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EXECUTIVE SUMMARY

This report presents the analyses of the anticipated traffic impacts associated with the proposed Emory Healthcare Druid Hills Expansion. The site includes two separate areas that are considered within the limits of the project. The first site (Main Campus) is located along Clifton Road, north of North Decatur Road, in DeKalb County, Georgia, adjacent to the Emory University academic center. The second site (Clairmont Campus) is located along Clairmont Road, north of North Decatur Road, also in DeKalb County. The two sites are connected by a ½ mile exclusive shuttle route which travels above (grade separated) the existing CSX rail line that bisects the Emory University Campus. Because the project is a healthcare facility and is anticipated to generate more than 375 peak hour vehicular trips per day, the proposed development is considered a Development of Regional Impact (DRI) and is subject to Georgia Regional Transportation Authority (GRTA) and Atlanta Regional Commission (ARC) review. This document is being submitted under GRTA's non-expedited review process.

The proposed development plan consists of additional clinic and hospital space as well as the conversion of existing uses to administrative and research space to support the existing Emory Healthcare facilities. Specifically, the plan will consist of the addition of a single 395,000 square foot clinic facility and a 525,000 square foot (250 bed) hospital. Additionally, 900 parking spaces and 500 spaces are proposed under each of the buildings, respectively. The plan also consists of a 1,200 space addition to the existing parking deck on the Clairmont Campus. Several other buildings will maintain their existing operation; however, some uses will be converted following the completion of the new facilities. The converted uses include the removal of 100 beds from the adjacent existing Emory Hospital (384 beds to remain in the existing hospital) to provide additional administrative/research space. Additionally, 226,594 square feet of existing clinic space in the adjacent existing Clinic "A" on site will also be converted to administrative/research space. Several facilities and parking structures will also be demolished in order to accommodate the expansion.

The development is scheduled to be completed in one phase by the year 2013. This review reports on the expansion project as a single phase with build-out of 2013.

The results of the detailed intersection analysis of the twenty-eight (28) study intersections for the 2013 No-Build (includes 2% per year background traffic growth for 5 years, but excludes trips generated by the Emory Healthcare Druid Hills Expansion) and 2013 Build conditions (includes background traffic plus trips generated by the Emory Healthcare Druid Hills Expansion) identify improvements that will be necessary in order to maintain the operational standards, as defined by GRTA's Technical Guidelines, within the study network. Listed on the following pages, by intersection number as described in the report, are the 2013 No-Build and Build Improvements.

Please refer to the footnotes that provide additional information and/or comment on the feasibility of each recommended improvement.

2008 Existing recommended improvements (includes existing traffic volumes):

#1 – Briarcliff Road at North Druid Hills Road

- Provide an additional eastbound left-turn lane, creating dual eastbound left-turn lanes along North Druid Hills Road[1]

#2 – Briarcliff Road at Lavista Road

- Provide a westbound right-turn lane along Lavista Road[1]

#4 – Briarcliff Road at North Decatur Road

- Provide a second northbound through lane and a second southbound through lane along Briarcliff Road[1 2]

#5 – Clairmont Road at North Druid Hills Road

- Provide a third eastbound and third westbound lane along North Druid Hills Road[1]
- Provide a westbound right-turn lane along North Druid Hills Road[1]
- Provide an additional southbound left-turn lane, creating dual left-turn lanes along Clairmont Road[1]

#6 – Clairmont Road at Mason Mill Road

- Optimize signal timings

#8 – North Decatur Road at Clairmont Road

- Optimize signal timings

#9 – North Decatur Road at Scott Boulevard[3]

- Provide a northbound right-turn lane along Scott Boulevard[1]
- Provide an additional eastbound left-turn lane, creating dual eastbound left-turn lanes along North Decatur Road[1]
- Provide an eastbound right-turn lane along North Decatur Road[1]
- Provide an additional westbound left-turn lane, creating dual westbound left-turn lanes along North Decatur Road[1]
- Provide a westbound right-turn lane along North Decatur Road[1]
- Provide an additional southbound right-turn lane, creating dual southbound right-turn lanes along Scott Boulevard[1]
- Provide a third eastbound through lane and westbound through lane along North Decatur Road[1]

#19 – Haygood Drive at Ridgewood Drive

- Install a southbound left-turn lane along Andrews Circle

2008 "Existing" Improvements Notes:

[1] Will require additional right-of-way and may have constructability limitations.
[2] Improvement not recommended, inconsistent with character of surrounding area.
[3] Recommendations improve intersection operation, but not to level of service standard. Improvements noted are the maximum that are deemed practical. These improvements aid in vehicular movement but may have major impacts on adjacent property and pedestrian/bicyclist safety.

2013 No-Build recommended improvements (includes background growth but does not include the Emory Healthcare Druid Hills Expansion DRI project traffic). Note: The following improvements are in addition to the Existing recommended improvements listed on the previous pages.

#1 – Briarcliff Road at North Druid Hills Road

- Convert the southbound dedicated right-turn lane along Briarcliff Road to a shared through/right-turn lane[1]

#2 – Briarcliff Road at Lavista Road

- Provide a second northbound through lane and a second southbound through lane along Briarcliff Road[2] [3]

#3 – Briarcliff Road at Clifton Road

- Realign the intersection so that Clifton Road is the through movement from the north leg of Briarcliff Road. The south leg of Briarcliff Road will form a T-intersection[2] [3] [6]
- Provide an additional westbound right-turn lane, creating dual westbound right-turn lanes along Clifton Road[2] [3] [6]

#8 – North Decatur Road at Clairmont Road

- Provide a southbound right-turn lane along Clairmont Road[2]

#11 – Scott Boulevard at Orion Drive

- Provide an additional northbound left-turn lane, creating dual left-turn lanes along Scott Boulevard[2]
- Convert the southbound right-turn lane into a shared through/right-turn lane[2]

#12 – Clifton Road at Houston Mill Road

- Provide an additional northbound left-turn lane, creating dual northbound left-turn lanes along Clifton Road[2]

#16 – Clifton Road at Gambrell Drive

- Provide an additional westbound left-turn lane, creating dual left-turn lanes along Gambrell Drive[7]

#17 – Clifton Road at North Decatur Road

- Provide a westbound right-turn lane along North Decatur Road

2013 "No-Build" Improvements Notes:

[1] Consistent with *North Druid Hills at Briarcliff Report*, dated 2006.
[2] Will require additional right-of-way and may have constructability limitations.
[3] Consistent with *Briarcliff Road Corridor Study*, dated 2006.
[4] Improvement not recommended, inconsistent with character of surrounding area.
[5] Recommendations improve intersection operation, but not to level of service standard. Improvements noted are the maximum that are deemed practical. These improvements aid in vehicular movement but may have major impacts on adjacent property and pedestrian/bicyclist safety.
[6] Intersection reconfiguration currently in design by DeKalb County.
[7] Improvement not recommended, not needed in the projected 2013 "Build" Conditions due to proposed Healthgate Drive connection to North Decatur Road.

2013 Build recommended improvements (includes the Emory Healthcare Druid Hills Expansion DRI project traffic). Note: The following improvements are in addition to the Existing and No-Build recommended improvements listed on the previous pages.

#5 – Clairmont Road at North Druid Hills Road

- Provide an additional eastbound right-turn lane, creating dual right-turn lanes along North Druid Hills Road[1]

#7 – Clairmont Road at Starvine Way

- Optimize signal timings

#8 – North Decatur Road at Clairmont Road

- Provide a westbound right-turn lane along North Decatur Road[1]

#13 – Clifton Road at Haygood Drive

- Provide a southbound right-turn lane along Clifton Road[2]

#13 Alt – Clifton Road at Haygood Drive[3] [4]

- Realign the intersection so that Haygood Drive is the through movement from the north leg of Clifton Road. The south leg of Clifton Road will create a T-intersection
- Provide two southbound through lanes and one right-turn lane along Clifton Road
- Provide one northbound left-turn lane and one shared northbound left-turn/right-turn lane along Clifton Road
- Provide one westbound left-turn lane and two westbound through lanes along Haygood Drive
- Remove Asbury Circle from intersection. Continue Asbury Circle under new bridge and reconnect with Haygood Drive further south.

#16 – Clifton Road at Gambrell Drive (Healthgate Drive)

- Remove the additional westbound left-turn lane along Gambrell (Healthgate) Drive if added during the 2013 No-Build Conditions[5]

#17 – Clifton Road at North Decatur Road

- Provide a southbound right-turn lane along Clifton Road

#20 – North Decatur Road at Proposed Healthgate Drive

- Provide a separate southbound left-turn and right-turn lane along Healthgate Drive
- Provide an eastbound left-turn lane along North Decatur Road
- Signalize if warranted by DeKalb County

#21 – Gambrell Drive at Proposed Site Driveway #1/Ridgewood Drive (full-movement)

- Provide a northbound left-turn lane along Gambrell Drive
- Provide a separate eastbound left-turn and right-turn lane along Site Driveway #1

#22 – Gambrell Drive at Proposed Site Driveway #2 (full-movement)

- Provide a separate southbound left-turn and right-turn lane along Site Driveway #2
- Provide an eastbound left-turn lane along Healthgate Drive

#23 – Clifton Road at Proposed Site Driveway #3 (right-in/right-out)

- Provide a westbound right-turn lane along Site Driveway #3

#27 – Gambrell Drive at Proposed Healthgate Drive

- Reconfigure Gambrell Drive to create T-intersection where the existing north portion of Gambrell Drive is stop-controlled and the renamed Gambrell Drive (Healthgate Drive) is the through movement into the new Healthgate Drive connection to North Decatur Road
- Provide a separate left-turn and right-turn lane along the stop-controlled portion of Gambrell Drive
- Provide a separate eastbound left-turn and through lane along Healthgate Drive
- Provide two westbound through lanes along Healthgate Drive

2013 "Build" Improvements Notes:

[1] Will require additional right-of-way and may have constructability limitations.
[2] Improvement not recommended, see 13 Alternative. Improvement also requires bridge widening.
[3] Intersection reconfiguration currently in design by Emory University.
[4] Recommended Improvement Alternative. Includes construction of a new bridge.
[5] Reduction in trips caused by proposed Healthgate Drive connection to North Decatur Road.

1.0 PROJECT DESCRIPTION

1.1 Introduction

This report presents the analyses of the anticipated traffic impacts associated with the proposed Emory Healthcare Druid Hills Expansion. The site includes two separate areas that are considered within the limits of the project. The first site (Main Campus) is located along Clifton Road, north of North Decatur Road, in DeKalb County, Georgia, adjacent to the Emory University academic center. The second site (Clairmont Campus) is located along Clairmont Road, north of North Decatur Road, also in DeKalb County, Georgia. The two sites are connected by a ½ mile exclusive shuttle route which travels above (grade separated) the existing CSX rail line that bisects the Emory University Campus. Because the project is a healthcare facility and is anticipated to generate more than 375 peak hour vehicular trips per day, the proposed development is considered a Development of Regional Impact (DRI) and is subject to Georgia Regional Transportation Authority (GRTA) and Atlanta Regional Commission (ARC) review. This document is being submitted under GRTA's non-expedited review process.

