

*Transportation Analysis*

# **Hidden Forest DRI# 1352 Cobb County, Georgia**

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## EXECUTIVE SUMMARY

This report presents the analysis of the anticipated traffic impacts of a proposed 52.11-mixed-use development (Hidden Forest) located east of Interstate 75 and west of Interstate 575 along Big Shanty Road, approximately 0.2 miles east of George Busbee Parkway, near the intersection of Big Shanty Road at Hidden Forest Court in Cobb County, Georgia. This report is being prepared as part of a submittal requesting rezoning from R-20 (Single Family Residential) to PVC (Planned Village Community). Because the mixed-use project will exceed 400,000 square feet, the proposed development is a Development of Regional Impact (DRI) and is subject to Georgia Regional Transportation Authority (GRTA) review. The Cobb County Future Land Use Plan identifies the area as Regional Activity Center.

The proposed development is expected to consist of approximately 144,600 square feet of retail space, 143,000 square feet of office space, a 31,200 square foot church, 1,351 apartments, 248 condominium units, and 185 senior adult housing units. The development is scheduled to be completed over multiple phases with build-out by the year 2015.

Based on the existing 2007 conditions, five of the study area intersections currently operate below the acceptable Level of Service standard (LOS D). It is important to note there is one programmed improvement project that will affect a few of the study intersections. The Big Shanty Road Extension (Phase I and Phase II) project includes the extension of Big Shanty Road from George Busbee Parkway to Chastain Road. This project has been designed and has a construction schedule start date of 2009. Per GRTA's Letter of Understanding guidelines, the Big Shanty Road Extension project was included in the 2015 No-Build and 2015 Build Conditions Analysis.

The results of the detailed intersection analysis for the 2015 No-Build and 2015 Build conditions identified improvements that will be necessary in order to maintain the Level of Service standard (LOS D or E) within the study network. These improvements are listed below:

*2015 No-Build recommended improvements (includes background growth but does not include the Hidden Forest DRI project traffic):*

### Chastain Road @ George Busbee Parkway (Intersection #4)

- No-Build LOS was within LOS standard; however based on the "no-build" volumes engineering judgment recommends dual lefts.

### Chastain Road @ Bells Ferry Road (Intersection #8)

- Construct a westbound right-turn lane along Chastain Road (see programmed improvement #1 in Section 7.0 of this report).
- Construct a northbound right-turn lane along Bells Ferry Road (see programmed improvement #1 in Section 7.0 of this report).

### George Busbee Parkway @ Busbee Drive (Intersection #9)

- Install a traffic signal when warranted.

**Big Shanty Road @ Bells Ferry Road (Intersection #12)**

- Install a traffic signal when warranted.
- Install split-phasing for the proposed traffic signal at the Big Shanty Road eastbound approach and the Kathryn Drive westbound approach or re-align the road to eliminate the offset.
- Install protected/permissive left-turn phasing (green arrow) for the northbound approach.
- Construct an eastbound right-turn lane along Big Shanty Road.
- Construct a southbound left-turn lane along Bells Ferry Road.

**Barrett Parkway @ Interstate 575 Southbound Ramps (Intersection #17)**

- Construct one additional westbound left-turn lane (creating dual left turn lanes) along Barrett Parkway.
- Re-stripe the existing southbound approach geometry along the Interstate 575 Southbound Ramp as a separate left-turn lane, a shared left-turn/through/right-turn lane, and a separate right-turn lane.

**Barrett Parkway @ Interstate 575 Northbound Ramps (Intersection #18)**

- Construct one additional eastbound left-turn lane (creating dual left turn lanes) along Barrett Parkway.
- Re-stripe the existing northbound approach geometry along the Interstate 575 Northbound Ramp as a separate left-turn lane, a shared left-turn/through/right-turn lane, and a separate right-turn lane.

**Barrett Parkway @ Chastain Meadows Parkway (Intersection #19)**

- Construct one additional southbound left-turn lane (creating dual left turn lanes) along Chastain Meadows Parkway.
- Install protected/permissive left-turn phasing (green arrow) for the northbound approach.

**Barrett Parkway @ Bells Ferry Road (Intersection #20)**

- Construct a southbound through lane along Bells Ferry Road.
- Construct a northbound through lane along Bells Ferry Road.
- Construct a westbound through lane along Barrett Parkway.
- Construct an eastbound through lane along Barrett Parkway.

**Chastain Road @ Big Shanty Road (Intersection #21)**

- Construct one additional westbound left-turn lane (creating dual left turn lanes) along Big Shanty Road.
- Construct an eastbound right-turn lane along Big Shanty Road.

*2015 Build recommended improvements (2015 No-Build conditions plus the Hidden Forest DRI project traffic):  
(Note: These improvements are in addition to the 2015 No-Build recommended improvements.)*

Chastain Road @ Interstate 575 Southbound Ramps (Intersection #5)

- Construct an eastbound through lane along Chastain Road.

George Busbee Parkway @ Big Shanty Road (Intersection #10)

- Construct a westbound right-turn lane along Big Shanty Road.

Barrett Parkway @ George Busbee Parkway (Intersection #16)

- Construct a westbound through lane along Barrett Parkway.
- Install permissive/overlapped right-turn phasing (green arrow) for the southbound approach.

*The following intersection geometry and improvements are recommended at the project site driveways and internal intersections (Note: The attached site plan includes these improvements):*

Big Shanty Road @ Town Center – Big Shanty Connector (Intersection #22)

- Install a traffic signal when warranted.
- Construct a westbound left-turn lane along Big Shanty Road.
- Construct an eastbound right-turn lane along Big Shanty Road.
- Install a northbound left-turn lane in median along Town Center – Big Shanty Connector. Reserve width to allow for possible through lane exiting the site for future conditions beyond the 2015 Build-out year.

Town Center Drive @ Town Center – Big Shanty Connector (Intersection #23)

- Re-stripe the existing westbound approach geometry along Town Center Drive as a separate left-turn lane and a shared through/right-turn lane.
- Re-stripe the existing eastbound approach geometry along Town Center Drive as a separate left-turn lane and a shared through/right-turn lane.
- Construct a southbound left-turn lane along Town Center – Big Shanty Connector
- Construct a southbound shared through/right-turn lane along Town Center – Big Shanty Connector.
- \* At un-signalized intersections, it is not uncommon for side-street traffic to experience delays at an intersection with a major street. To satisfy GRTA's level-of-service 'D' standard, an all-way stop should be considered if warranted.

Big Shanty Road @ Proposed Right-in/Right-out Driveway #1 (Intersection #25)

- Construct an eastbound right-turn lane along Big Shanty Road.

Big Shanty Road @ Proposed Right-in/Right-out Driveway #2 (Intersection #26)

- Construct an eastbound right-turn lane along Big Shanty Road.

## 1.0 PROJECT DESCRIPTION

### 1.1 Introduction

This report presents the analysis of the anticipated traffic impacts of a proposed 52.11-mixed-use development (Hidden Forest) located east of Interstate 75 and west of Interstate 575 along Big Shanty Road, approximately 0.2 miles east of George Busbee Parkway, near the intersection of Big Shanty Road at Hidden Forest Court in Cobb County, Georgia. This report is being prepared as part of a submittal requesting rezoning from R-20 (Single Family Residential) to PVC (Planned Village Community). Because the mixed-use project will exceed 400,000 square feet, the proposed development is a Development of Regional Impact (DRI) and is subject to Georgia Regional Transportation Authority (GRTA) review. The Cobb County Future Land Use Plan identifies the area as Regional Activity Center.

The proposed development is expected to consist of approximately 144,600 square feet of retail space, 143,000 square feet of office space, a 31,200 square foot church, 1,351 apartments, 248 condominium units, and 185 senior adult housing units. The development is scheduled to be completed over multiple phases with build-out by the year 2015.

A summary of the proposed land-use and densities can be found below in **Table 1**.

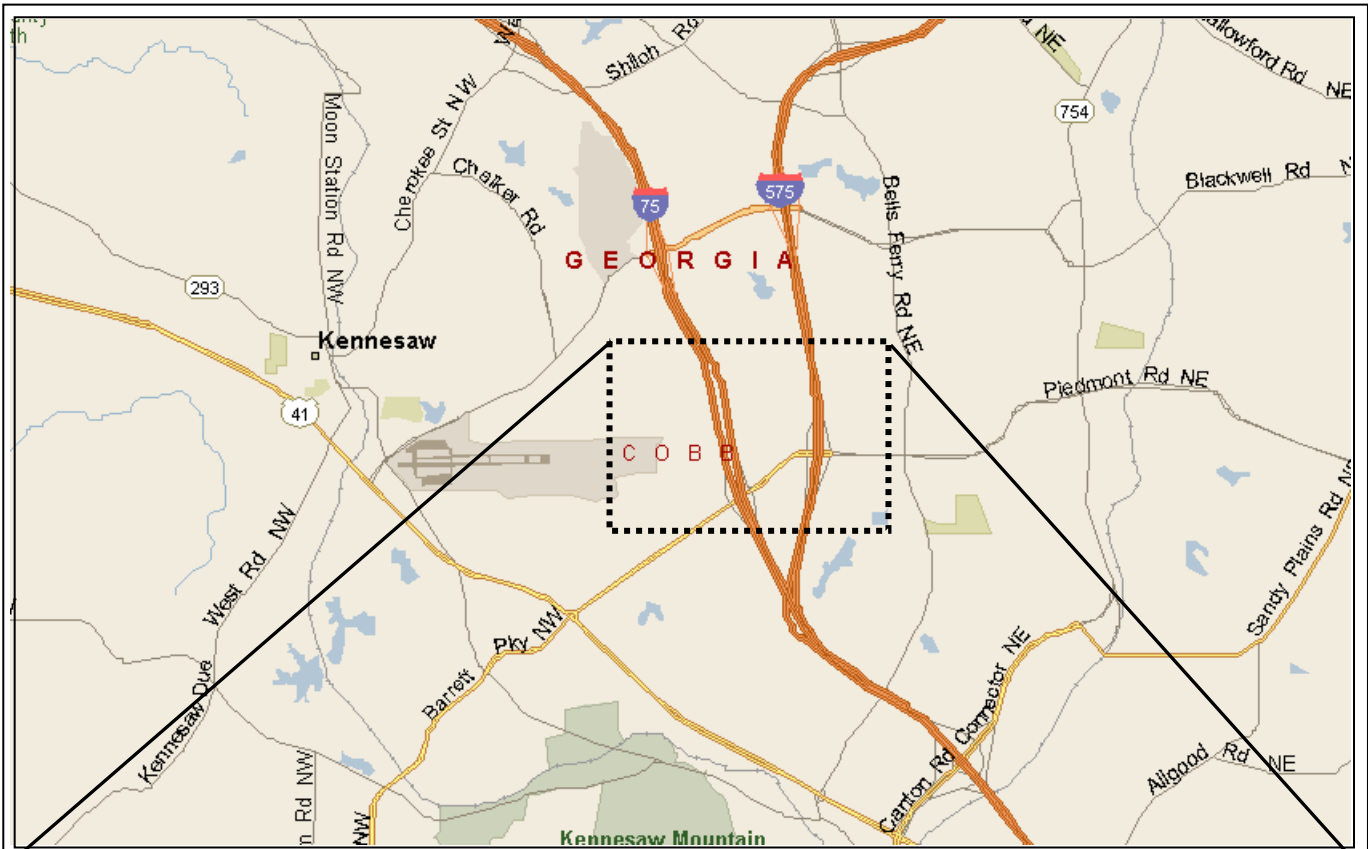
<b>Table 1</b> <b>Proposed Land Uses</b>	
Retail Space	144,600 SF
Office Space	143,000 SF
Church	31,200 SF
Apartments	1,351 Units
Residential Condominium Units	248 Units
Senior Adult Housing - Attached	185 Units

**Figure 1** and **Figure 2** provide a location map and an aerial photograph of the site.

### 1.2 Site Plan Review

The project site is located west of Interstate 75 and east of Interstate 575 along Big Shanty Road. The proposed site is bound by Interstate 575 to the east, Noonday Creek/ Town Center Mall/ Movie Theater to the south, existing townhomes/ retail to the west and office to the north. The development plan consists of a mix of uses including retail, office, restaurant, and residential uses. A parkway passes through the site from north to south, connecting the Town Center Mall northern entrance to Big Shanty Road. The existing site is currently low density residential.

**Figure 3** is a small-scale copy of the site plan. A full-size site plan consistent with GRTA's Site Plan Guidelines is also being submitted as part of the Review Package.



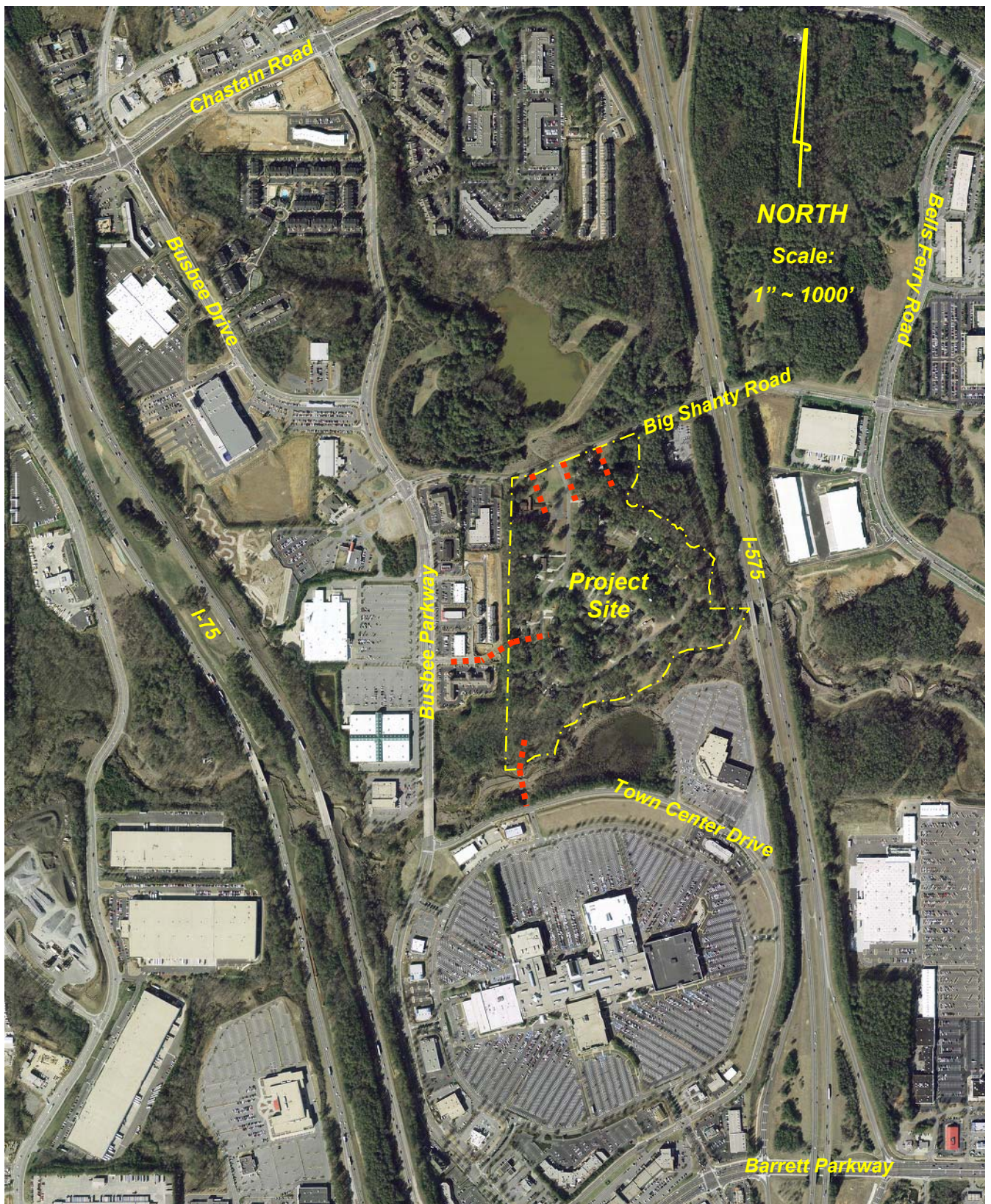
Kimley-Horn  
and Associates, Inc.

