Transportation Analysis

Big Creek
DRI# 1885
City of Buford, Hall County, Georgia

Prepared for:
Heritage South Partners, L.P.

Prepared by:
Kimley-Horn and Associates, Inc.
Norcross, GA

September 2008
019783000

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EXECUTIVE SUMMARY

This report presents the analysis of the anticipated traffic impacts of a proposed +/- 88-acre mixed-use development located in the City of Buford and Hall County, Georgia. This report is being prepared as part of a submittal requesting annexation and rezoning in the City of Buford. Approximately 53 acres is proposed to be annexed from Hall County into the City of Buford (35 acres is currently in the City of Buford). The rezoning proposes to change AR-3 (Hall County) to R-100 and C-2. A Special Use Permit is also being applied for to allow attached residential housing and a Special Use Permit is being applied for to allow residential above the commercial. Because the proposed development will exceed 400,000 square feet and is to be annexed into the City of Buford, it is a Development of Regional Impact (DRI) and is subject to Atlanta Regional Commission (ARC) review.

The proposed mixed-use development is expected to consist of approximately 64 single family homes, 620 recreational homes, and 30,000 square feet of commercial space. The development is scheduled to be completed in phases with full buildout expected by the year 2014.

Capacity analyses were performed for the Existing 2008 Conditions, Projected 2014 No-Build Conditions, and Projected 2014 Build Conditions at two intersections. This study network consists of:

1. SR 347 (Friendship Road) at SR 13 (Buford Highway)
2. SR 347 (Friendship Road) at McEver Road

Each of the above listed intersections was analyzed for the Existing 2008 Conditions, the 2014 No-Build Conditions, and the 2014 Build Conditions. Based on the existing 2008 conditions, none of the study intersections currently operate below the acceptable Level of Service standard (LOS D) during the AM and PM peak hours. The Projected 2014 No-Build Conditions represent the existing traffic volumes grown at 3% per year for six years along all roadway links. The 2014 No-Build Conditions indicated the two study intersections are expected to operate at an acceptable Level of Service standard with no improvements. The Projected 2014 Build Conditions adds the project trips associated with the Big Creek development to the Projected 2014 No-Build Conditions. The 2014 Build Conditions indicate the two study intersections are expected to operate at an acceptable Level of Service standard with no improvements.

The following recommendations are made at the proposed project driveway:

Proposed Full-movement (unsignalized) driveway along SR 374 (Holiday Road):

- Install a westbound right-turn deceleration lane along SR 374 (Holiday Road).
- Install an eastbound left-turn lane along SR 374 (Holiday Road).
- Install a separate left-turn lane and right-turn lane exiting the site along the proposed driveway.

1.0 PROJECT DESCRIPTION

1.1 Introduction

This report presents the analysis of the anticipated traffic impacts of a proposed +/- 88-acre mixed-use development located in the City of Buford and Hall County, Georgia. This report is being prepared as part of a submittal requesting annexation and rezoning in the City of Buford. Approximately 53 acres is proposed to be annexed from Hall County into the City of Buford (35 acres is currently in the City of Buford). The rezoning proposes to change AR-3 (Hall County) to R-100 and C-2. A Special Use Permit is also being applied for to allow attached residential housing and a Special Use Permit is being applied for to allow residential above the commercial. Because the proposed development will exceed 400,000 square feet and is to be annexed into the City of Buford, it is a Development of Regional Impact (DRI) and is subject to Atlanta Regional Commission (ARC) review.

The proposed mixed-use development is expected to consist of approximately 64 single family homes, 620 recreational homes, and 30,000 square feet of commercial space. The development is scheduled to be completed in phases with full buildout by the year 2014.

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

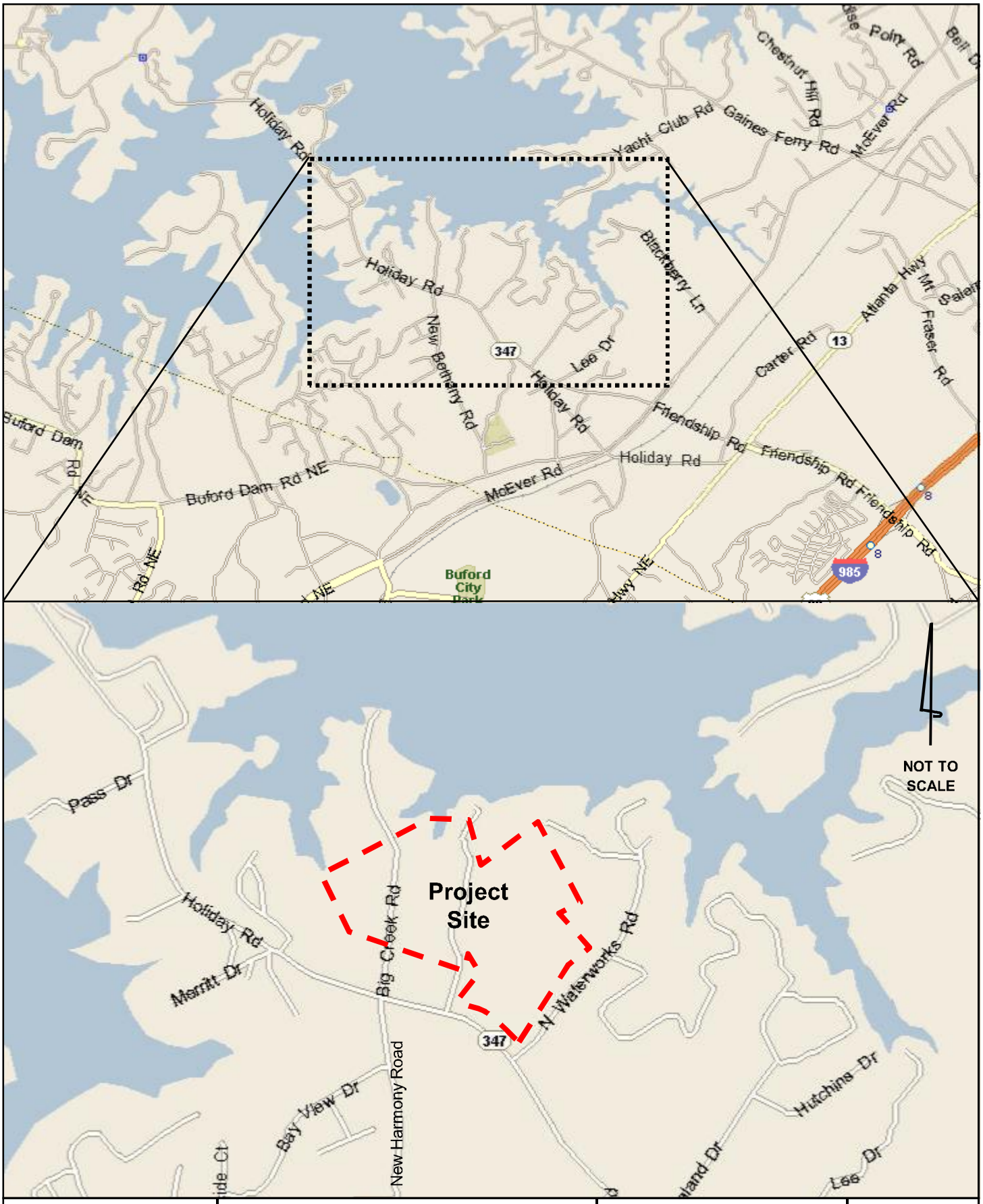
Table 1 Proposed Land Uses	
Residential Units (single family)	64 units
Residential Units (recreational)	620 units
Commercial Space	30,000 square feet

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

1.2 Site Plan Review

The proposed site is located along the north side of SR 347 (Holiday Road) and west side of North Waterworks Road. The site is primarily wooded and includes an existing restaurant (Big Creek Tavern) and boat storage facility (Kents Dry Storage Facility). The site has roadway frontage along SR 347 (Holiday Road) and North Waterworks Road. Two roads currently pass through the site. Big Creek Road travels north-south and connects SR 347 to the Big Creek Park (and boat ramps) north of the site. Whidby Road travels north-south and connects SR 347 to a couple residential homes north of the site. Traffic currently utilizing Big Creek Road to access the Big Creek Park and boat ramps will be shifted to the main road through the planned development. Traffic currently utilizing Whidby Road to access homes at the north end of the road will be shifted to the main road through the planned development.

The proposed retail is located internal to the site and not located along the site frontage. Retail can be accessed through the one proposed driveway along SR 347 (Holiday Road). The development proposes open spaces in the residential and retail portions of the site, primarily in proximity to Lake Lanier. **Figure 3** is a small-scale copy of the site plan.



Kimley-Horn and Associates, Inc.	**Big Creek DRI Transportation Analysis**	**Site Location**	**Figure 1**

NORTH

Scale:
1" ~100'

Big Creek Park

Big Creek Road

Whidby Road

Project
Site

SR 347 (Holiday Road)

North Waterworks Road

New Bethany Road

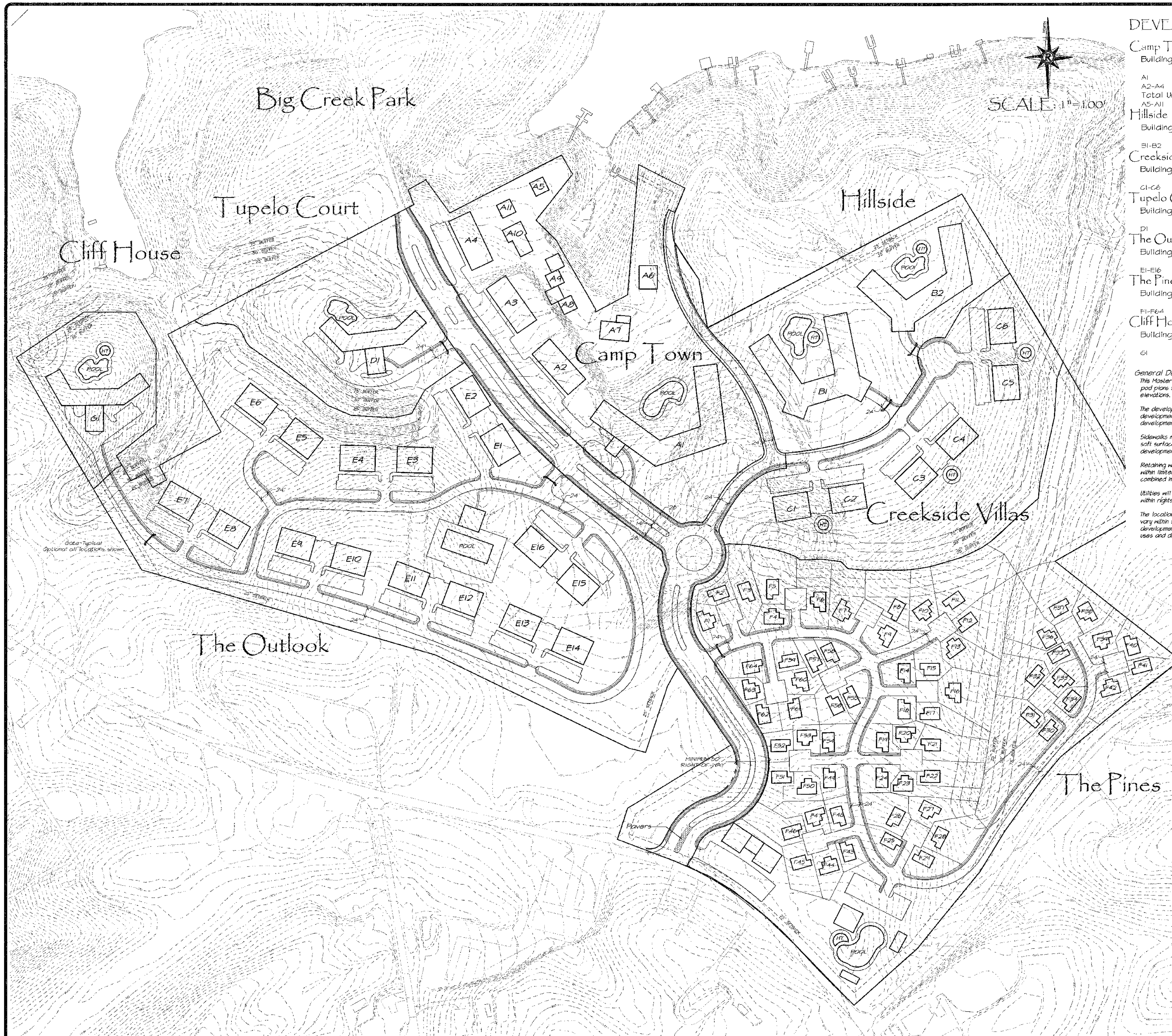
© 2025 AE

Figure
2

Aerial

Big Creek DRI
Transportation Analysis

Kimley-Horn
and Associates, Inc.



DEVELOPMENT SUMMARY

Camp Town

Buildings	Max. Bldg. Ht. Stories	Avg. Unit Size	Min. Unit Size	No. Units
A1	8	950	740	130
A2-A4	4	1,000	780	34
Total Units				164
A5-A11	3			30,000 SF

Hillside

Buildings	Max. Bldg. Ht. Stories	Avg. Unit Size	Min. Unit Size	No. Units
B1-B2	6	1,000	780	200

Creekside Villas

Buildings	Max. Bldg. Ht. Stories	Avg. Unit Size	Min. Unit Size	No. Units
C1-C6	4	1,500	1,170	48

Tupelo Court

Buildings	Max. Bldg. Ht. Stories	Avg. Unit Size	Min. Unit Size	No. Units
D1	6	2,000	1,560	40

The Outlook

Buildings	Max. Bldg. Ht. Stories	Avg. Unit Size	Min. Unit Size	No. Units
E1-E16	4	1,500	1,170	128

The Pines

Buildings	Max. Bldg. Ht. Stories	Avg. Unit Size	Min. Unit Size	No. Units
F1-F64	3	2,000	1,560	64

Cliff House

Buildings	Max. Bldg. Ht. Stories	Avg. Unit Size	Min. Unit Size	No. Units
G1	6	1,050	820	40

General Development Notes:

This Master Plan consists of the overall drawing of the site and individual pod plans with accompanying text, typical sections, and concept building elevations.

The developer may provide a Master Landscape Plan for the entire development or submit such plans in conjunction with each phase of development.

Sidewalks may meander into common areas. Additional hard surface and soft surface trails may be created to connect activity areas within the development at the developer's discretion.

Retaining walls and water quality-related structures may be constructed within limited portions of the 75' impervious buffer setback area provided combined impacts do not exceed 20%.

Utilities will lie within dedicated easements, which may be combined, or within rights-of-ways, if public or any combination

The location of buildings, roads, parking areas and amenity features may vary within the resort, based on field and market conditions, provided the development is in general compliance with the master plan for location of uses and densities.

MILL CREEK CONSULTING

JOB NO. Big Creek Land Plan

Rochester & Associates, Inc.

