS Standard: D

		Bill Arp Road (SR 5)			Bill Arp Road (SR 5)						I-20 WB Exit Ramp		
		Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R				L	T	R
NO-BUILD IMPROVED (SIGNAL)	AM	Overall LOS	C (28.8)										
		Approach LOS	A (7.8)			C (21.3)						E (69.9)	
		Storage	320					450					190
		50th Queue	34	105			275	5			186	184	117
		95th Queue	48	112			294	18			227	257	165
	PM	Overall LOS	D (39.9)										
		Approach LOS	C (21.6)			C (27.7)						E (64.4)	
		Storage	320					450					190
		50th Queue	161	31			814	58			342	335	318
		95th Queue	427	56			966	134			414	457	409
BUILD IMPROVED (SIGNAL)	AM	Overall LOS	C (29.8)										
		Approach LOS	A (7.9)			C (21.6)						E (71.0)	
		Storage	320					450					190
		50th Queue	34	105			276	5			188	185	161
		95th Queue	46	112			296	18			229	259	212
	PM	Overall LOS	D (41.0)										
		Approach LOS	C (22.3)			C (29.6)						E (65.4)	
		Storage	320					450					190
		50th Queue	214	32			837	63			357	350	333
		95th Queue	305	56			1,041	137			432	476	429

With the noted system improvements, the westbound approach in both No-Build and Build scenarios are projected to continue to operate at LOS E. The system improvement is not recommended to be conditioned, as the LOS E is due to existing signal timing. The additional left-turn lane provides marginal benefit to the approach delay and may not be feasible, as the additional left-turn lane would require widening the bridge over I-20 to provide an additional receiving lane. SR 5 is a freight and commuter corridor between I-20 and Veterans Memorial Highway (US 78/SR 8) in Douglas County. The intersection operates at an acceptable overall LOS, and existing signal timings and cycle lengths prioritize vehicular progression on the mainline (SR 5) at the expense of sidestreet operations.

#### 5.4 Bill Arp Road (SR 5) at I-20 EB Ramps (Intersection 4)

Overall LOS Standard: D  
Approach LOS Standard: D/E

		Bill Arp Road (SR 5)			Bill Arp Road (SR 5)			I-20 EB Exit Ramp					
		Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R	L	T	R			
EXISTING (SIGNAL)	AM	Overall LOS	C (25.8)										
		Approach LOS	C (20.6)			B (17.7)			F (81.2)				
		Storage			320	360				240			
		50th Queue		184	327	329	303			194	166		
		95th Queue		255	493	384	333			252	236		
	PM	Overall LOS	C (20.1)										
		Approach LOS	B (11.4)			A (8.0)			F (118.8)				
		Storage			320	360				240			
		50th Queue		216	0	75	128			144	271		
		95th Queue		306	46	167	483			222	479		
NO-BUILD (SIGNAL)	AM	Overall LOS	C (32.9)										
		Approach LOS	C (29.7)			B (23.6)			F (83.2)				
		Storage			320	360				240			
		50th Queue		253	528	443	376			209	187		
		95th Queue		276	598	506	375			274	261		
	PM	Overall LOS	C (30.2)										
		Approach LOS	C (23.2)			B (16.0)			F (137.7)				
		Storage			320	360				240			
		50th Queue		342	82	399	741			154	321		
		95th Queue		481	241	460	650			235	529		
BUILD (SIGNAL)	AM	Overall LOS	C (34.9)										
		Approach LOS	C (30.5)			C (27.2)			F (82.7)				
		Storage			320	360				240			
		50th Queue		265	554	466	388			222	188		
		95th Queue		283	611	526	378			287	262		
	PM	Overall LOS	C (32.0)										
		Approach LOS	C (27.0)			B (16.9)			F (138.4)				
		Storage			320	360				240			
		50th Queue		373	114	484	743			159	323		
		95th Queue		483	269	513	626			241	531		

The intersection of Bill Arp Road (SR 5) at I-20 EB Ramps (Intersection 4) is projected to operate at an acceptable overall LOS under the Estimated 2021, No-Build 2023, and Build 2023 conditions. The eastbound approach operates at LOS F under Estimated 2021, Projected 2023 No-Build and Projected 2023 Build conditions.

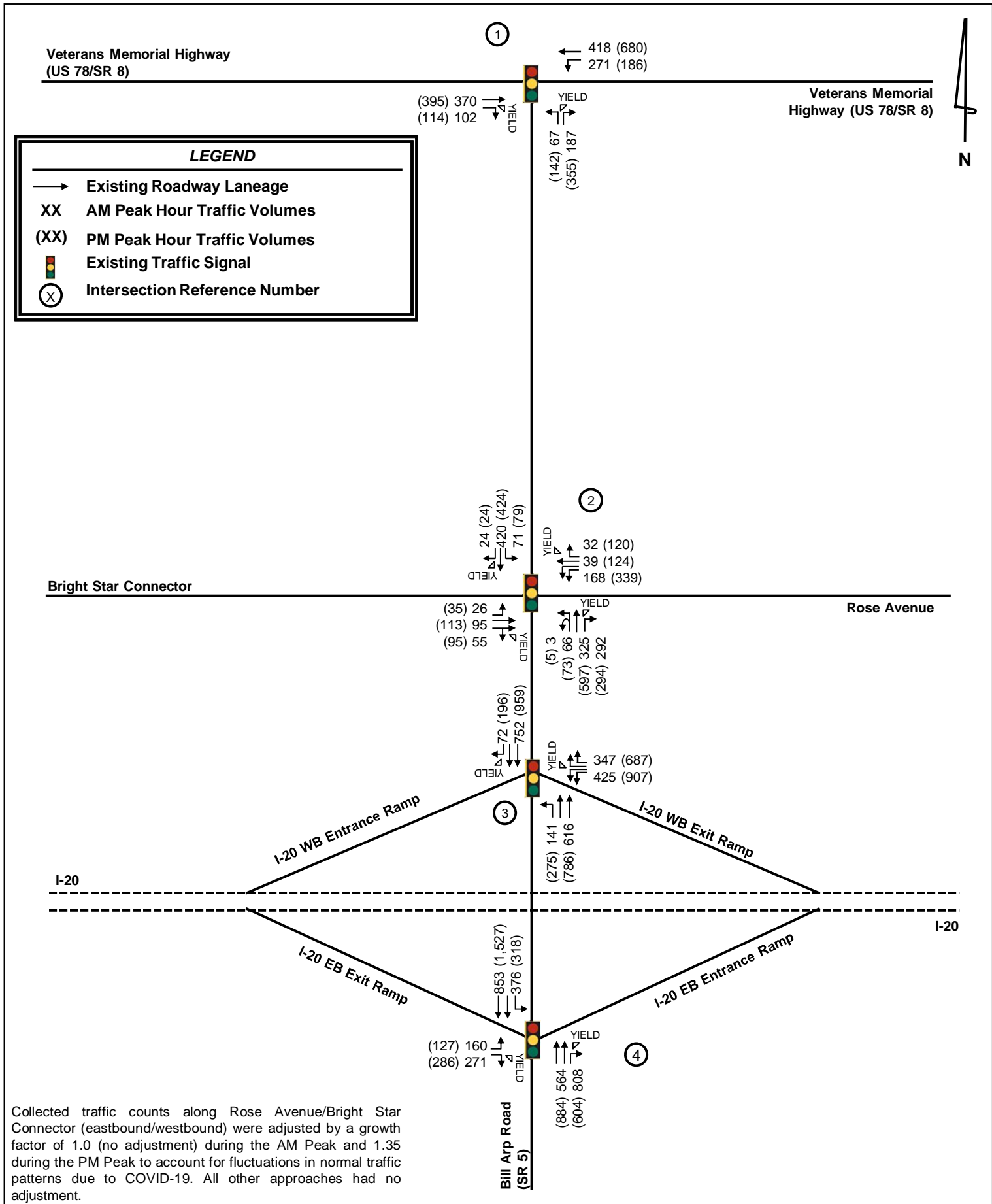
Although the eastbound approach is projected to operate at LOS F, no feasible improvements exist, as the failing LOS is due to the existing signal timing. SR 5 is a freight and commuter corridor between I-20 and Veterans Memorial Highway (US 78/SR 8) in Douglas County. The intersection operates at an acceptable overall LOS, and existing signal timings and cycle lengths prioritize vehicular progression on the mainline (SR 5) at the expense of sidestreet operations.

### 5.5 Bill Arp Road (SR 5) at Site Driveway A (Intersection 5)

Overall LOS Standard: D  
Approach LOS Standard: D

		Bill Arp Road (SR 5)			Bill Arp Road (SR 5)						Site Driveway A		
		Northbound			Southbound			Eastbound			Westbound		
		L	T	R	L	T	R	L	T	R	L	T	R
BUILD (TWSC)	AM	Overall LOS	(0.5)										
		Approach LOS	A (0.0)			A (8.5)			A (0.0)			C (17.2)	
		Storage											
		50th Queue											
		95th Queue	0			0			0		8		0
	PM	Overall LOS	(1.5)										
		Approach LOS	A (0.0)			B (10.1)			A (0.0)			C (23.1)	
		Storage											
		50th Queue											
		95th Queue	0			0			0		30		3

The intersection of Bill Arp Road (SR 5) at Site Driveway A (Intersection 5) is projected to operate at an acceptable LOS under the Build 2023 scenario. Each approach of the intersection is projected to operate acceptably under all studied scenarios. The recommended lane configuration for Site Driveway A is one lane entering the site and two lanes exiting the site. The recommended build improvements are shown in **Figure 15**.



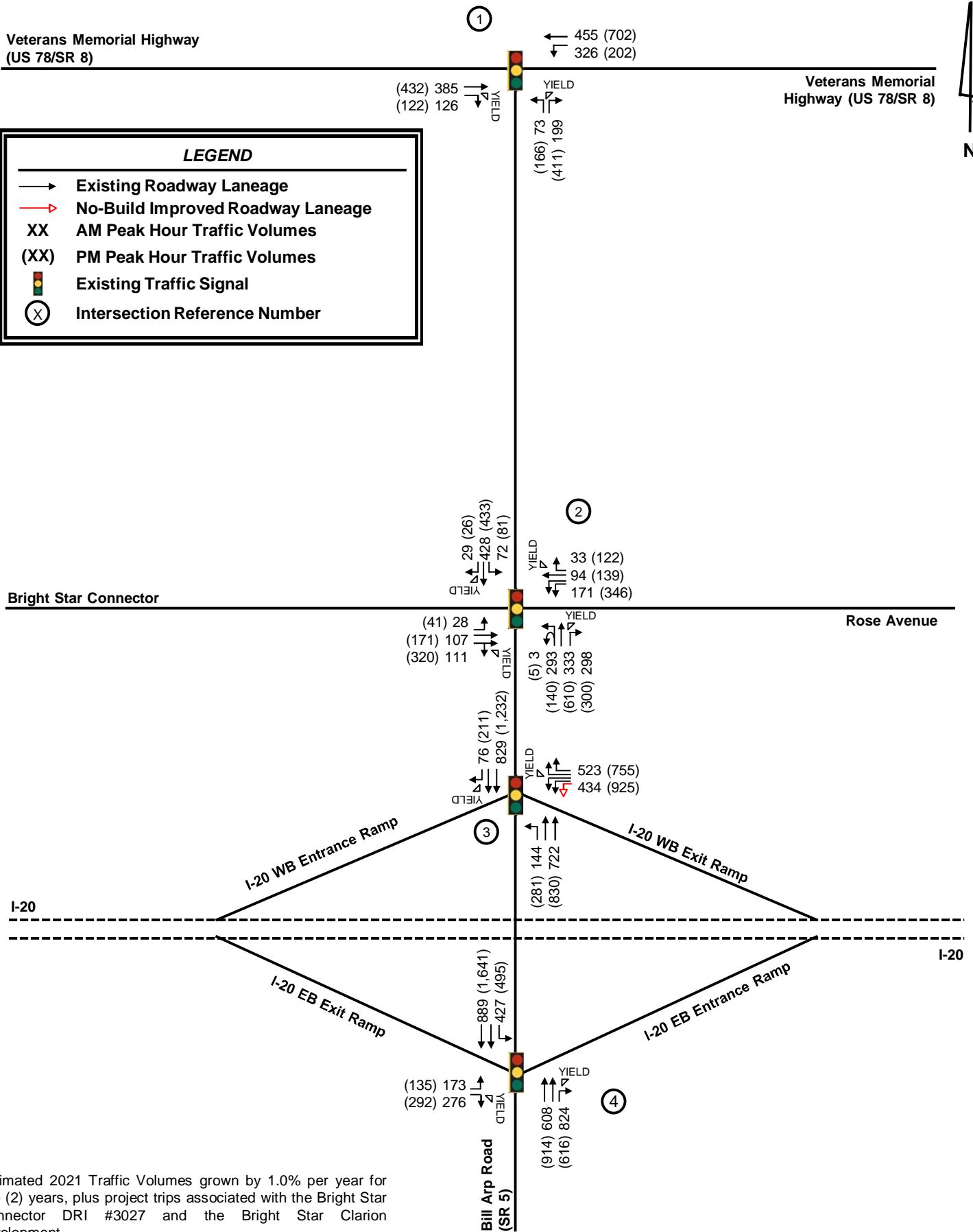
Veterans Memorial Highway  
(US 78/SR 8)

Veterans Memorial  
Highway (US 78/SR 8)



**LEGEND**

- Existing Roadway Laneage
- No-Build Improved Roadway Laneage
- XX AM Peak Hour Traffic Volumes
- (XX) PM Peak Hour Traffic Volumes
- Existing Traffic Signal
- (X) Intersection Reference Number



Estimated 2021 Traffic Volumes grown by 1.0% per year for two (2) years, plus project trips associated with the Bright Star Connector DRI #3027 and the Bright Star Clarion development.