## Hidden Forest DRI Transportation Analysis

Site Location

Figure  
1





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## Hidden Forest DRI Transportation Analysis

Site Aerial

Figure  
2



### 1.3 *Site Access*

Vehicular access to the development is proposed at five locations. Three driveways are proposed along Big Shanty Road, one along George Busbee Parkway and one along Town Center Drive.

- Town Center – Big Shanty Connector (Intersection #22), located along Big Shanty Road, is proposed to be a full-movement signalized driveway at the existing location of Big Shanty Road and Hidden Forest Court located approximately 1,100 feet east of the existing signalized intersection of Big Shanty Road and George Busbee Parkway. Upon build-out of the site, this road is referred to as Town Center – Big Shanty Connector
- Proposed Driveway #1 (Intersection #25), located along Big Shanty Road, is proposed to be a restricted movement (right-in/ right-out) unsignalized driveway located approximately 800 feet east of the existing signalized intersection of Big Shanty Road and George Busbee Parkway.
- Proposed Driveway #2 (Intersection #26), located along Big Shanty Road, is proposed to be a restricted movement (right-in/ right-out) unsignalized driveway located approximately 1,400 feet east of the existing signalized intersection of Big Shanty Road and George Busbee Parkway.
- Mall Driveway/future Town Center – Big Shanty Connector (Intersection #23), located along Town Center Drive, is proposed to be a full-movement unsignalized driveway at the existing location of Mall Driveway and Town Center Drive located approximately 750 feet east of the existing signalized intersection of George Busbee Parkway and Town Center Drive. Upon build-out of the site, this road is referred to as Town Center – Big Shanty Connector.
- George Busbee Parkway/ Retail Driveway (Intersection #13) connection is proposed to connect to the existing retail driveway approximately 300 feet east of the existing signalized intersection of George Busbee Parkway and Retail Driveway.

### 1.4 *Bicycle and Pedestrian Facilities*

No sidewalks currently exist along Big Shanty Road parallel to the proposed development, however, approximately 250 feet west of the property line begins sidewalk and other pedestrian facilities along the south side of Big Shanty Road. Pedestrian facilities currently exist along both sides of George Busbee Parkway and along the south side of Town Center Drive in the vicinity of the proposed mixed-use development.

The proposed development will provide sidewalks and trails for pedestrian and bicycle traffic. The retail and residential portions of the development are proposed to be connected by sidewalks to potentially reduce the amount of vehicular traffic internal to the site. The proposed development will provide pedestrian access in accordance with Cobb County development requirements.

Additionally, the programmed GDOT Project #0004511 is expected to develop a multi-use trail which will be a continuation of the Mountain to River trail at Kennesaw Mountain National Battlefield Park to Bells Ferry Road. A portion of the trail follows along side Noonday Creek right through the proposed site providing a scenic area to walk or bike and an enhanced pedestrian environment.

### *1.5 Transit Facilities*

The proposed development is located within the Town Center Area Community Improvement District and Cobb Rides Transportation Management Association. There are at least four (4) bus stops located within a mile of the proposed development. One is located on Big Shanty Road just west of the proposed site entrance and three (3) are located on George Busbee Parkway. A Cobb County Transit Park and Ride Lot is located off Busby Drive less than a mile from the proposed site. See the attached route maps for detailed route descriptions.

Cobb Community Transit (CCT) Route 10C operates from Town Center to Marta Arts Center via Marietta Transfer Center (MTC). The PM (Outbound) trips will begin at the Town Center Mall stop located at JC Penney, stopping only at the MTC and ending at the MARTA Arts Center station.

CCT Route 40 passes to the west of the site along George Busbee Parkway. This route operates from Marietta to Kennesaw State University via Bells Ferry Road and George Busbee Parkway, with stops in the Town Center Mall area.

CCT Route 45 passes in front of the proposed development along Big Shanty Road and to the west of the development along George Busbee Parkway. This route operates from Marietta to Town Center Mall area via U.S. 41 and Ernest Barrett Parkway, with access to Chastain Meadows Industrial Park and Kennesaw State University.

CCT Route 481 outbound operates express service from the Children's Health Care Center, adjacent to the Busbee Park and Ride Lot. Route 481 will travel to three MARTA stations, MARTA Civic Center, MARTA Arts Center, and MARTA Midtown (10<sup>th</sup> Street).

## **2.0 TRAFFIC ANALYSES METHODOLOGY AND ASSUMPTIONS**

### *2.1 Growth Rate*

Background traffic is defined as expected traffic on the roadway network in future year(s) absent the construction and opening of the proposed project. Historical traffic count data from the Georgia DOT was reviewed for the area surrounding the proposed development, and growth rates of 3.0% per year along all roadways were agreed upon in the GRTA Letter of Understanding.

No traffic from other developments will be included in the analysis, as agreed to in the GRTA Letter of Understanding.

## 2.2 *Traffic Data Collection*

Year 2007 peak hour turning movement counts were conducted at 21 intersections between 7:30-9:30 AM and 4:30-6:30 PM on May 22, 2007 and May 24, 2007. The morning and afternoon peak hours varied between the twenty-one intersections: Year 2007 peak hour turning movement counts were conducted at 2 intersections between 7:00-9:00 AM and 4:30-6:30 PM in September of 2007 to account for the Big Shanty Road extension. The morning and afternoon peak hours varied between the two intersections:

- Chastain Road @ Interstate 75 Southbound Ramps (AM Peak 7:30-8:30, PM Peak 5:00-6:00)
- Chastain Road @ Interstate 75 Northbound Ramps (AM Peak 7:30-8:30, PM Peak 5:00-6:00)
- Chastain Road @ Busbee Drive (AM Peak 7:30-8:30, PM Peak 5:00-6:00)
- Chastain Road @ George Busbee Parkway (AM Peak 7:30-8:30, PM Peak 5:00-6:00)
- Chastain Road @ Interstate 575 Southbound Ramps (AM Peak 7:30-8:30, PM Peak 4:45-5:45)
- Chastain Road @ Interstate 575 Northbound Ramps (AM Peak 7:30-8:30, PM Peak 5:00-6:00)
- Chastain Road @ Chastain Meadows Parkway (AM Peak 7:30-8:30, PM Peak 5:00-6:00)
- Chastain Road @ Bells Ferry Road (AM Peak 7:30-8:30, PM Peak 5:00-6:00)
- George Busbee Parkway @ Busbee Drive (AM Peak 7:30-8:30, PM Peak 5:00-6:00)
- George Busbee Parkway @ Big Shanty Road (AM Peak 7:30-8:30, PM Peak 5:15-6:15)
- Big Shanty Road @ Chastain Meadows Parkway (AM Peak 7:30-8:30, PM Peak 4:30-5:30)
- Big Shanty Road @ Bells Ferry Road (AM Peak 7:30-8:30, PM Peak 4:45-5:45)
- George Busbee Parkway @ Retail Driveway (AM Peak 7:30-8:30, PM Peak 5:00-6:00)
- Barrett Parkway @ Interstate 75 Southbound Ramps (AM Peak 7:30-8:30, PM Peak 4:45-5:45)
- Barrett Parkway @ Interstate 75 Northbound Ramps (AM Peak 7:30-8:30, PM Peak 5:30-6:30)
- Barrett Parkway @ George Busbee Parkway (AM Peak 7:30-8:30, PM Peak 5:15-6:15)
- Barrett Parkway @ Interstate 575 Southbound Ramps (AM Peak 7:30-8:30, PM Peak 4:45-5:45)
- Barrett Parkway @ Interstate 575 Northbound Ramps (AM Peak 8:30-9:30, PM Peak 5:30-6:30)
- Barrett Parkway @ Chastain Meadows Parkway (AM Peak 7:45-8:45, PM Peak 5:00-6:00)
- Barrett Parkway @ Bells Ferry Road (AM Peak 7:30-8:30, PM Peak 4:30-5:30)
- Big Shanty Road @ Hidden Forest Court (AM Peak 7:30-8:30, PM Peak 4:30-5:30)
- Chastain Road @ Big Shanty Road NW/ Town Point NW (AM Peak 7:30-8:30, PM Peak 4:45-5:45)
- Chastain Road @ Barrett Lakes Boulevard NW (AM Peak 7:15-8:15, PM Peak 4:45-5:45)
- Town Center Drive @ Mall Driveway (AM Peak 8:30-9:30, PM Peak 5:15-6:15)

All raw count data is available upon request.

### 2.3 *Detailed Intersection Analysis*

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. Level of service analyses were conducted at all intersections within the study network using Synchro Professional, Version 6.0.

Levels of service for signalized intersections are reported for the intersection as a whole. One or more movements at an intersection may experience a low level of service, while the intersection as a whole may operate acceptably.

Levels of service for unsignalized intersections, with stop control on the minor street only, are reported for the side street approaches. Low levels of service for side street approaches are not uncommon, as vehicles may experience delay in turning onto a major roadway.

## 3.0 **STUDY NETWORK**

### 3.1 *Gross Trip Generation*

The proposed development is expected to consist of approximately 144,600 square feet of retail space, 143,000 square feet of office space, a 31,200 square foot church, 1,351 apartments, 248 condominium units, and 185 senior adult housing units. The development is scheduled to be completed over multiple phases with build-out by the year 2015.

Traffic for the various land uses was calculated using trip generation equations and rates contained in the *Institute of Transportation Engineers' (ITE) Trip Generation Manual, Seventh Edition, 2003*. Gross trips generated are displayed below in **Table 2**.

Table 2 Hidden Forest Mixed Use DRI Gross Trip Generation							
Land Use	ITE Code	Daily Traffic		AM Peak Hour		PM Peak Hour	
		Enter	Exit	Enter	Exit	Enter	Exit
Build-Out (Year 2015)							
1,351 Units Apartment	220	4,135	4,135	133	533	495	266
248 Units Residential Condominium/Townhouse	230	695	695	18	89	85	42
185 Units Senior Adult Housing - Attached	252	322	322	7	8	12	8
31,200 SF Church	560	142	142	12	10	11	10
143,000 SF General Office Building	710	878	878	220	30	41	198
144,600 SF Retail	820	4,316	4,316	119	76	384	415
Total		10,488	10,488	509	746	1,028	939

### 3.2 Trip Distribution

The directional distribution and assignment of new project trips was based on the project land use, a review of land use densities in the area, combined with engineering judgment and discussions with staff at the Pre-Application meeting.

### 3.3 Level of Service Standards

For the purposes of this traffic analysis, a level of service standard of D was assumed for all intersections and segments within the study network. If, however, an intersection or segment currently operates at LOS E or LOS F during an existing peak period, the LOS standard for that peak period becomes LOS E, consistent with GRTA's Letter of Understanding.

### 3.4 *Study Network Determination*

A general study area was determined using the 7% rule. This rule recommends that all intersections and segments be analyzed which are impacted to the extent that the traffic from the proposed site is 7% or more of the Service Volume of the facility (at a previously established LOS standard) be considered for analysis. This general study area was refined during the Pre-Application meeting, and includes the following intersections:

- Chastain Road @ Interstate 75 Southbound Ramps
- Chastain Road @ Interstate 75 Northbound Ramps
- Chastain Road @ Busbee Drive
- Chastain Road @ George Busbee Parkway
- Chastain Road @ Interstate 575 Southbound Ramps
- Chastain Road @ Interstate 575 Northbound Ramps
- Chastain Road @ Chastain Meadows Parkway
- Chastain Road @ Bells Ferry Road
- George Busbee Parkway @ Busbee Drive
- George Busbee Parkway @ Big Shanty Road
- Big Shanty Road @ Chastain Meadows Parkway
- Big Shanty Road @ Bells Ferry Road
- George Busbee Parkway @ Retail Driveway
- Barrett Parkway @ Interstate 75 Southbound Ramps
- Barrett Parkway @ Interstate 75 Northbound Ramps
- Barrett Parkway @ George Busbee Parkway
- Barrett Parkway @ Interstate 575 Southbound Ramps
- Barrett Parkway @ Interstate 575 Northbound Ramps
- Barrett Parkway @ Chastain Meadows Parkway
- Barrett Parkway @ Bells Ferry Road
- Chastain Road @ Big Shanty Road NW/ Town Point NW
- Big Shanty Road @ Town Center – Big Shanty Connector

All twenty-two intersections were analyzed for the weekday AM and PM peak hour.

Each of the above listed intersections was analyzed for the Existing 2007 Condition, the 2015 “No-Build” Condition, and the 2015 “Build” Condition. The 2015 “No-Build” condition represents the existing traffic volumes grown at 3.0% per year for eight years. The 2015 “Build” condition adds the projected trips associated with the Hidden Forest Mixed Use development to the 2015 “No-Build” condition.

Additionally, the proposed intersection listed below was only analyzed for the 2015 “No-Build” Condition and the 2015 “Build” Condition:

- Barrett Lakes Boulevard NW @ Big Shanty Road (Extension)

Additionally, the proposed site driveway listed below was only analyzed for the 2015 “Build” Condition:

- Town Center Drive @ Mall Driveway / Town Center – Big Shanty Connector
- Big Shanty Road @ Proposed right-in / right-out Driveway #1
- Big Shanty Road @ Proposed right-in / right-out Driveway #2

These intersections were analyzed for the weekday AM and PM peak hour conditions.

### 3.5 *Existing Facilities*

George Busbee Parkway is a four-lane roadway that extends from Barrett Parkway to Wade Green Road. George Busbee Parkway is classified as an urban collector street by GDOT and as an arterial by Cobb County. The posted speed limit along George Busbee Parkway is 45 MPH.

Big Shanty Road is a two-lane undivided roadway that extends from its intersection with George Busbee Parkway east, under I-575, extending to where it intersects with Bells Ferry Road. Big Shanty Road is classified as an urban local street by GDOT and as a major collector by Cobb County. The posted speed limit along Big Shanty Road is 35 MPH. A driveway currently exists along Big Shanty Road at the location of Hidden Forest Court OR future Town Center – Big Shanty Connector (Intersection #22).

Busbee Drive is a two-lane undivided roadway that extends from its intersection with George Busbee Parkway just south of Chastain Road, turning into a four-lane undivided roadway, and extending to George Busbee Parkway just north of Chastain Road. Busbee Drive is classified as an urban local arterial by GDOT and a major collector by Cobb County. The posted speed limit along Busbee Drive is 40 MPH.

Interstate 575 is a four-lane divided roadway that is classified as an urban interstate principal arterial by GDOT. The posted speed limit along Interstate 575 is 65 MPH. I-575 has a north-south orientation and extends from its intersection with Interstate 75, passing to the east of the project site, traveling north to the Georgia/Tennessee state line.

Interstate 75 is a six-lane divided roadway that is classified as an urban interstate principal arterial by GDOT. The posted speed limit along I-75 is 65 MPH. I-75 has a north-south orientation and passes to the west of the project site.

Chastain Road is a six-lane divided roadway that extends from its intersection with Cobb Parkway to its intersection with Bells Ferry Road where it turns into New Chastain Road. Chastain Road is classified as an urban minor arterial by GDOT and an arterial by Cobb County. The posted speed limit along Chastain Road is 45 MPH.

Chastain Meadows Parkway is a four-lane divided roadway that extends from its intersection with Barrett Parkway to its intersection with Chastain Road. Chastain Meadows Parkway is classified as an urban local street by GDOT and an arterial by Cobb County. The posted speed limit along Chastain Meadows Parkway is 45 MPH.

Bells Ferry Road NE is a two-lane undivided roadway that extends from the City of Marietta to north of the project site. Bells Ferry Road NE is classified as an urban collector street by GDOT and an arterial by Cobb County. The posted speed limit along Bells Ferry Road NE is 45 MPH.



North Cobb Parkway NW is a four-lane divided roadway that typically travels parallel to Interstate 75. North Cobb Parkway NW is classified as an urban minor arterial by GDOT and an arterial by Cobb County. The posted speed limit along North Cobb Parkway NW is 45 MPH.

Barrett Parkway is a six-lane divided roadway from its intersection with Cobb Parkway to its intersection with Bells Ferry Road. Barrett Parkway is classified as an urban principal arterial by GDOT and an arterial by Cobb County. The posted speed limit along Barrett Parkway is 35 MPH in some locations and 45 MPH in other locations.

