



To: John McDonough, City Manager

From: Nancy J. Leathers, AICP, Director of Community Development



Date: August 10, 2010 for submission onto the August 17, 2010 City Council meeting

Agenda Item: **RZ09-010/U09-009/CV09-019 5775 & 5795 Glenridge Drive**, Request to rezone the subject property from O-I (Office and Institutional District) conditional and R-2 (Single Family Dwelling District) to MIX (Mixed Use District)

***Director of Community Development Recommendation:***

The subject petition was initiated by the Mayor and City Council in November 2009 as part of a potential settlement agreement. The case was heard at the July 15, 2010 Planning Commission meeting. The Commission recommended deferral of the petition for up to 90 days (5-0, Thatcher, Tart, Maziar, Pond, and Rupnow for; Duncan not voting; Rubenstein recused) subject to the following:

- 1) That a meeting be set up by staff for mediation between the developer and stakeholders including the neighbors, hospitals, representatives of PCID, and other business owners in the area to address the development and its impact on the immediate area (Glenridge/Glenforest/I-285) and the overall area (Hammond/Johnson Ferry/Glenridge Connector) especially regarding traffic impacts
- 2) That a condition be added to require the 40 foot landscape area along Glenridge Drive be planted to buffer standards
- 3) That a condition be added to require GDOT approval of the required traffic improvements prior to issuance of a land disturbance permit
- 4) That the condition regarding the required MARTA shuttle be amended to expand the hours and days of operation of the service.

Based on this recommendation, staff is recommending **DEFERRAL** of the request to rezone the subject property from O-I (Office and Institutional District) conditional and R-2 (Single Family Dwelling District) to MIX (Mixed Use District) for the development of 520 residential units, 8,000 square feet of freestanding restaurant space, 770,000 square feet of office space (400,000 new), and 42,000 square feet of accessory commercial space to be located within the existing and/or proposed office and residential buildings.

***Background:***

The site is located on the east side of Glenridge Drive at the intersection with I-285 and GA-400. The property is zoned O-I (Office and Institutional District) conditional under Z70-0120 and Z74-0001 and R-2 (Single Family Dwelling District). The property is currently developed with an office park with buildings totaling 415,000 square feet developed at a density of 15,943.14 square feet per acre. The subject property is located within the Suburban District of the Sandy Springs Overlay District.

***Discussion:***

Currently, there are three (3), five-story office buildings and two (2), two-story office buildings located on the subject property with a total building area of 415,000 square feet. The developer intends to

maintain the three (3), five-story office buildings and one (1) of the two-story office buildings. The remaining square footage after the demolition of the 45,000 square foot, two-story building is 370,000 square feet. The developer also intends to maintain a portion of the existing surface parking area at the center of the site. The site plan (Exhibit 1) also depicts the following proposed components:

- Two (2) maximum 7-story (4-story from Glenridge Drive) residential buildings located along the west side of the site fronting on Glenridge Drive
- A 1-story, 8,000 square foot building located behind the residential buildings along the main drive of the development
- A 16-story office building located at the rear (east side) of the site adjacent to GA-400 totaling 400,000 square feet
- A 7-story parking deck at the northeast corner of the property
- 42,000 square feet of accessory commercial located interior to the office and/or residential buildings

***Concurrent Review:***

The staff held a Focus Meeting on June 2, 2010 at which the following city departments provided comments:

- Building and Development Division
- Fire Department
- Public Works Department Transportation Division

In addition, the following external departments were contacted for comment:

- Atlanta Regional Commission
- Fulton County Board of Education
- Fulton County Department of Environment and Community Development
- Fulton County Department of Public Works
- Fulton County Environmental Health Services (*comments received*)
- Sandy Springs Council of Neighborhoods
- Sandy Springs Revitalization Inc.
- Georgia Department of Transportation
- City of Atlanta Department of Watershed Management (*comments received*)
- U.S. Postal Service Address Management Systems
- MARTA
- Fulton County Emergency Management



**Rezoning Petition No. RZ09-010/U09-009/CV09-019**  
*Development of Regional Impact (DRI)*

<b>HEARING &amp; MEETING DATES</b>				
<b>Community Zoning Information Meeting</b>	<b>Design Review Board Meeting</b>	<b>Community Developer Resolution Meeting</b>	<b>Planning Commission Hearing</b>	<b>Mayor and City Council Hearing</b>
May 25, 2010	May 25, 2010	June 23, 2010	July 15, 2010	August 17, 2010

<b>APPLICANT/PETITIONER INFORMATION</b>		
<b>Property Owners</b>	<b>Petitioner</b>	<b>Representative</b>
MGLP Lakeside, LLC	City of Sandy Springs	Department of Community Development

<b>PROPERTY INFORMATION</b>	
<b>Address, Land Lot, and District</b>	5775 & 5795 Glenridge Drive Land Lot 37, District 17
<b>Council District</b>	5
<b>Frontage and Area</b>	950 feet of frontage along the east side of Glenridge Drive. The subject property has a total area of 26.03 acres.
<b>Existing Zoning and Use</b>	O-I (Office and Institutional District) conditional under Z70-0120 and Z74-0001 and R-2 (Single Family Dwelling District), currently developed with an office park with buildings totaling 415,000 square feet developed at a density of 15,943.14 square feet per acre.
<b>Overlay District</b>	Urban District
<b>Interim 2025 Comprehensive Future Land Use Map Designation</b>	Live Work Community (LWC) Live Work Regional (LWR) Node 6: PCID (Perimeter Community Improvement District – Live Work Regional Only)
<b>Proposed Zoning</b>	MIX (Mixed Use District)

**INTENT**  
**FROM O-I (OFFICE AND INSTITUTIONAL DISTRICT) CONDITIONAL AND R-2 (SINGLE FAMILY DWELLING DISTRICT) TO MIX (MIXED USE DISTRICT)**

The request is to rezone the subject property from O-I (Office and Institutional District) conditional and R-2 (Single Family Dwelling District) to MIX (Mixed Use District) for the development of 520 residential units, 8,000 square feet of freestanding restaurant space, 770,000 square feet of office space (400,000 new), and 42,000 square feet of accessory commercial space to be located within the existing and/or proposed office and residential buildings.

One (1) concurrent variance is also being requested as follows:

- To modify the surface parking landscape island requirement to provide for an alternate landscaping plan by maintaining the existing surface parking landscaping (Section 4.23.2, *Parking Lot Landscaping*).

Additionally, the developer is requesting a use permit to exceed the permitted height of 60 feet (4 stories) by constructing the proposed office building at a maximum height of 240 feet (16 stories) and the residential buildings and proposed parking deck at a maximum height of 80 feet (7 stories) (Section 19.4.21, *Height -- To Exceed District Maximum*).

**BACKGROUND**

The site is located on the east side of Glenridge Drive at the intersection with I-285 and GA-400. The property is zoned O-I (Office and Institutional District) conditional under Z70-0120 and Z74-0001 and R-2 (Single Family Dwelling District). The property is currently developed with an office park with buildings totaling 415,000 square feet developed at a density of 15,943.14 square feet per acre. The subject property is located within the Suburban District of the Sandy Springs Overlay District.

Under the previous application (RZ07-021), the following uses and densities were proposed:

Proposed Use	Square Footage or Number of Units	Density (Square Footage or Units per Acre)
Office	1,125,000 sf	43,219.36 sf/ac
Commercial	50,000 sf	1,920.86 sf/ac
Residential	300 units	11.53 units/ac
Hotel	200 rooms	7.68 rooms/ac

Additionally, the developer proposed the following traffic improvements, which have been compared to the current request.

Traffic Mitigation Measure		RZ07-021	RZ09-010
1.	Update the existing signalization to accommodate the new roadway configuration at the project entrance and provide pedestrian access consistent with current city standards	X	X
2.	Install a dedicated northbound right turn lane to serve project entrances on Glenridge Drive	X	X
3.	Install southbound right turn lane from Glenridge Drive onto I-285 westbound ramp	X	
4.	Install a parallel lane on the westbound entrance ramp from Glenridge Drive onto I-285	X	
5.	Provide a shuttle service to ensure adequate access to MARTA from the site	X	
6.	Design and construct the following improvements at the intersection of Glenridge Drive and Hammond Drive: - Signalization shall be updated to accommodate new roadway configuration - Provide pedestrian access and meet current city standards. - Install a dedicated northbound right turn lane on Glenridge Drive at Hammond Drive. - Install a dedicated eastbound right turn lane on Hammond Drive at Glenridge Drive. - Install dual westbound left turn lanes on Hammond Drive at Glenridge Drive.	X	

While the uses and densities proposed by the developer have changed, it is the opinion of the staff that traffic mitigation measures 1 through 5 should be required to minimize the impact the proposal will have on surrounding neighborhoods and developments. Based on the issues identified and the Planning Commission recommendation found below, staff is recommending **DEFERRAL** of the request to rezone the subject property.

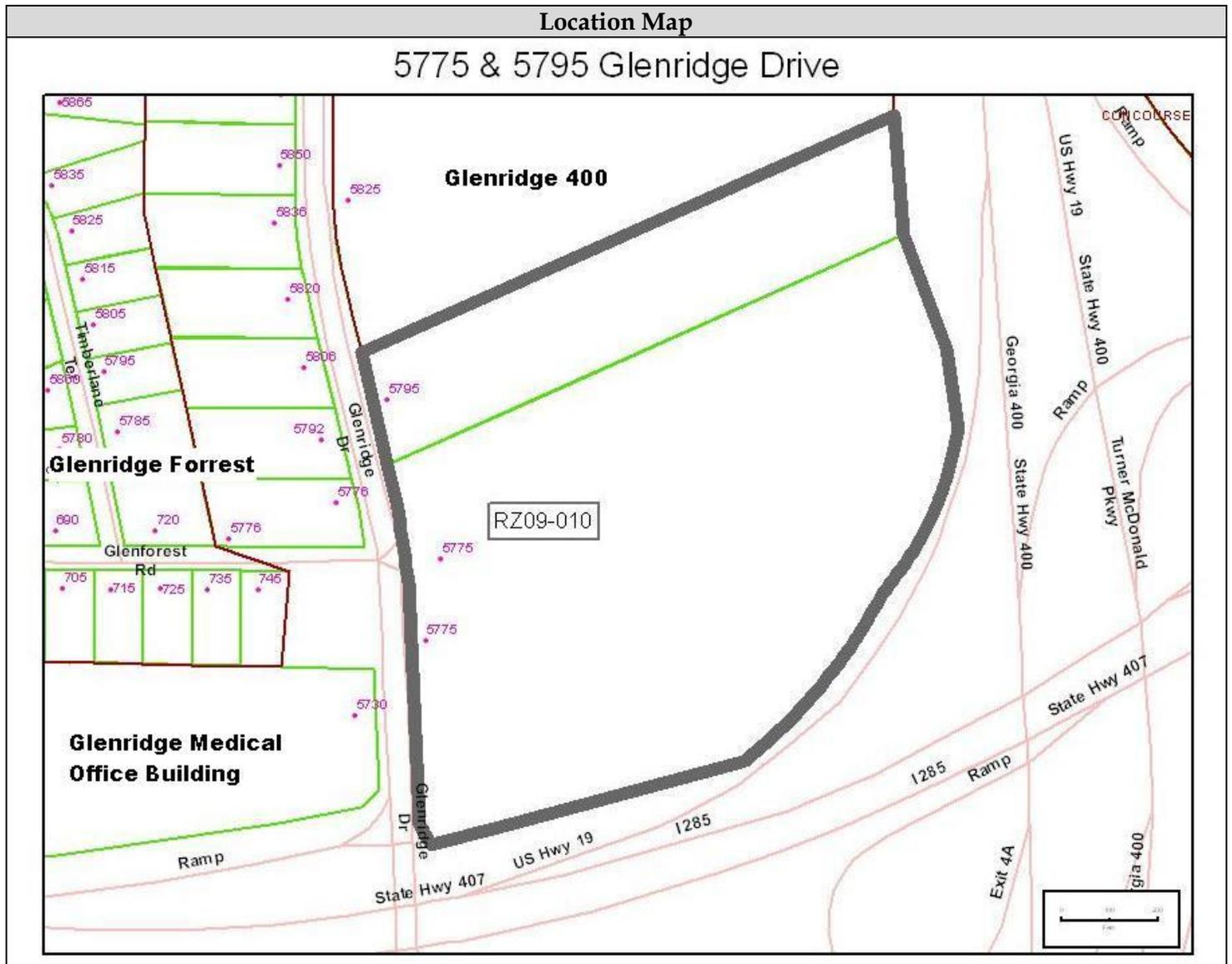
**DEPARTMENT OF COMMUNITY DEVELOPMENT RECOMMENDATION**

**RZ09-010 - DEFERRAL**  
**U09-009 - DEFERRAL**  
**CV09-019 #1 - DEFERRAL**

**PLANNING COMMISSION RECOMMENDATION**

The petition was heard at the July 15, 2010 Planning Commission hearing. The Commission recommended deferral of the petition for up to 90 days (5-0, Thatcher, Tart, Maziar, Pond, and Rupnow for; Duncan not voting; Rubenstein recused) subject to the following:

- 1) That a meeting be set up by staff for mediation between the developer and stakeholders including the neighbors, hospitals, representatives of PCID, and other business owners in the area to address the development and its impact on the immediate area (Glenridge/Glenforest/I-285) and the overall area (Hammond/Johnson Ferry/Glenridge Connector) especially regarding traffic impacts
- 2) That a condition be added to require the 40 foot landscape area along Glenridge Drive be planted to buffer standards
- 3) That a condition be added to require GDOT approval of the required traffic improvements prior to issuance of a land disturbance permit
- 4) That the condition regarding the required MARTA shuttle be amended to expand the hours and days of operation of the service.

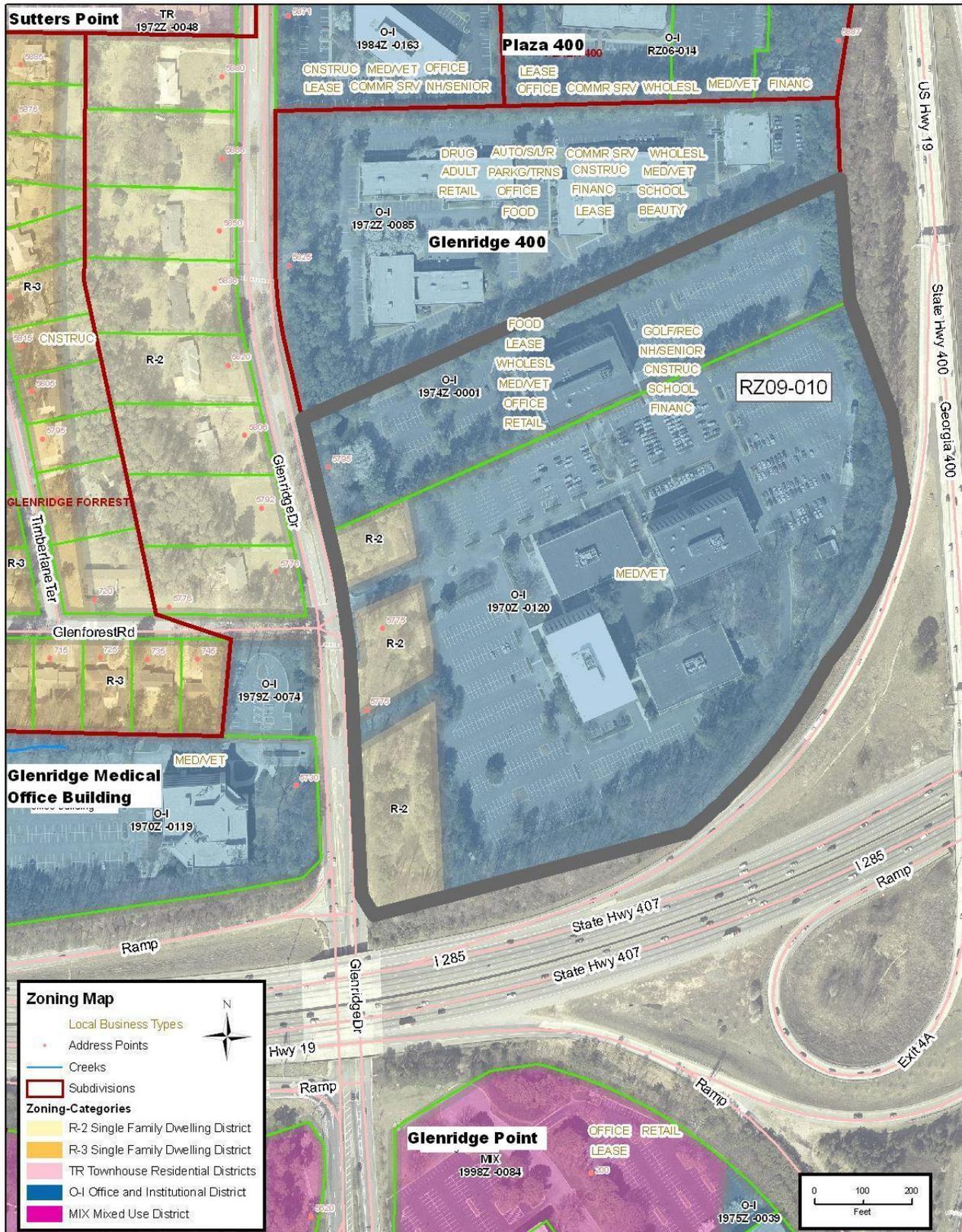


**EXISTING LAND USE AND ZONING OF ABUTTING PROPERTY**

SUBJECT PETITION RZ09-010 CV09-019 U09-009	Requested Zoning	Proposed Use	Land Area (Acres)	Square Footage or Number of Units	Density (Square Footage or Units per Acre)
	MIX	Office	26.03	770,000 sf	29,581.25 sf/ac
		Residential		520 units	19.98 units/ac
		Restaurant (freestanding)		8,000 sf	307.34 sf/ac
		Accessory commercial to be located interior to office and/or residential buildings		42,000 sf	1,613.52 sf/ac
Location in relation to subject property	Zoning	Use	Land Area (Acres)	Square Footage or Number of Units	Density (Square Feet or Units Per Acre)
North	O-I conditional Z90-0041	Glenridge 400 office park - 5825 Glenridge Drive	7.93	500,000	63,054
East	Georgia SR 400				
South	I-285				
West	R-2	5776-5806 Glenridge Drive - single family residences (part of the Glenridge Forest subdivision)	3.03	3	0.99
West	O-I conditional Z70-0119 Z79-0074	Glenridge Medical office building - 5730 Glenridge Drive	7.44	120,000	16,129.03

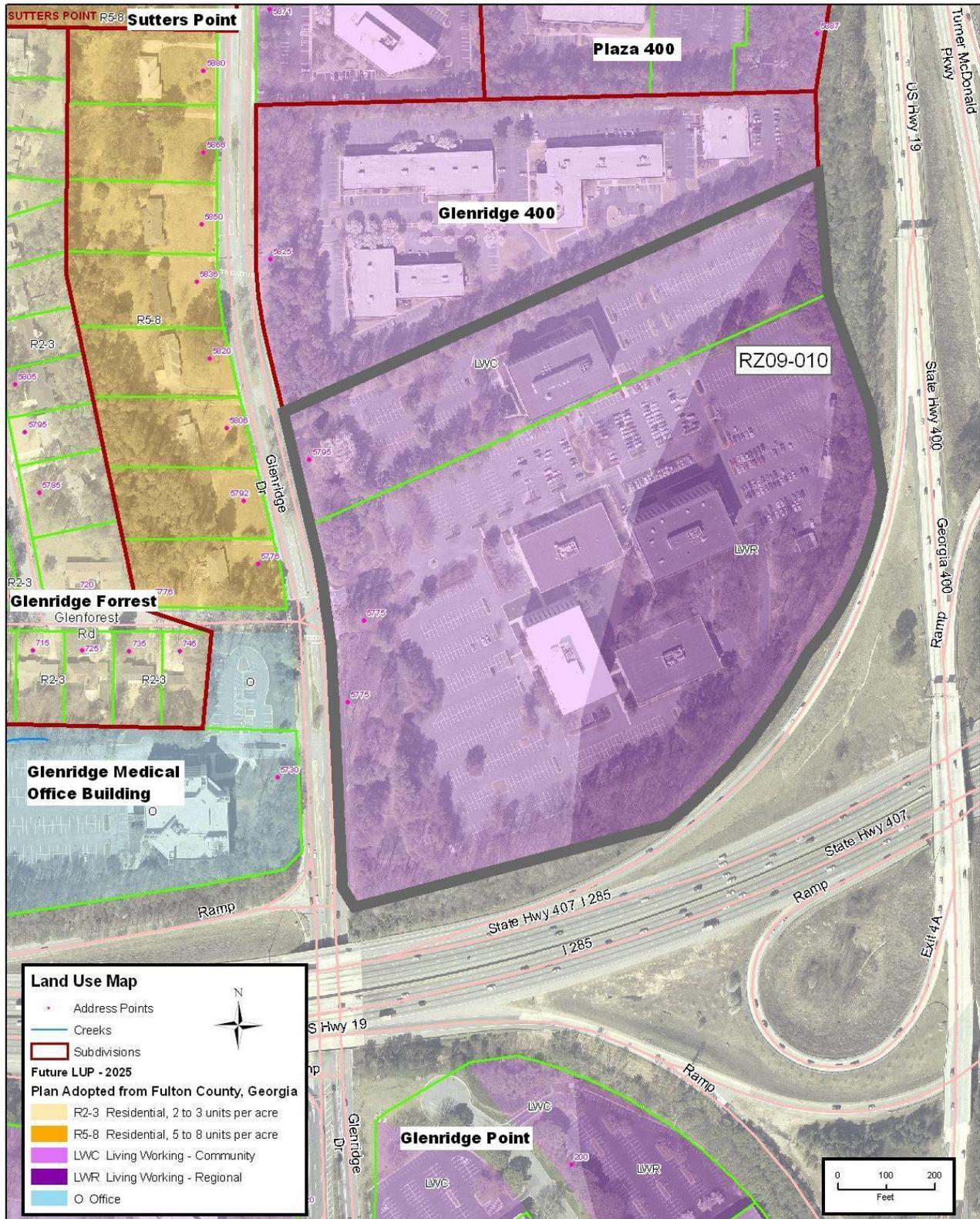
# Zoning Map

## 5775 & 5795 Glenridge Drive



Future Land Use Map

5775 & 5795 Glenridge Drive





Photograph 1. Lakeside office park (subject property).