Veterans Memorial Highway  
(US 78/SR 8)

Veterans Memorial  
Highway (US 78/SR 8)

N

### LEGEND

- Turning Movement
- No-Build Improved Roadway Laneage
- XX AM Peak Hour Traffic Volumes
- (XX) PM Peak Hour Traffic Volumes
- - - Proposed Driveway
- Proposed Roadway Laneage
- Existing Traffic Signal
- STOP Proposed STOP Control
- (X) Intersection Reference Number

Bright Star Connector

Rose Avenue

I-20

I-20

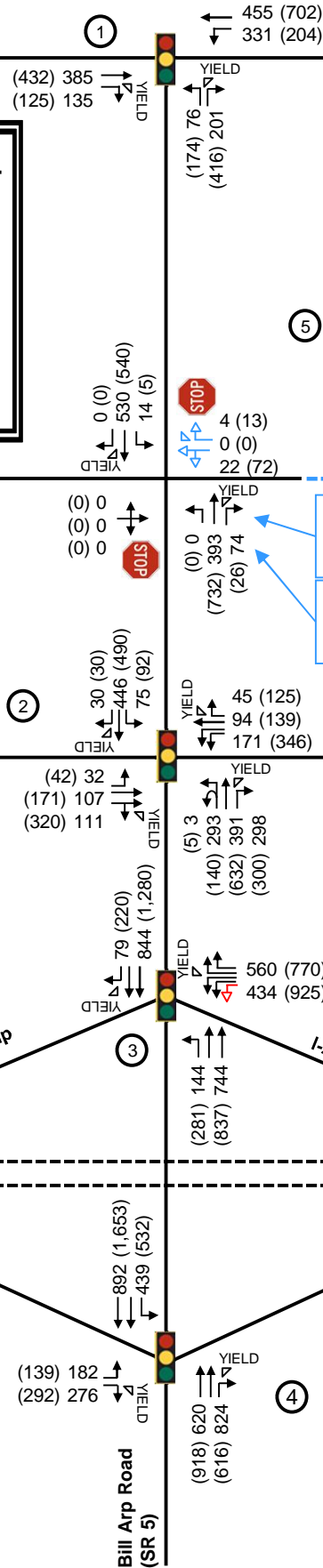
I-20 WB Entrance Ramp

I-20 WB Exit Ramp

I-20 EB Exit Ramp

I-20 EB Entrance Ramp

Bill Arp Road  
(SR 5)



Extend  
northbound right-  
turn lane.

Restripe existing  
center two-way  
left-turn lane.

## 6.0 INTERSECTION CONTROL EVALUATION (ICE)

Per GDOT's Policy, Intersection Control Evaluation (ICE) was performed at the following locations:

- Bill Arp Road (SR 5) at Site Driveway A (Intersection 5)

The intent of ICE is to determine the most effective intersection design/traffic control at a given intersection.

### 6.1 ICE Stage 1

Stage 1 is conducted early in the project development process and is intended to inform which alternatives are worthy of further evaluation in Stage 2. Stage 1 serves as a screening effort meant to eliminate non-competitive options and identify which alternatives merit further considerations based on their practical feasibility.

### 6.2 ICE Stage 2

Stage 2 involves a more detailed evaluation of the alternatives identified in Stage 1 in order to support the selection of a preferred alternative that may be advanced to detailed design. Stage 2 considers the construction cost, operational efficiency, safety considerations, and public opinion.

The intersection delays and v/c (volume-capacity) ratios were calculated at the study intersections during the AM and PM peak hour using Synchro Professional, Version 11.0, which uses methodologies contained in the 6th Edition Highway Capacity Manual to determine the operating characteristics of an intersection.

Per ICE Stage 1, the following alternatives were compared, and the ICE Stage 2 scores are shown in **Table 11**. GDOT's ICE Stage 1 and Stage 2 are provided in **Appendix F**.

<b>Table 11: ICE Alternative Selection Decision</b>		
<i>Bill Arp Road (SR 5) at Site Driveway A – Intersection 5</i>		
<b>ICE Stage 2</b>	<b>Conventional (Minor Stop)</b>	<b>RCUT (Stop Control)</b>
Score	6.1	5.8
Rank	1	2

From **Table 11**, the unsignalized full-movement sidestreet stop (Conventional (Minor Stop)) is the highest ranking (per the site plan).



# Proposed Site Plan







# Trip Generation Analysis

**Trip Generation Analysis (10th Ed. with *2nd Edition Handbook Daily IC & 3rd Edition AM/PM IC*)**  
**Highway 5 Business Center DRI #3589**  
**Douglasville, Douglas County, GA**

Land Use	Intensity	Daily Trips	AM Peak Hour			PM Peak Hour		
			Total	In	Out	Total	In	Out
<b>Proposed Site Traffic</b>								
150 Warehousing	737,200 s.f.	1,210	114	88	26	116	31	85
<b>Gross Trips</b>		<b>1,210</b>	<b>114</b>	<b>88</b>	<b>26</b>	<b>116</b>	<b>31</b>	<b>85</b>
Truck Trips (ITE 10th Edition Supplement)		406	15	8	7	22	11	11
Mixed-Use Reductions		0	0	0	0	0	0	0
Alternative Mode Reductions		0	0	0	0	0	0	0
Adjusted Truck Trips		406	15	8	7	22	11	11
Car Trips (Total Non-Truck Trips)		804	99	80	19	94	20	74
Mixed-Use Reductions		0	0	0	0	0	0	0
Alternative Mode Reductions		0	0	0	0	0	0	0
Adjusted Car Trips		804	99	80	19	94	20	74
Mixed-Use Reductions - TOTAL		0	0	0	0	0	0	0
Alternative Mode Reductions - TOTAL		0	0	0	0	0	0	0
Pass-By Reductions - TOTAL		0	0	0	0	0	0	0
<b>New Trips</b>		<b>1,210</b>	<b>114</b>	<b>88</b>	<b>26</b>	<b>116</b>	<b>31</b>	<b>85</b>
<b>Driveway Volumes</b>		<b>1,210</b>	<b>114</b>	<b>88</b>	<b>26</b>	<b>116</b>	<b>31</b>	<b>85</b>

\\kimley-horn.com\se\_alp1\alp\_tpto\019949031\_rose avenue - trip gen compare - douglasville - february 2021\02\_dri - january 2022\2\_phase ii\analysis\[highway 5 analysis.xls]trip generation (10th edition)

# Intersection Volume Worksheets

## INTERSECTION VOLUME DEVELOPMENT

### Intersection #1: Veterans Memorial Highway (US 78/SR 8) @ Bill Arp Road (SR 5) AM PEAK HOUR

Description	Bill Arp Road (SR 5)			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Observed 2021 Traffic Volumes	67	0	187	0	0	0	0	370	102	271	418	0
Pedestrians		0			0			0			0	
Conflicting Pedestrians	0		0	0		0	0		0	0		0
Heavy Vehicles	14	0	9	0	0	0	0	31	26	10	38	0
Heavy Vehicle %	21%	0%	5%	0%	0%	0%	0%	8%	25%	4%	9%	0%
Peak Hour Factor		0.94			0.94			0.94			0.94	
Covid Calibration Factor												
Adjusted 2021 Volumes	67	0	187	0	0	0	0	370	102	271	418	0
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Growth Factor	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020
Bright Star Connector DRI #3027	3		8					7	15	49	26	
Bright Star Connector DRI #3027 (Truck)	2								6			
Bright Star Road Clarion								1		1	3	
Bright Star Road Clarion (Truck)									1			
2023 Background Traffic	73	0	199	0	0	0	0	385	126	326	455	0
2023 No-Build Heavy Vehicle %	22%	0%	5%	0%	0%	0%	0%	8%	27%	3%	9%	0%
<b>Project Trips</b>												
Trip Distribution IN									10%	10%		
Trip Distribution OUT	10%		10%									
Truck Trips	1	0	1	0	0	0	0	0	1	1	0	0
Trip Distribution IN									10%	5%		
Trip Distribution OUT	10%		5%									
Car Trips	2	0	1	0	0	0	0	0	8	4	0	0
Total Project Trips	3	0	2	0	0	0	0	0	9	5	0	0
<b>2023 Buildout Total</b>	<b>76</b>	<b>0</b>	<b>201</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>385</b>	<b>135</b>	<b>331</b>	<b>455</b>	<b>0</b>
<b>2023 Build Heavy Vehicle %</b>	<b>23%</b>	<b>0%</b>	<b>5%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>8%</b>	<b>26%</b>	<b>3%</b>	<b>9%</b>	<b>0%</b>

### PM PEAK HOUR

Description	Bill Arp Road (SR 5)			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Observed 2021 Traffic Volumes	142	0	355	0	0	0	0	395	114	186	680	0
Pedestrians		0			0			0			0	
Conflicting Pedestrians	0		0	0		0	0		0	0		0
Heavy Vehicles	16	0	5	0	0	0	0	10	7	2	21	0
Heavy Vehicle %	11%	0%	2%	0%	0%	0%	0%	3%	6%	2%	3%	0%
Peak Hour Factor		0.98			0.98			0.98			0.98	
Covid Calibration Factor												
Adjusted 2021 Volumes	142	0	355	0	0	0	0	395	114	186	680	0
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Growth Factor	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020
Bright Star Connector DRI #3027	14		48					26	3	12	7	
Bright Star Connector DRI #3027 (Truck)	6								2			
Bright Star Road Clarion			1					3			1	
Bright Star Road Clarion (Truck)	1								1			
2023 Background Traffic	166	0	411	0	0	0	0	432	122	202	702	0
2023 No-Build Heavy Vehicle %	14%	0%	2%	0%	0%	0%	0%	2%	8%	2%	3%	0%
<b>Project Trips</b>												
Trip Distribution IN									10%	10%		
Trip Distribution OUT	10%		10%									
Truck Trips	1	0	1	0	0	0	0	0	1	1	0	0
Trip Distribution IN									10%	5%		
Trip Distribution OUT	10%		5%									
Car Trips	7	0	4	0	0	0	0	0	2	1	0	0
Total Project Trips	8	0	5	0	0	0	0	0	3	2	0	0
<b>2023 Buildout Total</b>	<b>174</b>	<b>0</b>	<b>416</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>432</b>	<b>125</b>	<b>204</b>	<b>702</b>	<b>0</b>
<b>2023 Build Heavy Vehicle %</b>	<b>14%</b>	<b>0%</b>	<b>2%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>2%</b>	<b>9%</b>	<b>2%</b>	<b>3%</b>	<b>0%</b>

## INTERSECTION VOLUME DEVELOPMENT

### Intersection #2: Bill Arp Road (SR 5) @ Bright Star Connector / Rose Avenue AM PEAK HOUR

Description	Bill Arp Road (SR 5) <u>Northbound</u>				Bill Arp Road (SR 5) <u>Southbound</u>				Bright Star Connector <u>Eastbound</u>				Rose Avenue <u>Westbound</u>			
	U-Turn	Left	Through	Right	Left	Through	Right		Left	Through	Right		Left	Through	Right	
Observed 2021 Traffic Volumes	3	66	325	292	71	420	24		26	95	55		168	39	32	
Pedestrians			0			0				3				1		
Conflicting Pedestrians	3			1	1		3		0		0		0		0	
Heavy Vehicles	0	5	46	6	6	37	0		0	2	20		4	2	2	
Heavy Vehicle %	2%	8%	14%	2%	8%	9%	2%		2%	2%	36%		2%	5%	6%	
Peak Hour Factor			0.89			0.89				0.89				0.89		
Covid Calibration Factor																
Adjusted 2021 Volumes	3	66	325	292	71	420	24		26	95	55		168	39	32	
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%		1.0%	1.0%	1.0%		1.0%	1.0%	1.0%	
Growth Factor	1.020	1.020	1.020	1.020	1.020	1.020	1.020		1.020	1.020	1.020		1.020	1.020	1.020	
Bright Star Connector DRI #3027		175					1			10	39			54		
Bright Star Connector DRI #3027 (Truck)		17	1				2		1		5					
Bright Star Road Clarion		31					1				8					
Bright Star Road Clarion (Truck)		3					1				3					
2023 Background Traffic	3	293	333	298	72	428	29		28	107	111		171	94	33	
2023 No-Build Heavy Vehicle %	2%	9%	14%	2%	9%	9%	12%		5%	2%	26%		2%	2%	6%	
<b>Project Trips</b>																
Trip Distribution IN			80%													
Trip Distribution OUT						80%										
Truck Trips	0	0	6	0	0	6	0		0	0	0		0	0	0	
Trip Distribution IN			65%						5%							15%
Trip Distribution OUT					15%	65%	5%									
Car Trips	0	0	52	0	3	12	1		4	0	0		0	0	12	
Total Project Trips	0	0	58	0	3	18	1		4	0	0		0	0	12	
<b>2023 Buildout Total</b>	<b>3</b>	<b>293</b>	<b>391</b>	<b>298</b>	<b>75</b>	<b>446</b>	<b>30</b>		<b>32</b>	<b>107</b>	<b>111</b>		<b>171</b>	<b>94</b>	<b>45</b>	
<b>2023 Build Heavy Vehicle %</b>	<b>2%</b>	<b>9%</b>	<b>14%</b>	<b>2%</b>	<b>8%</b>	<b>10%</b>	<b>12%</b>		<b>5%</b>	<b>2%</b>	<b>26%</b>		<b>2%</b>	<b>2%</b>	<b>5%</b>	