The table below summarizes the existing facilities in the vicinity of the proposed Hidden Forest development.

<b>Roadway</b>	<b>Number of Lanes</b>	<b>Posted Speed Limit (MPH)</b>	<b>GDOT Functional Classification</b>	<b>Cobb County Functional Classification</b>
George Busbee Parkway	4-Lane	45	Urban Collector Street	Arterial
Big Shanty Road	2-Lane Undivided	35	Urban Local Street	Major Collector
Busbee Drive	2/4-Lane Divided	40	Urban Local Arterial	Major Collector
Interstate 575	4-Lane Divided	65	Urban Interstate Principal Arterial	Interstate
Interstate 75	6-Lane Divided	65	Urban Interstate Principal Arterial	Interstate
Chastain Road	6-Lane Divided	45	Urban Minor Arterial	Arterial
Chastain Meadows Parkway	4-Lane Divide	45	Urban Local Street	Arterial
Bells Ferry Rd NE	2-Lane Undivided	45	Urban Collector Street	Arterial
N Cobb Parkway NW	4-Lane Divided	45	Urban Minor Arterial	Arterial
Barrett Parkway	6-Lane Divided	35/45	Urban Principal Arterial	Arterial

### 3.6 Proposed Transportation Improvements

Section 7.0 lists twelve proposed roadway projects and pedestrian/bicycle improvements in the area. It is important to note there is one programmed improvement project that will affect two of the study intersections. The Big Shanty Road Extension (Phase I and Phase II) project includes the extension of Big Shanty Road from George Busbee Parkway to Chastain Road. This project is in the design phase and has a construction schedule start date of 2009. Per GRTA's Letter of Understanding guidelines, the Big Shanty Road Extension project was included in the 2015 "No-Build" and the 2015 "Build" conditions analysis.

## 4.0 TRIP GENERATION

As stated earlier, trips associated with the proposed development were estimated using the trip generation equations and rates contained in the *Institute of Transportation Engineers' (ITE) Trip Generation Manual, Seventh Edition, 2003*. Mixed-Use reductions were taken and are expected to reduce the PM peak hour trips by 11.20% and daily new vehicle trips by 11.43%. Pass-by reductions were calculated according to the ITE Trip Generation Handbook, Second Edition, 2004 and GRTA guidelines. Based on a GRTA's "Limit Test", the total pass-by trips were limited to 10% of the adjacent roadway's existing traffic volumes. Additionally, alternate mode reductions of 2% were taken per discussions with GRTA during the pre-application meeting due to the proximity of transit service. The total trips generated and analyzed in the report are listed below in **Table 3**.

<b>Table 3</b> <b>Hidden Forest Mixed Use DRI</b> <b>Net Trip Generation</b>						
<b>Land Use</b>	<b>Daily Traffic</b>		<b>AM Peak Hour</b>		<b>PM Peak Hour</b>	
	<b>Enter</b>	<b>Exit</b>	<b>Enter</b>	<b>Exit</b>	<b>Enter</b>	<b>Exit</b>
<b>Build-Out (Year 2015)</b>						
<b>Gross Trips</b>	<b>10,488</b>	<b>10,488</b>	<b>509</b>	<b>746</b>	<b>1,028</b>	<b>939</b>
<i>Mixed-Use Reductions</i>	<i>-1183</i>	<i>-1183</i>	<i>--</i>	<i>--</i>	<i>-109</i>	<i>-109</i>
<i>Alternate Mode Reduction (2%)</i>	<i>-186</i>	<i>-186</i>	<i>-9</i>	<i>-16</i>	<i>-19</i>	<i>-17</i>
<i>Pass-By Reductions (Retail Land Use only)</i>	<i>-750</i>	<i>-750</i>	<i>--</i>	<i>--</i>	<i>-75</i>	<i>-75</i>
<b>New Trips</b>	<b>8,369</b>	<b>8,369</b>	<b>500</b>	<b>730</b>	<b>825</b>	<b>738</b>

## 5.0 TRIP DISTRIBUTION AND ASSIGNMENT

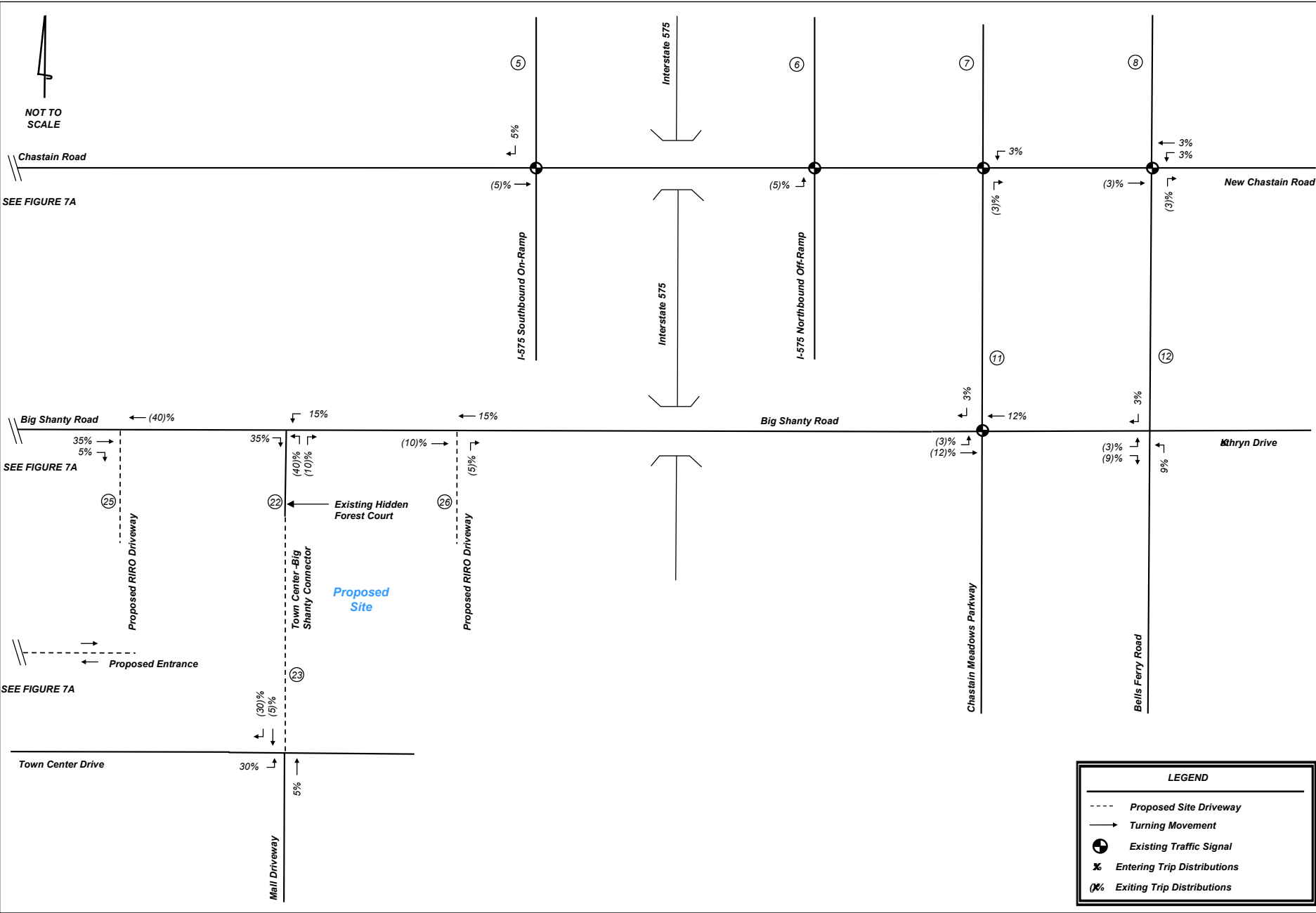
New trips were distributed onto the roadway network using the percentages agreed to during the Pre-Application meeting. **Figures 4A, 4B and 4C** display the expected distribution percentages for the residential portions of the development throughout the roadway network. **Figures 5A, 5B, and 5C** displays the expected distribution percentages for the non-residential portions of the development throughout the roadway network. These percentages were applied to the new trips generated by the development (see Table 3, above), and the volumes were assigned to the roadway network. The expected peak hour turning movements generated by the proposed development are shown in **Figure 6A, 6B and 6C**.

## 6.0 TRAFFIC ANALYSIS

### 6.1 *Existing Traffic*

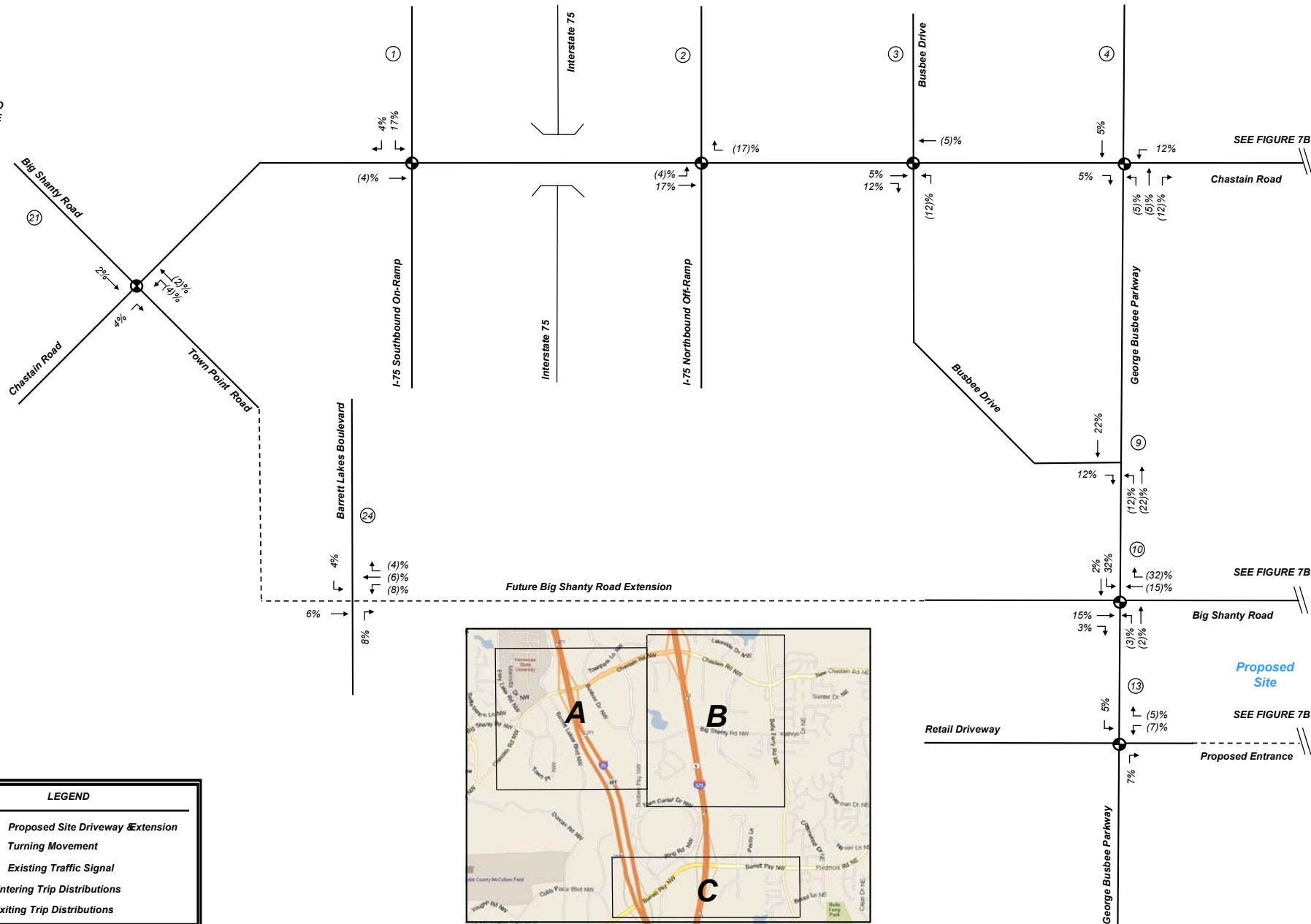
The existing traffic volumes are shown in **Figure 7A, 7B and 7C**. These volumes were input in Synchro 6.0 and an Existing Conditions analysis was performed. The results are displayed on the following page in **Table 4**.







NOT TO SCALE



**LEGEND**

- Proposed Site Driveway & Extension
- Turning Movement
- ⊕ Existing Traffic Signal
- ⊗ Entering Trip Distributions
- ⊘ Exiting Trip Distributions