Photograph 2. Notice of Rezoning Sign.



Photograph 3. Glenridge 400 office park (north of subject property).



Photograph 4. Glenridge Medical office building (west of subject property).



Photograph 5. Glenridge Forest subdivision (west of subject property).

## SITE PLAN ANALYSIS

Currently, there are three (3), five-story office buildings and two (2), two-story office buildings located on the subject property with a total building area of 415,000 square feet. The developer intends to maintain the three (3), five-story office buildings and one (1) of the two-story office buildings. The remaining square footage after the demolition of the 45,000 square foot, two-story building is 370,000 square feet. The developer also intends to maintain a portion of the existing surface parking area at the center of the site. The site plan (Exhibit 1) also depicts the following proposed components:

- Two (2) maximum 7-story (4-story from Glenridge Drive) residential buildings located along the west side of the site fronting on Glenridge Drive
- A 1-story, 8,000 square foot building located behind the residential buildings along the main drive of the development
- A 16-story office building located at the rear (east side) of the site adjacent to GA-400 totaling 400,000 square feet
- A 7-story parking deck at the northeast corner of the property
- 42,000 square feet of accessory commercial located interior to the office and/or residential buildings

The developer has proposed the following development standards for the site:

Minimum front yard: 40 feet

Minimum side yard: 10 feet

Minimum rear yard: 10 feet

Minimum internal setback: 0 feet

Minimum landscaping and buffering between uses: 0 feet

Minimum heated floor area per dwelling unit: 700 square feet

Maximum building height:

- Office building - 240 feet (16 stories) (excluding any penthouses for mechanical equipment)
- Residential buildings - 80 feet (7 stories) except that the buildings shall not exceed 60 feet (4 stories) along the Glenridge Drive frontage (excluding any penthouses for mechanical equipment)
- Parking Deck - 60 feet (4 stories) (excluding any penthouses for mechanical equipment)

## ENVIRONMENTAL SITE ANALYSIS

The Environmental Site Analysis Report is sufficient and satisfies the requirements of the Sandy Springs Zoning Ordinance. The site does not contain any known streams, steep slopes, sensitive plants and/or protected animal species, or archaeological/historical sites. There is a man-made lake located at the center of the site. The site is not located within a floodplain.

## ZONING IMPACT ANALYSIS

Per Article 28.4.1, *Zoning Impact Analysis by the Planning Commission and the Department*, the staff shall make a written record of its investigation and recommendation on each rezoning petition with respect to the following factors:

A. *Whether the zoning proposal will permit a use that is suitable in view of the use and development of adjacent and nearby property.*

Finding: The staff is of the opinion that the uses proposed for the site are suitable in view of similar approved mixed use developments in the surrounding area. However, at this level of density staff finds that appropriate traffic mitigation measures for the project have not been provided. The development will significantly increase traffic on this section of the Glenridge Drive corridor, impacting both the Glenridge Forest subdivision (a Protected Neighborhood) and the Glenridge Medical office building to the west.

Therefore, staff is recommending deferral of the rezoning, use permit, and concurrent variance request to allow the developer time to address additional traffic mitigation measures.

*B. Whether the zoning proposal will adversely affect the existing use or usability of adjacent or nearby property.*

**Finding:** The staff is of the opinion that the proposal as presented adversely affects the existing use and usability of adjacent property. The proposed development is anticipated to significantly impact the flow of traffic in and out of the Glenridge Forest subdivision, mostly during the PM peak hour, which is in direct conflict with the Protected Neighborhood policies outline below. The increase in development on this property will also impact the Glenridge Medical office building to the west by limiting the ability of users to access Glenridge Drive northbound.

**Land Use Policies – Protected Neighborhoods**

The following policies apply to all properties within the boundary of protected neighborhoods as shown on the future land use plan map. Where consistent with the context, such policies may be determined appropriate in transitional areas.

1. Protect the character and integrity of existing neighborhoods, while also meeting the needs of communities.
2. Delineate and maintain firm, visible boundaries of protected neighborhoods, and prevent the encroachment of incompatible land uses, including, commercial, office, and multi-family land uses into protected neighborhoods.
3. During rezoning and development application review, carefully address the interface between protected neighborhoods and commercial areas, especially within the Roswell Road corridor.
4. Limit infill development within protected neighborhoods to densities that are consistent with the surrounding residential development.
5. Discourage, or prohibit, flag lots.
6. Residential infill development in protected neighborhoods should maintain the existing dwelling setback pattern in relation to the street.

Staff is recommending several traffic mitigation measures to ensure protection of the Glenridge Forest subdivision, which will maintain the character and integrity of the neighborhood.

*C. Whether the property to be affected by the zoning proposal has a reasonable economic use as currently zoned.*

**Finding:** The staff is of the opinion that the property may have a reasonable economic use as currently zoned.

*D. Whether the zoning proposal will result in a use which will or could cause an excessive burdensome use of existing streets, transportation facilities, utilities, or schools.*

**Finding:** The staff does anticipate an excessive burdensome use of existing streets and transportation facilities without adequate traffic mitigation measures. The Public Works Department has provided the following comments on the impacts of the proposed development and recommendations for mitigation.

**Public Works Comments**

- *Public Works anticipates that this application will cause an excessively burdensome use of existing streets or transportation facilities.*

- Access to the property at 5730 Glenridge Drive (Glenridge Medical Office Building) will be severely impacted, especially during PM peak hours. The increased traffic volumes will create a safety and operational hazard in accessing the 5730 site.
- The subject property is located on a minor arterial.

### **Public Works Recommended Conditions**

- Right-of-way dedication: 55' from centerline of Glenridge Drive
- Signalization will be updated to accommodate new roadway configuration at project entrance, provide pedestrian access and meet current city standards. All changes will be made per the approval of Public Works as part of the LDP.
- Install a dedicated northbound right turn lane to serve project entrances on Glenridge Drive.
- Install southbound right turn lane from Glenridge Drive onto I-285 westbound ramp
- Install a parallel lane on the westbound entrance ramp from Glenridge Drive onto I-285
- No out parcel shall have direct access to Glenridge Drive.

The following table is a comparison of the traffic impact of the previous proposal (RZ07-021) and the current request (RZ09-010).

Proposed Use	RZ07-021	Trips Generated (24-Hour)	RZ09-010	Trips Generated (24-Hour)
Office	1,125,000 sf	6,067	770,000 sf	3,577
Commercial	50,000 sf	2,177	50,000 sf	2,177
Residential	300 units	1,355	520 units	2,188
Hotel	200 rooms	1,417	N/A	N/A
<b>TOTAL</b>		<b>11,016</b>		<b>7,942</b>

At the time of review of the 2007 application, staff recommended approval of the higher development density due to the developer's proposed traffic mitigation plan. While the current request produces less trips than the previous proposal, the developer has not proposed any additional traffic mitigation measures. Therefore, staff is recommending approval of the request, subject to traffic mitigation measures 1 through 5 below to ensure that the project does not adversely affect the surrounding area. The table below details the previous and current traffic mitigation measures proposed by the developer.

Traffic Mitigation Measure		RZ07-021	RZ09-010
1.	Update the existing signalization to accommodate the new roadway configuration at the project entrance and provide pedestrian access consistent with current city standards	X	X
2.	Install a dedicated northbound right turn lane to serve project entrances on Glenridge Drive	X	X
3.	Install southbound right turn lane from Glenridge Drive onto I-285 westbound ramp	X	
4.	Install a parallel lane on the westbound entrance ramp from Glenridge Drive onto I-285	X	
5.	Provide a shuttle service to ensure adequate access to MARTA from the site	X	
6.	Design and construct the following improvements at the intersection of Glenridge Drive and Hammond Drive: - Signalization shall be updated to accommodate new roadway configuration - Provide pedestrian access and meet current city standards. - Install a dedicated northbound right turn lane on Glenridge Drive at Hammond Drive. - Install a dedicated eastbound right turn lane on Hammond Drive at Glenridge Drive. - Install dual westbound left turn lanes on Hammond Drive at Glenridge Drive.	X	

The staff is recommending traffic mitigation measure #5 (shuttle service to MARTA rail) due to the fact that the Live Work Regional (LWR) designation on the property is tied to the sites proximity to the MARTA station. Though the property meets the half-mile radius, the station is not within a reasonable walking distance to the property. Therefore, to apply the LWR to the site the staff finds it necessary for the developer to provide practical access to the MARTA by shuttle service.

The developer indicates the site to be accessed by two (2) curb cuts along Glenridge Drive, one of which will be a right-in/right-out only drive. The second curb cut is the existing access point into the development from the traffic light on Glenridge Drive. Due to the site only being able to gain access from Glenridge Drive, there are not any alternative routes for traffic circulation through the property. Additionally, until such time as the developments to the north redevelop, there is currently limited opportunity for interparcel access.

In addition to the traffic impact, the development will impact the public schools zoned for this area of the city. Based on analysis from Fulton County Schools (Exhibit 5), the following is an outline of the projected number of students that the proposed residential component could bring and the current status of the existing enrollment and capacity for each school.

School	Projected Addition of Students from Lakeside	2010-2011 Enrollment Forecast	School Capacity per Georgia Department of Education
High Point Elementary	39 to 116	644	850
Ridgeview Middle	8 to 20	823	1,200
Riverwood High	13 to 36	1,618	1,325

*E. Whether the zoning proposal is in conformity with the policies and intent of the land use plan.*

Finding: The property has a dual Future Land Use designation (Live Work Regional along Georgia 400 and Live Work Community along Glenridge Drive) and is located in Node 6: PCID (Perimeter Community Improvement District - Live Work Regional only), which has the following guidelines and policies.

**Node 6: PCID (Perimeter Community Improvement District - Live Work Regional only)**

Guidelines and Policies:

1. Residential density should be above 20 units per acre.
2. Commercial and office densities should be above 25,000 square feet per acre.
3. Building heights should not be limited in this area.
4. At least 20% of a site shall be maintained as open space.
5. The densities and heights referenced as appropriate for this area shall be reduced when there are conflicts with existing single-family neighborhoods.
6. Density and/or height bonuses, beyond the recommendations of the Comprehensive Plan, may be approved by the Mayor and City Council for the development or redevelopment of assembled properties consisting of a minimum of five (5) or more acres. The approval of bonuses will be based on the merits of the project relative to whether it provides desirable attributes that meet or exceed the goals and objective of the Comprehensive Plan. Such goals may include, but not be limited to the following:
  7. Providing significant green space or open space that exceeds the minimums established in Table 1.5.
  8. Providing shared parking to other properties in the area or encouraging/requiring the use of alternative transportation options. This may include, but not be limited to, providing direct or planned access to MARTA services.

The developer is proposing to develop the site at an office density of 29,581.25 square feet per acre, at a residential density of 19.98 units per acre, and with a restaurant at a density of 307.34

square feet per acre. The LWC land use designation recommends a density of up to 25,000 square feet per acre for commercial and office uses plus up to 20 residential units per acre. The LWR land use designation recommends a density of over 25,000 square feet per acre for commercial and office uses plus over 20 residential units per acre. The proposal meets the policies of the Comprehensive Plan that call for developments within Node 6 to include an open space component of at least 20%.

It is the opinion of the staff that while the proposal is consistent with the Future Land Use Map and the Node 6 policies of the Comprehensive Plan; the project is not in conformity with the Protected Neighborhood and Transitional Area policies of the plan due to lack of sufficient traffic mitigation. These policies call for proper transition from commercial areas into established single family neighborhoods. The traffic impacts that the proposal will have on the surrounding transportation system and existing developments will affect the Glenridge Forest neighborhood.

---

F. *Whether there are other existing or changing conditions affecting the use and development of the property which give supporting grounds for either approval or disapproval of the zoning proposal.*

Finding: The staff is of the opinion that there are existing conditions affecting the use and development of the property, which give supporting grounds for disapproval of the developer's proposal absent the necessary traffic mitigation improvements. The existing transportation network, including Glenridge Drive and I-285 in the immediate area, functions poorly, especially during the PM peak hours. The addition of this development, with no additional improvements to the network, will further impair traffic in the area.

---

G. *Whether the zoning proposal will permit a use which can be considered environmentally adverse to the natural resources, environment and citizens of Sandy Springs.*

Finding: The staff is of the opinion that the zoning proposal will not permit a use which can be considered environmentally adverse to the natural resources, environment and citizens of Sandy Springs.

## USE PERMITS

The developer is requesting a use permit to exceed the permitted height of 60 feet (4 stories) by constructing the proposed office building at a maximum height of 240 feet (16 stories) and the residential buildings and proposed parking deck at a maximum height of 80 feet (7 stories) (Section 19.4.21, *Height -- To Exceed District Maximum*).

Per Article 19.2.4, *Use Permit Considerations*, the City Council shall consider each of the following:

A. *Whether the proposed use is consistent with the Comprehensive Land Use Plan and/or Economic Development Revitalization plans adopted by the City Council;*

Finding: The staff is of the opinion that the proposed heights are consistent with the recommendations of the Comprehensive Plan. The developer is proposing the new office building to be a maximum height of 240 feet (16 stories) and the residential buildings to be a maximum height of 4 stories along the Glenridge Drive frontage and 80 feet (7 stories) interior to the site. The developer is proposing to step the height down from Georgia 400 toward Glenridge Drive, which meets the intent and policies of the plan and allows for proper transition into the surrounding area. Additionally, the heights proposed are consistent with other developments in the Perimeter Center area of the city and especially those developments in close proximity to Georgia 400.

*B. Compatibility with land uses and zoning districts in the vicinity of the property for which the Use Permit is proposed;*

**Finding:** The staff is of the opinion that the mix of uses proposed is compatible with the land uses and zoning districts in the vicinity of the property. The property is located along a corridor of Glenridge Drive which features office and residential developments.

*C. Whether the proposed use may violate local, state and/or federal statutes, ordinances or regulations governing land development;*

**Finding:** The staff is of the opinion that the proposed use would not violate any local, state, and/or federal statutes, ordinances, or regulations.

*D. The effect of the proposed use on traffic flow, vehicular and pedestrian, along adjoining streets;*

**Finding:** The staff is of the opinion that the proposal will have an adverse impact on vehicular and pedestrian traffic flow along the property frontages without appropriate traffic mitigation measures. The level of service of the intersections in the vicinity of the development will be negatively affected and further contribute to the traffic issues in the area.

*E. The location and number of off-street parking spaces;*

**Finding:** The developer has provided 3,293 parking spaces, which is sufficient to meet the requirements of the Zoning Ordinance. The developer is proposing to maintain a portion of the existing surface parking and to develop three parking decks (two interior to the residential buildings) on the site.

Sections 18.2.1, *Basic Off-street Parking Requirements*, and 18.2.2, *Shared Parking*, outline the following parking requirements for the site:

Use	Square Footage/Units/Seats		Minimum # of Parking Spaces (18.2.1)		
Office	770,000		2,2156 (2.8 spaces/1,000 gsf)		
Restaurant	8,000		80 (10 spaces/1,000 gsf)		
<b>Shared Parking (18.2.2)</b>					
Use	Weekdays		Weekends		Nighttime
	6 a.m. - 5 p.m.	5 p.m. - 1 a.m.	6 a.m. - 5 p.m.	5 p.m. - 1 a.m.	1 a.m. - 6 a.m.
	<i>Required # of Parking Spaces (as % of Minimum per Use)</i>				
Office	2,156 (100%)	215 (10%)	215 (10%)	107 (5%)	107 (5%)
Restaurant	40 (50%)	80 (100%)	80 (100%)	80 (100%)	8 (10%)
<b>Office/Restaurant Subtotal*</b>	<b>2,196</b>	<b>295</b>	<b>295</b>	<b>187</b>	<b>115</b>
* The largest column total is the shared parking requirement.					
<b>Residential Parking Requirements</b>					
1 BR (208 units x 1.4)	291				
2 BR (312 units x 2)	624				
<b>Residential Subtotal</b>	<b>915</b>				
<b>TOTAL **</b>	<b>3,111</b>				
** Sum of Office/Restaurant and Residential = 2,196 + 915					
Note: The 42,000 square feet of accessory commercial to be located within the office and/or residential buildings has no required parking.					

The developer has indicated that the accessory commercial uses will be located inside either the office or residential buildings. As such, staff has recommended a condition that no exterior entrances or signage be permitted for these uses. Should the developer determine that exterior entrances or signage are desired, staff would have to reanalyze the traffic impacts of the development and the required parking for the site.

*F. The amount and location of open space;*

**Finding:** The developer has provided for landscaping and open space throughout the site totaling 34.7% of the total land area. The developer has also provided a forty (40) foot setback which includes a landscape area along Glenridge Drive and the required five (5) foot landscape strips along the north, south, and east property lines adjacent to GA-400, I-285, and the office development to the north.

The developer has requested a concurrent variance to allow the existing surface parking lot landscaping to remain in lieu of the required landscape island every sixth parking space.

*G. Protective screening;*

**Finding:** The developer is proposing to maintain most of the existing tree line as a vegetative screen along the Glenridge Drive frontage facing the neighboring residential properties.

*H. Hours and manner of operation;*

**Finding:** The developer has indicated that the proposed development will have a twenty-four hour, seven day a week presence due to the mix of uses proposed.

*I. Outdoor lighting; and*

**Finding:** The developer has not determined the type of lighting that will be used throughout the site at this time. This will be addressed at the time of permitting and city codes will be applied at that time.

*J. Ingress and egress to the property.*

**Finding:** The developer proposes two (2) curb cuts for the site from Glenridge Drive. One will be a full service access point at the existing traffic light on Glenridge Drive and the other is proposed to be a right-in/right-out only drive at the north end of the site.

## CONCURRENT VARIANCES

The developer is requesting one (1) concurrent variance as follows:

1. To modify the surface parking landscape island requirement to provide for an alternate landscaping plan by maintaining the existing surface parking landscaping (Section 4.23.2, *Parking Lot Landscaping*).

The developer has indicated that relief from this section of the code is in harmony with the intent of Zoning Ordinance. The developer has provided documentation showing that the aggregate square footage of the landscape islands that would be required by code is 6,470 square feet, while the landscaped area they are proposing to maintain in the existing surface parking area would provide 12,504 square feet of landscaping.

*The staff is of the opinion that the variance request is in harmony with the intent of the Zoning Ordinance as the overall landscaping provided, including the maintenance of existing vegetation in the surface parking areas, would result in more than what is required by the code. Therefore, the staff recommends **APPROVAL** of this request.*

## PUBLIC INVOLVEMENT

### Required Meetings

The developer attended the following required meetings:

- Community Zoning Information Meeting (CZIM) held May 25, 2010 at the Sandy Springs City Hall
- Community/Developer Resolution Meeting (CDRM) held June 23, 2010 at the Sandy Springs City Hall

### Public Comments

The public expressed concern about the proposal with regard to the following:

- Traffic - insufficient access to site, traffic study details, air quality

*Response: The staff has recommended traffic mitigation measures to address some of the public's concerns related to access to the site and the overall traffic impact of the proposal. The traffic study provided by the developer meets the submittal requirements of the city.*

- Retail uses on this section of Glenridge Drive

*Response: While there are retail uses proposed for the development, staff has recommended conditions to limit these uses to the interior of the existing or proposed office and/or residential buildings with no exterior access or signage. Such retail uses are consistent with the Live Work policies of the Comprehensive Plan by encouraging pedestrian activity within the development and reducing some of the vehicular trip generation from the site.*

- Aesthetics - visual impact, transition into neighborhood, increase proposed setback along Glenridge Drive, preservation of look and feel of area

*Response: The developer has proposed a 40-foot landscape strip along the Glenridge Drive frontage to address this concern. In addition, staff has recommended that the landscape strip be planted to buffer standards to ensure sufficient screening of the development.*

- Apartments as residential component

*Response: The developer has agreed to construct the residential units to condominium standards and staff has added a condition to that effect.*

- Signage

*Response: The staff has recommended that the accessory retail uses not be permitted any exterior entrances or signage. Therefore, the development would be restricted to the signage currently allowed under Article 33, Signs, of the Sandy Springs Zoning Ordinance.*

- Impact on Hammond Park

*Response: The staff finds the proposed development will have no more impact on Hammond Park than similar developments in the surrounding area.*

Following the CDRM a representative of the group sent follow-up correspondence clarifying their concerns (Exhibit 2):

The neighborhoods involved with the Lakeside re-zoning feel very strongly about this application. We would like to see that the following concerns are included with any report to the Planning Commission and the MCC.

Traffic - we would like an accurate disclosure of total vehicle trips per day included prominently in the Staff report to the PC. That total number should reflect the "new" trips as well as the trips generated by the total potential full occupancy of the old buildings that will remain on site. We understand that there is currently the potential for confusion in the lay out/presentation of the Traffic Report.

Prepared by the City of Sandy Springs Department of Community Development for the Mayor and City Council Hearing on August 17, 2010

*Response: Detailed information regarding vehicle trips per day can be found in the Traffic Impact Study (Exhibit 3) attached to this report. The applicant did revise the report to include information regarding traffic based on the current occupancy (70%) and based on typical occupancy (90%) as compared to the future proposed development.*

Traffic - with the huge numbers of vehicles expected with this proposed density - we would like to see some aggressive "good faith" traffic mitigation plan by the the owners beyond the MIX discount they currently receive. This could be a Voluntary Condition of Zoning that included rent reductions/incentives for the apartment component.

[We understand that Met Life has no developer for the apartment component, however they (Met Life) can privately make that developer whole for any loss of revenue that this Voluntary Condition caused. (This side agreement could not be any part of the Conditions but would be a part of the private sale/lease agreement between Met Life and the apartment developer.)]

*Response: The traffic improvements related to the development are outlined in the Traffic Impact Study (Exhibit 3) provided by the developer. Additional traffic improvements are recommended in the staff conditions to ensure mitigation of any negative impact caused by the development. However, based on the Planning Commission's recommendation and request for additional information, staff is recommending deferral of the petition.*

Traffic - they also have not renewed any bus/shuttle feature that would justify the basis of the MARTA component of their LUP Map designation.