### PM PEAK HOUR

Description	Bill Arp Road (SR 5) <u>Northbound</u>				Bill Arp Road (SR 5) <u>Southbound</u>				Bright Star Connector <u>Eastbound</u>				Rose Avenue <u>Westbound</u>			
	U-Turn	Left	Through	Right	Left	Through	Right		Left	Through	Right		Left	Through	Right	
Observed 2021 Traffic Volumes	5	73	597	294	79	424	24		26	84	70		251	92	89	
Pedestrians			0			1				0				1		
Conflicting Pedestrians	0			1	1		0		0		0		0		1	
Heavy Vehicles	0	14	19	4	4	20	1		1	1	1		1	0	0	
Heavy Vehicle %	2%	19%	3%	2%	5%	5%	4%		4%	2%	2%		2%	2%	2%	
Peak Hour Factor			0.98			0.98				0.98				0.98		
Covid Calibration Factor									1.35	1.35	1.35		1.35	1.35	1.35	
Adjusted 2021 Volumes	5	73	597	294	79	424	24		35	113	95		339	124	120	
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%		1.0%	1.0%	1.0%		1.0%	1.0%	1.0%	
Growth Factor	1.020	1.020	1.020	1.020	1.020	1.020	1.020		1.020	1.020	1.020		1.020	1.020	1.020	
Bright Star Connector DRI #3027		47								56	171			13		
Bright Star Connector DRI #3027 (Truck)		6	1				1		3		19					
Bright Star Road Clarion		9							1		29					
Bright Star Road Clarion (Truck)		4					1		1		4					
2023 Background Traffic	5	140	610	300	81	433	26		41	171	320		346	139	122	
2023 No-Build Heavy Vehicle %	2%	17%	3%	2%	5%	5%	12%		13%	2%	8%		2%	2%	2%	
<b>Project Trips</b>																
Trip Distribution IN			80%													
Trip Distribution OUT						80%										
Truck Trips	0	0	9	0	0	9	0		0	0	0		0	0	0	
Trip Distribution IN			65%						5%							15%
Trip Distribution OUT					15%	65%	5%									
Car Trips	0	0	13	0	11	48	4		1	0	0		0	0	3	
Total Project Trips	0	0	22	0	11	57	4		1	0	0		0	0	3	
<b>2023 Buildout Total</b>	<b>5</b>	<b>140</b>	<b>632</b>	<b>300</b>	<b>92</b>	<b>490</b>	<b>30</b>		<b>42</b>	<b>171</b>	<b>320</b>		<b>346</b>	<b>139</b>	<b>125</b>	
<b>2023 Build Heavy Vehicle %</b>	<b>2%</b>	<b>17%</b>	<b>5%</b>	<b>2%</b>	<b>4%</b>	<b>6%</b>	<b>10%</b>		<b>13%</b>	<b>2%</b>	<b>8%</b>		<b>2%</b>	<b>2%</b>	<b>2%</b>	

## INTERSECTION VOLUME DEVELOPMENT

### Intersection #3: Bill Arp Road (SR 5) @ I-20 WB Exit Ramp AM PEAK HOUR

Description	Bill Arp Road (SR 5) Northbound			Bill Arp Road (SR 5) Southbound			Eastbound			I-20 WB Exit Ramp Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Observed 2021 Traffic Volumes	141	616	0	0	752	72	0	0	0	425	0	347
Pedestrians		0			0			0			1	
Conflicting Pedestrians	0		1	1		0	0		0	0		0
Heavy Vehicles	9	23	0	0	58	8	0	0	0	17	0	42
Heavy Vehicle %	6%	4%	0%	0%	8%	11%	0%	0%	0%	4%	0%	12%
Peak Hour Factor		0.84			0.84			0.84			0.84	
Covid Calibration Factor												
Adjusted 2021 Volumes	141	616	0	0	752	72	0	0	0	425	0	347
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Growth Factor	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020
Bright Star Connector DRI #3027		81			44	1						114
Bright Star Connector DRI #3027 (Truck)		4			9	1						31
Bright Star Road Clarion		9			7	1						21
Bright Star Road Clarion (Truck)					2							3
2023 Background Traffic	144	722	0	0	829	76	0	0	0	434	0	523
2023 No-Build Heavy Vehicle %	6%	4%	0%	0%	8%	12%	0%	0%	0%	4%	0%	15%
<b>Project Trips</b>												
Trip Distribution IN		20%										60%
Trip Distribution OUT					65%	15%						
Truck Trips	0	2	0	0	5	1	0	0	0	0	0	5
Trip Distribution IN		25%										40%
Trip Distribution OUT					55%	10%						
Car Trips	0	20	0	0	10	2	0	0	0	0	0	32
Total Project Trips	0	22	0	0	15	3	0	0	0	0	0	37
<b>2023 Buildout Total</b>	<b>144</b>	<b>744</b>	<b>0</b>	<b>0</b>	<b>844</b>	<b>79</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>434</b>	<b>0</b>	<b>560</b>
<b>2023 Build Heavy Vehicle %</b>	<b>6%</b>	<b>4%</b>	<b>0%</b>	<b>0%</b>	<b>9%</b>	<b>13%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>4%</b>	<b>0%</b>	<b>15%</b>

### PM PEAK HOUR

Description	Bill Arp Road (SR 5) Northbound			Bill Arp Road (SR 5) Southbound			Eastbound			I-20 WB Exit Ramp Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Observed 2021 Traffic Volumes	275	786	0	0	959	196	0	0	0	907	0	687
Pedestrians		0			1			1			7	
Conflicting Pedestrians	1		7	7		1	0		0	0		1
Heavy Vehicles	5	11	0	0	28	2	0	0	0	14	0	24
Heavy Vehicle %	2%	2%	0%	0%	3%	2%	0%	0%	0%	2%	0%	3%
Peak Hour Factor		0.96			0.96			0.96			0.96	
Covid Calibration Factor												
Adjusted 2021 Volumes	275	786	0	0	959	196	0	0	0	907	0	687
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Growth Factor	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020
Bright Star Connector DRI #3027		22			191	4						32
Bright Star Connector DRI #3027 (Truck)		2			32	4						12
Bright Star Road Clarion		3			27	2						6
Bright Star Road Clarion (Truck)		1			4	1						4
2023 Background Traffic	281	830	0	0	1,232	211	0	0	0	925	0	755
2023 No-Build Heavy Vehicle %	2%	2%	0%	0%	5%	4%	0%	0%	0%	2%	0%	5%
<b>Project Trips</b>												
Trip Distribution IN		20%										60%
Trip Distribution OUT					65%	15%						
Truck Trips	0	2	0	0	7	2	0	0	0	0	0	7
Trip Distribution IN		25%										40%
Trip Distribution OUT					55%	10%						
Car Trips	0	5	0	0	41	7	0	0	0	0	0	8
Total Project Trips	0	7	0	0	48	9	0	0	0	0	0	15
<b>2023 Buildout Total</b>	<b>281</b>	<b>837</b>	<b>0</b>	<b>0</b>	<b>1,280</b>	<b>220</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>925</b>	<b>0</b>	<b>770</b>
<b>2023 Build Heavy Vehicle %</b>	<b>2%</b>	<b>3%</b>	<b>0%</b>	<b>0%</b>	<b>6%</b>	<b>5%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>2%</b>	<b>0%</b>	<b>6%</b>



## INTERSECTION VOLUME DEVELOPMENT

### Intersection #4: Bill Arp Road (SR 5) @ I-20 EB Exit Ramp AM PEAK HOUR

Description	Bill Arp Road (SR 5) Northbound			Bill Arp Road (SR 5) Southbound			I-20 EB Exit Ramp Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Observed 2021 Traffic Volumes	0	564	808	376	853	0	160	0	271	0	0	0
Pedestrians		0			0			0			1	
Conflicting Pedestrians	0		1	1		0	0		0	0		0
Heavy Vehicles	0	20	20	43	38	0	7	0	6	0	0	0
Heavy Vehicle %	0%	4%	2%	11%	4%	0%	4%	0%	2%	0%	0%	0%
Peak Hour Factor		0.82			0.82			0.82			0.82	
Covid Calibration Factor												
Adjusted 2021 Volumes	0	564	808	376	853	0	160	0	271	0	0	0
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Growth Factor	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020
Bright Star Connector DRI #3027		26		27	17		4					
Bright Star Connector DRI #3027 (Truck)				9			4					
Bright Star Road Clarion		7		5	2		2					
Bright Star Road Clarion (Truck)				2								
2023 Background Traffic	0	608	824	427	889	0	173	0	276	0	0	0
2023 No-Build Heavy Vehicle %	0%	3%	2%	13%	4%	0%	6%	0%	2%	0%	0%	0%
<b>Project Trips</b>												
Trip Distribution IN		5%					15%					
Trip Distribution OUT				60%	5%							
Truck Trips	0	0	0	4	0	0	1	0	0	0	0	0
Trip Distribution IN		15%					10%					
Trip Distribution OUT				40%	15%							
Car Trips	0	12	0	8	3	0	8	0	0	0	0	0
Total Project Trips	0	12	0	12	3	0	9	0	0	0	0	0
<b>2023 Buildout Total</b>	<b>0</b>	<b>620</b>	<b>824</b>	<b>439</b>	<b>892</b>	<b>0</b>	<b>182</b>	<b>0</b>	<b>276</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>2023 Build Heavy Vehicle %</b>	<b>0%</b>	<b>3%</b>	<b>2%</b>	<b>13%</b>	<b>4%</b>	<b>0%</b>	<b>7%</b>	<b>0%</b>	<b>2%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>

### PM PEAK HOUR

Description	Bill Arp Road (SR 5) Northbound			Bill Arp Road (SR 5) Southbound			I-20 EB Exit Ramp Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Observed 2021 Traffic Volumes	0	884	604	318	1,527	0	127	0	286	0	0	0
Pedestrians		1			0			0			1	
Conflicting Pedestrians	0		1	1		0	0		1	1		0
Heavy Vehicles	0	16	15	21	24	0	1	0	7	0	0	0
Heavy Vehicle %	0%	2%	2%	7%	2%	0%	2%	0%	2%	0%	0%	0%
Peak Hour Factor		0.99			0.99			0.99			0.99	
Covid Calibration Factor												
Adjusted 2021 Volumes	0	884	604	318	1,527	0	127	0	286	0	0	0
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Growth Factor	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020
Bright Star Connector DRI #3027		10		115	76		1					
Bright Star Connector DRI #3027 (Truck)				32			2					
Bright Star Road Clarion		2		20	7		1					
Bright Star Road Clarion (Truck)				4			1					
2023 Background Traffic	0	914	616	495	1,641	0	135	0	292	0	0	0
2023 No-Build Heavy Vehicle %	0%	2%	2%	12%	2%	0%	4%	0%	2%	0%	0%	0%
<b>Project Trips</b>												
Trip Distribution IN		5%					15%					
Trip Distribution OUT				60%	5%							
Truck Trips	0	1	0	7	1	0	2	0	0	0	0	0
Trip Distribution IN		15%					10%					
Trip Distribution OUT				40%	15%							
Car Trips	0	3	0	30	11	0	2	0	0	0	0	0
Total Project Trips	0	4	0	37	12	0	4	0	0	0	0	0
<b>2023 Buildout Total</b>	<b>0</b>	<b>918</b>	<b>616</b>	<b>532</b>	<b>1,653</b>	<b>0</b>	<b>139</b>	<b>0</b>	<b>292</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>2023 Build Heavy Vehicle %</b>	<b>0%</b>	<b>2%</b>	<b>2%</b>	<b>12%</b>	<b>2%</b>	<b>0%</b>	<b>5%</b>	<b>0%</b>	<b>2%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>

## INTERSECTION VOLUME DEVELOPMENT

### Intersection #5: Bill Arp Road (SR 5) @ Site Driveway A AM PEAK HOUR

Description	Bill Arp Road (SR 5) Northbound			Bill Arp Road (SR 5) Southbound			Eastbound			Site Driveway A Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Observed 2021 Traffic Volumes	0	383	0	0	515	0	0	0	0	0	0	0
Pedestrians		0			0			0			0	
Conflicting Pedestrians	0		0	0		0	0		0	0		0
Heavy Vehicles	0	48	0	0	43	0	0	0	0	0	0	0
Heavy Vehicle %	0%	13%	0%	0%	8%	0%	0%	0%	0%	0%	0%	0%
Peak Hour Factor		0.89			0.89			0.89			0.89	
Covid Calibration Factor												
Adjusted 2021 Volumes	0	383	0	0	515	0	0	0	0	0	0	0
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Growth Factor	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020
Bright Star Connector DRI #3027		0			1							
Bright Star Connector DRI #3027 (Truck)		2			2							
Bright Star Road Clarion					1							
Bright Star Road Clarion (Truck)					1							
2023 Background Traffic	0	393	0	0	530	0	0	0	0	0	0	0
2023 No-Build Heavy Vehicle %	0%	13%	0%	0%	9%	0%	0%	0%	0%	0%	0%	0%
<b>Project Trips</b>												
Trip Distribution IN			80%	20%								
Trip Distribution OUT										80%		20%
Truck Trips	0	0	6	2	0	0	0	0	0	6	0	1
Trip Distribution IN			85%	15%								
Trip Distribution OUT										85%		15%
Car Trips	0	0	68	12	0	0	0	0	0	16	0	3
Total Project Trips	0	0	74	14	0	0	0	0	0	22	0	4
<b>2023 Buildout Total</b>	0	393	74	14	530	0	0	0	0	22	0	4
<b>2023 Build Heavy Vehicle %</b>	0%	13%	8%	14%	9%	0%	0%	0%	0%	27%	0%	25%