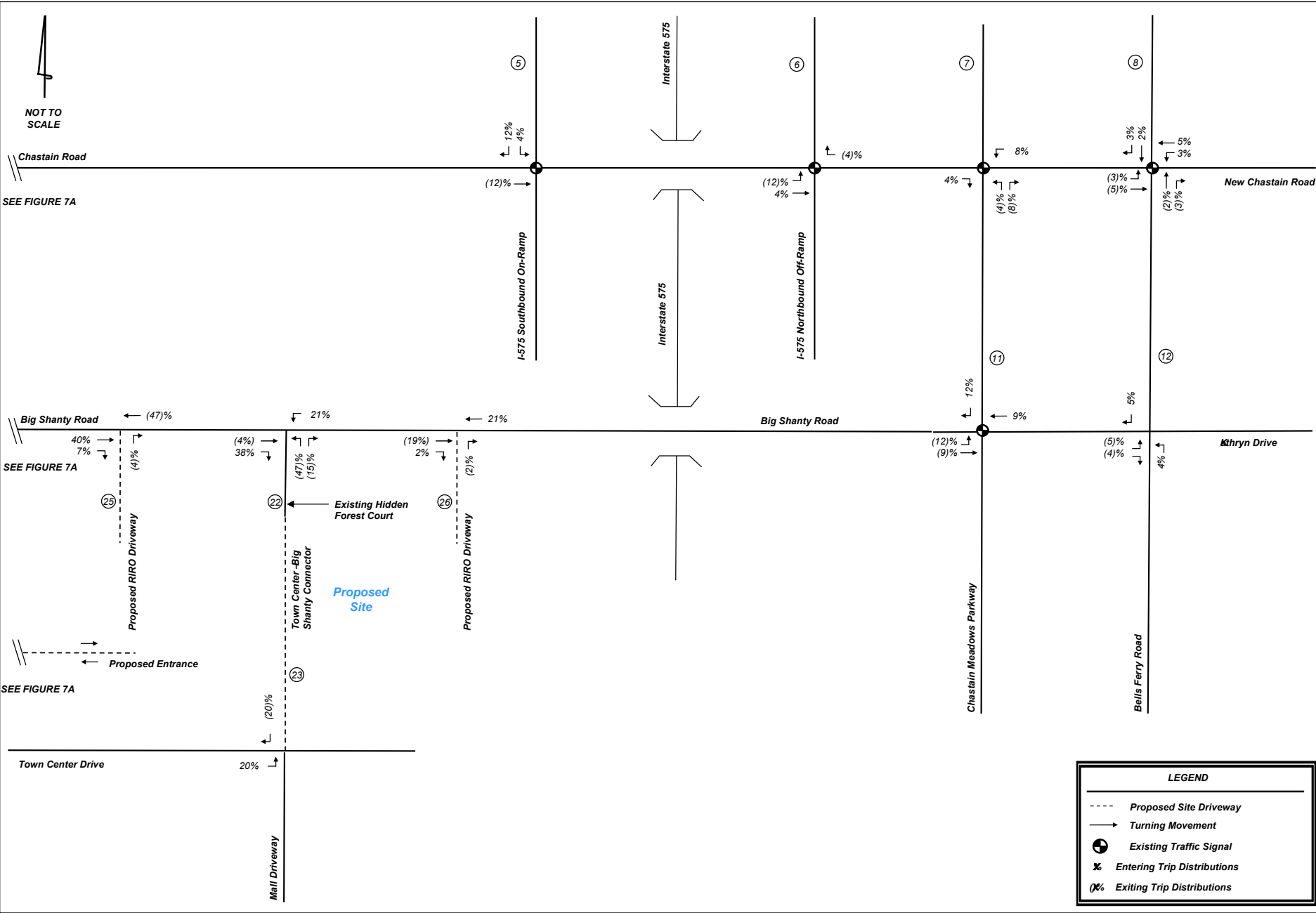
Figure 5A

Non-Residential Distribution

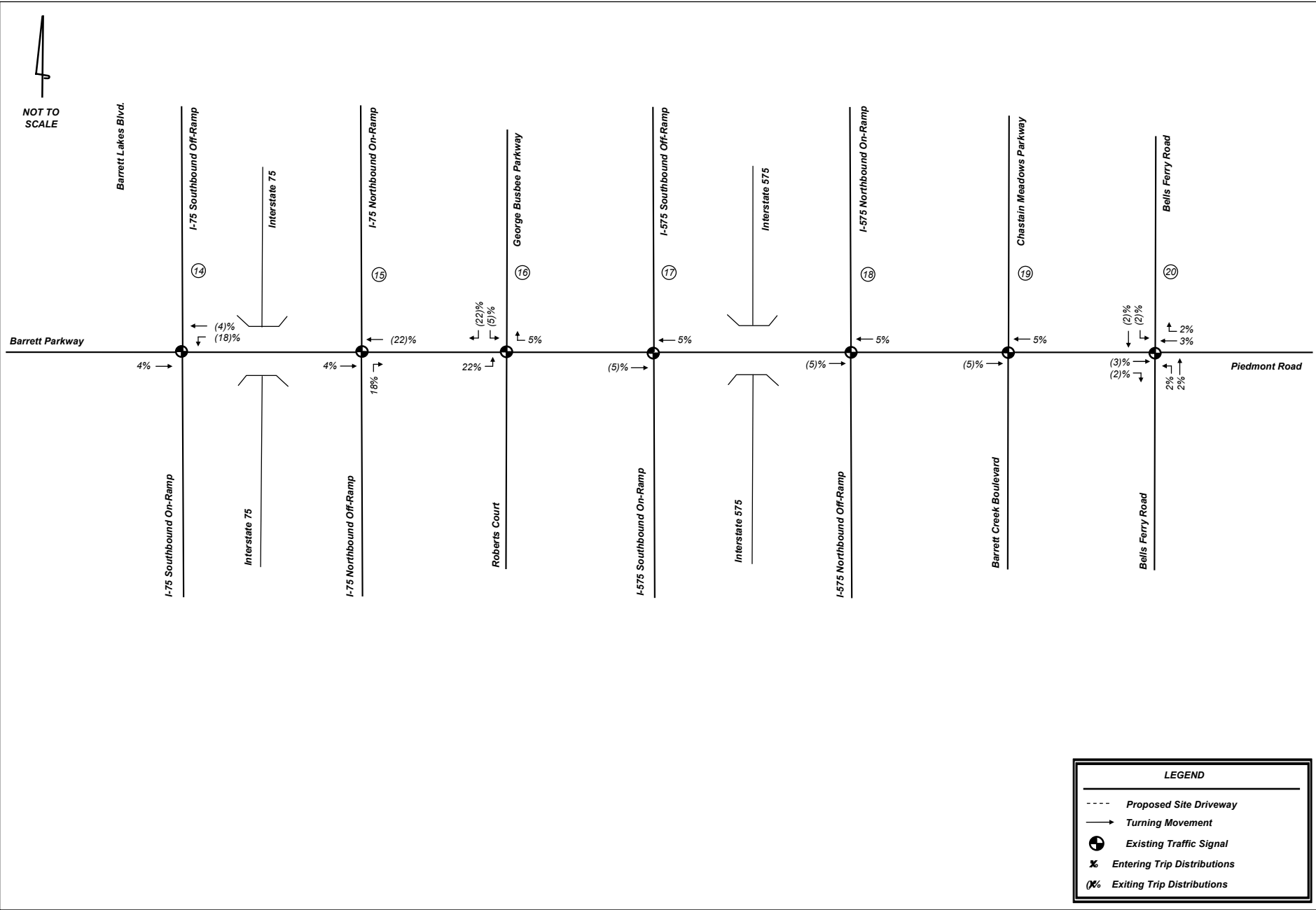
Hidden Forest Transportation Analysis

Kimley-Horn and Associates, Inc.

















LEGEND

Proposed Site Driveway & Extension

Existing Roadway Laneage

Existing Traffic Signal

X

AM Peak Hour Traffic Volumes

(X)

PM Peak Hour Traffic Volumes

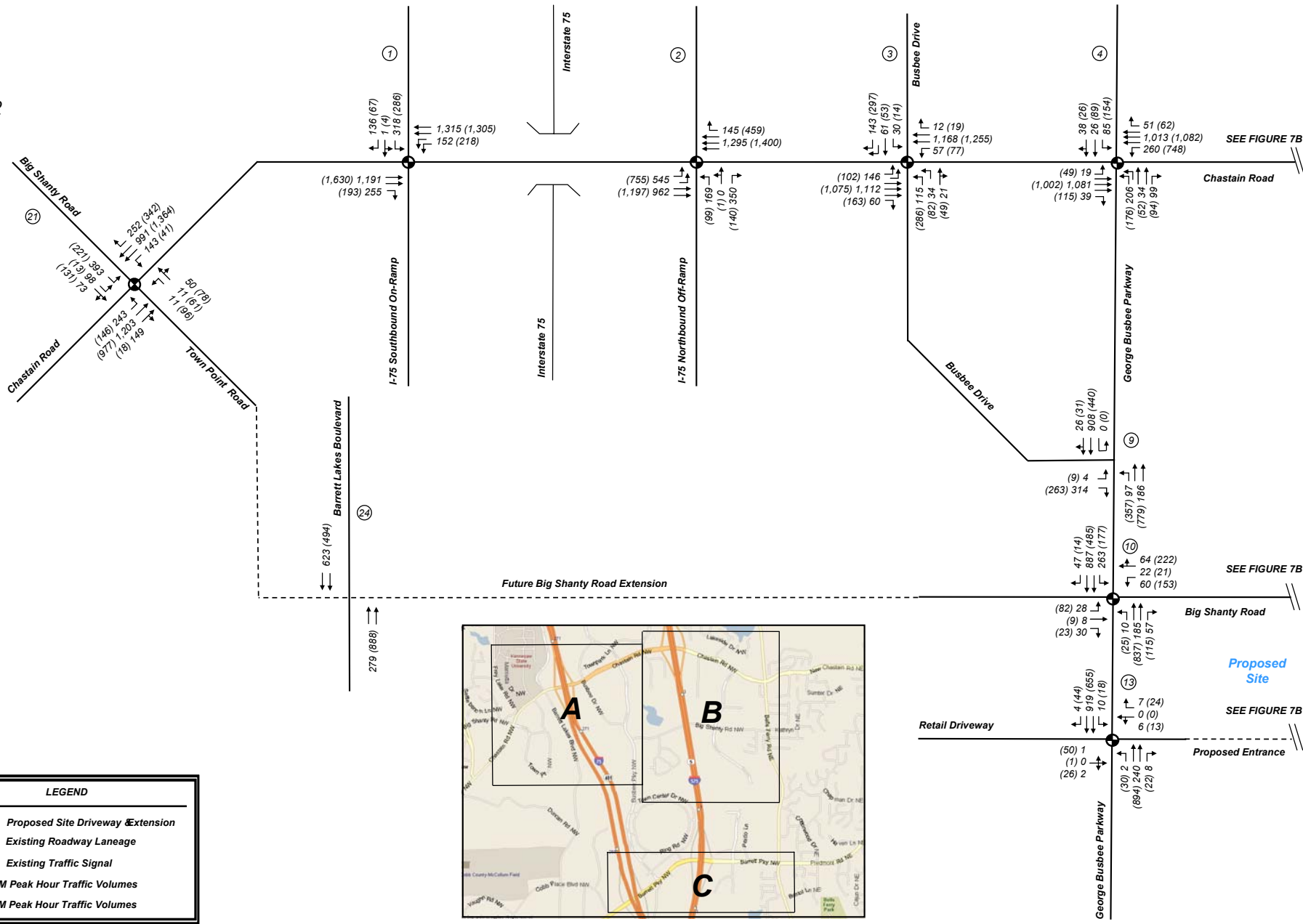
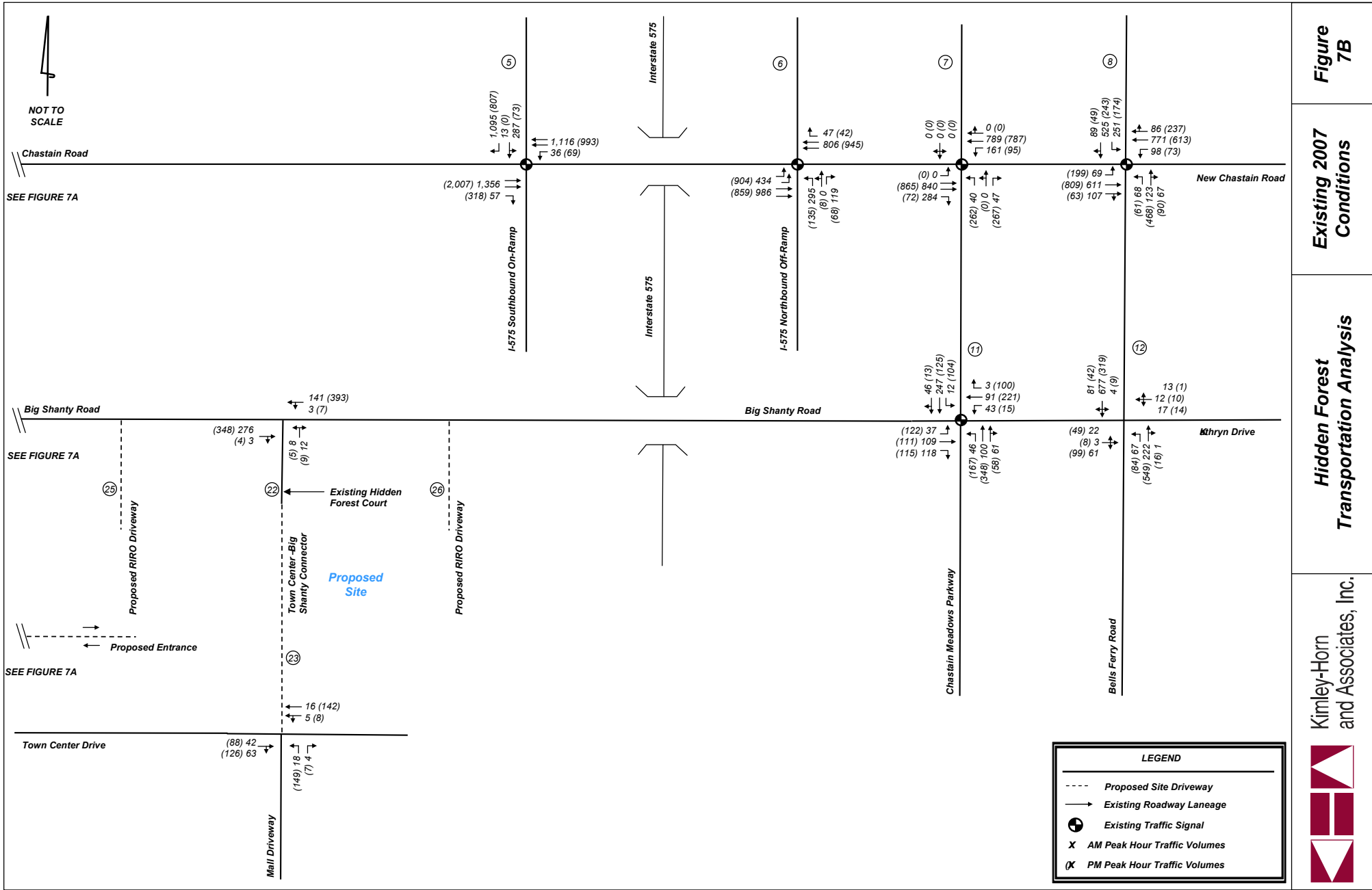


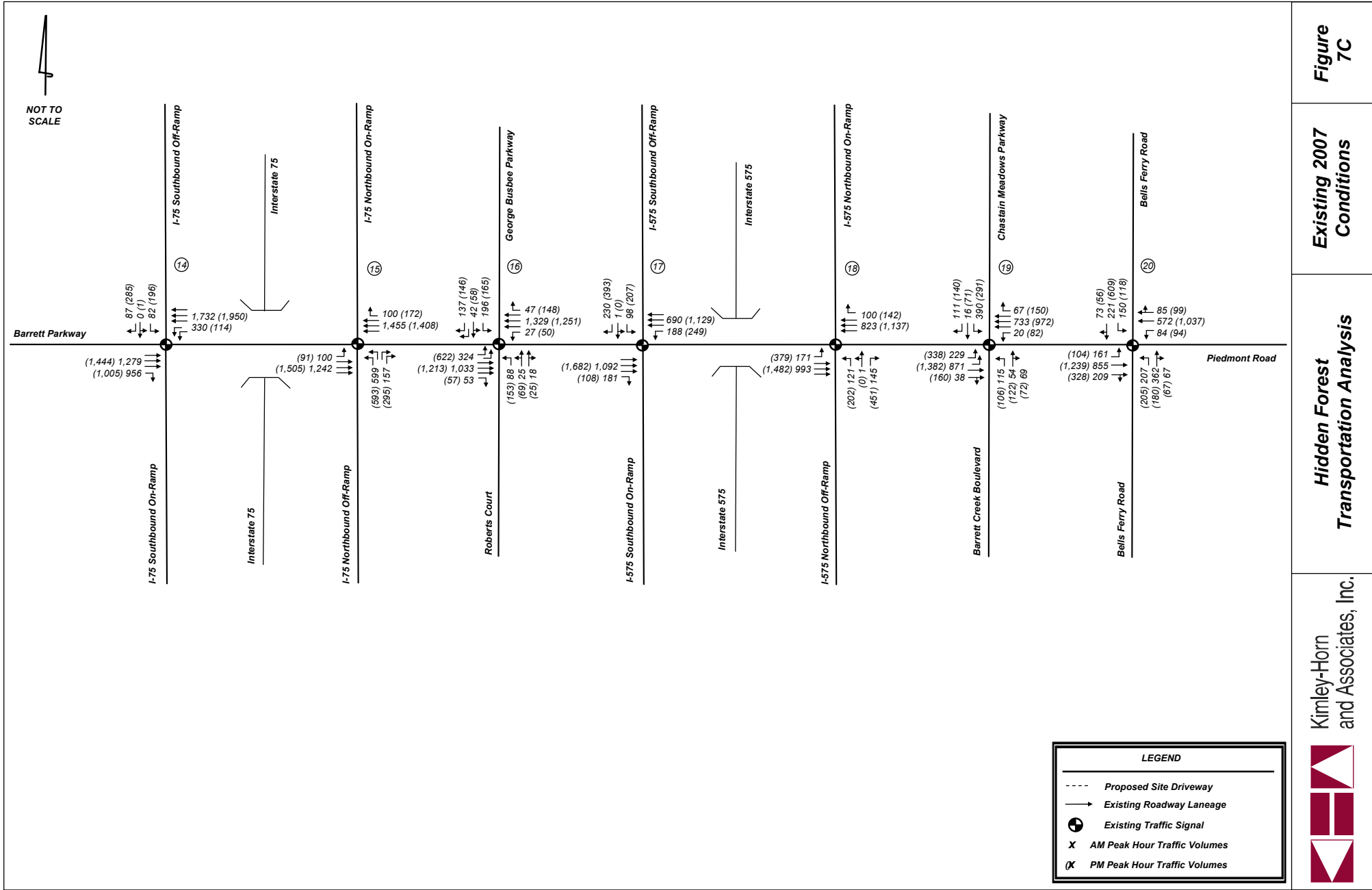
Figure 7A

Existing 2007 Conditions

Hidden Forest Transportation Analysis







**Table 4**  
**Hidden Forest Mixed Use DRI**  
**2007 Existing Intersection Levels of Service**  
**(delay in seconds)**

<b>Intersection</b>		<b>Control</b>	<b>AM Peak Hour</b>	<b>PM Peak Hour</b>
1	Chastain Road @ Interstate 75 Southbound Ramps	Signal	B (19.0)	C (21.9)
2	Chastain Road @ Interstate 75 Northbound Ramps	Signal	C (25.2)	C (23.6)
3	Chastain Road @ Busbee Drive	Signal	C (23.4)	D (37.4)
4	Chastain Road @ George Busbee Parkway	Signal	B (19.5)	E (77.8)
5	Chastain Road @ Interstate 575 Southbound Ramps	Signal	C (22.0)	B (15.0)
6	Chastain Road @ Interstate 575 Northbound Ramps	Signal	C (23.5)	C (25.9)
7	Chastain Road @ Chastain Meadows Parkway	Signal	A (6.0)	B (19.0)
8	Chastain Road @ Bells Ferry Road	Signal	D (54.4)	E (67.8)
9	George Busbee Parkway @ Busbee Drive	EB STOP	D (29.1)	C (15.6)
10	George Busbee Parkway @ Big Shanty Road	Signal	B (12.4)	C (22.0)
11	Big Shanty Road @ Chastain Meadows Parkway	Signal	B (14.6)	B (17.6)
12	Big Shanty Road @ Bells Ferry Road	EB STOP	D (29.3)	E (36.4)
		WB STOP	E (37.2)	E (48.5)
13	George Busbee Parkway @ Retail Driveway	Signal	A (2.1)	A (7.3)
14	Barrett Parkway @ Interstate 75 Southbound Ramps	Signal	B (15.8)	B (18.3)
15	Barrett Parkway @ Interstate 75 Northbound Ramps	Signal	B (17.4)	B (18.1)
16	Barrett Parkway @ George Busbee Parkway	Signal	D (35.8)	C (24.4)
17	Barrett Parkway @ Interstate 575 Southbound Ramps	Signal	B (18.3)	C (30.6)
18	Barrett Parkway @ Interstate 575 Northbound Ramps	Signal	B (11.4)	D (38.1)
19	Barrett Parkway @ Chastain Meadows Parkway	Signal	F (85.1)	E (68.4)
20	Barrett Parkway @ Bells Ferry Road	Signal	D (39.8)	F (137.5)
21	Chastain Road @ Big Shanty Road	Signal	C (34.9)	D (38.1)
22	Big Shanty Road @ Hidden Forest Court	NB STOP	B (11.1)	B (13.0)

As you can see in the table, five of the intersections currently operate below the acceptable Level of Service standard (LOS D) during the AM and/or PM peak hours.