BIG CREEK LAND PLAN

Lake Lanier Islands Resort

Buford, Georgia

REVISIONS

SHEET 1 OF 8

1.3 Site Access

Access to the development is proposed at one location along SR 347 (Holiday Road). The full movement driveway is proposed along SR 347 (Holiday Road) near Whidby Road and approximately 785 feet west of North Waterworks Road. Pedestrian access will be provided at the site driveway.

1.4 Bicycle and Pedestrian Facilities

Sidewalks currently do not exist along the site frontage along SR 347 (Holiday Road). There are no dedicated bike lanes in the area.

1.5 Transit Facilities

There are currently no transit accommodations servicing the area.

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 analyzed to help determine a background traffic growth rate. Based on the recent trends in traffic along the area roadways, as well as the population growth rates of Hall County, a growth rate of 3.0% per year along all roadways was agreed upon during the methodology meeting with ARC staff.

2.2 Traffic Data Collection

Vehicle turning movement counts were performed from 7:00 - 9:00 AM and 4:00 - 6:00 PM at the two signalized intersections within the study network. The data was collected on the 29th of July (when school was not in session). The morning and afternoon peak hours varied between the two intersections and are listed below:

1. SR 347 (Friendship Road) at SR 13 (Buford Highway)
    - 7:00 – 8:00 AM Peak Hour, 4:30-5:30 PM Peak Hour
2. SR 347 (Friendship Road) at McEver Road
    - 7:15 – 8:15 AM Peak Hour, 4:45-5:45 PM Peak Hour

A 24-hour count was performed along SR 347 (Holiday Road) on July 29th and was 5,858 vehicles per day (vpd). The 24-hour volume was compared to a 24-hour count of 2,940 vpd collected by GDOT earlier in the year when school was in session. The summer volumes were higher than the volumes when school was in session. This may be due to the proximity to the lake and attractions at the lake. Therefore, no volume adjustment was made to the summer counts.

All raw count data is included in the Appendix.

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 7.0.

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

As stated earlier, the proposed development will consist of approximately 64 single family homes, 620 recreational homes, and 30,000 square feet of commercial space.

Traffic for these land uses was calculated using equations 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
Big Creek 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 2014)							
64 Single Family Units	*210*	345	345	14	40	45	27
620 Recreational Homes	*260*	980	980	66	33	66	95
20,000 SF Shopping Center	*820*	430	430	13	8	36	39
10,000 SF Quality Restaurant	*931*	450	450	4	4	50	25
Total		**2,204**	**2,204**	**97**	**85**	**197**	**186**

3.2 Trip Distribution

The directional distribution and assignment of new project trips was based on the project land uses, a review of development in the area, combined with engineering judgment and discussions at the Pre-Application meeting. The distribution was 20% to/from the west along Holiday Road and 80% to/from the east along Holiday Road.

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.

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 methodology meeting, and includes the following intersections:

- SR 347 (Friendship Road) at SR 13 (Buford Drive)
- SR 347 (Friendship Road) at McEver Road
- SR 347 (Holiday Road) at proposed site driveway

Each of the above listed intersections was analyzed for the Existing 2008 Condition, the 2014 No-build Condition, and the 2014 Build Condition. The 2014 No-build condition represents the existing traffic volumes grown at 3.0% per year for six years. The 2014 Build condition adds the project trips associated with the Big Creek DRI development to the 2014 No-Build condition. (Note: The proposed site driveway was only analyzed for the 2014 Build conditions.)

3.5 Existing Facilities

Roads in the study network were inventoried to obtain geometric characteristics, posted speed limits, and the GDOT Roadway Functional Classifications. A description follows:

Roadway	Number of Lanes	Posted Speed Limit (MPH)	GDOT Functional Classification
SR 347 (Holiday Road)	2	45	Urban Minor Arterial
McEver Road	4	55	Urban Minor Arterial
New Bethany Road	2	45	Urban Local Street
SR 13 (Atlanta Highway)	2	45	Urban Minor Arterial
SR 347 (Friendship Road)	2/4	45	Urban Minor Arterial

SR 347 (Holiday Road) is a two-way, undivided, east-west oriented roadway that extends from the west, along the site frontage, and to McEver Road to the east. The posted speed limit along the site frontage is 45 MPH. On July 29, 2008, the average daily traffic volume (ADT) east of Whidby Road (along the site frontage) was 5,858 vehicles.

McEver Road is a two-way, divided, north-south oriented roadway that extends from the county line to SR 53 (Dawsonville Highway). The posted speed limit is 55 MPH.

New Bethany Road is a two-way, north-south oriented roadway that extends from South Waterworks Road to SR 347 (Holiday Road).

4.0 TRIP GENERATION

As stated earlier, trips associated with the proposed development were estimated using the ITE *Trip Generation Manual*, Seventh Edition (2003), using equations in where available.

Mixed-use and pass-by reductions were taken according to the *ITE Trip Generation Handbook, 2004*. The total trips generated and analyzed in the report are listed below in **Table 3**.

Table 3 Big Creek DRI Net Trip Generation						
Land Use	Daily Traffic		AM Peak Hour		PM Peak Hour	
	Enter	Exit	Enter	Exit	Enter	Exit
Build-Out (Year 2014)						
Gross Trips	**2,204**	**2,204**	**97**	**85**	**197**	**186**
Internal Capture Reductions	*-176*	*-176*	*-0*	*-0*	*-20*	*-19*
Pass-by Reductions	*-612*	*-612*	*-0*	*-0*	*-21*	*-20*
New Trips	**1,416**	**1,416**	**97**	**85**	**156**	**147**

5.0 TRAFFIC ANALYSIS

5.1 Existing Traffic

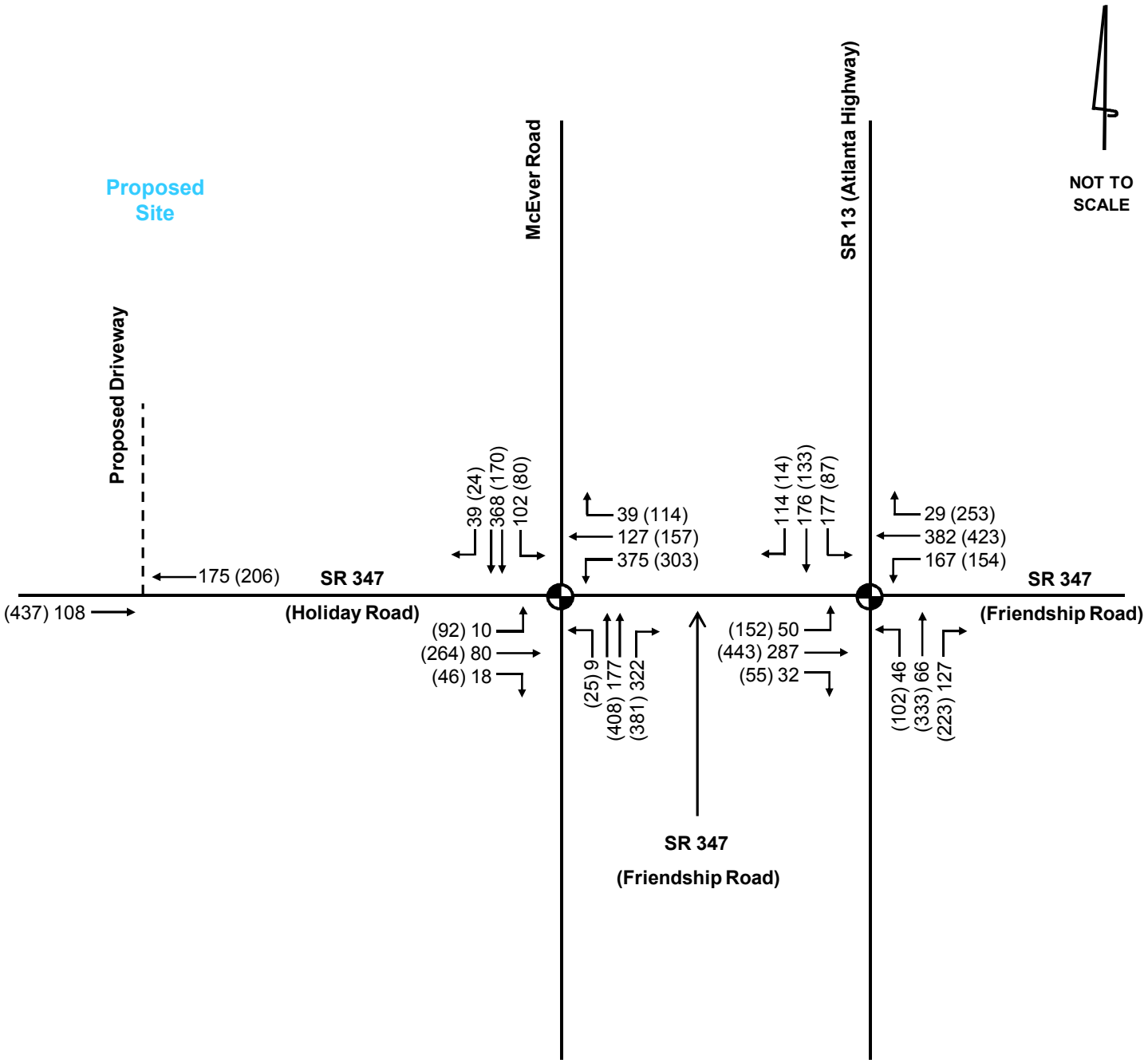
The existing 2008 traffic volumes and laneage are shown in **Figure 4**. These volumes were input in Synchro 7.0 and an Existing Conditions analysis was performed. The results are displayed below in **Table 4**.

Table 4 Big Creek DRI Existing 2008 Intersection Levels of Service (delay in seconds)				
Intersection		Control	AM Peak Hour	PM Peak Hour
1	SR 347 (Friendship Road) at SR 13 (Buford Highway)	Signal	C (26.3)	D (36.7)
2	SR 347 (Friendship Road) at McEver Road	Signal	C (28.2)	C (34.6)

As shown in Table 4, both of the existing intersections in the network currently operate above the acceptable Level of Service standard (LOS D).

5.2 2014 No-Build Traffic

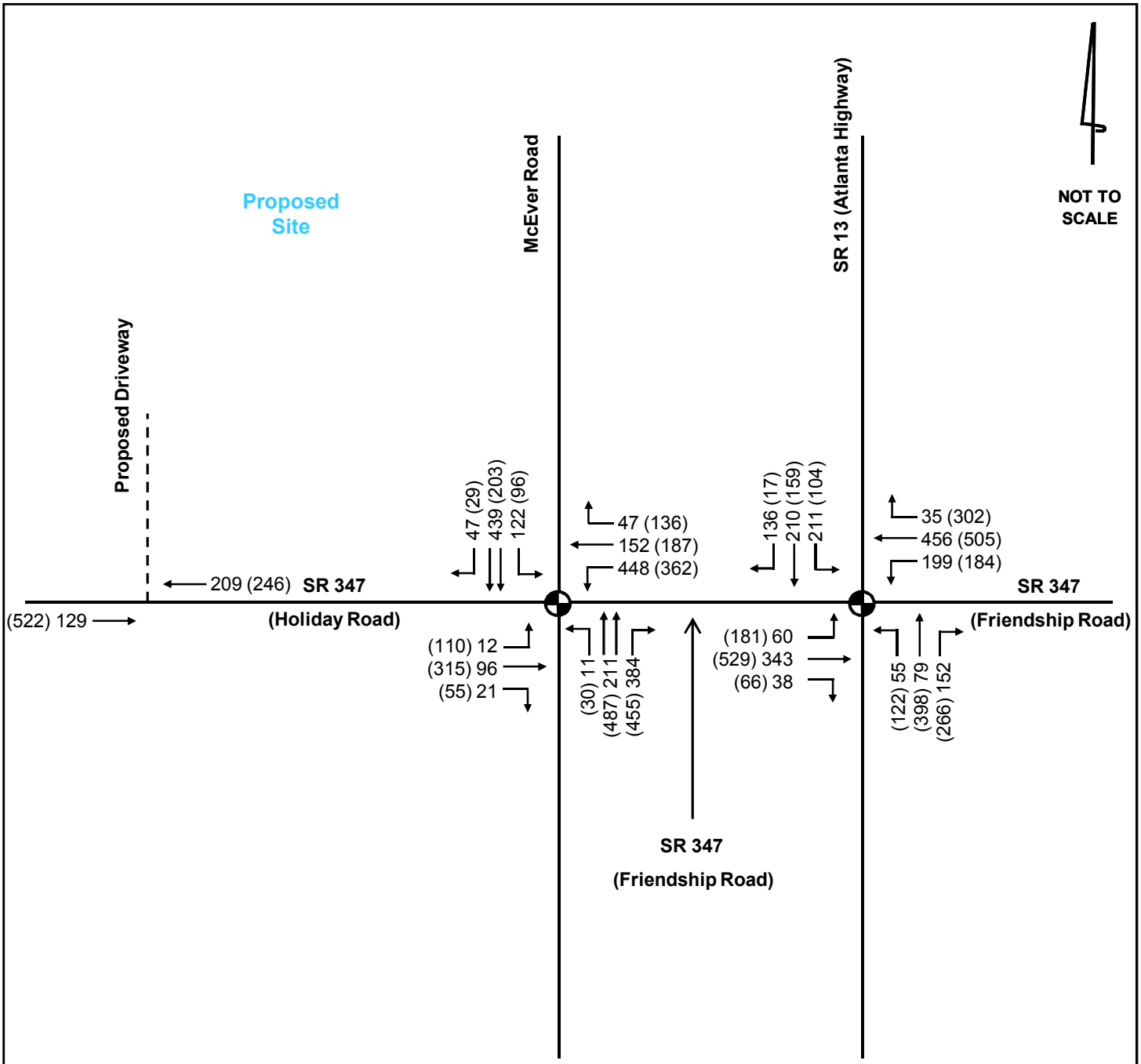
The existing traffic volumes were grown at 3.0% per year for six years along all roadway links within the study network. These volumes were input in Synchro 7.0, and analyses of the projected No-Build conditions were performed. The results are displayed below in **Table 5.** The projected volumes for the year 2014 No-Build condition are illustrated in **Figure 5.**



LEGEND

- Existing Roadway Laneage
- Existing Traffic Signal
- XX AM Peak Hour Traffic Volumes
- (XX) PM Peak Hour Traffic Volumes

Kimley-Horn and Associates, Inc.	**Big Creek DRI Transportation Analysis**	**Existing 2008 Conditions**	**Figure 4**



LEGEND

- Existing Roadway Laneage
- Existing Traffic Signal
- XX AM Peak Hour Traffic Volumes
- (XX) PM Peak Hour Traffic Volumes

Kimley-Horn and Associates, Inc.	**Big Creek DRI Transportation Analysis**	**2014 No-Build Conditions**	**Figure 5**

Table 5 Big Creek DRI No-Build 2014 Intersection Levels of Service (delay in seconds)				
Intersection		**Control**	**AM Peak Hour**	**PM Peak Hour**
1	SR 347 (Friendship Road) at SR 13 (Buford Highway)	Signal	C (28.9)	D (49.4)
2	SR 347 (Friendship Road) at McEver Road	Signal	C (32.6)	D (45.2)

As shown in Table 5, the both of the existing intersections in the network are expected to operate above the acceptable Level of Service standard (LOS D).

