

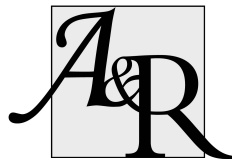
**DEVELOPMENT OF REGIONAL IMPACT
(DRI #3403)
TRAFFIC STUDY
BUICE LAKE SOUTH MIXED-USE DEVELOPMENT ON
BELLS FERRY ROAD,
CHEROKEE COUNTY, GEORGIA**



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A & R Project # 21-077

EXECUTIVE SUMMARY

Traffic impacts were evaluated for the added traffic from the proposed mixed-use development located on Bells Ferry Road to the north and south of Hunter Trail and southwest of the intersection Bells Ferry Road at Buice Lake Parkway in Cherokee County, Georgia. The proposed development will consist of:

- Single family detached homes: 26 units
- Multifamily housing (low rise): 167 units
- Multifamily housing (midrise): 575 units
- General office building: 18, 500 square feet
- Retail: 24,000 square feet

Existing and future operations after completion of the project were analyzed at the intersections of:

1. Bells Ferry Road at Eagle Drive
2. Bells Ferry Road at Buice Lake Parkway / Old Bascomb Court
3. Bells Ferry Road at Hunter Trail / Red Barn Road
4. Bells Ferry Road at Robin Road / Tyson Woods Road
5. Bells Ferry Road at SR 92 (Alabama Road)
6. SR 92 (Alabama Road) at Robin Road / Robin Road Extension

All study intersection will operate at standard levels of service after the project is completed except for the following two intersections on SR 92:

SR 92 / Bells Ferry Road:

The results of existing traffic operations analysis and future “No-Build” analysis indicate this intersection is operating at level-of-service “E” and “F” during the AM and PM peak hours, respectively. After addition of site generated volumes and system improvements that are identified below, the intersection will continue to operate at level-of-service “E” during the AM and PM peak hours (“Build”).

- Convert northbound channelized right turn lane to a shared through/right turn lane since three receiving lanes exist
- Convert dual westbound left turn lanes to one westbound left turn lane and re-purpose the second left turn lane as a third westbound through lane. Additional asphalt (currently striped off) on the westbound receiving roadway area exists for re-striping of a receiving lane.
- Convert eastbound right turn lane to a shared through/right turn lane using existing asphalt on receiving eastbound roadway
- Optimize Signal Timing

SR 92 / Robin Road:

This is currently operating at level of service “D” and “E” during the AM and PM peak hours, respectively. It will operate at level-of-service “E” during both the AM and PM peak hours in the “No-Build” scenario. After addition of site generated traffic and the system improvements identified below, the intersection will operate at level-of-service “C” during both the AM and PM peak hours.

- Remove northbound and southbound left turn protected/permissive signal phase since they do not meet left turn phase warrant.
- Addition of southbound right turn overlap phase with eastbound left turn phase
- Optimize Signal Timing

Site Access Configuration

All site driveways are recommended to be stop sign controlled on the driveway approach. The intersection of Hunter Trail and Bells Ferry Road is to include a left turn lane and a shared through/right turn lane at the existing signalized intersection. A deceleration lane is recommended at the intersection of Hunter Trail and Bells Ferry Road (GDOT standards). A left turn lane already exists at this intersection. All other driveways are to be stop-sign controlled and are recommended to have available sight distance verified per AASHTO standards during driveway design.

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INTRODUCTION

The purpose of this study is to determine the traffic impact that will result from the proposed mixed-use development located on Bells Ferry Road to the north and south of Hunter Trail and southwest of the intersection Bells Ferry Road at Buice Lake Parkway in Cherokee County, Georgia. The proposed development will consist of:

- Single family detached homes: 26 units
- Multifamily housing (low rise): 167 units
- Multifamily housing (midrise): 575 units
- General office building: 18, 500 square feet
- Retail: 24,000 square feet

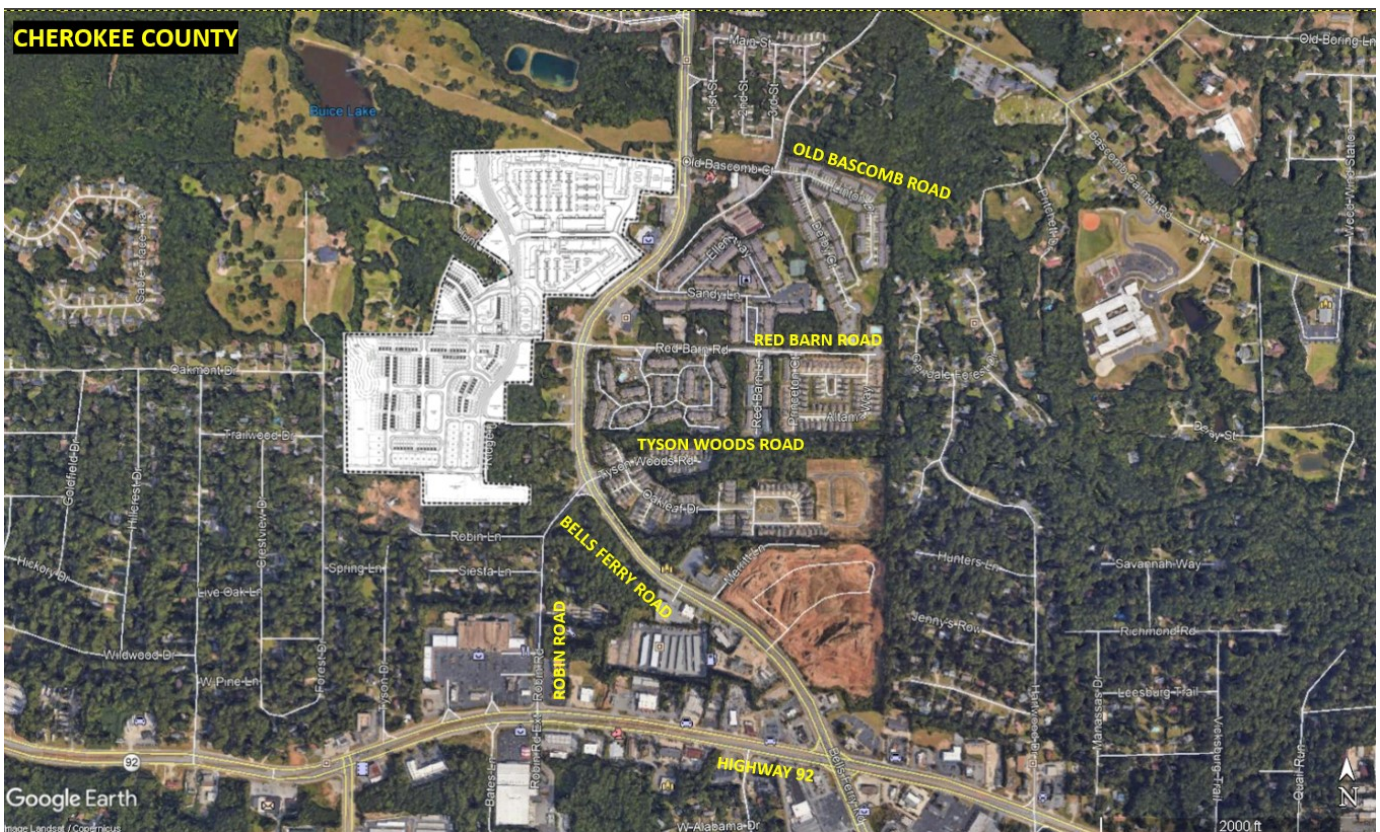


Figure 1: Site Overlay

The development proposes access at the following locations:

- Site Driveway 1: Northern Parcel Right-in/right-out driveway on Bells Ferry Road
- Site Driveway 2: Northern Parcel Full-access driveway on Buice Lake Parkway align across the Quincy (Eastern) Driveway 2
- Site Driveway 3: Northern Parcel Full-access driveway on Hunter Trail
- Site Driveway 4: Southern Parcel Full-access driveway on Hunter Trail align across Site Driveway 5 as southbound approach

- Site Driveway 5: Southern Parcel Full-access driveway on Hunter Trail align across Site Driveway 4 as northbound approach
- Site Driveway 6: Southern Parcel Full-access driveway on Hunter Trail
- Site Driveway 7: Northern Parcel Full-access driveway on Future Owl Creek Parkway
- Site Driveway 8: Northern Parcel Full-access driveway on Future Owl Creek Parkway align across Site Driveway 11 as westbound approach
- Site Driveway 9: Southern Parcel Right-in/right-out driveway on Future Owl Creek Parkway
- Site Driveway 10: Southern Parcel Full-access driveway on Future Owl Creek Parkway align across West Pine Ridge Drive
- Site Driveway 11: Northern Parcel Full-access driveway on Future Owl Creek Parkway align across Site Driveway 8 as eastbound approach

Existing and future operations during the AM (7:00 AM - 9:00 AM) and PM peak hours (4:00 PM – 6:00 PM) after completion of the project were analyzed at the intersections of:

1. Bells Ferry Road at Eagle Drive
2. Bells Ferry Road at Buice Lake Parkway / Old Bascomb Court
3. Bells Ferry Road at Hunter Trail / Red Barn Road
4. Bells Ferry Road at Robin Road / Tyson Woods Road
5. Bells Ferry Road at SR 92 (Alabama Road)
6. SR 92 (Alabama Road) at Robin Road / Robin Road Extension

Recommendations to improve traffic operations have been identified as appropriate and are discussed in detail in the following sections of the report.

STUDY NETWORK DETERMINATION

The study network was determined by evaluating the amount of traffic that the proposed development will add to each roadway segment in the area. According to GRTA requirements, a roadway segment carries a “significant” amount of traffic if the project contributes 7% or more trips to the two-way daily service volumes of the roadway at the appropriate level of service standard. Upon agreement with GRTA a level of service standard of “D” was used for determining the study area network.

The traffic generated by the proposed project was then assigned to the area roadways using the trip distribution to determine the site-generated traffic on each roadway segment. The boundaries of the study network extend to the most distant intersections where at least 7% of the service volumes on the segment are attributed to project traffic. The following study intersections fell within the 7% rule and/or have been selected as being suitable for evaluation in discussions with GRTA, ARC, GDOT, and Cherokee County DOT, the following intersections will be included in the DRI study:

- Bells Ferry Road at Buice Lake Parkway / Old Bascomb Court
- Bells Ferry Road at Hunter Trail / Red Barn Road
- Bells Ferry Road at West Pine Ridge Drive
- Bells Ferry Road at Robin Road / Tyson Woods Road
- Bells Ferry Road at SR 92 (Alabama Road)
- SR 92 (Alabama Road) at Robin Road / Robin Road Extension
- Bells Ferry Road at Eagle Drive

The location of the development and the surrounding study network is shown in Figure 2a and 2b. Other intersections within this corridor, such as unsignalized side streets, right-in/right-out driveways or private driveways have not been included in the study network.

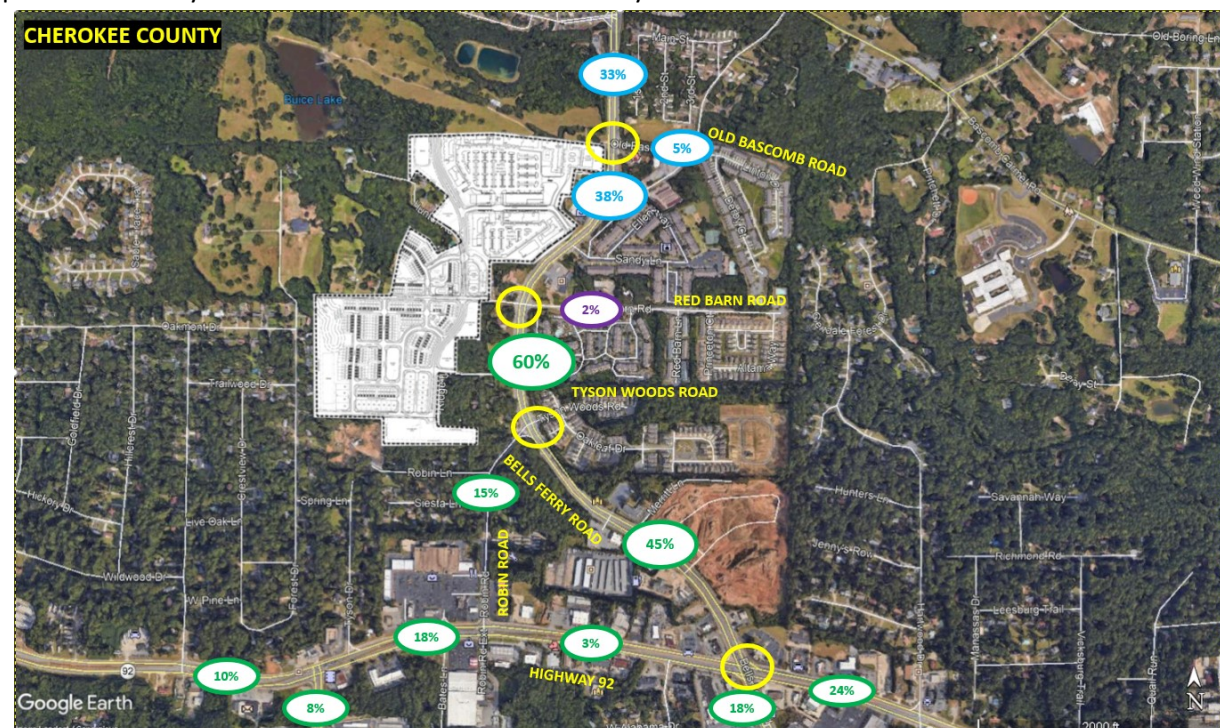
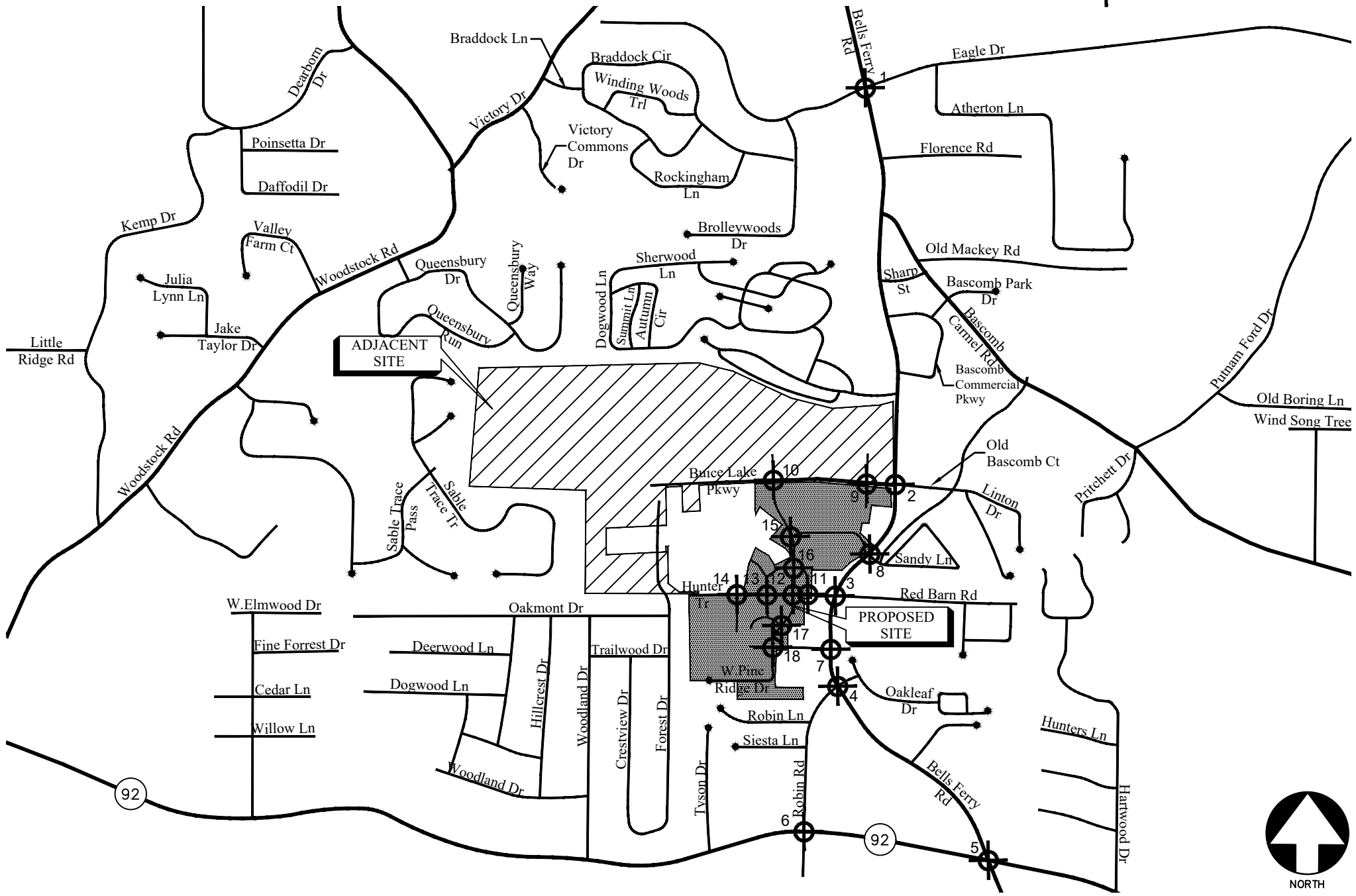


Figure 2a: Study Network Distribution



LOCATION MAP AND STUDY INTERSECTIONS

FIGURE 2b
A&R Engineering Inc.

Existing Roadway Facilities

The following is a brief description of each of the roadway facilities located in proximity to the site:

SR 92 (Alabama Road)

SR 92 (Alabama Road) is an east-west, four lane, median-divided roadway with a posted speed limit of 45 mph in the vicinity of the site. GDOT traffic counts (Station ID 057-0076) indicate that the daily traffic volume on SR 92 (Alabama Road) in 2019 was 41,600 vehicles per day west of Robin Road. GDOT classifies SR 92 (Alabama Road) as an Urban Principal Arterial roadway.

Bells Ferry Road

Bells Ferry Road is a north-south, four-lane, median-divided roadway with a posted speed limit of 45 mph in the vicinity of the site. GDOT traffic counts (Station ID 057-0117) indicate that the daily traffic volume on Bells Ferry Road in 2019 was 27,700 vehicles per day south of Eagle Drive. GDOT classifies Bells Ferry Road as an Urban Minor Arterial roadway.

Eagle Drive

Eagle Drive is an east-west roadway in the vicinity of the site. East of Bells Ferry Road, Eagle Drive is four lane, median-divided roadway with posted speed limit 40 mph and west of Bells Ferry Road, Eagle Drive is two lane undivided roadway with speed limit 25 mph.

Old Bascomb Court

Old Bascomb Court is an east-west, two lane, undivided roadway with a posted speed limit of 25 mph in the vicinity of the site.

Buice Lake Parkway

Buice Lake Parkway is an east-west, two lane, undivided roadway with a posted speed limit of 25 mph in the vicinity of the site.

Old Bascomb Road

Old Bascomb Road is an east-west, two lane, undivided roadway with a posted speed limit of 25 mph in the vicinity of the site.

Hunter Trail

Hunter Trail is an east-west, two lane, undivided roadway with a posted speed limit of 25 mph in the vicinity of the site.

Tyson Woods Road

Tyson Woods Road is an east-west, two lane, undivided roadway with a posted speed limit of 25 mph in the vicinity of the site.

West Pine Ridge Drive

West Pine Ridge Drive is an east-west, two lane, undivided roadway with a posted speed limit of 25 mph in the vicinity of the site.

Red Barn Road

Red Barn Road is an east-west, two lane, undivided roadway with a posted speed limit of 25 mph in the vicinity of the site.

Robin Road

Robin Road is two lane, undivided roadway in the vicinity of the site. Towards Bells Ferry Road, Robin Road posted speed limit of 25 mph and towards SR 92 (Alabama Road), Robin Road speed limit of 30 mph.

Existing Bicycle and Pedestrian Facilities

The following is a brief description of each of the bicycle and pedestrian facilities located in proximity to the site:

Nearby local or regional trails

A linear park trail is in discussion for

Bicycle paths or sidewalks

Sidewalks and pedestrian facilities are present along the following roadways in the study network:

- Bells Ferry Road: both sides of the road
- SR 92 (Alabama Road): both sides of the road
- Robin Road: one side (northbound direction) of the road
- Tyson Woods Road: both sides of the road
- Red Barn Road: one side (eastbound direction) of the road
- Eagle Drive: both sides of the road (West of Bells Ferry Road)
- West Pine Ridge Drive: Sidewalks are not available on either side of the road
- Hunter Trail: Sidewalks are not available on either side of the road.
- Old Bascomb Road: Sidewalks are not available on either side of the road
- Old Bascomb Court: Sidewalks are not available on either side of the road
- Buice Lake Parkway: Sidewalks are not available on either side of the road
- Cross walks are available at the signalized intersections.
- Bicycle lanes are not available in the study network

Existing Transit Facilities

Existing transit routes were not identified in the study network.



Figure 3 – Pedestrian, Transit, and Bike Facilities

STUDY METHODOLOGY

In this study, the methodology used for evaluating traffic operations at each of the subject intersections is based on the criteria set forth in the Transportation Research Board's Highway Capacity Manual, 6th edition (HCM 6). Synchro software, which utilizes the HCM methodology, was used for the analysis. The following is a description of the methodology employed for the analysis of unsignalized and signalized intersections.

Unsignalized Intersections

For unsignalized intersections at which the side street or minor street is controlled by a stop sign, the criteria for evaluating traffic operations are the level-of-service (LOS) for the turning movements at the intersection and the level-of-service for the overall intersection. Level-of-service is based on control delay incurred at the intersection. Control delay for unsignalized intersections includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Several factors affect the control delay for unsignalized intersections, such as the availability and distribution of gaps in the conflicting traffic stream, critical gaps, and follow-up time for a vehicle in the queue.

Level-of-service is assigned a letter designation from "A" through "F". Level-of-service "A" indicates excellent operations with little delay to motorists, while level-of-service "F" exists when there are insufficient gaps of acceptable size to allow vehicles on the side street to cross safely, resulting in extremely long total delays and long queues. The level-of-service criteria for two-way stop-controlled and all-way stop-controlled (unsignalized) intersections are given in Table 1.

TABLE 1 — LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS	
Level-of-service	Control Delay (sec)
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

Source: Highway Capacity Manual

Signalized Intersections

For signalized intersections, it is necessary to evaluate both capacity and level-of-service in order to evaluate the overall operation of the intersection. The capacity analysis of an intersection is performed by comparing the volume of traffic using the various lane groups at the intersection to the capacity of those lane groups. This results in a volume/capacity (v/c) ratio for each lane group. A v/c ratio greater than 1.0 indicates that the volume of traffic has exceeded the capacity available, resulting in a temporary excess of demand. Although the capacity of the entire intersection is not defined, a composite v/c ratio for the sum of the critical lane groups within the intersection is computed. This composite v/c ratio is an indication of the overall intersection sufficiency.

Level-of-service for a signalized intersection is defined in terms of average controlled delay per vehicle, which is composed of initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The level-of-service criteria for signalized intersections, based on control delay, are shown in Table 2. Level-of-service “A” indicates operations with very low control delay, while level-of-service “F” describes operations with extremely high control delay. Level-of-service “E” is typically considered to be the limit of acceptable delay, and level-of-service “F” is considered unacceptable by most drivers.