### PM PEAK HOUR

Description	Bill Arp Road (SR 5) Northbound			Bill Arp Road (SR 5) Southbound			Eastbound			Site Driveway A Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Observed 2021 Traffic Volumes	0	712	0	0	527	0	0	0	0	0	0	0
Pedestrians		0			0			0			0	
Conflicting Pedestrians	0		0	0		0	0		0	0		0
Heavy Vehicles	0	20	0	0	25	0	0	0	0	0	7	0
Heavy Vehicle %	0%	3%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%
Peak Hour Factor		0.98			0.98			0.98			0.98	
Covid Calibration Factor												
Adjusted 2021 Volumes	0	712	0	0	527	0	0	0	0	0	0	0
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Growth Factor	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020	1.020
Bright Star Connector DRI #3027		0			0							
Bright Star Connector DRI #3027 (Truck)		4			1							
Bright Star Road Clarion		1			0							
Bright Star Road Clarion (Truck)		1			1							
2023 Background Traffic	0	732	0	0	540	0	0	0	0	0	0	0
2023 No-Build Heavy Vehicle %	0%	3%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%
<b>Project Trips</b>												
Trip Distribution IN			80%	20%								
Trip Distribution OUT										80%		20%
Truck Trips	0	0	9	2	0	0	0	0	0	9	0	2
Trip Distribution IN			85%	15%								
Trip Distribution OUT										85%		15%
Car Trips	0	0	17	3	0	0	0	0	0	63	0	11
Total Project Trips	0	0	26	5	0	0	0	0	0	72	0	13
<b>2023 Buildout Total</b>	0	732	26	5	540	0	0	0	0	72	0	13
<b>2023 Build Heavy Vehicle %</b>	0%	3%	35%	40%	5%	0%	0%	0%	0%	13%	0%	15%

# Programmed Project Fact Sheets

Project ID	Road	From	To	Description
*DTP-07	Chapel Hill Rd	Stewart Mill Rd	Central Church Rd	Widening from 2 to 4 lanes
DTP-26	John West Rd Relocation	Mobley Creek	Bright Star Rd	Relocate John West Road to the north to tie in with Bright Star Connector. Close Cherry Lane and limit the existing John West Road to right in/right out.
*DTP-08	I-20	SR 5 (Bill Arp Rd)	Bright Star Road	Split diamond interchange. At I-20 at SR 5 and I-20 at Bright Star Road with frontage roads between Bright Star Road and SR 5 and two new signalized intersections at new ramp termini with Bright Star Road.

# PROJECT LIST

# PROJECT LIST – PAGE 2

<b>DTP-06</b>	Active Transportation	Spring St	Club Dr		Construct new 6' sidewalk to connect to the conference center	Mid Range	\$ 200,000.00	8.75
<b>*DTP-07</b>	Roadway Capacity	Chapel Hill Rd	Stewart Mill Rd	Central Church Rd	Widening from 2 to 4 lanes	Long Range	\$ 15,800,000	8.75

***These project costs are based on planning level studies and experience on prior projects and are approximate only. All costs are subject to change due to fluctuations in the construction market as well as further detailed design associated with each project provided.***

Project ID	Project Type	Road	From	To	Description	Implementation Phase	Cost	Prioritization Score
<b>*DTP-08</b>	Interchange Capacity	I-20	SR 5 (Bill Arp Rd)	Bright Star Road	Split diamond interchange. At I-20 at SR 5 and I-20 at Bright Star Road with frontage roads between Bright Star Road and SR 5 and two new signalized intersections at new ramp termini with Bright Star Road.	Long Range	\$ 32,000,000	7.75
<b>*DTP-09</b>	Safety & Operational	Chapel Hill Rd	Nightingale Ln	Hospital Dr	Operational and traffic flow improvements access management features, turn lanes, signal operational upgrades, and ITS connectivity	Mid Range	\$ 2,000,000	7.5
<b>DTP-10</b>	Intersection	Douglas Blvd	at SR 5	Conference Center	Add a second eastbound and westbound left turn lane. Add a dedicated westbound right turn land. Add a dedicated southbound right turn lane.	Mid Range	\$ 3,025,000	7.5
<b>DTP-11</b>	Intersection	Prestley Mill Rd	at High St		Gateway Feature	Short Range	\$ 50,000	6.25



## Short Title

SOUTH DOUGLAS LOOP - PHASE 3 (WIDENING/NEW ALIGNMENT) FROM INTERSECTION OF BRIGHT STAR ROAD AND I-20 WEST TO INTERSECTION OF CHAPEL HILL ROAD AND CENTRAL CHURCH ROAD (FOLLOWING ALIGNMENT OF BRIGHT STAR ROAD AND CENTRAL CHURCH ROAD)

## GDOT Project No.

N/A

## Federal ID No.

N/A

## Status

Long Range

## Service Type

Roadway / General Purpose Capacity

## Sponsor

TBD

## Jurisdiction

Douglas County

## Analysis Level

In the Region's Air Quality Conformity Analysis

## Existing Thru Lane

2

## LCI

☐

## Planned Thru Lane

4

## Flex

☐

## Network Year

2040

## Corridor Length

3.7 miles

## Detailed Description and Justification

None



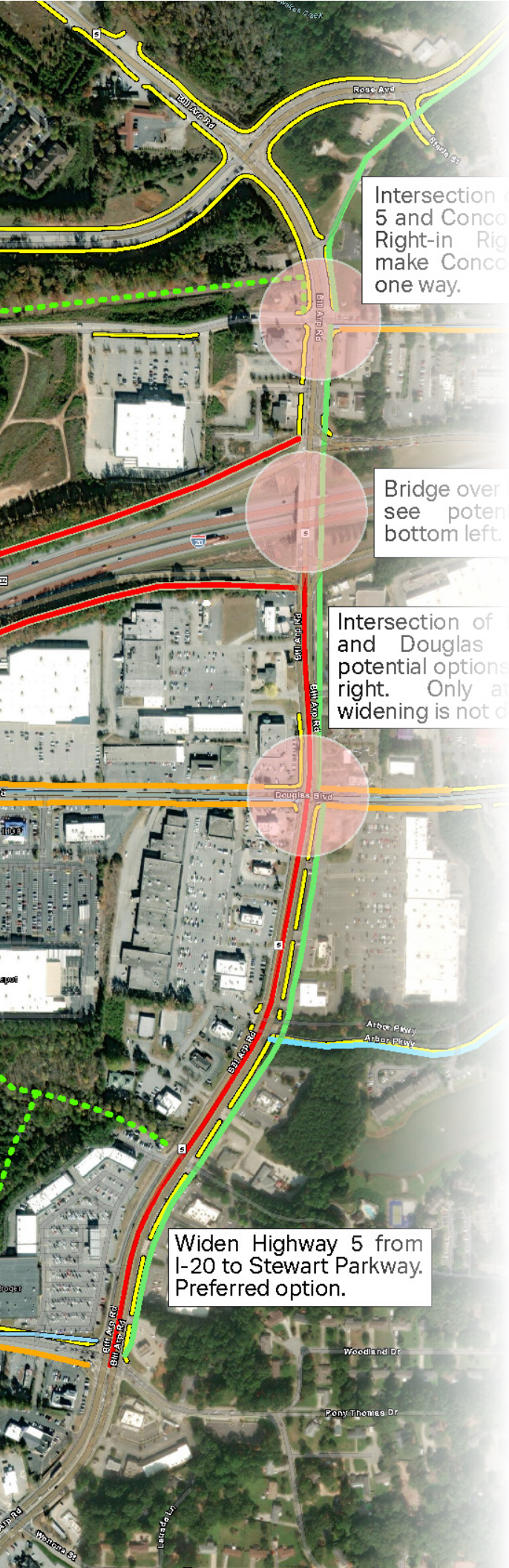
Phase Status & Funding Information		Status	FISCAL YEAR	TOTAL PHASE COST	BREAKDOWN OF TOTAL PHASE COST BY FUNDING SOURCE			
					FEDERAL	STATE	BONDS	LOCAL/PRIVATE
ALL	Local Jurisdiction/Municipality Funds		LR 2031-2040	\$30,000,000	\$0,000	\$0,000	\$0,000	\$30,000,000
				\$30,000,000	\$0,000	\$0,000	\$0,000	\$30,000,000

SCP: Scoping PE: Preliminary engineering / engineering / design / planning PE-OV: GDOT oversight services for engineering ROW: Right-of-way Acquisition  
 UTL: Utility relocation CST: Construction / Implementation ALL: Total estimated cost, inclusive of all phases



For additional information about this project, please call (404) 463-3100 or email [transportation@atlantaregional.com](mailto:transportation@atlantaregional.com).





Intersection of  
5 and Conco  
Right-in Right-out  
make Conco  
one way.

Bridge over  
see potential  
bottom left.

Intersection of  
and Douglas  
potential options  
right. Only at  
widening is not d

Widen Highway 5 from  
I-20 to Stewart Parkway.  
Preferred option.

# 04

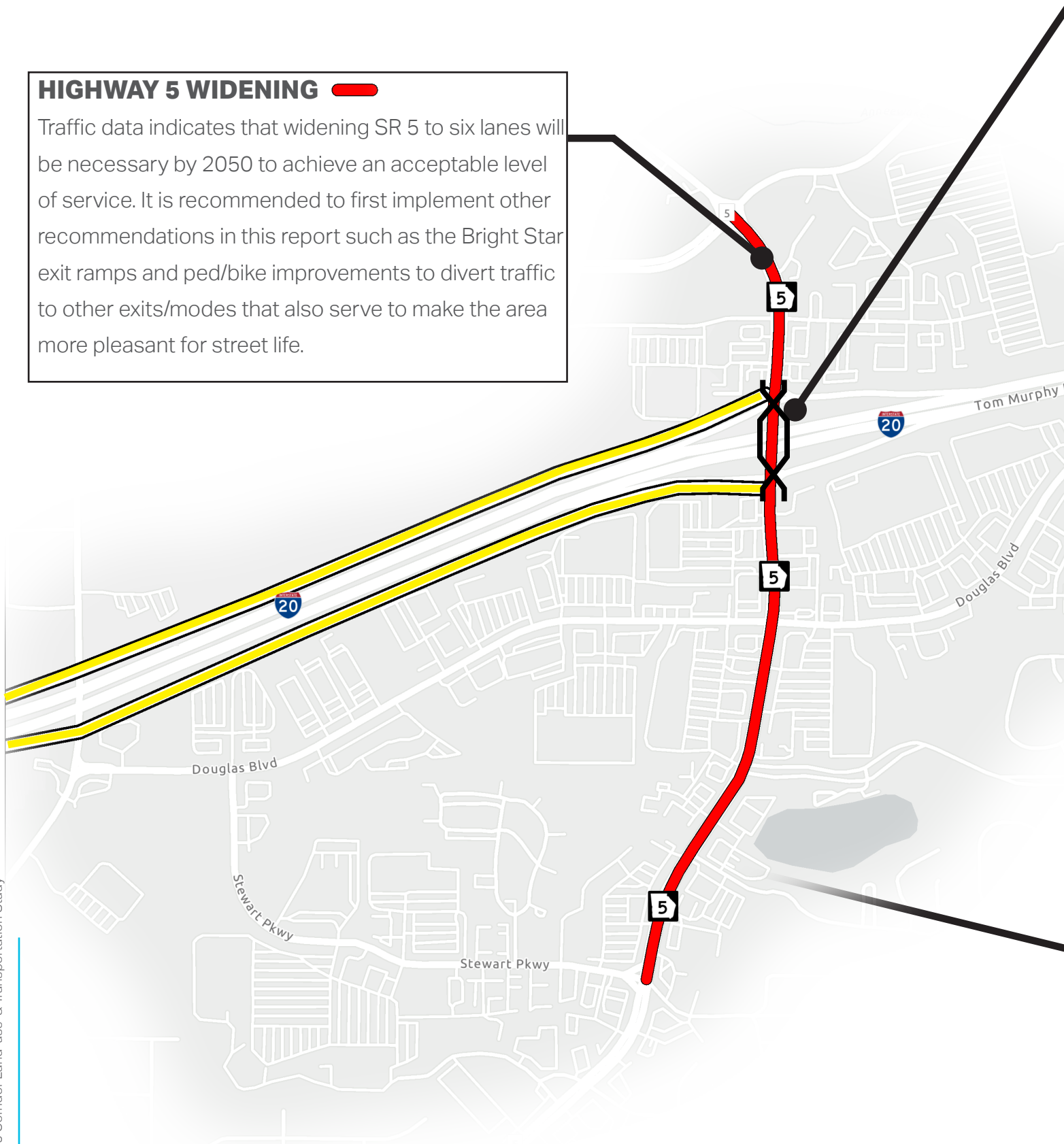
## RECOMMENDATIONS

- 4.1 Tool Kit of Recommendations**
- 4.2 Land Use and Zoning Recommendations**
- 4.3 Traffic Infrastructure Improvements**
- 4.4 Multimodal Infrastructure Improvements**
- 4.5 Placemaking & Streetscapes**

# TRAFFIC IMPROVEMENTS

## HIGHWAY 5 WIDENING

Traffic data indicates that widening SR 5 to six lanes will be necessary by 2050 to achieve an acceptable level of service. It is recommended to first implement other recommendations in this report such as the Bright Star exit ramps and ped/bike improvements to divert traffic to other exits/modes that also serve to make the area more pleasant for street life.





## HIGHWAY 5 DIVERGING DIAMOND INTERCHANGE

Built in 1964, the SR 5 bridge over I-20 will need to be replaced relatively soon. Widening SR 5 coupled with the Bright Star Rd improvements may bring the volume over the bridge in line with capacity. If those projects do not, or when the bridge naturally comes up for replacement, it is recommended to install a diverging diamond interchange for both capacity and safety.