5.3 2014 Build Traffic

The traffic associated with the proposed development (Big Creek) was added to the 2014 No-Build volumes. These volumes were input into Synchro 7.0 and analyses of the projected 2014 Build conditions were performed. The results of the study intersection analysis and proposed driveway analysis are displayed below in **Table 6**. The projected volumes, laneage, and recommended intersection control for the year 2014 Build condition are illustrated in **Figure 6.**

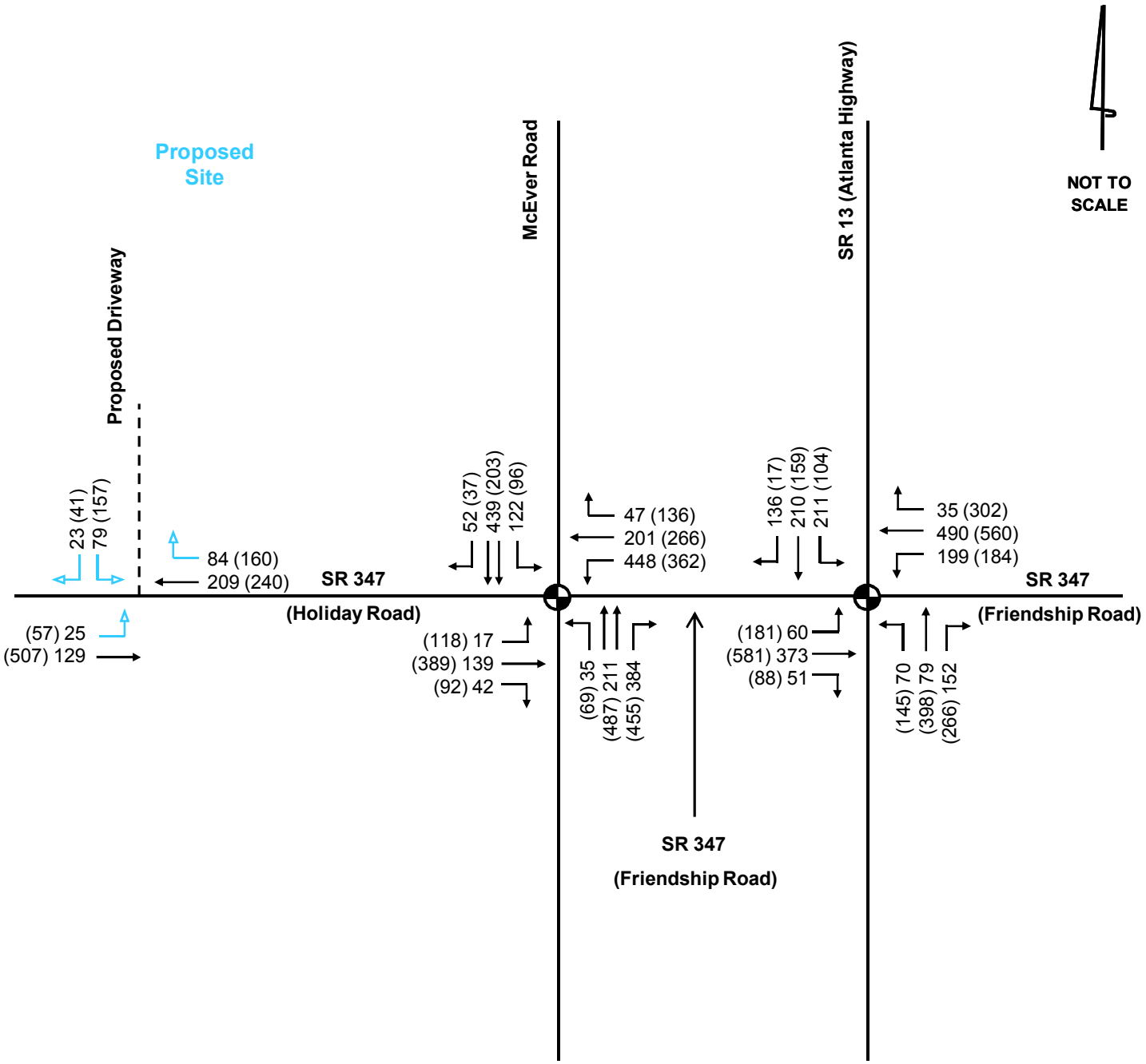
Table 6 Big Creek DRI Build 2014 Intersection Levels of Service (delay in seconds)				
Intersection		**Control**	**AM Peak Hour**	**PM Peak Hour**
1	SR 347 (Friendship Road) at SR 13 (Buford Highway)	Signal	C (29.5)	D (54.4)
2	SR 347 (Friendship Road) at McEver Road	Signal	C (32.9)	D (50.1)
3	SR 347 (Holiday Road) at Proposed Site Driveway	STOP-Control	SB - B (12.1)	SB - D (34.5)

As shown in Table 6, the both of the existing intersections (#1 and #2) are expected to operate above the acceptable Level of Service standard (LOS D). The proposed project driveway is expected to operate at an acceptable level of service.

The following recommendations are made at the proposed project driveway:

Proposed Full-movement (unsignalized) driveway along SR 374 (Holiday Road):

- Install a westbound right-turn deceleration lane along SR 374 (Holiday Road).
- Install an eastbound left-turn lane along SR 374 (Holiday Road).
- Install a separate left-turn lane and right-turn lane exiting the site along the proposed driveway.



Kimley-Horn and Associates, Inc.	Big Creek DRI Transportation Analysis	2014 Build Conditions	Figure 6

6.0 IDENTIFICATION OF PROGRAMMED PROJECTS

The *TIP, STIP, RTP, and GDOT's Construction Work Program* were searched for currently programmed transportation projects within the vicinity of the proposed development. According to GDOT's Construction Work Program and the STIP two projects are programmed for the area. Information on the projects is included in the Appendix.

Project #	Build Out Year	Project Description
GDOT #170735	2009	Widening of SR 347 (Friendship Road) from 2 to 4 lanes from I-985 to CR 1293 (McEver Road).

8.0 INGRESS/EGRESS ANALYSIS

Vehicular access to the development is proposed at one location along SR 347 (Friendship Road). The full movement driveway is proposed along SR 347 (Friendship Road) near Whidby Road and approximately 785 feet west of North Waterworks Road. Pedestrian access will be provided at the site driveway.

9.0 INTERNAL CIRCULATION ANALYSIS

The proposed development will generate trips between the residential and retail uses of the development. Using the *ITE Trip Generation Handbook, 2004* as a reference, 7.99% of the gross daily trips are expected to be internal and 8.36% of the PM peak hour trips are expected to be internal.

10.0 COMPLIANCE WITH COMPREHENSIVE PLAN ANALYSIS

The Atlanta Region Unified Growth Policy Map identifies the area as Suburban Neighborhoods.

11.0 NON-EXPEDITED CRITERIA

11.1 Offsite Trip Reduction and Trip Reduction Techniques

The proposed development will generate trips between the residential and retail uses of the development. Using the *ITE Trip Generation Handbook, 2004* as a reference, 7.99% of the gross daily trips are expected to be internal and 8.36% of the PM peak hour trips are expected to be internal.

Pass-by reductions were taken according to the *ITE Trip Generation Handbook, 2004*.

11.2 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 (2013).

12.0 ARC'S AIR QUALITY BENCHMARK

The mixed-use development is proposed to contain both residential and retail uses. The residential use is the dominant use, totaling an expected 871,500 SF. The residential density is approximately 7.8 units per acre. One of ARC's vehicle miles traveled (VMT) credits applies to residential projects with high densities. This project is expected to have a 3% reduction in VMT based on residential density. The 30,000 square feet of retail space is approximately 3.5% of the total development. One of ARC's VMT credits applies to primarily residential developments that include retail component. This project is expected to have a 1% reduction in VMT based on the retail component size. The development proposes a network of sidewalks within the site, which meets the ARC bicycle and pedestrian criteria for a 3% reduction. The total reduction for the proposed development is 16%. These reductions are displayed below in **Table 7**.

Table 7
ARC VMT Reductions

Mixed-Use where Residential is the dominant use	
Project where residential is the dominant use and the density is greater than 10 dwelling units/acre	-3%
Project contains a mix of uses; where residential is the dominant use and the retail gross floor area is greater than 10% of total	-1%
Pedestrian networks (sidewalks) connecting to land uses within the site	-4%
Total Reductions	**8%**

Appendix

Site Photos

Kimley-Horn and Associates, Inc.
3169 Holcomb Bridge Road
Norcross, GA 30071

Big Creek DRI

Photograph Sheet

KHA Job No.: 019783000
KHA Rep.: ARK
Date: July 9, 2008
Page: 1 of 2

Photo No. 1

Remarks: Southbound along McEver Road towards SR 137 (Friendship Road)

Photo No. 2

Remarks: Eastbound along SR 137 (Friendship Road) towards McEver Road

Photo No. 3

Remarks: Northbound along McEver Road towards SR 137 (Friendship Road)

Photo No. 4

Remarks: Westbound along SR 137 (Friendship Road) towards McEver Road

Kimley-Horn and Associates, Inc.
3169 Holcomb Bridge Road
Norcross, GA 30071

Big Creek DRI

Photograph Sheet

KHA Job No.: 019783000
KHA Rep.: ARK
Date: July 9, 2008
Page: 2 of 2

Photo No. 5	Photo No. 6
	
Remarks: Eastbound along SR 137 (Holiday Road) towards Project Site	Remarks:

Photo No. 7	Photo No. 8
Remarks:	Remarks:

Future Roadway/Intersection Projects

GEORGIA DEPARTMENT OF TRANSPORTATION
CONSTRUCTION WORK PROGRAM
LISTING OF PROJECTS BY COUNTY

162430- SR 347/FRIENDSHIP & THOMPSON MILL RD FM I-985 TO SR 211

Hall | Contractor:null | Let: | Reference: SR: 034700 | Field District:1 | Cong Dist:9
Length: | Primary Work Type: | Widening
Y | T.I.P.: GH-007 | Mgr:Haithcock, Mike
Concept:WIDEN & RECONST

Phase Accounting #	Phase	Fund	Status	Prog_Date
PESTP-2984-00(001)	PE	Q25	AUTHORIZED	1994
RWSTP-2984-00(001)	ROW	LY10	AUTHORIZED	2007
RWSTP-2984-00(001)	ROW	Q20	AUTHORIZED	2000
RWSTP-2984-00(001)	ROW	L200	PRECST	2008
RWSTP-2984-00(001)	ROW	HY10	AUTHORIZED	2007
RWSTP-2984-00(001)	ROW	Q20	AUTHORIZED	2007
STP00-2984-00(001)	CST	L200	PRECST	2010
STP00-2984-00(001)	CST	LY10S	PRECST	2010

LGPA: REQ HALL & GWINNETT DO UTILITIES 4-14-98|RESCISSION LETTER SENT TO GWINNETT & HALL 11-4-05.

* 170735- SR 347/FRIENDSHIP RD FM I-985 TO CR 1293/MCEVER RD - PHASE I

Hall | Contractor:null | Let: | Reference: SR: 034700 | Field District:1 | Cong Dist:9
Length: | Primary Work Type: | Widening
Y | T.I.P.: GH-014 | Mgr:Kantner, Neil
Concept:ADD 4R(MED 4)

Phase Accounting #	Phase	Fund	Status	Prog_Date
PESTP-2688-00(004)	PE	Q24	AUTHORIZED	1998
RWSTP-2688-00(004)	ROW	L200	PRECST	2008
STP00-2688-00(004)	CST	L200	PRECST	2008

LGPA: HALL SGN 7-10-89 UTIL| CITIES SGN 6-20-89 UTILITIES

A000465 GAINESVILLE REMEDIATION

Hall | Contractor:null | Let: | Reference: SR: 000000 | Field District:1 | Cong Dist:9
Length: | Primary Work Type: | Miscellaneous Improvements
Y | T.I.P.: null | Mgr:Bowen, Angie
Concept:null

Phase Accounting #	Phase	Fund	Status	Prog_Date
USTA0-GAIN-ES(000)	CST	60431	PRECST	2008

LGPA: NOT APPLICABLE

M003076 SR 136 @ CHESTATEE RIVER & @ ETOWAH RIVER - BRIDGE REHAB

Hall | Contractor:null | Let: | Reference: SR: 013600 | Field District:1 | Cong Dist:9
Length: | Primary Work Type: | Bridges
Y | T.I.P.: null | Mgr:Clements, Mike
Concept:BR REHAB

Phase Accounting #	Phase	Fund	Status	Prog_Date
PESTP-M003-00(076)	PE	L240	AUTHORIZED	2006
CSSTP-M003-00(076)	CST	L240	PRECST	LUMP

LGPA: NOT APPLICABLE

M003726 QR HALL CO SR 53 @ SR 369 EXTEND LEFT TURN LANE

Hall | Contractor:M&E | Let:06/29/1905 | Reference: SR: 005300 | Field District:1
Length: | Primary Work Type: | Turn Lanes
Y | T.I.P.: null | Mgr:Crim, David

Phase Accounting #	Phase	Fund	Status	Prog_Date
OSAP0-M003-00(726)	CST	0467	AUTHORIZED	2008

Trip Generation and Volume Worksheets

Friendship Rd, btwn N Waterworks and Whidby

County FIPS	139
TC Number	401
RCLink	1391034700
Beginning Milepoint	0
Ending Milepoint	2.47
Midpoint	1.24
2007 Truck Percentage	
2007 AADT	2940
2007 Count Type	Actual
2007 Direction	NonDir
2006 Truck Percentage	
2006 AADT	3990
2006 Count Type	Estimate
2006 Direction	NonDir
2005 AADT	4250
2005 Count Type	Actual
2005 Direction	NonDir
2004 AADT	2143 / 2109
2004 Count Type	Actual / Actual
2004 Direction	North / South
2003 AADT	3363
2003 Type Count	Actual
2003 Direction	NonDir
2002 AADT	3380
2002 Count Type	Actual
2002 Direction	NonDir

Friendship Road, between McEver and SR 13

County FIPS	139
TC Number	403
RCLink	1391034700
Beginning Milepoint	2.49
Ending Milepoint	3.03
Midpoint	2.76
2007 Truck Percentage	
2007 AADT	12370
2007 Count Type	Estimate
2007 Direction	NonDir
2006 Truck Percentage	
2006 AADT	13670
2006 Count Type	Actual
2006 Direction	NonDir
2005 AADT	14470
2005 Count Type	Actual
2005 Direction	NonDir
2004 AADT	8605
2004 Count Type	Actual
2004 Direction	NonDir
2003 AADT	12549
2003 Type Count	Actual
2003 Direction	NonDir
2002 AADT	9278
2002 Count Type	Estimate
2002 Direction	NonDir