TABLE 2 — LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS	
Level-of-service	Control Delay (sec)
A	≤ 10
B	$> 10 \text{ and } \leq 20$
C	$> 20 \text{ and } \leq 35$
D	$> 35 \text{ and } \leq 55$
E	$> 55 \text{ and } \leq 80$
F	> 80

Source: Highway Capacity Manual

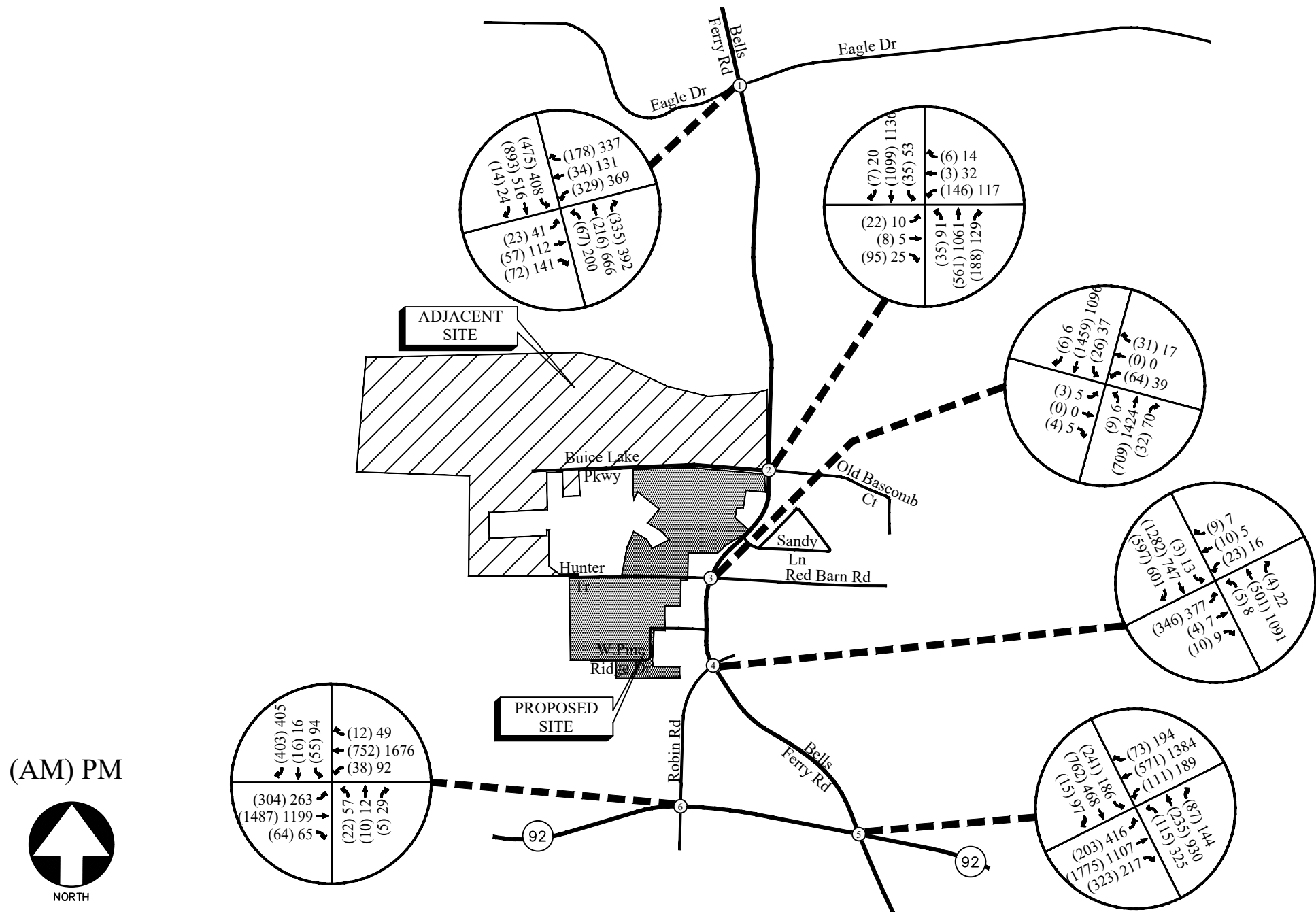
EXISTING 2021 TRAFFIC ANALYSIS

Existing Traffic Volumes

Existing traffic counts were obtained at the following study intersections:

1. Bells Ferry Road at Eagle Drive
2. Bells Ferry Road at Buice Lake Parkway / Old Bascomb Court
3. Bells Ferry Road at Hunter Trail / Red Barn Road
4. Bells Ferry Road at Robin Road / Tyson Woods Road
5. Bells Ferry Road at SR 92 (Alabama Road)
6. SR 92 (Alabama Road) at Robin Road / Robin Road Extension

Turning movement counts were collected on Tuesday, August 17, 2021. All turning movement counts were recorded during the AM and PM peak hours between 7:00am to 9:00am and 4:00pm to 6:00pm, respectively. The four consecutive 15-minute interval volumes that summed to produce the highest volume at the intersections were then determined. A 7% of total vehicles is assumed as trucks along Bells Ferry Road and Highway 92. These volumes make up the peak hour traffic volumes for the intersections counted and are shown in Figure 4.



EXISTING WEEKDAY PEAK-HOUR VOLUMES

FIGURE 4
A&R Engineering Inc.




Existing Traffic Operations

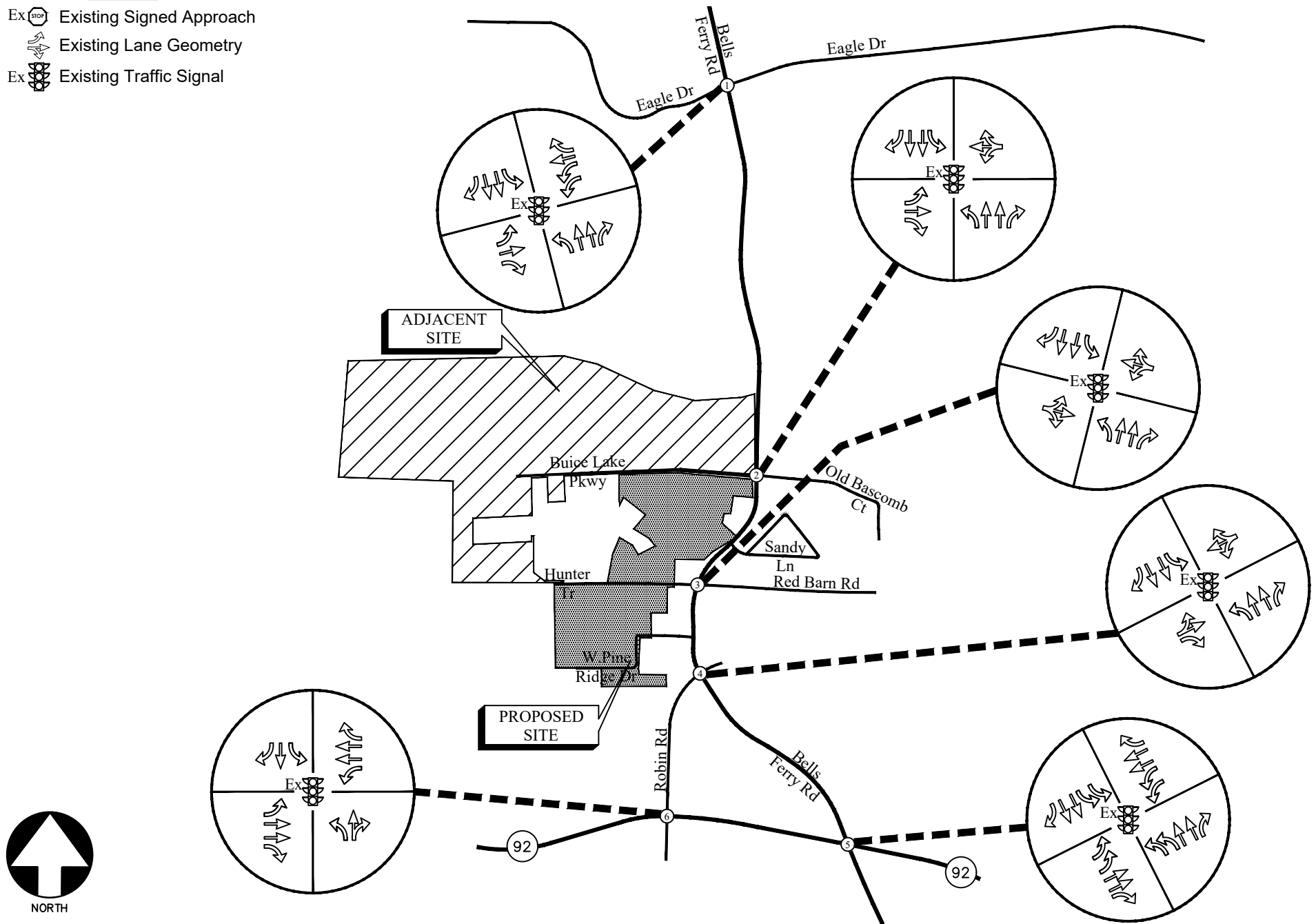
Existing 2021 traffic operations were analyzed at the study intersections in accordance with the HCM methodology. The results of the analysis are shown in Table 3. The existing traffic control and lane geometry for the intersections are shown in Figure 5.

TABLE 3 — EXISTING INTERSECTION OPERATIONS				
Intersection		Traffic Control	LOS (Delay)	
			AM Peak Hour	PM Peak Hour
1	<u>Eagle Drive @ Bells Ferry Road</u>	Signalized	<u>C (29.0)</u>	<u>D (45.3)</u>
	-Eastbound Approach		E (61.0)	E (58.7)
	-Westbound Approach		F (108.7)	F (151.1)
	-Northbound Approach		B (13.1)	B (15.6)
	-Southbound Approach		B (13.3)	C (26.7)
2	<u>Bells Ferry Road @ Buice Lake Parkway / Old Bascomb Court</u>	Signalized	<u>B (13.5)</u>	<u>B (10.4)</u>
	-Eastbound Approach		D (40.1)	D (40.7)
	-Westbound Approach		D (54.0)	D (54.6)
	-Northbound Approach		A (0.8)	A (1.4)
	-Southbound Approach		B (13.9)	B (12.9)
3	<u>Bells Ferry @ Hunter Trail / Red Barn Road</u>	Signalized	<u>A (3.7)</u>	<u>A (4.3)</u>
	-Eastbound Approach		D (52.8)	E (55.6)
	-Westbound Approach		E (57.7)	E (58.8)
	-Northbound Approach		A (4.3)	A (5.6)
	-Southbound Approach		A (1.0)	A (0.6)
4	<u>Bells Ferry Road @ Robin Rd/Tysons Wood Rd</u>	Signalized	<u>B (13.0)</u>	<u>B (18.1)</u>
	-Eastbound Approach		D (50.7)	D (48.1)
	-Westbound Approach		C (31.9)	C (30.1)
	-Northbound Approach		B (13.0)	B (19.2)
	-Southbound Approach		A (2.1)	A (0.9)
5	<u>Bells Ferry Road @ SR 92</u>	Signalized	<u>E (72.8)</u>	<u>F (100.3)</u>
	-Eastbound Approach		D (70.7)	E (57.4)
	-Westbound Approach		D (35.5)	F (149.3)
	-Northbound Approach		E (76.9)	F (109.9)
	-Southbound Approach		F (104.2)	E (63.4)
6	<u>SR 92 @ Robin Road / Robin Road Extension</u>	Signalized	<u>D (49.4)</u>	<u>E (66.2)</u>
	-Eastbound Approach		D (40.5)	E (66.7)
	-Westbound Approach		B (14.0)	E (69.7)
	-Northbound Approach		D (54.1)	D (54.1)
	-Southbound Approach		F (142.2)	D (54.7)

The results of existing traffic operations analysis indicate the intersection of Bells Ferry Road and SR 92 is operating at level-of-service “E” and “F” during the peak hours, respectively. The intersection of SR 92 and Robin Road is operating at level of service “D” and “E” during the peak hours, respectively. These areas are addressed in the Future Traffic Operations section.

LEGEND

- Ex  Existing Signed Approach
-  Existing Lane Geometry
- Ex  Existing Traffic Signal



EXISTING TRAFFIC CONTROL AND LANE GEOMETRY

FIGURE 5

A&R Engineering Inc.

PROJECT DESCRIPTION

The proposed mixed-use development located on Bells Ferry Road to the north and south of Hunter Trail and southwest of the intersection Bells Ferry Road at Buice Lake Parkway in Cherokee County, Georgia.

The proposed development will consist of:

- Single family detached homes: 26 units
- Multifamily housing (low rise): 167 units
- Multifamily housing (midrise): 575 units
- General office building: 18, 500 square feet
- Retail: 24,000 square feet

There are two roadway connections that provide access to the development, one roadway is West Pine Ridge Drive, and another roadway is Future Owl creek Parkway aligning between Buice Lake Parkway and West Pine Ridge Drive.

The development proposes access at the following locations:

- Site Driveway 1: Northern Parcel Right-in/right-out driveway on Bells Ferry Road
- Site Driveway 2: Northern Parcel Full-access driveway on Buice Lake Parkway align across the Quincy (Eastern) Driveway 2
- Site Driveway 3: Northern Parcel Full-access driveway on Hunter Trail
- Site Driveway 4: Southern Parcel Full-access driveway on Hunter Trail align across Site Driveway 5 as southbound approach
- Site Driveway 5: Southern Parcel Full-access driveway on Hunter Trail align across Site Driveway 4 as northbound approach
- Site Driveway 6: Southern Parcel Full-access driveway on Hunter Trail
- Site Driveway 7: Northern Parcel Full-access driveway on Future Owl Creek Parkway
- Site Driveway 8: Northern Parcel Full-access driveway on Future Owl Creek Parkway align across Site Driveway 11 as westbound approach
- Site Driveway 9: Southern Parcel Right-in/right-out driveway on Future Owl Creek Parkway
- Site Driveway 10: Southern Parcel Full-access driveway on Future Owl Creek Parkway align across West Pine Ridge Drive
- Site Driveway 11: Northern Parcel Full-access driveway on Future Owl Creek Parkway align across Site Driveway 8 as eastbound approach

Site Plan

A site plan is shown in Figure 6. A digital copy of the site plan is provided with this DRI Submittal

Planned Bicycle and Pedestrian Facilities

The on and/or off-site provisions for non-motorized travel included in the planned construction of the proposed development are as follows:

- The proposed development will be comprised of residential, retail, and office uses. Pedestrian connections are proposed between the mixed-uses on the site.
- The development plan includes several design elements that enhance the character and quality the site by incorporating building orientation, parking locations, bicycle and pedestrian facilities, a mix of land uses.
- The convenience and flexibility of the site benefit from public access to adjacent streets and internal connectivity between some of the parcels.
- Sidewalks are proposed along site frontage on Bells Ferry Road and throughout the internal roadway network that is proposed in the development.

Planned Transit Facilities

There is no public transit service near the site.

Consistency with Adopted Comprehensive Plan

The following is an explanation as to how the proposed DRI relates to the local government's Comprehensive Plan in particular the transportation and capital improvements element, and any transportation improvements listed in the vicinity of the DRI.

- Grow SW Cherokee into an even better place to call home and do business by capitalizing on the schools, transportation network, and outdoor recreation opportunities that make the area unique.
- Focus on the SW Cherokee Core Values:
 - Diversity of Land Uses
 - Connections to Opportunity
 - Quality Infrastructure and Services
 - Access to Greenspace and Recreation
 - Friendly and Safe Community

Project Phasing

This project has been evaluated for the complete build-out of the development in 2025.

Trip Generation

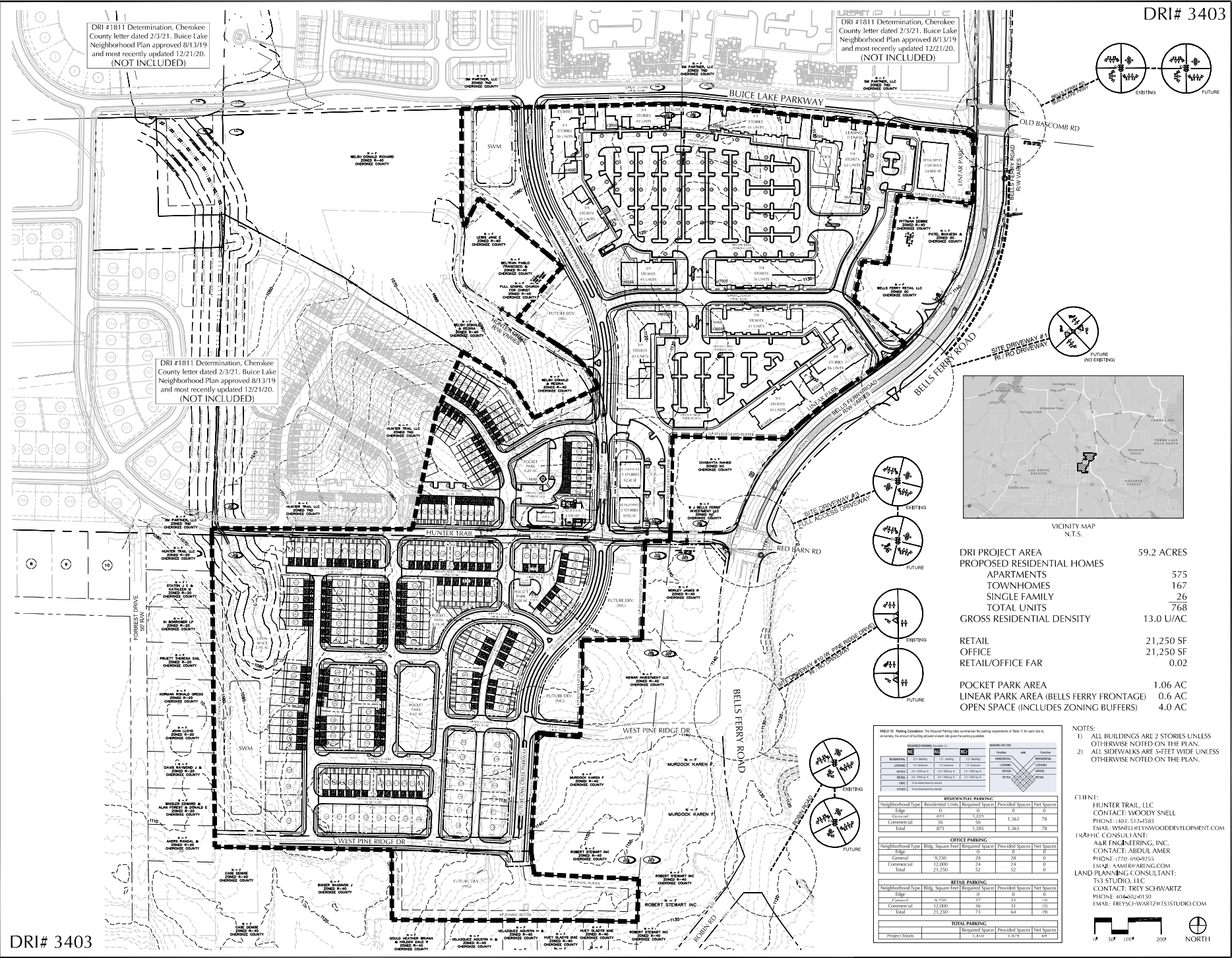
Trip generation estimates for the project were based on the rates and equations published in the 10th edition of the Institute of Transportation Engineers (ITE) Trip Generation report. This reference contains traffic volume count data collected at similar facilities nationwide. The trip generation was based on the following ITE Land Use: 210 – *Single-Family Detached Housing*, 220 – *Multifamily Housing (Low-Rise)*, 221 – *Multifamily Housing (Mid-Rise)*, 710 – *General Office Building* and 820 – *Shopping Center*. The calculated total trip generation for the proposed development is shown in Table 4.

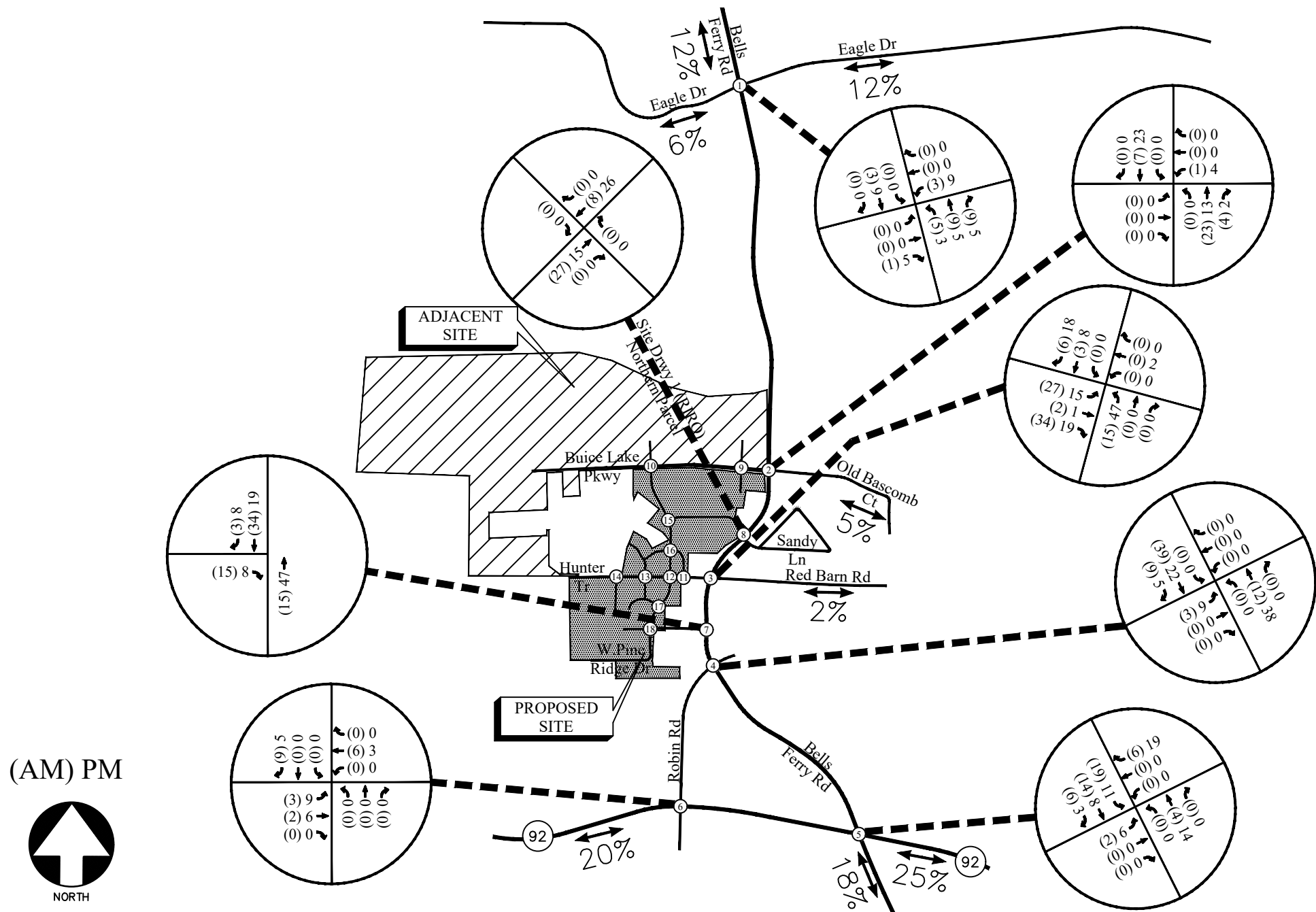
Land Use	Size	AM Peak Hour			PM Peak Hour			24-Hour
		Enter	Exit	Total	Enter	Exit	Total	Two-way
Single-Family Detached Housing	26 units	6	17	23	18	10	28	301
Mixed-Use Reduction		0	0	0	0	0	0	-6
Multifamily Housing (Low-Rise)	167 units	18	60	78	59	34	93	1,222
Mixed-Use Reduction		0	0	0	-2	-1	-3	-24
Multifamily Housing (Mid-Rise)	575 units	49	141	190	145	93	238	3,132
Mixed-Use Reduction		-1	-1	-2	-4	-3	-7	-63
General Office Building	18,500 sf	18	3	21	3	18	21	180
Mixed-Use Reduction		0	0	0	-1	-1	-2	-34
Shopping Center	24,000 sf	14	9	23	43	48	91	906
Mixed-Use Reduction		-1	-1	-2	-5	-7	-12	-123
Pass-by Trips (0%) 34%		0	0	0	-13	-14	-27	-270
Total Trips (without Reductions)		105	230	335	268	203	471	5,741
New External Trips (with Reductions)		103	228	331	243	177	420	5,221

Trip Distribution

The trip distribution describes how traffic arrives and departs from the site. An overall trip distribution was developed for the site based on a review of GDOT ADT volumes and the locations of major roadways and highways that will serve the development. The site-generated peak hour traffic volumes, shown in Table 4, were assigned to the study area intersections based on this distribution. The outer-leg distribution and AM and PM peak hour new traffic generated by the southern and northern site are shown in Figures 7a, 7b, 8a and 8b. Pass-by volumes of Northern parcel have also been distributed based on existing travel patterns and are shown in Figure 9.