The proposed development plan consists of additional clinic and hospital space to the existing Emory Healthcare facilities. Specifically, the plan will consist of the addition of a single 395,000 square foot clinic facility and a 525,000 square foot (250 bed) hospital. 900 parking spaces and 500 spaces are proposed under each of the buildings, respectively. The plan also consists of 1,200 additional parking spaces to the existing parking deck on the Clairmont campus. Several other buildings will maintain their existing operation; however some uses will be converted in response to the new facilities. The converted uses include the removal of 100 beds from the adjacent existing Emory Hospital (384 beds to remain in the existing hospital) which will be converted to administrative/research space. 226,594 square feet in the adjacent existing Clinic "A" on site will also be converted to administrative/research space.

The development is scheduled to be completed in one phase by the year 2013. This review reports on the expansion project as a single phase with build-out of 2013.

A detailed summary of the proposed development program is provided in **Table 1**.

Table 1
Proposed Development Program

Action	Use	Map ID	Facility Name	Density
Demolition	Parking	A	Tower	616 Spaces
		B	Scarborough	
		C	Lowergate (northern portion)	420 Spaces
		D	Lowergate South	665 Spaces
		E	Sorority Lodge (surface)	41 Spaces
	Clinic	B	Scarborough	26,800 SF
	Ancillary	E	Sorority Lodge	12,000 SF
		F	Tufts House	15,000 SF
New Construction	Parking	G	Clinic (below grade)	900 Spaces
		H	Hospital (below grade)	500 Spaces
		I	Clairmont Deck Expansion*	1,200 Spaces
	Clinic	G	New Clinic	395,000 SF
	Hospital	H	New Hospital	250 Beds
Converted Uses	Clinic	J	Existing Clinic "A" (Adjacent to Site)	226,984 SF Clinic to 226,984 SF Administrative/Research
	Hospital	K	Adjacent Existing Hospital (Adjacent to Site)	100 Beds to 184,750 SF Administrative/Research
Net New**	Clinic			+ 168,406 SF
	Hospital			+ 150 Beds
	Administrative/Research			+ 411,734 SF
	Parking			+ 858 Spaces

* Located on the Clairmont Campus. All other facilities are located on the Main Campus.
** Net New represents net increase in development program, taking into account new facilities, demolition of existing facilities, and conversion of uses in existing facilities.

Figure 1 illustrates the project's location and **Figure 2** provides an aerial photograph of the area surrounding the site. **Figure 3** shows the site with the location of the facilities described in the development program as listed in the Map ID column in Table 1.

1.2 Site Plan Review

The site includes two separate areas that are considered within the limits of this DRI review. The first area (Main Campus) is located along Clifton Road, north of North Decatur Road, in DeKalb County, Georgia. The second area (Clairmont Campus) is located along Clairmont Road, north of North Decatur Road, also in DeKalb County, Georgia. The two sites are connected by a ½ mile exclusive shuttle route which travels along a structure above (grade separated) the existing CSX rail line that bisects the Emory University Campus. A description of the expansion of the two sites is as follows on the next page.

Main Campus

The proposed expansion includes the demolition of several existing parking facilities and buildings to accommodate the new construction and expansion of additional space. The proposed Emory Clinic and Hospital parking and building expansion is specifically bounded by Uppergate Drive to the north, Gambrell Drive (to be renamed Healthgate Drive) to the south, Gambrell Drive to the east, and Clifton Road to the west. Figure 3 also shows the location of the roads adjacent to the proposed expansion project. All roadways adjacent to the site are public, except for Lowergate Drive and Gambrell Drive between Clifton Road and Ridgewood Drive.

The site is located in the heart of the Emory University academic center, with classroom buildings, research buildings, student housing, and park space all located within close proximity. The area surrounding the site and the University consists mainly of medium density residential development and a golf course to the south; low to medium density residential and parks to the north; low to high density residential and commercial development to the east; and low to high residential density residential development to the west. The Centers for Disease Control and Prevention is located to the north along Clifton Road and Emory Village is located to the west along North Decatur Road.

Clairmont Campus

An expansion of 1,200 spaces to the existing 1,897-space Clairmont Deck on the Clairmont Campus is proposed to serve the additional demand of staff parking for the healthcare expansion. This area has vehicular access at one driveway (Starvine Way) along Clairmont Road and is connected to the Main Campus via the exclusive express shuttle route. It is anticipated that staff who park in this facility will travel to the main campus via an existing express shuttle, which is a service currently provided for the patrons of the existing Clairmont Deck. Starvine Way is a private roadway facility.

This site is located along Clairmont Road which consists mainly of multifamily and single family residential to the east. The Veterans Administration Hospital is located to the north of the site and a CSX rail line lies along the site's southern border. Emory's Lullwater Estate (nature preserve) is located to the west.

Demolition

The development is proposed to include the demolition of several structures and facilities on the Main Campus. Among these are the Tower/Scarborough parking deck, the north portion of the Lowergate parking deck, the Lowergate South parking deck, and Sorority Lodge surface parking lot. The Sorority Lodge, Tufts House, and the Scarborough Clinic are also slated for demolition. This demolition will accommodate expansion of Emory's healthcare operations by offering a new clinic facility as well as a new hospital. Below grade parking for each of the buildings is also proposed to be constructed to allow for more convenient visitor parking. The demolished and proposed parking and building space is listed in Table 1. See Figure 3 and the referenced conceptual plan for visual representation of the site layout. It should be noted that 755,361 square feet of clinic space and 923,752 square feet of hospital space are currently associated with Emory Healthcare adjacent to the site. No demolition is anticipated for the Clairmont Campus.

Figure 4 and **Figure 5** provide a small-scale copy of the site plan for each of the sites. Full-size site plans consistent with GRTA's Site Plan Guidelines are also being submitted as part of the Review Package.

1.3 Site Access

Main Campus

Note: The southern portion of Gambrell Drive is proposed to be renamed to Healthgate Drive and have direct access to North Decatur Road between Clifton Road and Ridgewood Drive.

Driveway #1 (full-movement) is proposed to be located approximately at the intersection of Gambrell Drive at Ridgewood Drive. Driveway #1 is proposed to serve as vehicular drop-off/valet as well as access to the Hospital's below grade parking. Circulation will most likely occur within the building's footprint.

Emergency access to the hospital is proposed along Lowergate Drive and loading for the hospital is proposed at the existing loading area along Uppergate Drive.

Driveway #2 (full-movement) is proposed along Healthgate Drive (the re-named Gambrell Drive) approximately 350 feet east of Clifton Road. Driveway #2 is proposed to serve as vehicular drop-off/valet as well as access to the Clinic's below grade parking.

Driveway #3 (right-in/right-out) is proposed along Clifton Road between Healthgate Drive and Lowergate Drive, approximately 225 feet north of Healthgate Drive. Driveway #3 is proposed to provide direct access to the Clinic's below grade parking.

The loading and service entrance serving the clinic is proposed to be located along Healthgate Drive, approximately 450 feet east of Clifton Road.

The portion of the Lowergate Deck to remain currently consists of five access points, all expected to remain.

Clairmont Campus

The Clairmont Deck expansion is proposed to utilize the northern-most existing driveway for the current deck along Starvine Way. This driveway is located approximately 650 southwest of the intersection of Clairmont Road at Starvine Way. Access to this site is proposed to be maintained at the existing signalized intersection of Clairmont Road with Starvine Way.

See the referenced conceptual plan for a visual representation of access to the proposed sites

1.4 Bicycle and Pedestrian Facilities

Commute options available in the area include bike and walk programs. The Bike Emory program was created to provide Emory faculty, staff, students, and healthcare employees with an opportunity to bike within or around Emory by providing bike racks around campus and free bikes at bike share locations around campus. Also, in partnership with the Atlanta Bicycle Campaign and the Emory Office of Alternative Transportation, the Clifton Corridor Traffic Management Association (CCTMA) created a bicycle suitability map for people living or working in the greater Emory area. The 'Destination Emory' website is used to locate those interested in walking or biking to Emory and the Clifton Corridor together.

A continuous sidewalk network is generally provided in the immediate vicinity of the expansion. Given the site's presence within a University campus, most sidewalks are well maintained and make logical connections between uses. New and aligned roadways as indicated by the referenced conceptual plan are proposed to include sidewalks along each side of the roadway and connect into the existing sidewalk networks adjacent to the site.

1.5 Transit Facilities

Currently, four MARTA bus routes (6, 19, 36, and 245) provide convenient service on roadways nearby the sites. Route 6 connects the site to the Lindbergh MARTA rail station to the north and to the Inman Park/Reynoldstown MARTA rail station to the south. Route 19 serves Clairmont Road and connects the site to the Brookhaven MARTA rail station to the north and the Decatur MARTA rail station to the south. Route 36 connects the site to the Arts Center MARTA rail station to the west and the Avondale MARTA rail station to the southeast. Route 245 Express bus stops only on the "Clifton Connection" on its rush hour route and connects the site to the Kensington MARTA rail station to the southeast and to the Lindbergh MARTA rail station to the northwest. During weekday peak hours, Route 6 operates on scheduled approximate 30-minute headways; Route 19 operates on scheduled approximate 50-minute headways; Route 36 operates on scheduled approximate 40-minute headways; and Route 245 operates on scheduled approximate 20-minute headways.

Emory's campus shuttle program, the Cliff, provides several stops to service areas throughout the campus and connects the campus with other transit sites. Emory also offers three Park-n-Ride lots, located at North DeKalb, Northlake, and South DeKalb malls.

Other commute options available in the area include carpool and vanpool programs. Emory, working with the CCTMA, organizes dozens of carpools and vanpools for employees who work in the Clifton Road area, such as the Veterans Administration Hospital, Emory, and the Centers for Disease Control and Prevention. Zipcar is also provided at numerous locations within walking distance of healthcare operations.

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 expansion, and growth rates along all roadways were agreed upon during the methodology meeting with GRTA, ARC, DeKalb County, and GDOT staff. A 2% per year background traffic growth rate was used for all roadways within the study network from 2008 to 2013. This background grown rate is consistent with GRTA's Letter of Understanding.

2.2 Traffic Data Collection

Traffic patterns during the summer in and around the Emory University area are not representative of those during the school year; therefore, it was agreed by GRTA and DeKalb County that historical counts that were taken while school was in session should be used to their fullest extent. At some intersections; however, existing traffic counts were not available. In these cases, counts were performed on July 10, July 15, and July 17, 2008 and adjusted accordingly.

Historical counts were grown at the recommended 2% per year growth rate. For counts collected when school was not in session, a summer adjustment factor was determined by comparing 2008 counts when school was not in session with historic counts when school was in session. It was determined that the traffic volumes at the intersection of Clifton Road at North Decatur Road were approximately 10% higher during the AM peak hour and approximately 8% higher during the PM peak hour when school was in session. These growth rates were then applied accordingly based upon whether school was in session when the counts were performed. All school adjusted volumes were then compared to counts adjusted based upon the year during which they were collected. A summary of the traffic count adjustments is provided in **Table 2**.