*Response: The traffic improvements related to the development are outlined in the Traffic Impact Study (Exhibit 3) provided by the developer. Additional traffic improvements are recommended in the staff conditions to ensure mitigation of any negative impact caused by the development.*

We understand that Voluntary Conditions of Zoning cannot be requested by Staff, the PC or the MCC, however, they can be urged by the Community and we are doing so with the applicant. We want to make this point very clear to the PC and the MCC.

Apartments -we would also like to make sure that the developer's agreement with the Community to build the apartment components to condominium standards is reflected by a specific Voluntary Condition of Zoning.

*Response: Staff condition 1.c. addresses this request, which the developer has agreed to.*

Thank you,  
Trisha Thompson  
Zoning Chair  
Sandy Springs Council of Neighborhoods (SSCN)

In addition to the concerns raised at the CZIM and CDRM, the neighbors raised some questions with the applicant. The responses to those questions can be found in Exhibit 4 attached.

#### Notice Requirements

The petition was advertised in the Daily Report on July 8, 2010 and July 22, 2010. A sign issued by the Department of Community Development was posted along the frontage of Glenridge Drive on June 11, 2010.

#### Public Participation Plan and Report

The Public Participation Plan requirements have been met and the Public Participation Report is required to be submitted seven (7) days prior to the Mayor and City Council Hearing on August 17, 2010. The Public Participation Report must be submitted on or before August 10, 2010.

**DEPARTMENT COMMENTS**

The staff held a Focus Meeting on June 2, 2010 at which the following departmental comments were provided:

<b>BUILDING AND DEVELOPMENT DIVISION</b>	Sandy Springs Building Officer	<ul style="list-style-type: none"> <li>There are no building requirements that need to be addressed at this time.</li> </ul>
	Sandy Springs Chief Engineer	<ul style="list-style-type: none"> <li>Stormwater management shall be provided in accordance with the Sandy Springs Development Regulations.</li> </ul>
	Sandy Springs Chief Arborist	<ul style="list-style-type: none"> <li>The proposed site plan may impact several landmark trees and will change the look of the property along Glenridge Drive.</li> </ul>
<b>FIRE DEPT.</b>	Sandy Springs Fire Protection Engineer	<ul style="list-style-type: none"> <li>Refer to 120-3-3, modification to the 2003 IFC, "508.5.1 Where required. Where a portion of the facility or building hereafter constructed or moved into or within the jurisdiction is more than 500 feet (152 m) from a hydrant on a fire apparatus access road, as measured by an approved route around the exterior of the facility or building, on-site fire hydrant mains shall be provided where required by the local responding fire department or agency.</li> </ul> <p>Exceptions:</p> <ol style="list-style-type: none"> <li>For group R-3 and Group U occupancies, the distance requirement shall be 600 feet (183 m).</li> <li>For buildings equipped throughout with an approved automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2, the distance requirement shall be 600 feet (183 m).</li> </ol> <p>Fire hydrants may not be omitted unless written approval by the local responding fire department or agency is submitted to this office.</p> <ul style="list-style-type: none"> <li>Section 3.3.1 of the City of Sandy Springs Fire Ordinance requires that every existing building and all new buildings shall be accessible to fire department apparatus by way of designated fire lanes with an all-weather driving surface of not less than 20 feet of unobstructed width. There shall be a minimum roadway outside turning radius at the curb of 40 feet. There shall be a minimum vertical clearance of thirteen feet, six inches (13'6"). Any dead-end fire department access roadway in excess of 150 feet in length shall include a turnaround at the closed end conforming to county construction standards and specifications, latest edition.</li> <li>All multi-family construction must be sprinkled in accordance with the City of Sandy Springs Fire Ordinance.</li> <li>The additions to the parking deck appear to enclose the deck to qualify it an enclosed parking deck. If so, sprinklers in the entire parking deck will be required.</li> <li>All high rises must have an aerial access road in accordance with IFC D105.</li> <li>Fire hydrants must be installed and spaced in accordance with the IFC.</li> </ul>
<b>TRANSPORTATION</b>	Sandy Springs Transportation Planner	<ul style="list-style-type: none"> <li><i>Public Works anticipates that this application will cause an excessively burdensome use of existing streets or transportation facilities.</i></li> <li><i>Access to the property at 5730 Glenridge Drive (Glenridge Medical Office Building) will be severely impacted, especially during PM peak hours. The increased traffic volumes will create a safety and operational hazard in accessing the 5730 site.</i></li> <li><i>The subject property is located on a minor arterial.</i></li> <li>Right-of-way dedication: 55' from centerline of Glenridge Drive</li> <li>Signalization will be updated to accommodate new roadway configuration at project entrance, provide pedestrian access and meet current city standards. All changes will be made per the approval of Public Works as part of the LDP.</li> <li>Install a dedicated northbound right turn lane to serve project entrances on Glenridge Drive.</li> <li>Install southbound right turn lane from Glenridge Drive onto I-285 westbound ramp</li> <li>Install a parallel lane on the westbound entrance ramp from Glenridge Drive onto I-285</li> <li>No out parcel shall have direct access to Glenridge Drive.</li> </ul>

	Georgia Department of Transportation	<ul style="list-style-type: none"> <li>▪ There are no GDOT requirements that need to be met at this time.</li> </ul>
--	--------------------------------------	--

The staff has received additional comments from the Fulton County Board of Education (Exhibit 5).

### CONCLUSION TO FINDINGS

The Sandy Springs Planning Commission recommended deferral of the petition for up to 90 days subject to the following:

- 1) That a meeting be set up by staff for mediation between the developer and stakeholders including the neighbors, hospitals, representatives of PCID, and other business owners in the area to address the development and its impact on the immediate area (Glenridge/Glenforest/I-285) and the overall area (Hammond/Johnson Ferry/Glenridge Connector) especially regarding traffic impacts
- 2) That a condition be added to require the 40 foot landscape area along Glenridge Drive be planted to buffer standards
- 3) That a condition be added to require GDOT approval of the required traffic improvements prior to issuance of a land disturbance permit
- 4) That the condition regarding the required MARTA shuttle be amended to expand the hours and days of operation of the service.

Therefore, based on these reasons, the staff recommends DEFERRAL of the petition for rezoning, use permit, and concurrent variance.

## STAFF RECOMMENDED CONDITIONS

The staff recommends DEFERRAL of the petition; however, should the Mayor and City Council decide to approve the request, the staff recommends that the approval be subject to the following conditions. The applicant's agreement to these conditions would not change staff recommendations. These conditions shall prevail unless otherwise stipulated by the Mayor and City Council.

1. To the owner's agreement to restrict the use of the subject property as follows:
  - a. Office and associated accessory uses at a density of 29,581.25 square feet per acre or 770,000 square feet, whichever is less.
  - b. One (1) freestanding restaurant at a density of 307.34 square feet per acre or 8,000 square feet, whichever is less.
  - c. Residential and associated accessory uses at a density of 19.98 units per acre or 520 units, whichever is less. Said residential units shall be constructed to condominium standards subject to the approval of the Director of Community Development.
  - d. Accessory commercial uses at a density of 1,613.52 square feet per acre or 42,000 square feet, whichever is less. Said accessory commercial uses shall be contained entirely within either the office buildings and/or the residential buildings. Exterior entrances and signage shall be prohibited.
  - e. The maximum building height for the new office tower shall be sixteen (16) stories, excluding any penthouses for mechanical equipment. (U09-009)
  - f. The restaurant shall have a maximum height of one (1) story.
  - g. The residential building shall have a maximum height of 80 feet (7 stories) except that the building shall not exceed 60 feet (4 stories) along the Glenridge Drive frontage (west elevation), excluding any penthouses for mechanical equipment. (U09-009)
  - h. The following uses are prohibited: Amusements, Indoor; Assembly Halls; Automotive Parking Lots; Automotive Specialty Shops; Church, Temple or Other Place of Worship; Funeral Homes; Garage, Automobile Repair including painting, body repair and overhaul of major components; Group Residences; Gymnasiums; Landscaping Business; Garden Center; Lawn Service Businesses; Millinery or Similar Trade whenever products are sold commercial, exclusively on the site where produced; Motels; Personal Care Homes; Plant Nurseries; Repair Shops not involving any manufacturing on the site; Research Laboratories; Service Stations; Stadiums; Theaters; Recycling Centers, Collecting; Automotive Garage; Automotive Repair Garage; Automobile & Light Truck Sales\Leasing; Batting Cage, Outdoor; Bowling Alley; Car Wash; Check Cashing Establishment; Drive-in Theater; Drive-thru banking facilities; Garage, Automobile Repair; Laundry and/or Dry Cleaning Plant Distribution Center; Pawn Shop; Plumbing Shop associated with commercial sales; Skating Rink; Tinsmithing Shop; Self Storage/Mini; Self Storage/Multi; Drive-thru restaurants.
2. To the owner's agreement to abide by the following:
  - a. To the site plan received by the Department of Community Development dated June 23, 2010. Said site plan is conceptual only and must meet or exceed the requirements of the Zoning Ordinance and these conditions prior to the approval of a Land Disturbance Permit. Unless otherwise noted herein, compliance with all conditions shall be in place prior to the issuance of a Certificate of Occupancy.

Prepared by the City of Sandy Springs Department of Community Development for the Mayor and City Council Hearing on August 17, 2010

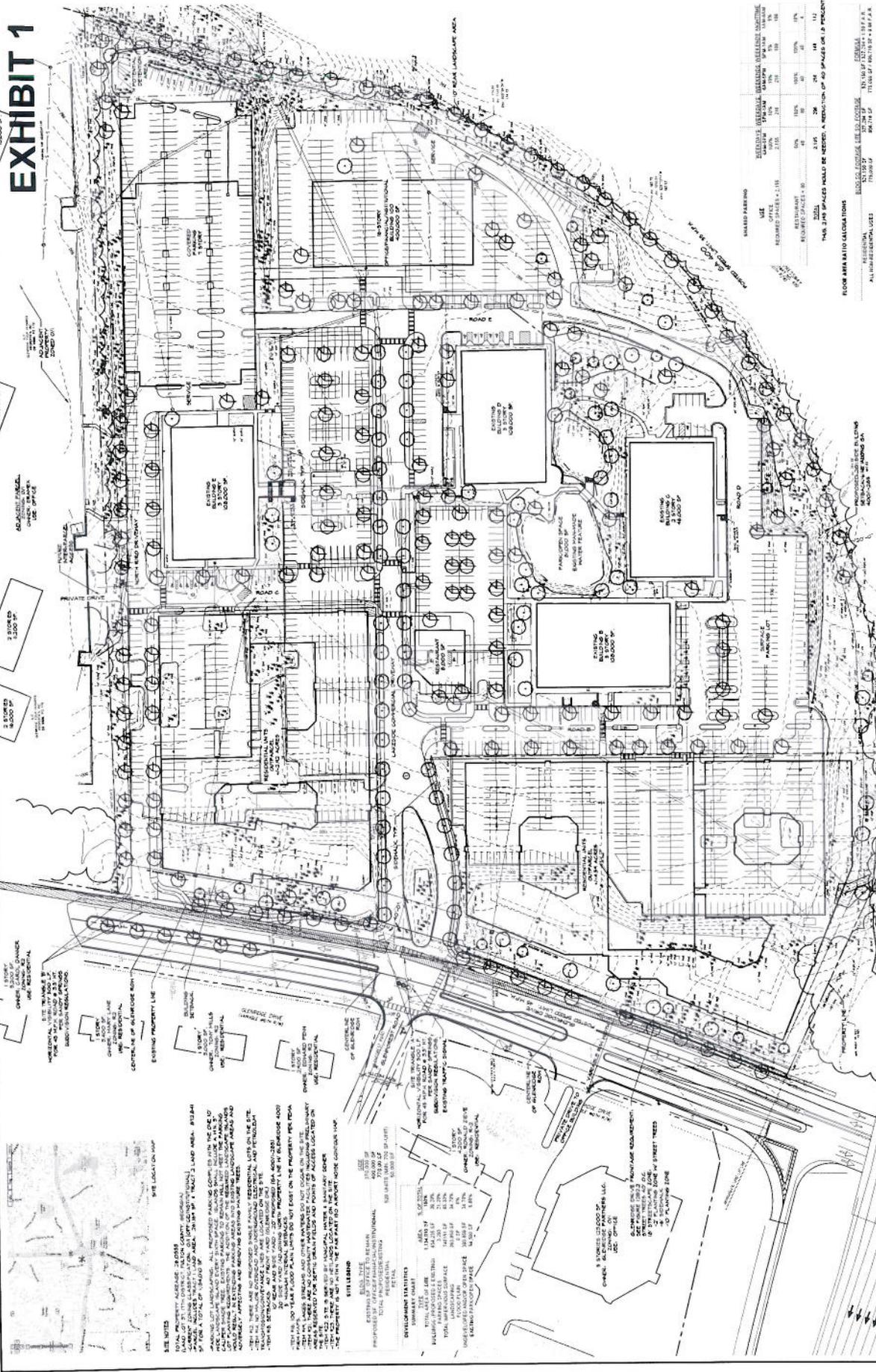
3. To the owner's agreement to provide the following site development standards:
- a. The minimum design standards are:
    - Minimum front yard: 40 feet
    - Minimum side yard: 10 feet
    - Minimum rear yard: 10 feet
    - Minimum internal setback: 0 feet
    - Minimum landscaping and buffering between uses: 0 feet
    - Minimum heated floor area per dwelling unit: 700 square feet
  - b. The owner/developer shall dedicate fifty-five (55) feet of right-of-way from centerline of Glenridge Drive along the entire property frontage or ten and one-half (10.5) feet from back of curb, whichever is greater, to the City of Sandy Springs.
  - c. No less than 34% of the site shall be maintained as open space of which 15% shall be green space.
  - d. The owner/developer shall provide a forty (40) foot landscape strip within the minimum front yard along the Glenridge Drive frontage planted to buffer standards subject to the approval of the Sandy Springs Arborist.
  - e. Prior to issuance of an LDP, the owner/developer shall attempt to provide interparcel access with adjacent properties. Should the owner/developer not come to an agreement on interparcel access at this time with the adjacent property owners, the owner/developer shall provide documentation of such. In addition, if an interparcel access agreement is not obtained; permanent easements shall be recorded allowing for future interparcel access along the entirety of the boundary of the adjacent properties, prior to the issuance of an LDP.
  - f. The owner/developer shall update the existing signalization to accommodate the new roadway configuration at the project entrance and provide pedestrian access consistent with current city standards. Said signalization and pedestrian access shall be subject to the approval of the Public Works Department as part of the LDP and shall be installed prior to the issuance of the first Certificate of Occupancy for the development.
  - g. The owner/developer shall install a dedicated northbound right turn lane to serve project entrances on Glenridge Drive. Location and design of said lane shall be subject to the approval of the Public Works Department as part of the LDP and shall be installed prior to the issuance of the first Certificate of Occupancy for the development.
  - h. The owner/developer shall install southbound right turn lane from Glenridge Drive onto I-285 westbound ramp. Location and design of said lane shall be subject to the approval of the Public Works Department as part of the LDP and shall be installed prior to the issuance of the first Certificate of Occupancy for the development.
  - i. The owner/developer shall install a parallel lane on the westbound entrance ramp from Glenridge Drive onto I-285. Location and design of said lane shall be subject to the approval of the Georgia Department of Transportation and shall be installed prior to the issuance of the first Certificate of Occupancy for the development.

- j. No outparcel shall have direct access to Glenridge Drive.
- k. To modify the surface parking landscape island requirement to provide for an alternate landscaping plan by maintaining the existing surface parking landscaping as shown on the site plan received by the Department of Community Development dated June 23, 2010. (CV09-009)
- l. The proposed parking decks shall be designed with an architectural treatment and shall not be designed with cables along the deck facades. Said parking deck architectural design shall be subject to the approval of the Director of Community Development.
- m. No neon or internally lit signage shall be permitted.
- n. The owner/developer shall provide a shuttle service to ensure adequate access to MARTA from the site. Said service shall be provided at a minimum of 30-minute intervals from 7:00 a.m. to 6:00 p.m. Monday through Friday. Documentation detailing said shuttle service program shall be submitted to the Department of Community Development prior to the issuance of the first Certificate of Occupancy for the development.

## Attachments

- Exhibit 1 – Site Plan dated received June 23, 2010
- Exhibit 2 – Email from Sandy Springs Council of Neighborhoods dated received June 24, 2010
- Exhibit 3 – Traffic Impact Study dated received June 7, 2010
- Exhibit 4 – Applicant Response to Neighbor Concerns dated received June 23, 2010
- Exhibit 5 – E-mail from Fulton County Schools dated received July 6, 2010
- Exhibit 6 – Letter of Intent dated received June 23, 2010
- Exhibit 7 – Developer Zoning Impact Analysis dated received June 23, 2010
- Exhibit 8 – Developer Use Permit Considerations dated received June 23, 2010
- Exhibit 9 – Memo from Fulton County Department of Health Services dated received June 21, 2010
- Exhibit 10 – Letter from City of Atlanta Department of Watershed Management dated received July 21, 2010
- Exhibit 11 – Letters of Opposition from Northside Hospital and Neighboring Property Owners

**EXHIBIT 1**



**DEVELOPMENT STATISTICS**

ITEM	AREA (SQ FT)	PERCENTAGE
TOTAL SITE AREA	1,100,000	100%
EXISTING BUILDING FOOTPRINT	150,000	13.6%
NEW BUILDING FOOTPRINT	250,000	22.7%
TOTAL BUILDING FOOTPRINT	400,000	36.3%
PARKING SPACES	1,500	0.14%
LANDSCAPING	100,000	9.1%
ROADS	50,000	4.5%
UTILITIES	50,000	4.5%
OTHER	100,000	9.1%

**MINIMUM PARKING REQUIREMENTS**

ITEM	REQUIREMENTS	REQUIREMENTS	REQUIREMENTS
OFFICE BUILDING	100 SPACES / 10,000 SF	150 SPACES / 15,000 SF	200 SPACES / 20,000 SF
RETAIL	100 SPACES / 10,000 SF	150 SPACES / 15,000 SF	200 SPACES / 20,000 SF
RESTAURANT	100 SPACES / 10,000 SF	150 SPACES / 15,000 SF	200 SPACES / 20,000 SF
RECREATION	100 SPACES / 10,000 SF	150 SPACES / 15,000 SF	200 SPACES / 20,000 SF

**FLOOR AREA RATIO CALCULATIONS**

ITEM	REQUIREMENTS	REQUIREMENTS	REQUIREMENTS
OFFICE BUILDING	1.0	1.5	2.0
RETAIL	1.0	1.5	2.0
RESTAURANT	1.0	1.5	2.0
RECREATION	1.0	1.5	2.0

**STREETScape STANDARDS**

STREET LIGHTING: 15' TALL, 150 WATT, 120' SPACING  
 STREET TREES: 6" DBH, 10' SPACING  
 STREET SIGNAGE: 12" HIGH, 18" WIDE  
 LANDSCAPING: 10' WIDE STRIP

## EXHIBIT 2

**Ruffin, Patrice**

---

**From:** trishathompsonfox@comcast.net  
**Sent:** Thursday, June 24, 2010 10:37 AM  
**To:** Ruffin, Patrice; Trettin, Doug; Moore, Mark  
**Cc:** Mark Sampi; Doug Faiciglia; Thaea Lloyd; Harriet Mills; Jane Kelley  
**Subject:** Lakeside - Res Meeting

Patrice,

The neighborhoods involved with the Lakeside re-zoning feel very strongly about this application. We would like to see that the following concerns are included with any report to the Planning Commission and the MCC.

Traffic - we would like an accurate disclosure of total vehicle trips per day included prominently in the Staff report to the PC. That total number should reflect the "new" trips as well as the trips generated by the total potential full occupancy of the old buildings that will remain on site. We understand that there is currently the potential for confusion in the lay out/presentation of the Traffic Report.

Traffic - with the huge numbers of vehicles expected with this proposed density - we would like to see some aggressive "good faith" traffic mitigation plan by the the owners beyond the MIX discount they currently receive. This could be a Voluntary Condition of Zoning that included rent reductions/incentives for the apartment component.

[We understand that Met Life has no developer for the apartment component, however they (Met Life) can privately make that developer whole for any loss of revenue that this Voluntary Condition caused.(This side agreement could not be any part of the Conditions but would be a part of the private sale/lease agreement between Met Life and the apartment developer .)]

Traffic - they also have not renewed any bus/shuttle feature that would justify the basis of the MARTA component of their LUP Map designation.

We understand that Voluntary Conditions of Zoning cannot be requested by Staff, the PC or the MCC, however, they can be urged by the Community and we are doing so with the applicant. We want to make this point very clear to the PC and the MCC.

Apartments -we would also like to make sure that the developer's agreement with the Community to build the apartment components to condominium standards is reflected by a specific Voluntary Condition of Zoning.

Thank you,  
Trisha Thompson  
Zoning Chair  
SSCN

# EXHIBIT 3

## LAKESIDE DEVELOPMENT Development of Regional Impact # 1503

SANDY SPRINGS, GA

### REVISED TRAFFIC IMPACT STUDY



**Prepared for:**

Greenstone Properties  
3330 Cumberland Blvd, Suite 475  
Atlanta, GA 30339

**Prepared by:**



**A&R Engineering Inc.**

2160 Kingston Court, Suite O  
Marietta, GA 30067  
Tel: (770) 690-9255 Fax: (770) 690-9210  
[www.areng.com](http://www.areng.com)

**TRAFFIC IMPACT STUDY  
FOR  
LAKESIDE DEVELOPMENT  
SANDY SPRINGS, GEORGIA**

**Prepared for:**

Greenstone Properties  
3330 Cumberland Blvd, Suite 475  
Atlanta, GA 30339

**Prepared by:**



**A&R Engineering Inc.**

2160 Kingston Court, Suite O  
Marietta, GA 30067  
Tel: (770) 690-9255 Fax: (770) 690-9210  
[www.areng.com](http://www.areng.com)

June 7, 2010  
A&R Project No: 10-010

## EXECUTIVE SUMMARY

The purpose of this study is to evaluate the traffic impact from the expansion of Lakeside Development located along Glenridge Drive to the northeast of the intersection of Glenridge Drive / I-285 ramp in Sandy Springs. A&R Engineering previously completed a traffic study for the previous site plan in August 2007. Since the site plan has been revised, this study reflects changes from the revised plan. The new plan includes significantly reduced office density and increased residential density for the proposed expansion. The new plan proposes to include a total of 770,000 s.f. of office space (existing 410k – demolished 40k + proposed 400k = 770k), 520 apartment units, and 50,000 s.f. of supportive retail / commercial space. (It should be noted that the previous site plan included of a total of 1,125,000 s.f. office space, 300 residential condominiums, a 200 room hotel, and 50,000 s.f. of supportive / specialty retail center.) The same methodology that was followed in the previous study has been used in this revised analysis utilizing the newly collected existing traffic counts at the study intersections. The traffic volumes generated by the development have been updated due to the reduced density in the office component of the development. The traffic analysis evaluated the following scenarios: existing conditions, the year 2012 without additional traffic generated by the site, and the year 2012 with the traffic generated by the development.