## 6.2 2015 No-Build Traffic

The existing traffic volumes were grown at 3.0% per year along all roadway links within the study network. The 2015 “No-Build” traffic volumes were input in Synchro 6.0 and analyses of the projected “No-Build” conditions were performed. The programmed project located within the project vicinity is GDOT #0006869 and #0006870 (Big Shanty Road Extension – Phase I from George Busbee Parkway to Barrett Lakes Boulevard and Phase II from Barrett Lakes Boulevard to Chastain Road); this improvement is included in the 2015 No-Build per GRTA’s request. Based on our understanding of the Main Line plans from the Project Construction Report for the *Construction of a Big Shanty Connector and Widening of Big Shanty Road* we anticipate the No-Build Programmed improvements to be as described below by intersection:

### Chastain Road @ Big Shanty Road (Intersection #21)

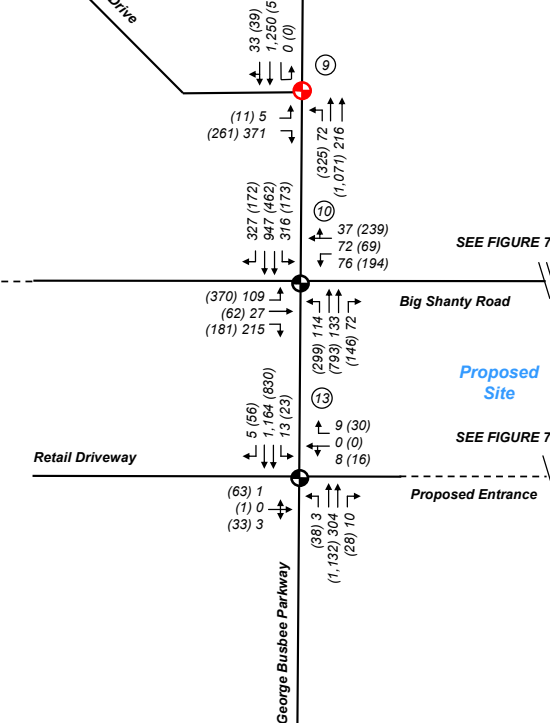
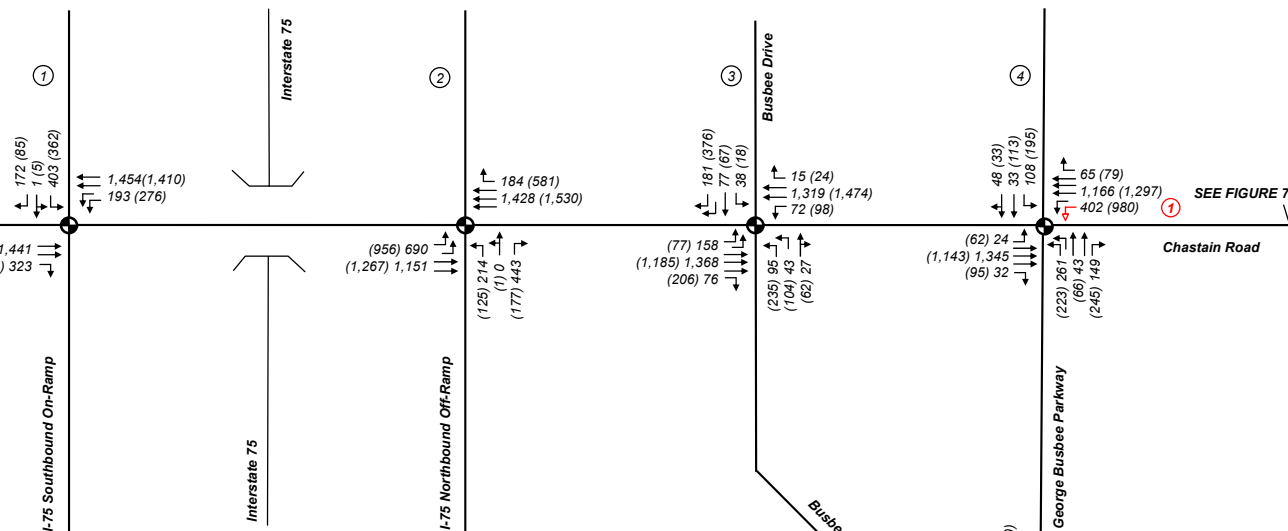
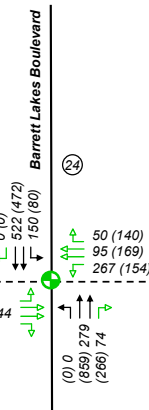
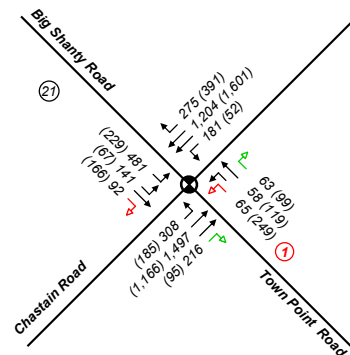
- Note: the following improvements are programmed (GDOT #0006870).
- Construct one westbound right-turn lane along Big Shanty Road.
- Construct a northbound right-turn lane along Chastain Road.

### Barrett Lakes Boulevard @ Big Shanty Road Extension (Intersection #24)

- Note: the following improvements are programmed (GDOT #0006869 and #0006870).
- Construct a signalized intersection.
- Eastbound: Construct an exclusive left-turn lane, two through lanes and a shared through/right-turn lane along Big Shanty Road Extension.
- Westbound: Construct an exclusive left-turn lane, two through lanes and an exclusive right-turn lane along Big Shanty Road Extension.
- Northbound: Construct an exclusive right-turn lane along Barrett Lakes Boulevard.
- Southbound: Construct an exclusive right-turn lane along Barrett Lakes Boulevard.

The results are displayed on the following page in **Table 5**. The projected volumes for the year 2015 “No-Build” conditions are shown in **Figure 8A, 8B and 8C**.

NOT TO  
SCALE



**LEGEND**

- Existing Roadway Laneage
- Programmed Roadway Laneage
- No-Build Roadway Laneage
- Existing Traffic Signal
- Programmed Traffic Signal
- No-Build Traffic Signal
- AM Peak Hour Traffic Volumes
- PM Peak Hour Traffic Volumes

**No-Build Improvements**

1 Install protected only phasing for the traffic signal when dual left-turns are present.

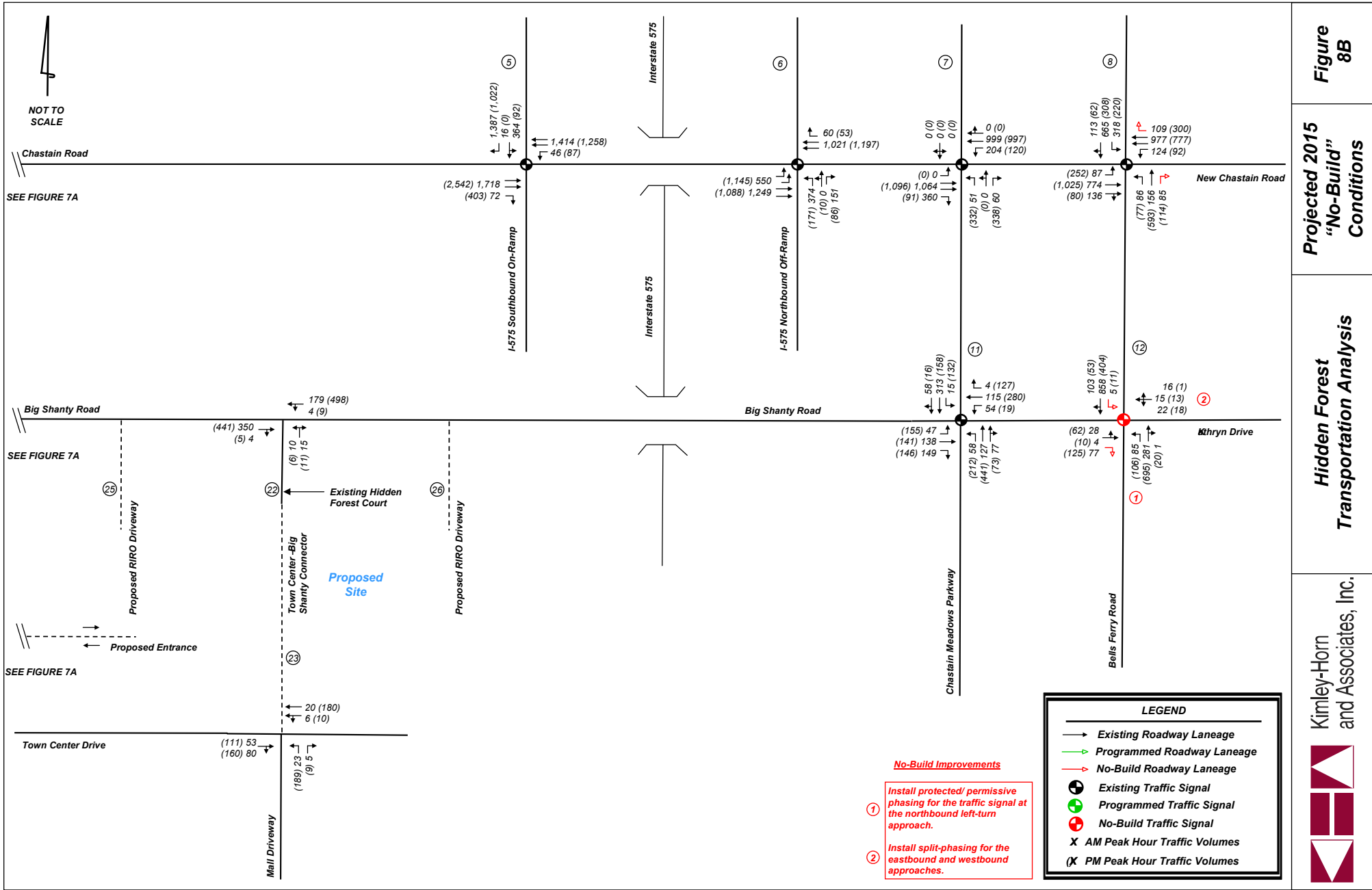
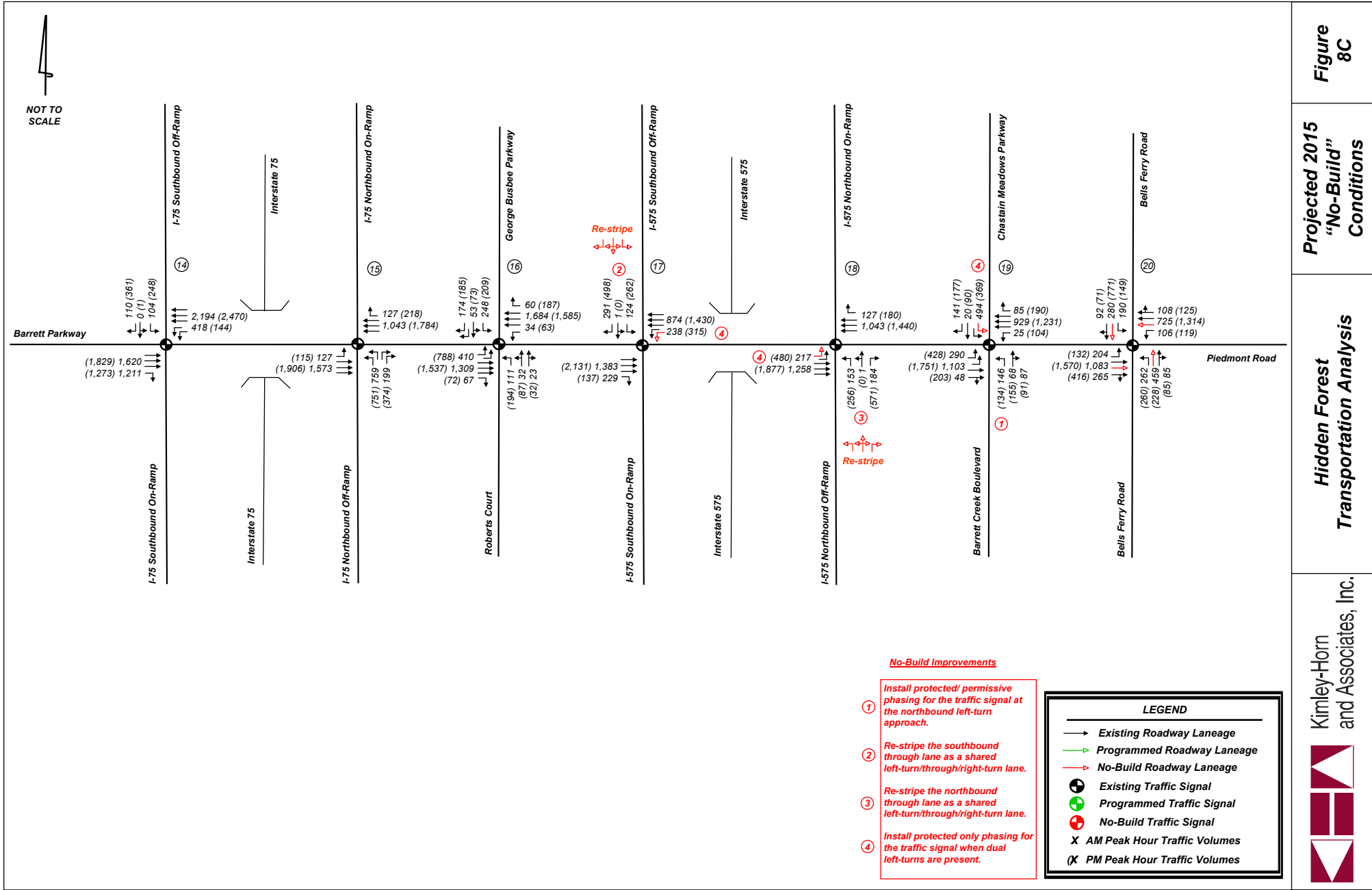