The weekday morning and afternoon peak hours varied between the 28 intersections. The AM peak period occurred between 7:00 am and 9:00 am, and the PM peak period occurred between 4:00 pm and 6:00 pm. Per

GRTA recommendation, counts were performed along Clifton Road between 2:00pm and 7:00pm to determine the PM peak hour in the Emory area. Based on the count, the peak hour occurred from 4:30 pm to 5:30 pm, so the peak hour at all intersections in the immediate Emory area was assumed to occur during this time period. The AM and PM peak hours are provided in Table 2.

Table 2
Intersection Turning Movement Count Summary

	Intersection	Year Counted	School on Session?	AM Peak	PM Peak
1	Briarcliff Road at North Druid Hills Road	2008	Yes	7:30-8:30	5:30-6:30
2	Briarcliff Road at Lavista Road	2008	Yes	7:45-8:45	5:30-6:30
3	Briarcliff Road at Clifton Road	2008	Yes	8:00-9:00	5:15-6:15
4	Briarcliff Road at North Decatur Road	2008	No	8:00-9:00	5:00-6:00
5	Clairmont Road at North Druid Hills Road	2008	No	7:45-8:45	4:00-5:00
6	Clairmont Road at Mason Mill Road	2008	No	7:30-8:30	4:15-5:15
7	Clairmont Road at Starvine Way	2007	Yes	7:30-8:30	5:30-6:30
8	North Decatur Road at Clairmont Road	2008	No	7:30-8:30	4:15-5:15
9	North Decatur Road at Scott Boulevard	2008	No	7:30-8:30	4:45-5:45
10	Scott Boulevard at DeKalb Industrial Way	2008	No	7:45-8:45	5:00-6:00
11	Scott Boulevard at Orion Drive	2008	No	7:45-8:45	5:00-6:00
12	Clifton Road at Houston Mill Road	2008	No	7:45-8:45	4:45-5:45
13	Clifton Road at Haygood Drive	2006	Yes	7:30-8:30	4:30-5:30
14	Clifton Road at Uppergate Drive	2006	Yes	7:30-8:30	4:30-5:30
15	Clifton Road at Lowergate Drive	2006	Yes	8:00-9:00	4:30-5:30
16	Clifton Road at Gambrell Drive	2006	Yes	7:45-8:45	4:30-5:30
17	Clifton Road at North Decatur Road	2006	Yes	7:45-8:45	4:30-5:30
18	Haygood Drive at North Decatur Road	2006	Yes	7:45-8:45	4:30-5:30
19	Haygood Drive at Ridgewood Drive	2006	Yes	7:30-8:30	4:30-5:30
21	Gambrell Drive at Ridgewood Drive/Site Driveway #1	2008	No	7:15-8:15	4:30-5:30
22	Gambrell Drive (Healthgate Drive) at Site Driveway #2	N/A	N/A	N/A	N/A
23	Clifton Road at Site Driveway #3	N/A	N/A	N/A	N/A
24	Ridgewood Drive at Ridgewood Drive (Uppergate Drive)	2008	No	7:15-8:15	4:30-5:30
25	Gambrell Drive at Lowergate Drive	2008	No	7:30-8:30	4:30-5:30
26	North Decatur Road at Ridgewood Drive	2006	Yes	7:45-8:45	4:30-5:30
28	Starvine Way at Clairmont Deck Driveway	2008	No	8:00-9:00	5:00-6:00

These study intersections are listed in *Section 3.4 Study Network Determination*. Raw count data is provided 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. **Table 3** illustrates LOS thresholds for unsignalized and signalized intersections. Level of service analyses were conducted at all intersections within the study network using *Synchro Professional, Version 6.0*.

Level of Service for signalized intersections is reported for the intersection as a whole. One or more movements at an intersection may experience a low LOS, while the intersection as a whole may operate at the LOS standard.

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

Table 3
Level of Service Criteria
Unsignalized and Signalized Intersections

Unsignalized Intersections		Signalized Intersections	
Level-of-Service	**Average Control Delay (sec/veh)**	**Level-of-Service**	**Average Control Delay (sec/veh)**
A	≤ 10	A	≤ 10.0
B	> 10 and ≤ 15	B	> 10.0 and ≤ 20.0
C	> 15 and ≤ 25	C	> 20.0 and ≤ 35.0
D	> 25 and ≤ 35	D	> 35.0 and ≤ 55.0
E	> 35 and ≤ 50	E	> 55.0 and ≤ 80.0
F	> 50	F	> 80.0

Source: 2000 Highway Capacity Manual

Volume to Capacity (v/c) ratio is also used to describe the operating characteristics of a road segment or intersection in relation to its capacity. The *Highway Capacity Manual* describes the v/c ratio as the ratio of traffic demand on a roadway facility divided by the facility's available capacity. V/C is often referred to as the degree of saturation. A facility with a v/c ratio between 0 and 1 operates with excess capacity; however, values above 1.0 indicate an excess of demand, or a facility operating over capacity.

3.0 STUDY NETWORK

3.1 Gross Trip Generation

As stated in *Section 1.1 Introduction*, the proposed development plan consists of a development program that consists of a gross increase of 395,000 square feet of clinic space (117 full-time doctors are expected to work in this space), 250 hospital beds (525,000 square feet), and 2,600 new parking spaces. Additionally, 411,734 square feet of administration and research space will be created by the conversion of uses in several existing facilities. The expansion will accomplish this growth by demolishing several facilities and parking decks, converting existing uses, and constructing new facilities. This report presents trips generated based on total build-out (2013) of the project.

As discussed and agreed upon with GRTA, ARC, DeKalb County, and GDOT staff, trips associated with the proposed development were estimated using equations provided in the *ITE Trip Generation Manual, Seventh Edition (2003)* when available. In certain cases, ITE rates were not provided due to limited data. Daily and AM peak hour rates were not provided for the Clinic land use. In this case, daily trips were estimated to be 10 times the PM peak hour trips, and AM peak hour trips were assumed to be approximately equal to the PM peak hour trips, but with the reverse entering/exiting trip split. Trip projections associated with the hospital land use was based on number of beds, while trip projections associated with the clinic land use was based on number of full-time doctors, as stated in GRTA's Letter of Understanding.

Gross projected trips anticipated to be generated by the proposed Emory Healthcare Druid Hills Expansion are displayed below in **Table 4**. It should be noted that net new trips associated with this project include a reduction of a percentage of existing trips generated by existing uses, as described in *Section 4.0 Trip Generation*.

Table 4
Gross Trip Generation

Land Use	ITE Code	Daily Traffic		AM Peak Hour		PM Peak Hour	
		Enter	Exit	Enter	Exit	Enter	Exit
Build-Out (Year 2013)							
Hospital - 250 beds (525,000 SF)	*610*	1,794	1,794	147	63	108	193
Clinic - 117 doctors (395,000 SF)	*310*	2,210*	2,210*	261*	181*	181	261
Research and Development Center - 411,734 SF	*710*	1,610	1,610	400	82	64	363
Total		**5,614**	**5,614**	**808**	**326**	**353**	**817**

* Indicates values approximated based upon ITE rates.

3.2 Trip Distribution

The directional distribution and assignment of new project trips were generated through extrapolation of zip code data for both patients and staff of Emory Healthcare as discussed and agreed upon with GRTA, ARC, and GDOT staff at the pre-application meeting.

3.3 Operational Standards

For the purposes of this traffic analysis, two intersection operational standards are report. First, a level of service (LOS) standard of D was used 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. Second, a volume to capacity (v/c) ratio standard of 1.2 was used for all intersections and segments within the study network.

3.4 Study Network Determination

A general study area was determined using GRTA's 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. Given the size of this DRI and the nature of the adjacent roadway facilities, it was decided that the study area consist of fewer intersections than the 7% rule yields. The study area was agreed upon during methodology discussions with GRTA, ARC, GDOT, and Emory staff, and consists of the following intersections, as listed in GRTA's Letter of Understanding:

Intersection #1 – Briarcliff Road at North Druid Hills Road	(Signalized)
Intersection #2 – Briarcliff Road at Lavista Road	(Signalized)
Intersection #3 – Briarcliff Road at Clifton Road	(Signalized)
Intersection #4 – Briarcliff Road at North Decatur Road	(Signalized)
Intersection #5 – Clairmont Road at North Druid Hills Road	(Signalized)
Intersection #6 – Clairmont Road at Mason Mill Road	(Signalized)
Intersection #7 – Clairmont Road at Starvine Way	(Signalized)
Intersection #8 – North Decatur Road at Clairmont Road	(Signalized)
Intersection #9 – North Decatur Road at Scott Boulevard	(Signalized)
Intersection #10 – Scott Boulevard at DeKalb Industrial Way	(Signalized)
Intersection #11 – Scott Boulevard at Orion Drive	(Signalized)
Intersection #12 – Clifton Road at Houston Mill Road	(Signalized)
Intersection #13 – Clifton Road at Haygood Drive	(Signalized)
Intersection #14 – Clifton Road at Uppergate Drive	(Unsignalized)
Intersection #15 – Clifton Road at Lowergate Drive	(Signalized)
Intersection #16 – Clifton Road at Gambrell Drive	(Signalized)
Intersection #17 – Clifton Road at North Decatur Road	(Signalized)
Intersection #18 – Haygood Drive at North Decatur Road	(Signalized)
Intersection #19 – Haygood Drive at Ridgewood Drive	(Signalized)
Intersection #20 – North Decatur Road at Proposed Healthgate Drive	(Signalized)

Several other intersections that are not listed above lie within the DRI boundary. These intersections were added to the study network and are listed below:

Intersection #24 – Ridgewood Drive at Ridgewood Drive (Uppergate Drive)	(Unsignalized)
Intersection #25 – Gambrell Drive at Lowergate Drive	(Unsignalized)
Intersection #26 – North Decatur Road at Ridgewood Drive	(Unsignalized)
Intersection #27 – Gambrell Drive @ Gambrell Drive	(Free-Flow)
Intersection #28 – Starvine Way at Clairmont Deck Driveway	(Unsignalized)

Each of the above listed intersections was analyzed for Existing 2008 Conditions, the 2013 No-Build Conditions, and the 2013 Build Conditions. The 2013 No-Build conditions represent the existing traffic volumes grown at 2.0% per year from 2008 to 2013. The 2013 Build conditions add the projected trips associated with the development to the 2013 No-Build conditions.

The additional proposed site access points listed below were only analyzed for 2013 Build Conditions:

Intersection #21 – Gambrell Drive/Ridgewood Drive at Proposed Site Driveway #1
Intersection #22 – Gambrell Drive (Healthgate Drive) at Proposed Site Driveway #2
Intersection #23 – Clifton Road at Proposed Site Driveway #3

All of the study intersections were analyzed for the weekday AM and PM peak hours as discussed in *Section 2.2 Traffic Data Collection*.