From the existing conditions analysis it was found that all intersections within the study area are currently operating at LOS D. Analysis of the Base Year 2012 revealed that intersection of Glenridge Drive / Hammond Drive will operate at LOS E in the PM peak hour.

The Future 2012 traffic, including the site-generated traffic was then evaluated using existing lane geometry. If no roadway improvements are implemented, two study network intersections will operate at LOS E after the project is completed. Improvements were recommended for these intersections. In addition, recommendations to allow the site accesses to operate satisfactorily were identified. Details can be found in the site access analysis section of the report.

**TABLE OF CONTENTS**

<b>Item</b>	<b>Page</b>
1. Project Description .....	1
1.1 Site Plan .....	1
1.2 Consistency with Adopted Comprehensive County Plan .....	1
1.3 Project Phasing .....	1
2. Trip Generation .....	4
2.1 Net Trip Ends .....	5
3. Trip Distribution & Assignment .....	5
4. Study Network Determination .....	7
5. Planned & Programmed Improvements .....	9
6. Existing Conditions .....	10
6.1 Description of Transportation Facilities in Study Network .....	10
6.2 Analysis Summary .....	11
7. Future Year Background Traffic .....	16
8. Future Year Total Traffic .....	20
9. Facility Needs Analysis .....	20
9.1 Intersection Analysis .....	20
9.2 Site Access Analysis .....	24
10. Non-Expedited Criteria .....	27
10.1 Regional Mobility and Location .....	27
10.2 Pedestrian and Internal Circulation .....	28
11. Other Pertinent Information .....	28
12. Significant Impact Analysis .....	28

Appendix

# EXHIBIT 3

## LIST OF FIGURES

Figure	Page
1	Location Map..... 2
2	Site Plan..... 3
3	Trip Distribution..... 6
4	Study Intersections ..... 8
5	Existing Weekday Peak Hour Volumes ..... 12
6	Existing Traffic Control and Lane Geometry ..... 13
7A	Site Generated Weekday Peak Hour Volumes ..... 14
7B	Site Generated Weekday Peak Hour Volumes ..... 15
8	Base 2012 Weekday Peak Hour Volumes ..... 17
9	Base 2012 Traffic Control and Lane Geometry ..... 19
10	Future 2012 Weekday Peak Hour Volumes ..... 21
11	Future 2012 Traffic Control and Lane Geometry ..... 23
12	Future 2012 Site Access Peak Hour Volumes ..... 25
13	Future 2012 Site Access Traffic Control and Lane Geometry ..... 26

## LIST OF TABLES

Table	Page
1A	Trip Generation Volumes Current Site Plan..... 4
1B	Trip Generation Volumes Previous Site Plan..... 4
2	Trip Generation with reductions..... 5
3	Existing Intersection Operations ..... 11
4	Base Year (2012) Intersection Operations..... 18
5	Future Year (2012) Intersection Operations with Existing Lane Geometry..... 22
6	Future Year (2012) Site Driveway Operations..... 24

## 1. PROJECT DESCRIPTION

The purpose of this study is to evaluate the traffic operations from the proposed expansion of Lakeside Development located along Glenridge Drive to the northeast of the intersection of Glenridge Drive / I-285 ramp in Sandy Springs. A&R Engineering previously completed a traffic impact study for the previous site plan in August 2007. The site plan for the proposed expansion has been revised and this study reflects changes from the revised plan. The new plan includes significantly reduced office density and increased residential density for the proposed expansion. The new plan proposes to include a total of 770,000 s.f. of office space (existing 410k – demolished 40k + proposed 400k = 770k), 520 apartment units, and 50,000 s.f. of supportive retail / commercial space. (It should be noted that the previous site plan included of a total of 1,125,000 s.f. office space, 300 residential condominiums, a 200 room hotel, and 50,000 s.f. of supportive / specialty retail center.) The same methodology that was followed in the previous study has been used in this revised analysis utilizing the newly collected existing traffic counts at the study intersections. The traffic volumes generated by the development have been updated due to the reduced density in the office component of the development. The site is currently served by an existing driveway that aligns across from Glenforest Road, which is signalized and will continue to serve as the primary access for the site. The site also proposes a right-in / right-out access along Glenridge Drive. In addition, the site proposes an inter-parcel access to the adjacent Glenridge 400 Office Park development to the north which has a signalized access point along Glenridge Drive. A location map for the site is shown in Figure 1.

### 1.1 Site Plan

A site plan for this project is shown in Figure 2. A larger size drawing and a digital copy of the site plan are also provided with this report.

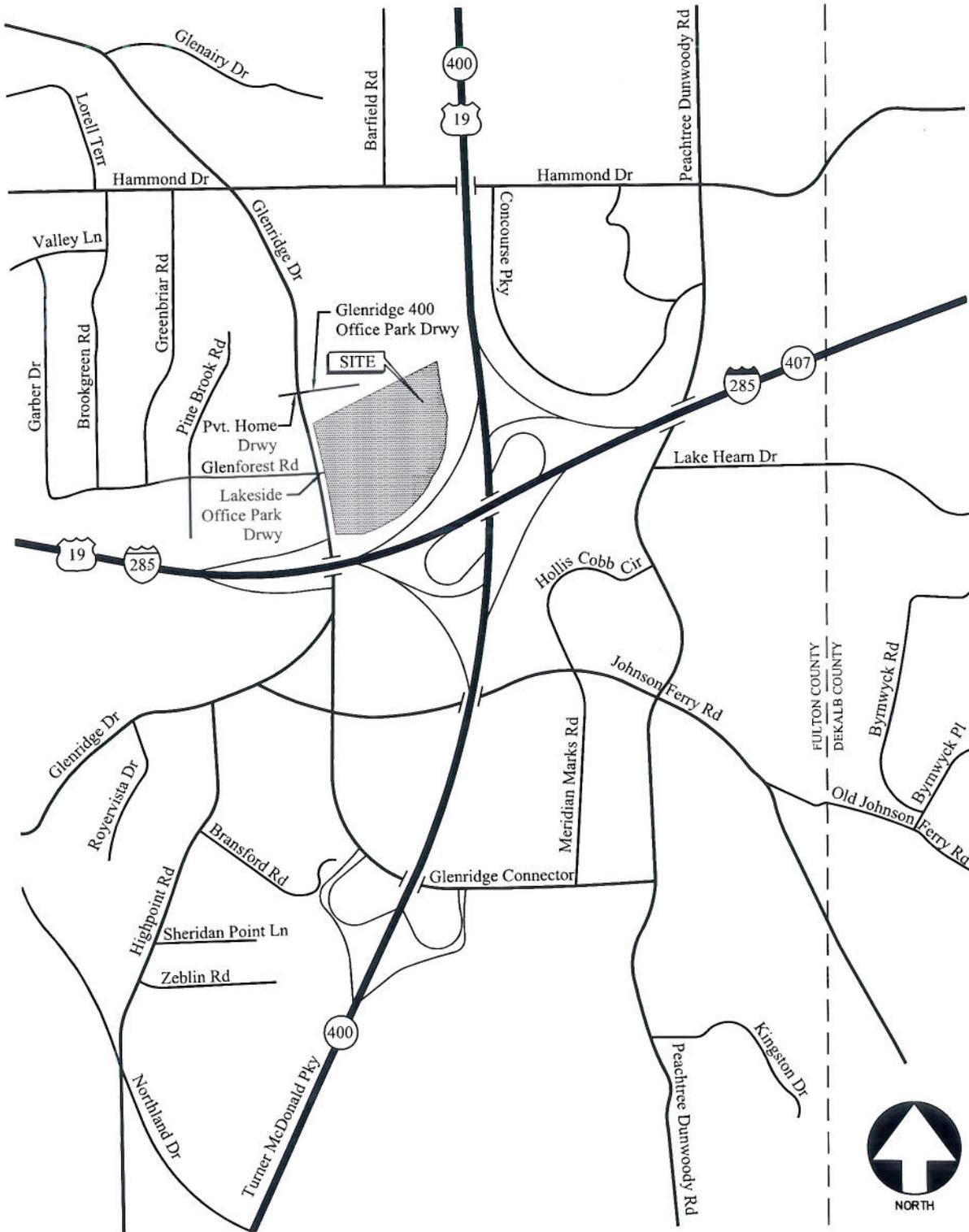
### 1.2 Consistency with Adopted Comprehensive County Plan

The existing site zoning is OI and the proposed zoning is MIX. The future land use plan calls for live / work community and live / work regional. The site is consistent with the areas future land use plan, except a use permit will be required to allow for the proposed building heights.

### 1.3 Project Phasing

The project's impact has been evaluated in one phase, estimated for completion in the year 2012. This study will evaluate the traffic operations in the vicinity of the site for existing conditions year 2010, the year 2012 without additional traffic generated by the site, and the year 2012 with the additional traffic generated by the development.

# EXHIBIT 3

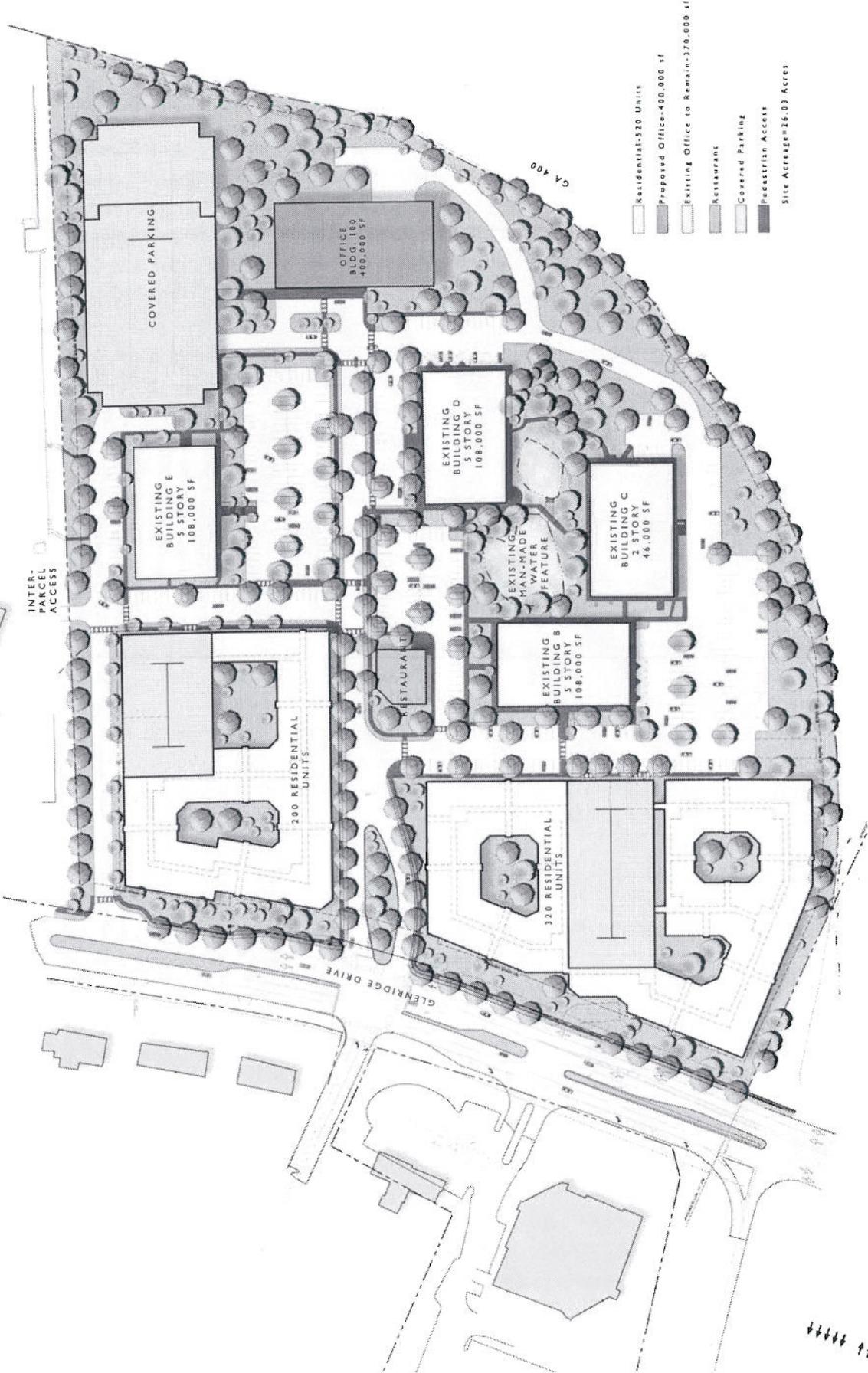


LOCATION MAP

FIGURE 1  
A&R Engineering Inc.

# EXHIBIT 3

## LAKESIDE OFFICE MASTER PLAN



- Residential-320 Units
  - Proposed Office-400,000 sf
  - Existing Office to Remain-370,000 sf
  - Restaurant
  - Covered Parking
  - Pedestrian Access
- Site Acres=26.03 Acres

ZONING PLAN  
 ATLANTA, GEORGIA  
 APRIL 07, 2010

GREENSTONE PROPERTIES

HCOR  
 HUMAN CAPITAL OPERATIONS RESEARCH

**2. TRIP GENERATION**

Trip generation estimates for the project were based on the rates and equations published in the 8th edition of the Institute of Transportation Engineers (ITE) Trip Generation report. The ITE Trip Generation report contains traffic volume count data collected at similar facilities nationwide. The existing site is proposed to add 360,000 s.f of office space, 520 apartment units and 50,000 s.f of supportive / specialty retail center. Trip generation calculations for the Lakeside Development are shown in Table 1A. The trips from the revised site plan that are shown in Table 1A was used in this traffic study. The trip generation that was used in the previous DRI traffic study for the previous application is shown in Table 1B.

Land Use	Total Size	A.M. Peak Hour			P.M Peak Hour			24-Hour 2-way
		Enter	Exit	Total	Enter	Exit	Total	
710 – General Office	360,000 s.f.	460	63	523	82	400	482	3,577
222- High-Rise Apartment	520 units	39	117	156	109	70	179	2,188
814 – Specialty Retail Center	50,000 s.f.	173	188	361	62	79	141	2,177
<b>Total</b>		<b>672</b>	<b>368</b>	<b>1,040</b>	<b>253</b>	<b>549</b>	<b>802</b>	<b>7,942</b>

Land Use	Total Size	A.M. Peak Hour			P.M Peak Hour			24-Hour 2-way
		Enter	Exit	Total	Enter	Exit	Total	
710 – General Office	715,000 s.f.	796	109	905	150	730	880	6,067
310 – Hotel	200 rooms	59	38	97	63	55	118	1,417
232- High-Rise Residential Condominium / Townhouse	300 units	22	94	116	73	44	117	1,355
814 – Specialty Retail Center	50,000 s.f.	173	188	361	62	79	141	2,177
<b>Total</b>		<b>1,050</b>	<b>429</b>	<b>1,479</b>	<b>348</b>	<b>908</b>	<b>1,256</b>	<b>11,016</b>

As shown in Table 1A and 1B, the revised site plan that was used in this traffic study will generate significantly low traffic compared to the previous site plan that was used to calculate the trip generation in the previous traffic study dated in August 2007.

## 2.1 Net Trip Ends

Due to the nature of the development mixed-use reductions have been applied. Trip Generation with the applied reductions is shown in the Table 2. In addition, a 2% transit reduction has been applied since the site is served by MARTA.

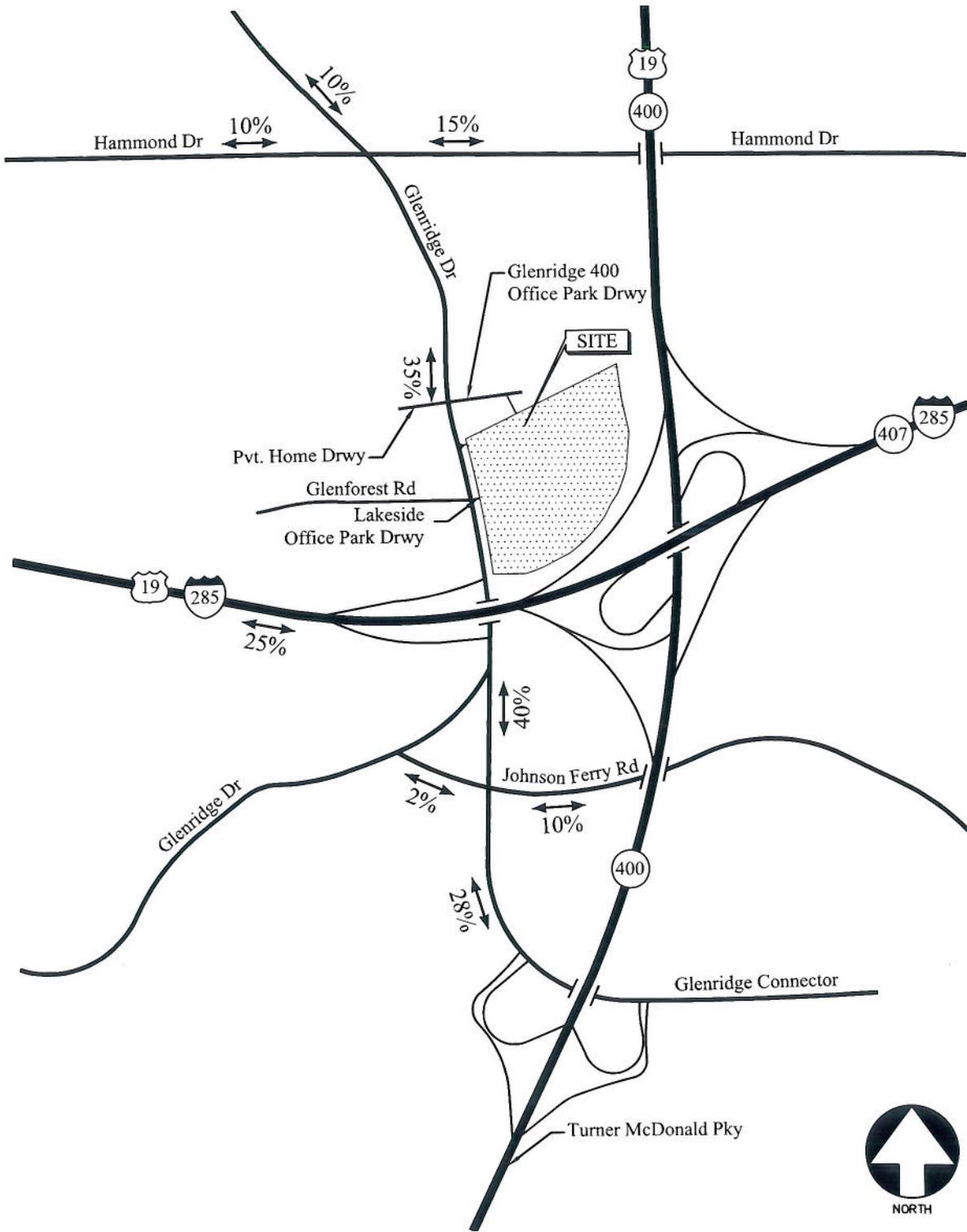
Land Use - Size	A.M. Peak Hour			P.M. Peak Hour			24-Hour
	Enter	Exit	Total	Enter	Exit	Total	2-way
710-General Office - 360,000 s.f	460	63	523	82	400	482	3,577
- <i>Mixed-use Reduction</i>	-3	-2	-5	-2	-3	-5	-109
222- High-Rise Apartment - 520 units	39	117	156	109	70	179	2,188
- <i>Mixed-use Reduction</i>	-6	-3	-9	-12	-6	-18	-251
814 – Specialty Retail Center - 50,000 s.f	173	188	361	62	79	141	2,177
- <i>Mixed-use Reduction</i>	-4	-9	-13	-7	-12	-19	-294
Transit Reduction - 2%	-13	-7	-20	-5	-11	-16	-146
<b>Totals without Reductions</b>	<b>672</b>	<b>368</b>	<b>1,040</b>	<b>253</b>	<b>549</b>	<b>802</b>	<b>7,942</b>
<b>Totals with Reductions</b>	<b>646</b>	<b>347</b>	<b>993</b>	<b>227</b>	<b>517</b>	<b>744</b>	<b>7,142</b>

The new traffic from the proposed expansion is shown in Figure 7A. The existing office complex is currently 70% occupied. The developer projects that the occupancy rate will increase to 90% (20% increase) after the proposed expansion is completed. Therefore, existing site traffic from the office complex has also been increased and added to existing traffic in addition to the new site traffic from the proposed expansion to reflect occupancy increase in the existing office complex and to include the trips from the excessive office space. The new traffic from the existing occupancy change is shown in Figure 7B.

## 3. TRIP DISTRIBUTION & ASSIGNMENT

The trip distribution is the percentage of the traffic generated by the site that travels to and from the site on each segment of the surrounding roadway network. The trip distribution was based on the location of major roadways, highways and residential concentrations that will serve the development. The trip distribution is shown in Figure 3. The distribution was discussed and agreed upon in the methodology meeting. The site-generated volumes were then distributed to the surrounding roadway network based on the driver's destination, and the most easily accessible route.

# EXHIBIT 3



TRIP DISTRIBUTION

FIGURE 3

A&R Engineering Inc.