## DOUGLAS BLVD @ CHAPEL HILL RD IMPROVEMENTS

In the short-term, build eastbound and westbound right turn overlap signals. In the longer term, add an additional northbound left turn lane.

## BRIGHT STAR RD EXIT RAMPS & FRONTAGE ROADS

From I-20 onto Bright Star Road allow people to bypass the worst of the congestion on SR 5 between the bridge over I-20 and Douglas Blvd. Dovetails with ARC-D003 that aims to widen Bright Star Road south of I-20. Bypass will remove congestion from the SR 5 bottleneck and activate the entire Stewart Parkway area to the west of the study area. The Park & Ride becomes much more convenient, which boosts utilization more than any other incentive. Stewart Parkway will see more activity, thus setting the stage for the Town Center Catalyst redevelopment.

# 9.1 - SR 5 WIDENING

This alternative would widen SR 5 from its intersection with Concourse Pkwy south to its intersection with Stewart Mill Rd. An additional through lane in the northbound and southbound direction would be added to SR 5 between these intersections. This would improve traffic operations along the corridor to an acceptable LOS D or better. Furthermore, at locations where congestion occurs in the field due to closely spaced intersections the additional lane would have the added effect of providing additional queue storage operations and coordination of traffic signals.

## SR 5 @ STEWART PKWY

- Terminate new southbound lane at Stewart Pkwy at a right turn only lane.
- Begin new northbound lane at Stewart Pkwy as a receiving lane for the westbound right turn lane.

### SR 5 @ CONCOURSE PKWY

- Terminate the new northbound lane as a right turn lane into Concourse Parkway
- Begin the new southbound lane as a continuous right turn lane from eastbound Concourse

### SR 5 @ I-20 WESTBOUND EXIT RAMP

- Trap one of the northbound thru lanes as a northbound left turn lane onto I-20 WB
- Convert one of the westbound turn lanes from I-20 into a third westbound left turn lane
- Convert the remaining westbound right turn lane into a continuous flow right turn lane with receiving lane on SR 5

### SR 5 @ DOUGLAS BLVD

- Add northbound and southbound right turn lanes.
- Add additional eastbound and westbound left turn lane to make dual left turn lanes.
- Change to protected only phasing on the new dual left turn lanes.

The intersection LOS and Delay for the Open (2030) and Design (2050) year Build SR 5 Widening condition is shown below in Table 5. As is shown, these improvements would result in an LOS of D or better at each intersection along SR 5 in the Open and Design years and in the AM and PM peak period. The HCM Synchro printouts for the SR 5 Widening scenario can be found in Appendix C.4.

**Table 5: Build Widen SR 5 Open and Design Year LOS and Delay (sec/veh)**

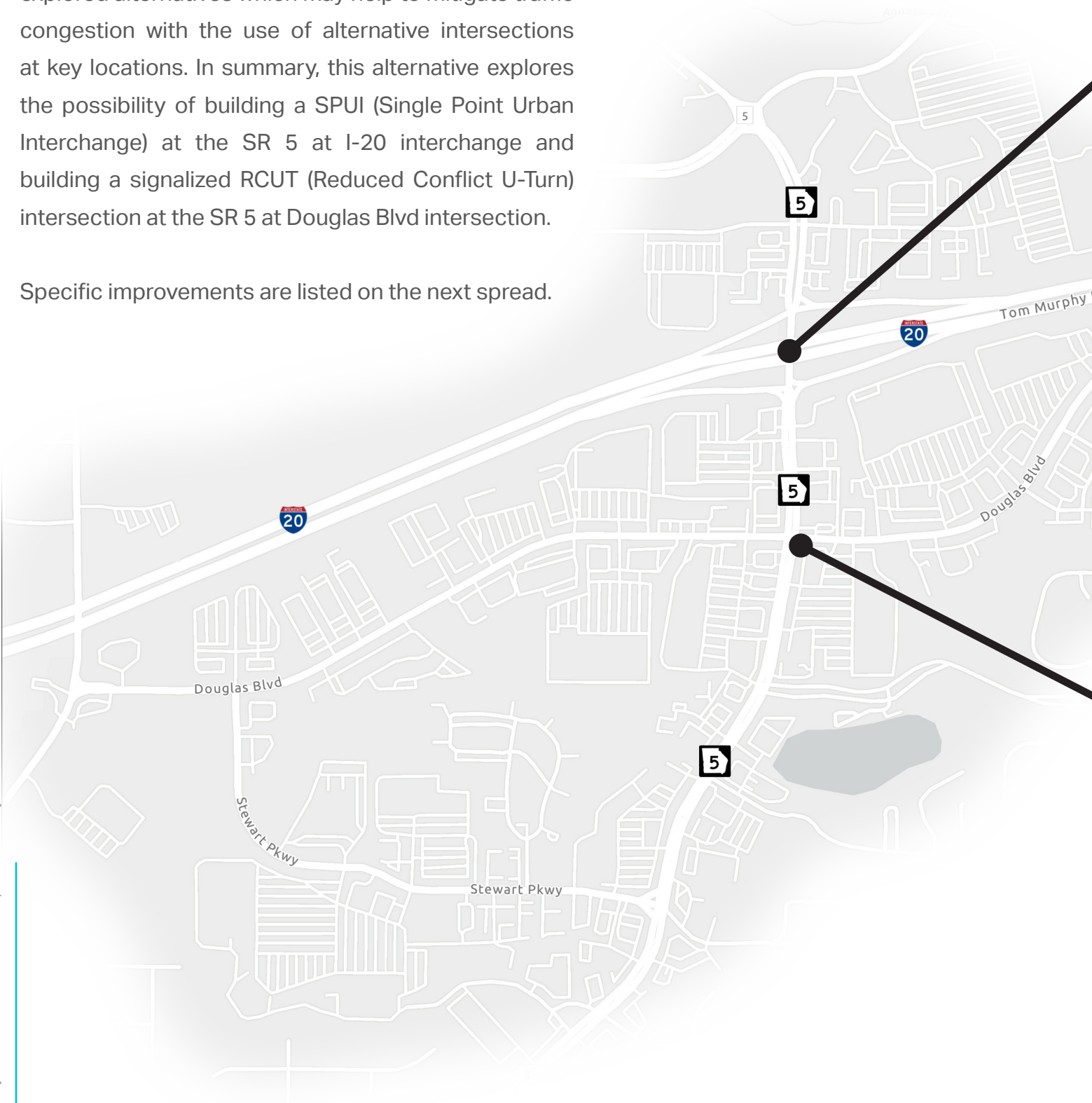
Intersection Number	Intersection Name	2030				2050			
		AM		PM		AM		PM	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
1	SR 5 @ Bright Star Connector	C	20.2	C	28.8	C	22.6	C	30.6
2	SR 5 @ Concourse Pkwy	B	16.6	B	19.5	B	17.9	C	23.1
3	SR 5 @ I 20 WB Ramps	B	16.7	C	22.5	B	15.2	C	29.9
4	SR 5 @ I 20 EB Ramps	A	8.8	A	3.4	B	12.8	A	4.4
5	SR 5 @ Douglas Blvd	B	19.2	D	40.2	C	31	D	41.8
6	SR 5 @ Arbor Pkwy	A	7.4	B	10.2	A	8.1	B	12.2
7	SR 5 @ Stewart Mill Rd	C	24.5	C	32.8	C	26.1	D	36.1



## 9.2 - SR 5 NO WIDENING

This alternative would not widen SR 5 and instead explored alternatives which may help to mitigate traffic congestion with the use of alternative intersections at key locations. In summary, this alternative explores the possibility of building a SPUI (Single Point Urban Interchange) at the SR 5 at I-20 interchange and building a signalized RCUT (Reduced Conflict U-Turn) intersection at the SR 5 at Douglas Blvd intersection.

Specific improvements are listed on the next spread.



## SINGLE POINT URBAN INTERCHANGE (SPUI)

🚲 Depending on their level of comfort, cyclists may navigate the intersection using vehicle or pedestrian paths

↩ To turn left from a freeway ramp, use the left-turn lane like at a conventional diamond interchange

🚶 Pedestrians use marked crosswalks to safely cross the freeway ramps. At SPUIs, crosswalks are not provided across the arterial. To cross the arterial, pedestrians may use the nearest marked crosswalk (not shown)

➔ From the arterial, navigate the interchange like at a conventional diamond interchange

↪ To turn right from a freeway ramp, use the right-turn lane like at a conventional diamond interchange

NOT TO SCALE

Note: For simplicity, only two directions of traffic are shown. Opposing traffic follows similar routes.

🚶 Pedestrians use marked crosswalks to safely cross the intersection

↩ To make a left turn from the side street to the major street, turn right onto the major street, make a u-turn, and continue straight

🚲 Depending on their level of comfort, cyclists may navigate the intersection using vehicle or pedestrian paths

➔ To continue straight on the side street, turn right onto the major street, make a u-turn, and turn right onto the side street

➔ From the major street, navigate the intersection like at a conventional intersection

↪ To turn right from the side street, turn right like at a conventional intersection

## RESTRICTED CROSSING U-TURN (RCUT)

NOT TO SCALE

Note: For simplicity, only two directions of traffic are shown. Opposing traffic follows similar routes.

## 9.2 - SR 5 NO WIDENING

This alternative would not widen SR 5 and instead explored alternatives which may help to mitigate traffic congestion with the use of alternative intersections at key locations. In summary, this alternative explores the possibility of building a SPUI (Single Point Urban Interchange) at the SR 5 at I-20 interchange and building a signalized RCUT (Reduced Conflict U-Turn) intersection at the SR 5 at Douglas Blvd intersection.

### SR 5 BETWEEN I-20 & DOUGLAS BLVD

- Construct new signs to accommodate U-turns from the restricted through and left turns from westbound Douglas Blvd.

### SR 5 @ ARBOR PKWY

- Construct new signal to accommodate U-turns from the restricted through and left turns from westbound Douglas Blvd.

### SR 5 @ I-20 INTERCHANGE

- Replace existing diamond interchange with a Single Point Urban Interchange.

### SR 5 @ DOUGLAS BLVD

- Construct RCUT intersection.
- Add additional northbound left turn lane and change to protected only phasing.
- Remove eastbound and westbound left turn and thru lanes and signal phases, re-route traffic to eastbound/westbound right turn then U-turn.
- Add second eastbound and westbound right turn lane and make protected only right turn phase overlapped with northbound and southbound left turn phases.

The intersection LOS and Delay for the Open (2030) and Design (2050) year SR 5 Build No Widening Alternative 1 condition is shown below in Table 6. As is shown, the LOS in PM peak hour of the Design year (2050) would be LOS E at two intersections and LOS F at one intersection. Although the SPUI would be improved compared to the No Build condition in terms of overall intersection delay it would still result in an LOS E which is not desirable. Furthermore, SR 5 at Douglas Blvd would result in an LOS E and U-turns from diverted traffic at Douglas Blvd would degrade SR 5 at Arbor Pkwy to an LOS F by the design year. Based on this information a SPUI at the SR 5 at I-20 interchange and an RCUT at the SR 5 at Douglas Blvd intersection would not be ideal candidates for consideration at these locations. The HCM Synchro printouts for No Widening Alternative 1 can be found in Appendix C.5.

**Table 6: Build SR 5 No Widening Alternative 1 Intersection LOS and Delay (sec/veh)**

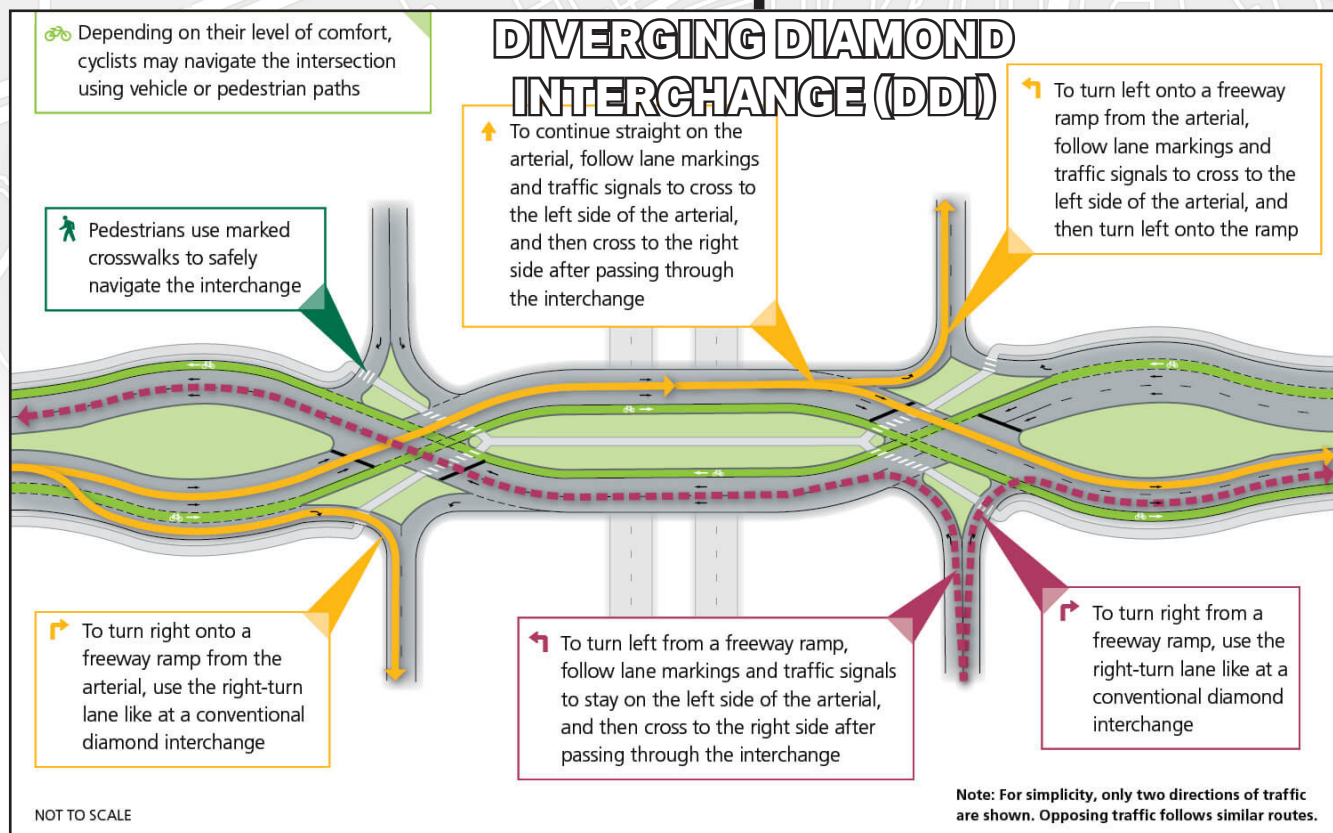
Intersection Number	Intersection Name	2030				2050			
		AM		PM		AM		PM	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
2	SR 5 @ Concourse Pkwy	B	18.8	C	23.7	B	19.4	C	25.6
3	SR 5 @ I 20 (SPUI)*	D	35.5	D	44.7	D	39.9	E	62.5
5	SR 5 @ Douglas Blvd (RCUT)*	B	17.2	D	36.6	D	35.8	E	66.5
6	SR 5 @ Arbor Pkwy (RCUT U-Turns)	B	12.6	D	40.7	C	30	F	83.7