3.5 Existing Facilities

The following section provides a written description of the study area roadway facilities.

Clairmont Road (SR 155)

- Clairmont Road (SR 155) is a four-lane roadway that contains portions separated by a two-way left-turn lane. The roadway runs primarily north-south beginning north of Decatur and terminating at Peachtree Industrial Boulevard. GDOT classifies this road as an Urban Principal Arterial. Sidewalks are provided south of North Druid Hills Road. The posted speed along Clairmont Road is 40 MPH, and the ADT along the roadway is 31,560 vehicles per day (vpd) based upon GDOT 2007 counts.

Briarcliff Road (SR 42)

- Briarcliff Road (SR 42) is a two-lane roadway that begins at Memorial Drive and runs primarily north-south until it intersects with North Druid Hills Road (in the vicinity of the site) to the north. To the north Briarcliff Road runs northeast where it terminates at Lavista Road. GDOT classifies this road as an Urban Minor Arterial. Sidewalks are provided south of Lavista Road (the southern intersection) and north of North Decatur Road. The posted speed along Briarcliff Road is 35 MPH, and the ADT along the roadway is 15,340 vpd based upon GDOT 2007 counts.

Lavista Road (SR 236)

- Lavista Road (SR 236) is a two-lane undivided roadway that begins at Cheshire Bridge Road and ends at Lawrenceville Highway. Lavista Road runs east-west from Cheshire Bridge Road to Oak Grove Road, north-south from Oak Grove Road to Briarcliff Road, and east-west from Briarcliff Road to Lawrenceville Highway. GDOT classifies the road as an Urban Minor Arterial. Sidewalks are provided between Briarcliff Road and North Druid Hills Road. The posted speed along Lavista Road is 35 MPH, and the ADT along the roadway is 22,440 vpd based upon GDOT 2007 counts.

North Druid Hills Road

- North Druid Hills Road is a four-lane roadway that begins at Peachtree Road and runs primarily north-south until it intersects I-85 to the south. To the south of I-85, North Druid Hills Road runs primarily east-west in the vicinity of the study area through North Decatur where it ends at Highway 78 inside I-285. This road is classified as an Urban Minor Arterial. Sidewalks are provided west of Clairmont Road. The posted speed along North Druid Hills Road is 35 MPH, and the ADT along the roadway is 29,040vpd based upon GDOT 2007 counts.

Clifton Road

- Clifton Road is a four-lane undivided roadway in the vicinity of the project that begins to the south at DeKalb Avenue, extending to the northeast at North Decatur Road, and ending to the northwest at Briarcliff Road. This road is classified as an Urban Collector Street. Sidewalks are provided along both sides of the road in the Emory area. The posted speed limit along Clifton Road is 35 MPH, and the ADT along the roadway is not available.

North Decatur Road

- North Decatur Road is a four-lane undivided roadway in the vicinity of the project that begins to the west at Briarcliff Road, and extends to the east, connecting with Scott Boulevard. This road is classified as an Urban Collector Street. Sidewalks are provided along North Decatur Road in the Emory area. The posted speed limit along North Decatur Road is 35 MPH, and the ADT along the roadway is 15,710 vpd based upon GDOT 2007 counts.

Houston Mill Road

- Houston Mill Road is a two-lane roadway that begins to the south at Michael Street and ends to the north at Lavista Road. This road runs primarily north-south and is classified as an Urban Collector Street. Sidewalks are provided along Houston Mill Road. The posted speed limit along Houston Mill Road is 30 MPH, and the ADT along the roadway is 19,700 vpd based upon GDOT 2007 counts.

Haygood Drive

- Haygood Drive is a two-lane undivided roadway that begins to the south at North Decatur Road, extending to the northeast, the roadway ends at Clifton Road. This road is classified as an Urban Collector Street. The posted speed limit along Haygood Drive is 25 MPH, and no ADT counts are available along Haygood Road.

Scott Boulevard

- Scott Boulevard is a six-lane roadway, with a two-way left-turn lane, that begins to the south at West Ponce de Leon Avenue and extends to the northeast to intersect with Church Street, where the roadway becomes Lawrenceville Highway. This road is classified as an Urban Principal Arterial. The posted speed limit along Scott Boulevard is 40 MPH, and the ADT along the roadway is 25,620 vpd based upon GDOT 2007 counts.

Starvine Way

- Starvine Way is a private, two-lane undivided roadway that begins to the east at Clairmont Avenue. West of the Clairmont parking facility, the roadway becomes a limited-access, shuttle-only roadway. This road is classified as an Urban Local Street. The ADT along Starvine Way, 5,796 vpd, was counted on June 19, 2008.

Mason Mill Road

- Mason Mill Road is a two-lane undivided roadway that begins to the east at Clairmont Avenue, and extends to the west, where it intersects with Houston Mill Road. This road is classified as an Urban Local Street. Sidewalks are provided along Mason Mill Road. The posted speed limit is 35 MPH, but no ADT information is available along the roadway.

DeKalb Industrial Way

- DeKalb Industrial Way is generally a four-lane undivided roadway with a two-way left-turn lane. The roadway runs primarily north-south beginning at East Ponce de Leon Avenue and terminating at Scott Boulevard to the north. GDOT classifies this road as an Urban Collector Street. Sidewalks are generally provided along the east side of the road. The posted speed along DeKalb Industrial Way is 40 MPH, and the ADT along the roadway is 17,340 vehicles per day (vpd) based upon GDOT 2007 counts.

Orion Drive

- Orion Drive is a two-lane undivided roadway that provides access to North DeKalb Mall to the west and residential neighborhoods to the east. This road is classified by GDOT as an Urban Local Street. Sidewalks are generally not provided along either side of the road with the exception of the portion immediately adjacent to the mall. The posted speed limit along Orion Drive is 35 MPH, and the ADT along the roadway is not available.

Ridgewood Drive

- Ridgewood Drive is a two-lane undivided roadway that travels through the Emory Campus. The road travels from Clifton Road to the south and terminates at Haygood Drive to the north. This road is classified by GDOT as an Urban Local Street. Sidewalks are generally provided along both sides of the road with the exception of the portion between North Decatur Road to Gambrell Drive. The posted speed limit along Ridgewood Drive is 25 MPH, and the ADT along the roadway is not available.

Uppergate Drive

- Uppergate Drive is a short two-lane undivided roadway that generally serves Emory Healthcare and Children's Healthcare of Atlanta facilities. The road extends between Clifton Road and Ridgewood Drive and is classified by GDOT as an Urban Local Street. Sidewalks are provided along both sides of the road. The speed limit along Uppergate Drive is assumed to be 25 MPH, and the ADT along the roadway is not available.

Lowergate Drive

- Lowergate Drive is a short private two-lane undivided roadway that generally serves Emory Healthcare facilities. The road extends between Clifton Road and Ridgewood Drive and travels underneath the existing Lowergate Parking Deck. Sidewalks are provided along both sides of the road. The speed limit along Lowergate Drive is assumed to be 25 MPH, and the ADT along the roadway is not available.

Gambrell Drive

- Gambrell Drive is a short private two-lane undivided roadway that generally serves Emory Healthcare facilities. The road extends between Clifton Road and Ridgewood Drive. Sidewalks are provided along both sides of the road. The speed limit along Gambrell Drive is assumed to be 25 MPH, and the ADT along the roadway is not available. The portion between Clifton Road and its bend at the southeast corner of the Lowergate Parking Deck (new Healthgate Drive connection to North Decatur Road) is proposed to undergo improvements as part of the healthcare expansion and be renamed Healthgate Drive. The portion north of this point to Ridgewood Drive will maintain its name.

Roadway classification descriptions are provided in **Table 5**.

Table 5 Roadway Classification			
Roadway	**Number Of Through Lanes**	**Posted Speed Limit (MPH)**	**GDOT Functional Classification**
Clairmont Road (SR 155)	4	40	Urban Principal Arterial
Briarcliff Road (SR 42)	2	35	Urban Minor Arterial
Lavista Road (SR 236)	2	35	Urban Minor Arterial
North Druid Hills Road	4	35	Urban Minor Arterial
Clifton Road	4	25/35	Urban Collector Street
North Decatur Road	4	35	Urban Collector Street
Houston Mill Road	2	30	Urban Collector Street
Haygood Drive	2	25	Urban Local Street
Scott Boulevard	6	40	Urban Principal Arterial
Starvine Way	2	25	Urban Local Street
Mason Mill Road	2	35	Urban Collector Street
DeKalb Industrial Way	4	40	Urban Collector Street
Orion Drive	2	35	Urban Local Street
Ridgewood Drive	2	25	Urban Local Street
Uppergate Drive	2	25	Urban Local Street
Lowergate Drive	2	25	Urban Local Street
Gambrell Drive	2	25	Urban Local Street

4.0 TRIP GENERATION

As mentioned previously, trips associated with the proposed expansion were estimated using methods agreed upon during the methodology meeting with GRTA, ARC, and GDOT staff. Equations provided in the *ITE Trip Generation Manual, Seventh Edition (2003)* were used when available. Project traffic associated with the clinic was generated on a per doctor basis, project traffic associated with the hospital was generated based upon number of hospital beds, and project traffic associated with the administrative/research land use was generated based upon the square feet to be converted to administrative and research space. In certain cases, ITE rates were not provided due to limited data. Daily and AM peak hour rates were not provided for the clinic land use. In this case, daily trips were estimated to be 10 times the PM peak hour. AM peak hour trips were assumed to be approximately equal to the PM peak hour trips, but with the reverse entering/exiting trip splits.

Mixed-use vehicle trip reductions were applied to the gross trip generated according to data collected at Emory's Lowergate visitor parking deck performed in May 2008. It was determined that 5% of the daily, AM peak hour, and PM peak hour trips were associated with visitors visiting both the clinic and hospital. Therefore, 5% of the visitor clinic and hospital trips were reduced as internal capture trips, as agreed upon by GRTA, ARC, GDOT, and DeKalb County staff.

Per the Letter of Understanding, alternative transportation mode (walking, bicycling, transit, etc.) reductions were applied at 5% for the visitor trips and 20% for the staff trips, as agreed upon during methodology discussions with GRTA, ARC, GDOT, and DeKalb County staff. Data provided by the commute option program at Emory was

used to develop these values. Of the existing employees of Emory University and Healthcare, approximately 70% of employees and staff are accounted for in the commute option program. Of the total number of Emory University and Healthcare employees and staff, 13.4% currently chose to commute to Emory via alternative modes. This leaves 30% of all employees and staff unaccounted for, thus making it very reasonable to expect that at least 20% of the total number of employees and staff currently (and will in the future) use alternative commute modes.

The adjusted gross (with mixed-use and alternative mode reductions applied) trips generated and analyzed in this report are listed below in **Table 6**.