## 4. STUDY NETWORK DETERMINATION

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

The traffic generated by the proposed project was then assigned to the area roadways using the trip distribution to determine the site-generated traffic on each roadway segment. The boundaries of the study network extend to the most distant intersections where at least 7% of the service volumes on the segment are attributed to project traffic. The following intersections fell within the 7% rule and have been included in the traffic study:

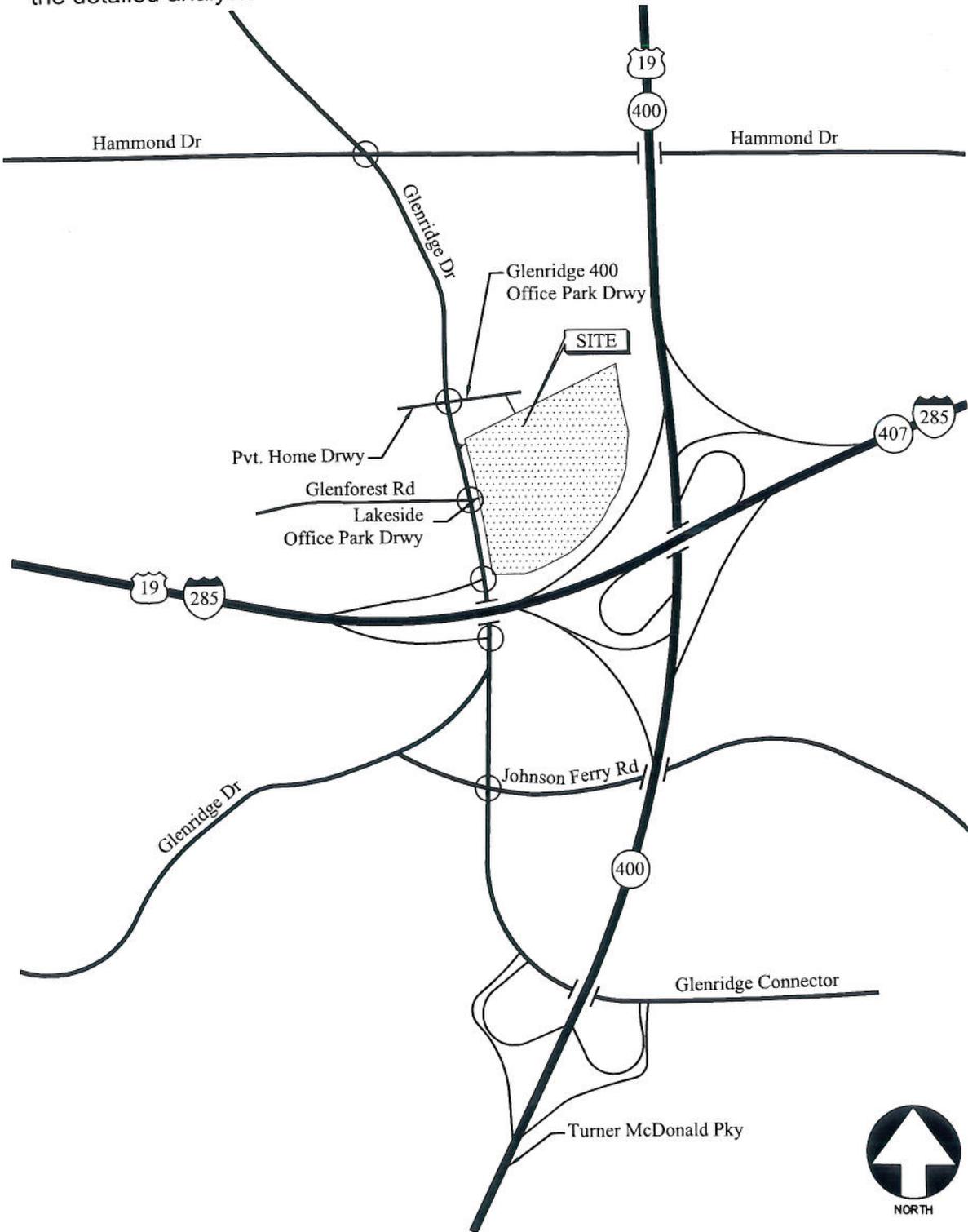
- 1) Glenridge Drive / Hammond Drive
- 2) Glenridge Drive / Glenridge 400 Office Park Driveway
- 3) Glenridge Drive / Glenforest Road / Lakeside Driveway
- 4) Glenridge Drive / I-285 Westbound On-Ramp
- 5) Glenridge Drive / I-285 Eastbound Off-Ramp
- 6) Glenridge Connector / Johnson Ferry Road

The study intersections are shown graphically in Figure 4. Other intersections within this corridor, such as unsignalized side streets, right-in / right-out driveways or private driveways were viewed as insignificant and have not been included in the study network.

# EXHIBIT 3

## LEGEND

- - Intersections to be included in the detailed analysis



STUDY INTERSECTIONS

FIGURE 4  
A&R Engineering Inc.

# EXHIBIT 3

## 5. PLANNED & PROGRAMMED IMPROVEMENTS

The following improvements have been identified in the Atlanta Regional Commission's Transportation Improvement Program (TIP), Regional Transportation Plan (RTP) and City of Sandy Spring Program. These improvements are within the vicinity of the proposed development. Additional improvements for Fulton County have been identified, but they are not relevant to this project. Details of the planned programs can be found in the Appendix.

- FN-103A: Glenridge Drive from SR 9 (Roswell Road) to Glenridge Connector
  - Includes the addition of median and right and left turn lanes.
- FN-103B: Glenridge Drive from SR 9 (Roswell Road) to Johnson Ferry Road
  - Includes the addition of median and right and left turn lanes.
- AR-H-300: I-285 North HOV Lanes from I-75 North in Cobb County to I-85 North in DeKalb County
  - Includes the addition of 1 HOV lane in both directions for 13 miles.
- FN-221: Johnson Ferry Road / Glenridge Drive from Abernathy Road to Hammond Drive
  - Includes widening of Johnson Ferry Road / Glenridge Drive from two lanes to four lanes.
- T-0024: City of Sandy Springs proposes improvements on Hammond Drive corridor. The project consists of the widening of Hammond Drive from Barfield Road to Roswell Road to accommodate the traffic volumes along this corridor.

## 6. EXISTING CONDITIONS

An inventory was performed of the roadways in the area surrounding the site. The following is a brief description of each of these facilities.

### 6.1 Description of Transportation Facilities in Study Network

#### I-285

I-285 is a twelve lane (six lanes in each direction) east-west interstate facility to the south of the proposed development.

#### Glenridge Drive

Glenridge Drive is a four-lane divided roadway with a posted speed limit of 45 mph in the vicinity of the site.

#### Glenridge Connector

Glenridge Connector is a six-lane divided roadway with a posted speed limit of 45 mph. It runs between Glenridge Drive / Johnson Ferry Road and Peachtree Dunwoody Road.

#### Johnson Ferry Road

Johnson Ferry Road is an east-west undivided roadway. It extends from SR 141 in the east to Glenridge Connector in the west.

#### Hammond Drive

Hammond Drive is an east-west four-lane undivided roadway with a posted speed limit of 35 mph in the vicinity of the site. It extends from Ashford Dunwoody Road in the east to Mt Vernon Highway in the west.

# EXHIBIT 3

## 6.2 Analysis Summary

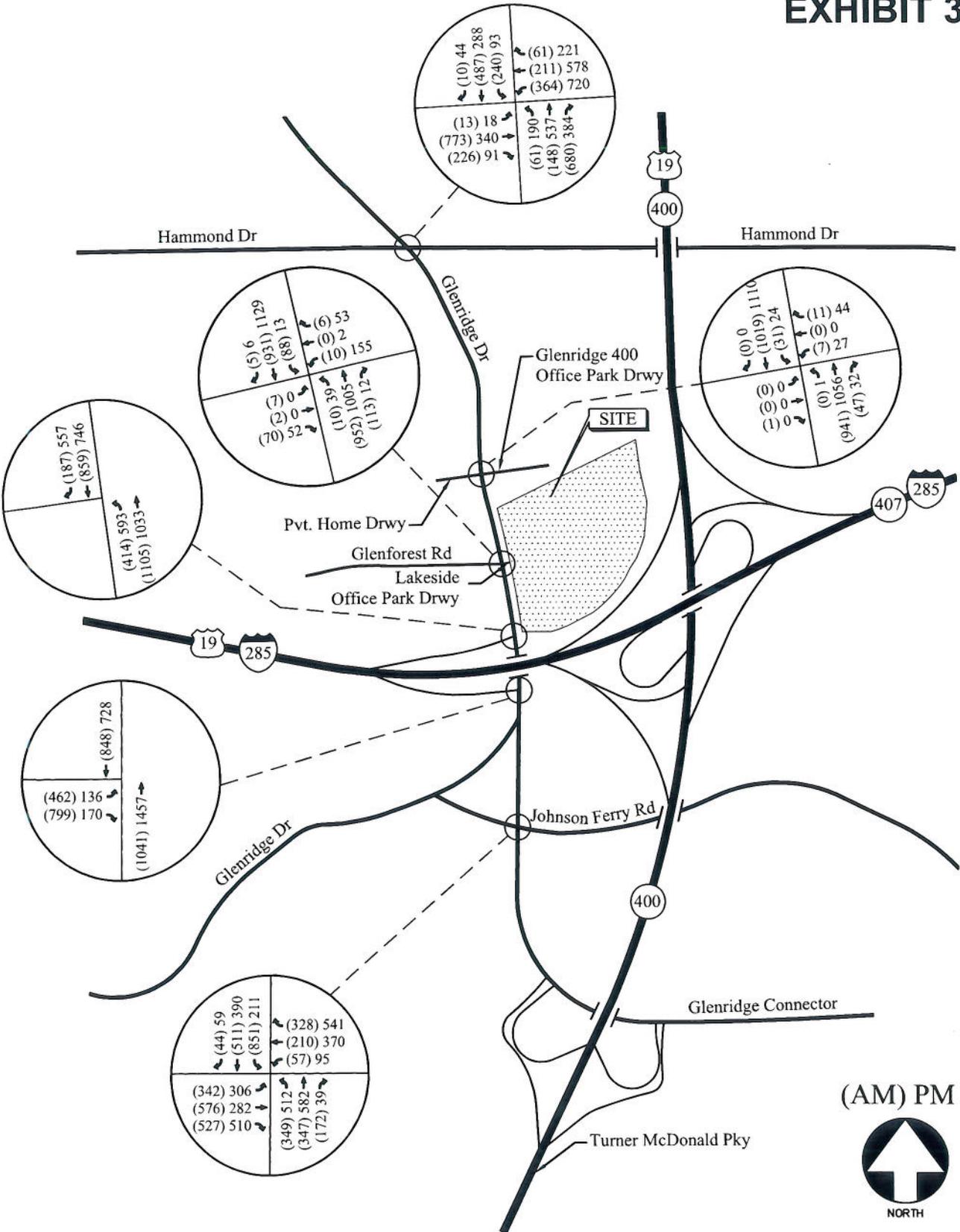
Existing traffic counts were performed at the intersections listed in Section 4 - Study Area Network. In addition to traffic counts, intersection geometry data was also obtained. Turning movement counts were collected during the agreed upon hours of 7.00 AM – 9.00 AM and 4.00 PM - 6:00 PM on weekdays. The four consecutive 15-minute interval volumes that summed to produce the highest volume at each intersection during each two-hour period were then determined. These volumes make up the A.M. and P.M peak hour traffic volumes for the intersections counted. The existing traffic volumes are shown in Figure 5 and the existing intersections traffic control and lane geometry for the study area network is shown in Figure 6.

The site-generated volumes shown in Table 2 were distributed to the surrounding roadway network in accordance with the trip distribution. The site-generated volumes for the study intersections are shown in Figure 7. Existing traffic operations were analyzed at all the existing intersections in accordance with the HCM methodology using Synchro software. A&R Engineering observed the impact of ramp meter and queuing that is on the I-285 Westbound On-Ramp to the existing traffic at the site. In existing condition, traffic flow on I-285 Westbound On-Ramp is at times since the ramp-meter slows down the traffic on the ramp that is preparing to merge onto I-285. Therefore, we calibrated the traffic flow rate due to slow down of the traffic flow on I-285 Westbound On-Ramp and adjusted the traffic model in Synchro to represent the existing conditions at the intersection of Glenridge Drive / I-285 Westbound On-Ramp. The results of the analysis are shown in Table 3.

Intersection	Traffic Control	A.M. Peak Hour		P.M. Peak Hour	
		LOS (Delay)	v/c	LOS (Delay)	v/c
Glenridge Drive / Hammond Drive	Signalized	D (43.9)	0.94	D (52.4)	0.94
Glenridge Drive / Private Home Drwy / Glenridge 400 Office Park Driveway	Signalized	A (1.1)	0.33	A (3.1)	0.41
Glenridge Drive / Glenforest Rd / Lakeside Office Park Driveway	Signalized	A (4.7)	0.36	A (8.0)	0.52
Glenridge Drive / I-285 WB On-Ramp	Signalized	B (14.7)	0.71	C (24.4)	0.98
Glenridge Drive / I-285 EB Off-Ramp	Signalized	B (12.0)	0.61	A (5.3)	0.43
Glenridge Connector / Johnson Ferry Road	Signalized	D (39.4)	0.89	D (47.1)	0.91

As shown in Table 3, all study intersections are operating at the required LOS D or better.

# EXHIBIT 3



EXISTING WEEKDAY PEAK-HOUR VOLUMES

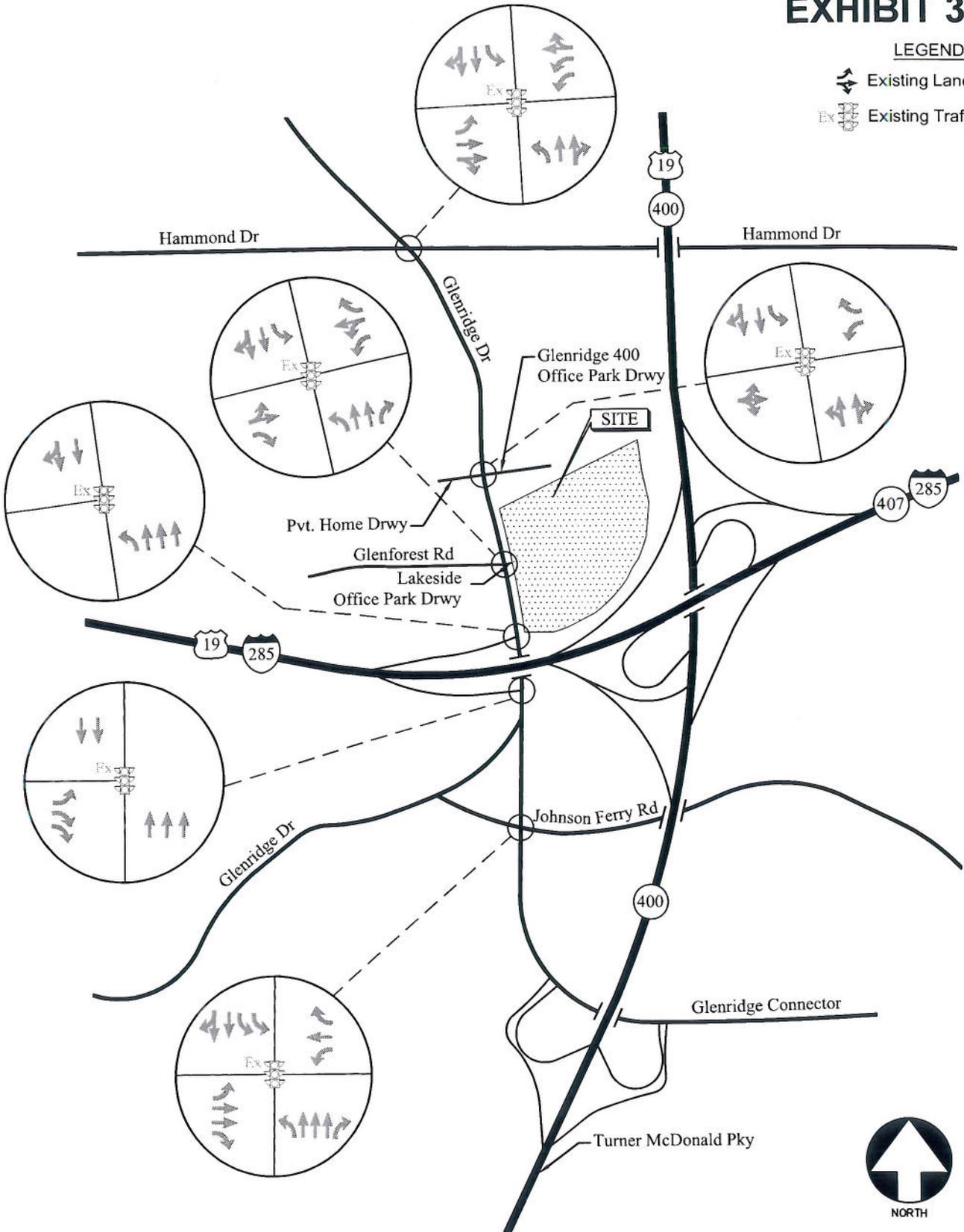
FIGURE 5  
A&R Engineering Inc.

# EXHIBIT 3

## LEGEND

Existing Lane Geometry

Existing Traffic Signal

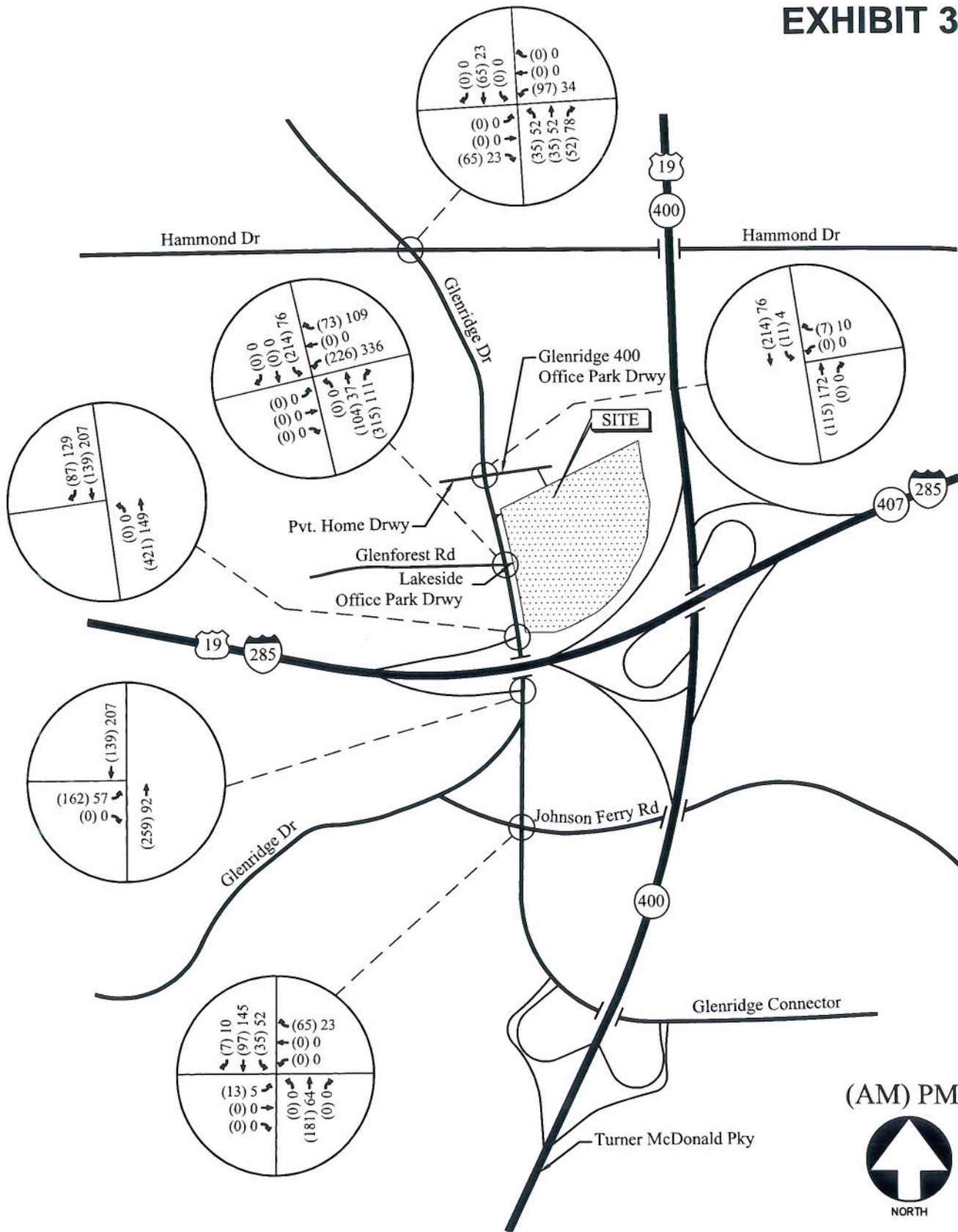


EXISTING TRAFFIC CONTROL AND LANE GEOMETRY

FIGURE 6

A&R Engineering Inc.