McEver Road, south of Friendship Road

County FIPS	139
TC Number	465
RCLink	1392129300
Beginning Milepoint	0
Ending Milepoint	1.04
Midpoint	0.52
2007 Truck Percentage	
2007 AADT	6320 / 6320 / Sum: 12640
2007 Count Type	Actual / Actual
2007 Direction	North / South
2006 Truck Percentage	
2006 AADT	6710 / 6410 / Sum: 13120
2006 Count Type	Actual / Actual
2006 Direction	North / South
2005 AADT	6090 / 6380
2005 Count Type	Actual / Actual
2005 Direction	North / South
2004 AADT	12175
2004 Count Type	Estimate
2004 Direction	NonDir
2003 AADT	6190 / 5775
2003 Type Count	Actual / Actual
2003 Direction	North / South
2002 AADT	4233 / 4272
2002 Count Type	Estimate / Estimate
2002 Direction	North / South

Source:	GDOT
Location:	Friendship Rd
West of N Waterworks	
Route Type:	State
Station:	GDOT # 401

Count Year	Volume	Growth Rate
2002	3,380	
2003	3,363	-0.50%
2004	4,252	26.43%
2005	4,250	-0.05%
2006	3,990	-6.12%
2007	2,940	-26.32%

Avg. 1 Year Rates 2002-2007	-2.75%

Source:	GDOT
Location:	Friendship Rd
Between McEver and SR 13	
Route Type:	State
Station:	GDOT # 403

Count Year	Volume	Growth Rate
2002	9,278	
2003	12,549	35.26%
2004	8,605	-31.43%
2005	14,470	68.16%
2006	13,670	-5.53%
2007	12,370	-9.51%

Avg. 1 Year Rates 2002-2007	5.92%

Source:	GDOT
Location:	McEver
South of Friendship Rd	
Route Type	State
Station:	GDOT # 465

Count Year	Volume	Growth Rate
2002	8,505	
2003	11,965	40.68%
2004	12,175	1.76%
2005	12,470	2.42%
2006	13,120	5.21%
2007	12,640	-3.66%

Avg. 1 Year Rates 2002-2007	8.25%

	Annual Growth
Hall County Population Annual Growth (1990-2000):	4.29%
Hall County Population Annual Growth Est. (2000-2006):	4.46%

CHOSEN GROWTH RATE:	3.0%

TABLE 1
Big Creek
TRIP GENERATION

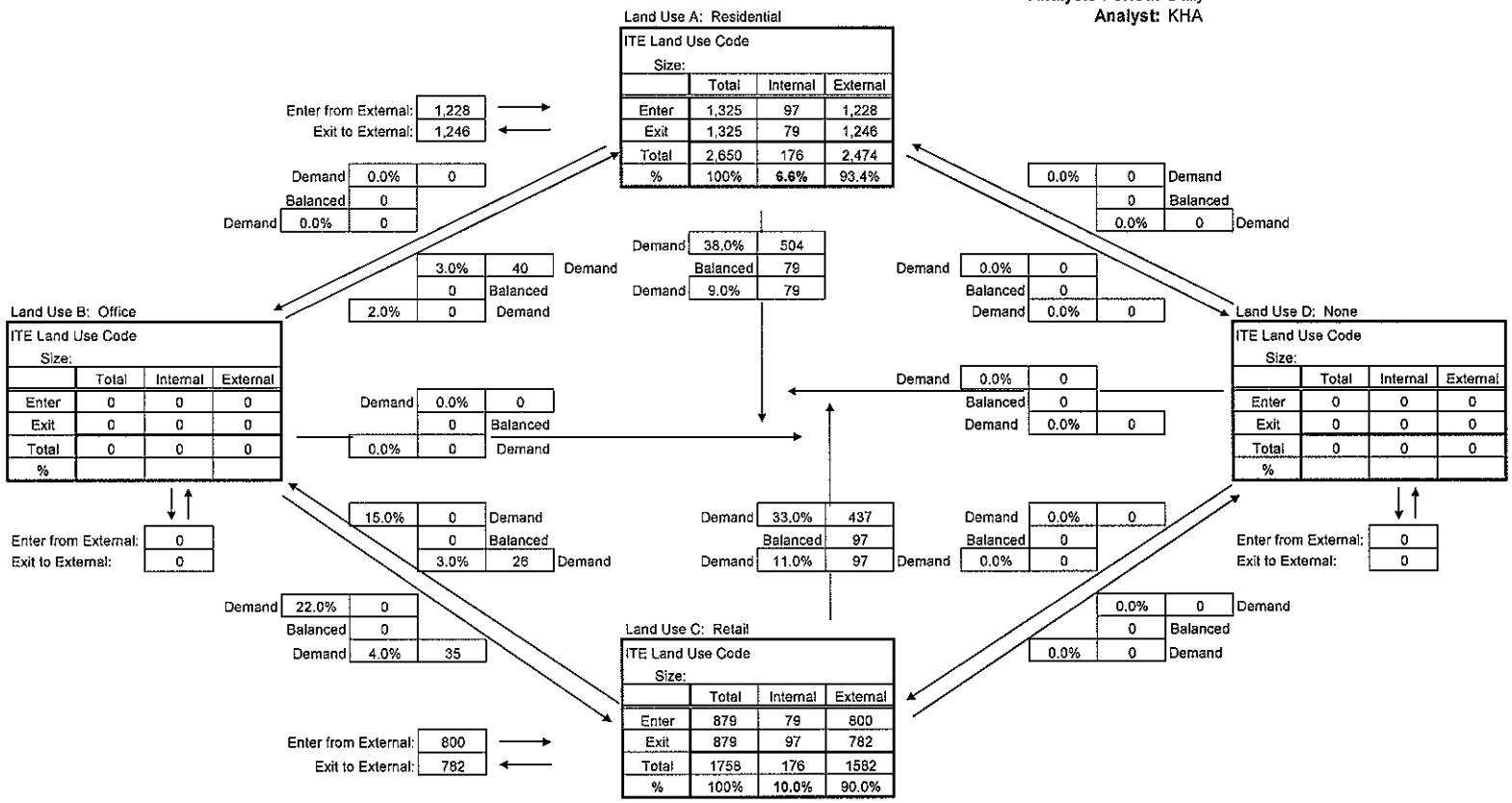
Land Use		Intensity	Daily Trips	AM Peak Hour			PM Peak Hour		
				Total	In	Out	Total	In	Out
Proposed Site Traffic									
210	Single-Family Detached	64 d.u.	690	54	14	40	72	45	27
260	Recreational Homes	620 d.u.	1,959	99	66	33	161	66	95
820	Shopping Center	20,000 s.f.	859	21	13	8	75	36	39
931	Quality Restaurant	10,000 s.f.	900	8	4	4	75	50	25
Gross Trips			**4,408**	**182**	**97**	**85**	**383**	**197**	**186**
Residential Trips			2,649	153	80	73	233	111	122
Mixed-Use Reductions			*-176*				*-16*	*-8*	*-8*
Adjusted Residential Trips			2,473	153	80	73	217	103	114
Retail Trips			859	21	13	8	75	36	39
Mixed-Use Reductions			*-86*				*-8*	*-3*	*-5*
Pass By Reductions (Limited by GRTA 10% Rule)			*-598*	*0*	*0*	*0*	*-21*	*-9*	*-12*
Adjusted Retail Trips			175	21	13	8	46	24	22
Restaurant Trips			900	8	4	4	75	50	25
Mixed-Use Reductions			*-90*				*-8*	*-9*	*-6*
Pass By Reductions (Limited by GRTA 10% Rule)			*-626*	*0*	*0*	*0*	*-21*	*-12*	*-8*
Adjusted Restaurant Trips			184	8	4	4	46	29	11
Mixed-Use Reductions - TOTAL			*-352*	*0*	*0*	*0*	*-32*	*-20*	*-19*
Pass-By Reductions - TOTAL			*-1,224*	*0*	*0*	*0*	*-42*	*-21*	*-20*
New Trips			**2,832**	**182**	**97**	**85**	**309**	**156**	**147**
Driveway Volumes			**4,056**	**182**	**97**	**85**	**351**	**177**	**167**

k:\project\atl_tpto\019783000 big creek dri, buford\big creek dri_city of buford\phase 2\analysis\[bigcreek analysis.xls]trip generation

ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET

(Source: Chapter 7, ITE *Trip Generation Handbook*, June 2004)

Project Number: Project Number
Project Name: Big Creek
Scenario: Build-Out
Analysis Period: Daily
Analyst: KHA



NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT

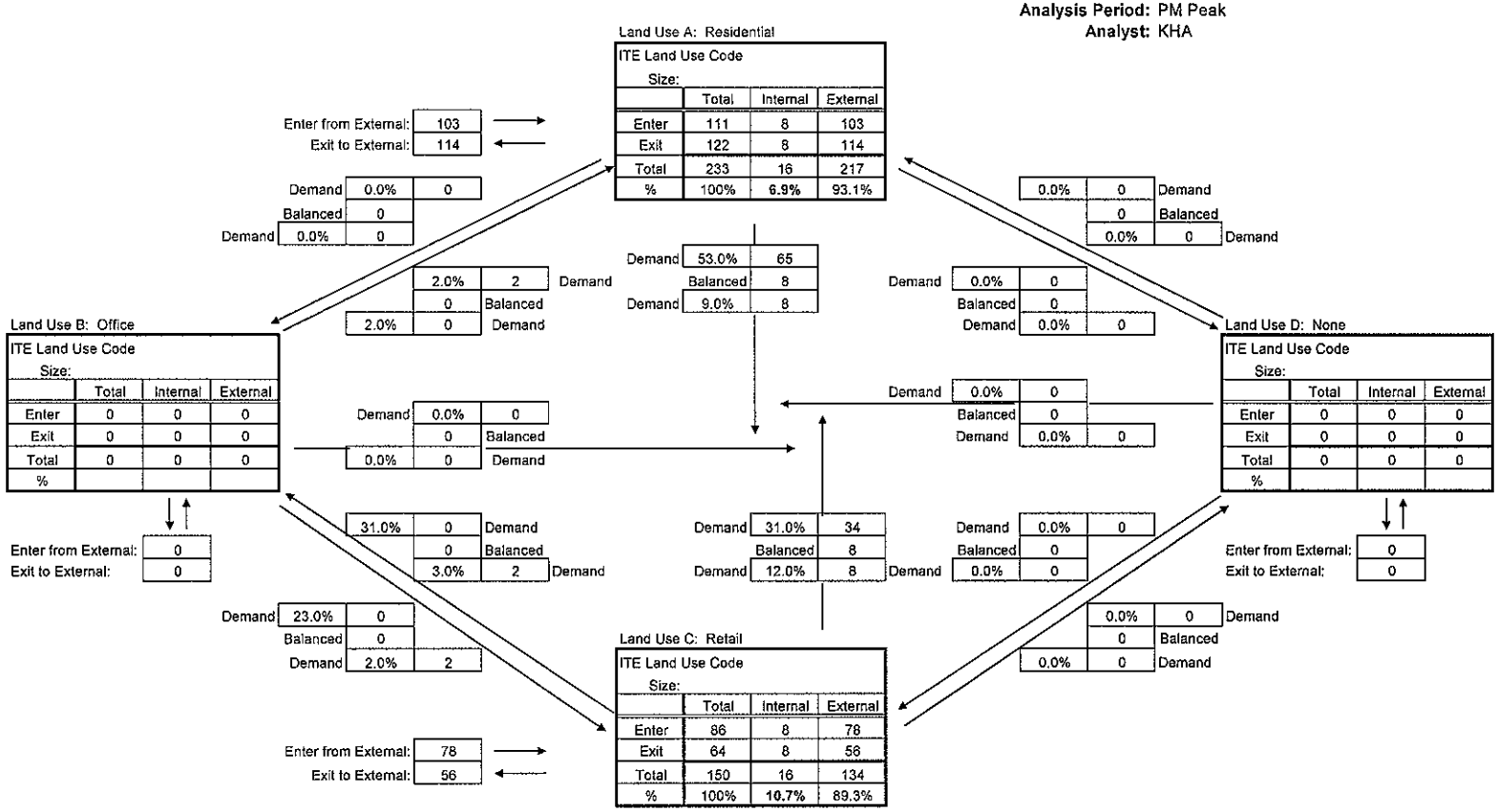
Category	Land Use A	Land Use B	Land Use C	Land Use D	Total
Enter	1,228	0	782	0	2,010
Exit	1,246	0	800	0	2,046
Total	2,474	0	1,582	0	**4,056**
Single Use Trip Gen Estimate	2,650	0	1,758	0	**4,408**

Overall Internal Capture = **7.99%**

ITE MULTI-USE PROJECT INTERNAL CAPTURE WORKSHEET

(Source: Chapter 7, ITE *Trip Generation Handbook*, June 2004)

Project Number: Project Number
Project Name: Big Creek
Scenario: Build-Out
Analysis Period: PM Peak
Analyst: KHA



NET EXTERNAL TRIPS FOR MULTI-USE DEVELOPMENT

Category	Land Use A	B	C	D	Total
Enter	103	0	56	0	159
Exit	114	0	78	0	192
Total	217	0	134	0	351
Single Use Trip Gen Estimate	233	0	150	0	383

Overall Internal Capture = 8.36%

INTERSECTION VOLUME DEVELOPMENT

SR 347 Friendship Road @ SR 13 (Buford Highway)
AM PEAK HOUR

Description	SR 13 (Buford Highway) Northbound			SR 13 (Buford Highway) Southbound			Friendship Road Eastbound			Friendship Road Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Observed 2008 Volumes	46	66	127	177	176	114	50	287	32	167	382	29
Peak Hour Factor		0.84			0.88			0.87			0.88	
Annual Growth Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Growth Factor	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194
2014 Background Traffic	55	79	152	211	210	136	60	343	38	199	456	35
Project Trips												
Trip Distribution IN	15%										35%	
Trip Distribution OUT								35%	15%			
Residential Trips	12	0	0	0	0	0	0	26	11	0	28	0
Trip Distribution IN	15%										35%	
Trip Distribution OUT								35%	15%			
Non-Residential Trips	3	0	0	0	0	0	0	4	2	0	6	0
Total Project Trips	15	0	0	0	0	0	0	30	13	0	34	0
2014 Buildout Total	70	79	152	211	210	136	60	373	51	199	490	35

PM PEAK HOUR

Description	SR 13 (Buford Highway) Northbound			SR 13 (Buford Highway) Southbound			Friendship Road Eastbound			Friendship Road Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Observed 2008 Volumes	102	333	223	87	133	14	152	443	55	154	423	253
Peak Hour Factor		0.80			0.72			0.92			0.85	
Annual Growth Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Growth Factor	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194
2014 Background Traffic	122	398	266	104	159	17	181	529	66	184	505	302
Project Trips												
Trip Distribution IN	15%										35%	
Trip Distribution OUT								35%	15%			
Residential Trips	15	0	0	0	0	0	0	40	17	0	36	0
Trip Distribution IN	15%										35%	
Trip Distribution OUT								35%	15%			
Non-Residential Trips	8	0	0	0	0	0	0	12	5	0	19	0
Total Project Trips	23	0	0	0	0	0	0	52	22	0	55	0
2014 Buildout Total	145	398	266	104	159	17	181	581	88	184	560	302