Table 6
Adjusted Gross Trip Generation

Land Use	Daily Traffic	AM Peak Hour		PM Peak Hour	
		Enter	Exit	Enter	Exit
Build-Out (Year 2013)					
Gross Trips	**11,227**	**808**	**326**	**353**	**817**
Mixed-Use Reductions	*-702*	*-14*	*-8*	*-58*	*-79*
Alternate Mode Reductions	*-1,345*	*-120*	*-40*	*-31*	*-104*
Adjusted Gross Trips	**9,180**	**674**	**278**	**264**	**634**

In addition to the trips generated by the project, some existing traffic associated with current healthcare facilities was removed from the network based upon the parking decks to be demolished. The traffic removed is associated with the existing hospital and clinic facilities that are to be converted to administrative space. These trips were removed from the roadway network based on existing traffic volumes associated with the current parking facilities on site. The parking decks to be demolished are shown in Figure 3. A majority of the decks currently serve staff, while some parking to be removed currently serve visitor parking, while other parking will be converted to alternative uses. Staff trips were determined based upon rates developed during a parking study performed in April 2007. A summary of the removed and converted trips is provided below in **Table 7**.

Table 7 Removed Trips						
Parking Deck	Number of Spaces	Daily Trips (10 times PM)	AM Peak Hour		PM Peak Hour	
			Enter	Exit	Enter	Exit
STAFF						
Tower and Scarborough	616	-1,198	-116	-40	-25	-95
Lowergate South	665	-1,293	-125	-43	-27	-103
Sorority Parking Lot	41	-80	-8	-3	-2	-6
VISITORS						
Lowergate Visitor Parking	1,097	-1,396	-152	-32	-23	-125
TOTAL TO BE REMOVED		**-3,966**	**-401**	**-117**	**-76**	**-329**
Lowergate Parking (Converted to Staff)	677	+1,316	+127	+44	+27	+104
TOTAL TO BE CONVERTED		**+1,316**	**+127**	**+44**	**+27**	**+104**
TOTAL TRIPS (=CONVERTED - REMOVED)		***-2,650***	***-273***	***-74***	***-49***	***-229***

Net new trips generated by the proposed expansion were calculated by removing existing traffic associated with uses to be removed/converted (Table 7) from the adjusted gross trips anticipated to be generated (Table 6). A summary of the net new trips anticipated to result from the project is provided below in **Table 8**.

Table 8 Net New Trips					
Land Use	Daily Traffic	AM Peak Hour		PM Peak Hour	
		Enter	Exit	Enter	Exit
Build-Out (Year 2013)					
Adjusted Gross Trips	**9,180**	**674**	**278**	**264**	**634**
Removed Trips	**-2,650**	**-273**	**-74**	**-49**	**-229**
Net New Trips	**6,530**	**401**	**204**	**215**	**405**

The trips described in Table 8 are for illustrative purposes only. The 2013 Build Conditions operational analysis as described in *Section 6.0 Traffic Analysis*, was performed by removing the project trips in Table 7 first, then applying the adjusted gross project trips from Table 6 to the study network.

5.0 TRIP DISTRIBUTION AND ASSIGNMENT

Project trip distribution (both new and removed trips) was based on zip code data provided by Emory University (see appendix), as well as engineering judgment and a review of land use densities in the area using aerial mapping. The proposed trip distribution is as follows:

Clinic and Hospital Visitor

- To/from the north along Clifton Road/Clairmont Road – 32%
- To/from the south along Clifton Road/Clairmont Road – 12%
- To/from the east along North Decatur Road – 39%
- To/from the west along North Decatur Road – 17%

Staff/Students

- To/from the north along Clifton Road/Clairmont Road – 35%
- To/from the south along Clifton Road/Clairmont Road – 20%
- To/from the east along North Decatur Road – 40%
- To/from the west along North Decatur Road – 5%

Since ITE provides total trip volume projections per land use, but does not provide a visitor/staff volume split, Emory's Lowergate visitor deck parking study, dated May 2008, was used to make these projections. Given recorded visitor parking turnover times and assumed staff parking behaviors, it was estimated that visitor trips account for approximately 2/3 of all vehicular trip demand associated with the healthcare operations.

Figures 6.1 through **7.2** display the expected trip percentages for the adjusted gross new vehicular trips associated with the project throughout the roadway study network. These percentages were applied to the new trips expected to be generated by the expansion (see Table 6), and the volumes were assigned to the roadway network. The expected peak hour project trips generated by the proposed expansion are shown in **Figures 8.1** through **8.2**. The project trips shown in Figures 8.1-8.2 do not include trips removed based upon the demolition of parking decks and the conversion/removal of existing uses as shown in Table 7. These removed volumes, however, are accounted for as background trips in the 2013 Build Conditions analysis.

6.0 TRAFFIC ANALYSIS

6.1 Existing 2008 Traffic

The observed existing peak hour traffic volumes (as well as pedestrian volumes and heavy vehicle factors) were input into *Synchro 6.0*, along with the existing traffic signal cycle lengths, splits, and offsets, and an Existing 2008 Conditions analysis was performed. The results of the operational analysis are displayed in **Table 9**.

Table 9
Existing 2008 Intersection Operation
(delay in seconds)

	Intersection	Control		AM Peak Hour		PM Peak Hour	
				LOS	v/c	LOS	v/c
1	Briarcliff Road at North Druid Hills Road	Signal		E (57.1)	0.94	F (95.6)	1.30
2	Briarcliff Road at Lavista Road	Signal		F (121.6)	1.15	F (105.0)	1.21
3	Briarcliff Road at Clifton Road	Signal		E (67.6)	1.06	D (47.2)	0.98
4	Briarcliff Road at North Decatur Road	Signal		F (158.7)	1.36	F (142.8)	1.22
5	Clairmont Road at North Druid Hills Road	Signal		F (83.1)	1.01	F (108.4)	1.22
6	Clairmont Road at Mason Mill Road	Signal		B (13.0)	0.68	F (114.4)	0.72
7	Clairmont Road at Starvine Way	Signal		B (10.2)	0.59	E (59.0)	0.81
8	North Decatur Road at Clairmont Road	Signal		F (167.2)	1.18	D (52.3)	0.90
9	North Decatur Road at Scott Boulevard	Signal		F (106.2)	1.06	F (113.7)	1.06
10	Scott Boulevard at DeKalb Industrial Way	Signal		B (19.6)	0.81	D (46.2)	0.90
11	Scott Boulevard at Orion Drive	Signal		D (40.6)	1.00	E (65.4)	1.05
12	Clifton Road at Houston Mill Road	Signal		D (44.0)	0.96	C (33.9)	0.85
13	Clifton Road at Haygood Drive	Signal		E (56.1)	0.87	C (28.9)	0.69
14	Clifton Road at Uppergate Drive	Stop		C (20.9)	0.13	C (16.0)	0.08
15	Clifton Road at Lowergate Drive	Signal		B (10.0)	0.66	C (21.9)	0.52
16	Clifton Road at Gambrell Drive	Signal		D (36.8)	0.87	E (65.0)	0.68
17	Clifton Road at North Decatur Road	Signal		E (67.9)	0.96	E (56.5)	0.99
18	Haygood Drive at North Decatur Road	Signal		C (20.1)	0.78	C (26.7)	0.61
19	Haygood Drive at Ridgewood Drive	Signal		E (64.5)	0.98	C (30.7)	0.75
20	North Decatur Road at Healthgate Drive	N/A		N/A	N/A	N/A	N/A
21	Gambrell Drive at Ridgewood Drive/Site Driveway #1	Stop		B (13.2)	0.38	B (11.7)	0.16
22	Gambrell Drive (Healthgate Drive) at Site Driveway #2	N/A		N/A	N/A	N/A	N/A
23	Clifton Road at Site Driveway #3	N/A		N/A	N/A	N/A	N/A
24	Ridgewood Drive at Ridgewood Drive (Uppergate Drive)	Stop	NB	B (10.5)	**	A (9.3)	**
			SB	B (10.3)	**	A (9.3)	**
			WB	B (12.2)	**	A (8.9)	**
25	Gambrell Drive at Lowergate Drive	Stop		C (15.2)	0.37	B (14.2)	0.21
26	North Decatur Road at Ridgewood Drive*	Stop		A (1.5)	0.09	A (0.1)	0.01
27	Gambrell Drive at Gambrell Drive (Healthgate Drive)	N/A		N/A	N/A	N/A	N/A
28	Starvine Way at Clairmont Deck Driveway	Stop		B (10.1)	0.23	A (9.3)	0.03

*Delay reported for EB left-turn movement, Ridgewood Drive is one-way northbound, no southbound stop-controlled approach.
** v/c not provided for all-way stop control intersection configuration.

As shown in Table 9, fourteen of the study intersections currently operate at a Level of Service of E or F during at least one peak hour. Per GRTA's Technical Guidelines and Letter of Understanding, LOS standards are therefore lowered to LOS E for the respective analysis time periods.

Given the adjusted LOS standards, eight intersections currently operate below the operational standards during at least one peak hour. Intersection timing improvements were made to appropriate study intersections and operational improvements were made to specific intersections until each intersection's operation was elevated to an appropriate range, as described above. The geometric improvements made to the system to elevate the operational standards to the acceptable standards are listed below, by intersection:

2008 Existing recommended improvements (includes existing traffic volumes):

#1 – Briarcliff Road at North Druid Hills Road

- Provide an additional eastbound left-turn lane, creating dual eastbound left-turn lanes along North Druid Hills Road[1]

#2 – Briarcliff Road at Lavista Road

- Provide a westbound right-turn lane along Lavista Road[1]

#4 – Briarcliff Road at North Decatur Road

- Provide a second northbound through lane and a second southbound through lane along Briarcliff Road[1 2]

#5 – Clairmont Road at North Druid Hills Road

- Provide a third eastbound and third westbound lane along North Druid Hills Road[1]
- Provide a westbound right-turn lane along North Druid Hills Road[1]
- Provide an additional southbound left-turn lane, creating dual left-turn lanes along Clairmont Road[1]

#6 – Clairmont Road at Mason Mill Road

- Optimize signal timings

#8 – North Decatur Road at Clairmont Road

- Optimize signal timings

#9 – North Decatur Road at Scott Boulevard[3]

- Provide a northbound right-turn lane along Scott Boulevard[1]
- Provide an additional eastbound left-turn lane, creating dual eastbound left-turn lanes along North Decatur Road[1]
- Provide an eastbound right-turn lane along North Decatur Road[1]
- Provide an additional westbound left-turn lane, creating dual westbound left-turn lanes along North Decatur Road[1]
- Provide a westbound right-turn lane along North Decatur Road[1]
- Provide an additional southbound right-turn lane, creating dual southbound right-turn lanes along Scott Boulevard[1]
- Provide a third eastbound through lane and westbound through lane along North Decatur Road[1]

#19 – Haygood Drive at Ridgewood Drive

- Install a southbound left-turn lane along Andrews Circle

2008 "Existing" Improvements Notes:

[1] Will require additional right-of-way and may have constructability limitations.
[2] Improvement not recommended, inconsistent with character of surrounding area.
[3] Recommendations improve intersection operation, but not to level of service standard. Improvements noted are the maximum that are deemed practical. These improvements aid in vehicular movement but may have major impacts on adjacent property and pedestrian/bicyclist safety.