# EXHIBIT 3

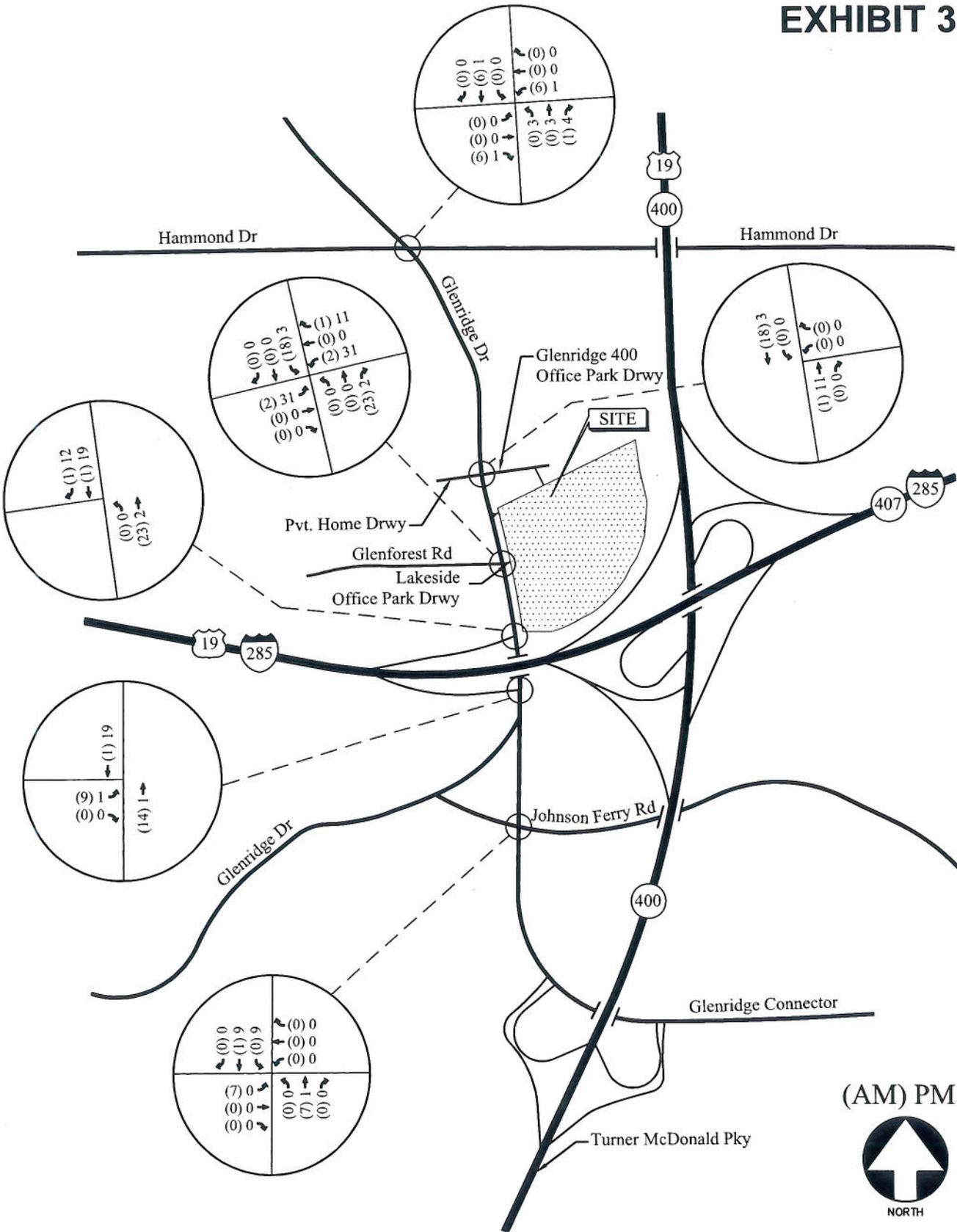


(AM) PM  
  
 NORTH

NEW SITE GENERATED WEEKDAY PEAK HOUR VOLUMES  
 (FROM PROPOSED SITE)

FIGURE 7A  
 A&R Engineering Inc.

# EXHIBIT 3



(AM) PM  
  
 NORTH

SITE GENERATED WEEKDAY PEAK HOUR VOLUMES  
 (FROM OCCUPANCY INCREASE IN EXISTING OFFICE  
 SPACE)

FIGURE 7B  
 A&R Engineering Inc.

## 7. FUTURE YEAR BACKGROUND TRAFFIC

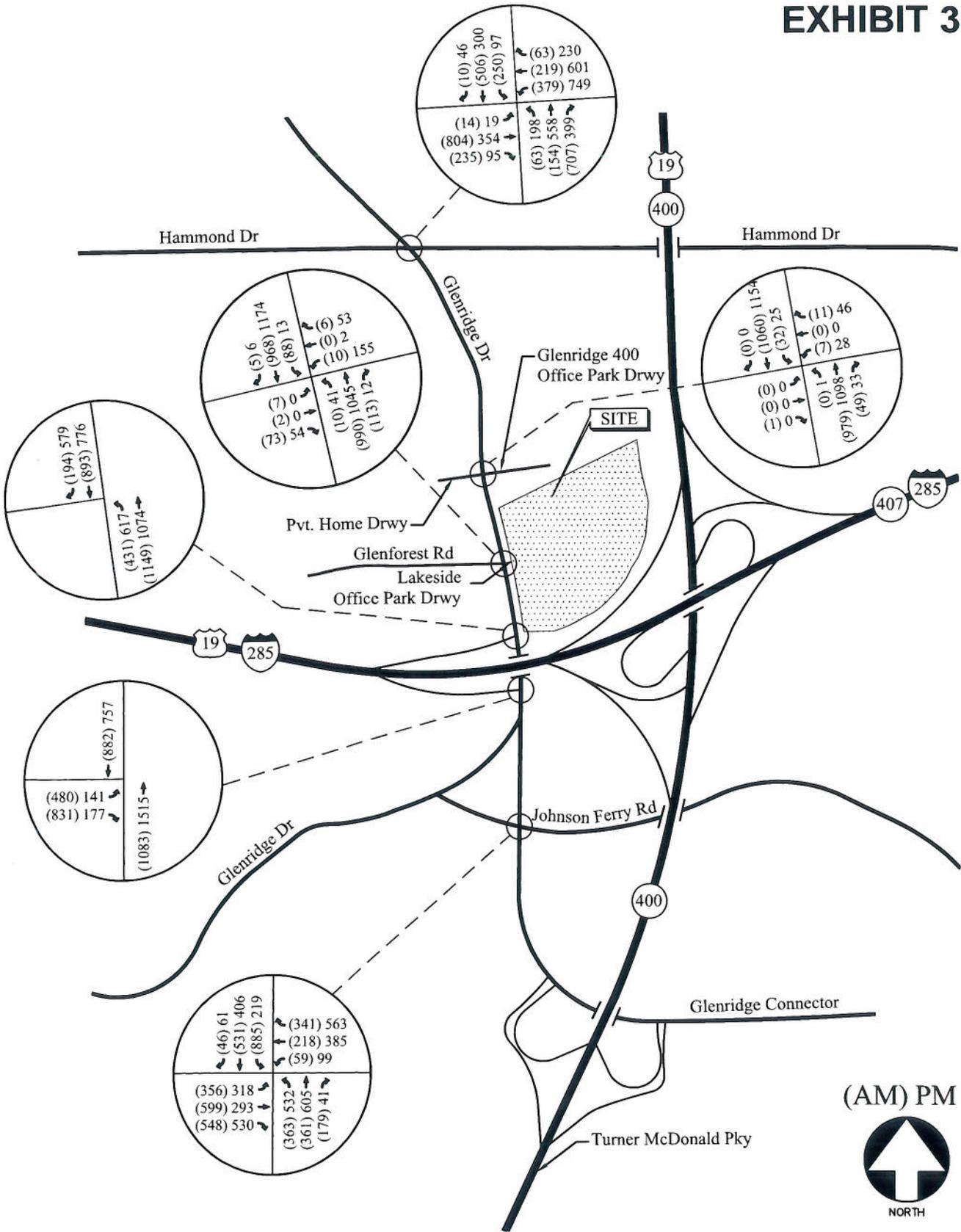
In order to evaluate future traffic operations in this area a projection was made of future base year traffic volumes. It was agreed upon with GRTA and the City of Sandy Springs to use a growth factor of 2% per year. This growth factor was applied to the existing traffic volumes on the roadways to estimate the future year 2012 traffic volumes prior to the addition of the site-generated volumes. Further details are included in the correspondence section of Appendix. The future year (base) traffic volumes for 2012 at all the study intersections are shown in Figure 8.

A traffic operation analyses for the following Base Scenario was performed:

- Base Year 2012 traffic with existing lane geometry.

It should be noted that same calibrated Synchro model that was used in existing condition was also used to include the impact of the ramp meter on I-285 Westbound On-Ramp in base condition. Results of the analyses for the above scenario are shown in Table 4.

# EXHIBIT 3



BASE 2012 WEEKDAY PEAK HOUR VOLUMES

FIGURE 8

A&R Engineering Inc.

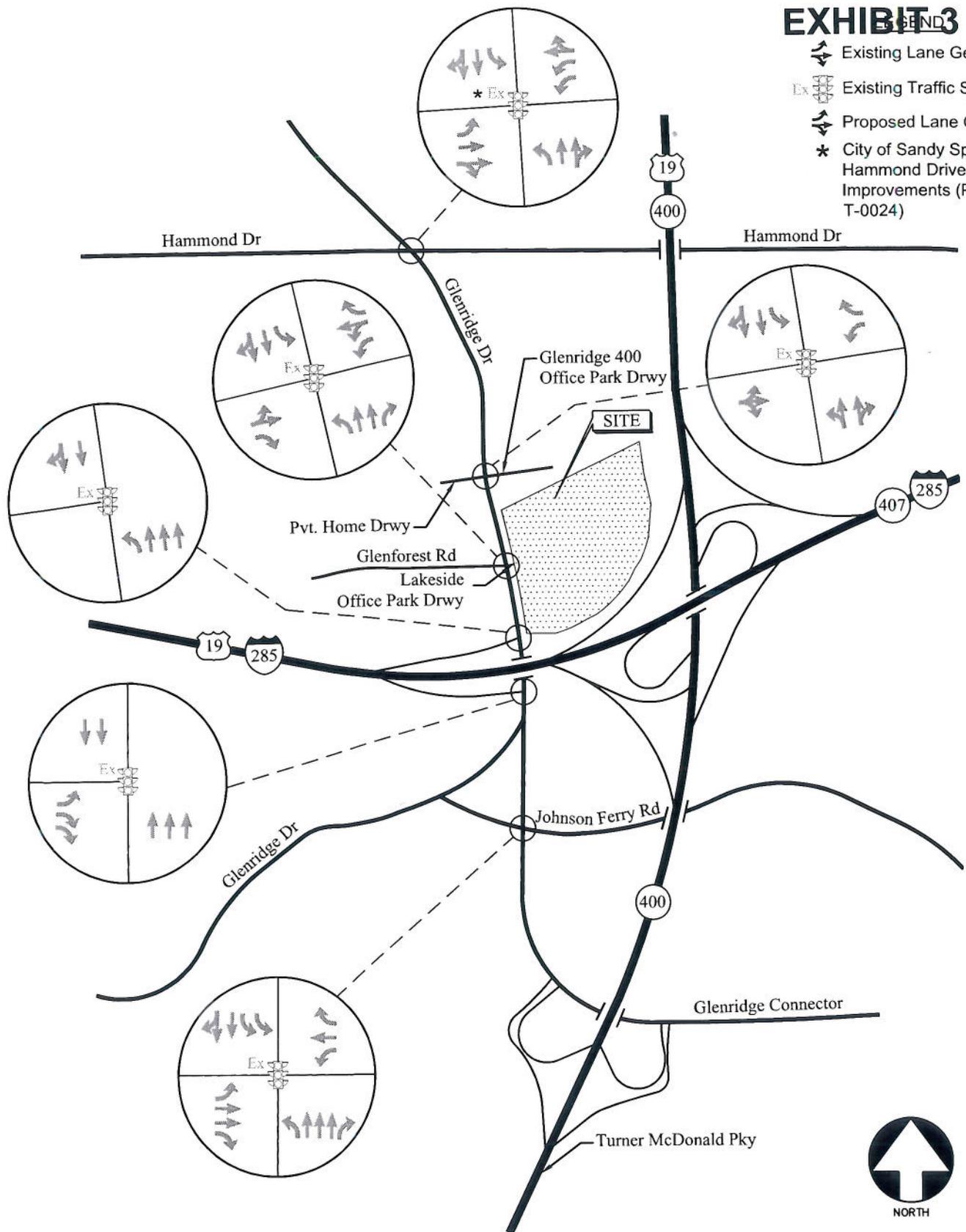
# EXHIBIT 3

Intersection	Traffic Control	A.M. Peak Hour		P.M. Peak Hour	
		LOS (Delay)	v/c	LOS (Delay)	v/c
Glenridge Drive / Hammond Drive	Signalized	D (50.2)	0.99	E (55.1)	0.97
Glenridge Drive / Private Home Drwy / Glenridge 400 Office Park Driveway	Signalized	A (1.5)	0.34	A (3.2)	0.42
Glenridge Drive / Glenforest Rd / Lakeside Office Park Driveway	Signalized	A (4.8)	0.38	A (8.0)	0.56
Glenridge Drive / I-285 WB On-Ramp	Signalized	B (15.1)	0.74	C (31.2)	1.04
Glenridge Drive / I-285 EB Off-Ramp	Signalized	B (13.6)	0.63	A (5.5)	0.45
Glenridge Connector / Johnson Ferry Road	Signalized	D (41.1)	0.87	D (50.9)	0.96

Analysis of the future year (Base 2012) traffic volumes indicates that, the intersection of Glenridge Drive / Hammond Drive will operate at LOS E in the PM peak hour. It should be noted that City of Sandy Spring proposes improvements (project # T-0024) to Hammond Drive corridor. These improvements will include widening of Hammond Drive from Barfield Road to Roswell Road. This project will include Glenridge Drive / Hammond Drive intersection and traffic operations are expected improve after the improvement project is implemented. All other study intersections will operate at LOS D or better.

# EXHIBIT 3

-  Existing Lane Geometry
-  Existing Traffic Signal
-  Proposed Lane Geometry
-  City of Sandy Springs Hammond Drive Corridor Improvements (Project # T-0024)



BASE 2012 TRAFFIC CONTROL AND LANE GEOMETRY

FIGURE 9  
A&R Engineering Inc.

## 8. FUTURE YEAR TOTAL TRAFFIC

The traffic volumes that will be generated by the proposed development were added to the future base year 2012 traffic volumes in order to determine the traffic volumes that will be on the roadway network after completion of the project. The future traffic volumes for the year 2012 including the site-generated volumes for the study intersections are shown in Figure 10.

## 9. FACILITY NEEDS ANALYSIS

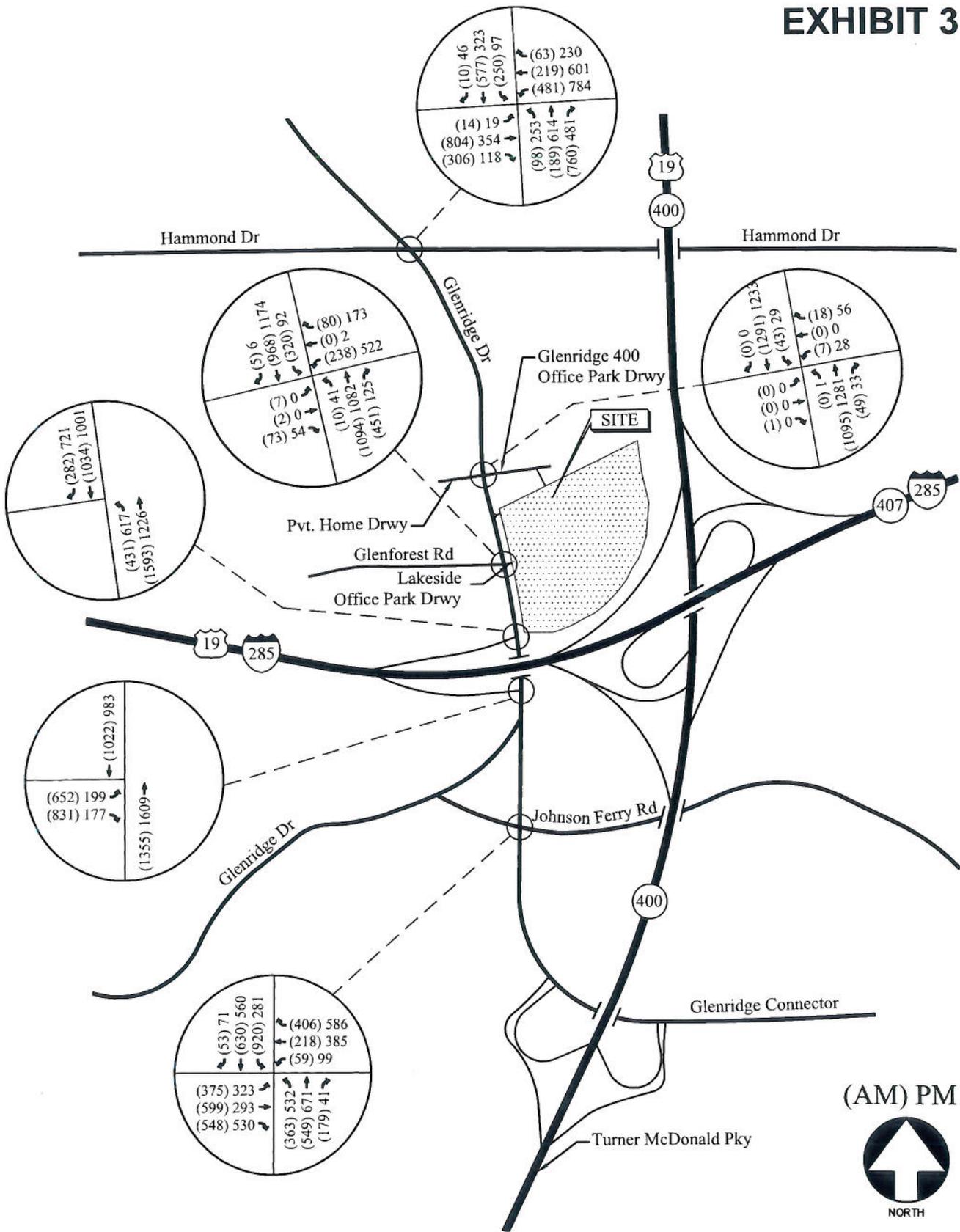
### 9.1 Intersection Analysis

The future year total traffic volumes were used to analyze the study network intersections. Traffic operations analyses for the following scenarios were performed:

- Future Year 2012 Traffic Volumes with site generated traffic and existing lane geometry.
- Future Year 2012 Traffic Volumes with site generated traffic and the recommended improvements.

It should be noted that same calibrated Synchro model that was used in existing condition was also used to include the impact of the ramp meter on I-285 Westbound On-Ramp in base condition. The results of the analysis for the above scenarios are shown in Tables 5 and 6. Recommendations to improve the LOS are discussed after each appropriate section.

# EXHIBIT 3



FUTURE 2012 WEEKDAY PEAK HOUR VOLUMES

FIGURE 10  
A&R Engineering Inc.

## EXHIBIT 3

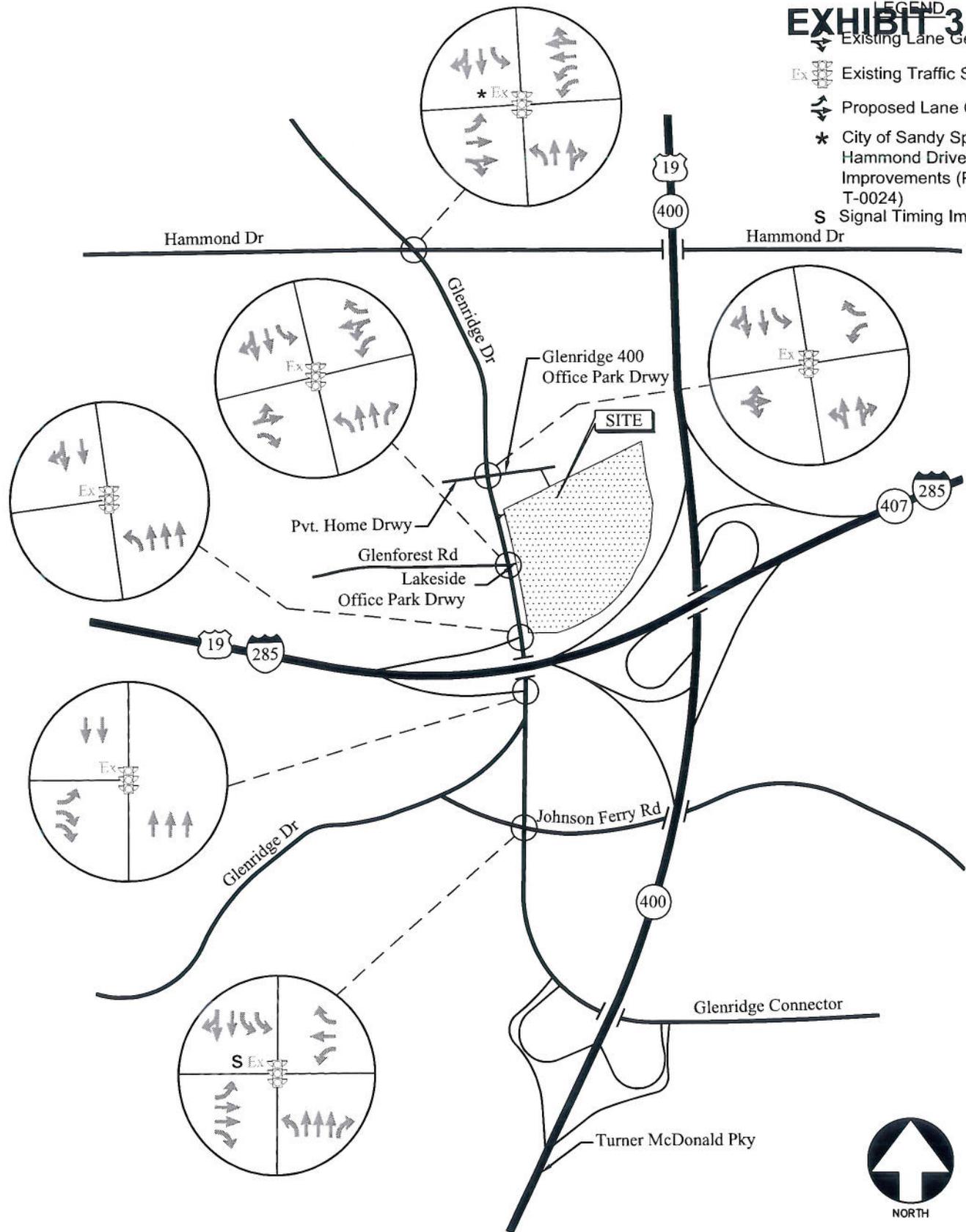
TABLE 5					
FUTURE INTERSECTION OPERATIONS					
Intersection	Traffic Control	A.M. Peak Hour		P.M. Peak Hour	
		LOS (Delay)	v/c	LOS (Delay)	v/c
Glenridge Drive / Hammond Drive	Signalized	E (76.9)	1.09	E (57.6)	0.99
Glenridge Drive / Private Home Drwy / Glenridge 400 Office Park Driveway	Signalized	A (1.6)	0.41	A (4.3)	0.48
Glenridge Drive / Glenforest Rd / Lakeside Office Park Driveway	Signalized	C (29.9)	0.77	C (22.8)	0.79
Glenridge Drive / I-285 WB On-Ramp	Signalized	B (17.4)	0.80	D (51.6)	1.16
Glenridge Drive / I-285 EB Off-Ramp	Signalized	B (14.6)	0.80	A (6.5)	0.51
Glenridge Connector / Johnson Ferry Road	Signalized	D (40.5)	0.89	D (54.6)	1.03

Analysis of the future year 2012 traffic volumes indicates that two of the study intersections will operate at LOS E. It should be noted that the intersection of Glenridge Drive / Hammond Drive will operate at LOS E in base 2012 condition before the addition of new traffic from the proposed development. After the addition of new traffic, it will continue to operate at LOS E in the future. City of Sandy Springs proposes improvements to Hammond Drive corridor (project # T-0024). These improvements will include widening of Hammond Drive from Barfield Road to Roswell Road. This project will include Glenridge Drive / Hammond Drive intersection and traffic operations are expected to improve at this intersection after the improvement project is implemented.