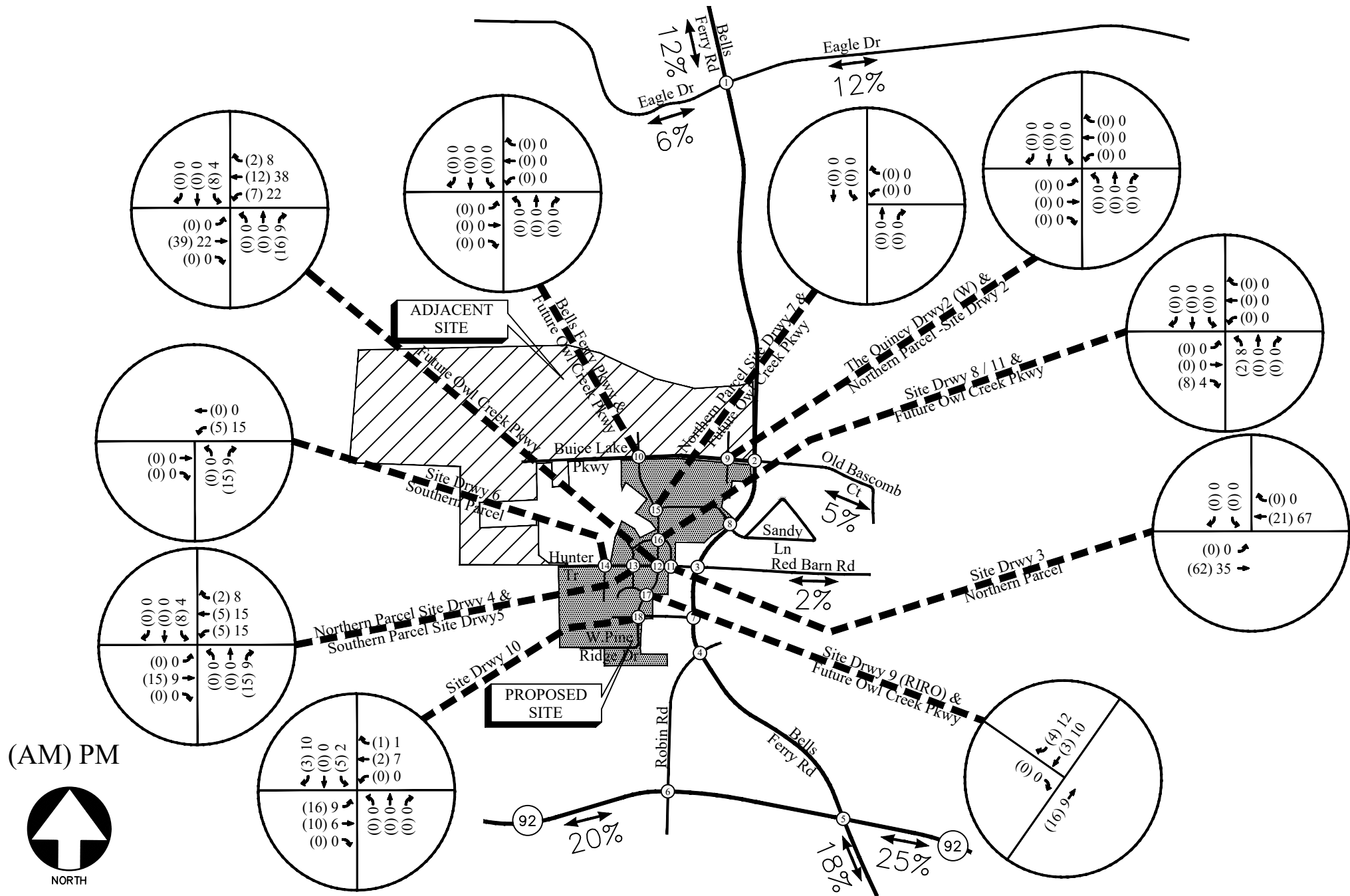
Figure 6 – Site Plan





TRIP DISTRIBUTION AND SITE-GENERATED
WEEKDAY PEAK HOUR VOLUMES (SOUTH PARCEL)

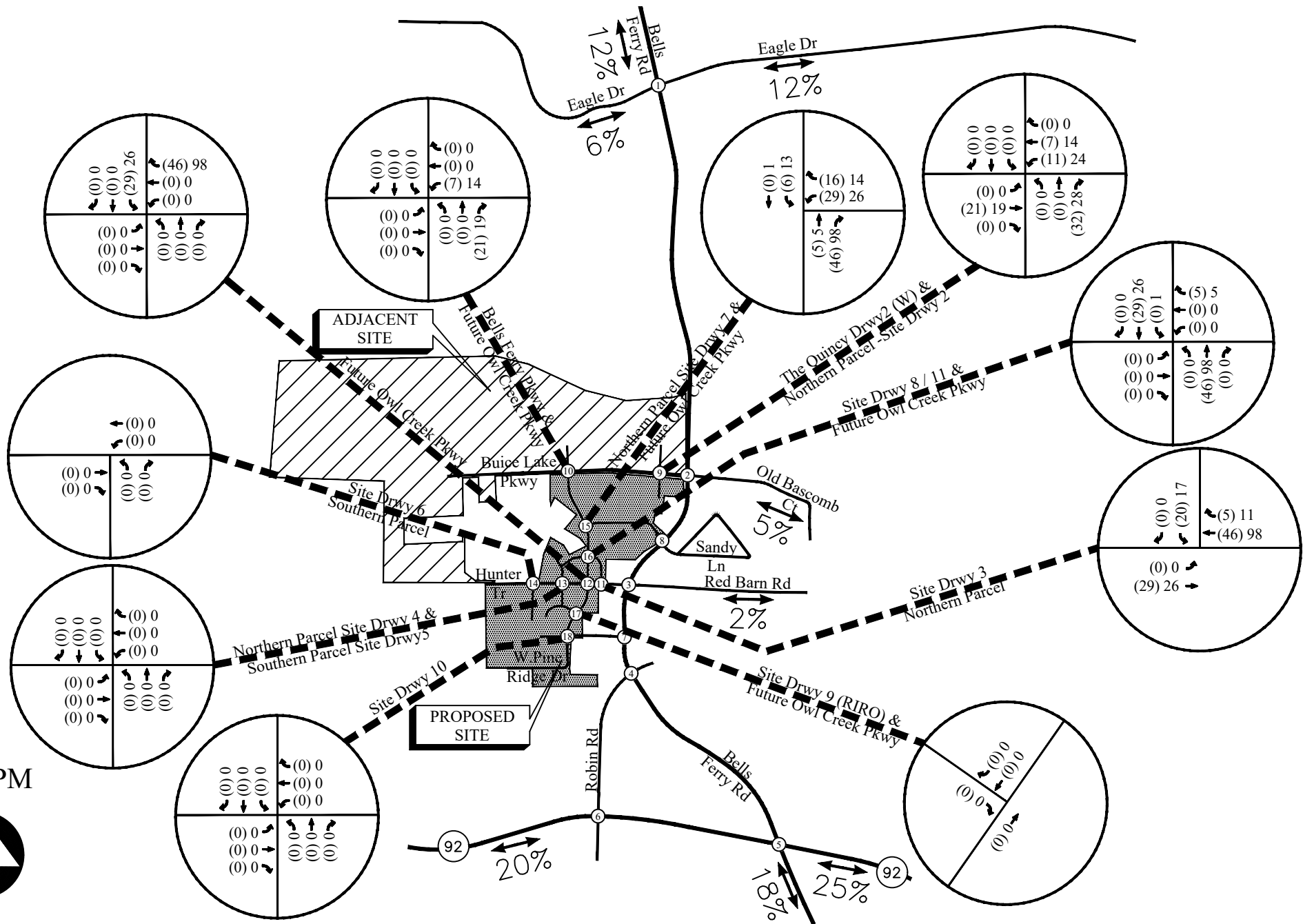
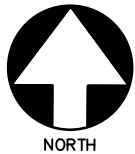
FIGURE 7a
A&R Engineering Inc.



TRIP DISTRIBUTION AND SITE-GENERATED WEEKDAY
PEAK HOUR VOLUMES (SOUTH PARCEL)

FIGURE 7b
A&R Engineering
Inc.

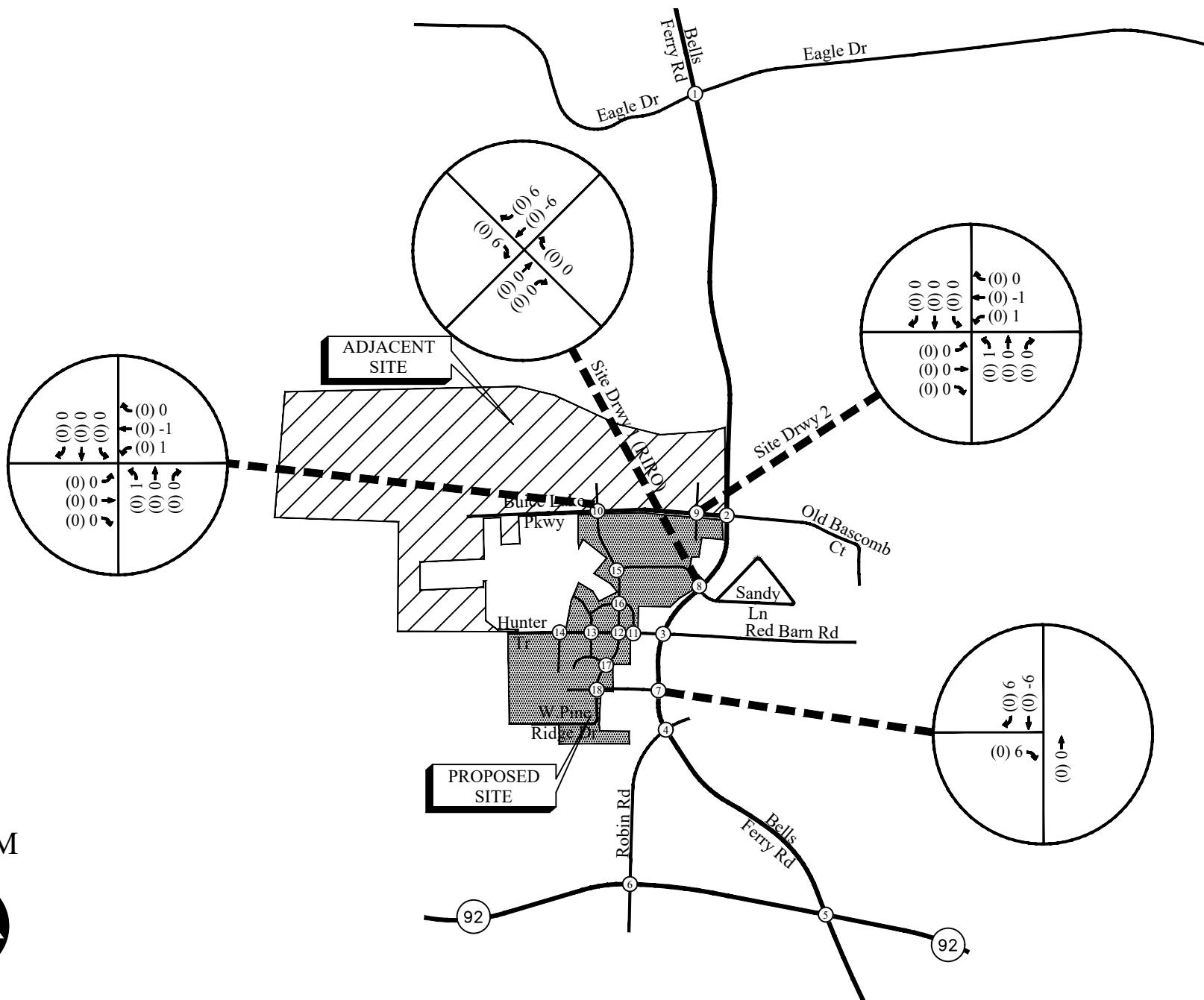
(AM) PM



TRIP DISTRIBUTION AND SITE-GENERATED WEEKDAY
PEAK HOUR VOLUMES (NORTH PARCEL)

FIGURE 8b
A&R Engineering Inc.

(AM) PM



SITE PEAK HOUR PASS-BY VOLUMES

FIGURE 9
A&R Engineering Inc.

FUTURE 2025 TRAFFIC ANALYSIS

The future 2025 traffic operations are analyzed for the “Build” and “No-Build” conditions. This provides a basis of reference for determining both the contribution of the site to overall traffic conditions and the additional improvements needed to provide sufficient site access and capacity for passing traffic. Note that survey and construction drawings would be needed to verify the feasibility and extent of additional right-of-way required for any recommended improvements.

Improvements that are identified as “System Improvements” address deficiencies that are found within the existing road network prior to any impacts from the proposed development’s added traffic. Improvements that are identified as “Site Mitigation Improvements” address further impacts that are a result of the proposed development’s added traffic.

Nearby Planned Development – Madison, The Quincy, Southwest Pod, Waverly and Hunter Trail Residential Units

There is a planned following development (DRI 1811) was included as background traffic in this traffic analysis.

1. **Madison:** 278 dwelling units of single-family residential development. This development has access via Buice Lake Parkway.
2. **The Quincy:** 338 dwelling units of multifamily residential development and 49,000 square feet of Retail / Office. This development has one right-In/right-out driveway on Bells Ferry Road and two driveways on Buice Lake Parkway.
 - a. *NOTE: Only 10% of traffic was projected using ITE Trip Generation since 90% of units are occupied.*
3. **Southwest Pod:** 116 dwelling units of single-family residential development. This development has one full access driveway on Buice Lake Parkway and another full access driveway on Hunter Trail.
4. **Waverly:** 172 dwelling units of multifamily (Low-rise) residential development. This development has one full access driveway on Bells Ferry Parkway and two full access driveway on Buice Lake Parkway.
5. **Hunter Trail:** 107 dwelling units of multifamily (Low-rise) residential development. This development has one full access driveway on Hunter Trail.

Traffic from the nearby planned developments trip generation estimates for the project were based on the rates and equations published in the 10th edition of the Institute of Transportation Engineers (ITE) Trip Generation report. This reference contains traffic volume count data collected at similar facilities nationwide. The trip generation was based on the following ITE Land Use: 210 – *Single-Family Detached Housing*, 220 – *Multifamily Housing (Low-Rise)*, 221 – *Multifamily Housing (Mid-Rise)*, 710 – *General Office Building* and 820 – *Shopping Center*. The calculated total trip generation for the proposed development is shown in Table 6.

TABLE 5 – TRIP GENERATION FOR PREVIOUSLY APPROVED DRI 1811

Land Use	Size	AM Peak Hour			PM Peak Hour			24-Hour
		Enter	Exit	Total	Enter	Exit	Total	Two-way
Single-Family Detached Housing - Madison	278 units	51	151	202	171	100	271	2,664
Multifamily Housing (Low-Rise) –The Quincy	34 units	3	9	12	10	6	16	182
Shopping Center – The Quincy	2,450 sf	1	1	2	4	5	9	92
Mixed-Use Reduction		0	0	0	0	0	0	-3
Pass-by Trips (0%) 34%		0	0	0	-1	-2	-3	-30
General Office Building – The Quincy	2,450 sf	2	1	3	0	3	3	24
Mixed-Use Reduction		0	0	0	0	0	0	-3
New External Trips (with Reductions) - The Quincy Retail & Office		3	2	5	3	6	9	80
Single-Family Detached Housing – Southwest Pod	116 units	22	65	87	74	43	117	1,192
Multifamily Housing (Low-Rise) -Waverly	172 units	18	62	80	60	36	96	1,259
Multifamily Housing (Low-Rise) – Hunter Trail	107 units	12	39	51	40	23	63	768

Traffic for these developments were also included in the analysis of the future “No-Build” and “Build” conditions as a background traffic.

Future “No-Build” Conditions

The “No-Build” (or background) conditions provide an assessment of how traffic will operate in the study horizon year without the study site being developed as proposed, with projected increases in through traffic volumes due to normal annual growth. The Future “No-Build” volumes consist of the existing traffic volumes (Figure 4) plus increases for annual growth of through traffic and nearby developments traffic.

Annual Traffic Growth

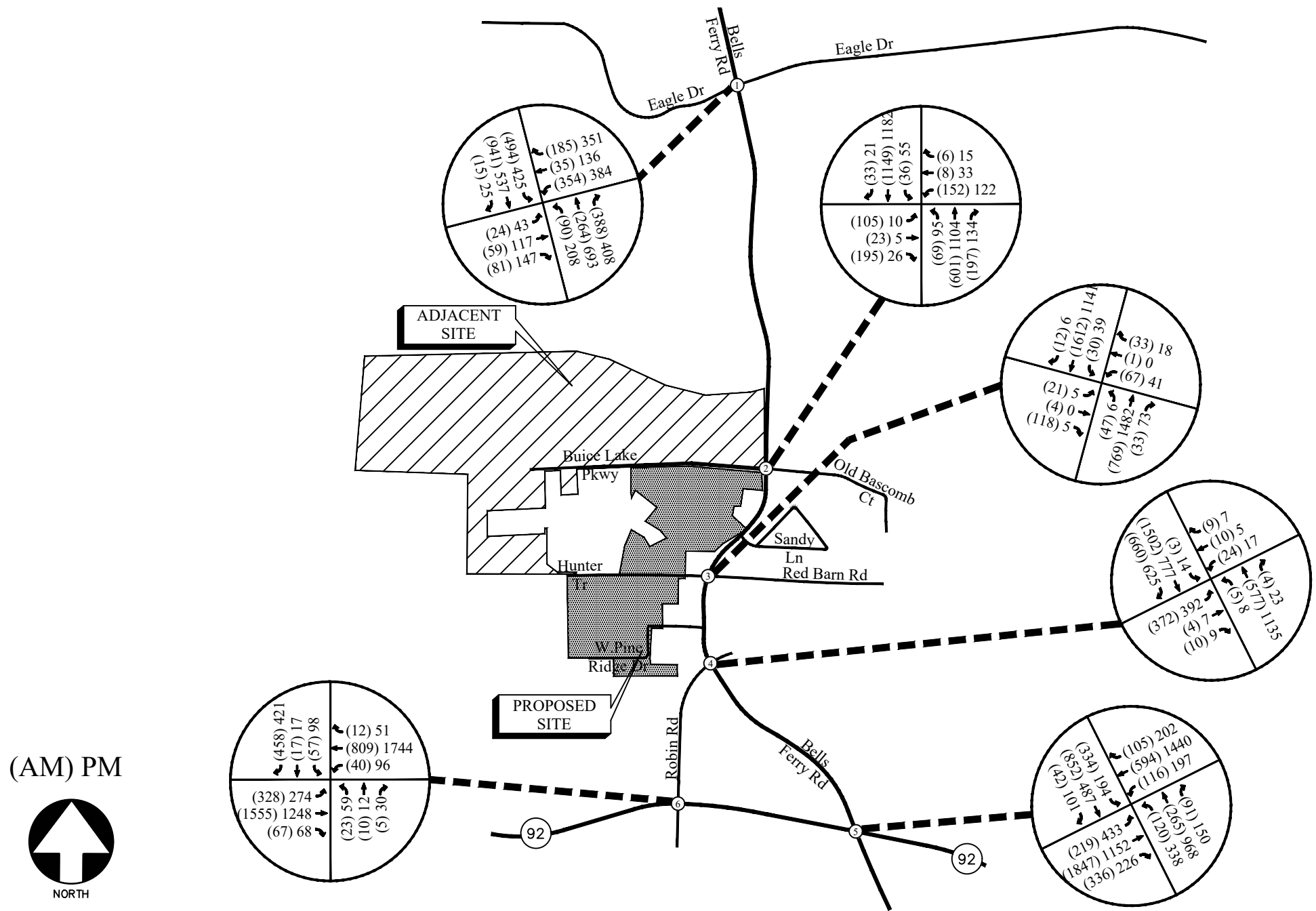
In order to evaluate future traffic operations in this area, a projection of normal traffic growth was applied to the adjusted existing volumes. The Georgia Department of Transportation recorded average daily traffic volumes at several locations in the vicinity of the site. Reviewing the growth over the last three years revealed no consistent positive growth of through traffic; therefore, a growth rate of 1% was used in the analysis. This growth factor was applied to the existing traffic volumes between collector and arterial roadways in order to estimate the future year traffic volumes prior to the addition of site-generated traffic. The resulting Future “No-Build” volumes at all the study intersections are shown in Figure 10.

Planned and Programmed Improvements in Study Area

No planned or programmed improvement projects were identified in the study network.

Future “Build” Conditions

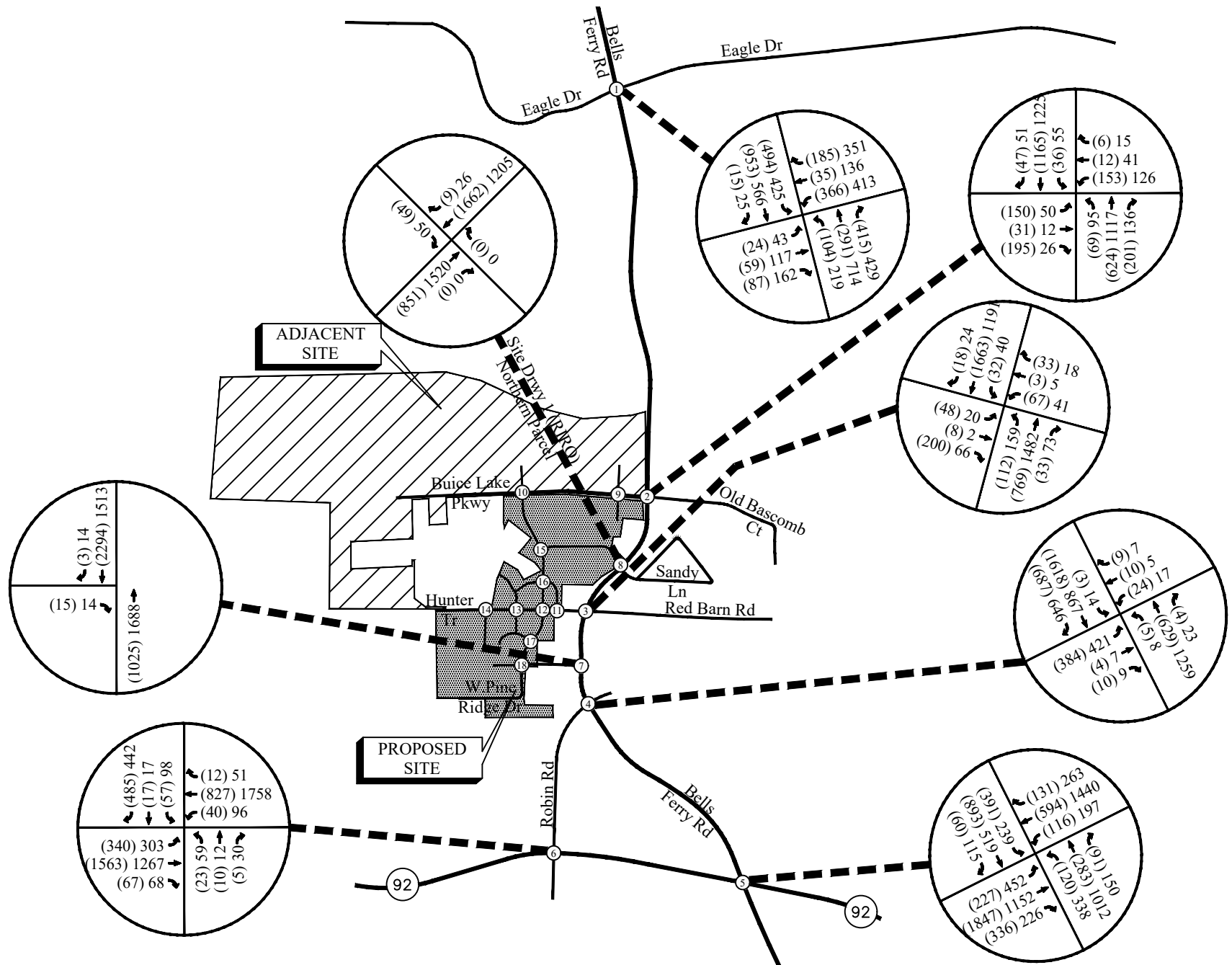
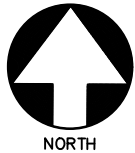
The “Build” or development conditions include the estimated background traffic from the “No-Build” conditions plus the added traffic from the proposed development. In order to evaluate future traffic operations in this area, the additional traffic volumes from the site (Figures 7a, 7b, 8a and 8b) and pass-by’s volumes (Figure 10) were added to base traffic volumes (Figure 4) to calculate the future traffic volumes after the construction of the development. These total future traffic volumes are shown in Figures 11a and 11b.



FUTURE (NO-BUILD) WEEKDAY PEAK HOUR VOLUMES

FIGURE 10
A&R Engineering Inc.

(AM) PM



FUTURE (BUILD) WEEKDAY PEAK HOUR VOLUMES

FIGURE 11a
A&R Engineering Inc.