Given the above improvements, the Existing 2008 Improved Conditions intersection levels of service and v/c ratios are displayed in **Table 10** below. The Existing 2008 Conditions laneage and improved laneage and peak hour traffic volumes are shown in **Figures 9.1** through **9.2**.

Table 10
Existing 2008 Intersection Operation IMPROVED
(delay in seconds)

Intersection		Control	AM Peak Hour		PM Peak Hour	
			LOS	v/c	LOS	v/c
1	Briarcliff Road at North Druid Hills Road	Signal	D (53.0)	0.87	E (62.1)	0.98
2	Briarcliff Road at Lavista Road	Signal	E (68.1)	0.99	E (74.2)	0.96
4	Briarcliff Road at North Decatur Road	Signal	D (51.5)	0.88	E (64.9)	0.95
5	Clairmont Road at North Druid Hills Road	Signal	E (64.3)	0.83	E (67.9)	0.86
6	Clairmont Road at Mason Mill Road	Signal	B (11.0)	0.69	D (53.0)	0.72
8	North Decatur Road at Clairmont Road	Signal	E (60.1)	0.99	D (48.2)	0.89
9	North Decatur Road at Scott Boulevard	Signal	E (79.0)	0.88	F (82.4)*	0.88
19	Haygood Drive at Ridgewood Drive	Signal	C (33.2)	0.82	C (30.1)	0.75

* Recommendations improve intersection operation, but not to the level of service standard. Improvements noted are the maximum that are deemed reasonable.

6.2 2013 No-Build Traffic

To account for growth in traffic in the vicinity of the proposed development, the existing traffic volumes were grown at 2.0% per year along all roadway links within the study network from 2008 to 2013.

These no-build volumes, along with existing roadway geometry, and existing signal timings were input into *Synchro 6.0* and an analysis of the projected 2013 No-Build Conditions was performed. The results are displayed below in **Table 11.**

Table 11
2013 No-Build Intersection Operation
(delay in seconds)

	Intersection	Control	LOS Standard	AM Peak Hour		PM Peak Hour	
				LOS	v/c	LOS	v/c
1	Briarcliff Road at North Druid Hills Road	Signal	E	F (80.5)	1.03	F (144.2)	1.57
2	Briarcliff Road at Lavista Road	Signal	E	F (153.3)	1.32	F (136.7)	1.39
3	Briarcliff Road at Clifton Road	Signal	E AM/ D PM	F (87.4)	1.20	E (62.9)	1.15
4	Briarcliff Road at North Decatur Road	Signal	E	F (209.3)	1.51	F (184.6)	1.35
5	Clairmont Road at North Druid Hills Road	Signal	E	F (109.3)	1.16	F (135.6)	1.39
6	Clairmont Road at Mason Mill Road	Signal	D AM/ E PM	B (15.4)	0.77	F (132.8)	0.80
7	Clairmont Road at Starvine Way	Signal	D AM/ E PM	B (10.9)	0.65	E (73.4)	0.91
8	North Decatur Road at Clairmont Road	Signal	E AM/ D PM	F (201.6)	1.39	E (76.4)	1.01
9	North Decatur Road at Scott Boulevard	Signal	E	F (102.0)	1.09	F (151.2)	1.41
10	Scott Boulevard at DeKalb Industrial Way	Signal	D	C (22.6)	0.90	D (54.3)	0.99
11	Scott Boulevard at Orion Drive	Signal	D AM/ E PM	E (71.1)	1.11	F (81.6)	1.17
12	Clifton Road at Houston Mill Road	Signal	D	E (61.8)	1.10	D (45.2)	0.97
13	Clifton Road at Haygood Drive	Signal	E AM/ D PM	E (76.6)	0.97	C (34.4)	0.81
14	Clifton Road at Uppergate Drive	Stop	D	C (23.5)	0.17	C (16.9)	0.09
15	Clifton Road at Lowergate Drive	Signal	D	B (12.3)	0.71	C (23.8)	0.57
16	Clifton Road at Gambrell Drive	Signal	D AM/ E PM	D (51.5)	0.98	F (80.5)	0.76
17	Clifton Road at North Decatur Road	Signal	E	F (95.8)	1.08	E (79.1)	1.07
18	Haygood Drive at North Decatur Road	Signal	D	C (23.7)	0.86	C (28.5)	0.68
19	Haygood Drive at Ridgewood Drive	Signal	E AM/ D PM	F (93.7)	1.10	D (38.2)	0.83
20	North Decatur Road at Healthgate Drive	N/A	D	N/A	N/A	N/A	N/A
21	Gambrell Drive at Ridgewood Drive/Site Driveway #1	Stop	D	B (14.5)	0.44	B (12.3)	0.19
22	Gambrell Drive (Healthgate Drive) at Site Driveway #2	N/A	D	N/A	N/A	N/A	N/A
23	Clifton Road at Site Driveway #3	N/A	D	N/A	N/A	N/A	N/A
24	Ridgewood Drive at Ridgewood Drive (Uppergate Drive)	Stop	NB D	B (11.7)	**	A (9.8)	**
			SB D	B (10.9)	**	A (9.7)	**
			WB D	B (13.6)	**	A (9.2)	**
25	Gambrell Drive at Lowergate Drive	Stop	D	C (17.2)	0.43	C (15.5)	0.25
26	North Decatur Road at Ridgewood Drive*	Stop	D	A (1.6)	0.10	A (0.1)	0.01
27	Gambrell Drive at Gambrell Drive (Healthgate Drive)	N/A	D	N/A	N/A	N/A	N/A
28	Starvine Way at Clairmont Driveway	Stop	D	B (10.2)	0.25	A (9.3)	0.03

*Delay reported for EB left-turn movement, Ridgewood Drive is one-way northbound, no southbound stop-controlled approach.
** v/c not provided for all-way stop control intersection configuration.

Maintaining existing signal timings and roadway geometry, thirteen intersections are projected to operate below the operational standards during at least one peak hour for the year 2013 No-Build Conditions. Intersection timing improvements were made to appropriate study intersections and operational improvements were made to specific intersections until each intersection's operation was elevated to an appropriate range, as defined by GRTA's Technical Guidelines. The geometric improvements made to the system to elevate the operational standards to the acceptable standards are listed below, by intersection:

2013 No-Build recommended improvements (includes background growth but does not include the Emory Healthcare Druid Hills Expansion DRI project traffic). Note: The following improvements are in addition to the Existing recommended improvements listed on the previous pages.

#1 – Briarcliff Road at North Druid Hills Road

- Convert the southbound dedicated right-turn lane along Briarcliff Road to a shared through/right-turn lane[1]

#2 – Briarcliff Road at Lavista Road

- Provide a second northbound through lane and a second southbound through lane along Briarcliff Road[2 3]

#3 – Briarcliff Road at Clifton Road

- Realign the intersection so that Clifton Road is the through movement from the north leg of Briarcliff Road. The south leg of Briarcliff Road will form a T-intersection[2 3 6]
- Provide an additional westbound right-turn lane, creating dual westbound right-turn lanes along Clifton Road[2 3 6]

#8 – North Decatur Road at Clairmont Road

- Provide a southbound right-turn lane along Clairmont Road[2]

#11 – Scott Boulevard at Orion Drive

- Provide an additional northbound left-turn lane, creating dual left-turn lanes along Scott Boulevard[2]
- Convert the southbound right-turn lane into a shared through/right-turn lane[2]

#12 – Clifton Road at Houston Mill Road

- Provide an additional northbound left-turn lane, creating dual northbound left-turn lanes along Clifton Road[2]

#16 – Clifton Road at Gambrell Drive

- Provide an additional westbound left-turn lane, creating dual left-turn lanes along Gambrell Drive[7]

#17 – Clifton Road at North Decatur Road

- Provide a westbound right-turn lane along North Decatur Road

2013 "No-Build" Improvements Notes:

[1] Consistent with *North Druid Hills at Briarcliff Report*, dated 2006.
[2] Will require additional right-of-way and may have constructability limitations.
[3] Consistent with *Briarcliff Road Corridor Study*, dated 2006.
[4] Improvement not recommended, inconsistent with character of surrounding area.
[5] Recommendations improve intersection operation, but not to level of service standard. Improvements noted are the maximum that are deemed practical. These improvements aid in vehicular movement but may have major impacts on adjacent property and pedestrian/bicyclist safety.
[6] Intersection reconfiguration currently in design by DeKalb County.
[7] Improvement not recommended, not needed in the projected 2013 "Build" Conditions due to proposed Healthgate Drive connection to North Decatur Road.

Given the above improvements, the 2013 No-Build Improved Conditions intersection levels of service and v/c ratios are displayed in **Table 12** below. The projected 2013 Non-Build Improved Conditions laneage and traffic volumes are shown in **Figures 10.1** through **10.2**.

Table 12
2013 No-Build Intersection Operation IMPROVED
(delay in seconds)

Intersection		Control	LOS Standard	AM Peak Hour		PM Peak Hour	
				LOS	v/c	LOS	v/c
1	Briarcliff Road at North Druid Hills Road	Signal	E	E (70.8)	1.03	E (78.4)	1.03
2	Briarcliff Road at Lavista Road	Signal	E	D (47.8)	0.90	D (48.2)	0.73
3	Briarcliff Road at Clifton Road	Signal	E AM/D PM	D (50.3)	0.87	D (52.0)	1.00
4	Briarcliff Road at North Decatur Road	Signal	E	E (65.5)	0.98	E (76.1)	1.03
5	Clairmont Road at North Druid Hills Road	Signal	E	E (71.9)	0.95	E (72.6)	0.98
6	Clairmont Road at Mason Mill Road	Signal	D AM/E PM	B (12.2)	0.77	E (59.2)	0.80
8	North Decatur Road at Clairmont Road	Signal	E AM/D PM	E (69.0)	1.04	D (51.0)	0.95
9	North Decatur Road at Scott Boulevard	Signal	E	F (81.9)*	0.87	E (66.0)	0.83
11	Scott Boulevard at Orion Drive	Signal	D AM/E PM	C (21.1)	0.89	D (40.5)	1.04
12	Clifton Road at Houston Mill Road	Signal	D	D (41.4)	0.87	D (35.3)	0.88
16	Clifton Road at Gambrell Drive	Signal	D AM/E PM	C (30.6)	0.84	C (33.0)	0.68
17	Clifton Road at North Decatur Road	Signal	E	D (50.7)	0.89	E (57.0)	0.98
19	Haygood Drive at Ridgewood Drive	Signal	E AM/D PM	D (45.1)	0.92	D (36.3)	0.83

* Recommendations improve intersection operation, but not to the level of service standard. Improvements noted are the maximum that are deemed reasonable.