For the intersection of Glenridge Connector / Johnson Ferry Road a permissive + overlap phasing for eastbound right turn movements from Johnson Ferry Road onto Glenridge Connector should be provided.

# LEGEND EXHIBIT 3

- Existing Lane Geometry
- Existing Traffic Signal
- Proposed Lane Geometry
- City of Sandy Springs Hammond Drive Corridor Improvements (Project # T-0024)
- Signal Timing Improvement



FUTURE 2012 TRAFFIC CONTROL AND LANE GEOMETRY

FIGURE 11  
A&R Engineering Inc.

## 9.2 Site Access Analysis

The site proposes to have a full access and a right-in/right-out driveway along Glenridge Drive. The site will also have an access to the existing Glenridge 400 Office Park Driveway to the north since the proposed site is inter-connected with the adjacent property. The future traffic volumes at the site driveways are shown in Figure 12. The recommended traffic control and lane geometry at these driveways are presented in the following sections.

The site access analysis was performed for the Future Year 2012 traffic volumes with recommended lane geometry. Results of the analysis are shown in Table 6. The recommended traffic control and lane geometry for the proposed intersections is discussed in the following pages.

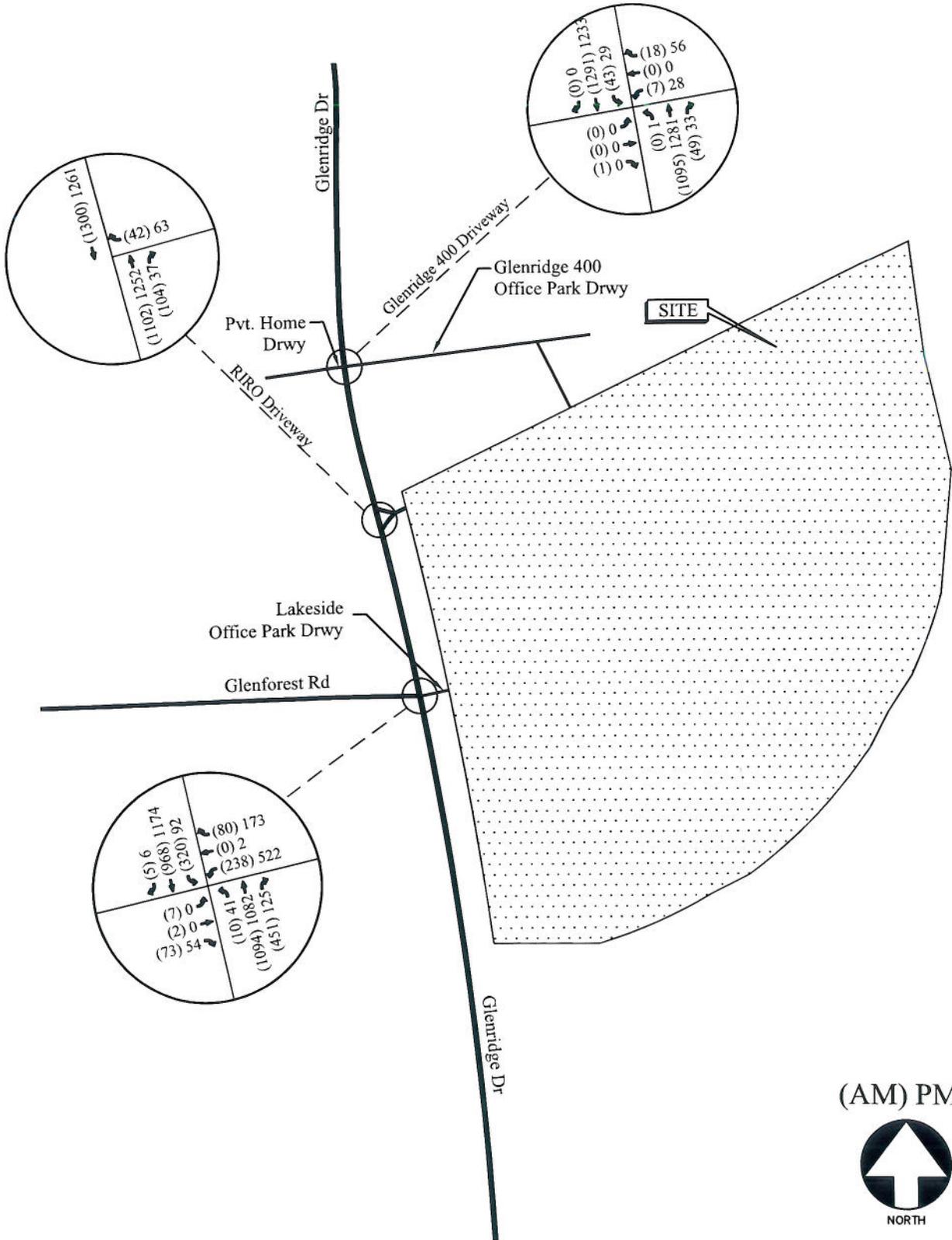
Intersection	Traffic Control	A.M. Peak Hour		P.M. Peak Hour	
		LOS (Delay)	v/c	LOS (Delay)	v/c
Glenridge Drive / Private Home Drwy / Glenridge 400 Office Park Driveway	Signalized	A (1.6)	0.41	A (4.3)	0.48
Glenridge Drive / Glenforest Rd / Lakeside Office Park Driveway	Signalized	C (29.9)	0.77	C (22.8)	0.79

The following lists the recommended lane geometry improvements for the site driveways.

- Glenridge Drive / Right-in / Right-out Driveway
  - Add a dedicated northbound right turn lane on Glenridge Drive for traffic entering the development.

The recommended traffic control and lane geometry for the site driveways is shown in Figure 13.

# EXHIBIT 3



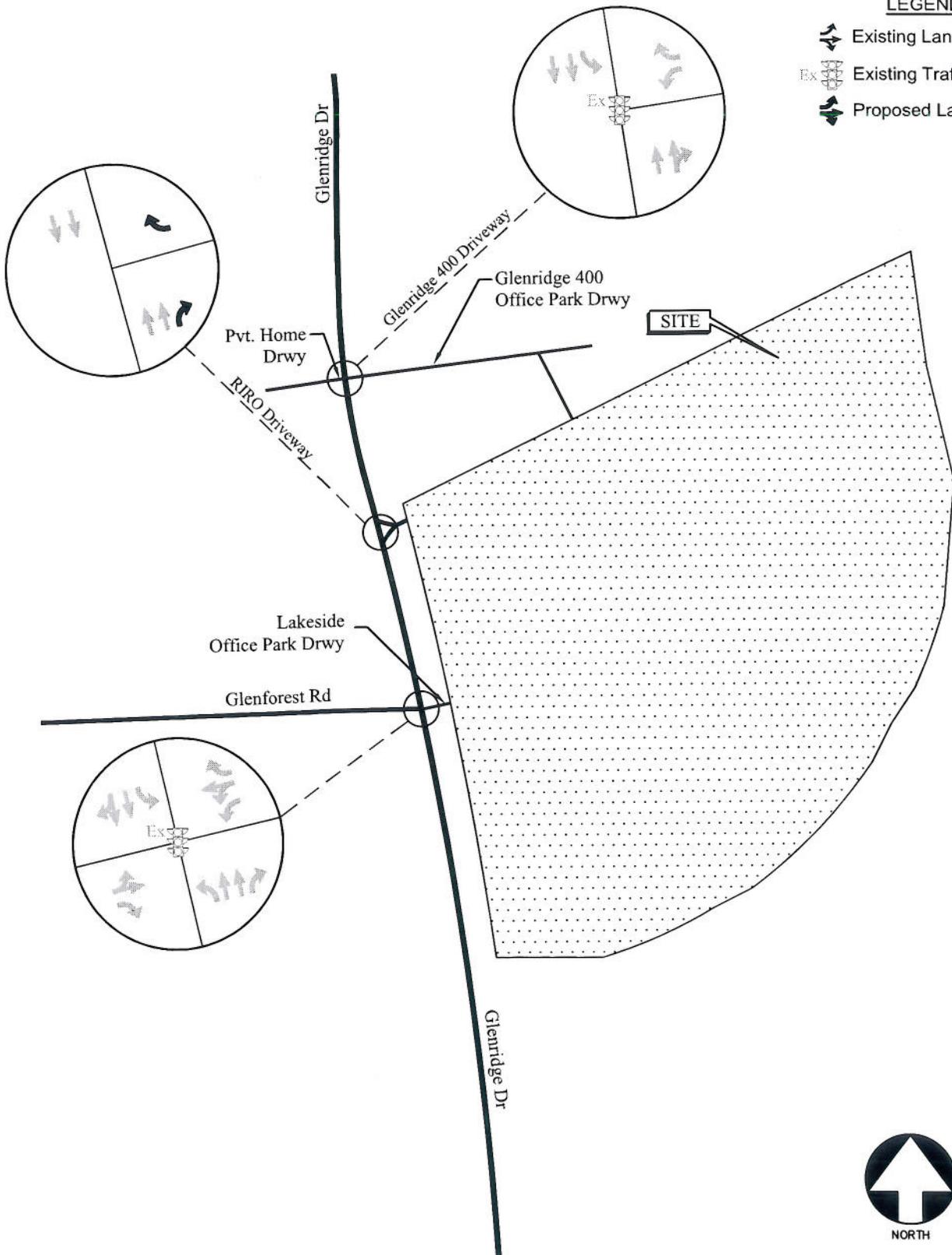
FUTURE 2012 SITE ACCESS PEAK HOUR VOLUMES

FIGURE 12  
A&R Engineering Inc.

# EXHIBIT 3

## LEGEND

-  Existing Lane Geometry
-  Existing Traffic Signal
-  Proposed Lane Geometry



FUTURE 2012 SITE ACCESS TRAFFIC CONTROL AND LANE GEOMETRY

FIGURE 13  
A&R Engineering Inc.

**10. NON-EXPEDITED CRITERIA**

**10.1 Regional Mobility and Location**

**1. Quality, Character, Convenience, and Flexibility of Transportation Options**

MARTA bus route stops for routes 5 and 87 are located approximately 1/3 mile from the site and the Dunwoody MARTA rail station is located just over 1 mile from the site.

**2. Vehicle Miles Traveled**

The table below displays the reductions in trip generation due to mixed-use and transit reductions.

24-hour Trip Generation	7,942
- Mixed Use Reductions (internal capture)	-654
- Transit Reduction	-146
Net Trips:	7,142

**3. Relationship between Location of Proposed DRI and Regional Mobility**

The proposed DRI is currently served by two MARTA bus routes that run in close proximity to the site. The site is also located within close proximity to numerous major roadway facilities including GA 400 and I-285.

**4. Relationship between Proposed DRI and Existing or Planned Transit Facilities**

MARTA bus route 5 and 87 currently runs within close proximity to the site. Details for the MARTA routes are included in the Appendix.

**5. Transportation Management Area Designation**

The area around the proposed project is designated as a transportation management area and is managed by the Perimeter CID.

**6. Offsite Trip Reduction and Trip Reduction Techniques**

Due to the nature of the development, there will be significant mixed-use reductions. In addition a transit reduction has also been applied. These reductions have been applied for the AM peak hour, PM peak hour and 24-hour trips projected to be generated by the site.

**7. Balance of Land Uses – Jobs/Housing Balance**

Please refer to the AOI study submitted along with this report.

**8. Relationships between Proposed DRI and Existing Development and Infrastructure**

The proposed DRI is located in an area where adequate public facilities will be available to serve the proposed development. Regarding transportation, the traffic study has identified

## EXHIBIT 3

transportation improvements relating to the site access, along with improvements to the surrounding roadway network, which will allow traffic in the area to operate at an acceptable LOS.

### **10.2 Pedestrian and Internal Circulation**

Internal roadways will provide adequate circulation of vehicular traffic as designed in the site plan. Vehicles exiting the site will be able to move internally to the site exit without experiencing excessive delays.

## **11. OTHER PERTINENT INFORMATION**

At this time no other pertinent information is available with regards to this development. All significant characteristics of the proposed development are fully discussed within this report. Additionally, an Area of Influence study has been prepared and submitted at the same time as the rest of this package.

## **12. SIGNIFICANT IMPACT ANALYSIS**

There is capacity at all but two study network intersections to accommodate the traffic that will be generated by the proposed project. After the implementation of the recommended improvements, all intersections in the study area network will operate at acceptable LOS.

# EXHIBIT 3

## Appendix

# EXHIBIT 3

## Existing AM Intersection Analysis

# EXHIBIT 3

## HCM Signalized Intersection Capacity Analysis

1: Hammond Dr & Glenridge Dr

Existing AM  
2/15/2010

Lanes, Volumes, Timings

1: Hammond Dr & Glenridge Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	16	1108	400	335	74	164	716	316	518	14		
Lane Flow (vph)	42.4	42.4	15.3	56.9	45.8	38.3	38.3	47.3	40.9	40.9	40.9	40.9
Act Effct Green (s)	0.35	0.35	0.13	0.47	0.38	0.32	0.32	0.39	0.34	0.34	0.34	0.34
Actuated g/C Ratio	0.04	0.30	0.92	0.39	0.24	0.15	0.98	0.62	0.43	0.03		
v/c Ratio	27.0	46.9	78.4	22.7	13.5	18.6	42.4	32.5	32.2	19.2		
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Queue Delay	27.0	46.9	78.4	22.7	13.5	18.6	42.4	32.5	32.2	19.2		
Total Delay												
LOS	C	D	E	C	B	B	D	C	C	C	B	B
Approach Delay		46.6		53.1		36.1			32.1			
Approach LOS		D		D		D			C			
Queue Length 50th (ft)	8	419	160	146	26	38	390	166	164	4		
Queue Length 95th (ft)	21	#557	#255	240	37	51	#568	196	215	14		
Internal Link Dist (ft)		667		649		1719			675			
Turn Bay Length (ft)	220	260	437	858	321	1180	751	513	1205	543		
Base Capacity (vph)	416	1230	437	858	321	1180	751	513	1205	543		
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.04	0.90	0.92	0.39	0.23	0.14	0.95	0.62	0.43	0.03		

Intersection Summary  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 81 (68%), Referenced to phase 2:WBT and 6:EBTL, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.98  
 Intersection Signal Delay: 41.8  
 Intersection Capacity Utilization 94.0%  
 Analysis Period (min): 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Baseline  
A & R Engineering Inc.  
Synchro 6 Report  
Page 1

Existing AM  
2/15/2010

Lanes, Volumes, Timings

1: Hammond Dr & Glenridge Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Lane Util. Factor	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00	0.95	1.00
Flt Protected	1770	3402	3433	1793	1770	3539	1583	1770	3539	1583	1770	3539
Satd. Flow (prot)	0.56	1.00	0.95	1.00	0.56	1.00	0.56	1.00	0.95	1.00	0.56	1.00
Flt Permitted	1041	3402	3433	1793	1041	3539	1583	1041	3539	1583	1041	3539
Satd. Flow (perm)	13	773	226	364	211	61	148	680	240	487	10	10
Volume (vph)	0.79	0.94	0.79	0.91	0.84	0.73	0.82	0.90	0.95	0.76	0.94	0.69
Peak-hour factor, PHF	16	822	286	400	251	84	74	164	716	316	518	14
Adj. Flow (vph)	0	29	0	0	9	0	0	0	226	0	0	5
RTOR Reduction (vph)	16	1079	0	400	326	0	74	164	490	316	518	9
Lane Group Flow (vph)												
Turn Type	1	6		5	2		7	4		3	8	8
Protected Phases												
Permitted Phases	6			4			4		4	8		8
Actuated Green, G (s)	41.5	41.5	15.3	53.6	45.5	39.2	48.9	39.2	48.9	40.9	40.9	40.9
Effective Green, g (s)	41.5	41.5	15.3	53.6	45.5	39.2	48.9	39.2	48.9	40.9	40.9	40.9
Actuated g/C Ratio	0.35	0.35	0.13	0.45	0.38	0.33	0.33	0.41	0.34	0.34	0.34	0.34
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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)	379	1177	438	801	313	1156	517	512	1206	540		
v/s Ratio Prot	0.00	c0.32		c0.12	0.18	0.01	0.05		c0.04	0.15		
v/s Ratio Perm	0.01			0.08		0.24	0.14		0.95	0.62	0.43	0.01
v/c Ratio	0.04	0.92	0.91	0.41	0.24	0.14	0.95	0.62	0.43	0.01	0.01	0.01
Uniform Delay, d1	26.1	37.6	51.7	22.4	24.5	28.5	39.4	27.0	30.5	26.2		
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2	0.0	12.6	23.2	1.5	0.4	0.1	26.3	2.2	0.2	0.0		
Delay (s)	C	D	D	E	C	B	D	D	D	C		
Level of Service												
Approach Delay (s)		49.9		51.7		43.1			30.1			
Approach LOS		D		D		D			C			

Intersection Summary  
 HCM Average Control Delay: 43.9  
 HCM Volume to Capacity ratio: 0.94  
 Actuated Cycle Length (s): 120.0  
 Intersection Capacity Utilization: 94.0%  
 Analysis Period (min): 15  
 Critical Lane Group: C

Baseline  
A & R Engineering Inc.  
Synchro 6 Report  
Page 2

Existing AM  
2/15/2010

## HCM Signalized Intersection Capacity Analysis

2: Pvt. Home Drwy & Glenridge Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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
Flt Protected	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Satd. Flow (prot)	1611	1770	1583	1770	1583	1770	1583	1770	1583	1770	1583	1770
Flt Permitted	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	1611	1863	1583	1863	1583	1863	1583	1863	1583	1863	1583	1863
Volume (vph)	0	0	1	7	0	11	0	941	47	31	1019	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.50	0.92	0.83	0.92	0.86	0.77	0.86	0.97	0.92
Adj. Flow (vph)	0	0	1	14	0	13	0	980	61	36	1051	0
RTOR Reduction (vph)	0	1	0	0	13	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	0	0	14	0	0	0	1040	0	36	1051	0
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	8	8	8	4	4	4	6	6	6	6	2	2
Permitted Phases	8	8	8	4	4	4	6	6	6	6	2	2
Actuated Green, G (s)	3.1	3.1	3.1	3.1	3.1	3.1	108.9	108.9	108.9	108.9	108.9	108.9
Effective Green, g (s)	3.1	3.1	3.1	3.1	3.1	3.1	108.9	108.9	108.9	108.9	108.9	108.9
Actuated g/C Ratio	0.03	0.03	0.03	0.03	0.03	0.03	0.91	0.91	0.91	0.91	0.91	0.91
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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)	42	48	41	41	41	41	3184	3184	461	3212	461	3212
v/s Ratio Prot	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.30	0.07	0.07	0.30	0.30
v/c Ratio	0.00	0.00	0.00	0.29	0.01	0.33	0.33	0.33	0.08	0.08	0.33	0.33
Uniform Delay, d1	56.9	57.4	57.0	57.0	57.0	57.0	0.7	0.7	0.6	0.7	0.6	0.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.16	0.16	0.05	0.05	0.14	0.14
Incremental Delay, d2	0.0	0.0	0.1	0.1	0.1	0.1	0.3	0.3	0.2	0.2	0.3	0.3
Delay (s)	56.9	57.4	57.0	57.0	57.0	57.0	0.4	0.4	0.3	0.3	0.4	0.4
Level of Service	E	E	E	E	E	E	A	A	A	A	A	A
Approach Delay (s)	56.9	57.4	57.0	57.0	57.0	57.0	0.4	0.4	0.3	0.3	0.4	0.4
Approach LOS	E	E	E	E	E	E	A	A	A	A	A	A
<b>Intersection Summary</b>												
HCM Average Control Delay	1.1											
HCM Volume to Capacity ratio	0.33											
Actuated Cycle Length (s)	120.0											
Intersection Capacity Utilization	40.7%											
Analysis Period (min)	15											
c Critical Lane Group												

Baseline  
A & R Engineering Inc.

Synchro 6 Report  
Page 4

Existing AM  
2/15/2010

## Lanes, Volumes, Timings

2: Pvt. Home Drwy & Glenridge Dr

Lane Group	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	1	14	13	1041	36	1051
Act Effct Green (s)	6.4	6.6	6.6	113.7	113.7	113.7
Actuated g/C Ratio	0.05	0.06	0.06	0.95	0.95	0.95
v/c Ratio	0.01	0.18	0.07	0.31	0.10	0.31
Control Delay	0.0	58.9	0.6	0.4	0.4	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.0	58.9	0.6	0.4	0.4	0.3
LOS	A	E	A	A	A	A
Approach Delay	0.0	30.8	0.4	0.4	0.4	0.3
Approach LOS	A	C	A	A	A	A
Queue Length 50th (ft)	0	11	0	0	0	0
Queue Length 95th (ft)	0	18	0	9	m0	m0
Internal Link Dist (ft)	280	313	313	500	125	1719
Turn Bay Length (ft)	150	494	631	3323	362	3353
Base Capacity (vph)	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.03	0.02	0.31	0.10	0.31

**Intersection Summary**  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 69 (74%), Referenced to phase 2:SBTL and 6:NBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.31  
 Intersection Signal Delay: 0.7  
 Intersection Capacity Utilization 40.7%  
 Analysis Period (min): 15  
 m Volume for 95th percentile queue is metered by upstream signal.