Figure 8B

Projected 2015 "No-Build" Conditions

Hidden Forest Transportation Analysis



**Table 5**  
**Hidden Forest Mixed Use DRI**  
**2015 "No-Build" Intersection Levels of Service**  
**(delay in seconds)**

<b>Intersection</b>		<b>Control</b>	<b>LOS Standard</b>	<b>AM Peak Hour</b>	<b>PM Peak Hour</b>
1	Chastain Road @ Interstate 75 Southbound Ramps	Signal	D	C (24.5)	C (29.9)
2	Chastain Road @ Interstate 75 Northbound Ramps	Signal	D	B (19.1)	C (25.8)
3	Chastain Road @ Busbee Drive	Signal	D	C (28.9)	D (36.3)
4	Chastain Road @ George Busbee Parkway	Signal	E	C (33.7)	E (79.7)
5	Chastain Road @ Interstate 575 Southbound Ramps	Signal	D	C (29.2)	D (48.3)
6	Chastain Road @ Interstate 575 Northbound Ramps	Signal	D	C (26.4)	C (32.2)
7	Chastain Road @ Chastain Meadows Parkway	Signal	D	A (9.7)	C (21.2)
8	Chastain Road @ Bells Ferry Road	Signal	E	E (68.7)	F (95.0)
9	George Busbee Parkway @ Busbee Drive	EB STOP	D	F (125.9)	C (21.4)
10	George Busbee Parkway @ Big Shanty Road	Signal	D	C (23.0)	D (48.2)
11	Big Shanty Road @ Chastain Meadows Parkway	Signal	D	B (15.1)	C (22.8)
12	Big Shanty Road @ Bells Ferry Road	EB STOP	E	F (101.8)	F (*)
		WB STOP	E	F (139.2)	F (171.7)
13	George Busbee Parkway @ Retail Driveway	Signal	D	A (4.2)	A (8.7)
14	Barrett Parkway @ Interstate 75 Southbound Ramps	Signal	D	C (30.1)	B (17.0)
15	Barrett Parkway @ Interstate 75 Northbound Ramps	Signal	D	C (20.9)	C (23.3)
16	Barrett Parkway @ George Busbee Parkway	Signal	D	D (39.0)	D (43.0)
17	Barrett Parkway @ Interstate 575 Southbound Ramps	Signal	D	C (28.1)	F (97.7)
18	Barrett Parkway @ Interstate 575 Northbound Ramps	Signal	D	B (12.4)	F (84.8)
19	Barrett Parkway @ Chastain Meadows Parkway	Signal	E	E (57.9)	F (118.0)
20	Barrett Parkway @ Bells Ferry Road	Signal	E	E (55.1)	F (221.9)
21	Chastain Road @ Big Shanty Road	Signal	D	E (58.9)	F (77.9)
22	Big Shanty Road @ Hidden Forest Court	NB STOP	D	B (12.4)	C (16.1)
24	Barrett Lakes Boulevard @ Big Shanty Road Extension	Signal	D	B (16.5)	B (17.2)

\* Long delays for side-street traffic

As you can see in the table above, eight of the intersections currently operate below the acceptable Level of Service standard (LOS D) during the AM and/or PM peak hours. Eight of the study intersections failed to meet acceptable Level of Service standards for the year 2015 No-Build condition. Per GRTA'S Letter of Understanding guidelines, improvements were made to the eight intersections until the Level of Service was elevated to the GRTA standard. The 2015 "No-Build" with Improvements intersection Levels of Service are displayed below in Table 6.

**Table 6**  
**Hidden Forest Mixed Use DRI**  
**2015 "No-Build" with Improvements Intersection Levels of Service**  
**(delay in seconds)**

	<b>Intersection</b>	<b>Control</b>	<b>LOS Standard</b>	<b>AM Peak Hour</b>	<b>PM Peak Hour</b>
4	Chastain Road @ George Busbee Parkway	Signal	E	C (24.0)	D (43.7)
8	Chastain Road @ Bells Ferry Road	Signal	E	E (63.5)	E (60.9)
9	George Busbee Parkway @ Busbee Drive	Signal	D	C (20.9)	A (8.0)
12	Big Shanty Road @ Bells Ferry Road	Signal	E	C (31.7)	B (17.4)
17	Barrett Parkway @ Interstate 575 Southbound Ramps	Signal	D	B (16.9)	C (31.5)
18	Barrett Parkway @ Interstate 575 Northbound Ramps	Signal	D	B (18.1)	C (27.1)
19	Barrett Parkway @ Chastain Meadows Parkway	Signal	E	D (43.7)	E (65.7)
20	Barrett Parkway @ Bells Ferry Road	Signal	E	D (38.6)	E (64.4)
21	Chastain Road @ Big Shanty Road	Signal	D	D (48.6)	D (47.9)

The 2015 No-Build recommended improvements made to the intersections are shown in Figure 8A, 8B and 8C and are listed below by intersection:

Chastain Road @ George Busbee Parkway (Intersection #4)

- No-Build LOS was within LOS standard; however based on the "no-build" volumes engineering judgment recommends dual lefts.

Chastain Road @ Bells Ferry Road (Intersection #8)

- Construct a westbound right-turn lane along Chastain Road (see programmed improvement #1 in Section 7.0 of this report).
- Construct a northbound right-turn lane along Bells Ferry Road (see programmed improvement #1 in Section 7.0 of this report).

George Busbee Parkway @ Busbee Drive (Intersection #9)

- Install a traffic signal when warranted.

**Big Shanty Road @ Bells Ferry Road (Intersection #12)**

- Install a traffic signal when warranted.
- Install split-phasing for the proposed traffic signal at the Big Shanty Road eastbound approach and the Kathryn Drive westbound approach or re-align the road to eliminate the offset.
- Install protected/permissive left-turn phasing (green arrow) for the northbound approach.
- Construct an eastbound right-turn lane along Big Shanty Road.
- Construct a southbound left-turn lane along Bells Ferry Road.

**Barrett Parkway @ Interstate 575 Southbound Ramps (Intersection #17)**

- Construct one additional westbound left-turn lane (creating dual left turn lanes) along Barrett Parkway.
- Re-stripe the existing southbound approach geometry along the Interstate 575 Southbound Ramp as a separate left-turn lane, a shared left-turn/through/right-turn lane, and a separate right-turn lane.

**Barrett Parkway @ Interstate 575 Northbound Ramps (Intersection #18)**

- Construct one additional eastbound left-turn lane (creating dual left turn lanes) along Barrett Parkway.
- Re-stripe the existing northbound approach geometry along the Interstate 575 Northbound Ramp as a separate left-turn lane, a shared left-turn/through/right-turn lane, and a separate right-turn lane.

**Barrett Parkway @ Chastain Meadows Parkway (Intersection #19)**

- Construct one additional southbound left-turn lane (creating dual left turn lanes) along Chastain Meadows Parkway.
- Install protected/permissive left-turn phasing (green arrow) for the northbound approach.

**Barrett Parkway @ Bells Ferry Road (Intersection #20)**

- Construct a southbound through lane along Bells Ferry Road.
- Construct a northbound through lane along Bells Ferry Road.
- Construct a westbound through lane along Barrett Parkway.
- Construct an eastbound through lane along Barrett Parkway.

**Chastain Road @ Big Shanty Road (Intersection #21)**

- Construct one additional westbound left-turn lane (creating dual left turn lanes) along Big Shanty Road.
- Construct an eastbound right-turn lane along Big Shanty Road.

### **6.3 2015 “Build” Traffic**

The traffic associated with the proposed development (Hidden Forest Mixed Use DRI) was added to the 2015 “No-Build” volumes. These volumes were then input into the 2015 “No-Build” with Improvements roadway network and analyzed with Synchro 6.0. The results of the analyses are displayed in **Table 7**. The projected volumes for the year 2015 “Build” conditions are shown in **Figure 9A, 9B and 9C**.

NOT TO  
SCALE

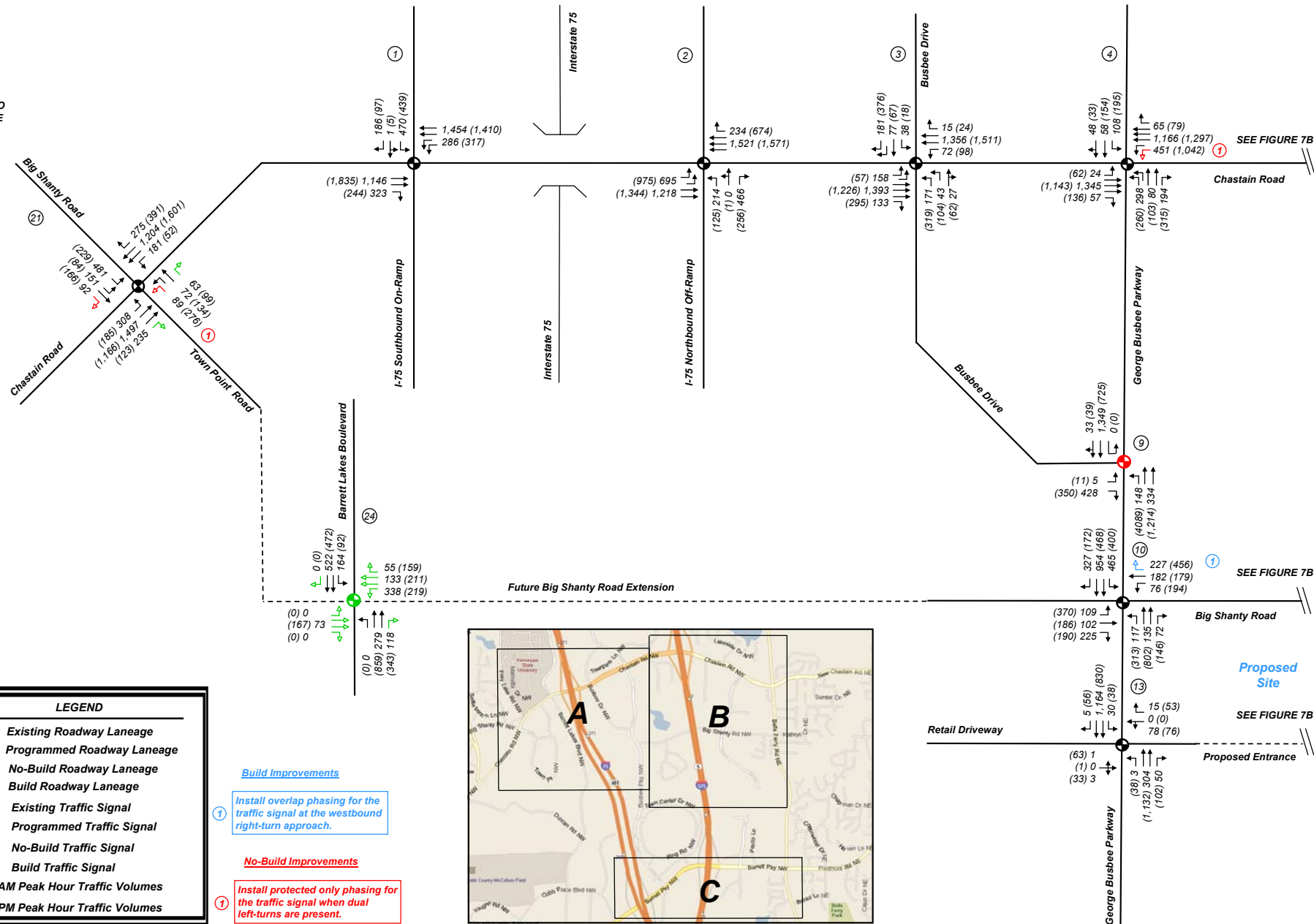


Figure  
9A

Projected 2015  
"Build"  
Conditions

Hidden Forest  
Transportation Analysis

Kimley-Horn  
and Associates, Inc.









**Table 7**  
**Hidden Forest Mixed Use DRI**  
**2015 "Build" Intersection Levels of Service**  
**(delay in seconds)**

	<b>Intersection</b>	<b>Control</b>	<b>LOS Standard</b>	<b>AM Peak Hour</b>	<b>PM Peak Hour</b>
1	Chastain Road @ Interstate 75 Southbound Ramps	Signal	D	C (28.4)	C (34.2)
2	Chastain Road @ Interstate 75 Northbound Ramps	Signal	D	C (21.7)	C (25.5)
3	Chastain Road @ Busbee Drive	Signal	D	C (29.0)	D (36.1)
4	Chastain Road @ George Busbee Parkway	Signal	E	C (27.4)	D(48.1)
5	Chastain Road @ Interstate 575 Southbound Ramps	Signal	D	C (30.3)	E (57.1)
6	Chastain Road @ Interstate 575 Northbound Ramps	Signal	D	C (26.9)	C (34.0)
7	Chastain Road @ Chastain Meadows Parkway	Signal	D	B (12.3)	C (23.3)
8	Chastain Road @ Bells Ferry Road	Signal	E	E (68.2)	E (66.2)
9	George Busbee Parkway @ Busbee Drive	Signal	D	D (44.2)	B (15.9)
10	George Busbee Parkway @ Big Shanty Road	Signal	D	C (37.0)	F (121.3)
11	Big Shanty Road @ Chastain Meadows Parkway	Signal	D	B (18.2)	C (26.9)
12	Big Shanty Road @ Bells Ferry Road	Signal	E	D (51.5)	C (20.2)
13	George Busbee Parkway @ Retail Driveway	Signal	D	A (7.9)	B (11.5)
14	Barrett Parkway @ Interstate 75 Southbound Ramps	Signal	D	D (41.2)	C (23.4)
15	Barrett Parkway @ Interstate 75 Northbound Ramps	Signal	D	B (19.8)	C (25.0)
16	Barrett Parkway @ George Busbee Parkway	Signal	D	E (75.5)	E (74.8)
17	Barrett Parkway @ Interstate 575 Southbound Ramps	Signal	D	B (17.0)	C (31.8)
18	Barrett Parkway @ Interstate 575 Northbound Ramps	Signal	D	B (18.3)	C (30.9)
19	Barrett Parkway @ Chastain Meadows Parkway	Signal	E	D (45.0)	E (66.8)
20	Barrett Parkway @ Bells Ferry Road	Signal	E	D (41.2)	E (70.4)
21	Chastain Road @ Big Shanty Road	Signal	D	D (50.5)	D (50.2)
23	Town Center Drive @ Mall Driveway / Town Center – Big Shanty Connector	NB STOP	D	C (17.5)	F (*)
		SB STOP	D	B (10.6)	B(14.7)
24	Barrett Lakes Boulevard @ Big Shanty Road Extension	Signal	D	B (18.6)	B (19.3)

\* Long delays for side-street traffic

As shown in Table 7, four of the intersections failed to meet the acceptable Level of Service standard for the PM peak hours and one of those four intersections fails to meet the acceptable Level of Service standard for the AM peak hour. Per GRTA's Letter of Understanding guidelines, improvements were made to the intersections until the Level of Service was elevated to the GRTA standard. The 2015 Build with Improvement intersection Levels of Service are displayed below in **Table 8**.

<b>Table 8</b> <b>Hidden Forest Mixed Use DRI</b> <b>2015 "Build" with Improvements Intersection Levels of Service</b> <b>(delay in seconds)</b>					
<b>Intersection</b>		<b>Control</b>	<b>LOS Standard</b>	<b>AM Peak Hour</b>	<b>PM Peak Hour</b>
5	Chastain Road @ Interstate 575 Southbound Ramps	Signal	D	C (24.6)	B (10.7)
10	George Busbee Parkway @ Big Shanty Road	Signal	D	C (26.8)	D (53.6)
16	Barrett Parkway @ George Busbee Parkway	Signal	D	D (43.4)	D (54.5)

The 2015 Build improvements made to the intersections are shown in Figure 9A, 9B and 9C, and are listed below by intersection:

Chastain Road @ Interstate 575 Southbound Ramps (Intersection #5)

- Construct an eastbound through lane along Chastain Road.

George Busbee Parkway @ Big Shanty Road (Intersection #10)

- Construct a westbound right-turn lane along Big Shanty Road.

Barrett Parkway @ George Busbee Parkway (Intersection #16)

- Construct a westbound through lane along Barrett Parkway.
- Install permissive/overlapped right-turn phasing (green arrow) for the southbound approach.