INTERSECTION VOLUME DEVELOPMENT

SR 347 / Friendship Road @ McEver Road
AM PEAK HOUR

Description	McEver Road Northbound			McEver Road Southbound			Holiday Road Eastbound			Friendship Road Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Observed 2008 Volumes	9	177	322	102	368	39	10	80	18	375	127	39
Peak Hour Factor		0.81			0.92			0.79			0.91	
Annual Growth Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Growth Factor	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194
2014 Background Traffic	11	211	384	122	439	47	12	96	21	448	152	47
Project Trips												
Trip Distribution IN	25%					5%					50%	
Trip Distribution OUT							5%	50%	25%			
Residential Trips	20	0	0	0	0	4	4	37	18	0	40	0
Trip Distribution IN	25%					5%					50%	
Trip Distribution OUT							5%	50%	25%			
Non-Residential Trips	4	0	0	0	0	1	1	6	3	0	9	0
Total Project Trips	24	0	0	0	0	5	5	43	21	0	49	0
2014 Buildout Total	35	211	384	122	439	52	17	139	42	448	201	47

PM PEAK HOUR

Description	McEver Road Northbound			McEver Road Southbound			Holiday Road Eastbound			Friendship Road Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Observed 2008 Volumes	25	408	381	80	170	24	92	264	46	303	157	114
Peak Hour Factor		0.90			0.91			0.71			0.94	
Annual Growth Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Growth Factor	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194
2014 Background Traffic	30	487	455	96	203	29	110	315	55	362	187	136
Project Trips												
Trip Distribution IN	25%					5%					50%	
Trip Distribution OUT							5%	50%	25%			
Residential Trips	26	0	0	0	0	5	6	57	29	0	52	0
Trip Distribution IN	25%					5%					50%	
Trip Distribution OUT							5%	50%	25%			
Non-Residential Trips	13	0	0	0	0	3	2	17	8	0	27	0
Total Project Trips	39	0	0	0	0	8	8	74	37	0	79	0
2014 Buildout Total	69	487	455	96	203	37	118	389	92	362	266	136

INTERSECTION VOLUME DEVELOPMENT

SR 347 / Holiday Road @ McEver Road
AM PEAK HOUR

Description	Northbound			Proposed Driveway Southbound			Holiday Road Eastbound			Holiday Road Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Observed 2008 Volumes								108			175	
Peak Hour Factor					0.83			0.87			0.87	
Annual Growth Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Growth Factor	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194
2014 Background Traffic	0	0	0	12	0	6	6	129	0	0	209	6
Project Trips												
Trip Distribution IN							20%					80%
Trip Distribution OUT				80%		20%						
Residential Trips	0	0	0	58	0	15	16	0	0	0	0	64
Trip Distribution IN							20%					80%
Trip Distribution OUT				80%		20%						
Non-Residential Trips	0	0	0	9	0	2	3	0	0	0	0	14
Pass-By Trips	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Trips	0	0	0	67	0	17	19	0	0	0	0	78
2014 Buildout Total	0	0	0	79	0	23	25	129	0	0	209	84

PM PEAK HOUR

Description	Northbound			Proposed Driveway Southbound			Holiday Road Eastbound			Holiday Road Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Observed 2008 Volumes								437			206	
Peak Hour Factor					0.87			0.92			0.87	
Annual Growth Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Growth Factor	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194	1.194
2014 Background Traffic	0	0	0	25	0	5	10	522	0	0	246	30
Project Trips												
Trip Distribution IN							20%					80%
Trip Distribution OUT				80%		20%						
Residential Trips	0	0	0	91	0	23	21	0	0	0	0	82
Trip Distribution IN							20%					80%
Trip Distribution OUT				80%		20%						
Non-Residential Trips	0	0	0	26	0	7	11	0	0	0	0	42
Pass-By Trips	0	0	0	15	0	6	15	-15	0	0	-6	6
Total Project Trips	0	0	0	132	0	36	47	-15	0	0	-6	130
2014 Buildout Total	0	0	0	157	0	41	57	507	0	0	240	160

Traffic Counts

Greater Traffic Company

File Name : kh072901
Site Code : 00000001
Start Date : 7/29/2008
Page No : 1

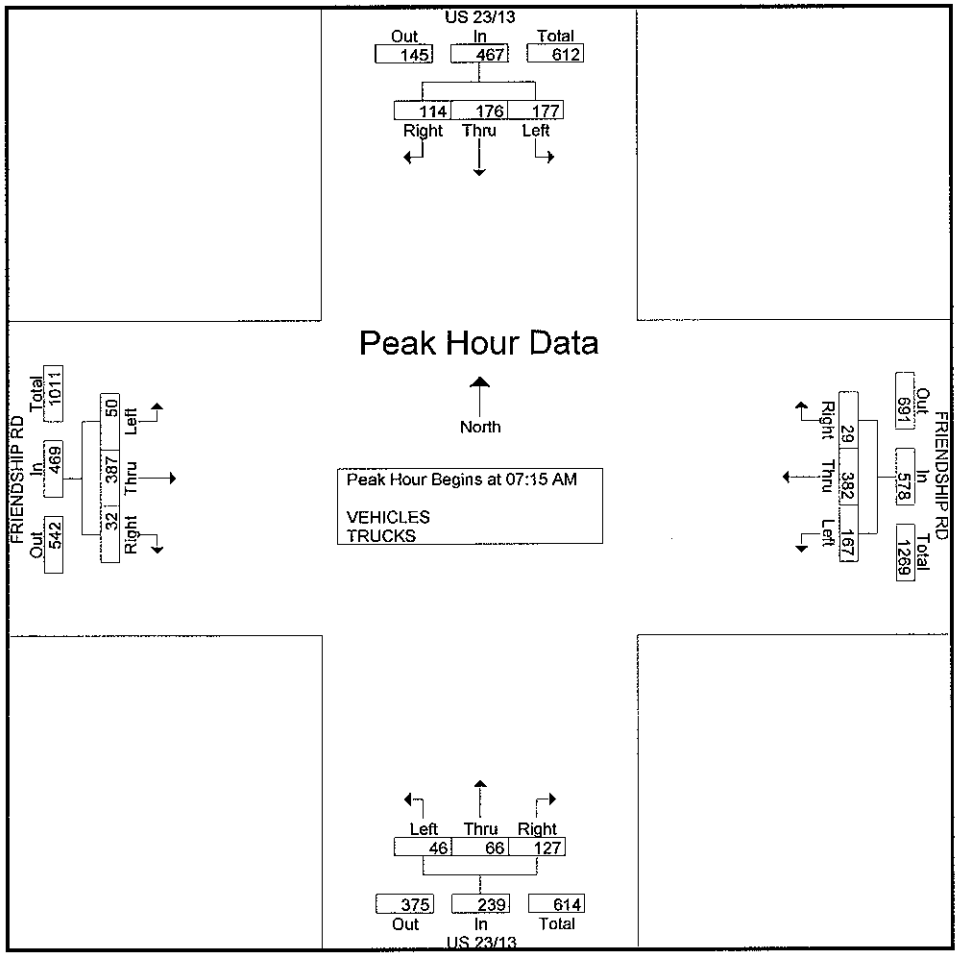
Groups Printed- VEHICLES - TRUCKS

	US 23/13 Southbound				FRIENDSHIP RD Westbound				US 23/13 Northbound				FRIENDSHIP RD Eastbound				
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	24	29	37	90	25	95	6	126	7	18	39	64	7	81	13	101	381
07:15 AM	52	43	37	132	29	91	5	125	8	18	29	55	13	87	4	104	416
07:30 AM	39	45	24	108	33	97	10	140	11	11	22	44	13	91	9	113	405
07:45 AM	49	41	27	117	60	85	3	148	10	22	39	71	16	95	6	117	453
Total	164	158	125	447	147	368	24	539	36	69	129	234	49	354	32	435	1655
08:00 AM	37	47	26	110	45	109	11	165	17	15	37	69	8	114	13	135	479
08:15 AM	33	38	19	90	37	73	5	115	9	17	30	56	7	80	19	106	367
08:30 AM	39	34	12	85	41	102	10	153	14	26	34	74	6	86	7	99	411
08:45 AM	45	42	22	109	49	77	12	138	15	23	33	71	10	81	15	106	424
Total	154	161	79	394	172	361	38	571	55	81	134	270	31	361	54	446	1681
04:00 PM	11	32	6	49	25	66	21	112	11	46	33	90	22	88	11	121	372
04:15 PM	16	34	9	59	30	71	23	124	13	52	40	105	23	99	14	136	424
04:30 PM	18	22	12	52	33	100	37	170	19	59	34	112	40	119	16	175	509
04:45 PM	24	37	1	62	33	99	56	188	24	75	49	148	39	103	12	154	552
Total	69	125	28	222	121	336	137	594	67	232	156	455	124	409	53	586	1857
05:00 PM	20	28	1	49	45	126	73	244	20	77	40	137	37	126	13	176	606
05:15 PM	31	42	8	81	40	89	78	207	30	78	58	166	48	111	16	175	629
05:30 PM	12	26	4	42	36	109	46	191	28	103	76	207	28	103	14	145	585
05:45 PM	6	25	0	31	39	95	36	170	14	57	30	101	50	107	19	176	478
Total	69	121	13	203	160	419	233	812	92	315	204	611	163	447	62	672	2298
Grand Total	456	565	245	1266	600	1484	432	2516	250	697	623	1570	367	1571	201	2139	7491
Apprch %	36	44.6	19.4		23.8	59	17.2		15.9	44.4	39.7		17.2	73.4	9.4		
Total %	6.1	7.5	3.3	16.9	8	19.8	5.8	33.6	3.3	9.3	8.3	21	4.9	21	2.7	28.6	
VEHICLES	454	557	242	1253	589	1475	425	2489	249	693	618	1560	364	1567	195	2126	7428
% VEHICLES	99.6	98.6	98.8	99	98.2	99.4	98.4	98.9	99.6	99.4	99.2	99.4	99.2	99.7	97	99.4	99.2
TRUCKS	2	8	3	13	11	9	7	27	1	4	5	10	3	4	6	13	63
% TRUCKS	0.4	1.4	1.2	1	1.8	0.6	1.6	1.1	0.4	0.6	0.8	0.6	0.8	0.3	3	0.6	0.8

Greater Traffic Company

File Name : kh072901
Site Code : 00000001
Start Date : 7/29/2008
Page No : 3

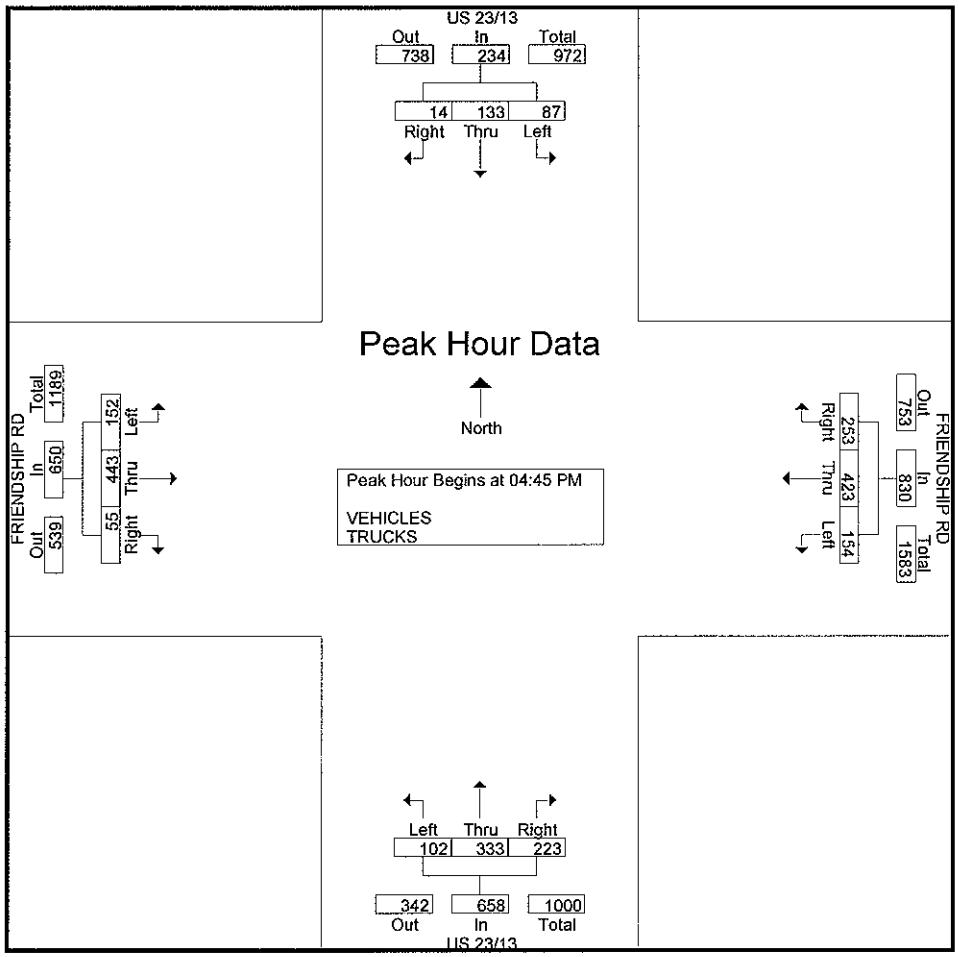
	US 23/13 Southbound				FRIENDSHIP RD Westbound				US 23/13 Northbound				FRIENDSHIP RD Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	**52**		**37**	**132**													
07:30 AM	39	45	24	108	33	97	10	140	11	11	22	44	13	91	9	113	405
07:45 AM	49	41	27	117	**60**	85	3	148	10	**22**	**39**	**71**	**16**	95	6	117	453
08:00 AM	37	**47**	26	110	45	**109**	**11**	**165**	17	15	37	69	8	**114**	**13**	**135**	**479**
Total Volume	177	176	114	467	167	382	29	578	46	66	127	239	50	387	32	469	1753
% App. Total	37.9	37.7	24.4		28.9	66.1	5		19.2	27.6	53.1		10.7	82.5	6.8		
PHF	.851	.936	.770	.884	.696	.876	.659	.876	.676	.750	.814	.842	.781	.849	.615	.869	.915



Greater Traffic Company

File Name : kh072901
Site Code : 00000001
Start Date : 7/29/2008
Page No : 4

	US 23/13 Southbound				FRIENDSHIP RD Westbound				US 23/13 Northbound				FRIENDSHIP RD Eastbound				
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 04:45 PM																	
04:45 PM	24	37	1	62	33	99	56	188	24	75	49	148	39	103	12	154	552
05:00 PM	20	28	1	49	**45**	**126**		**244**						**126**		**176**	
05:15 PM	**31**	**42**	**8**	**81**	40	89	**78**	207	**30**	78	58	166	**48**	**111**	**16**	175	**629**
05:30 PM	12	26	4	42	36	109	46	191	28	**103**	**76**	**207**	28	103	14	145	585
Total Volume	87	133	14	234	154	423	253	830	102	333	223	658	152	443	55	650	2372
% App. Total	37.2	56.8	6		18.6	51	30.5		15.5	50.6	33.9		23.4	68.2	8.5		
PHF	.702	.792	.438	.722	.856	.839	.811	.850	.850	.808	.734	.795	.792	.879	.859	.923	.943