6.3 2013 Build Traffic

The traffic associated with the proposed Emory Healthcare Druid Hills Expansion was added to the 2013 No-Build volumes. These volumes, along with existing roadway geometry and signal timings were input into *Synchro 6.0* and an analysis of the projected 2013 Build Conditions was performed. The results of the analysis are displayed in **Table 13**. An analysis of the proposed three site driveways was also performed and results provided in the table.

Table 13
2013 Build Intersection Operation
(delay in seconds)

	Intersection	Control	LOS Standard	AM Peak Hour		PM Peak Hour	
				LOS	v/c	LOS	v/c
1	Briarcliff Road at North Druid Hills Road	Signal	E	F (82.2)	1.04	F (147.3)	1.59
2	Briarcliff Road at Lavista Road	Signal	E	F (155.0)	1.33	F (141.8)	1.41
3	Briarcliff Road at Clifton Road	Signal	E AM/D PM	F (88.5)	1.20	E (69.7)	1.21
4	Briarcliff Road at North Decatur Road	Signal	E	F (216.8)	1.55	F (191.4)	1.38
5	Clairmont Road at North Druid Hills Road	Signal	E	F (123.3)	1.17	F (134.8)	1.39
6	Clairmont Road at Mason Mill Road	Signal	D AM/E PM	B (17.8)	0.82	F (131.7)	0.82
7	Clairmont Road at Starvine Way	Signal	D AM/E PM	B (17.2)	0.74	F (84.6)	0.96
8	North Decatur Road at Clairmont Road	Signal	E AM/D PM	F (257.8)	1.45	F (87.2)	1.05
9	North Decatur Road at Scott Boulevard	Signal	E	F (122.4)	1.33	F (161.3)	1.49
10	Scott Boulevard at DeKalb Industrial Way	Signal	D	C (22.9)	0.91	D (44.8)	1.01
11	Scott Boulevard at Orion Drive	Signal	D AM/E PM	F (82.2)	1.14	F (83.2)	1.18
12	Clifton Road at Houston Mill Road	Signal	D	E (62.0)	1.10	D (47.1)	0.99
13	Clifton Road at Haygood Drive	Signal	E AM/D PM	F (80.6)	0.99	D (36.9)	0.82
14	Clifton Road at Uppergate Drive	Stop	D	C (24.0)	0.17	C (16.9)	0.11
15	Clifton Road at Lowergate Drive	Signal	D	B (11.8)	0.71	C (22.5)	0.56
16	Clifton Road at Gambrell Drive	Signal	D AM/E PM	C (21.0)	0.78	B (18.4)	0.58
17	Clifton Road at North Decatur Road	Signal	E	F (99.5)	1.10	F (87.8)	1.10
18	Haygood Drive at North Decatur Road	Signal	D	C (21.8)	0.83	C (28.1)	0.67
19	Haygood Drive at Ridgewood Drive	Signal	E AM/D PM	F (82.9)	1.06	C (34.9)	0.81
20	North Decatur Road at Healthgate Drive	Stop	D	F (142.2)	1.06	F (204.9)	1.31
21	Gambrell Drive at Ridgewood Drive/Site Driveway #1	Stop	EB D	B (13.4)	0.09	B (12.6)	0.21
			WB D	B (14.8)	0.34	B (13.3)	0.11
22	Gambrell Drive (Healthgate Drive) at Site Driveway #2	Stop	D	C (18.2)	0.23	C (19.5)	0.32
23	Clifton Road at Site Driveway #3	Stop	D	C (15.4)	0.10	B (12.7)	0.10
24	Ridgewood Drive at Ridgewood Drive (Uppergate Drive)	Stop	NB D	B (10.5)	**	A (9.7)	**
			SB D	B (11.0)	**	A (9.4)	**
			WB D	B (14.6)	**	A (9.9)	**
25	Gambrell Drive at Lowergate Drive	Stop	D	C (15.0)	0.38	B (14.1)	0.25
26	North Decatur Road at Ridgewood Drive*	Stop	D	A (1.2)	0.09	A (0.1)	0.01
27	Gambrell Drive at Healthgate Drive	Stop	D	C (24.9)	0.35	C (24.8)	0.27
28	Starvine Way at Clairmont Driveway	Stop	D	B (13.6)	0.13	B (10.5)	0.15

*Delay reported for EB left-turn movement, Ridgewood Drive is one-way northbound, no southbound stop-controlled approach.
** v/c not provided for all-way stop control intersection configuration.

As shown in Table 13, maintaining existing roadway geometry and signal timing, and adding both background traffic growth as well as the traffic associated with the Emory Healthcare Druid Hills Expansion project causes fifteen of the study intersections to be projected to operate below the operational standards during at least one peak hour scenario for the 2013 Build Conditions. Operational improvements were made to the roadway network until each intersection's operation was elevated to an appropriate range as defined by GRTA's Technical Guidelines. The 2013 Build improvements made to the system are listed below, by intersection:

2013 Build recommended improvements (includes the Emory Healthcare Druid Hills Expansion DRI project traffic). Note: The following improvements are in addition to the Existing and No-Build recommended improvements listed on the previous pages.

#5 – Clairmont Road at North Druid Hills Road

- Provide an additional eastbound right-turn lane, creating dual right-turn lanes along North Druid Hills Road[1]

#7 – Clairmont Road at Starvine Way

- Optimize signal timings

#8 – North Decatur Road at Clairmont Road

- Provide a westbound right-turn lane along North Decatur Road[1]

#13 – Clifton Road at Haygood Drive

- Provide a southbound right-turn lane along Clifton Road[2]

#13 Alt – Clifton Road at Haygood Drive[3 4]

- Realign the intersection so that Haygood Drive is the through movement from the north leg of Clifton Road. The south leg of Clifton Road will create a T-intersection
- Provide two southbound through lanes and one right-turn lane along Clifton Road
- Provide one northbound left-turn lane and one shared northbound left-turn/right-turn lane along Clifton Road
- Provide one westbound left-turn lane and two westbound through lanes along Haygood Drive
- Remove Asbury Circle from intersection. Continue Asbury Circle under new bridge and reconnect with Haygood Drive further south.

#16 – Clifton Road at Gambrell Drive (Healthgate Drive)

- Remove the additional westbound left-turn lane along Gambrell (Healthgate) Drive if added during the 2013 No-Build Conditions[5]

#17 – Clifton Road at North Decatur Road

- Provide a southbound right-turn lane along Clifton Road

#20 – North Decatur Road at Proposed Healthgate Drive

- Provide a separate southbound left-turn and right-turn lane along Healthgate Drive
- Provide an eastbound left-turn lane along North Decatur Road
- Signalize if warranted by DeKalb County

#21 – Gambrell Drive at Proposed Site Driveway #1/Ridgewood Drive (full-movement)

- Provide a northbound left-turn lane along Gambrell Drive
- Provide a separate eastbound left-turn and right-turn lane along Site Driveway #1

#22 – Gambrell Drive at Proposed Site Driveway #2 (full-movement)

- Provide a separate southbound left-turn and right-turn lane along Site Driveway #2
- Provide an eastbound left-turn lane along Healthgate Drive

#23 – Clifton Road at Proposed Site Driveway #3 (right-in/right-out)

- Provide a westbound right-turn lane along Site Driveway #3

#27 – Gambrell Drive at Proposed Healthgate Drive

- Reconfigure Gambrell Drive to create T-intersection where the existing north portion of Gambrell Drive is stop-controlled and the renamed Gambrell Drive (Healthgate Drive) is the through movement into the new Healthgate Drive connection to North Decatur Road
- Provide a separate left-turn and right-turn lane along the stop-controlled portion of Gambrell Drive
- Provide a separate eastbound left-turn and through lane along Healthgate Drive
- Provide two westbound through lanes along Healthgate Drive

2013 "Build" Improvements Notes:

[1] Will require additional right-of-way and may have constructability limitations.
[2] Improvement not recommended, see 13 Alternative. Improvement also requires bridge widening.
[3] Intersection reconfiguration currently in design by Emory University.
[4] Recommended Improvement Alternative. Includes construction of a new bridge.
[5] Reduction in trips caused by proposed Healthgate Drive connection to North Decatur Road.

Given the above recommended improvements, the 2013 Build Improved Conditions intersection levels of service and v/c ratios are displayed in **Table 14** below. The projected 2013 Build Improved Conditions laneage and traffic volumes are shown in **Figures 11.1** through **11.2**.

It should be noted that intersection #13 – Clifton Road at Haygood Drive was analyzed for two roadway geometry alternatives. The first alternative reported in Table 14 illustrates operation assuming a minimal improvement that is anticipated to increase the intersection operation to a level above the operational standards. The second alternative, #13 Alternate, includes a much more aggressive roadway geometry change to that intersection. Emory University and DeKalb County are currently working together to design a realigned bridge that will ultimately tie into an improved Haygood Drive (widened from 2 lanes to 4 lanes) from Clifton Road to North Decatur Road.

The new bridge alignment removes Asbury Circle from the intersection and creates a new main through-movement between the northern portion of Clifton Road and the eastern portion of Haygood Drive. The existing

southern portion of Clifton Road will create the side-street leg of the new T-intersection. The operation of the intersection as described in Table 14 includes redistribution of trips associated with Asbury Circle further to the south along Haygood Drive, where the new Asbury Circle is anticipated to reconnect. This new bridge and intersection design is currently underway, thus recommended by this study.

Table 14
2013 Build Intersection Operation IMPROVED
(delay in seconds)

Intersection		Control	LOS Standard	AM Peak Hour		PM Peak Hour	
				LOS	v/c	LOS	v/c
1	Briarcliff Road at North Druid Hills Road	Signal	E	E (72.3)	1.04	E (78.9)	1.03
2	Briarcliff Road at Lavista Road	Signal	E	D (48.4)	0.90	D (49.1)	0.75
3	Briarcliff Road at Clifton Road	Signal	E AM/ D PM	D (50.3)	0.87	D (52.8)	1.00
4	Briarcliff Road at North Decatur Road	Signal	E	E (69.3)	1.00	E (78.7)	1.05
5	Clairmont Road at North Druid Hills Road	Signal	E	E (67.9)	0.91	E (73.4)	0.99
6	Clairmont Road at Mason Mill Road	Signal	D AM/ E PM	B (17.5)	0.82	E (62.0)	0.81
7	Clairmont Road at Starvine Way	Signal	D AM/ E PM	B (18.1)	0.69	D (53.8)	0.98
8	North Decatur Road at Clairmont Road	Signal	E AM/ D PM	E (77.9)	1.06	D (54.2)	0.95
9	North Decatur Road at Scott Boulevard	Signal	E	F (96.6)*	0.93	E (68.5)	0.85
11	Scott Boulevard at Orion Drive	Signal	D AM/ E PM	C (24.1)	0.92	D (49.0)	1.01
12	Clifton Road at Houston Mill Road	Signal	D	D (41.7)	0.87	D (44.3)	1.06
13	Clifton Road at Haygood Drive	Signal	E AM/ D PM	D (54.1)	0.98	D (36.1)	0.88
13Alt	Clifton Road at Haygood Drive	Signal	E AM/ D PM	C (30.1)	0.74	D (39.6)	0.98
16	Clifton Road at Gambrell Drive (Healthgate Drive)	Signal	D	C (24.2)	0.83	C (23.0)	0.58
17	Clifton Road at North Decatur Road	Signal	E	D (50.7)	0.91	D (36.6)	0.74
20	North Decatur Road at Healthgate Drive	Signal	D	A (6.6)	0.46	A (7.7)	0.44
21	Gambrell Drive at Ridgewood Drive/Site Driveway #1	Stop	EB D	B (13.5)	0.07	B (12.1)	0.17
			WB D	B (13.0)	0.29	B (12.7)	0.10
22	Gambrell Drive (Healthgate Drive) at Site Driveway #2	Stop	D	B (13.7)	0.14	C (16.5)	0.23
23	Clifton Road at Site Driveway #3	Stop	D	B (14.2)	0.09	B (12.6)	0.10

* Recommendations improve intersection operation, but not to the level of service standard. Improvements noted are the maximum that are deemed reasonable.