The proposed project driveways were analyzed for the 2015 Build Conditions. The results of the analyses are presented in **Table 9**. The projected volumes and recommended intersection geometries are shown in Figure 9A, 9B and 9C.

**Table 9**  
**Hidden Forest Mixed Use DRI**  
**2015 "Build" Intersections Levels of Service for Proposed Site Driveways**  
**(delay in seconds)**

	<b>Intersection</b>	<b>Control</b>	<b>LOS Standard</b>	<b>AM Peak Hour</b>	<b>PM Peak Hour</b>
22	Big Shanty Road @ Town Center – Big Shanty Connector	Signal	D	C (33.0)	C (29.3)
23	Town Center Drive @ Mall Driveway / Town Center – Big Shanty Connector	NB STOP	D	C (17.5)	F (*)
		SB STOP	D	B (10.6)	B(14.7)
25	Big Shanty Road @ Proposed RIRO Driveway 1	NB STOP	D	B(14.0)	D (26.3)
26	Big Shanty Road @ Proposed RIRO Driveway 2	NB STOP	D	B (14.3)	C (17.1)

\* Long delays for side-street traffic

The intersection of Town Center Drive at Mall Driveway/ Town Center – Big Shanty Connector (23) failed to meet Level of Service standard 'D' for the year 2015 Build condition for the NB STOP during the PM peak hour. In conclusion, it is not uncommon for side-street traffic to experience delays at an intersection with a major street. Volumes on side-streets are not high enough to warrant a signal.

The intersections of Big Shanty Road at Town Center – Big Shanty Connector (22), and Town Center Drive at Mall Driveway / Town Center – Big Shanty Connector (23) will most likely meet traffic peak hour volume warrants in the 2015 Build year during the AM and PM peak conditions. Installation of a traffic signal at this location should coincide when a major portion of the retail or a major portion of the residential is open.

Intersection geometry and improvements were recommended at the project site driveways. They are shown in Figure 9A, 9B and 9C and are listed below by intersection:

**Big Shanty Road @ Town Center – Big Shanty Connector (Intersection #22)**

- Install a traffic signal when warranted.
- Construct a westbound left-turn lane along Big Shanty Road.
- Construct an eastbound right-turn lane along Big Shanty Road.
- Install a northbound left-turn lane in median along Town Center – Big Shanty Connector. Reserve width to allow for possible through lane exiting the site for future conditions beyond the 2015 Build-out year.

Town Center Drive @ Mall Driveway / Town Center – Big Shanty Connector (Intersection #23)

- Re-stripe the existing westbound approach geometry along Town Center Drive as a separate left-turn lane and a shared through/right-turn lane.
- Re-stripe the existing eastbound approach geometry along Town Center Drive as a separate left-turn lane and a shared through/right-turn lane.
- Construct a southbound left-turn lane along Town Center – Big Shanty Connector
- Construct a southbound shared through/right-turn lane along Town Center – Big Shanty Connector.
- \* At unsignalized intersections, it is not uncommon for side-street traffic to experience delays at an intersection with a major street. To satisfy GRTA's level-of-service 'D' standard, an all-way stop should be considered if warranted.

Big Shanty Road @ Proposed Right-in/Right-out Driveway #1 (Intersection #25)

- Construct an eastbound right-turn lane along Big Shanty Road.

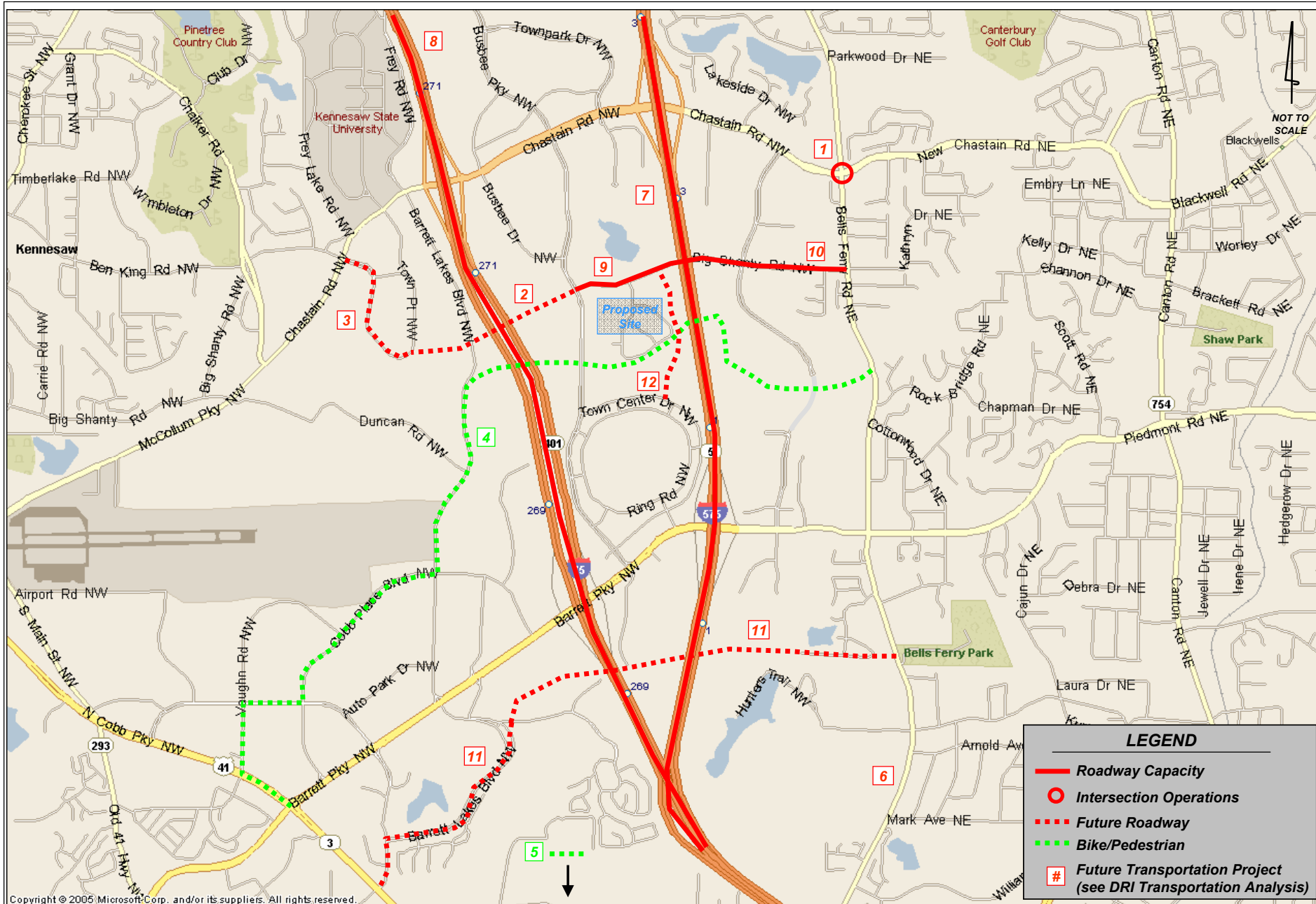
Big Shanty Road @ Proposed Right-in/Right-out Driveway #2 (Intersection #26)

- Construct an eastbound right-turn lane along Big Shanty Road.

## 7.0 IDENTIFICATION OF PROGRAMMED PROJECTS

The *RTP*, *TIP*, *STIP*, *GDOT's Construction Work Program*, *Cobb County SPLOST Program*, and *Town Center CID* were researched for currently programmed transportation projects within the vicinity of the proposed development. Several projects are programmed for the area surrounding the study network. Information on the projects is included in the Appendix. **Figure 10** illustrates the programmed projects listed below.

1.	ARC# CO-313 GDOT# 0000555	2008	Chastain Road at Bells Ferry Road – add right turn lanes Completion Date: 2008, ROW-2007, Construction-2008
2.	ARC# CO-332A GDOT# 0006869	2010	Big Shanty Road Extension – Phase I From Busbee Parkway to Barrett Lakes Boulevard at Big Shanty Road [See also CO-332B] Completion Date: 2010, ROW-2008, Construction-2009
3.	ARC# CO-332B GDOT# 0006870	2010	Big Shanty Road Extension – Phase II From Barrett Lakes Boulevard at Big Shanty Road to Chastain Road [See also CO-332A]. Completion Date: 2010, ROW-2008, Construction-2009
4.	ARC# CP-AR-BP219 GDOT# 00068185	2010	Noonday Creek Trail: Phase II from US 41 (Cobb Parkway) to Bells Ferry Road. Completion Date: 2013, ROW-2008, Construction-2009, 2010
5.	Town Center CID	2010	Cobb County Transit Supportive Sidewalks Completion Date: 2010
6.	SPLOST	2010	Bells Ferry Road – I-575 to North Cobb Parkway (US 41) – Intersection Improvements Completion Date: Scheduled Construction Bid – May 2010
7.	ARC# ARC-H-005 GDOT# 713640	2015	I-575 HOV Lanes from I-75 North in Cobb County to Sixes Road in Cherokee County. Completion Date: 2015
8.	ARC# AR-H-004 GDOT# 0006419	2024	I-75 North HOV Lanes (Funding for Engineering and Design included under AR-H-010) from I-575 to Wade Green Road in Cobb County. Completion Date: 2024
9.	ARC# CO-297A GDOT# 0006861	Long Range	Big Shanty Road from Busbee Parkway to Chastain Meadows Parkway. Completion Date: Long Range
10.	ARC# CO-297B GDOT# 0006861	Long Range	Big Shanty Road from Chastain Meadows Parkway to Bells Ferry Road. Completion Date: Long Range
11.	ARC# CP-AR-BP214B GDOT# 0004511	Long Range	South Barrett Reliever – Phase I: US 41 to Barrett Lakes, Phase II: has not started Completion Date: Phase I: Design Ready, ROW + Construction will begin by June 2008, Phase II: proposed 2020 – Long Range
12.	Town Center CID	TBD	Town Center Mall / Big Shanty Connector – North of the mall to Big Shanty Completion Date: No Funds/ No Timeframe





## 8.0 INGRESS/EGRESS ANALYSIS

Vehicular access to the development is proposed at five locations. Three driveways are proposed along Big Shanty Road, one along George Busbee Parkway and one along Town Center Drive.

- Town Center – Big Shanty Connector (Intersection #22), located along Big Shanty Road, is proposed to be a full-movement signalized driveway at the existing location of Big Shanty Road and Hidden Forest Court located approximately 1,100 feet east of the existing signalized intersection of Big Shanty Road and George Busbee Parkway. It is recommended that the driveway consist of two southbound ingress lane and two northbound egress lanes. With the northbound egress lanes consisting of one-exclusive right-turn lane, a northbound left-turn lane in median along Town Center – Big Shanty Connector, and reserve width to allow for possible through lane exiting the site for future conditions beyond the 2015 Build-out year.
- Proposed Driveway #1 (Intersection #25), located along Big Shanty Road, is proposed to be a restricted movement (right-in/ right-out) unsignalized driveway located approximately 800 feet east of the existing signalized intersection of Big Shanty Road and George Busbee Parkway. It is recommended that the driveway consist of one southbound ingress lane and one northbound egress lane (one exclusive right-turn lane).
- Proposed Driveway #2 (Intersection #26), located along Big Shanty Road, is proposed to be a restricted movement (right-in/ right-out) unsignalized driveway located approximately 1,400 feet east of the existing signalized intersection of Big Shanty Road and George Busbee Parkway. It is recommended that the driveway consist of one southbound ingress lane and one northbound egress lane (one exclusive right-turn lane).
- Mall Driveway / Town Center – Big Shanty Connector (Intersection #23), located along Town Center Drive, is proposed to be a full-movement unsignalized driveway at the existing location of Mall Driveway and Town Center Drive located approximately 750 feet east of the existing signalized intersection of George Busbee Parkway and Town Center Drive. It is recommended that the driveway consist of two northbound ingress lanes and two southbound egress lanes (one exclusive left-turn lane and one shared through/ right-turn lane).
- George Busbee Parkway/ Retail Driveway (Intersection #13) connection is proposed to connect to the existing retail driveway approximately 300 feet east of the existing signalized intersection of George Busbee Parkway and Retail Driveway. The existing driveway consists of one eastbound ingress lane and two southbound egress lane (one exclusive right-turn lane and one shared through/ left-turn lane).

## 9.0 INTERNAL CIRCULATION ANALYSIS

The Hidden Forest development is mixed-use in nature, and is expected to reduce the PM peak hour trips by 11.20% and daily new vehicle trips by 11.43%. Please refer to the Appendix for the internal capture spreadsheet.

## 10.0 COMPLIANCE WITH COMPREHENSIVE PLAN ANALYSIS

The Cobb County Future Land Use Plan identifies the area as Regional Activity Center.

## 11.0 NON-EXPEDITED CRITERIA

### 11.1 *Quality, Character, Convenience, and Flexibility of Transportation Options*

The site is accessible via vehicle, transit, walking or biking. The existing roadways and sidewalks provide transportation options to residents, employees, and visitors of the site.

The proposed development is located within the Town Center Area Community Improvement District and Cobb Rides Transportation Management Association. There are at least four (4) bus stops located within a mile of the proposed development. One is located on Big Shanty Road just west of the proposed site entrance and three (3) are located on George Busbee Parkway. A Cobb County Transit Park and Ride Lot is located off Busby Drive less than a mile from the proposed site. See the attached route maps for detailed route descriptions.

No sidewalks currently exist along Big Shanty Road parallel to the proposed development, however, approximately 250 feet west of the property line begins sidewalk and other pedestrian facilities along the south side of Big Shanty Road. Pedestrian facilities currently exist along both sides of George Busbee Parkway and along the south side of Town Center Drive in the vicinity of the proposed mixed-use development.

The proposed development will provide sidewalks and trails for pedestrian and bicycle traffic. The retail and residential portions of the development are proposed to be connected by sidewalks to potentially reduce the amount of vehicular traffic internal to the site. The proposed development will provide pedestrian access in accordance with Cobb County development requirements.

Additionally, the programmed GDOT Project #0004511 is expected to develop a multi-use trail which will be a continuation of the Mountain to River trail at Kennesaw Mountain National Battlefield Park to Bells Ferry Road. A portion of the trail follows along side Noonday Creek right through the proposed site providing a scenic area to walk or bike and an enhanced pedestrian environment.

### 11.2 *Vehicle Miles Traveled*

The following table displays the reduction in traffic generation expected due to mixed-use reductions, pass-by trips, and alternative mode reductions.

	Build-out Total
Daily Gross Trip Generation:	20,975
(-)Mixed-use reductions (internal capture)	-2,366
(-)Pass-by trips	-1,500
(-)Alternative modes	-372
Net Trips:	16,737

### 11.3 *Relationship Between Location of Proposed DRI and Regional Mobility*

The development is located within the Town Center LCI study area. The proposed development has direct access to both to I-75 and I-575, allowing easy access to other parts of the Atlanta area.

#### *11.4 Relationship Between Proposed DRI and Existing or Planned Transit Facilities*

The proposed development is located within the Town Center Area Community Improvement District and Cobb Rides Transportation Management Association. There are at least four (4) bus stops located within a mile of the proposed development. One is located on Big Shanty Road just west of the proposed site entrance and three (3) are located on George Busbee Parkway. A Cobb County Transit Park and Ride Lot is located off Busby Drive less than a mile from the proposed site. See the attached route maps for detailed route descriptions.

Cobb Community Transit (CCT) Route 10C operates from Town Center to Marta Arts Center via Marietta Transfer Center (MTC). The PM (Outbound) trips will begin at the Town Center Mall stop located at JC Penney, stopping only at the MTC and ending at the MARTA Arts Center station.

CCT Route 40 passes to the west of the site along George Busbee Parkway. This route operates from Marietta to Kennesaw State University via Bells Ferry Road and George Busbee Parkway, with stops in the Town Center Mall area.

CCT Route 45 passes in front of the proposed development along Big Shanty Road and to the west of the development along George Busbee Parkway. This route operates from Marietta to Town Center Mall area via U.S. 41 and Ernest Barrett Parkway, with access to Chastain Meadows Industrial Park and Kennesaw State University.