Greater Traffic Company

File Name : KH072902
Site Code : 00000002
Start Date : 7/29/2008
Page No : 1

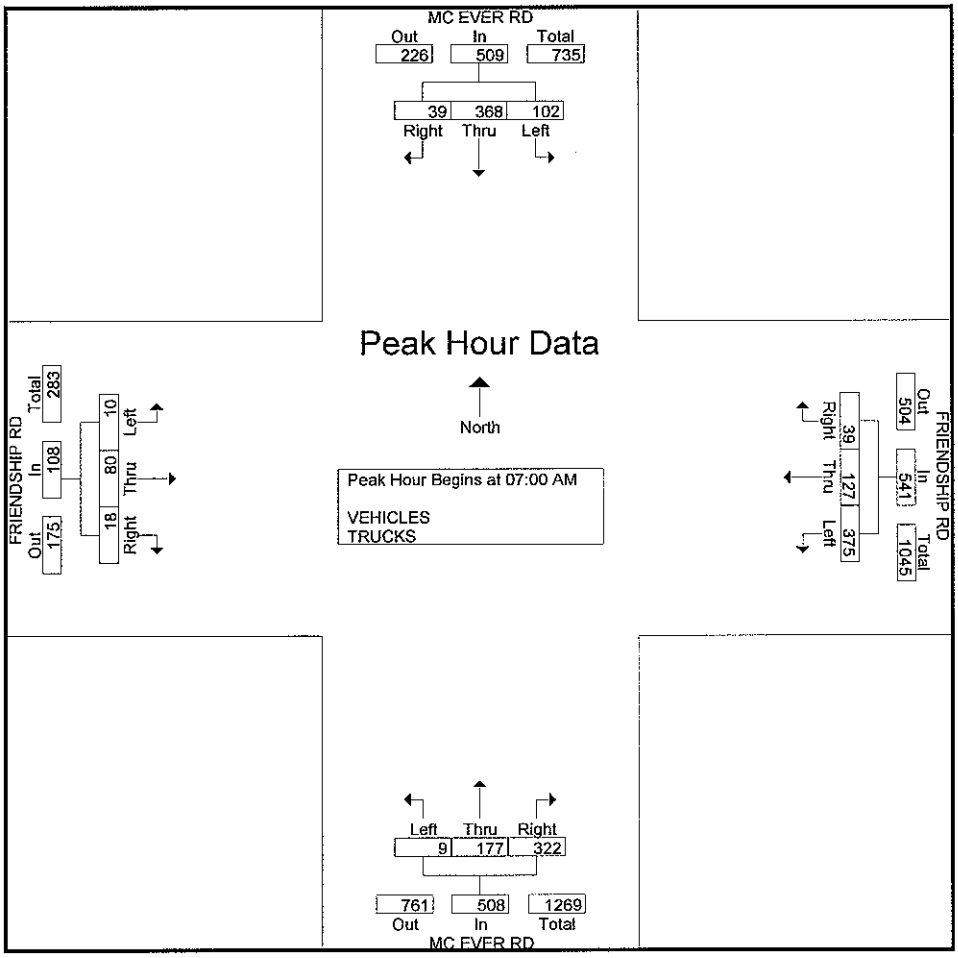
Groups Printed- VEHICLES - TRUCKS

	MC EVER RD Southbound				FRIENDSHIP RD Westbound				MC EVER RD Northbound				FRIENDSHIP RD Eastbound				
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	25	101	11	137	115	25	8	148	1	29	71	101	2	21	4	27	413
07:15 AM	31	102	5	138	98	36	5	139	3	29	84	116	0	15	6	21	414
07:30 AM	23	77	8	108	83	28	11	122	2	71	84	157	4	17	5	26	413
07:45 AM	23	88	15	126	79	38	15	132	3	48	83	134	4	27	3	34	426
Total	102	368	39	509	375	127	39	541	9	177	322	508	10	80	18	108	1666
08:00 AM	14	61	10	85	90	27	13	130	4	31	77	112	8	21	6	35	362
08:15 AM	26	61	7	94	82	28	6	116	1	35	62	98	7	24	3	34	342
08:30 AM	29	65	10	104	72	27	12	111	4	33	83	120	2	29	3	34	369
08:45 AM	23	61	5	89	58	22	11	91	2	28	60	90	2	19	3	24	294
Total	92	248	32	372	302	104	42	448	11	127	282	420	19	93	15	127	1367
04:00 PM	11	35	2	48	56	34	26	116	6	52	66	124	21	45	5	71	359
04:15 PM	18	30	5	53	77	35	26	138	5	68	86	159	16	55	5	76	426
04:30 PM	24	40	3	67	81	42	29	152	8	85	98	191	29	67	9	105	515
04:45 PM	13	45	12	70	65	47	27	139	3	119	103	225	7	42	15	64	498
Total	66	150	22	238	279	158	108	545	22	324	353	699	73	209	34	316	1798
05:00 PM	26	32	4	62	79	35	35	149	7	81	88	176	27	58	6	91	478
05:15 PM	17	53	5	75	78	33	23	134	7	123	92	222	29	97	16	142	573
05:30 PM	17	57	2	76	86	34	35	155	7	110	59	176	30	45	6	81	488
05:45 PM	15	27	2	44	59	36	26	121	7	88	101	196	11	41	12	64	425
Total	75	169	13	257	302	138	119	559	28	402	340	770	97	241	40	378	1964
Grand Total	335	935	106	1376	1258	527	308	2093	70	1030	1297	2397	199	623	107	929	6795
Apprch %	24.3	68	7.7		60.1	25.2	14.7		2.9	43	54.1		21.4	67.1	11.5		
Total %	4.9	13.8	1.6	20.3	18.5	7.8	4.5	30.8	1	15.2	19.1	35.3	2.9	9.2	1.6	13.7	
VEHICLES	329	926	106	1361	1230	524	306	2060	68	1018	1268	2354	198	619	107	924	6699
% VEHICLES	98.2	99	100	98.9	97.8	99.4	99.4	98.4	97.1	98.8	97.8	98.2	99.5	99.4	100	99.5	98.6
TRUCKS	6	9	0	15	28	3	2	33	2	12	29	43	1	4	0	5	96
% TRUCKS	1.8	1	0	1.1	2.2	0.6	0.6	1.6	2.9	1.2	2.2	1.8	0.5	0.6	0	0.5	1.4

Greater Traffic Company

File Name : KH072902
Site Code : 00000002
Start Date : 7/29/2008
Page No : 3

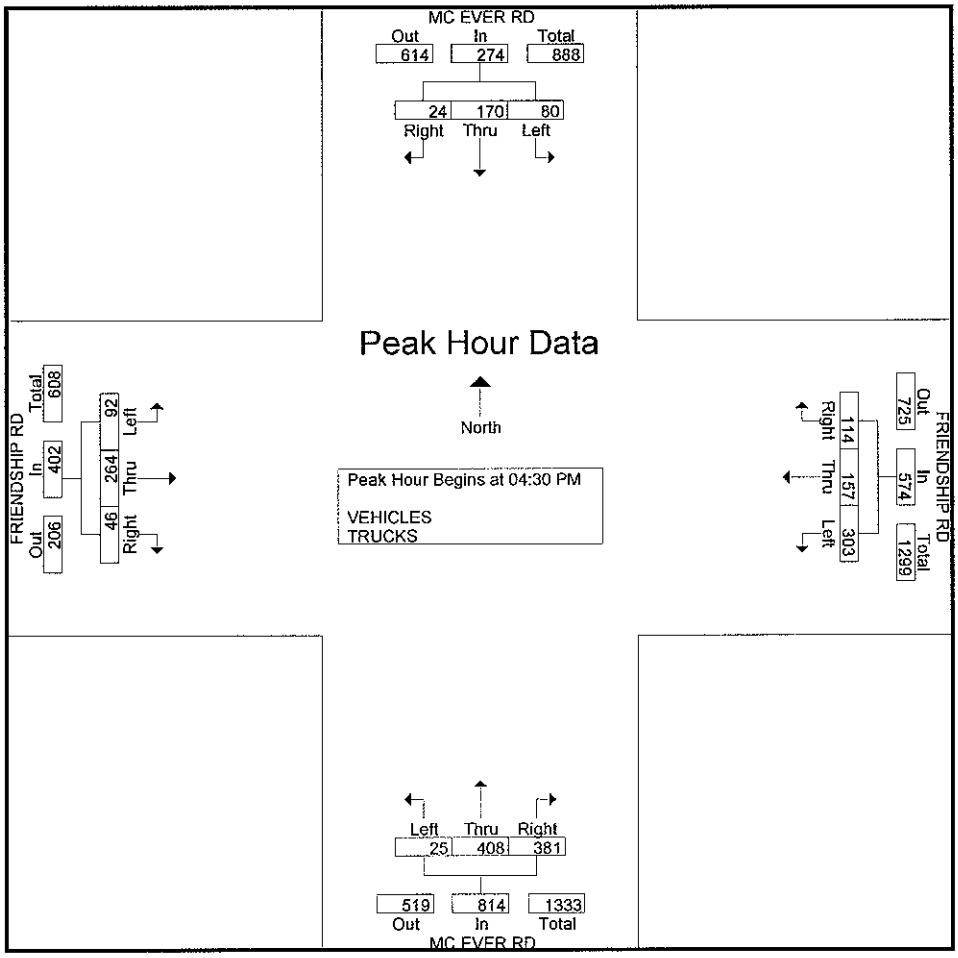
	MC EVER RD Southbound				FRIENDSHIP RD Westbound				MC EVER RD Northbound				FRIENDSHIP RD Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	25	101	11	137	**115**			**148**									
07:15 AM	**31**	**102**	5	**138**	98	36	5	139	**3**	29	**84**	116	0	15	**6**	21	414
07:30 AM	23	77	8	108	83	28	11	122	2	**71**	84	**157**	**4**	17	5	26	413
07:45 AM	23	88	**15**	126	79	**38**	**15**	132	3	48	83	134	4	**27**	3	**34**	**426**
Total Volume	102	368	39	509	375	127	39	541	9	177	322	508	10	80	18	108	1666
% App. Total	20	72.3	7.7		69.3	23.5	7.2		1.8	34.8	63.4		9.3	74.1	16.7		
PHF	.823	.902	.650	.922	.815	.836	.650	.914	.750	.623	.958	.809	.625	.741	.750	.794	.978



Greater Traffic Company

File Name : KH072902
Site Code : 00000002
Start Date : 7/29/2008
Page No : 4

	MC EVER RD Southbound				FRIENDSHIP RD Westbound				MC EVER RD Northbound				FRIENDSHIP RD Eastbound				
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 04:30 PM																	
04:30 PM	24	40	3	67	**81**			**152**	**8**				**29**				
04:45 PM	13	45	**12**	70	65	**47**	27	139	3	119	**103**	**225**	7	42	15	64	498
05:00 PM	**26**	32	4	62	79	35	**35**	149	7	81	88	176	27	58	6	91	478
05:15 PM	17	**53**	5	**75**	78	33	23	134	7	**123**	92	222	29	**97**	**16**	**142**	**573**
Total Volume	80	170	24	274	303	157	114	574	25	408	381	814	92	264	46	402	2064
% App. Total	29.2	62	8.8		52.8	27.4	19.9		3.1	50.1	46.8		22.9	65.7	11.4		
PHF	.769	.802	.500	.913	.935	.835	.814	.944	.781	.829	.925	.904	.793	.680	.719	.708	.901



FRIENDSHIP RD BYW OF WHIDBY RD
AND MCEVER RD

KH072904

Start	21-Jul-08		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
Time	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
12:00 AM	*	*	*	*	*	*	*	*	*	*	45	29	56	26	50	28
01:00	*	*	*	*	*	*	*	*	*	*	44	21	36	21	40	21
02:00	*	*	*	*	*	*	*	*	*	*	28	22	32	9	30	16
03:00	*	*	*	*	*	*	*	*	*	*	16	18	23	14	20	16
04:00	*	*	*	*	*	*	*	*	*	*	11	7	14	12	12	10
05:00	*	*	*	*	*	*	*	*	*	*	19	22	10	13	14	18
06:00	*	*	*	*	*	*	*	*	*	*	30	52	16	36	23	44
07:00	*	*	*	*	*	*	*	*	*	*	70	136	60	54	65	95
08:00	*	*	*	*	*	*	*	*	*	*	100	144	84	133	92	138
09:00	*	*	*	*	*	*	*	*	*	*	177	243	145	191	161	217
10:00	*	*	*	*	*	*	*	*	*	*	165	293	211	295	188	294
11:00	*	*	*	*	*	*	*	*	*	*	**216**	**327**	**242**	**318**	**229**	**322**
12:00 PM	*	*	*	*	*	*	*	*	*	*	259	**326**	262	338	260	**332**
01:00	*	*	*	*	*	*	*	*	*	*	242	307	228	**343**	235	325
02:00	*	*	*	*	*	*	*	*	*	*	244	284	273	265	258	274
03:00	*	*	*	*	*	*	*	*	*	*	285	262	292	233	288	248
04:00	*	*	*	*	*	*	*	*	370	238	327	203	290	175	329	205
05:00	*	*	*	*	*	*	*	*	326	**262**	284	184	351	145	320	197
06:00	*	*	*	*	*	*	*	*	**377**	262	**358**	178	**453**	[redacted]	**396**	186
07:00	*	*	*	*	*	*	*	*	190	210	293	161	277	120	253	164
08:00	*	*	*	*	*	*	*	*	150	155	171	95	180	92	167	114
09:00	*	*	*	*	*	*	*	*	132	117	155	97	140	69	142	94
10:00	*	*	*	*	*	*	*	*	95	83	118	89	60	57	91	76
11:00	*	*	*	*	*	*	*	*	69	57	94	50	40	22	68	43
Lane	0	0	0	0	0	0	0	0	1709	1360	3751	3544	3775	3121	3731	3474
Day	0		0		0		0		3069		7295		6896		7205	
AM Peak											11:00	11:00	11:00	11:00	11:00	11:00
Vol.											216	327	242	318	229	322
PM Peak									18:00	17:00	18:00	12:00	18:00	13:00	18:00	12:00
Vol.									377	262	358	326	453	343	396	332