\*HCM 2000 used due to HCM6th limited methodology to analyze intersections with more than 4 approaches or non-NEMA phasing

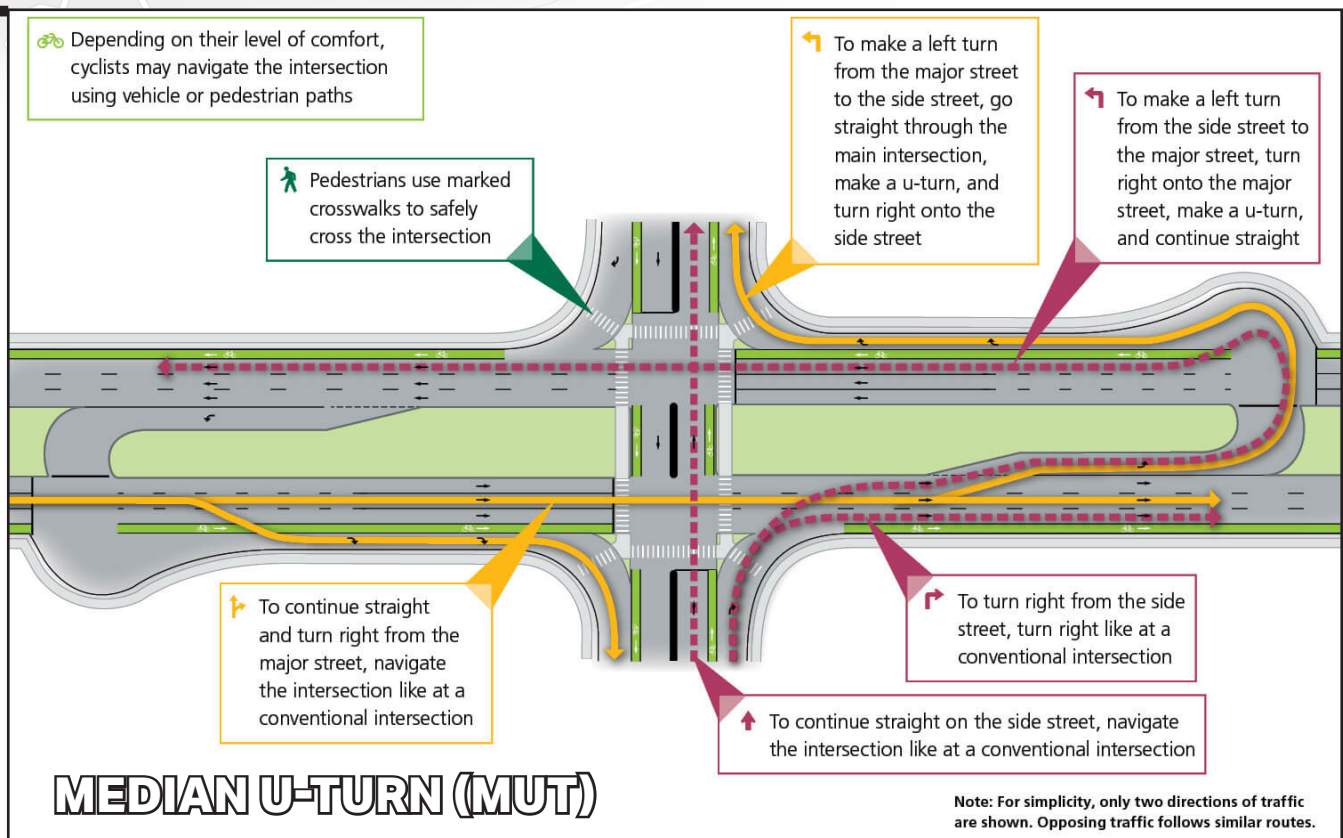
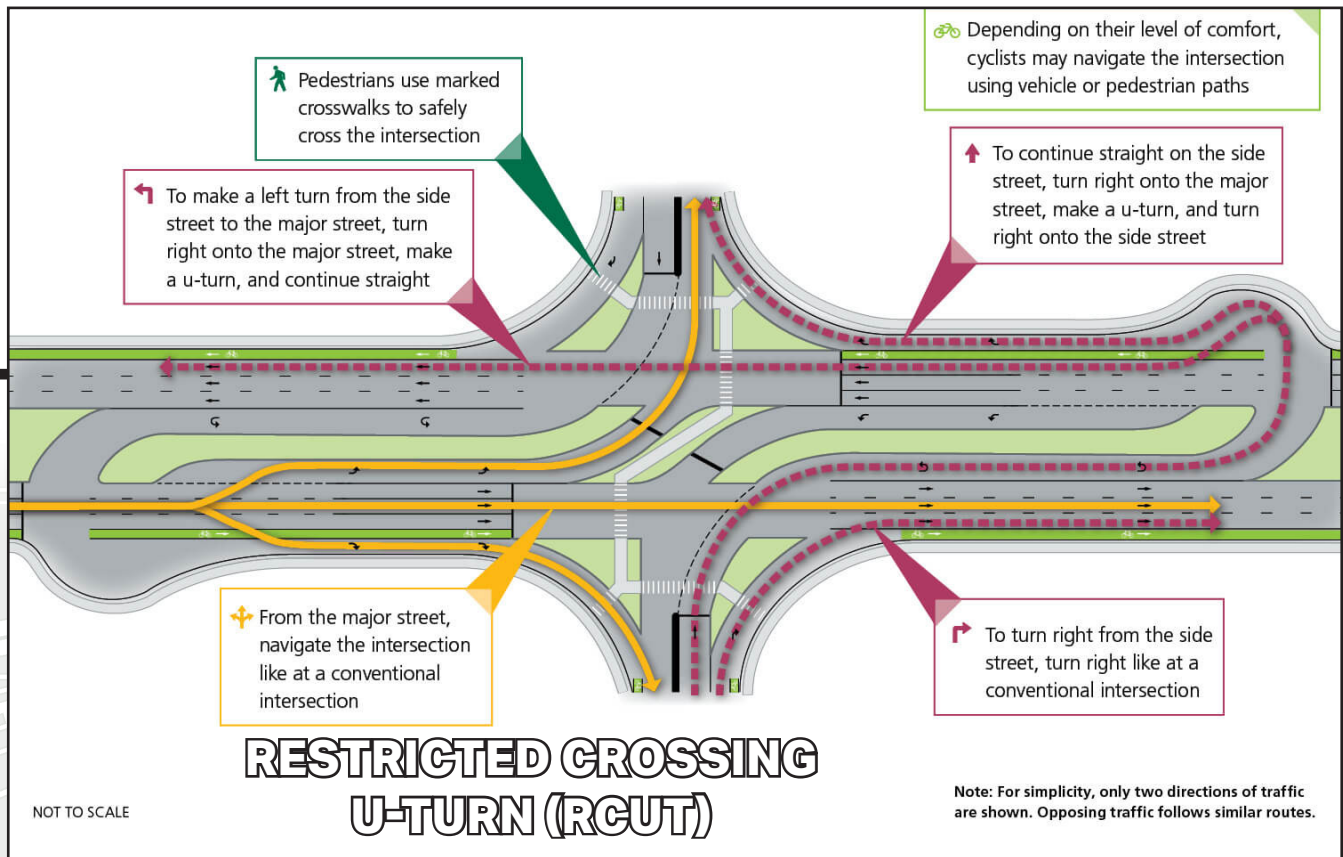


## 9.3 - SR 5 NO WIDENING ALT 2

This alternative would not widen SR 5 and instead explored alternatives which may help to mitigate traffic congestion with the use of alternative intersections at key locations. In summary, this alternative explores the possibility of building a signalized RCUT intersection at the SR 5 at Concourse Pkwy intersection, a DDI (Diverging Diamond Interchange) at the SR 5 at I-20 interchange, and a signalized MUT (Median U-Turn) intersection at the SR 5 at Douglas Blvd intersection.







## 9.3 - SR 5 NO WIDENING ALT 2

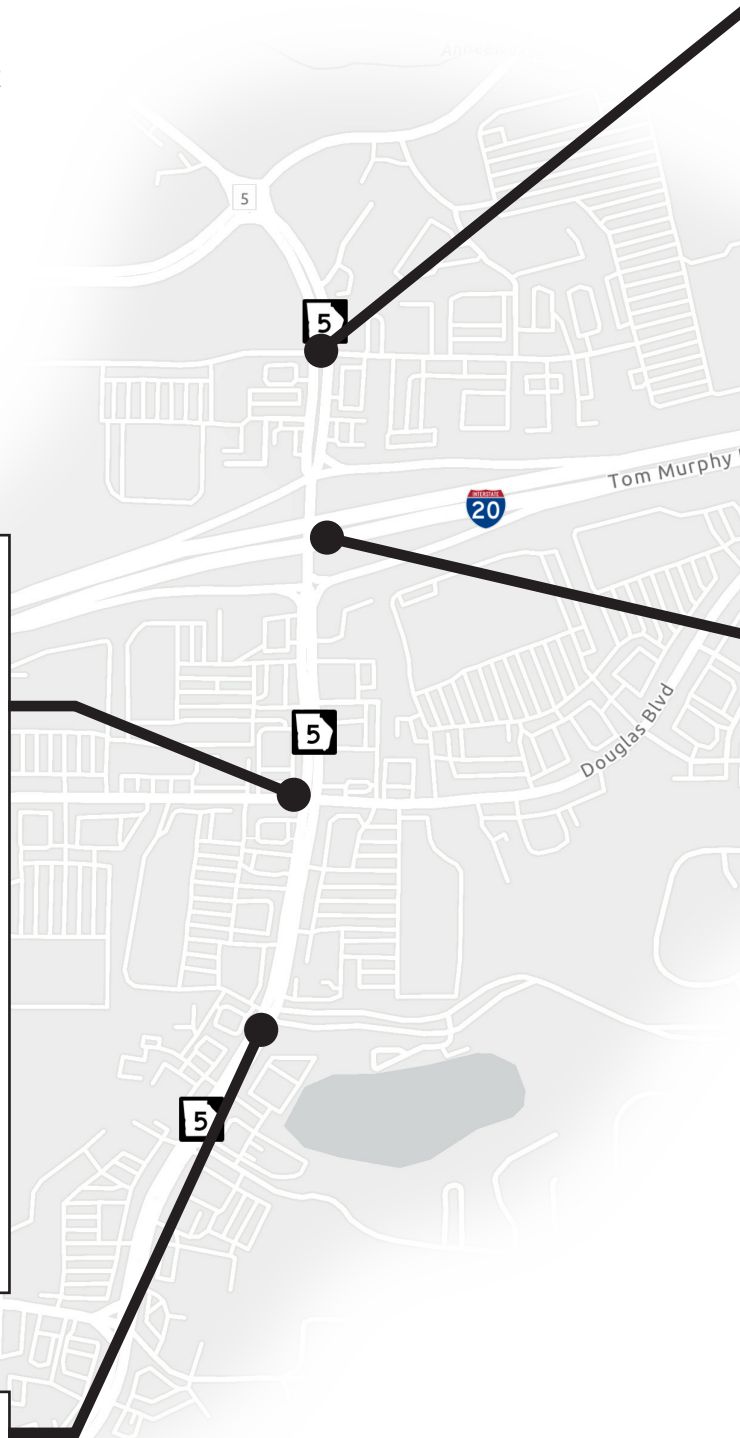
This alternative would not widen SR 5 and instead explored alternatives which may help to mitigate traffic congestion with the use of alternative intersections at key locations. In summary, this alternative explores the possibility of building a signalized RCUT intersection at the SR 5 at Concourse Pkwy intersection, a DDI (Diverging Diamond Interchange) at the SR 5 at I-20 interchange, and a signalized MUT (Median U-Turn) intersection at the SR 5 at Douglas Blvd intersection.