FIGURE 11b
A&R Engineering Inc.

Site Access Configuration

The following access configuration was utilized when modeling the proposed site driveway intersections:

- Site Driveway 1: Northern Parcel Right-in/right-out driveway on Bells Ferry Road
- Site Driveway 2: Northern Parcel Full-access driveway on Buice Lake Parkway align across the Quincy (Eastern) Driveway 2
- Site Driveway 3: Northern Parcel Full-access driveway on Hunter Trail
- Site Driveway 4: Southern Parcel Full-access driveway on Hunter Trail align across Site Driveway 5 as southbound approach
- Site Driveway 5: Southern Parcel Full-access driveway on Hunter Trail align across Site Driveway 4 as northbound approach
- Site Driveway 6: Southern Parcel Full-access driveway on Hunter Trail
- Site Driveway 7: Northern Parcel Full-access driveway on Future Owl Creek Parkway
- Site Driveway 8: Northern Parcel Full-access driveway on Future Owl Creek Parkway align across Site Driveway 11 as westbound approach
- Site Driveway 9: Southern Parcel Right-in/right-out driveway on Future Owl Creek Parkway
- Site Driveway 10: Southern Parcel Full-access driveway on Future Owl Creek Parkway align across West Pine Ridge Drive
- Site Driveway 11: Northern Parcel Full-access driveway on Future Owl Creek Parkway align across Site Driveway 8 as eastbound approach

Auxiliary Lane Analysis

Included below are analyses for left-turn lanes and deceleration lanes for all site driveways per GDOT standards. The analysis is based off the assumption that the average annual daily traffic (ADT) count on Bells Ferry Road is assumed to be greater than 10,000 vehicles per day based on the surrounding roadway ADT's. The analysis is based off the assumption that the average annual daily traffic (ADT) count on Buice Lake Parkway and Hunter Trail is assumed to be less than 6,000 vehicles per day based on the surrounding roadway ADT's. The analyses below are based off the trip distribution included in the "Trip Distribution" section.

Left Turn Lane Analysis

For two lane roadways with AADT's less than 6,000 vehicles, the daily site generated traffic left-turn movements threshold to warrant a left-turn lane is 300 left-turning vehicles a day for a posted speed limit of 25 mph. For four lane roadways with AADT's greater than 10,000 vehicles, the daily site generated traffic left-turn movements threshold to warrant a left-turn lane is 250 left-turning vehicles a day for a posted speed limit of 45 mph. The projected left-turn volumes per day for each driveway is included in Table 6.

TABLE 6 - GDOT REQUIREMENTS FOR LEFT TURN LANES

Intersection	Left-turn traffic (% total entering)		Left-turn Volume (veh/day)		Roadway Speed / # lanes	GDOT Threshold (veh/day)
	North	South	North	South		
Bells Ferry Rd @ W Pine Ridge Dr (RIRO)	0%	0%	0	0	45 mph / 4-Lane, > 10,000	250
Bells Ferry Rd @ Site Drwy 1(RIRO)	0%	0%	0	0	45 mph / 4-Lane, > 10,000	250
Buice Lake Pkwy @ Site Drwy 2	14.5%	0%	290 (total trips) ÷ 2 × 0.145 = left turning vehicles (4218-220) ÷ 2 × 0.145 = 290	0	25 mph / 2-Lane, < 6000	300
Buice Lake Pkwy @ Future Owl Creek Pkwy	8.5%	0%	170 (total trips) ÷ 2 × 0.85 = left turning vehicles (4218-220) ÷ 2 × 0.85 = 170	0	25 mph / 2-Lane, < 6000	300
Hunter Trl @ Site Drwy 3	0%	0%	0	0	25 mph / 2-Lane, < 6000	300
Hunter Trl @ Future Owl Creek Pkwy	0%	29.5%	0	220 (total trips) ÷ 2 × 0.295 = left turning vehicles (1523-30) ÷ 2 × 0.295 = 220	25 mph / 2-Lane, < 6000	300
Hunter Trl @ Site Drwy 4-5	0%	20.0%	0	149 (total trips) ÷ 2 × 0.20 = left turning vehicles	25 mph / 2-Lane, < 6000	300

				$(1523-30) \div 2 \times 0.20 = 149$		
Hunter Trl @ Site Drwy 6	0%	20.0%	0	149 (total trips) $\div 2 \times 0.20 =$ left turning vehicles $(1523-30) \div 2 \times 0.20 = 149$	25 mph / 2- Lane, < 6000	300
Future Owl Creek Pkwy @Site Drwy 7	8.0%	0%	160 (total trips) $\div 2 \times 0.08 =$ left turning vehicles $(4218-220) \div 2 \times 0.08 = 160$	0	25 mph / 2- Lane, < 6000	300
Future Owl Creek Pkwy @Site Drwy 8-11	0.5 %	10.0%	10 (total trips) $\div 2 \times 0.005 =$ left turning vehicles $(4218-220) \div 2 \times 0.005 = 10$	75 (total trips) $\div 2 \times 0.10 =$ left turning vehicles $(1523-30) \div 2 \times 0.10 = 75$	25 mph / 2- Lane, < 6000	300
Future Owl Creek Pkwy @Site Drwy 9	0%	0%	0	0	25 mph / 2- Lane, < 6000	300
Future Owl Creek Pkwy @Site Drwy 10	0%	0%	0	0	25 mph / 2- Lane, < 6000	300

Left turn lanes are not required per GDOT standards at any of the internal driveways off of Bells Ferry Road.

Deceleration Turn Lane Analysis

For two lane roadways with AADT's less than 6,000 vehicles, the daily site generated traffic right-turn movements threshold to warrant a left-turn lane is 200 right-turning vehicles a day for a posted speed limit of 25 mph. For four lane roadways with AADT's greater than 10,000 vehicles, the daily site generated traffic right-turn movements threshold to warrant a right-turn lane is 200 right-turning vehicles a day for a posted speed limit of 45 mph. The projected right-turn volumes per day for each driveway is included in Table 7.

TABLE 7 - GDOT REQUIREMENTS FOR DECELERATION LANES

Intersection	Right-turn traffic (% total entering)		Right-turn Volume (veh/day)		Roadway Speed / # lanes	GDOT Threshold (veh/day)
	North	South	North	South		
Bells Ferry Rd @ W Pine Ridge Dr (RIRO)	0%	10.5%	0	78 (total trips) $\div 2 \times 0.295 =$ left turning vehicles $(1523-30) \div 2 \times 0.295 = 220$	45 mph / 4- Lane, > 10,000	75
Bells Ferry Rd @ Site Drwy 1(RIRO)	12%	0%	240 (total trips) $\div 2 \times 0.12 =$ left turning vehicles $(4218-220) \div 2 \times 0.12 = 240$	0	45 mph / 4- Lane, > 10,000	75
Buice Lake Pkwy @ Site Drwy 2	0%	0%	0	0	25 mph / 2- Lane, < 6000	200
Buice Lake Pkwy @Future Owl Creek Pkwy	0%	0%	0	0	25 mph / 2- Lane, < 6000	200

Hunter Trl @ Site Drwy 3	6.5%	0%	130 (total trips) $\div 2 \times 0.85 =$ left turning vehicles (4218-220) $\div 2 \times 0.85 = 170$	0	25 mph / 2- Lane, < 6000	200
Hunter Trl @ Future Owl Creek Pkwy	58.5%	10.0%	1169 (total trips) $\div 2 \times 0.585 =$ left turning vehicles (4218-220) $\div 2 \times 0.585 =$ 1169	75 (total trips) $\div 2 \times 0.10 =$ left turning vehicles (1523-30) $\div 2 \times 0.10 = 75$	25 mph / 2- Lane, < 6000	200
Hunter Trl @ Site Drwy 4-5	0%	10.0%	0	75 (total trips) $\div 2 \times 0.10 =$ left turning vehicles (1523-30) $\div 2 \times 0.10 = 75$	25 mph / 2- Lane, < 6000	200
Hunter Trl @ Site Drwy 6	0%	0%	0	0	25 mph / 2- Lane, < 6000	200
Future Owl Creek Pkwy @Site Drwy 7	58.5%	0%	1169 (total trips) $\div 2 \times 0.585 =$ left turning vehicles (4218-220) $\div 2 \times 0.585 =$ 1169	0	25 mph / 2- Lane, < 6000	200
Future Owl Creek Pkwy @Site Drwy 8-11	0 %	0 %	0	0	25 mph / 2- Lane, < 6000	200
Future Owl Creek Pkwy @Site Drwy 9	0%	16.5%	0	123 (total trips) $\div 2 \times 0.165 =$ left turning vehicles (1523-30) $\div 2 \times 0.165 = 123$	25 mph / 2- Lane, < 6000	200
Future Owl Creek Pkwy @Site Drwy 10	0%	13%	0	97 (total trips) $\div 2 \times 0.13 =$ left turning vehicles (1523-30) $\div 2 \times 0.13 = 97$	25 mph / 2- Lane, < 6000	200

Site Driveway 1 and Site Driveway 7 warrant deceleration lanes on Bells Ferry Road. Also, deceleration lanes are warranted on Hunter Trail and West Pine Ridge Drive.

Future Traffic Operations

The future 2025 “No-Build” and “Build” traffic operations were analyzed using the volumes in Figures 10, and 11a and 11b, respectively, and the results are shown in Table 8. The “Build” scenario includes recommended site mitigation and system improvements. The results of the analyses, including the recommended improvements, are discussed in detail in the next section.

TABLE 8 — FUTURE INTERSECTION OPERATIONS

Intersection		Future Conditions: LOS (Delay)			
		NO-BUILD		BUILD	
		AM Peak	PM Peak	AM Peak	PM Peak
1	<u>Eagle Drive @ Bells Ferry Road</u>	<u>C (34.2)</u>	<u>D (51.1)</u>	<u>C (29.3)</u>	<u>D (40.0)</u>
	-Eastbound Approach	E (60.9)	E (58.5)	E (71.5)	E (68.8)
	-Westbound Approach	F (133.1)	F (165.9)	F (88.1)	F (97.7)
	-Northbound Approach	B (13.7)	B (16.0)	C (21.3)	C (22.8)
	-Southbound Approach	B (16.6)	D (35.7)	B (15.2)	C (27.5)
2	<u>Bells Ferry Road / Old Bascomb Court</u>	<u>B (18.4)</u>	<u>B (10.8)</u>	<u>B (19.4)</u>	<u>B (12.8)</u>
	-Eastbound Approach	D (36.3)	D (40.2)	C (34.9)	D (38.7)
	-Westbound Approach	E (55.1)	D (54.9)	E (55.5)	E (55.5)
	-Northbound Approach	A (1.7)	A (1.5)	A (1.9)	A (1.9)
	-Southbound Approach	C (20.5)	B (13.7)	C (22.4)	B (16.2)
3	<u>Bells Ferry @ Hunter Trail / Red Barn Road</u>	<u>A (4.5)</u>	<u>A (4.5)</u>	<u>A (5.3)</u>	<u>A (5.1)</u>
	-Eastbound Approach	D (53.6)	E (55.5)	D (53.2)	E (55.3)
	-Westbound Approach	E (57.1)	E (59.0)	E (56.7)	E (58.3)
	-Northbound Approach	A (4.5)	A (6.0)	A (4.9)	A (6.1)
	-Southbound Approach	A (1.5)	A (0.7)	A (1.9)	A (0.8)
4	<u>Bells Ferry Road @ Robin Road / Tysons Wood Road</u>	<u>B (14.4)</u>	<u>B (18.9)</u>	<u>B (16.8)</u>	<u>C (20.7)</u>
	-Eastbound Approach	D (51.5)	D (48.2)	D (52.0)	D (48.7)
	-Westbound Approach	C (30.4)	C (29.3)	C (29.8)	C (27.7)
	-Northbound Approach	B (14.5)	C (20.7)	B (15.4)	C (24.5)
	-Southbound Approach	A (4.6)	A (1.0)	A (8.5)	A (1.2)
5	<u>Bells Ferry Road @ SR 92</u>	<u>E (79.6)</u>	<u>F (112.6)</u>	<u>E (58.8)</u>	<u>E (63.8)</u>
	-Eastbound Approach	E (66.8)	E (59.7)	D (47.9)	D (46.3)
	-Westbound Approach	D (36.1)	F (174.7)	D (44.3)	E (62.6)
	-Northbound Approach	F (80.6)	F (123.6)	E (74.0)	F (84.6)
	-Southbound Approach	F (135.2)	E (64.1)	F (83.7)	E (71.6)
6	<u>SR 92 @ Robin Road / Robin Road Extension</u>	<u>E (76.2)</u>	<u>E (79.3)</u>	<u>C (27.7)</u>	<u>C (29.8)</u>
	-Eastbound Approach	D (44.0)	E (67.9)	C (30.7)	D (50.1)
	-Westbound Approach	D (44.5)	F (96.7)	A (9.6)	A (4.9)
	-Northbound Approach	E (61.6)	D (54.0)	D (54.8)	E (57.0)
	-Southbound Approach	F (242.6)	E (55.2)	D (44.3)	D (53.4)
7	<u>Bells Ferry Road @ W. Pine Ridge Drive (RIRO)</u>	-	-		
	-Eastbound Approach			D (29.2)	C (16.9)
8	<u>Bells Ferry Road @ Northern Site Driveway 1 (RIRO) / Old Bascomb Road</u>	-	-		
	-Eastbound Approach				

	-Westbound Approach			C (20.9) A (0.0)	C (15.1) A (0.0)
9	<u>Buice Lake Parkway @ Northern Site Driveway 2 / The Quincy (Eastern) Driveway 2</u> -Eastbound Left -Westbound Left -Northbound Approach -Southbound Approach	-	-	A (0.0) A (8.1) B (10.6) B (13.5)	A (0.0) A (7.4) A (8.8) A (0.0)
10	<u>Buice Lake Parkway @ Future Owl Creek Parkway</u> -Eastbound Left -Westbound Left -Northbound Approach -Southbound Approach	-	-	A (0.0) A (7.9) B (10.1) B (12.6)	A (0.0) A (7.3) A (8.7) A (0.0)
11	<u>Hunter Trail @ Northern Site Driveway 3</u> -Eastbound Left -Southbound Approach	-	-	A (0.0) B (11.1)	A (0.0) B (10.2)
12	<u>Hunter Trail @ Future Owl Creek Parkway</u> -Eastbound Left -Westbound Left -Northbound Approach -Southbound Approach	-	-	A (0.0) A (7.6) A (9.4) B (11.3)	A (0.0) A (7.3) A (8.5) B (10.1)
13	<u>Hunter Trail @ Southern Site Driveway 4 / Southern Site Driveway 5</u> -Eastbound Left -Westbound Left -Northbound Approach -Southbound Approach	-	-	A (0.0) A (7.6) A (9.2) B (10.4)	A (0.0) A (7.3) A (8.4) A (9.1)
14	<u>Hunter Trail @ Southern Site Driveway 6</u> -Westbound Left -Northbound Approach	-	-	A (7.5) A (9.1)	A (7.3) A (8.4)
15	<u>Future Owl Creek Parkway @ Northern Site Driveway 7</u> -Westbound Approach -Southbound Left	-	-	A (8.7) A (7.3)	A (8.7) A (7.5)
16	<u>Future Owl Creek Parkway @ Northern Site Driveway 8 / Southern Site Driveway 11</u> -Eastbound Approach -Westbound Approach -Northbound Left -Southbound Left	-	-	A (8.5) A (8.6) A (7.3) A (0.0)	A (8.5) A (8.8) A (7.3) A (7.4)
17	<u>Future Owl Creek Parkway @ Southern Site Driveway 9</u> -Eastbound Approach	-	-	A (0.0)	A (0.0)
18	<u>Future Owl Creek Parkway @ Southern Site Driveway 10 / W. Pine Ridge Drive</u>	-	-		

-Eastbound Approach			A (7.2)	A (7.2)
-Westbound Approach			A (0.0)	A (0.0)
-Northbound Left			A (0.0)	A (0.0)
-Southbound Left			A (8.3)	A (8.4)

The results of the future “No-Build” analysis indicate that the intersection of SR 92 and Bells Ferry Road will operation at a level-service “E” and “F” during the AM and PM peaks, respectively. After addition of site generated volumes and improvements, the intersection will continue to operate at level-of-service “E” during the AM and PM peak hours (“Build”). The intersection of SR 92 and Robin Road will operate at level-of-service “E” during the AM and PM peak hours in the “No-Build” scenario. After addition of site generated traffic and improvements, the intersection will operate at level-of-service “C” during the AM and PM peak hours.

Recommendations for System and Site Improvements

A summary of the system improvements, which address deficiencies that are found within the existing road network for the “No-Build” conditions, is provided below. The improvements listed below were accounted for in the “Build” analysis.

SYSTEM IMPROVEMENTS

1. Intersection 5: Bells Ferry Road and SR 92

- a. Convert northbound channelized right turn lane to a shared through/right turn lane since three receiving lanes exist
- b. Convert dual westbound left turn lanes to one westbound left turn lane and re-purpose the second left turn lane as a third westbound through lane. Additional asphalt (currently striped off) on the westbound receiving roadway area exists for re-striping of a receiving lane.
- c. Convert eastbound right turn lane to a shared through/right turn lane using existing asphalt on receiving eastbound roadway
- d. Optimize Signal Timing



2. Intersection 6: SR 92 and Robin Road

- a. Remove northbound and southbound left turn protected/permissive signal phase since they do not meet left turn phase warrant.
- b. Addition of southbound right turn overlap phase with eastbound left turn phase
- c. Optimize Signal Timing

SITE IMPROVEMENTS

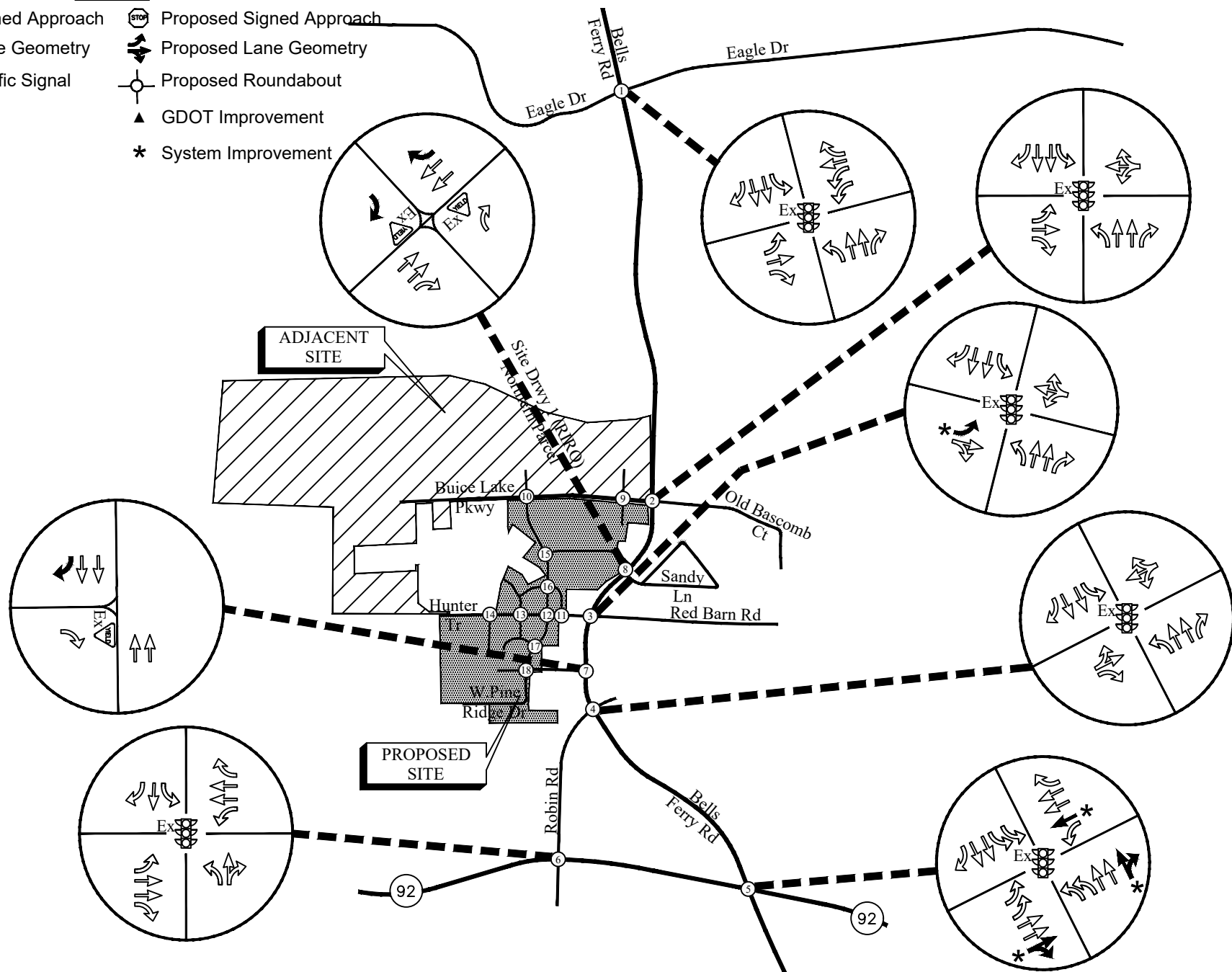
3. Intersection 3: Bells Ferry Road/ Hunter Trail and Red Barn Road

- a. Provide a southbound deceleration lane
- b. Driveway approach is to include a left turn lane and a shared through/right turn lane

All driveways are to be stop-sign controlled and are recommended to have available sight distance verified per AASHTO standards during driveway design. Recommendations on traffic control and lane geometry are shown graphically in Figures 12a and 12b.

LEGEND

- Ex Existing Signed Approach
- Existing Lane Geometry
- Ex Existing Traffic Signal
- Proposed Signed Approach
- Proposed Lane Geometry
- Proposed Roundabout
- Proposed Traffic Signal
- GDOT Improvement
- System Improvement



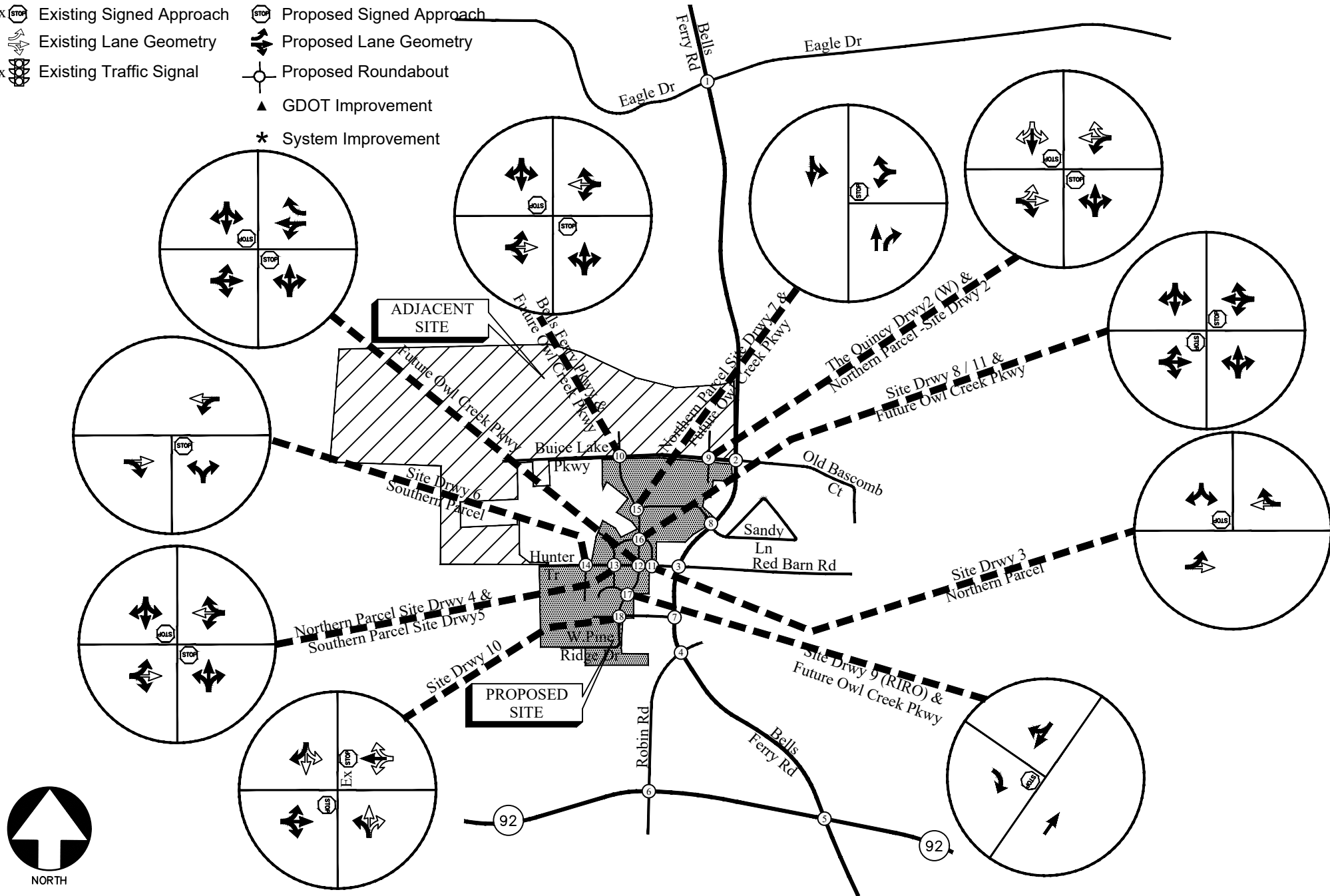
FUTURE TRAFFIC CONTROL AND LANE GEOMETRY

FIGURE 12a

A&R Engineering
Inc.