FRIENDSHIP RD BYW OF WHIDBY RD
AND MCEVER RD

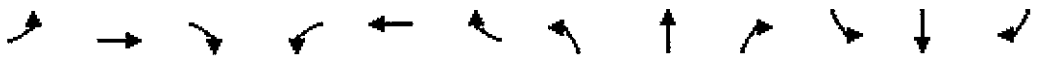
KH072904

Start	28-Jul-08		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
Time	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
12:00 AM	13	10	17	10	21	17	16	17	15	13	*	*	*	*	16	13
01:00	6	10	12	6	6	4	11	8	4	7	*	*	*	*	8	7
02:00	4	0	4	4	4	4	4	6	7	8	*	*	*	*	5	4
03:00	3	5	2	2	2	4	4	2	8	5	*	*	*	*	4	4
04:00	15	5	12	2	7	9	7	9	14	8	*	*	*	*	11	7
05:00	47	14	25	14	37	14	24	10	26	18	*	*	*	*	32	14
06:00	66	76	71	82	52	83	60	82	52	61	*	*	*	*	60	77
07:00	101	156	93	163	102	146	96	148	90	154	*	*	*	*	96	153
08:00	131	165	140	165	137	185	114	195	120	179	*	*	*	*	128	178
09:00	155	**174**	137	**272**	154	385	139	**250**	167	257	*	*	*	*	150	268
10:00	175	173	154	260	144	**460**	149	229	175	**313**	*	*	*	*	159	**287**
11:00	**185**	159	**180**	214	**186**	285	**153**	199	**223**	275	*	*	*	*	**185**	226
12:00 PM	214	**195**	210	**246**	233	**230**	203	**222**	258	294	*	*	*	*	224	**237**
01:00	206	178	216	223	197	212	209	178	235	**314**	*	*	*	*	213	221
02:00	175	194	214	222	253	204	202	189	264	248	*	*	*	*	222	211
03:00	158	154	259	220	307	193	249	210	**269**	254	*	*	*	*	248	206
04:00	213	140	307	194	374	163	**327**	**166**	*	*	*	*	*	*	305	166
05:00	**239**	155	**414**	150	**391**	169	228	147	*	*	*	*	*	*	**318**	155
06:00	165	145	213	111	356	147	213	167	*	*	*	*	*	*	237	142
07:00	159	121	89	90	154	111	127	91	*	*	*	*	*	*	132	103
08:00	87	95	71	97	101	110	98	95	*	*	*	*	*	*	89	99
09:00	75	67	58	65	74	94	72	73	*	*	*	*	*	*	70	75
10:00	33	40	45	39	50	58	44	47	*	*	*	*	*	*	43	46
11:00	43	21	42	22	25	25	26	24	*	*	*	*	*	*	34	23
Lane	2668	2452	2985	2873	3367	3312	2775	2764	1927	2408	0	0	0	0	2989	2922
Day	5120		5858		6679		5539		4335		0		0		5911	
AM Peak	11:00	09:00	11:00	09:00	11:00	10:00	11:00	09:00	11:00	10:00					11:00	10:00
Vol.	185	174	180	272	186	460	153	250	223	313					185	287
PM Peak	17:00	12:00	17:00	12:00	17:00	12:00	16:00	12:00	15:00	13:00					17:00	12:00
Vol.	239	195	414	246	391	230	327	222	269	314					318	237

Comb. Total	5120	5858	6679	5539	7404	7295	6896	13116

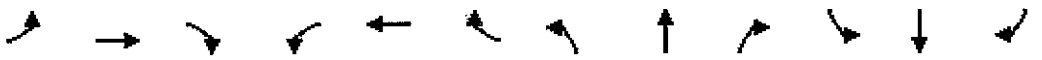
ADT Not Calculated

Capacity Analyses – Existing 2008 Conditions



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	287	32	167	382	29	46	66	127	177	176	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.38	1.00	1.00	0.26	1.00	1.00	0.63	1.00	1.00	0.55	1.00	1.00
Satd. Flow (perm)	712	1863	1583	478	1863	1583	1178	1863	1583	1029	1863	1583
Peak-hour factor, PHF	0.87	0.87	0.87	0.88	0.88	0.88	0.84	0.84	0.84	0.88	0.88	0.88
Adj. Flow (vph)	57	330	37	190	434	33	55	79	151	201	200	130
RTOR Reduction (vph)	0	0	28	0	0	22	0	0	114	0	0	87
Lane Group Flow (vph)	57	330	9	190	434	11	55	79	37	201	200	43
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	24.9	21.8	21.8	38.4	29.3	29.3	24.7	21.6	21.6	38.6	29.5	29.5
Effective Green, g (s)	24.9	21.8	21.8	38.4	29.3	29.3	24.7	21.6	21.6	38.6	29.5	29.5
Actuated g/C Ratio	0.28	0.24	0.24	0.43	0.33	0.33	0.28	0.24	0.24	0.43	0.33	0.33
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	236	456	388	360	613	521	348	452	384	538	618	525
v/s Ratio Prot	0.01	0.18		c0.06	c0.23		0.01	0.04		c0.05	0.11	
v/s Ratio Perm	0.06		0.01	0.16		0.01	0.04		0.02	c0.12		0.03
v/c Ratio	0.24	0.72	0.02	0.53	0.71	0.02	0.16	0.17	0.10	0.37	0.32	0.08
Uniform Delay, d1	24.0	30.8	25.5	17.7	26.1	20.2	24.0	26.7	26.1	16.3	22.3	20.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	5.6	0.0	1.4	3.7	0.0	0.2	0.8	0.5	0.4	1.4	0.3
Delay (s)	24.6	36.5	25.5	19.1	29.8	20.2	24.2	27.5	26.6	16.8	23.7	20.8
Level of Service	C	D	C	B	C	C	C	C	C	B	C	C
Approach Delay (s)		33.9			26.2			26.4			20.3	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	26.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	89.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	80	18	375	127	39	9	177	322	102	368	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.67	1.00	1.00	0.46	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1244	1863	1583	854	1863	1583	1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.79	0.79	0.79	0.91	0.91	0.91	0.81	0.81	0.81	0.92	0.92	0.92
Adj. Flow (vph)	13	101	23	412	140	43	11	219	398	111	400	42
RTOR Reduction (vph)	0	0	20	0	0	29	0	0	268	0	0	25
Lane Group Flow (vph)	13	101	3	412	140	14	11	219	130	111	400	17
Turn Type	pm+pt		Perm	pm+pt		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	12.5	11.8	11.8	37.7	31.0	31.0	0.7	30.8	30.8	8.1	38.2	38.2
Effective Green, g (s)	12.5	11.8	11.8	37.7	31.0	31.0	0.7	30.8	30.8	8.1	38.2	38.2
Actuated g/C Ratio	0.13	0.12	0.12	0.40	0.33	0.33	0.01	0.33	0.33	0.09	0.40	0.40
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	168	232	197	533	610	519	13	1152	515	152	1429	639
v/s Ratio Prot	0.00	0.05		c0.16	0.08		0.01	0.06		c0.06	c0.11	
v/s Ratio Perm	0.01		0.00	c0.15		0.01			0.08			0.01
v/c Ratio	0.08	0.44	0.01	0.77	0.23	0.03	0.85	0.19	0.25	0.73	0.28	0.03
Uniform Delay, d1	35.9	38.3	36.3	22.6	23.1	21.6	46.9	22.9	23.4	42.2	19.0	17.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	1.3	0.0	6.9	0.2	0.0	166.4	0.4	1.2	16.4	0.5	0.1
Delay (s)	36.1	39.6	36.3	29.5	23.3	21.6	213.3	23.3	24.6	58.6	19.4	17.1
Level of Service	D	D	D	C	C	C	F	C	C	E	B	B
Approach Delay (s)		38.7			27.4			27.5			27.1	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM Average Control Delay	28.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	94.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

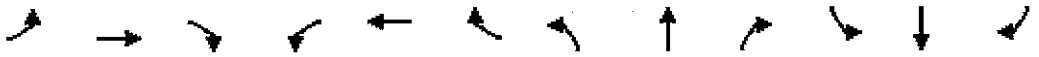
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	152	443	55	154	423	253	102	333	223	87	133	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.15	1.00	1.00	0.17	1.00	1.00	0.57	1.00	1.00	0.33	1.00	1.00
Satd. Flow (perm)	279	1863	1583	313	1863	1583	1060	1863	1583	620	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.80	0.80	0.80	0.72	0.72	0.72
Adj. Flow (vph)	165	482	60	181	498	298	128	416	279	121	185	19
RTOR Reduction (vph)	0	0	36	0	0	173	0	0	175	0	0	13
Lane Group Flow (vph)	165	482	24	181	498	125	128	416	104	121	185	6
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	44.1	34.4	34.4	44.3	34.5	34.5	46.2	40.2	40.2	42.2	38.2	38.2
Effective Green, g (s)	44.1	34.4	34.4	44.3	34.5	34.5	46.2	40.2	40.2	42.2	38.2	38.2
Actuated g/C Ratio	0.39	0.31	0.31	0.39	0.31	0.31	0.41	0.36	0.36	0.38	0.34	0.34
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	238	570	484	250	572	486	474	666	566	274	633	538
v/s Ratio Prot	0.06	0.26		c0.06	c0.27		0.01	c0.22		c0.02	0.10	
v/s Ratio Perm	0.21		0.02	0.22		0.08	0.10		0.07	0.15		0.00
v/c Ratio	0.69	0.85	0.05	0.72	0.87	0.26	0.27	0.62	0.18	0.44	0.29	0.01
Uniform Delay, d1	25.9	36.5	27.5	25.8	36.8	29.3	21.1	29.9	24.8	26.7	27.2	24.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.4	11.1	0.0	9.9	13.6	0.3	0.3	4.4	0.7	1.1	1.2	0.0
Delay (s)	34.4	47.6	27.5	35.8	50.4	29.6	21.4	34.2	25.5	27.9	28.4	24.6
Level of Service	C	D	C	D	D	C	C	C	C	C	C	C
Approach Delay (s)		42.8			41.4			29.3			28.0	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	36.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	112.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	92	264	46	303	157	114	25	408	381	80	170	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.65	1.00	1.00	0.18	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1214	1863	1583	330	1863	1583	1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.71	0.71	0.71	0.94	0.94	0.94	0.90	0.90	0.90	0.91	0.91	0.91
Adj. Flow (vph)	130	372	65	322	167	121	28	453	423	88	187	26
RTOR Reduction (vph)	0	0	39	0	0	79	0	0	298	0	0	17
Lane Group Flow (vph)	130	372	26	322	167	42	28	453	125	88	187	9
Turn Type	pm+pt		Perm	pm+pt		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	31.5	25.3	25.3	48.9	36.7	36.7	3.3	31.4	31.4	7.8	35.9	35.9
Effective Green, g (s)	31.5	25.3	25.3	48.9	36.7	36.7	3.3	31.4	31.4	7.8	35.9	35.9
Actuated g/C Ratio	0.30	0.24	0.24	0.46	0.35	0.35	0.03	0.30	0.30	0.07	0.34	0.34
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	393	444	377	391	644	548	55	1047	468	130	1197	536
v/s Ratio Prot	0.02	0.20		c0.14	0.09		0.02	c0.13		c0.05	c0.05	
v/s Ratio Perm	0.08		0.02	c0.24		0.03			0.08			0.01
v/c Ratio	0.33	0.84	0.07	0.82	0.26	0.08	0.51	0.43	0.27	0.68	0.16	0.02
Uniform Delay, d1	28.3	38.4	31.3	21.9	24.9	23.3	50.6	30.2	28.6	47.9	24.5	23.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	13.0	0.1	13.1	0.2	0.1	7.2	1.3	1.4	13.1	0.3	0.1
Delay (s)	28.8	51.4	31.4	35.0	25.1	23.4	57.8	31.5	30.0	61.0	24.8	23.4
Level of Service	C	D	C	D	C	C	E	C	C	E	C	C
Approach Delay (s)		43.9			30.0			31.6			35.3	
Approach LOS		D			C			C			D	

Intersection Summary			
HCM Average Control Delay	34.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	106.1	Sum of lost time (s)	24.0
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Capacity Analyses – 2014 No-Build Conditions



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	343	38	199	456	35	55	79	152	211	210	136
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.27	1.00	1.00	0.21	1.00	1.00	0.61	1.00	1.00	0.54	1.00	1.00
Satd. Flow (perm)	503	1863	1583	393	1863	1583	1136	1863	1583	997	1863	1583
Peak-hour factor, PHF	0.87	0.87	0.87	0.88	0.88	0.88	0.84	0.84	0.84	0.88	0.88	0.88
Adj. Flow (vph)	69	394	44	226	518	40	65	94	181	240	239	155
RTOR Reduction (vph)	0	0	32	0	0	26	0	0	142	0	0	108
Lane Group Flow (vph)	69	394	12	226	518	14	65	94	39	240	239	47
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	28.9	25.1	25.1	42.2	32.4	32.4	23.8	20.0	20.0	37.7	27.9	27.9
Effective Green, g (s)	28.9	25.1	25.1	42.2	32.4	32.4	23.8	20.0	20.0	37.7	27.9	27.9
Actuated g/C Ratio	0.31	0.27	0.27	0.46	0.35	0.35	0.26	0.22	0.22	0.41	0.30	0.30
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	211	509	432	347	657	558	320	405	345	507	566	481
v/s Ratio Prot	0.01	0.21		c0.08	c0.28		0.01	0.05		c0.06	0.13	
v/s Ratio Perm	0.09		0.01	0.22		0.01	0.04		0.02	c0.13		0.03
v/c Ratio	0.33	0.77	0.03	0.65	0.79	0.03	0.20	0.23	0.11	0.47	0.42	0.10
Uniform Delay, d1	23.2	30.8	24.5	17.9	26.7	19.4	26.2	29.6	28.8	18.7	25.6	23.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9	7.2	0.0	4.3	6.2	0.0	0.3	1.3	0.7	0.7	2.3	0.4
Delay (s)	24.1	38.0	24.5	22.2	32.9	19.5	26.5	31.0	29.5	19.4	27.9	23.4
Level of Service	C	D	C	C	C	B	C	C	C	B	C	C
Approach Delay (s)		34.9			29.1			29.3			23.6	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	28.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	91.9	Sum of lost time (s)	18.0
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	96	21	448	152	47	11	211	384	122	439	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.65	1.00	1.00	0.48	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1214	1863	1583	890	1863	1583	1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.79	0.79	0.79	0.91	0.91	0.91	0.81	0.81	0.81	0.92	0.92	0.92
Adj. Flow (vph)	15	122	27	492	167	52	14	260	474	133	477	51
RTOR Reduction (vph)	0	0	23	0	0	34	0	0	338	0	0	31
Lane Group Flow (vph)	15	122	4	492	167	18	14	260	136	133	477	20
Turn Type	pm+pt		Perm	pm+pt		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	16.6	15.1	15.1	43.4	35.9	35.9	0.7	29.0	29.0	10.7	39.0	39.0
Effective Green, g (s)	16.6	15.1	15.1	43.4	35.9	35.9	0.7	29.0	29.0	10.7	39.0	39.0
Actuated g/C Ratio	0.16	0.15	0.15	0.43	0.36	0.36	0.01	0.29	0.29	0.11	0.39	0.39
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	208	278	236	576	662	562	12	1015	454	187	1365	611
v/s Ratio Prot	0.00	0.07		c0.19	0.09		0.01	0.07		c0.08	c0.13	
v/s Ratio Perm	0.01		0.00	c0.18		0.01			0.09			0.01
v/c Ratio	0.07	0.44	0.02	0.85	0.25	0.03	1.17	0.26	0.30	0.71	0.35	0.03
Uniform Delay, d1	35.6	39.1	36.7	23.1	23.1	21.3	50.2	27.7	28.1	43.7	22.0	19.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	1.1	0.0	11.8	0.2	0.0	320.6	0.6	1.7	12.0	0.7	0.1
Delay (s)	35.8	40.3	36.7	34.9	23.3	21.3	370.8	28.4	29.8	55.7	22.8	19.4
Level of Service	D	D	D	C	C	C	F	C	C	E	C	B
Approach Delay (s)		39.3			31.2			35.7			29.1	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM Average Control Delay	32.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	101.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	181	529	66	184	505	302	122	398	266	104	159	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.10	1.00	1.00	0.10	1.00	1.00	0.49	1.00	1.00	0.20	1.00	1.00
Satd. Flow (perm)	193	1863	1583	184	1863	1583	909	1863	1583	371	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.80	0.80	0.80	0.72	0.72	0.72
Adj. Flow (vph)	197	575	72	216	594	355	152	498	332	144	221	24
RTOR Reduction (vph)	0	0	34	0	0	153	0	0	178	0	0	17
Lane Group Flow (vph)	197	575	38	216	594	202	152	498	154	144	221	7
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	47.6	38.6	38.6	51.6	40.6	40.6	46.9	39.0	39.0	41.1	36.1	36.1
Effective Green, g (s)	47.6	38.6	38.6	51.6	40.6	40.6	46.9	39.0	39.0	41.1	36.1	36.1
Actuated g/C Ratio	0.40	0.33	0.33	0.44	0.35	0.35	0.40	0.33	0.33	0.35	0.31	0.31
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	199	611	520	229	643	547	420	618	525	189	572	486
v/s Ratio Prot	0.08	0.31		c0.09	0.32		0.02	c0.27		c0.03	0.12	
v/s Ratio Perm	0.33		0.02	c0.33		0.13	0.12		0.10	0.23		0.00
v/c Ratio	0.99	0.94	0.07	0.94	0.92	0.37	0.36	0.81	0.29	0.76	0.39	0.02
Uniform Delay, d1	28.9	38.4	27.2	30.9	37.0	28.9	23.6	35.8	29.1	33.8	32.0	28.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	60.2	22.8	0.1	43.6	19.0	0.4	0.5	10.8	1.4	16.5	2.0	0.1
Delay (s)	89.1	61.2	27.2	74.5	56.0	29.3	24.1	46.6	30.5	50.3	34.0	28.4
Level of Service	F	E	C	E	E	C	C	D	C	D	C	C
Approach Delay (s)		64.9			51.3			37.7			39.7	
Approach LOS		E			D			D			D	