### SR 5 @ DOUGLAS BLVD - MUT

- Remove northbound and southbound left turn lanes and associated left turn signal phase.
- Add northbound and southbound right turn lane.
- Add additional eastbound and westbound left turn lane and convert to protected only signal phasing.
- Add additional westbound right turn lane.
- Construct new signalized intersection between the I-20 interchange and Douglas Blvd to accommodate U-turns for re-routed northbound left turn volume at Douglas Blvd.
- Re-route southbound left turn volume at Douglas Blvd to a U-turn at the Arbor Pkwy intersection.

### SR 5 @ ARBOR PKWY

- Construct bulbout for southbound U-turning traffic as a high volume of U-turns will be accommodated at Arbor Pkwy due to re-routed southbound left turning volume from Douglas Blvd.



### SR 5 @ I-20 INTERCHANGE

- Reconstruct intersection to a signalized Restricted Crossing U-Turn (RCUT) intersection.
- Remove one westbound left turn lane and convert the remaining westbound approach lanes to right turn only lanes under protexted only phasing overlapped with the southbound left turn lane.
- Remove eastbound left turn lane and convert eastbound thru-lane/right-turn lane to a right turn only lane under protected only phasing overlapped with the northbound left turn phase.
- Re-route westbound thru-lane/left-turn vehicles to the northbound U-turn at the SR 5 at Bright Star Connector intersection.
- Re-route eastbound thru/left turn vehicles to the eastbound approach of SR 5 at Bright Star Connector via Concourse Pkwy at Bright Star Conn.

### SR 5 @ I-20 INTERCHANGE

- Replace existing diamond interchange with a DDI
- DDI would require three thru-lanes in each direction at the interchange: third northbound thru-lane would begin south of the interchange and terminate as a right turn lane at Concourse Pkwy. Third southbound thru-lane would begin north of the interchange and terminate as a right turn lane at Douglas Blvd.

The intersection LOS and Delay for the Open (2030) and Design (2050) year SR 5 Build No Widening Alternative 1 condition is shown below in Table 7. As is shown, the LOS in PM peak hour of the Design year (2050) would be LOS E at the SR 5 at Douglas Blvd intersection. Although an LOS E is not desirable it does mark a substantial improvement over the LOS F from the No Build and Build No Mitigation scenarios which result in excess of 100 seconds per vehicle delay. The HCM Synchro printouts for the No Widening Alternative 2 scenario can be found in Appendix C.6.

**Table 7: Build SR 5 No Widening Alternative 2 Intersection LOS and Delay (sec/veh)**

Intersection Number	Intersection Name	2030				2050			
		AM		PM		AM		PM	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
1	SR 5 @ Bright Star Connector	C	29.7	D	50.1	C	34	D	43
2	SR 5 @ Concourse Pkwy (RCUT)*	A	9.5	B	13.1	A	9.6	B	18
3	SR 5 @ I 20 WB Ramps (DDI)*	B	19.6	C	21.5	C	24.9	C	24.7
4	SR 5 @ I 20 EB Ramps (DDI)*	B	13	B	15.4	B	13.3	C	24.9
5	SR 5 @ Douglas Blvd (MUT)	B	19.9	D	47.2	C	33.6	E	69.3
6	SR 5 @ Arbor Pkwy (MUT U-Turns)	B	10.4	C	22.5	B	18.1	C	34.6

\*HCM 2000 used due to HCM6th limited methodology to analyze intersections with more than 4 approaches or non-NEMA phasing

# 10 - BRIGHT STAR RD IMPROVEMENTS

Improving Bright Star Road with an interchange, a wider bridge, and collector distributor lanes connecting to SR 5 will greatly help alleviate traffic congestion on SR 5.

## SR 5 @ I-20

- Construct Collector-Distributor Lanes from SR 5 to Bright Star Rd.



## BRIGHT STAR @ I-20

- Construct four lane bridge in place of existing two-lane bridge.
- Construct exit ramps from Bright Star Rd onto I-20.



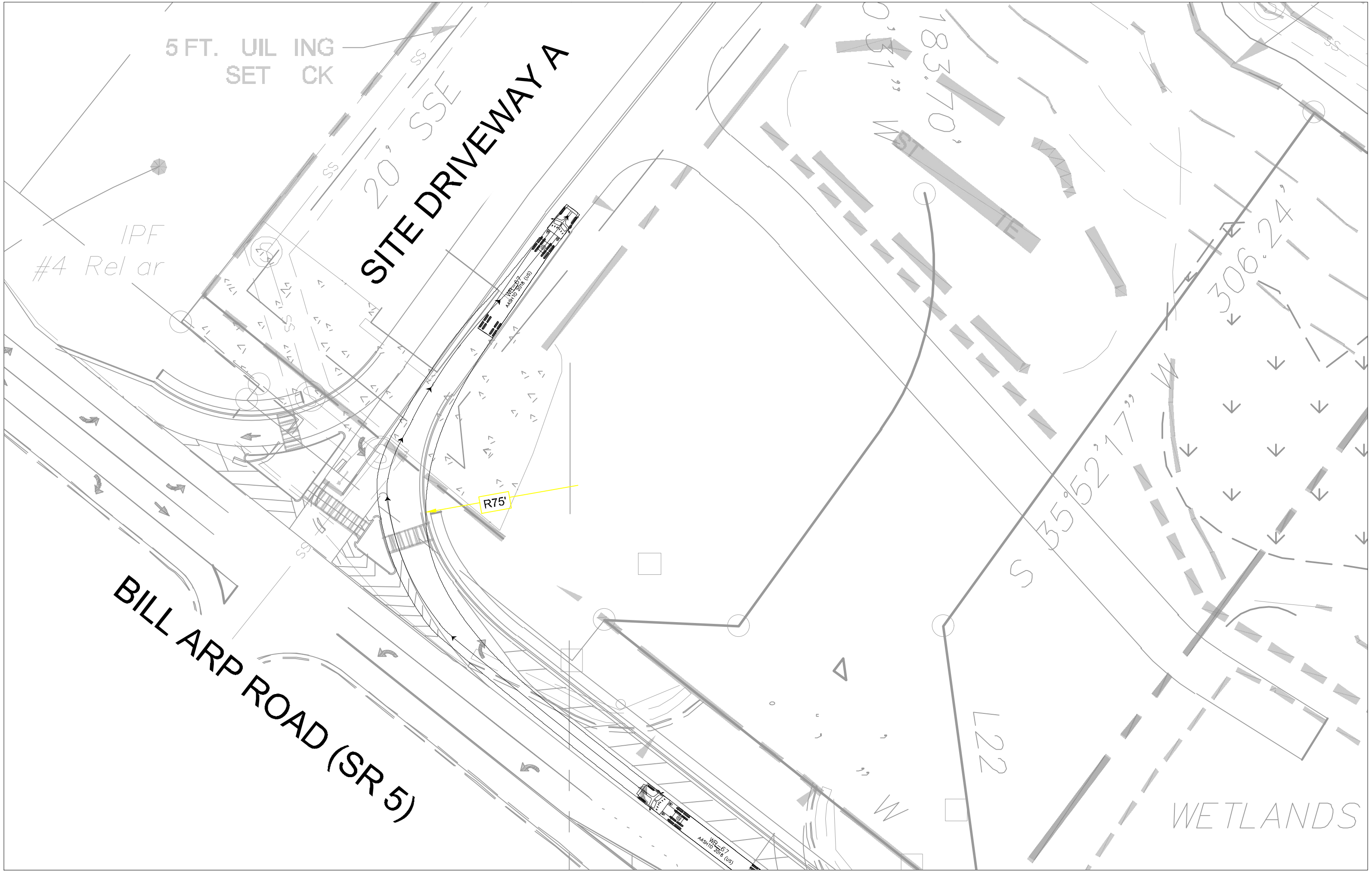
Adding an interchange and collector distributor lanes to Bright Star Road and widening the bridge to four lanes will go a long way to alleviating the SR 5 bottleneck. Not only will this improve traffic, this will have a myriad of add-on benefits:

- Alleviates congestion at the SR 5 bottleneck - All of the travelers that live in the area or to the south are forced to go through the existing bottleneck of SR 5 @ Douglas Blvd. These travelers can use the bypass to avoid the worst of the traffic.
- Reactivates the Park and Ride by making it more convenient - As it is now, the Park and Ride is underutilized because you are forced to drive through the most congested part to get to it, defeating the purpose. With a Bright Star bypass, it makes sense to get off at Bright Star and park to avoid sitting in traffic. Couple this with a dedicated Arbor Place bus, bike share, and parkways leading from the PnR.
- Revitalizes Stewart Parkway, setting stage for future Town Center development - Will also make the Bright Star Connector area north of I-20 more attractive to prospective developers.
- Opportunity to capture tag-along commercial developments - Businesses tend to spread to whatever the next exits are, so plant fertile ground for them by building the next exit.
- Dovetails with ARC DO-003 – South Douglas Loop Phase 3 project to widen Bright Star Road south of I-20.





# Full Page Truck Exhibits





# Intersection Control Evaluation (ICE)

GDOT PI #		N/A		<p>Note: Up to 5 alternatives may be selected and evaluated; Use this ICE Stage 1 to screen 5 or fewer alternatives to evaluate in Stage 2</p> <p>1. Does alternative address the project need in a balanced manner and in scale with the project?</p> <p>2. Does alternative improve safety performance in terms of reducing severe crashes?</p> <p>3. Does alternative incorporate safety, convenience and accessibility for pedestrians and/or bicyclists?</p> <p>4. Does alternative improve (or preserve) traffic operations (congestion, delay, reliability, etc.)?</p> <p>5. Does alternative appear feasible given the site characteristics, constraints &amp; location context?</p> <p>6. Does alternative appear feasible with respect to other project factors?</p> <p>7. Overall feasible alternative (select alternative for further evaluation in Stage 2)?</p>						
Project Location:		SR 5 @ Site Drwy A								
Existing Control:		Conventional (Minor Stop)								
Prepared by:		KHA								
Date:		3/27/2022		<p>Answer "Yes" or "No" to each policy question for each control type to identify which alternatives should be evaluated in the Stage 2 Decision Record; enter justification in the rightmost column</p>						
Intersection Alternative (see "Intersections" tab for detailed description of intersection/interchange type)										
Unsignalized Intersections	Conventional (Minor Stop)	Yes	Yes	Yes	No	Yes	Yes	Yes	Consider for Stage 2 Analysis	
	Conventional (All-Way Stop)	No	Yes	No	No	No	No	No	AWS not viable due to speeds and volumes on mainline	
	Mini Roundabout	No	No	No	No	No	No	No	Control not appropriate for high-speed roadway	
	Single Lane Roundabout	No	Yes	No	Yes	No	No	No	Sidestreet less than 10% of overall intersection volume	
	Multilane Roundabout	Yes	Yes	No	Yes	No	No	No	Sidestreet less than 10% of overall intersection volume	
	RCUT (stop control)	Yes	Yes	No	Yes	Yes	Yes	Yes	Consider for Stage 2 Analysis	
	RIRO w/down stream U-Turn	Yes	Yes	No	No	No	Yes	No	No feasible location for U-Turns south of the site.	
	High-T (unsignalized)	No	No	No	No	No	No	No	Not a T-intersection	
	Offset-T Intersections	No	No	No	No	No	No	No	Purpose to align with driveway stub across street	
	Diamond Interch (Stop Control)	No	No	No	No	No	No	No	Not a grade separated interchange	
	Diamond Interch (RAB Control)	No	No	No	No	No	No	No	Not a grade separated interchange	
	No LT Lane Improvements	Yes	Yes	No	Yes	Yes	Yes	No	N/A	
	No RT Lane Improvements									
	Other unsignalized (provide description):	No	No	No	No	No	No	No	N/A	
Signalized Intersections	Traffic Signal	Yes	No	Yes	No	Yes	No	No	Intersection does not meet signal warrants.	
	Median U-Turn (Indirect Left)	No	No	No	No	No	No	No	Intersection does not meet signal warrants.	
	RCUT (signalized)	Yes	No	Yes	No	Yes	No	No	Intersection does not meet signal warrants.	
	Displaced Left Turn (CFI)	No	No	No	No	No	No	No	Intersection does not meet signal warrants.	
	Continuous Green-T	Yes	No	No	No	Yes	No	No	Intersection does not meet signal warrants.	
	Jughandle	No	No	No	No	No	No	No	Intersection does not meet signal warrants.	
	Quadrant Roadway	No	No	No	No	No	No	No	Intersection does not meet signal warrants.	
	Diamond Interch (Signal Control)	No	No	No	No	No	No	No	Intersection does not meet signal warrants.	
	Diverging Diamond	No	No	No	No	No	No	No	Intersection does not meet signal warrants.	
	Single Point Interchange	No	No	No	No	No	No	No	Intersection does not meet signal warrants.	
	No LT Lane Improvements	No	No	No	No	No	No	No	N/A	
	No RT Lane Improvements									
	Other Signalized (provide description):	No	No	No	No	No	No	No	N/A	

☐ = Intersection type selected for more detailed analysis in Stage 2 Alternative Selection Decision Record



GDOT PI # (or N/A) N/A

GDOT District: 7 - Metro Atlanta

Date: 3/27/2022

County: Douglas

Area Type: Urban

Agency/Firm: KHA

Project Location: SR 5 @ Site Drwy A

Analyst: BNM

Existing Intersection Control: Conventional (Minor Stop)

Type of Analysis: Conventional Non-Safety Funded Project

## Opening / Design Year Traffic Operations

Intersection meets signal/AWS warrants?	None	
Traffic Analysis Measure of Effectiveness	Intersection Delay	
Traffic Analysis Software Used	Synchro 10	
Analysis Time Period	AM Peak Hr	PM Peak Hr
2023 Opening Yr No-Build Peak Hr Intersection Delay	0.0 sec	0.0 sec
2023 Opening Yr No-Build Peak Hr Intersection V/C	0.00	0.00
2043 Design Yr No-Build Peak Hr Intersection Delay	0.0 sec	0.0 sec
2043 Design Yr No-Build Peak Hr Intersection V/C ratio	0.00	0.00

Complete Streets Warrants Met?