LEGEND

- Ex Existing Signed Approach
- Existing Lane Geometry
- Ex Existing Traffic Signal
- Proposed Signed Approach
- Proposed Lane Geometry
- Proposed Roundabout
- GDOT Improvement
- System Improvement



FUTURE TRAFFIC CONTROL AND LANE GEOMETRY

FIGURE 12b

A&R Engineering Inc.

CONCLUSIONS AND RECOMMENDATIONS

Traffic impacts were evaluated for the added traffic from the proposed mixed-use development located on Bells Ferry Road to the north and south of Hunter Trail and southwest of the intersection Bells Ferry Road at Buice Lake Parkway in Cherokee County, Georgia. The proposed development will consist of:

- Single family detached homes: 26 units
- Multifamily housing (low rise): 167 units
- Multifamily housing (midrise): 575 units
- General office building: 18, 500 square feet
- Retail: 24,000 square feet

Existing and future operations after completion of the project were analyzed at the intersections of:

7. Bells Ferry Road at Eagle Drive
8. Bells Ferry Road at Buice Lake Parkway / Old Bascomb Court
9. Bells Ferry Road at Hunter Trail / Red Barn Road
10. Bells Ferry Road at Robin Road / Tyson Woods Road
11. Bells Ferry Road at SR 92 (Alabama Road)
12. SR 92 (Alabama Road) at Robin Road / Robin Road Extension

All study intersection will operate at standard levels of service after the project is completed except for the following two intersections on SR 92:

SR 92 / Bells Ferry Road:

The results of existing traffic operations analysis and future “No-Build” analysis indicate this intersection is operating at level-of-service “E” and “F” during the AM and PM peak hours, respectively. After addition of site generated volumes and system improvements that are identified below, the intersection will continue to operate at level-of-service “E” during the AM and PM peak hours (“Build”).

- Convert northbound channelized right turn lane to a shared through/right turn lane since three receiving lanes exist
- Convert dual westbound left turn lanes to one westbound left turn lane and re-purpose the second left turn lane as a third westbound through lane. Additional asphalt (currently striped off) on the westbound receiving roadway area exists for re-striping of a receiving lane.
- Convert eastbound right turn lane to a shared through/right turn lane using existing asphalt on receiving eastbound roadway
- Optimize Signal Timing

SR 92 / Robin Road:

This is currently operating at level of service “D” and “E” during the AM and PM peak hours, respectively. It will operate at level-of-service “E” during both the AM and PM peak hours in the “No-Build” scenario. After addition of site generated traffic and the system improvements identified below, the intersection will operate at level-of-service “C” during both the AM and PM peak hours.

- Remove northbound and southbound left turn protected/permissive signal phase since they do not meet left turn phase warrant.
- Addition of southbound right turn overlap phase with eastbound left turn phase
- Optimize Signal Timing

Site Access Configuration

All site driveways are recommended to be stop sign controlled on the driveway approach. The intersection of Hunter Trail and Bells Ferry Road is to include a left turn lane and a shared through/right turn lane at the existing signalized intersection. A deceleration lane is recommended at the intersection of Hunter Trail and Bells Ferry Road (GDOT standards). A left turn lane already exists at this intersection. All other driveways are to be stop-sign controlled and are recommended to have available sight distance verified per AASHTO standards during driveway design.

Appendix

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Existing Intersection Traffic Counts

A & R Engineering, Inc

2160 Kingston Court, Suite 'O'
Marietta, GA 30067

TMC DATA

Bells Ferry Rd @ Bascomb Carmel Rd
7-9 am | 4-6 pm

File Name : 20210253

Site Code : 20210253

Start Date : 8/17/2021

Page No : 1

Groups Printed- Cars, Buses & Trucks

	Bells Ferry Rd Northbound				Bells Ferry Rd Southbound					O'Reilly Auto Parts Drwy Eastbound				Bascomb Carmel Rd Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	93	1	94	31	208	2	0	241	1	0	1	2	0	0	11	11	348
07:15 AM	0	128	5	133	29	254	3	0	286	1	0	0	1	4	0	11	15	435
07:30 AM	2	141	3	146	53	270	0	1	324	2	0	1	3	2	0	12	14	487
07:45 AM	2	133	4	139	46	306	1	0	353	1	0	4	5	4	1	15	20	517
Total	4	495	13	512	159	1038	6	1	1204	5	0	6	11	10	1	49	60	1787
08:00 AM	0	135	3	138	36	256	2	0	294	0	0	1	1	2	0	13	15	448
08:15 AM	5	130	1	136	26	244	0	1	271	0	1	1	2	1	1	13	15	424
08:30 AM	1	121	2	124	38	212	2	0	252	2	1	2	5	4	0	16	20	401
08:45 AM	4	130	0	134	31	213	1	3	248	3	0	0	3	4	0	13	17	402
Total	10	516	6	532	131	925	5	4	1065	5	2	4	11	11	1	55	67	1675
*** BREAK ***																		
04:00 PM	5	234	0	239	31	222	3	4	260	6	2	3	11	3	0	5	8	518
04:15 PM	2	249	7	258	24	231	3	0	258	2	0	5	7	8	0	0	8	531
04:30 PM	2	253	3	258	41	215	6	2	264	2	0	1	3	1	0	0	1	526
04:45 PM	4	298	3	305	24	220	2	2	248	1	1	4	6	1	2	2	5	564
Total	13	1034	13	1060	120	888	14	8	1030	11	3	13	27	13	2	7	22	2139
05:00 PM	5	252	4	261	30	242	4	5	281	5	1	5	11	3	0	57	60	613
05:15 PM	2	257	2	261	35	236	1	2	274	2	1	3	6	3	0	50	53	594
05:30 PM	2	291	2	295	31	238	4	2	275	1	0	1	2	1	0	53	54	626
05:45 PM	2	289	1	292	31	180	10	1	222	2	0	3	5	0	1	52	53	572
Total	11	1089	9	1109	127	896	19	10	1052	10	2	12	24	7	1	212	220	2405
Grand Total	38	3134	41	3213	537	3747	44	23	4351	31	7	35	73	41	5	323	369	8006
Apprch %	1.2	97.5	1.3		12.3	86.1	1	0.5		42.5	9.6	47.9		11.1	1.4	87.5		
Total %	0.5	39.1	0.5	40.1	6.7	46.8	0.5	0.3	54.3	0.4	0.1	0.4	0.9	0.5	0.1	4	4.6	

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Bells Ferry Rd @ Bascomb Carmel Rd
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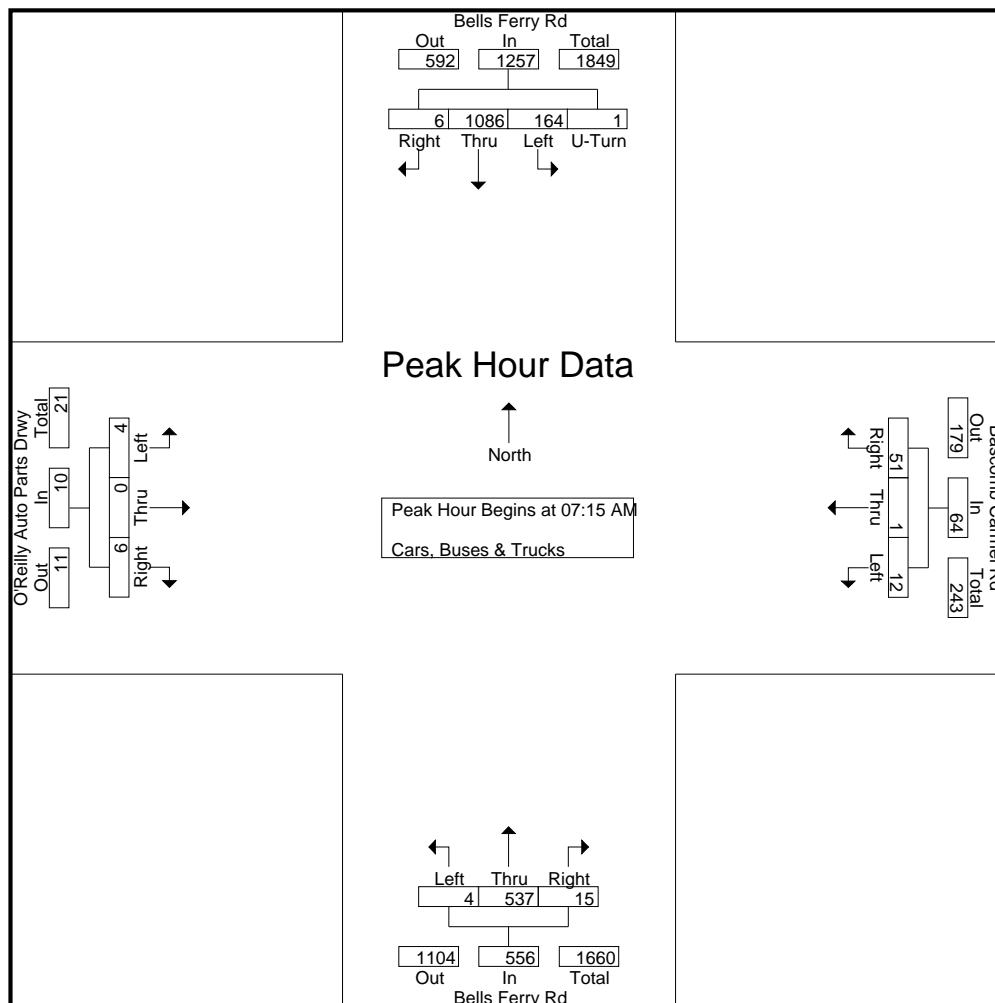
File Name : 20210253

Site Code : 20210253

Start Date : 8/17/2021

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	Bells Ferry Rd Northbound				Bells Ferry Rd Southbound					O'Reilly Auto Parts Drwy Eastbound				Bascomb Carmel Rd Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 07:15 AM																		
07:15 AM	0	128	5	133	29	254	3	0	286	1	0	0	1	4	0	11	15	435
07:30 AM	2	141	3	146	53	270	0	1	324	2	0	1	3	2	0	12	14	487
07:45 AM	2	133	4	139	46	306	1	0	353	1	0	4	5	4	1	15	20	517
08:00 AM	0	135	3	138	36	256	2	0	294	0	0	1	1	2	0	13	15	448
Total Volume	4	537	15	556	164	1086	6	1	1257	4	0	6	10	12	1	51	64	1887
% App. Total	0.7	96.6	2.7		13	86.4	0.5	0.1		40	0	60		18.8	1.6	79.7		
PHF	.500	.952	.750	.952	.774	.887	.500	.250	.890	.500	.000	.375	.500	.750	.250	.850	.800	.912



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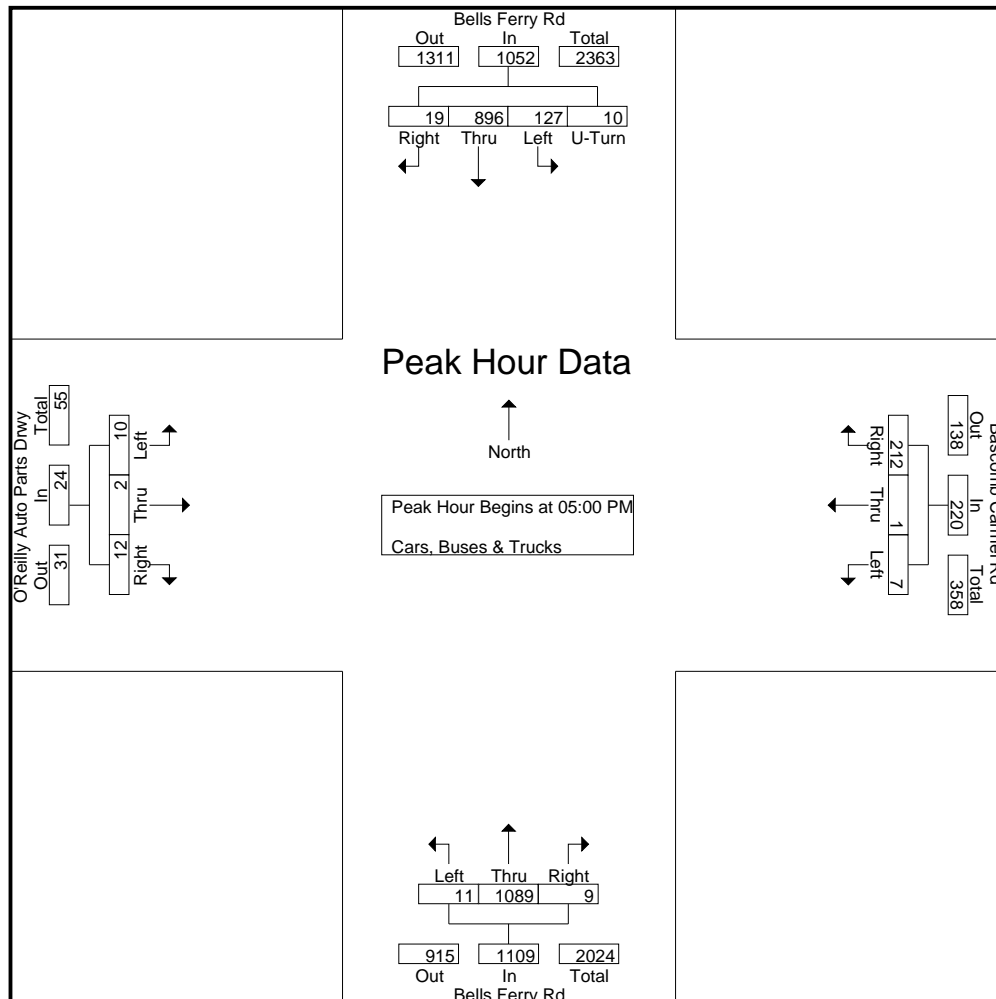
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	Bells Ferry Rd Northbound				Bells Ferry Rd Southbound					O'Reilly Auto Parts Drwy Eastbound				Bascomb Carmel Rd Westbound				
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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 05:00 PM																		
05:00 PM	5	252	4	261	30	242	4	5	281	5	1	5	11	3	0	57	60	613
05:15 PM	2	257	2	261	35	236	1	2	274	2	1	3	6	3	0	50	53	594
05:30 PM	2	291	2	295	31	238	4	2	275	1	0	1	2	1	0	53	54	626
05:45 PM	2	289	1	292	31	180	10	1	222	2	0	3	5	0	1	52	53	572
Total Volume	11	1089	9	1109	127	896	19	10	1052	10	2	12	24	7	1	212	220	2405
% App. Total	1	98.2	0.8		12.1	85.2	1.8	1		41.7	8.3	50		3.2	0.5	96.4		
PHF	.550	.936	.563	.940	.907	.926	.475	.500	.936	.500	.500	.600	.545	.583	.250	.930	.917	.960



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TMC DATA

Bells Ferry Rd @ Buice Lake Pkwy
7-9 am | 4-6 pm

File Name : 20210254

Site Code : 20210254

Start Date : 8/17/2021

Page No : 1

Groups Printed- Cars, Buses & Trucks

	Bells Ferry Rd Northbound					Bells Ferry Rd Southbound					Buice Lake Pkwy Eastbound				Old Bascomb Ct Westbound				
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	1	91	28	5	125	3	310	1	0	314	5	1	15	21	29	0	0	29	489
07:15 AM	3	108	46	13	170	3	270	0	0	273	3	1	17	21	46	0	2	48	512
07:30 AM	4	158	40	3	205	6	293	2	1	302	10	1	18	29	34	2	2	38	574
07:45 AM	4	146	58	2	210	14	262	4	1	281	7	4	43	54	41	1	1	43	588
Total	12	503	172	23	710	26	1135	7	2	1170	25	7	93	125	150	3	5	158	2163
08:00 AM	2	149	44	4	199	8	274	1	2	285	2	2	17	21	25	0	1	26	531
08:15 AM	3	118	26	5	152	11	282	1	2	296	3	2	13	18	24	0	3	27	493
08:30 AM	4	126	24	4	158	2	247	2	1	252	3	0	11	14	29	0	3	32	456
08:45 AM	6	143	18	3	170	3	234	3	0	240	3	1	6	10	25	0	2	27	447
Total	15	536	112	16	679	24	1037	7	5	1073	11	5	47	63	103	0	9	112	1927
*** BREAK ***																			
04:00 PM	8	241	30	6	285	8	225	5	3	241	1	0	7	8	26	0	6	32	566
04:15 PM	12	251	29	9	301	7	251	5	3	266	7	4	8	19	29	1	2	32	618
04:30 PM	14	282	33	4	333	6	222	4	3	235	0	1	7	8	24	1	7	32	608
04:45 PM	16	245	35	8	304	11	277	6	6	300	1	0	4	5	36	2	7	45	654
Total	50	1019	127	27	1223	32	975	20	15	1042	9	5	26	40	115	4	22	141	2446
05:00 PM	14	268	33	8	323	3	296	3	0	302	3	2	10	15	30	2	0	32	672
05:15 PM	14	298	32	6	350	10	285	4	5	304	4	1	4	9	28	2	2	32	695
05:30 PM	18	250	29	7	304	16	278	7	2	303	2	2	7	11	23	26	5	54	672
05:45 PM	21	263	35	9	328	7	246	5	1	259	1	1	12	14	23	0	1	24	625
Total	67	1079	129	30	1305	36	1105	19	8	1168	10	6	33	49	104	30	8	142	2664
Grand Total	144	3137	540	96	3917	118	4252	53	30	4453	55	23	199	277	472	37	44	553	9200
Apprch %	3.7	80.1	13.8	2.5		2.6	95.5	1.2	0.7		19.9	8.3	71.8		85.4	6.7	8		
Total %	1.6	34.1	5.9	1	42.6	1.3	46.2	0.6	0.3	48.4	0.6	0.2	2.2	3	5.1	0.4	0.5	6	

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Bells Ferry Rd @ Buice Lake Pkwy
7-9 am | 4-6 pm

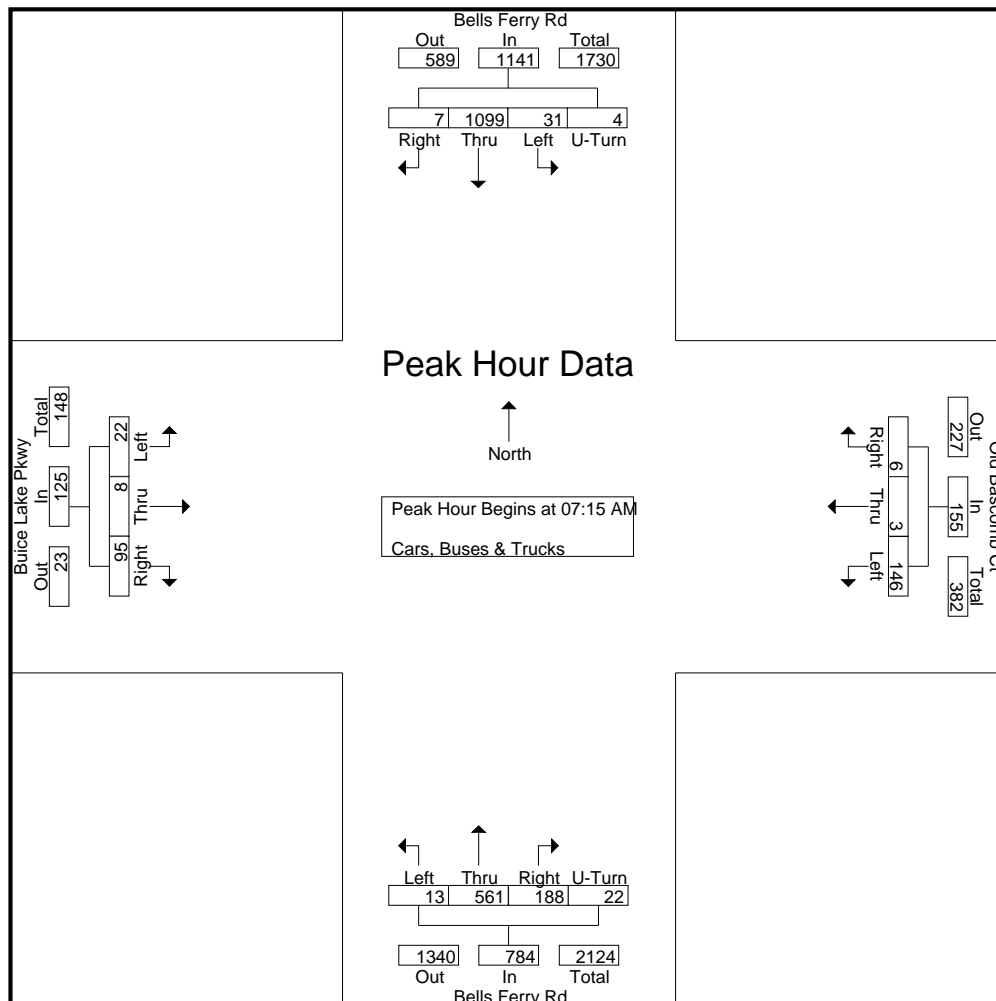
File Name : 20210254

Site Code : 20210254

Start Date : 8/17/2021

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	Bells Ferry Rd Northbound					Bells Ferry Rd Southbound					Buice Lake Pkwy Eastbound				Old Bascomb Ct Westbound				
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:15 AM																			
07:15 AM	3	108	46	13	170	3	270	0	0	273	3	1	17	21	46	0	2	48	512
07:30 AM	4	158	40	3	205	6	293	2	1	302	10	1	18	29	34	2	2	38	574
07:45 AM	4	146	58	2	210	14	262	4	1	281	7	4	43	54	41	1	1	43	588
08:00 AM	2	149	44	4	199	8	274	1	2	285	2	2	17	21	25	0	1	26	531
Total Volume	13	561	188	22	784	31	1099	7	4	1141	22	8	95	125	146	3	6	155	2205
% App. Total	1.7	71.6	24	2.8		2.7	96.3	0.6	0.4		17.6	6.4	76		94.2	1.9	3.9		
PHF	.813	.888	.810	.423	.933	.554	.938	.438	.500	.945	.550	.500	.552	.579	.793	.375	.750	.807	.938