CCT Route 481 outbound operates express service from the Children's Health Care Center, adjacent to the Busbee Park and Ride Lot. Route 481 will travel to three MARTA stations, MARTA Civic Center, MARTA Arts Center, and MARTA Midtown (10<sup>th</sup> Street).

#### *11.5 Transportation Management Area Designation*

The proposed development is located within Cobb Rides Transportation Management Association.

#### *11.6 Offsite Trip Reduction and Trip Reduction Techniques*

Pass-by trip reductions were calculated according to the *ITE Trip Generation Handbook, 1998*; however, according to the GRTA's 10% limit test, pass-by trips were limited to 10% of the adjacent roadway volumes.

#### *11.7 Balance of Land Uses – Jobs/Housing Balance*

Please refer to the Area of Influence Analysis, located in Section 12.0 of the report.

#### *11.8 Relationship Between Proposed DRI and Existing Development and Infrastructure*

The development is located in an area where, the existing infrastructure is expected to be adequate to serve the needs of the development upon build-out (2015).

## 12.0 AREA OF INFLUENCE

This section will describe the Area of Influence (AOI) demographics, AOI average wage levels, expected DRI housing costs, and the availability of jobs within the AOI that would reasonably position employees to purchase housing within the proposed DRI.

### 12.1 Criteria

As part of the non-expedited review process for a DRI, an Area of Influence Analysis must be performed to determine the impact of the proposed development on the balance of housing and jobs within the immediate area surrounding the proposed development. For this proposed development expansion, the non-expedited review criterion is as follows:

This section is included to satisfy the following GRTA Non-expedited review criteria:

7. The proposed DRI:

- (c) Is located in an area of influence with employment opportunities which are such that at least twenty-five percent (25%) of the persons that are reasonably anticipated to live in the proposed DRI and are reasonably expected to be employed will have an opportunity to find employment appropriate to such persons' qualifications and experience within the Area of Influence.

### 12.2 Study Area Determination and Characteristics

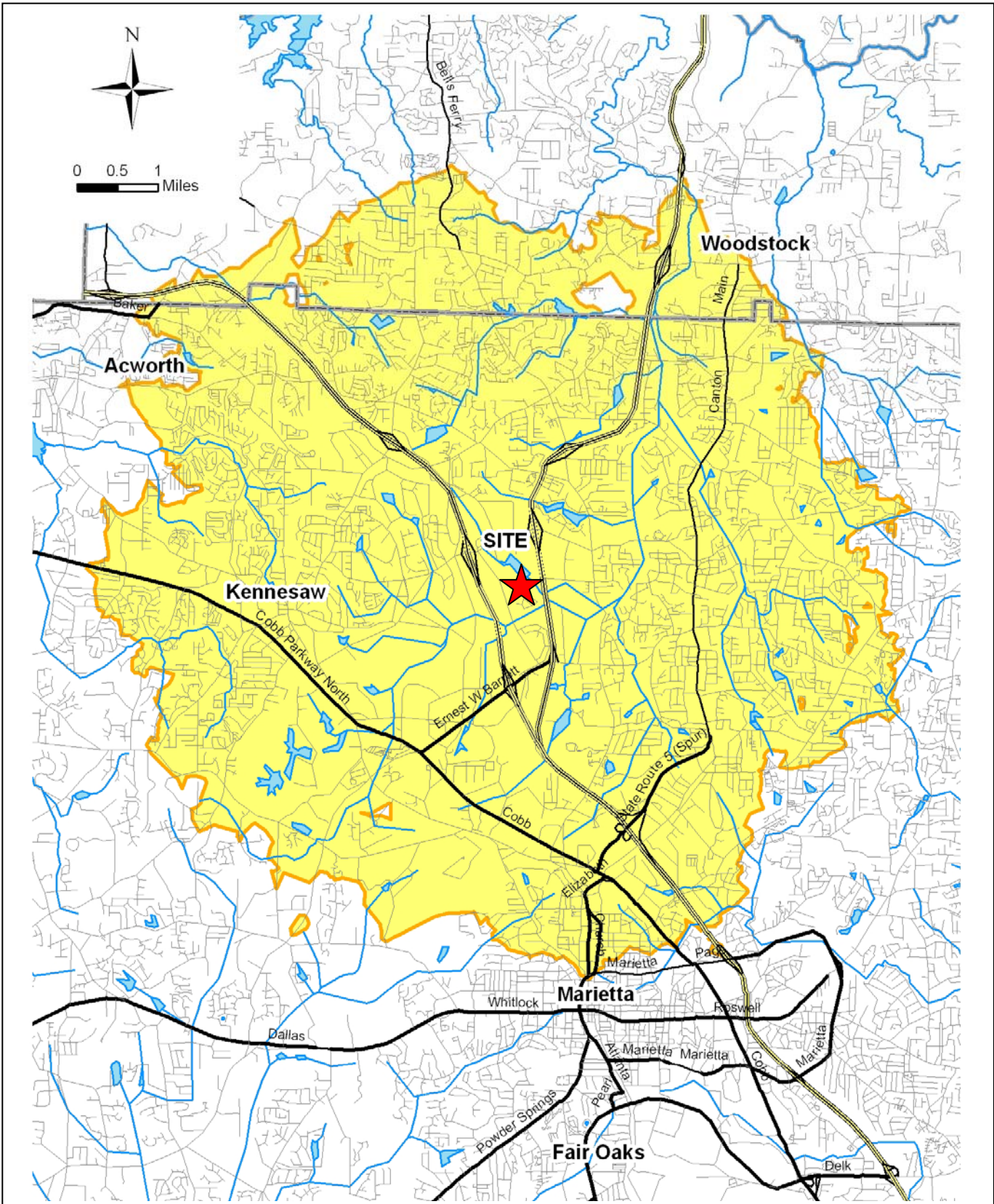
The Area of Influence is comprised of the area within six road-miles of the proposed development. To determine the AOI, *TransCAD* was used to measure six road miles from the nearest intersection to the project (Big Shanty Road at George Busbee Parkway). The population and housing statistics for the AOI were determined by taking the area outlined in *TransCAD*, creating a boundary in GIS format, and overlaying the boundary with a GIS layer containing census tract information. The Area of Influence (located within Cobb and Cherokee Counties) can be seen in **Figure 11**. Information obtained from the census tracts can be seen in **Table 10**.

<b>Table 10</b> <b>Census Tract Information</b>	
<b>Total Households</b>	<b>43,999</b>
<b>Population in Households</b>	<b>119,197</b>
<b>Average household size</b>	<b>2.71</b>
<b>Total Workers</b>	<b>65,430</b>
<b>Workers per Household</b>	<b>1.49</b>
<b>Owner Occupied</b>	<b>76.7%</b>
<b>Rental Occupied</b>	<b>23.3%</b>

As can be seen from the table above, the total population within the Area of Influence is 119,197, residing within 43,999 households (an average of 2.71 people per household). The AOI area totals 43,819 acres.

Using the above calculated average of 1.49 persons per household, it can be anticipated that the proposed DRI will house approximately 4,835 people (1,784 proposed dwelling units multiplied by 2.71). Based on information obtained from the Census Tracts, it is estimated that approximately 2,658 of these expected 4,835 residents would be workers. The remainder of this section will demonstrate the availability of jobs for these expected workers within the development at or above the necessary income level to afford housing within the DRI.

The Atlanta Journal-Constitution website was researched to find current listings of houses for sale in the vicinity of the proposed development (30066 Zip Code). At the time of this report, about 83 homes were listed for sale in the area, ranging in price from \$99,900 to \$1,650,000.



Kimley-Horn  
and Associates, Inc.

## Hidden Forest DRI Transportation Analysis

Area of  
Influence

Figure  
11

### 12.3 Development Housing Analysis

The development plan provides for houses for sale in four price ranges within the proposed development. **Table 11**, below, displays the number of units for sale, the average sale price for those units, and the number of workers expected to reside in the homes.

<b>Table 11</b> <b>Estimated Workers per Household</b>				
<b>Tier</b>	<b>Description</b>	<b>Number of Units</b>	<b>Average Price</b>	<b>Number of Workers</b>
<b>1</b>	<b>Village Apartments</b>	<b>1,351</b>	<b>\$1,200/month</b>	<b>2,013</b>
<b>2</b>	<b>Townhomes</b>	<b>88</b>	<b>\$300,000</b>	<b>131</b>
<b>3</b>	<b>Condominiums</b>	<b>160</b>	<b>\$200,000</b>	<b>238</b>
<b>4</b>	<b>Senior Living</b>	<b>185</b>	<b>\$1,500/month</b>	<b>276</b>

In order to determine the number of jobs available within the AOI that would provide adequate income, information about the types of jobs within the AOI and the average salaries for these positions was collected first. Information about the types of jobs available within the AOI was obtained from Claritas, a data solutions company. A map with the boundary of the AOI was sent to Claritas, and a report containing the types of employment opportunities and number of each type of job was compiled. The Claritas report is included in the Appendix of this report. Next, the Georgia Department of Labor website was researched to obtain average salary information for the positions available within the AOI. Average salary information for jobs in Cobb and Cherokee counties was matched to the jobs existing within the AOI. This information (also available in the Appendix), along with the information provided by Claritas, is included in the **Table 12**, on the following page.

**Table 12**  
**AOI Jobs and Average Salaries**

<b>Industry / Business Type</b>	<b># Businesses</b>	<b># Employees</b>	<b>Average Salary</b>
<b>Retail Trade</b>	<b>1,467</b>	<b>23,493</b>	<b>\$25,986</b>
<i>Building Materials and Garden Supply</i>	<i>98</i>	<i>1,898</i>	<i>-</i>
<i>General Merchandise Stores</i>	<i>48</i>	<i>3,176</i>	<i>-</i>
<i>Food Stores</i>	<i>97</i>	<i>1,981</i>	<i>-</i>
<i>Auto Dealers and Gas Stations</i>	<i>151</i>	<i>2,288</i>	<i>-</i>
<i>Apparel and Accessory Stores</i>	<i>126</i>	<i>1,093</i>	<i>-</i>
<i>Home Furniture, Furnishings, and Equipment</i>	<i>210</i>	<i>2,009</i>	<i>-</i>
<i>Eating and Drinking Places</i>	<i>349</i>	<i>7,466</i>	<i>-</i>
<i>Miscellaneous Retail Stores</i>	<i>387</i>	<i>3,582</i>	<i>-</i>
<b>Finance</b>	<b>521</b>	<b>5,163</b>	<b>\$50,864</b>
<i>Banks, Savings and Lending Institutions</i>	<i>172</i>	<i>2,481</i>	<i>-</i>
<i>Securities and Commodity Brokers</i>	<i>33</i>	<i>157</i>	<i>-</i>
<i>Insurance Carriers and Agencies</i>	<i>131</i>	<i>1,096</i>	<i>-</i>
<i>Real Estate</i>	<i>184</i>	<i>1,428</i>	<i>-</i>
<i>Trusts, Holdings, and Other Investments</i>			
<b>Services</b>	<b>2,572</b>	<b>29,485</b>	<b>-</b>
<i>Hotels and Other Lodging</i>	<i>44</i>	<i>438</i>	<i>\$14,737</i>
<i>Personal Services</i>	<i>668</i>	<i>3,541</i>	<i>-</i>
<i>Business Services</i>	<i>756</i>	<i>7,572</i>	<i>\$62,450</i>
<i>Motion Picture and Amusement</i>	<i>127</i>	<i>1,246</i>	<i>\$20,203</i>
<i>Health Services</i>	<i>443</i>	<i>7,672</i>	<i>\$40,396</i>
<i>Legal Services</i>	<i>71</i>	<i>277</i>	<i>\$62,450</i>
<i>Education Services</i>	<i>75</i>	<i>5,267</i>	<i>\$28,027</i>
<i>Social Services</i>	<i>103</i>	<i>1,383</i>	<i>\$40,396</i>
<i>Miscellaneous, Membership</i>	<i>285</i>	<i>2,089</i>	<i>-</i>
<i>Organizations and Nonclassified</i>			
<b>Agriculture</b>	<b>122</b>	<b>1,019</b>	<b>\$23,094</b>
<b>Mining</b>	<b>6</b>	<b>51</b>	<b>\$32,118</b>
<b>Construction</b>	<b>611</b>	<b>6,997</b>	<b>\$42,480</b>
<b>Manufacturing</b>	<b>418</b>	<b>9,675</b>	<b>\$51,602</b>
<b>Transportation, Communication/Public Utilities</b>	<b>199</b>	<b>3,457</b>	<b>\$58,376</b>
<b>Wholesale Trade</b>	<b>387</b>	<b>6,135</b>	<b>\$59,586</b>
<b>Public Administration</b>	<b>80</b>	<b>1,539</b>	<b>\$35,137</b>
<b>Total</b>	<b>4,560</b>	<b>58,141</b>	<b>-</b>

## 12.4 Affordable Housing Analysis

Various mortgage calculators are available online to aid in determining affordable housing based on given incomes and income ranges. These calculators were used to determine the minimum income necessary to afford housing within the proposed Hidden Forest development. It was assumed that no more than one third of an individual's income would be used for mortgage costs (principal + interest), that a 7% interest rate on a 30-year conventional loan could be obtained, and that a 10% down payment would be made. The income required to purchase a home at the approximate price range was calculated and is displayed in **Table 13**. Because there is an average of 1.49 workers expected per household, the required income was divided by 1.49 to determine the average salary each worker within the development would be expected to earn in order to provide their "fair share" of the housing costs. This methodology assumes an equal burden on all workers within the development, and is considered to be a conservative approach since it eliminates the lower paying positions within the AOI from consideration in the analysis. Table 13 also displays the number of workers expected in each price range, as well as the number of jobs available at the necessary average income level to afford housing within that price range. As can be seen in the table, it is expected that all of the workers living within the DRI would be able to find employment within the AOI, thus satisfying the GRTA requirement of 25%.

<b>Table 13</b> <b>Expected Workers</b>				
	<b>Average Sale Price</b>	<b>Necessary Income per Expected Worker</b>	<b>Expected Worker per Price Range</b>	<b>Jobs at or above Necessary Income</b>
<b>1</b>	<b>\$1,200/month</b>	<b>\$28,993</b>	<b>2,013</b>	<b>49,921</b>
<b>2</b>	<b>\$300,000</b>	<b>\$43,401</b>	<b>131</b>	<b>32,279</b>
<b>3</b>	<b>\$200,000</b>	<b>\$28,934</b>	<b>238</b>	<b>49,921</b>
<b>4</b>	<b>\$1,500/month</b>	<b>\$36,242</b>	<b>276</b>	<b>48,331</b>
<b>Percent of expected workers likely to find necessary employment within the AOI</b>				<b>100%</b>



### 13.0 ARC'S AIR QUALITY BENCHMARK

The proposed development is expected to consist of approximately 144,600 square feet of retail space, 143,000 square feet of office space, a 31,200 square foot church, 1,351 apartments, 248 condominium units, and 185 senior adult housing units. ARC has establish criteria that link reductions in vehicle miles traveled (VMT) to improvements in air quality. The following describes the various reductions this development will accrue.

For projects where residential is the dominant use: developments that have a unit to acre ratio greater than 15 dwelling units per acre will receive a 6% reduction. The project's residential component is the dominant use with approximately 30 dwelling units per acre.

A 2% reduction is applied because approximately 4% of the gross area is retail space and approximately 4% of the gross floor area is office.

Since the project is located within ¼ mile of a CCT bus stop, a 3% reduction is applied.

The development lies within the Cobb Rides Transportation Management Association, earning an additional 3% reduction.

Since the development proposed sidewalks within the development, connecting the proposed buildings and connecting to the existing sidewalks along Town Center Drive, a 5% reduction is applied.

The proposed development meets the ARC criteria for a total 19% VMT reduction. These reductions are displayed below in **Table 14**.

<b>Table 14 ARC VMT Reductions</b>	
<b><i>Mixed-Use Project where Industrial is the dominant use</i></b>	
Greater than 15 dwelling units/ acre	-6%
The primary land use is residential with a approximately 4% of the floor area as retail and approximately 4% of the floor area as office	-2%
Development is located within ¼ mile of a CCT bus stop	-3%
Participation in a Transportation Management Association program	-3%
Bike/ped network in development that met one Density 'target' and connects to adjoining uses	-5%
<b>Total Reductions</b>	<b>-19%</b>