Intersection Summary			
HCM Average Control Delay	49.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	117.6	Sum of lost time (s)	18.0
Intersection Capacity Utilization	84.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	110	315	55	362	187	136	30	487	455	96	203	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.63	1.00	1.00	0.11	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1179	1863	1583	207	1863	1583	1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.71	0.71	0.71	0.94	0.94	0.94	0.90	0.90	0.90	0.91	0.91	0.91
Adj. Flow (vph)	155	444	77	385	199	145	33	541	506	105	223	32
RTOR Reduction (vph)	0	0	38	0	0	87	0	0	325	0	0	22
Lane Group Flow (vph)	155	444	39	385	199	58	33	541	181	105	223	10
Turn Type	pm+pt		Perm	pm+pt		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	36.5	30.5	30.5	59.2	47.2	47.2	3.5	30.8	30.8	9.5	36.8	36.8
Effective Green, g (s)	36.5	30.5	30.5	59.2	47.2	47.2	3.5	30.8	30.8	9.5	36.8	36.8
Actuated g/C Ratio	0.31	0.26	0.26	0.50	0.40	0.40	0.03	0.26	0.26	0.08	0.31	0.31
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	396	484	411	406	748	636	53	928	415	143	1108	496
v/s Ratio Prot	0.02	0.24		c0.18	0.11		0.02	c0.15		c0.06	c0.06	
v/s Ratio Perm	0.10		0.02	c0.29		0.04			0.11			0.01
v/c Ratio	0.39	0.92	0.10	0.95	0.27	0.09	0.62	0.58	0.44	0.73	0.20	0.02
Uniform Delay, d1	30.7	42.3	33.0	34.5	23.5	21.8	56.3	37.8	36.1	52.8	29.6	27.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	22.1	0.1	31.3	0.2	0.1	20.6	2.7	3.3	17.6	0.4	0.1
Delay (s)	31.3	64.4	33.1	65.9	23.7	21.9	76.9	40.4	39.4	70.4	30.0	28.0
Level of Service	C	E	C	E	C	C	E	D	D	E	C	C
Approach Delay (s)		53.3			45.6			41.1			41.6	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM Average Control Delay	45.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	117.5	Sum of lost time (s)	24.0
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Capacity Analyses – 2014 Build Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	373	51	199	490	35	70	79	152	211	210	136
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.24	1.00	1.00	0.19	1.00	1.00	0.61	1.00	1.00	0.53	1.00	1.00
Satd. Flow (perm)	446	1863	1583	363	1863	1583	1136	1863	1583	982	1863	1583
Peak-hour factor, PHF	0.87	0.87	0.87	0.88	0.88	0.88	0.84	0.84	0.84	0.88	0.88	0.88
Adj. Flow (vph)	69	429	59	226	557	40	83	94	181	240	239	155
RTOR Reduction (vph)	0	0	42	0	0	25	0	0	144	0	0	112
Lane Group Flow (vph)	69	429	17	226	557	15	83	94	37	240	239	43
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	30.7	26.8	26.8	43.9	34.0	34.0	23.3	18.7	18.7	35.9	25.3	25.3
Effective Green, g (s)	30.7	26.8	26.8	43.9	34.0	34.0	23.3	18.7	18.7	35.9	25.3	25.3
Actuated g/C Ratio	0.33	0.29	0.29	0.48	0.37	0.37	0.25	0.20	0.20	0.39	0.28	0.28
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	205	544	462	344	690	586	320	380	322	480	513	436
v/s Ratio Prot	0.01	0.23		c0.08	c0.30		0.01	0.05		c0.06	0.13	
v/s Ratio Perm	0.10		0.01	0.24		0.01	0.05		0.02	c0.13		0.03
v/c Ratio	0.34	0.79	0.04	0.66	0.81	0.03	0.26	0.25	0.11	0.50	0.47	0.10
Uniform Delay, d1	22.1	29.9	23.3	17.3	26.0	18.4	26.8	30.6	29.8	19.9	27.6	24.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	7.5	0.0	4.5	6.9	0.0	0.4	1.5	0.7	0.8	3.0	0.4
Delay (s)	23.1	37.4	23.3	21.8	32.8	18.4	27.2	32.2	30.5	20.8	30.7	25.2
Level of Service	C	D	C	C	C	B	C	C	C	C	C	C
Approach Delay (s)		34.1			29.1			30.2			25.6	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	29.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	91.8	Sum of lost time (s)	18.0
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	17	139	42	448	201	47	35	211	384	122	439	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.62	1.00	1.00	0.39	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1155	1863	1583	725	1863	1583	1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.79	0.79	0.79	0.91	0.91	0.91	0.81	0.81	0.81	0.92	0.92	0.92
Adj. Flow (vph)	22	176	53	492	221	52	43	260	474	133	477	57
RTOR Reduction (vph)	0	0	44	0	0	32	0	0	349	0	0	38
Lane Group Flow (vph)	22	176	9	492	221	20	43	260	125	133	477	19
Turn Type	pm+pt		Perm	pm+pt		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	18.5	17.0	17.0	46.4	38.9	38.9	3.4	26.7	26.7	10.3	33.6	33.6
Effective Green, g (s)	18.5	17.0	17.0	46.4	38.9	38.9	3.4	26.7	26.7	10.3	33.6	33.6
Actuated g/C Ratio	0.18	0.17	0.17	0.46	0.38	0.38	0.03	0.26	0.26	0.10	0.33	0.33
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	220	312	265	573	715	607	59	932	417	180	1173	525
v/s Ratio Prot	0.00	0.09		c0.20	0.12		0.02	0.07		c0.08	c0.13	
v/s Ratio Perm	0.02		0.01	c0.19		0.01			0.08			0.01
v/c Ratio	0.10	0.56	0.03	0.86	0.31	0.03	0.73	0.28	0.30	0.74	0.41	0.04
Uniform Delay, d1	34.3	38.8	35.3	21.4	21.9	19.5	48.5	29.7	29.9	44.2	26.2	22.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	2.3	0.1	12.2	0.2	0.0	36.0	0.7	1.8	14.6	1.0	0.1
Delay (s)	34.5	41.1	35.4	33.5	22.1	19.5	84.5	30.4	31.7	58.9	27.2	23.1
Level of Service	C	D	D	C	C	B	F	C	C	E	C	C
Approach Delay (s)		39.3			29.3			34.2			33.2	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM Average Control Delay	32.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	101.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

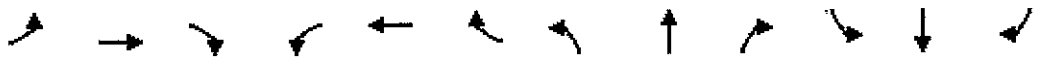
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	25	129	209	84	79	23
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.83	0.83
Hourly flow rate (vph)	29	148	240	97	95	28
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	337				446	240
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	337				446	240
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				83	97
cM capacity (veh/h)	1222				557	799

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	29	148	240	97	95	28
Volume Left	29	0	0	0	95	0
Volume Right	0	0	0	97	0	28
cSH	1222	1700	1700	1700	557	799
Volume to Capacity	0.02	0.09	0.14	0.06	0.17	0.03
Queue Length 95th (ft)	2	0	0	0	15	3
Control Delay (s)	8.0	0.0	0.0	0.0	12.8	9.7
Lane LOS	A				B	A
Approach Delay (s)	1.3		0.0		12.1	
Approach LOS					B	

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	28.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	181	581	88	184	560	302	145	398	266	104	159	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.09	1.00	1.00	0.09	1.00	1.00	0.42	1.00	1.00	0.16	1.00	1.00
Satd. Flow (perm)	174	1863	1583	170	1863	1583	782	1863	1583	302	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.80	0.80	0.80	0.72	0.72	0.72
Adj. Flow (vph)	197	632	96	216	659	355	181	498	332	144	221	24
RTOR Reduction (vph)	0	0	42	0	0	147	0	0	179	0	0	18
Lane Group Flow (vph)	197	632	54	216	659	208	181	498	153	144	221	6
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	51.8	42.8	42.8	53.8	43.8	43.8	47.3	36.0	36.0	36.7	30.7	30.7
Effective Green, g (s)	51.8	42.8	42.8	53.8	43.8	43.8	47.3	36.0	36.0	36.7	30.7	30.7
Actuated g/C Ratio	0.44	0.36	0.36	0.45	0.37	0.37	0.40	0.30	0.30	0.31	0.26	0.26
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	197	671	570	212	687	584	405	565	480	167	481	409
v/s Ratio Prot	0.08	0.34		c0.09	0.35		0.04	c0.27		c0.04	0.12	
v/s Ratio Perm	0.36		0.03	c0.38		0.13	0.14		0.10	0.22		0.00
v/c Ratio	1.00	0.94	0.10	1.02	0.96	0.36	0.45	0.88	0.32	0.86	0.46	0.02
Uniform Delay, d1	31.1	36.8	25.2	32.6	36.6	27.3	24.6	39.4	31.9	36.0	37.1	32.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	64.1	21.5	0.1	66.8	24.4	0.4	0.8	17.8	1.7	33.9	3.1	0.1
Delay (s)	95.2	58.3	25.2	99.3	61.0	27.6	25.4	57.1	33.7	69.9	40.2	32.9
Level of Service	F	E	C	F	E	C	C	E	C	E	D	C
Approach Delay (s)		62.8			58.1			43.8			50.7	
Approach LOS		E			E			D			D	

Intersection Summary			
HCM Average Control Delay	54.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	118.8	Sum of lost time (s)	18.0
Intersection Capacity Utilization	87.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	118	389	92	362	266	136	69	487	455	96	203	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.59	1.00	1.00	0.09	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1092	1863	1583	175	1863	1583	1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.71	0.71	0.71	0.94	0.94	0.94	0.90	0.90	0.90	0.91	0.91	0.91
Adj. Flow (vph)	166	548	130	385	283	145	77	541	506	105	223	41
RTOR Reduction (vph)	0	0	51	0	0	82	0	0	289	0	0	31
Lane Group Flow (vph)	166	548	79	385	283	63	77	541	217	105	223	10
Turn Type	pm+pt		Perm	pm+pt		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8			2			6
Actuated Green, G (s)	43.6	36.6	36.6	65.3	52.3	52.3	8.2	28.3	28.3	8.0	28.1	28.1
Effective Green, g (s)	43.6	36.6	36.6	65.3	52.3	52.3	8.2	28.3	28.3	8.0	28.1	28.1
Actuated g/C Ratio	0.36	0.31	0.31	0.55	0.44	0.44	0.07	0.24	0.24	0.07	0.23	0.23
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	438	570	484	398	815	692	121	837	375	118	831	372
v/s Ratio Prot	0.02	0.29		c0.18	0.15		0.04	c0.15		c0.06	0.06	
v/s Ratio Perm	0.12		0.05	c0.34		0.04			0.14			0.01
v/c Ratio	0.38	0.96	0.16	0.97	0.35	0.09	0.64	0.65	0.58	0.89	0.27	0.03
Uniform Delay, d1	26.7	40.8	30.3	37.0	22.3	19.7	54.2	41.1	40.4	55.4	37.4	35.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	28.1	0.2	36.2	0.3	0.1	10.5	3.8	6.4	49.7	0.8	0.1
Delay (s)	27.2	68.9	30.5	73.2	22.6	19.8	64.7	45.0	46.8	105.1	38.1	35.3
Level of Service	C	E	C	E	C	B	E	D	D	F	D	D
Approach Delay (s)		54.8			46.0			47.1			56.9	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM Average Control Delay	50.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	119.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	57	507	240	160	157	41
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	62	551	276	184	180	47
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	460				951	276
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	460				951	276
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	94				34	94
cM capacity (veh/h)	1101				272	763

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	62	551	276	184	180	47
Volume Left	62	0	0	0	180	0
Volume Right	0	0	0	184	0	47
cSH	1101	1700	1700	1700	272	763
Volume to Capacity	0.06	0.32	0.16	0.11	0.66	0.06
Queue Length 95th (ft)	4	0	0	0	107	5
Control Delay (s)	8.5	0.0	0.0	0.0	40.9	10.0
Lane LOS	A				E	B
Approach Delay (s)	0.9		0.0		34.5	
Approach LOS					D	

Intersection Summary			
Average Delay	6.4		
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		