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TMC DATA

Bells Ferry Rd @ Buice Lake Pkwy
7-9 am | 4-6 pm

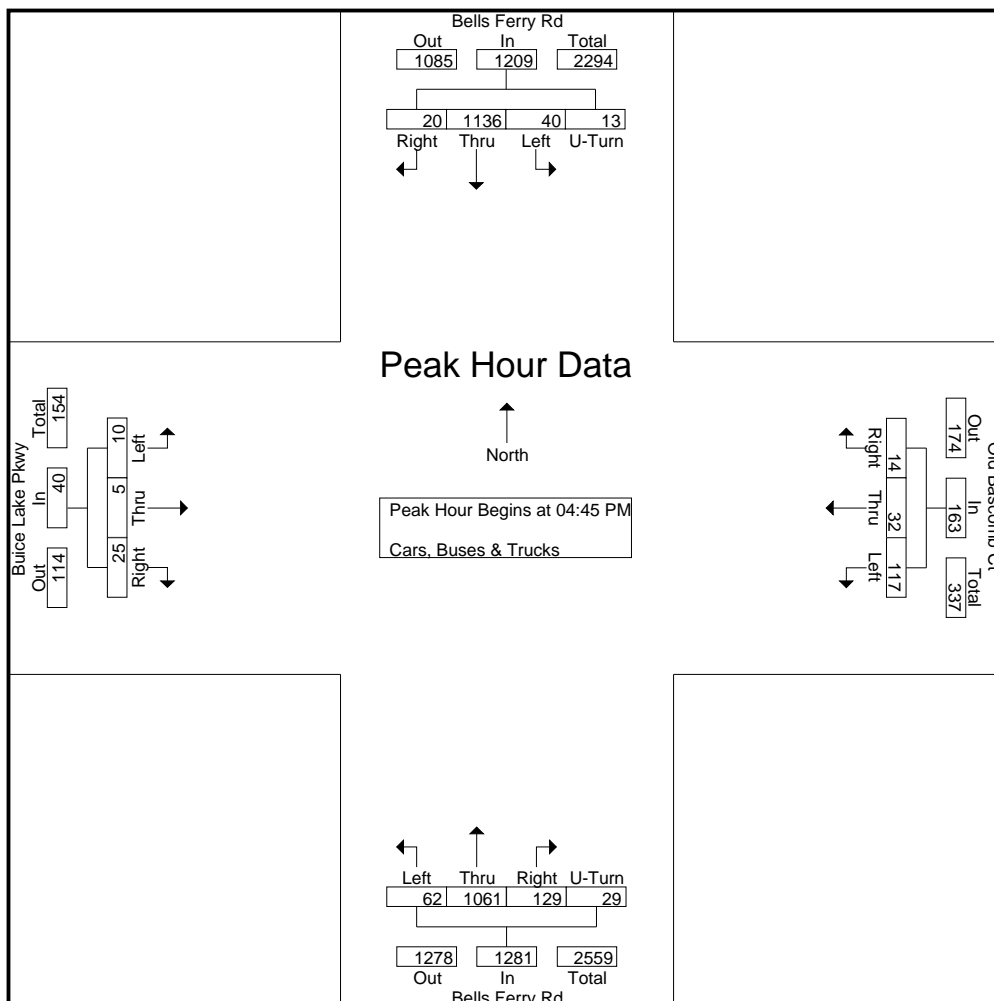
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	Bells Ferry Rd Northbound					Bells Ferry Rd Southbound					Buice Lake Pkwy Eastbound				Old Bascomb Ct Westbound				
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 04:45 PM																			
04:45 PM	16	245	35	8	304	11	277	6	6	300	1	0	4	5	36	2	7	45	654
05:00 PM	14	268	33	8	323	3	296	3	0	302	3	2	10	15	30	2	0	32	672
05:15 PM	14	298	32	6	350	10	285	4	5	304	4	1	4	9	28	2	2	32	695
05:30 PM	18	250	29	7	304	16	278	7	2	303	2	2	7	11	23	26	5	54	672
Total Volume	62	1061	129	29	1281	40	1136	20	13	1209	10	5	25	40	117	32	14	163	2693
% App. Total	4.8	82.8	10.1	2.3		3.3	94	1.7	1.1		25	12.5	62.5		71.8	19.6	8.6		
PHF	.861	.890	.921	.906	.915	.625	.959	.714	.542	.994	.625	.625	.625	.667	.813	.308	.500	.755	.969



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TMC DATA

Bells Ferry Rd @ Eagle Dr

7-9 am | 4-6 pm

File Name : 20210255

Site Code : 20210255

Start Date : 8/17/2021

Page No : 1

Groups Printed- Cars, Buses & Trucks

	Bells Ferry Rd Northbound					Bells Ferry Rd Southbound				Eagle Dr Eastbound				Eagle Dr Westbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
07:00 AM	13	42	49	2	106	64	192	2	258	6	7	23	36	44	7	19	0	70	470
07:15 AM	9	46	54	1	110	98	242	3	343	4	9	23	36	52	6	35	2	95	584
07:30 AM	12	52	85	1	150	119	242	8	369	6	13	19	38	68	6	27	2	103	660
07:45 AM	16	46	95	3	160	144	249	1	394	5	11	18	34	76	8	36	0	120	708
Total	50	186	283	7	526	425	925	14	1364	21	40	83	144	240	27	117	4	388	2422
08:00 AM	12	65	82	1	160	119	206	5	330	6	16	23	45	84	12	54	0	150	685
08:15 AM	21	53	73	1	148	93	196	0	289	6	17	12	35	96	8	61	3	168	640
08:30 AM	8	53	82	0	143	120	204	5	329	6	10	12	28	67	16	57	0	140	640
08:45 AM	13	75	60	3	151	97	172	5	274	4	16	11	31	81	14	52	2	149	605
Total	54	246	297	5	602	429	778	15	1222	22	59	58	139	328	50	224	5	607	2570
*** BREAK ***																			
04:00 PM	47	128	66	0	241	69	93	7	169	6	19	21	46	83	37	65	1	186	642
04:15 PM	53	129	89	0	271	88	122	6	216	8	18	24	50	104	26	81	0	211	748
04:30 PM	51	151	119	0	321	105	110	5	220	15	31	42	88	73	32	103	2	210	839
04:45 PM	41	142	84	2	269	85	148	8	241	17	24	32	73	95	40	78	0	213	796
Total	192	550	358	2	1102	347	473	26	846	46	92	119	257	355	135	327	3	820	3025
05:00 PM	48	196	102	0	346	94	111	5	210	13	24	37	74	81	28	83	1	193	823
05:15 PM	40	149	84	2	275	110	152	4	266	6	31	27	64	117	45	87	0	249	854
05:30 PM	44	141	98	2	285	118	123	5	246	11	29	39	79	94	30	86	1	211	821
05:45 PM	57	180	108	7	352	86	130	10	226	11	28	38	77	72	28	81	3	184	839
Total	189	666	392	11	1258	408	516	24	948	41	112	141	294	364	131	337	5	837	3337
Grand Total	485	1648	1330	25	3488	1609	2692	79	4380	130	303	401	834	1287	343	1005	17	2652	11354
Apprch %	13.9	47.2	38.1	0.7		36.7	61.5	1.8		15.6	36.3	48.1		48.5	12.9	37.9	0.6		
Total %	4.3	14.5	11.7	0.2	30.7	14.2	23.7	0.7	38.6	1.1	2.7	3.5	7.3	11.3	3	8.9	0.1	23.4	

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7-9 am | 4-6 pm

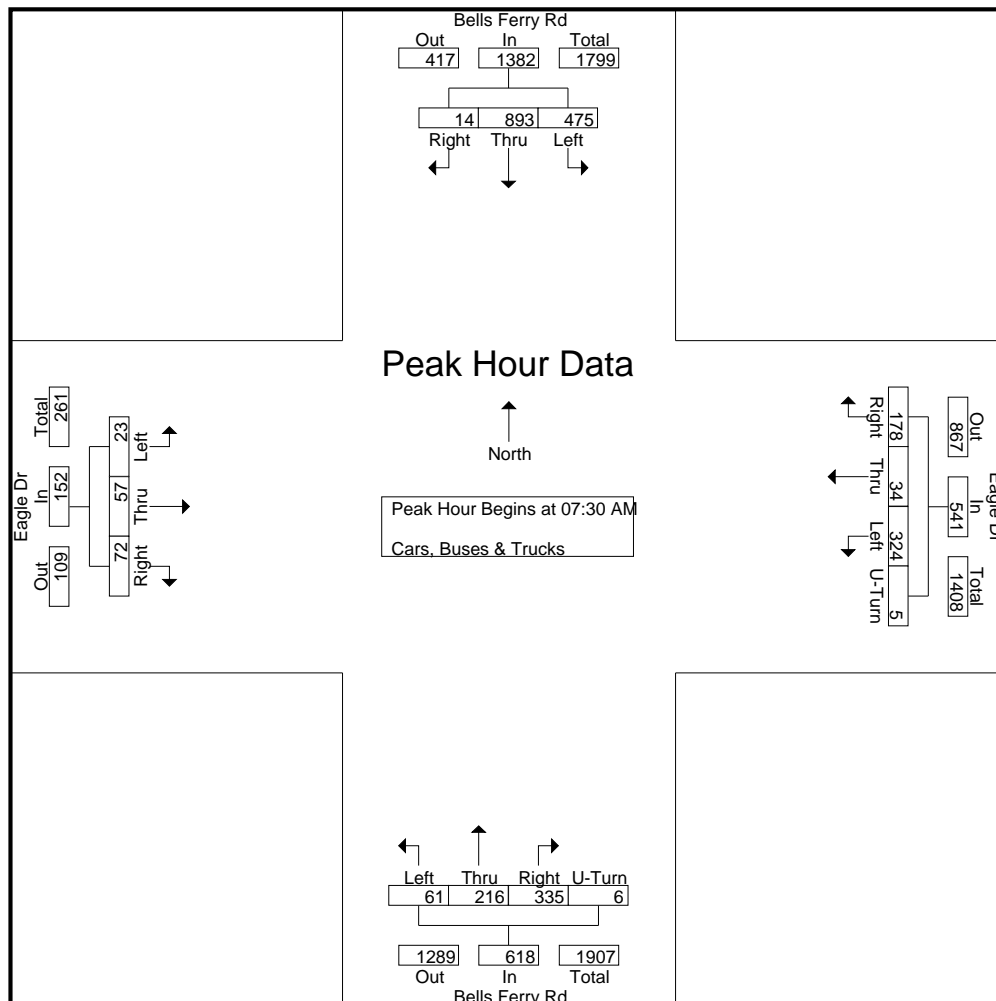
File Name : 20210255

Site Code : 20210255

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Page No : 2

	Bells Ferry Rd Northbound					Bells Ferry Rd Southbound				Eagle Dr Eastbound				Eagle Dr Westbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:30 AM																			
07:30 AM	12	52	85	1	150	119	242	8	369	6	13	19	38	68	6	27	2	103	660
07:45 AM	16	46	95	3	160	144	249	1	394	5	11	18	34	76	8	36	0	120	708
08:00 AM	12	65	82	1	160	119	206	5	330	6	16	23	45	84	12	54	0	150	685
08:15 AM	21	53	73	1	148	93	196	0	289	6	17	12	35	96	8	61	3	168	640
Total Volume	61	216	335	6	618	475	893	14	1382	23	57	72	152	324	34	178	5	541	2693
% App. Total	9.9	35	54.2	1		34.4	64.6	1		15.1	37.5	47.4		59.9	6.3	32.9	0.9		
PHF	.726	.831	.882	.500	.966	.825	.897	.438	.877	.958	.838	.783	.844	.844	.708	.730	.417	.805	.951



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Bells Ferry Rd @ Eagle Dr
7-9 am | 4-6 pm

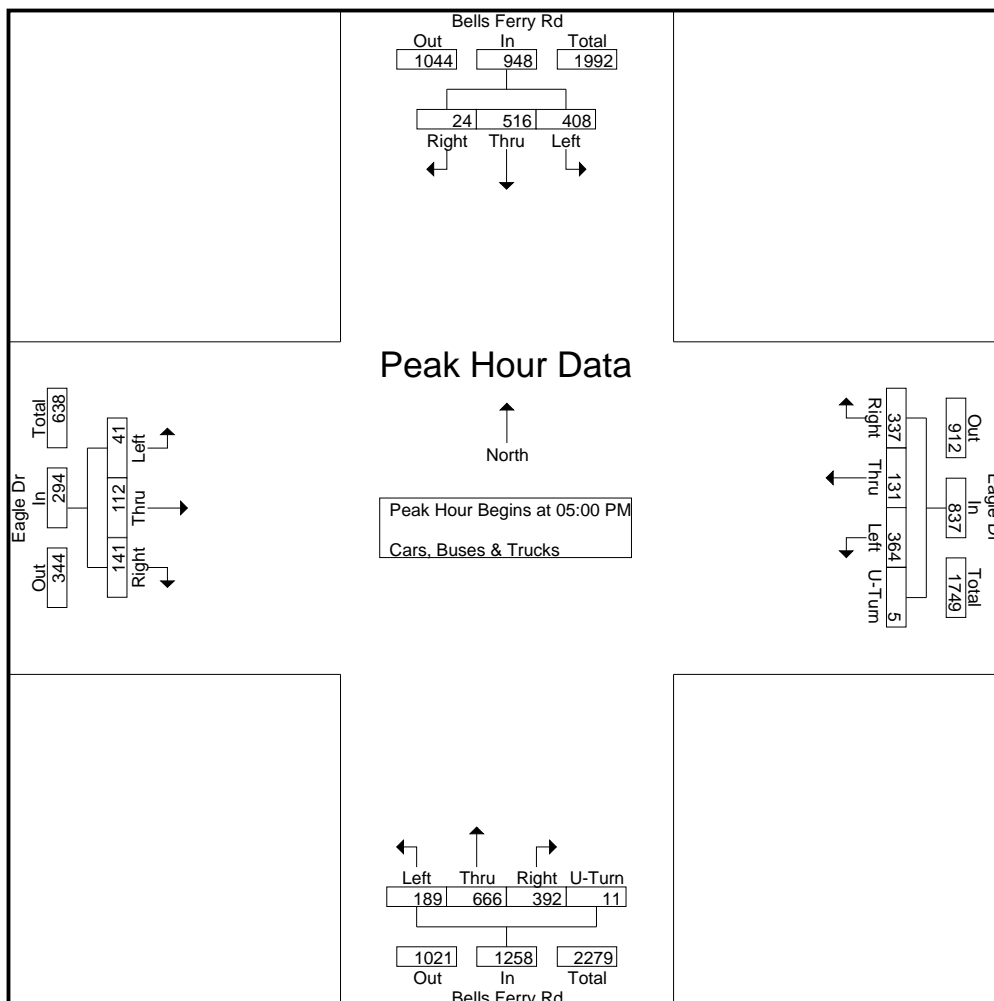
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Site Code : 20210255

Start Date : 8/17/2021

Page No : 3

	Bells Ferry Rd Northbound					Bells Ferry Rd Southbound				Eagle Dr Eastbound				Eagle Dr Westbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 05:00 PM																			
05:00 PM	48	196	102	0	346	94	111	5	210	13	24	37	74	81	28	83	1	193	823
05:15 PM	40	149	84	2	275	110	152	4	266	6	31	27	64	117	45	87	0	249	854
05:30 PM	44	141	98	2	285	118	123	5	246	11	29	39	79	94	30	86	1	211	821
05:45 PM	57	180	108	7	352	86	130	10	226	11	28	38	77	72	28	81	3	184	839
Total Volume	189	666	392	11	1258	408	516	24	948	41	112	141	294	364	131	337	5	837	3337
% App. Total	15	52.9	31.2	0.9		43	54.4	2.5		13.9	38.1	48		43.5	15.7	40.3	0.6		
PHF	.829	.849	.907	.393	.893	.864	.849	.600	.891	.788	.903	.904	.930	.778	.728	.968	.417	.840	.977



A & R Engineering, Inc

2160 Kingston Court, Suite 'O'
Marietta, GA 30067

TMC DATA

Bells Ferry Rd @ Red Barn Rd / Hunter Tr
7-9 am | 4-6 pm

File Name : 20210256

Site Code : 20210256

Start Date : 8/17/2021

Page No : 1

Groups Printed- Cars, Buses & Trucks

	Bells Ferry Rd Northbound					Bells Ferry Rd Southbound					Hunter Tr Eastbound				Red Barn Rd Westbound				
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	1	114	2	1	118	4	333	2	0	339	1	0	3	4	22	1	7	30	491
07:15 AM	2	159	4	1	166	6	356	3	1	366	1	0	0	1	18	0	10	28	561
07:30 AM	2	190	7	1	200	6	411	0	0	417	0	0	2	2	21	0	10	31	650
07:45 AM	1	183	8	2	194	5	356	2	3	366	1	0	1	2	17	0	7	24	586
Total	6	646	21	5	678	21	1456	7	4	1488	3	0	6	9	78	1	34	113	2288
08:00 AM	0	177	13	0	190	4	336	1	1	342	1	0	1	2	8	0	4	12	546
08:15 AM	2	143	5	0	150	6	299	0	1	306	0	0	0	0	12	0	5	17	473
08:30 AM	1	129	5	0	135	2	300	2	1	305	0	0	2	2	12	0	8	20	462
08:45 AM	2	153	9	1	165	3	259	0	1	263	0	0	0	0	9	0	6	15	443
Total	5	602	32	1	640	15	1194	3	4	1216	1	0	3	4	41	0	23	64	1924
*** BREAK ***																			
04:00 PM	0	284	18	1	303	7	220	4	4	235	1	0	3	4	10	0	2	12	554
04:15 PM	0	308	15	0	323	10	312	2	6	330	0	0	0	0	10	0	8	18	671
04:30 PM	0	336	24	0	360	9	245	1	5	260	1	0	0	1	13	0	6	19	640
04:45 PM	2	324	12	2	340	10	312	1	5	328	0	0	0	0	12	0	6	18	686
Total	2	1252	69	3	1326	36	1089	8	20	1153	2	0	3	5	45	0	22	67	2551
05:00 PM	0	350	16	0	366	5	290	0	3	298	0	0	1	1	5	0	5	10	675
05:15 PM	3	324	15	0	342	9	287	3	2	301	2	0	0	2	8	0	5	13	658
05:30 PM	0	329	18	1	348	2	262	0	7	271	0	0	1	1	13	0	3	16	636
05:45 PM	2	421	21	0	444	6	257	3	3	269	3	0	3	6	13	0	4	17	736
Total	5	1424	70	1	1500	22	1096	6	15	1139	5	0	5	10	39	0	17	56	2705
Grand Total	18	3924	192	10	4144	94	4835	24	43	4996	11	0	17	28	203	1	96	300	9468
Apprch %	0.4	94.7	4.6	0.2		1.9	96.8	0.5	0.9		39.3	0	60.7		67.7	0.3	32		
Total %	0.2	41.4	2	0.1	43.8	1	51.1	0.3	0.5	52.8	0.1	0	0.2	0.3	2.1	0	1	3.2	

A & R Engineering, Inc

2160 Kingston Court, Suite 'O'
Marietta, GA 30067

TMC DATA

Bells Ferry Rd @ Red Barn Rd / Hunter Tr
7-9 am | 4-6 pm

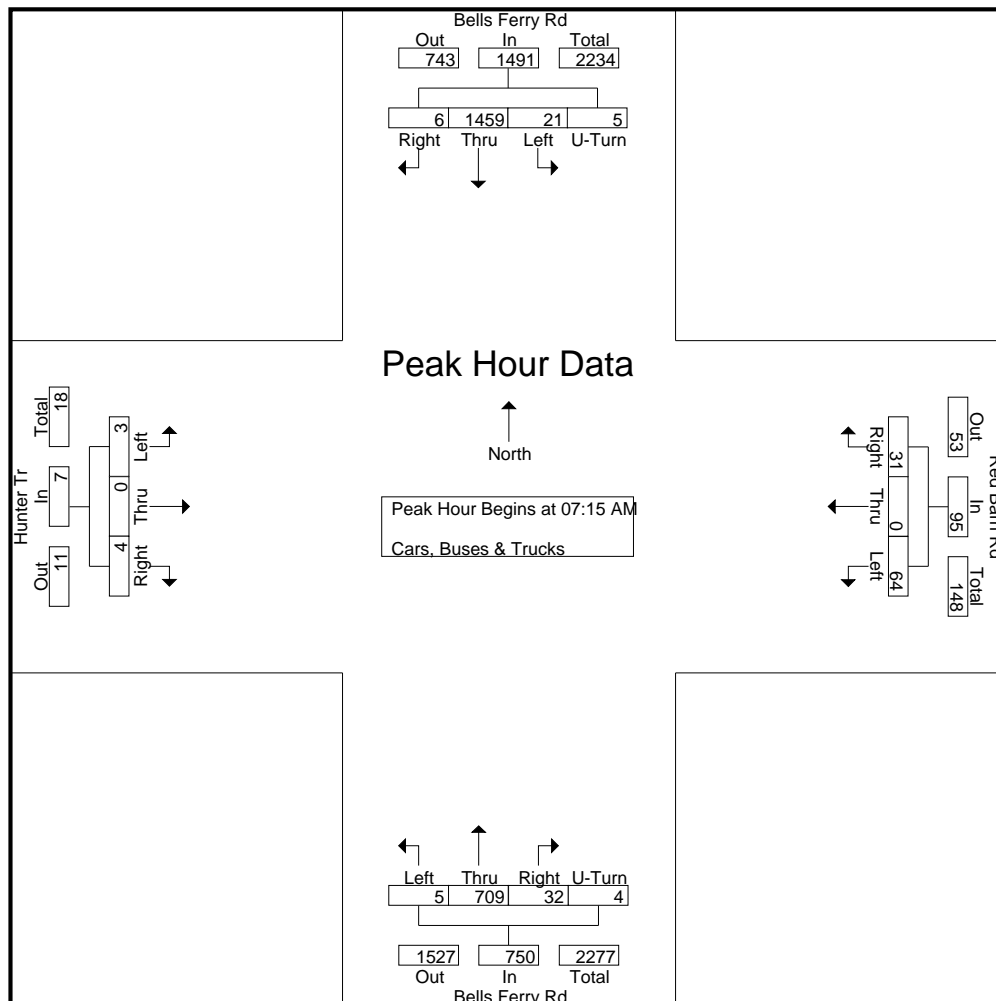
File Name : 20210256

Site Code : 20210256

Start Date : 8/17/2021

Page No : 2

	Bells Ferry Rd Northbound					Bells Ferry Rd Southbound					Hunter Tr Eastbound				Red Barn Rd Westbound				
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:15 AM																			
07:15 AM	2	159	4	1	166	6	356	3	1	366	1	0	0	1	18	0	10	28	561
07:30 AM	2	190	7	1	200	6	411	0	0	417	0	0	2	2	21	0	10	31	650
07:45 AM	1	183	8	2	194	5	356	2	3	366	1	0	1	2	17	0	7	24	586
08:00 AM	0	177	13	0	190	4	336	1	1	342	1	0	1	2	8	0	4	12	546
Total Volume	5	709	32	4	750	21	1459	6	5	1491	3	0	4	7	64	0	31	95	2343
% App. Total	0.7	94.5	4.3	0.5		1.4	97.9	0.4	0.3		42.9	0	57.1		67.4	0	32.6		
PHF	.625	.933	.615	.500	.938	.875	.887	.500	.417	.894	.750	.000	.500	.875	.762	.000	.775	.766	.901



A & R Engineering, Inc

2160 Kingston Court, Suite 'O'
Marietta, GA 30067

TMC DATA

Bells Ferry Rd @ Red Barn Rd / Hunter Tr
7-9 am | 4-6 pm

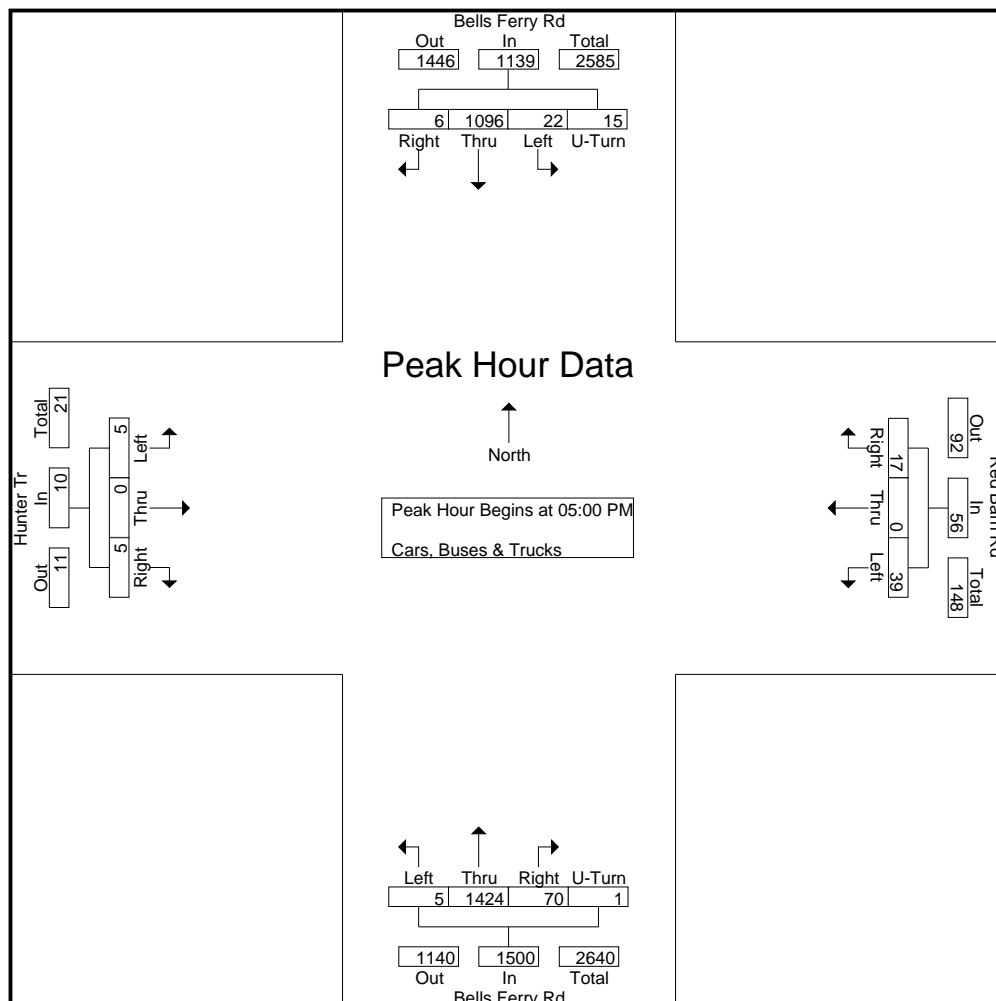
File Name : 20210256

Site Code : 20210256

Start Date : 8/17/2021

Page No : 3

	Bells Ferry Rd Northbound					Bells Ferry Rd Southbound					Hunter Tr Eastbound				Red Barn Rd Westbound				
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 05:00 PM																			
05:00 PM	0	350	16	0	366	5	290	0	3	298	0	0	1	1	5	0	5	10	675
05:15 PM	3	324	15	0	342	9	287	3	2	301	2	0	0	2	8	0	5	13	658
05:30 PM	0	329	18	1	348	2	262	0	7	271	0	0	1	1	13	0	3	16	636
05:45 PM	2	421	21	0	444	6	257	3	3	269	3	0	3	6	13	0	4	17	736
Total Volume	5	1424	70	1	1500	22	1096	6	15	1139	5	0	5	10	39	0	17	56	2705
% App. Total	0.3	94.9	4.7	0.1		1.9	96.2	0.5	1.3		50	0	50		69.6	0	30.4		
PHF	.417	.846	.833	.250	.845	.611	.945	.500	.536	.946	.417	.000	.417	.417	.750	.000	.850	.824	.919