7.0 IDENTIFICATION OF PROGRAMMED PROJECTS

The Atlanta Regional Commissions' (ARC) Envision6 Regional Transportation Plan (RTP), the ARC's FY 2008-2013 Transportation Improvement Plan (TIP), the GDOT State Transportation Improvement Program (STIP), the GDOT Construction Work Program (CWP), and Emory Village Revitalization Plan were all used as resources for future roadway and intersection projects in the vicinity of the proposed site. Area projects are displayed in **Table 15** and shown graphically in **Figure 12**. Descriptions of the projects are included in the Appendix.

According to ARC's Transportation Improvement Program, Regional Transportation Improvement Program, GDOT's Construction Work Program, and the STIP, the following projects are programmed or planned to be completed by the respective years.

Table 15
Programmed Area Projects

GDOT # 0006268 ARC # DK-AR-234	2009	North Decatur Road Bicycle, Pedestrian, and Street Improvements at Oxford Road/Dowman Drive
GDOT # N/A ARC # DK-269	2010	Briarcliff Road (SR 42) Intersection Operation/Corridor Study from Clifton Road to North Druid Hills Road
GDOT # 0002404 ARC # DK-AR-BP060	2010	4' sidewalks along US 29/78/278 (Ponce de Leon Avenue) from US 23 (Moreland Avenue) to Eastland Drive
GDOT # 0002903 ARC # DK-AR-BP055	2011	4' sidewalks along US 23 (Clairmont Road) from North Druid Hills Road to SR 13 (Buford Highway)
GDOT # 0004451 ARC # DK-219	2012	Rehabilitation of Clifton Road Bridge at CSX Rail Line between Asbury Circle and Dantzler Drive
GDOT # N/A ARC # M-AR-288	2015	Lindbergh/Emory High-Speed Transit Service from Lindbergh MARTA Rail Station to Emory University/Centers for Disease Control and Prevention
GDOT # 753290 ARC # DK-274	2013	Intersection upgrades to SR 236 (Lavista Road) at SR 42 (Briarcliff Road)

The Emory Village Revitalization Plan (LCI) recommends numerous improvements to the area surrounding the project site. Excerpts from the study are attached in the appendix. Some of the notable improvements are as follows:

- Reduce North Decatur Road to a single lane in each direction with a shared center turn lane between Clifton Road and Lullwater Road.
- Realign North Oxford Road to remove it from the intersection.
- Construct a roundabout (or a 4-way signalized intersection) to accommodate traffic in the intersection, and test the changes thoroughly before finalizing the arrangement.
- Install new facilities for transit users, bicyclists and safer amenities for pedestrians.
- Plan to link to future commuter rail station scheduled for construction nearby.
- Reorganize on-street parking to replace angles parking with parallel parking spaces.
- Construct new off-street parking garages to handle Village demand and the needs of visitors.
- Limit curb cuts providing access to the decks to reduce their interruption of the sidewalk environment.

Utility relocation is currently underway in order to begin construction on the proposed roundabout. Roundabout design has been modified to allow North Oxford Road to maintain its connection to the intersection. This alignment is possible through Emory University's willingness to convert Dowman Drive to one-way into campus only. This one-way conversion of Dowman Drive is currently under construction.

8.0 INGRESS/EGRESS ANALYSIS

Main Campus

General vehicular access

- Proposed Site Driveway #1 will provide access for visitors of the hospital. The access point will provide an entrance and exit off of Gambrell Drive which allows valet, drop-off, and parking deck patrons a place to circulate within the footprint of the building. This full-movement driveway is proposed to be located across from Ridgewood Drive and will consist of one ingress lane and two egress lanes.
- Proposed Site Driveway #2 will provide access for visitors of the clinic. The access point will provide an entrance and exit off of Healthgate Drive (renamed Gambrell Drive) which allows valet, drop-off, and parking deck patrons a place to circulate within the footprint of the building. This full-movement driveway is proposed to consist of one ingress lane and two egress lanes.
- Proposed Site Driveway #3 will provide direct access into and out of the clinic's below grade parking. This right-in/right-out access point will be located along Clifton Road, between Healthgate Drive (Gambrell Drive) and Lowergate Drive. It is anticipated that the driveway will consist of one ingress lane and one egress lane.

Emergency

- Emergency access is proposed along Lowergate Drive, along the west side of the proposed hospital.

Clairmont Campus

All access to the Clairmont Deck expansion is proposed to be provided at the existing northern-most driveway (Clairmont Deck Driveway) into the existing deck along Starvine Way. This driveway is proposed to maintain its geometry of one ingress lane and two egress lanes.

Starvine Way serves as a driveway for the entire Clairmont Campus. The road consists of two ingress lanes and two egress lanes at Clairmont Road and is signalized.

9.0 INTERNAL CIRCULATION ANALYSIS

The proposed clinic and hospital buildings will be located within an existing street network which consists of both private and public facilities. This study considers the area bound by Clifton Road, North Decatur Road, and Haygood Drive to be the boundary of the expansion site. Within this boundary, Uppergate Drive, Lowergate Drive, Gambrell Drive, and Ridgewood Drive all provide access between all existing and proposed facilities.

A shuttle route (with a portion exclusive to bus only) connects the Main Campus with the Clairmont Campus, which is also included in this DRI review.

Internal pedestrian access between all uses will also be provided.

10.0 COMPLIANCE WITH COMPREHENSIVE PLAN ANALYSIS

The proposed project is complaint with DeKalb County's 2005-2025 Land Use Plan, which designates this area as institutional.

11.0 NON-EXPEDITED CRITERIA

11.1 Vehicle Miles of Travel

Table 16 displays the reduction in traffic generation due to internal capture and alternative mode reductions. No pass-by trip reductions are associated with healthcare land uses.

Table 16
Vehicle Mile Reduction

	Build-Out Total
Daily Gross Trip Generation	11,227
(-) Mixed-use reductions (internal capture)	-702
(-) Alternative modes	-1,345
(-) Pass-by trips	-0
Net Trips	9,180

11.2 Transportation and Traffic Analysis

11.2.1 Planned and Programmed Improvements

The proposed project is not anticipated to preclude any transportation infrastructure improvement projects as identified by DeKalb County.

11.2.2 Preserving Regional Mobility

Emory University and Healthcare is located in the heart of the Atlanta region. This project is proximate to Interstate 85 and Interstate 285. Additionally, Emory provides an extensive alternative commute program, which provides shuttle service connecting the community with adjacent areas and connections to other modes of travel. MARTA also provides four bus routes which travel through or immediately adjacent to the site. These routes connect to many other locations throughout the region, including MARTA rail stations. Emory's strong bike program also educates bicyclists of biking options in and around the region.

Emory and the CCTMA are exploring two future transit options: an enhanced circulator system which would involve a modern streetcar system and a commuter-type rail shuttle service which would involve a diesel heavy rail car. Other transit opportunities around the Clifton Corridor, which could provide connections to the area, include the Brain Train, the Commuter Rail System (Lovejoy to Atlanta), the BeltLine / C-Loop, and the Peachtree Streetcar.

11.2.3 Safe and Efficient Operations

Pedestrians and bicyclists were taken into strong consideration when formulating and testing recommended improvements as outlined in this report. The results of this traffic study represent a list of recommendations that not only address transportation enhancements for vehicular traffic, but also for

pedestrians and bicyclists. The recommendations are intended to provide solutions that are context sensitive and create safe conditions and aim at balancing the mobility needs of all modes.

11.2.4 Minimize Congestion

The recommendations as described in this report are targeted at reducing vehicular congestion to standards as described earlier in this report. Recommendations reflect the goal of vehicular congestion mitigation, while giving priority to pedestrian and bicycle safety.

The project is also located within the Clifton Corridor Transportation Management Association (CCTMA). The Clifton Corridor TMA focuses on addressing transportation concerns, improving accessibility and mobility, share services, improving air quality, and promoting alternative forms of transportation to mitigate traffic congestion.

11.3 Relationship of Existing Development and Infrastructure

The development is located in an area where the existing infrastructure is adequate to serve the needs of the development upon build-out (2013).

12.0 ARC'S AIR QUALITY BENCHMARK

The proposed development is a healthcare expansion that is expected to net an increase of 168,406 SF of clinic space, 150 hospital beds, and 411,734 SF of administrative/research space.

The proposed development is located within ¼ mile from several existing MARTA bus stops, along Clifton Road and North Decatur Road. Therefore, ARC criteria (4) is met for a 3% VMT reduction.

Because the proposed development is located within the Clifton Corridor Transportation Management Association, which provides shuttle service and parking restrictions, it meets ARC criteria (5d) and is eligible for a 5% VMT reduction. It should be noted that Emory University provides a bike program, as well as a bus program (The Cliff), to support alternative modes of transportation in the area.

Finally, the proposed development will contain a complete pedestrian network within the site, and connections to pedestrian and bicycle paths as deemed appropriate by the DeKalb County. Pedestrians will be able to access other uses within the proposed development via this network. This anticipated pedestrian and bicycle internal network that connects to adjoining uses meets the ARC criteria (6c) for a 4% VMT reduction.

The proposed development earns a score of 12% VMT reduction for the ARC criteria. These reductions are displayed in **Table 17**.

While the proposed expansion does not exceed ARC's standard of a 15% VMT reduction, the project would score much higher on vehicle miles traveled and air quality mitigation if hospital land use was specifically addressed in the technical guidelines. As discussed in *Section 4.0, Trip Generation* Emory's strong commitment to encouraging and empowering its employees, visitors, and students to travel using alternative modes is expected to create a trip reduction of up to 20%.

Table 17 ARC VMT Reductions	
Projects where Healthcare is the single use	
Project is located within ¼ mile of a bus stop	-3%
Located within TMA which provides shuttle and parking restrictions	-5%
Bike/ped networks in development that connect to adjoining uses	-4%
Total Reductions	**12%**