- ☐ PEDESTRIANS  
☐ BICYCLES  
☐ TRANSIT

Crash Type	Crash Severity			
	PDO	Injury Crash*	Fatal Crash*	
Angle	1	0	0	50%
Head-On	0	0	0	0%
Rear End	0	0	0	0%
Sideswipe - same	0	0	0	0%
Sideswipe - opposite	0	0	0	0%
Not Collision w/Motor Veh	1	0	0	50%
TOTALS:	2	0	0	2

\* Number of crashes resulting in injuries / fatalities, not number of persons

## Alternatives Analysis:

Proposed Control Type/Improvement:

Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Conventional (Minor Stop)	RCUT (stop control)	N/A	N/A	N/A

## Project Cost: (From CostEst Worksheet)

	Additional description here	Additional description here			
Construction Cost	\$200,000	\$389,000			
ROW Cost	\$0	\$21,000			
Environmental Cost	\$0	\$0			
Reimbursable Utility Cost	\$0	\$5,000			
Design & Contingency Cost	\$0	\$100,000			
Cost Adjustment (justification req'd)	0%	0%			
Total Cost	\$200,000	\$515,000			

## Traffic Operations:

	Synchro 10		Synchro 10				
	AM Peak Hr	PM Peak Hr	AM Peak Hr	PM Peak Hr			
Traffic Analysis Software Used							
Analysis Period							
2043 Design Yr Build Intersection Delay	21.6 sec	33.1 sec	37.6 sec	45.7 sec			
2043 Design Yr Build Intersection V/C	0.06	0.21	0.09	0.17			

## Safety Analysis:

Predefined CRF: PDO	0%	31%			
Predefined CRF: Fatal/Inj	0%	53%			
Predefined CRF Source:	N/A	NC/MO Table 4-7			
User Defined CRF: PDO					
User Defined CRF: Fatal/Inj					
User Defined CRF Source (write in if applicable):					

## Environmental Impacts:<sup>1</sup>

Historic District/Property	None	None			
Archaeology Resources	None	None			
Graveyard	None	None			
Stream	None	None			
Underground Tank/Hazmat	None	None			
Park Land	None	None			
EJ Community	None	None			
Wooded Area	None	None			
Wetland	None	None			

Note: If environmental impact is significant (RED), provide justification impact won't jeopardize project delivery using "Env" worksheet

<sup>1</sup> Environmental impacts are only preliminary estimates; detailed environmental impact documentation will be included with project concept report

## Stakeholder Posture:

Local Community Support	Neutral	Neutral			
GDOT Support	Neutral	Neutral			

## Final ICE Stage 2 Score:

Rank of Control Type Alternatives:	6.1	5.8			
	1	2			

Note: Stage 2 score is not given (shown as "-") if signal or AWS is selected as control type but respective warrants are not met

Provide additional comments and/or explain any unique analysis inputs, or results (as necessary): Synchro 11 used for analysis. RCUT delay and v/c includes weighted average of westbound movement and corresponding displaced u-turn and travel time (worst approach). Conventional minor stop with turn lane delay and v/c represents worst approach (westbound left). Cost override tool used to include cost of conventional driveway.

HCM 6th TWSC  
5: Bill Arp Road (SR 5) & Site Driveway A

Highway 5 Business Center DRI #3589  
Horizon 2043 Build AM Peak (Unsignalized)

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔	↔	↔	↔	↔	↔	↔
Traffic Vol, veh/h	0	0	0	22	0	4	0	479	74	14	646	0
Future Vol, veh/h	0	0	0	22	0	4	0	479	74	14	646	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Stop	-	-	Yield	-	-	Yield
Storage Length	-	-	-	-	-	245	150	-	470	150	-	155
Veh in Median Storage, #	-	0	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	27	2	25	2	13	8	14	9	2
Mvmt Flow	0	0	0	25	0	4	0	538	83	16	726	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1296	1296	726	1296	1296	538	726	0	0	538	0	0
Stage 1	758	758	-	538	538	-	-	-	-	-	-	-
Stage 2	538	538	-	758	758	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.37	6.52	6.45	4.12	-	-	4.24	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.37	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.37	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.743	4.018	3.525	2.218	-	-	2.326	-	-
Pot Cap-1 Maneuver	139	162	425	123	162	501	877	-	-	972	-	-
Stage 1	399	415	-	485	522	-	-	-	-	-	-	-
Stage 2	527	522	-	364	415	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	136	159	425	121	159	501	877	-	-	972	-	-
Mov Cap-2 Maneuver	136	159	-	241	280	-	-	-	-	-	-	-
Stage 1	399	408	-	485	522	-	-	-	-	-	-	-
Stage 2	522	522	-	358	408	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	0		20.2		0		0.2	
HCM LOS	A		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR
Capacity (veh/h)	877	-	-	- 241 501 972	-	-	-
HCM Lane V/C Ratio	-	-	-	- 0.103 0.009 0.016	-	-	-
HCM Control Delay (s)	0	-	-	0 21.6 12.3 8.8	-	-	-
HCM Lane LOS	A	-	-	A C B A	-	-	-
HCM 95th %tile Q(veh)	0	-	-	- 0.3 0 0	-	-	-

HCM 6th TWSC  
5: Bill Arp Road (SR 5) & Site Driveway A

Highway 5 Business Center DRI #3589  
Horizon 2043 Build PM Peak (Unsignalized)

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔	↔	↔	↔	↔	↔	↔
Traffic Vol, veh/h	0	0	0	72	0	13	0	892	26	5	658	0
Future Vol, veh/h	0	0	0	72	0	13	0	892	26	5	658	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Stop	-	-	Yield	-	-	Yield
Storage Length	-	-	-	-	-	245	150	-	470	150	-	155
Veh in Median Storage, #	-	0	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	13	2	15	2	3	35	40	5	2
Mvmt Flow	0	0	0	73	0	13	0	910	27	5	671	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1591	1591	671	1591	1591	910	671	0	0	910	0	0
Stage 1	681	681	-	910	910	-	-	-	-	-	-	-
Stage 2	910	910	-	681	681	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.23	6.52	6.35	4.12	-	-	4.5	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.23	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.23	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.617	4.018	3.435	2.218	-	-	2.56	-	-
Pot Cap-1 Maneuver	87	107	456	82	107	315	919	-	-	612	-	-
Stage 1	440	450	-	314	353	-	-	-	-	-	-	-
Stage 2	329	353	-	423	450	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	83	106	456	82	106	315	919	-	-	612	-	-
Mov Cap-2 Maneuver	83	106	-	200	227	-	-	-	-	-	-	-
Stage 1	440	446	-	314	353	-	-	-	-	-	-	-
Stage 2	315	353	-	420	446	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	30.6	0	0.1
HCM LOS	A	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR
Capacity (veh/h)	919	-	-	- 200 315 612	-	-	-
HCM Lane V/C Ratio	-	-	-	0.367 0.042 0.008	-	-	-
HCM Control Delay (s)	0	-	-	0 33.1 16.9 10.9	-	-	-
HCM Lane LOS	A	-	-	A D C B	-	-	-
HCM 95th %tile Q(veh)	0	-	-	- 1.6 0.1 0	-	-	-

HCM 6th TWSC  
5: Bill Arp Road (SR 5) & Site Driveway A










Highway 5 Business Center DRI #3589  
Projected 2043 Build AM Peak (RCUT)

Intersection												
Int Delay, s/veh	0.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔				↔	↔	↔	↔	↔	↔	↔
Traffic Vol, veh/h	0	0	0	0	0	26	0	479	74	14	668	0
Future Vol, veh/h	0	0	0	0	0	26	0	479	74	14	668	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Stop	-	-	Yield	-	-	Yield
Storage Length	-	-	-	-	-	-	150	-	470	150	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	27	2	25	2	13	8	14	9	2
Mvmt Flow	0	0	0	0	0	29	0	538	83	16	751	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1321	1321	751	-	-	538	751	0	0	538	0	0
Stage 1	783	783	-	-	-	-	-	-	-	-	-	-
Stage 2	538	538	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	-	-	6.45	4.12	-	-	4.24	-	-
Critical Hdwy Stg 1	6.12	5.52	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	-	-	3.525	2.218	-	-	2.326	-	-
Pot Cap-1 Maneuver	134	157	411	0	0	501	858	-	-	972	-	-
Stage 1	387	404	-	0	0	-	-	-	-	-	-	-
Stage 2	527	522	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	125	154	411	-	-	501	858	-	-	972	-	-
Mov Cap-2 Maneuver	125	154	-	-	-	-	-	-	-	-	-	-
Stage 1	387	398	-	-	-	-	-	-	-	-	-	-
Stage 2	496	522	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	12.6	0	0.2
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	858	-	-	-	501	972	-
HCM Lane V/C Ratio	-	-	-	-	0.058	0.016	-
HCM Control Delay (s)	0	-	-	0	12.6	8.8	-
HCM Lane LOS	A	-	-	A	B	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.2	0	-

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	0	0	22	483	0	0	660	0
Future Vol, veh/h	0	0	0	0	0	0	22	483	0	0	660	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	Yield	-	-	Yield
Storage Length	0	-	0	-	-	-	140	-	95	150	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	25	543	0	0	742	0

Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	1335	-	742	1335	1335	543	742	0	0	543	0	0
Stage 1	742	-	-	593	593	-	-	-	-	-	-	-
Stage 2	593	-	-	742	742	-	-	-	-	-	-	-
Critical Hdwy	7.12	-	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	-	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	-	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	-	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	131	0	416	131	154	540	865	-	-	1026	-	-
Stage 1	408	0	-	492	493	-	-	-	-	-	-	-
Stage 2	492	0	-	408	422	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	128	-	416	128	150	540	865	-	-	1026	-	-
Mov Cap-2 Maneuver	128	-	-	128	150	-	-	-	-	-	-	-
Stage 1	396	-	-	478	479	-	-	-	-	-	-	-
Stage 2	478	-	-	408	422	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0.4	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	865	-	-	-	-	-	1026	-	-
HCM Lane V/C Ratio	0.029	-	-	-	-	-	-	-	-
HCM Control Delay (s)	9.3	-	-	0	0	0	0	-	-
HCM Lane LOS	A	-	-	A	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-	-	-	0	-	-



HCM 6th TWSC  
5: Bill Arp Road (SR 5) & Site Driveway A










Highway 5 Business Center DRI #3589  
Projected 2043 Build PM Peak (RCUT)

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔				↔	↔	↔	↔	↔	↔	↔
Traffic Vol, veh/h	0	0	0	0	0	85	0	892	26	5	730	0
Future Vol, veh/h	0	0	0	0	0	85	0	892	26	5	730	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Stop	-	-	Yield	-	-	Yield
Storage Length	-	-	-	-	-	-	150	-	470	150	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	13	2	15	2	3	35	40	5	2
Mvmt Flow	0	0	0	0	0	87	0	910	27	5	745	0

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1665	1665	745	-	-	910	745	0	0	910	0	0
Stage 1	755	755	-	-	-	-	-	-	-	-	-	-
Stage 2	910	910	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	-	-	6.35	4.12	-	-	4.5	-	-
Critical Hdwy Stg 1	6.12	5.52	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	-	-	3.435	2.218	-	-	2.56	-	-
Pot Cap-1 Maneuver	77	97	414	0	0	315	863	-	-	612	-	-
Stage 1	401	417	-	0	0	-	-	-	-	-	-	-
Stage 2	329	353	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	55	96	414	-	-	315	863	-	-	612	-	-
Mov Cap-2 Maneuver	55	96	-	-	-	-	-	-	-	-	-	-
Stage 1	401	414	-	-	-	-	-	-	-	-	-	-
Stage 2	238	353	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	20.7	0	0.1
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	863	-	-	-	315	612	-
HCM Lane V/C Ratio	-	-	-	-	0.275	0.008	-
HCM Control Delay (s)	0	-	-	0	20.7	10.9	-
HCM Lane LOS	A	-	-	A	C	B	-
HCM 95th %tile Q(veh)	0	-	-	-	1.1	0	-

Intersection												
Int Delay, s/veh	0.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	0	0	72	905	0	0	663	0
Future Vol, veh/h	0	0	0	0	0	0	72	905	0	0	663	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	Yield	-	-	Yield
Storage Length	0	-	0	-	-	-	140	-	95	150	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	73	923	0	0	677	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1746	-	677	1746	1746	923	677	0	0	923	0	0
Stage 1	677	-	-	1069	1069	-	-	-	-	-	-	-
Stage 2	1069	-	-	677	677	-	-	-	-	-	-	-
Critical Hdwy	7.12	-	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	-	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	-	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	-	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	68	0	453	68	86	327	915	-	-	740	-	-
Stage 1	443	0	-	268	298	-	-	-	-	-	-	-
Stage 2	268	0	-	443	452	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	64	-	453	64	79	327	915	-	-	740	-	-
Mov Cap-2 Maneuver	64	-	-	64	79	-	-	-	-	-	-	-
Stage 1	408	-	-	247	274	-	-	-	-	-	-	-
Stage 2	247	-	-	443	452	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	0		0		0.7		0					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	915	-	-	-	-	-	740	-	-			
HCM Lane V/C Ratio	0.08	-	-	-	-	-	-	-	-			
HCM Control Delay (s)	9.3	-	-	0	0	0	0	-	-			
HCM Lane LOS	A	-	-	A	A	A	A	-	-			
HCM 95th %tile Q(veh)	0.3	-	-	-	-	-	0	-	-			