A & R Engineering, Inc

2160 Kingston Court, Suite 'O'
Marietta, GA 30067

TMC DATA

Bells Ferry Rd @ Red Barn Rd / Hunter Tr
7-9 am | 4-6 pm

File Name : 20210256

Site Code : 20210256

Start Date : 8/17/2021

Page No : 1

Groups Printed- Cars, Buses & Trucks

	Bells Ferry Rd Northbound					Bells Ferry Rd Southbound					Hunter Tr Eastbound				Red Barn Rd Westbound				
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	1	114	2	1	118	4	333	2	0	339	1	0	3	4	22	1	7	30	491
07:15 AM	2	159	4	1	166	6	356	3	1	366	1	0	0	1	18	0	10	28	561
07:30 AM	2	190	7	1	200	6	411	0	0	417	0	0	2	2	21	0	10	31	650
07:45 AM	1	183	8	2	194	5	356	2	3	366	1	0	1	2	17	0	7	24	586
Total	6	646	21	5	678	21	1456	7	4	1488	3	0	6	9	78	1	34	113	2288
08:00 AM	0	177	13	0	190	4	336	1	1	342	1	0	1	2	8	0	4	12	546
08:15 AM	2	143	5	0	150	6	299	0	1	306	0	0	0	0	12	0	5	17	473
08:30 AM	1	129	5	0	135	2	300	2	1	305	0	0	2	2	12	0	8	20	462
08:45 AM	2	153	9	1	165	3	259	0	1	263	0	0	0	0	9	0	6	15	443
Total	5	602	32	1	640	15	1194	3	4	1216	1	0	3	4	41	0	23	64	1924
*** BREAK ***																			
04:00 PM	0	284	18	1	303	7	220	4	4	235	1	0	3	4	10	0	2	12	554
04:15 PM	0	308	15	0	323	10	312	2	6	330	0	0	0	0	10	0	8	18	671
04:30 PM	0	336	24	0	360	9	245	1	5	260	1	0	0	1	13	0	6	19	640
04:45 PM	2	324	12	2	340	10	312	1	5	328	0	0	0	0	12	0	6	18	686
Total	2	1252	69	3	1326	36	1089	8	20	1153	2	0	3	5	45	0	22	67	2551
05:00 PM	0	350	16	0	366	5	290	0	3	298	0	0	1	1	5	0	5	10	675
05:15 PM	3	324	15	0	342	9	287	3	2	301	2	0	0	2	8	0	5	13	658
05:30 PM	0	329	18	1	348	2	262	0	7	271	0	0	1	1	13	0	3	16	636
05:45 PM	2	421	21	0	444	6	257	3	3	269	3	0	3	6	13	0	4	17	736
Total	5	1424	70	1	1500	22	1096	6	15	1139	5	0	5	10	39	0	17	56	2705
Grand Total	18	3924	192	10	4144	94	4835	24	43	4996	11	0	17	28	203	1	96	300	9468
Apprch %	0.4	94.7	4.6	0.2		1.9	96.8	0.5	0.9		39.3	0	60.7		67.7	0.3	32		
Total %	0.2	41.4	2	0.1	43.8	1	51.1	0.3	0.5	52.8	0.1	0	0.2	0.3	2.1	0	1	3.2	

A & R Engineering, Inc

2160 Kingston Court, Suite 'O'
Marietta, GA 30067

TMC DATA

Bells Ferry Rd @ Red Barn Rd / Hunter Tr
7-9 am | 4-6 pm

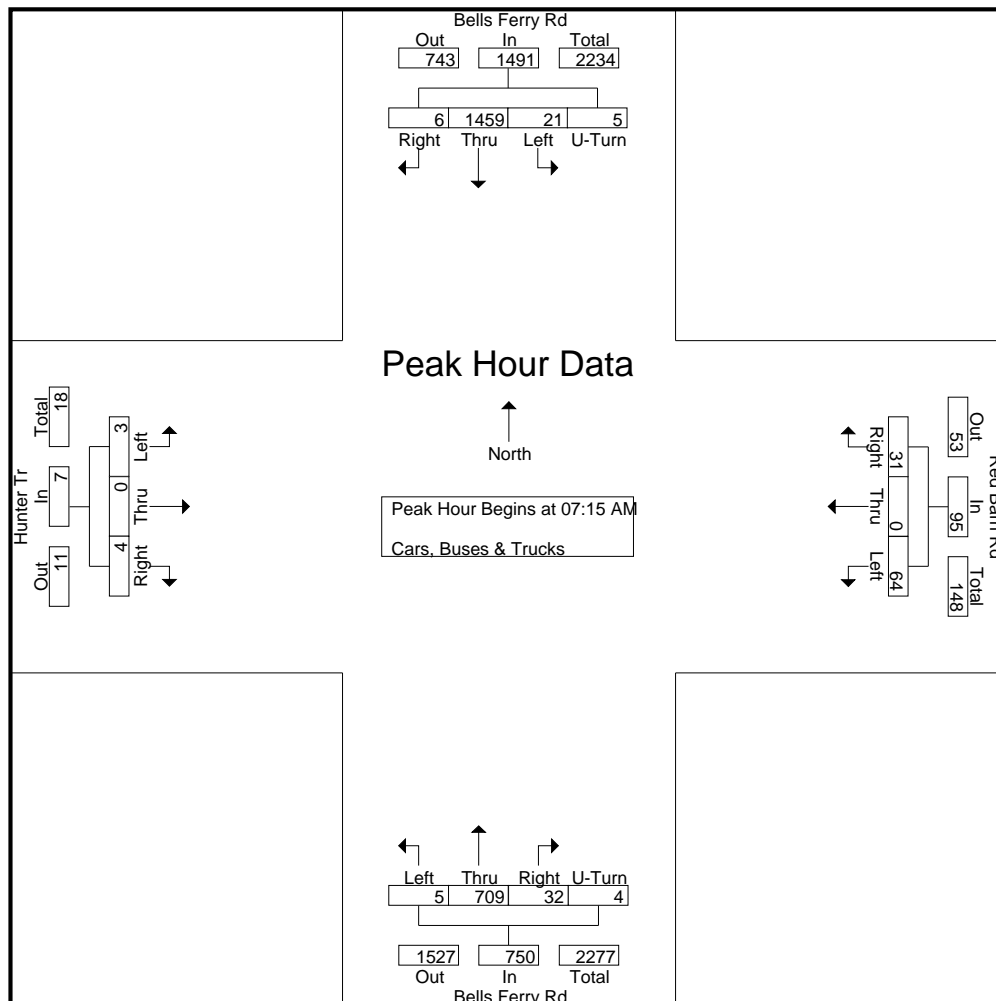
File Name : 20210256

Site Code : 20210256

Start Date : 8/17/2021

Page No : 2

	Bells Ferry Rd Northbound					Bells Ferry Rd Southbound					Hunter Tr Eastbound				Red Barn Rd Westbound				
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:15 AM																			
07:15 AM	2	159	4	1	166	6	356	3	1	366	1	0	0	1	18	0	10	28	561
07:30 AM	2	190	7	1	200	6	411	0	0	417	0	0	2	2	21	0	10	31	650
07:45 AM	1	183	8	2	194	5	356	2	3	366	1	0	1	2	17	0	7	24	586
08:00 AM	0	177	13	0	190	4	336	1	1	342	1	0	1	2	8	0	4	12	546
Total Volume	5	709	32	4	750	21	1459	6	5	1491	3	0	4	7	64	0	31	95	2343
% App. Total	0.7	94.5	4.3	0.5		1.4	97.9	0.4	0.3		42.9	0	57.1		67.4	0	32.6		
PHF	.625	.933	.615	.500	.938	.875	.887	.500	.417	.894	.750	.000	.500	.875	.762	.000	.775	.766	.901



A & R Engineering, Inc

2160 Kingston Court, Suite 'O'
Marietta, GA 30067

TMC DATA

Bells Ferry Rd @ Red Barn Rd / Hunter Tr
7-9 am | 4-6 pm

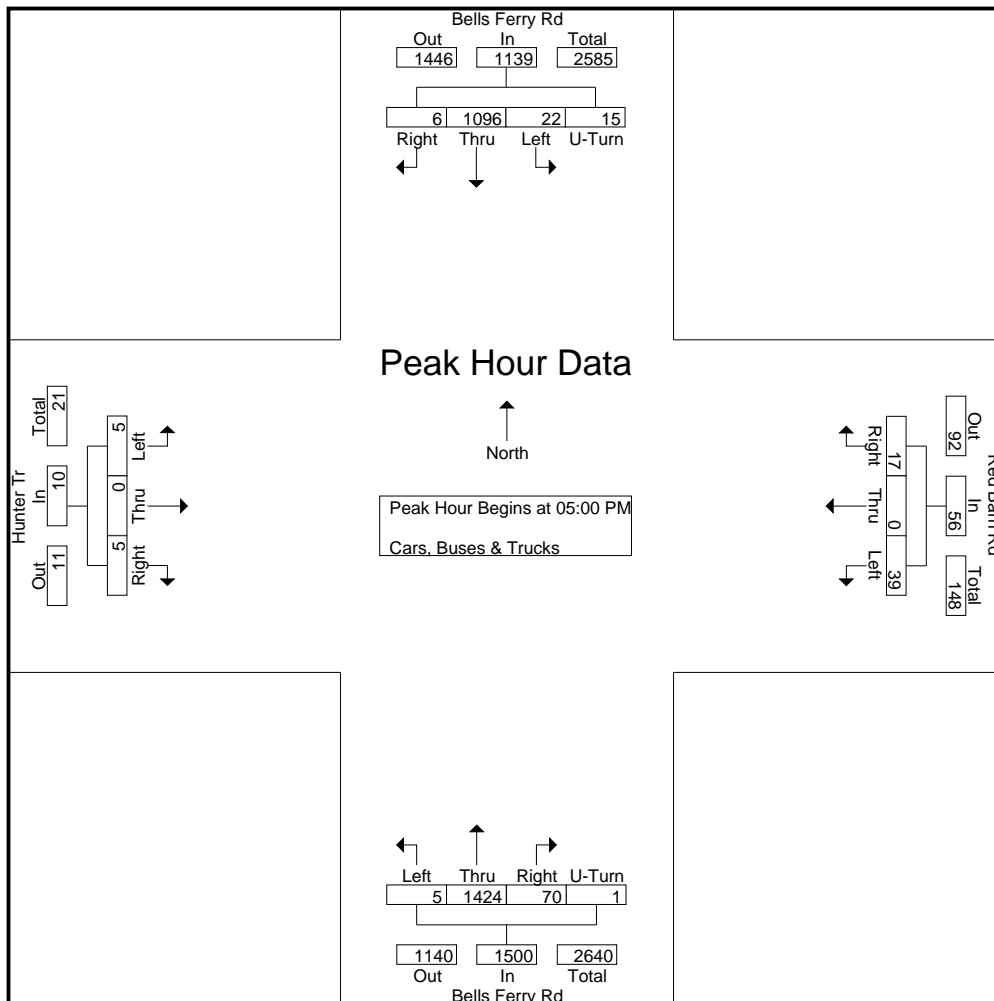
File Name : 20210256

Site Code : 20210256

Start Date : 8/17/2021

Page No : 3

	Bells Ferry Rd Northbound					Bells Ferry Rd Southbound					Hunter Tr Eastbound				Red Barn Rd Westbound				
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 05:00 PM																			
05:00 PM	0	350	16	0	366	5	290	0	3	298	0	0	1	1	5	0	5	10	675
05:15 PM	3	324	15	0	342	9	287	3	2	301	2	0	0	2	8	0	5	13	658
05:30 PM	0	329	18	1	348	2	262	0	7	271	0	0	1	1	13	0	3	16	636
05:45 PM	2	421	21	0	444	6	257	3	3	269	3	0	3	6	13	0	4	17	736
Total Volume	5	1424	70	1	1500	22	1096	6	15	1139	5	0	5	10	39	0	17	56	2705
% App. Total	0.3	94.9	4.7	0.1		1.9	96.2	0.5	1.3		50	0	50		69.6	0	30.4		
PHF	.417	.846	.833	.250	.845	.611	.945	.500	.536	.946	.417	.000	.417	.417	.750	.000	.850	.824	.919



A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC DATA

SR 92 @ Bells Ferry Rd

7-9 am | 4-6 pm

File Name : 20210257

Site Code : 20210257

Start Date : 08-17-2021

Page No : 1

Groups Printed- Cars, Buses & Trucks

	Bells Ferry Rd Northbound				Bells Ferry Rd Southbound				SR 92 Eastbound					SR 92 Westbound					
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	U - Turn	App. Total	Left	Thru	Right	U - Turn	App. Total	Int. Total
07:00 AM	15	39	9	63	56	181	2	239	15	314	69	1	399	20	135	15	0	170	871
07:15 AM	14	49	17	80	41	198	5	244	46	400	71	0	517	29	112	14	2	157	998
07:30 AM	30	57	19	106	68	206	2	276	57	448	89	3	597	27	131	18	1	177	1156
07:45 AM	44	59	34	137	66	172	3	241	48	514	93	2	657	25	146	23	4	198	1233
Total	103	204	79	386	231	757	12	1000	166	1676	322	6	2170	101	524	70	7	702	4258
08:00 AM	27	70	17	114	66	186	5	257	45	413	70	2	530	17	182	18	6	223	1124
08:15 AM	41	69	17	127	51	182	5	238	39	315	61	3	418	26	143	16	5	190	973
08:30 AM	56	47	21	124	47	146	7	200	28	365	54	2	449	28	177	20	0	225	998
08:45 AM	32	76	22	130	35	171	8	214	47	445	39	4	535	26	135	23	2	186	1065
Total	156	262	77	495	199	685	25	909	159	1538	224	11	1932	97	637	77	13	824	4160
*** BREAK ***																			
04:00 PM	55	123	18	196	40	95	6	141	87	309	45	4	445	25	238	46	1	310	1092
04:15 PM	77	170	7	254	62	126	11	199	100	300	52	4	456	39	278	53	4	374	1283
04:30 PM	71	175	23	269	64	102	12	178	113	264	80	4	461	28	246	50	9	333	1241
04:45 PM	28	82	4	114	58	105	16	179	93	317	53	5	468	10	127	18	3	158	919
Total	231	550	52	833	224	428	45	697	393	1190	230	17	1830	102	889	167	17	1175	4535
05:00 PM	78	166	12	256	49	113	15	177	56	209	40	8	313	28	248	42	2	320	1066
05:15 PM	76	153	7	236	43	95	13	151	69	238	38	6	351	22	307	41	8	378	1116
05:30 PM	51	160	9	220	33	93	12	138	59	224	46	10	339	38	303	50	5	396	1093
05:45 PM	70	238	13	321	43	101	24	168	86	183	45	14	328	22	242	45	9	318	1135
Total	275	717	41	1033	168	402	64	634	270	854	169	38	1331	110	1100	178	24	1412	4410
Grand Total	765	1733	249	2747	822	2272	146	3240	988	5258	945	72	7263	410	3150	492	61	4113	17363
Apprch %	27.8	63.1	9.1		25.4	70.1	4.5		13.6	72.4	13	1		10	76.6	12	1.5		
Total %	4.4	10	1.4	15.8	4.7	13.1	0.8	18.7	5.7	30.3	5.4	0.4	41.8	2.4	18.1	2.8	0.4	23.7	

A & R Engineering, Inc.

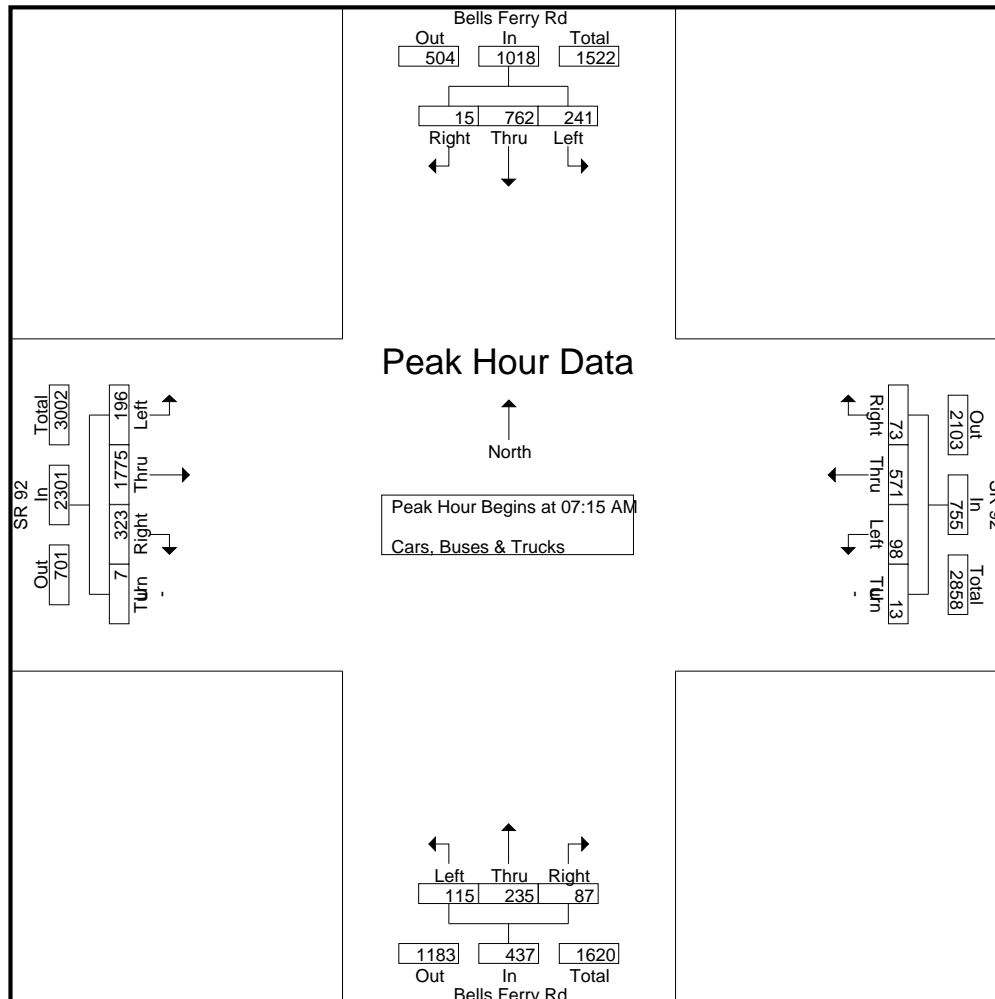
2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC DATA

SR 92 @ Bells Ferry Rd
7-9 am | 4-6 pm

File Name : 20210257
Site Code : 20210257
Start Date : 08-17-2021
Page No : 2

	Bells Ferry Rd Northbound				Bells Ferry Rd Southbound				SR 92 Eastbound					SR 92 Westbound					
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	U - Turn	App. Total	Left	Thru	Right	U - Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:15 AM																			
07:15 AM	14	49	17	80	41	198	5	244	46	400	71	0	517	29	112	14	2	157	998
07:30 AM	30	57	19	106	68	206	2	276	57	448	89	3	597	27	131	18	1	177	1156
07:45 AM	44	59	34	137	66	172	3	241	48	514	93	2	657	25	146	23	4	198	1233
08:00 AM	27	70	17	114	66	186	5	257	45	413	70	2	530	17	182	18	6	223	1124
Total Volume	115	235	87	437	241	762	15	1018	196	1775	323	7	2301	98	571	73	13	755	4511
% App. Total	26.3	53.8	19.9		23.7	74.9	1.5		8.5	77.1	14	0.3		13	75.6	9.7	1.7		
PHF	.653	.839	.640	.797	.886	.925	.750	.922	.860	.863	.868	.583	.876	.845	.784	.793	.542	.846	.915



A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC DATA

SR 92 @ Bells Ferry Rd

7-9 am | 4-6 pm

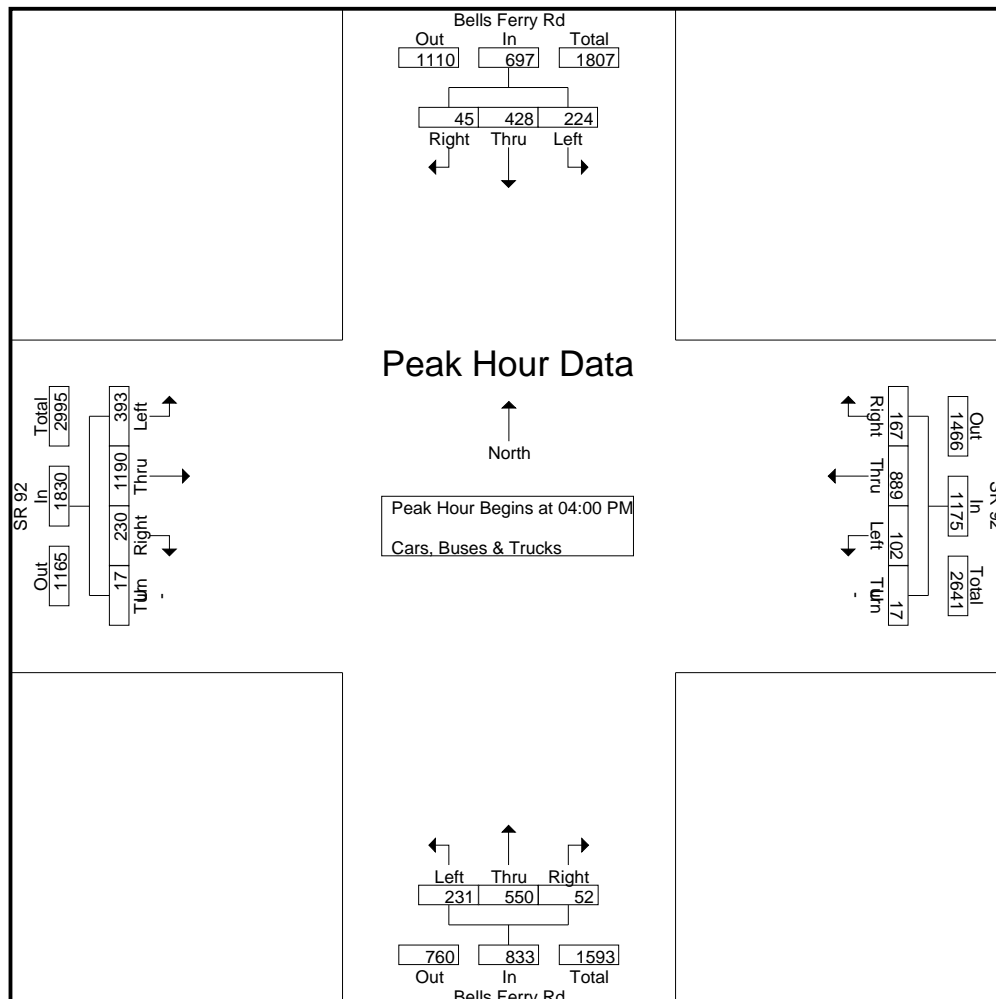
File Name : 20210257

Site Code : 20210257

Start Date : 08-17-2021

Page No : 3

	Bells Ferry Rd Northbound				Bells Ferry Rd Southbound				SR 92 Eastbound					SR 92 Westbound					
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	U - Turn	App. Total	Left	Thru	Right	U - Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 04:00 PM																			
04:00 PM	55	123	18	196	40	95	6	141	87	309	45	4	445	25	238	46	1	310	1092
04:15 PM	77	170	7	254	62	126	11	199	100	300	52	4	456	39	278	53	4	374	1283
04:30 PM	71	175	23	269	64	102	12	178	113	264	80	4	461	28	246	50	9	333	1241
04:45 PM	28	82	4	114	58	105	16	179	93	317	53	5	468	10	127	18	3	158	919
Total Volume	231	550	52	833	224	428	45	697	393	1190	230	17	1830	102	889	167	17	1175	4535
% App. Total	27.7	66	6.2		32.1	61.4	6.5		21.5	65	12.6	0.9		8.7	75.7	14.2	1.4		
PHF	.750	.786	.565	.774	.875	.849	.703	.876	.869	.938	.719	.850	.978	.654	.799	.788	.472	.785	.884



A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC DATA
SR 92 @ Robin Rd
7-9 am | 4-6 pm

File Name : 20210258
Site Code : 20210258
Start Date : 08-17-2021
Page No : 1

Groups Printed- Cars,Buses & Trucks

	Robin Rd Ext Northbound				Robin Rd Southbound				SR 92 Eastbound				SR 92 Westbound					
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	U - Turn	App. Total	Int. Total
07:00 AM	4	0	1	5	4	4	78	86	63	254	13	330	5	142	1	2	150	571
07:15 AM	5	2	1	8	11	5	110	126	87	359	14	460	4	175	5	7	191	785
07:30 AM	4	4	1	9	11	2	102	115	86	409	17	512	7	173	0	1	181	817
07:45 AM	5	0	3	8	19	6	100	125	70	408	18	496	6	180	1	5	192	821
Total	18	6	6	30	45	17	390	452	306	1430	62	1798	22	670	7	15	714	2994
08:00 AM	8	4	0	12	14	3	91	108	61	311	15	387	5	224	6	3	238	745
08:15 AM	7	4	0	11	19	7	89	115	44	271	9	324	11	214	3	6	234	684
08:30 AM	13	1	0	14	4	4	90	98	44	319	22	385	6	204	4	4	218	715
08:45 AM	9	2	1	12	14	3	76	93	49	282	13	344	8	200	2	5	215	664
Total	37	11	1	49	51	17	346	414	198	1183	59	1440	30	842	15	18	905	2808
*** BREAK ***																		
04:00 PM	5	6	5	16	16	6	63	85	64	267	8	339	14	402	12	13	441	881
04:15 PM	13	3	5	21	26	7	120	153	72	254	15	341	18	373	17	6	414	929
04:30 PM	13	3	5	21	17	6	86	109	57	266	9	332	10	422	11	10	453	915
04:45 PM	14	2	3	19	34	5	120	159	55	280	13	348	15	415	11	8	449	975
Total	45	14	18	77	93	24	389	506	248	1067	45	1360	57	1612	51	37	1757	3700
05:00 PM	9	3	4	16	19	1	97	117	67	259	16	342	17	411	9	10	447	922
05:15 PM	17	3	6	26	18	2	113	133	55	364	19	438	6	464	10	12	492	1089
05:30 PM	19	3	12	34	25	10	110	145	62	297	18	377	14	364	10	8	396	952
05:45 PM	12	3	7	22	32	3	85	120	79	279	12	370	11	437	20	14	482	994
Total	57	12	29	98	94	16	405	515	263	1199	65	1527	48	1676	49	44	1817	3957
Grand Total	157	43	54	254	283	74	1530	1887	1015	4879	231	6125	157	4800	122	114	5193	13459
Apprch %	61.8	16.9	21.3		15	3.9	81.1		16.6	79.7	3.8		3	92.4	2.3	2.2		
Total %	1.2	0.3	0.4	1.9	2.1	0.5	11.4	14	7.5	36.3	1.7	45.5	1.2	35.7	0.9	0.8	38.6	

A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC DATA

SR 92 @ Robin Rd

7-9 am | 4-6 pm

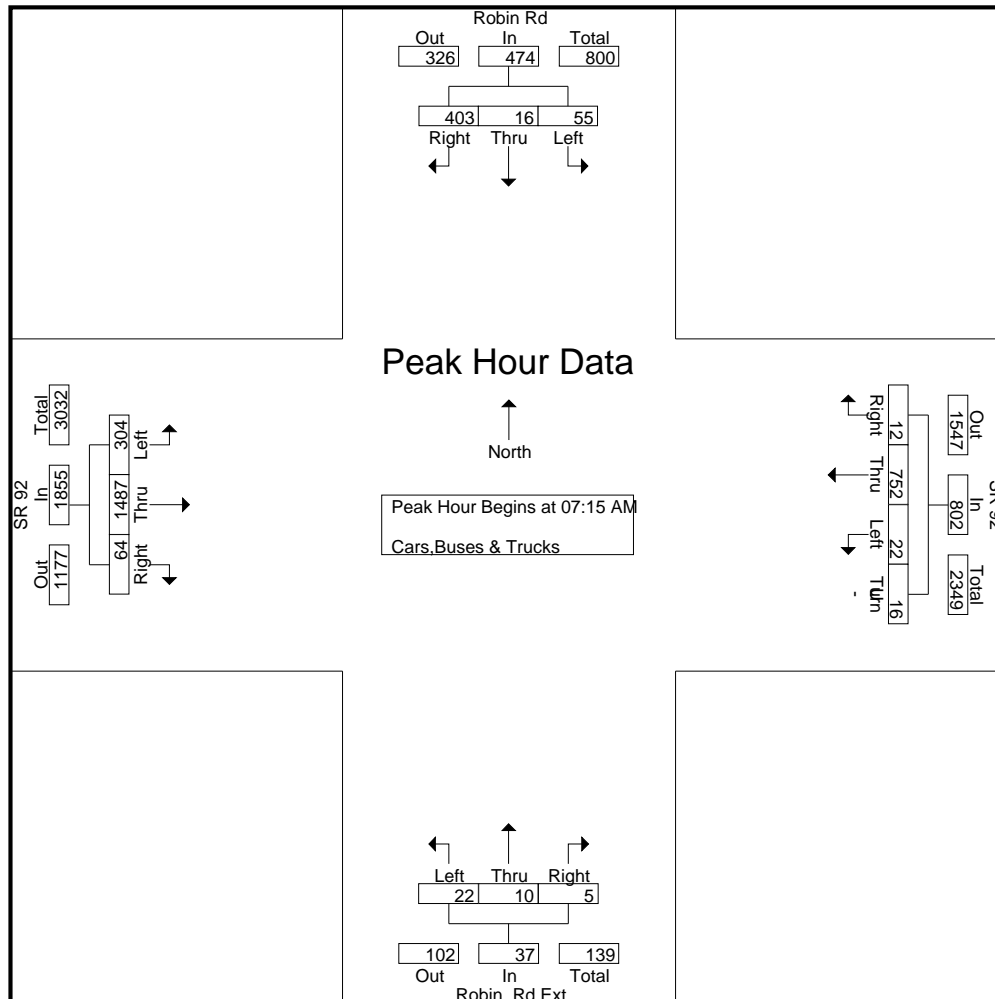
File Name : 20210258

Site Code : 20210258

Start Date : 08-17-2021

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	Robin Rd Ext Northbound				Robin Rd Southbound				SR 92 Eastbound				SR 92 Westbound					
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	U - Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 07:15 AM																		
07:15 AM	5	2	1	8	11	5	110	126	87	359	14	460	4	175	5	7	191	785
07:30 AM	4	4	1	9	11	2	102	115	86	409	17	512	7	173	0	1	181	817
07:45 AM	5	0	3	8	19	6	100	125	70	408	18	496	6	180	1	5	192	821
08:00 AM	8	4	0	12	14	3	91	108	61	311	15	387	5	224	6	3	238	745
Total Volume	22	10	5	37	55	16	403	474	304	1487	64	1855	22	752	12	16	802	3168
% App. Total	59.5	27	13.5		11.6	3.4	85		16.4	80.2	3.5		2.7	93.8	1.5	2		
PHF	.688	.625	.417	.771	.724	.667	.916	.940	.874	.909	.889	.906	.786	.839	.500	.571	.842	.965



A & R Engineering, Inc.

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TMC DATA

SR 92 @ Robin Rd

7-9 am | 4-6 pm

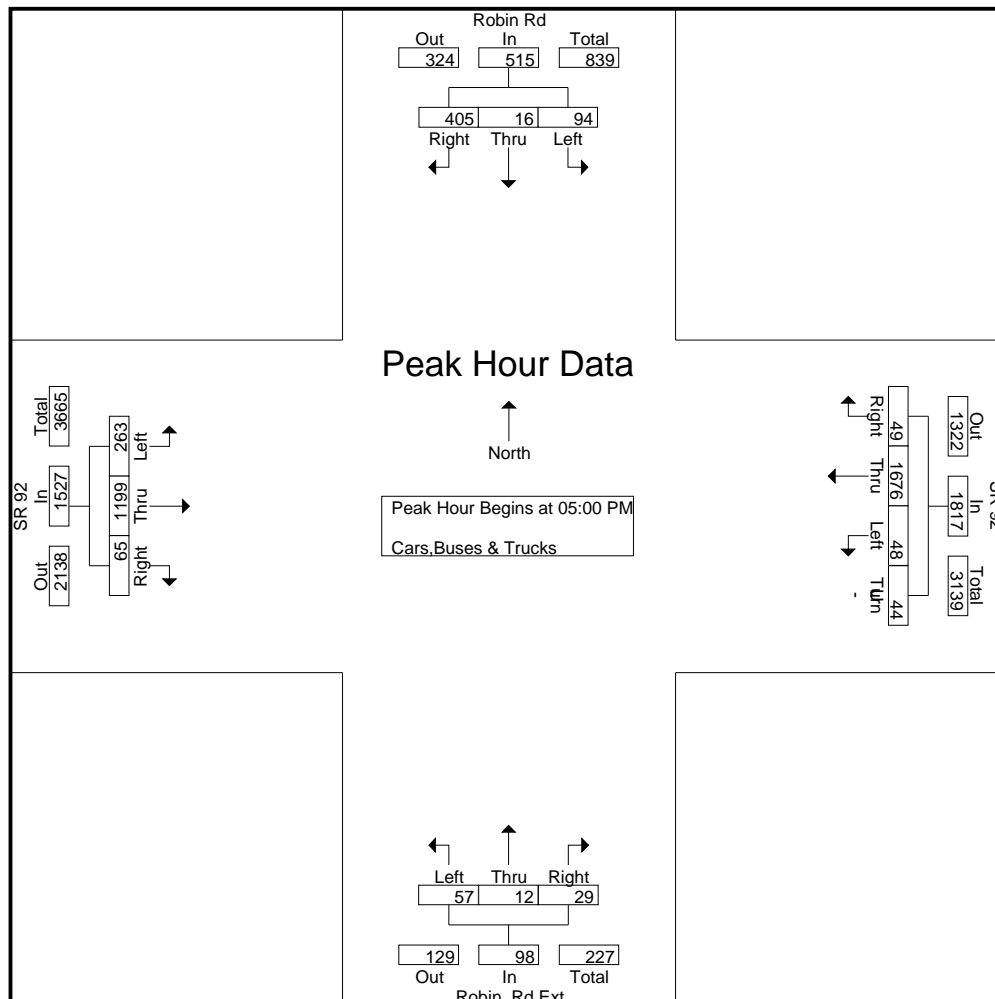
File Name : 20210258

Site Code : 20210258

Start Date : 08-17-2021

Page No : 3

	Robin Rd Ext Northbound				Robin Rd Southbound				SR 92 Eastbound				SR 92 Westbound					
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	U - Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 05:00 PM																		
05:00 PM	9	3	4	16	19	1	97	117	67	259	16	342	17	411	9	10	447	922
05:15 PM	17	3	6	26	18	2	113	133	55	364	19	438	6	464	10	12	492	1089
05:30 PM	19	3	12	34	25	10	110	145	62	297	18	377	14	364	10	8	396	952
05:45 PM	12	3	7	22	32	3	85	120	79	279	12	370	11	437	20	14	482	994
Total Volume	57	12	29	98	94	16	405	515	263	1199	65	1527	48	1676	49	44	1817	3957
% App. Total	58.2	12.2	29.6		18.3	3.1	78.6		17.2	78.5	4.3		2.6	92.2	2.7	2.4		
PHF	.750	1.00	.604	.721	.734	.400	.896	.888	.832	.823	.855	.872	.706	.903	.613	.786	.923	.908



A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
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TMC DATA

Bells Ferry Rd @ Robin Rd
7-9 am | 4-6 pm

File Name : 20210259
Site Code : 20210259
Start Date : 08-17-2021
Page No : 1

Groups Printed- Cars, Buses & Trucks

	Bells Ferry Rd Northbound				Bells Ferry Rd Southbound				Robin Rd Eastbound				Tyson Woods Rd Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	2	75	3	80	0	257	99	356	72	0	4	76	4	1	6	11	523
07:15 AM	0	135	0	135	1	319	172	492	99	0	2	101	8	2	4	14	742
07:30 AM	1	123	2	126	2	345	141	488	95	2	0	97	10	2	2	14	725
07:45 AM	3	146	1	150	0	279	113	392	71	1	2	74	2	2	3	7	623
Total	6	479	6	491	3	1200	525	1728	337	3	8	348	24	7	15	46	2613
08:00 AM	1	97	1	99	0	339	171	510	81	1	6	88	3	4	0	7	704
08:15 AM	1	101	2	104	0	258	91	349	62	0	5	67	7	2	1	10	530
08:30 AM	0	133	2	135	3	249	134	386	58	1	0	59	3	0	6	9	589
08:45 AM	0	115	2	117	1	209	136	346	75	0	2	77	1	0	4	5	545
Total	2	446	7	455	4	1055	532	1591	276	2	13	291	14	6	11	31	2368
09:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
*** BREAK ***																	
Total	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
*** BREAK ***																	
04:00 PM	1	253	4	258	1	140	126	267	90	0	3	93	3	0	1	4	622
04:15 PM	5	236	3	244	5	167	145	317	90	0	6	96	4	1	2	7	664
04:30 PM	4	310	3	317	8	160	134	302	89	1	0	90	3	1	4	8	717
04:45 PM	2	265	8	275	7	180	124	311	75	1	6	82	3	0	2	5	673
Total	12	1064	18	1094	21	647	529	1197	344	2	15	361	13	2	9	24	2676
05:00 PM	2	254	6	262	4	206	156	366	99	3	3	105	5	2	0	7	740
05:15 PM	4	269	4	277	7	165	166	338	85	1	2	88	3	1	1	5	708
05:30 PM	1	293	4	298	1	185	148	334	96	0	1	97	4	0	4	8	737
05:45 PM	1	275	8	284	1	191	131	323	97	3	3	103	4	2	2	8	718
Total	8	1091	22	1121	13	747	601	1361	377	7	9	393	16	5	7	28	2903
Grand Total	28	3080	53	3161	41	3650	2187	5878	1334	14	45	1393	67	20	42	129	10561
Apprch %	0.9	97.4	1.7		0.7	62.1	37.2		95.8	1	3.2		51.9	15.5	32.6		
Total %	0.3	29.2	0.5	29.9	0.4	34.6	20.7	55.7	12.6	0.1	0.4	13.2	0.6	0.2	0.4	1.2	

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TMC DATA

Bells Ferry Rd @ Robin Rd
7-9 am | 4-6 pm

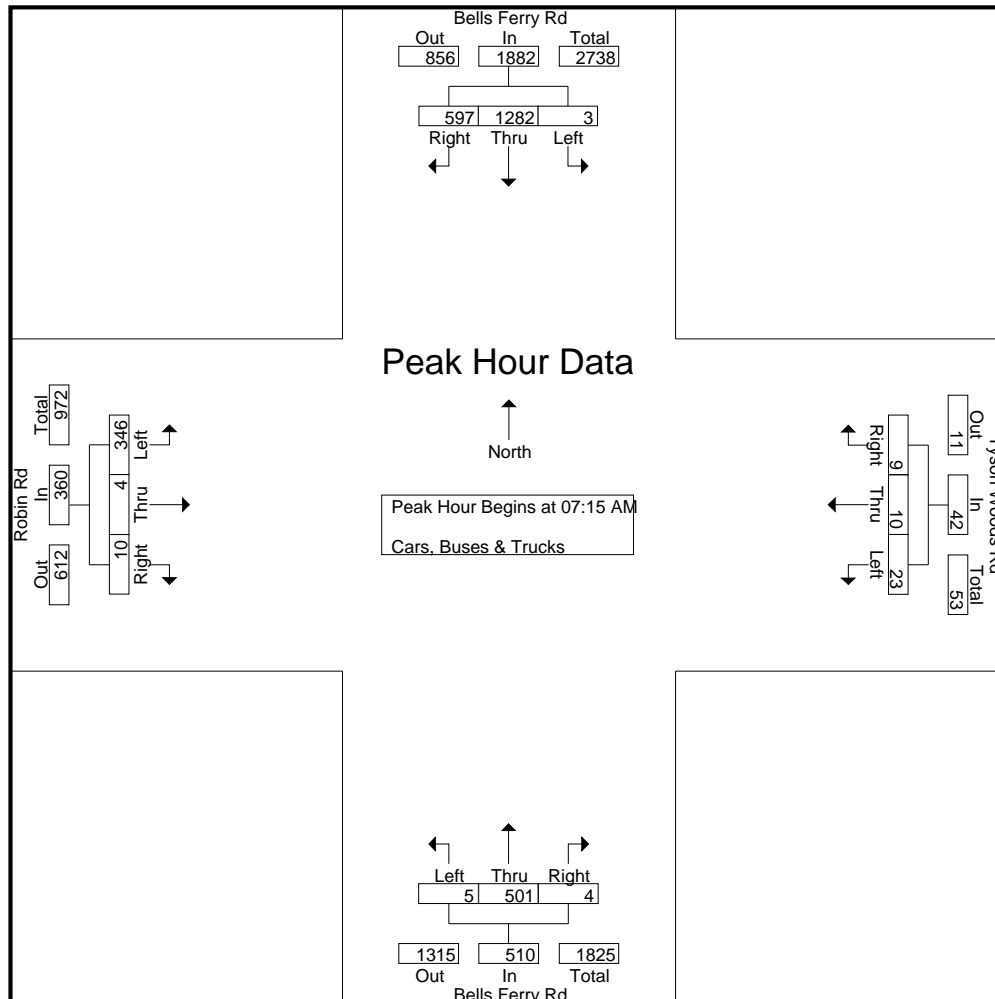
File Name : 20210259

Site Code : 20210259

Start Date : 08-17-2021

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	Bells Ferry Rd Northbound				Bells Ferry Rd Southbound				Robin Rd Eastbound				Tyson Woods Rd Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	135	0	135	1	319	172	492	99	0	2	101	8	2	4	14	742
07:30 AM	1	123	2	126	2	345	141	488	95	2	0	97	10	2	2	14	725
07:45 AM	3	146	1	150	0	279	113	392	71	1	2	74	2	2	3	7	623
08:00 AM	1	97	1	99	0	339	171	510	81	1	6	88	3	4	0	7	704
Total Volume	5	501	4	510	3	1282	597	1882	346	4	10	360	23	10	9	42	2794
% App. Total	1	98.2	0.8		0.2	68.1	31.7		96.1	1.1	2.8		54.8	23.8	21.4		
PHF	.417	.858	.500	.850	.375	.929	.868	.923	.874	.500	.417	.891	.575	.625	.563	.750	.941



A & R Engineering, Inc.

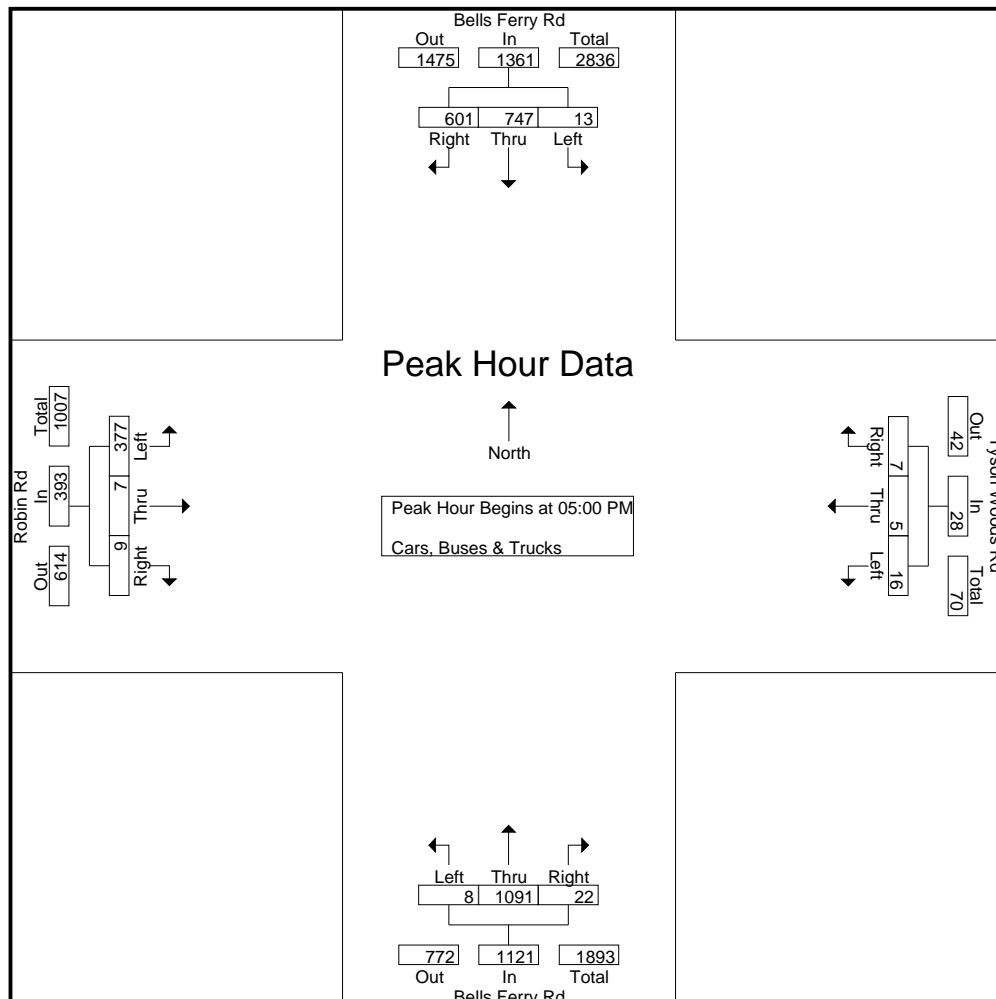
2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC DATA

Bells Ferry Rd @ Robin Rd
7-9 am | 4-6 pm

File Name : 20210259
Site Code : 20210259
Start Date : 08-17-2021
Page No : 3

	Bells Ferry Rd Northbound				Bells Ferry Rd Southbound				Robin Rd Eastbound				Tyson Woods Rd Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	2	254	6	262	4	206	156	366	99	3	3	105	5	2	0	7	740
05:15 PM	4	269	4	277	7	165	166	338	85	1	2	88	3	1	1	5	708
05:30 PM	1	293	4	298	1	185	148	334	96	0	1	97	4	0	4	8	737
05:45 PM	1	275	8	284	1	191	131	323	97	3	3	103	4	2	2	8	718
Total Volume	8	1091	22	1121	13	747	601	1361	377	7	9	393	16	5	7	28	2903
% App. Total	0.7	97.3	2		1	54.9	44.2		95.9	1.8	2.3		57.1	17.9	25		
PHF	.500	.931	.688	.940	.464	.907	.905	.930	.952	.583	.750	.936	.800	.625	.438	.875	.981



GRTA Letter of Understanding

Linear Regression of Daily Traffic

**Fact Sheets for Planned and Programmed
Improvements**

Existing Intersection Analysis

Future “No-Build” Intersection Analysis

Future “Build” Intersections Analysis

Traffic Volume Worksheets