Baseline  
A & R Engineering Inc.

Synchro 6 Report  
Page 3

Lanes, Volumes, Timings  
3. Glenforest Rd & Glenridge Dr

HCM Signalized Intersection Capacity Analysis  
3. Glenforest Rd & Glenridge Dr

Existing AM  
2/15/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	14	111	7	7	14	13	992	124	144	1132		
Lane Group Flow (vph)	7.2	7.2	7.2	7.2	120.0	99.8	94.3	94.3	104.8	102.9		
Act Effct Green (s)	0.06	0.06	0.06	0.06	1.00	0.83	0.79	0.79	0.87	0.86		
Actuated g/C Ratio	0.14	0.56	0.09	0.09	0.01	0.05	0.36	0.10	0.39	0.37		
v/c Ratio	55.3	20.6	54.0	0.0	0.0	0.9	2.0	0.7	5.5	1.4		
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0		
Queue Delay	55.3	20.6	54.0	0.0	0.0	0.9	2.1	0.7	5.5	1.4		
Total Delay	E	C	D	D	A	A	A	A	A	A		
LOS	24.5		27.0		2.0		2.0		1.9			
Approach LOS	C		C		A		A		A			
Queue Length 50th (ft)	11	0	5	0	0	35	0	6	26			
Queue Length 95th (ft)	22	14	16	6	0	74	9	7	63			
Internal Link Dist (ft)	562		233		156				93			
Turn Bay Length (ft)	150	150	150	150	55	483	2781	1255	629	3031		
Base Capacity (vph)	383	454	309	309	1583	483	2781	1255	629	3031		
Starvation/Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.04	0.24	0.02	0.02	0.01	0.03	0.48	0.10	0.23	0.37		

Intersection Summary  
Cycle Length: 120  
Actuated Cycle Length: 120  
Offset: 96 (80%), Referenced to phase 2.SBTL and 6.NBTL, Start of Green  
Control Type: Actuated-Coordinated  
Maximum v/c Ratio: 0.56  
Intersection Signal Delay: 3.3  
Intersection Capacity Utilization 47.4%  
Analysis Period (min) 15

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	4			4			4			4		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Flt Protected	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.95	1.00
Flt Permitted	0.95	1.00	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1792	1583	1681	1681	1583	1770	3539	1583	1770	3535		
Flt Permitted	0.79	1.00	0.75	0.75	1.00	0.23	1.00	1.00	0.27	1.00		
Satd. Flow (perm)	1463	1583	1324	1324	1583	437	3539	1583	494	3535		
Volume (vph)	7	2	70	10	0	6	10	962	113	88	931	5
Peak-hour factor, PHF	0.62	0.62	0.63	0.71	0.25	0.44	0.75	0.96	0.91	0.61	0.83	0.50
Adj. Flow (vph)	11	3	111	14	0	14	13	992	124	144	1122	10
RTOR Reduction (vph)	0	0	104	0	0	0	0	0	0	13	0	0
Lane Group Flow (vph)	0	14	7	7	7	14	13	992	111	144	1132	0
Turn Type	Perm	Perm	Perm	Perm	Free	pm+pt	Free	pm+pt	Perm	pm+pt	Perm	pm+pt
Protected Phases	8	8	4	4	4	6	6	6	6	2	2	2
Permitted Phases	8	8	4	4	4	6	6	6	6	2	2	2
Actuated Green, G (s)	7.2	7.2	7.2	7.2	7.2	120.0	92.2	91.1	91.1	104.8	99.7	99.7
Effective Green, G (s)	7.2	7.2	7.2	7.2	7.2	120.0	92.2	91.1	91.1	104.8	99.7	99.7
Actuated g/C Ratio	0.06	0.06	0.06	0.06	1.00	0.77	0.76	0.76	0.76	0.87	0.83	0.83
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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)	88	95	79	79	1563	348	2687	1202	535	2937		
v/s Ratio Prot	c0.01	0.00	0.01	0.01	0.01	0.03	0.00	0.28	0.07	c0.02	c0.32	
v/s Ratio Perm	0.16	0.07	0.09	0.09	0.01	0.04	0.37	0.09	0.21	0.39		
v/c Ratio	53.5	53.2	53.3	53.3	0.0	4.9	4.8	3.7	3.0	2.5		
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	0.42	0.39	0.24	0.94	0.46		
Progression Factor	0.8	0.3	0.5	0.5	0.0	0.0	0.4	0.2	0.3	0.4		
Incremental Delay, d2	54.4	53.6	53.8	53.8	0.0	2.1	2.3	1.0	3.1	1.5		
Delay (s)	D	D	D	D	A	A	A	A	A	A		
Level of Service	D	D	D	D	A	A	A	A	A	A		
Approach Delay (s)	53.6		26.9		C		2.1		1.7			
Approach LOS	D		D		C		A		A			

Intersection Summary  
HCM Average Control Delay: 4.7  
HCM Level of Service: A  
HCM Volume to Capacity ratio: 0.36  
Actuated Cycle Length (s): 120.0  
Sum of lost time (s): 8.0  
Intersection Capacity Utilization: 47.4%  
ICU Level of Service: A  
Analysis Period (min): 15  
c Critical Lane Group

Queues  
4: I-285 Westbound On-Ramp & Glenridge Dr

	NBL	NBT	SBT	SBR
Lane Group	450	1128	904	210
Lane Group Flow (vph)	116.0	120.0	40.0	40.0
Act Effct Green (s)	0.97	1.00	0.33	0.33
Actuated g/C Ratio	0.71	0.22	0.77	0.37
v/c Ratio	20.0	0.1	31.0	14.7
Control Delay	17.6	0.0	0.3	0.0
Queue Delay	37.7	0.1	31.3	14.7
Total Delay				
LOS	D	A	C	B
Approach Delay		10.8	28.2	
Approach LOS		B	C	
Queue Length 50th (ft)	103	0	271	73
Queue Length 95th (ft)	m284	m0	334	131
Internal Link Dist (ft)		339	233	
Turn Bay Length (ft)		634	5085	1180
Base Capacity (vph)		177	0	42
Starvation Cap Reductn		0	0	0
Spillback Cap Reductn		0	0	0
Storage Cap Reductn		0	0	0
Reduced v/c Ratio	0.98	0.22	0.79	0.37

Intersection Summary  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 97 (81%), Referenced to phase 2.SBT and 6.NBTL, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.77  
 Intersection Signal Delay: 18.0  
 Intersection Capacity Utilization 55.7%  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal

HCM Signalized Intersection Capacity Analysis  
4: I-285 Westbound On-Ramp & Glenridge Dr

Movement	EBL	EBr	NBL	NBT	SBT	SBR
Lane Configurations			↑↑↑	↑↑↑	↑↑	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	0.95	0.95	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	900	5085	3539	3539	900	900
Flt Permitted	0.14	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	257	5085	3539	3539	1583	187
Volume (vph)	0	0	414	1105	859	187
Peak-hour factor, PHF	0.92	0.92	0.98	0.98	0.95	0.89
Adj. Flow (vph)	0	0	450	1128	904	210
RTOR Reduction (vph)	0	0	0	0	0	43
Lane Group Flow (vph)	0	0	450	1128	904	167
Turn Type			pm+pt			Perm
Protected Phases			1	6	2	
Permitted Phases			6		2	
Actuated Green, G (s)			116.0	120.0	40.0	40.0
Effective Green, g (s)			116.0	120.0	40.0	40.0
Actuated g/C Ratio			0.97	1.00	0.33	0.33
Clearance Time (s)			4.0	4.0	4.0	4.0
Vehicle Extension (s)			3.0	3.0	3.0	3.0
Lane Grp Cap (vph)			634	5085	1180	528
v/s Ratio Prot.			c0.43	0.22	c0.26	
v/s Ratio Perm			0.26		0.11	
v/c Ratio			0.71	0.22	0.77	0.32
Uniform Delay, d1			8.0	0.0	35.8	29.8
Progression Factor			1.73	1.00	0.73	0.62
Incremental Delay, d2			3.1	0.1	4.5	1.5
Delay (s)			16.9	0.1	30.7	19.9
Level of Service			B	A	C	B
Approach Delay (s)			0.0	4.9	28.7	
Approach LOS			A	A	C	

Intersection Summary		HCM Level of Service	
HCM Average Control Delay	14.7		B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0		4.0
Intersection Capacity Utilization	55.7%		B
Analysis Period (min)	15		
c. Critical Lane Group			

Lanes, Volumes, Timings  
5. I-285 Eastbound Off-Ramp & Glenridge Dr

	EBL	EBR	NBT	SBT
Lane Group	544	888	1144	922
Lane Group Flow (vph)	39.3	120.0	72.7	72.7
Act Effct Green (s)	0.33	1.00	0.61	0.61
Actuated g/C Ratio	0.94	0.32	0.37	0.43
v/c Ratio	63.3	0.3	7.1	0.8
Control Delay	0.0	0.0	0.0	0.0
Queue Delay	63.3	0.3	7.1	0.8
Total Delay	E	A	A	A
LOS	24.1	A	7.1	0.8
Approach Delay	C		A	A
Approach LOS	409	0	104	2
Queue Length 50th (ft)	433	0	180	4
Queue Length 95th (ft)	644	0	961	339
Internal Link Dist (ft)				
Turn Bay Length (ft)				
Base Capacity (vph)	915	2787	3083	2145
Starvation Cap Reductn	0	0	0	53
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.59	0.32	0.37	0.44

Intersection Summary  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 97 (81%), Referenced to phase 2:SBT and 6:NBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.94  
 Intersection Signal Delay: 12.4  
 Intersection Capacity Utilization 55.7%  
 Analysis Period (min): 15

HCM Signalized Intersection Capacity Analysis  
5. I-285 Eastbound Off-Ramp & Glenridge Dr

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Lane Group Flow (vph)	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost Time (s)	1.00	0.88	0.91	0.95	1.00	1.00
Lane Util. Factor	1.00	0.85	1.00	1.00	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1770	2787	5085	3539	5085	3539
Flt Permitted	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	1770	2787	5085	3539	5085	3539
Volume (vph)	462	799	0	1041	848	0
Peak-hour factor, PHF	0.85	0.89	0.92	0.91	0.92	0.88
Adj. Flow (vph)	544	898	0	1144	922	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	544	898	0	1144	922	0
Turn Type	Free					
Protected Phases	8 6 2					
Permitted Phases	Free					
Actuated Green, G (s)	39.3 120.0 72.7 72.7					
Effective Green, g (s)	39.3 120.0 72.7 72.7					
Actuated g/C Ratio	0.33 1.00 0.61 0.61					
Clearance Time (s)	4.0 4.0 4.0 4.0					
Vehicle Extension (s)	3.0 3.0 3.0 3.0					
Lane Grp Cap (vph)	580 2787 3081 2144					
v/s Ratio Prot	0.31 0.22 0.26					
v/s Ratio Perm	0.32 0.37 0.43					
v/c Ratio	0.94 0.32 12.0 12.6					
Uniform Delay, d1	39.2 0.0 0.52 0.02					
Progression Factor	1.00 1.00 0.3 0.5					
Incremental Delay, d2	22.9 0.3 6.5 0.8					
Delay (s)	E A A A A					
Level of Service	E A A A A					
Approach Delay (s)	23.6 6.5 0.8					
Approach LOS	C A A A A					

Intersection Summary  
 HCM Average Control Delay: 12.0 HCM Level of Service: B  
 HCM Volume to Capacity ratio: 0.61  
 Actuated Cycle Length (s): 120.0 Sum of lost time (s): 8.0  
 Intersection Capacity Utilization: 55.7% ICU Level of Service: B  
 Analysis Period (min): 15  
 c Critical Lane Group

## HCM Signalized Intersection Capacity Analysis 6. Johnson Ferry Rd & Glenridge Connector

## Lanes, Volumes, Timings 6. Johnson Ferry Rd & Glenridge Connector

Existing AM  
2/15/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.95	0.99
Lane Util. Factor	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	1583	1770	1863	1583	1770	5085	1583	3433	3492	3492
Flt Permitted	0.22	1.00	1.00	0.41	1.00	1.00	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	405	3539	1583	772	1863	1583	1770	5085	1583	3433	3492	3492
Volume (vph)	342	576	527	57	210	328	348	347	172	851	511	44
Peak-hour factor, PHF	0.91	0.92	0.89	0.80	0.93	0.85	0.95	0.84	0.90	0.92	0.92	0.81
Adj. Flow (vph)	376	626	592	71	226	386	367	413	191	925	555	54
RTOR Reduction (vph)	0	0	389	0	0	62	0	0	126	0	6	0
Lane Group Flow (vph)	376	626	203	71	226	324	367	413	65	925	603	0
Turn Type	pm+pt	pm+pt	pm	pm+ov	pm+ov	pm+ov	pm	pm	pm	pm	pm	pm
Protected Phases	3	8	8	7	4	5	1	6	6	5	2	
Permitted Phases	8	8	8	4	4	4						
Actuated Green, G (s)	46.6	36.3	36.3	24.8	18.5	54.6	28.0	25.3	25.3	36.1	33.4	
Effective Green, g (s)	46.6	36.3	36.3	24.8	18.5	54.6	28.0	25.3	25.3	36.1	33.4	
Actuated g/C Ratio	0.39	0.30	0.30	0.21	0.15	0.46	0.23	0.21	0.21	0.30	0.28	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
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	
Lane Grp Cap (vph)	431	1071	479	212	287	720	413	1072	334	1033	972	
v/s Ratio Prot	c0.18	0.18	0.13	0.02	0.12	0.14	c0.21	0.08	c0.27	0.17		
v/s Ratio Perm	c0.18	0.18	0.13	0.05	0.07	0.07	0.04	0.04	0.04	0.04		
v/c Ratio	0.87	0.58	0.42	0.33	0.79	0.45	0.89	0.39	0.19	0.90	0.62	
Uniform Delay, d1	29.8	35.5	33.5	39.3	48.9	22.4	44.5	40.7	39.0	40.1	37.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.72	
Incremental Delay, d2	17.4	0.8	0.6	0.9	13.3	0.5	20.1	1.0	1.3	9.6	2.8	
Delay (s)	47.2	36.3	34.1	40.3	62.2	22.9	64.6	41.7	40.2	38.5	29.5	
Level of Service	D	D	C	D	E	C	E	D	D	D	D	
Approach Delay (s)	38.0	38.0	37.7	37.7	37.7	37.7	37.7	37.7	37.7	37.7	35.0	
Approach LOS	D	D	D	D	D	D	D	D	D	D	C	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	376	626	592	71	226	386	367	413	191	925	609	
Lane Group Flow (vph)	45.8	36.3	36.3	25.1	17.6	53.6	28.0	26.2	26.2	36.0	34.3	
Act Effct Green (s)	0.38	0.30	0.30	0.21	0.15	0.45	0.23	0.22	0.22	0.30	0.29	
Actuated g/C Ratio	0.87	0.59	0.68	0.32	0.82	0.50	0.89	0.37	0.41	0.90	0.61	
v/c Ratio	50.5	38.1	8.3	28.7	73.6	10.4	68.2	42.0	12.7	41.3	29.9	
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Queue Delay	50.5	38.1	8.3	28.7	73.6	10.4	68.2	42.0	12.7	41.3	29.9	
Total Delay	D	D	A	C	E	B	E	D	B	D	C	
LOS	D	D	A	C	E	B	E	D	B	D	C	
Approach Delay	29.9	29.9	33.2	33.2	33.2	33.2	33.2	33.2	33.2	33.2	36.8	
Approach LOS	C	C	C	C	C	C	C	C	C	C	D	
Queue Length 50th (ft)	216	214	19	33	169	63	269	104	20	353	226	
Queue Length 95th (ft)	#358	275	119	57	#285	96	#415	128	87	#469	296	
Internal Link Dist (ft)	275	418	230	205	375	240	405	240	405	240	405	
Turn Bay Length (ft)	454	1092	874	231	296	770	457	1112	471	1030	1003	
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.83	0.57	0.68	0.31	0.76	0.50	0.80	0.37	0.41	0.90	0.61	

**Intersection Summary**  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 12 (10%), Referenced to phase 2:SBT and 6:NBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.90  
 Intersection Signal Delay: 35.9  
 Intersection Capacity Utilization 78.2%  
 Analysis Period (min): 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

**Intersection Summary**  
 HCM Average Control Delay: 39.4  
 HCM Volume to Capacity ratio: 0.89  
 Actuated Cycle Length (s): 120.0  
 Intersection Capacity Utilization: 78.2%  
 Analysis Period (min): 15  
 Critical Lane Group: c

# EXHIBIT 3

## Existing PM Intersection Analysis

# EXHIBIT 3

Existing PM  
2/15/2010

## HCM Signalized Intersection Capacity Analysis

1: Hammond Dr & Glenridge Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Configurations	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.85
Lane Util. Factor	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Fit Protected	1770	3411	1770	3433	1777	1770	3539	1583	1770	3539	1583
Satd. Flow (prot)	0.11	1.00	0.95	1.00	0.95	1.00	0.28	1.00	1.00	0.25	1.00
Fit Permitted	204	3411	204	3433	1777	515	3539	1583	466	3539	1583
Satd. Flow (perm)	18	340	91	720	578	221	190	537	384	93	288
Volume (vph)	0.79	0.94	0.79	0.81	0.84	0.73	0.82	0.90	0.95	0.76	0.94
Peak-hour factor, PHF	23	362	115	791	688	303	232	597	404	122	306
Adj. Flow (vph)	0	24	0	0	12	0	0	0	116	0	36
RTOR Reduction (vph)	23	453	0	791	979	0	232	597	289	122	306
Lane Group Flow (vph)	pm+pt		Prot		pm+pt		pm+pt		pm+pt		Perm
Turn Type	1	6	5	2	2	7	4	4	3	8	8
Protected Phases	6		4		4		4		8		8
Permitted Phases	46.6		32.2		71.2		33.0		21.0		24.0
Actuated Green, G (s)	46.6		32.2		71.2		33.0		21.0		24.0
Effective Green, g (s)	0.39		0.36		0.27		0.59		0.18		0.20
Actuated g/C Ratio	4.0		4.0		4.0		4.0		4.0		4.0
Clearance Time (s)	3.0		3.0		3.0		3.0		3.0		3.0
Vehicle Extension (s)	129		1217		921		1054		278		619
Lane Grp Cap (vph)	0.01		0.13		c0.23		c0.55		c0.09		0.17
v/s Ratio Prot	0.06		0.18		0.37		0.85		0.93		0.83
v/s Ratio Perm	0.18		0.37		0.85		0.93		0.83		0.96
Uniform Delay, d1	26.0		28.6		41.7		22.1		36.9		49.1
Progression Factor	1.00		1.00		1.00		1.00		0.81		0.87
Incremental Delay, d2	0.7		0.9		8.0		15.1		18.2		26.5
Delay (s)	26.7		29.5		49.8		37.2		48.2		69.1
Level of Service	C		C		D		D		E		F
Approach Delay (s)	29.4		C		42.8		D		E		51.4
Approach LOS	C		C		D		D		E		D
Intersection Summary											
HCM Average Control Delay	52.4		HCM Level of Service		D						
HCM Volume to Capacity ratio	0.94										
Actuated Cycle Length (s)	120.0		Sum of lost time (s)		12.0						
Intersection Capacity Utilization	80.5%		ICU Level of Service		D						
Analysis Period (min)	15										
c Critical Lane Group											

Baseline  
A & R Engineering Inc.  
Synchro 6 Report  
Page 2

Existing PM  
2/15/2010

## Lanes, Volumes, Timings

1: Hammond Dr & Glenridge Dr

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	23	477	791	691	232	597	404	122	306	64	64
Act Effct Green (s)	48.9	42.8	32.2	72.8	33.0	21.0	21.0	24.0	16.0	16.0	16.0
Actuated g/C Ratio	0.41	0.36	0.27	0.61	0.28	0.18	0.18	0.20	0.13	0.13	0.13
v/c Ratio	0.14	0.38	0.86	0.91	0.63	0.96	1.03	0.68	0.65	0.26	0.26
Control Delay	15.0	28.4	51.6	34.9	55.2	70.9	78.2	55.0	56.4	24.2	24.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.0	28.4	51.6	34.9	55.2	70.9	78.2	55.0	56.4	24.2	24.2
LOS	B	C	D	C	E	E	E	D	E	C	C
Approach Delay	27.8		42.3		70.4		E		51.9		D
Approach LOS	C		D		E		E		D		D
Queue Length 50th (ft)	6		133		298		677		154		245
Queue Length 95th (ft)	13		191		356		#892		#184		#441
Internal Link Dist (ft)	667		649		1719		50		115		50
Turn Bay Length (ft)	220		260		1059		1090		278		619
Base Capacity (vph)	188		1241		1059		278		619		393
Starvation Cap Reductn	0		0		0		0		0		0
Spillback Cap Reductn	0		0		0		0		0		0
Storage Cap Reductn	0		0		0		0		0		0
Reduced v/c Ratio	0.12		0.38		0.75		0.91		0.83		0.96
Intersection Summary											
Cycle Length: 120											
Actuated Cycle Length: 120											
Offset: 84 (70%), Referenced to phase 2:WBT and 6:EBTL, Start of Green											
Control Type: Actuated-Coordinated											
Maximum v/c Ratio: 1.03											
Intersection Signal Delay: 50.3											
Intersection Capacity Utilization 80.5%											
Analysis Period (min) 15											
~ Volume exceeds capacity, queue is theoretically infinite.											
# Queue shown is maximum after two cycles.											
Queue shown is maximum after two cycles.											

Baseline  
A & R Engineering Inc.  
Synchro 6 Report  
Page 1

Lanes, Volumes, Timings  
 2. Pvt. Home Drwy & Glenridge Dr

Existing PM  
 2/15/2010

	WBL	WBT	NBT	SBL	SBT
Lane Group	54	53	1143	28	1144
Lane Group Flow (vph)	9.4	9.4	105.3	105.3	105.3
Act Effct Green (s)	0.08	0.08	0.88	0.88	0.88
Actuated g/C Ratio	0.49	0.25	0.39	0.09	0.37
v/c Ratio	66.8	3.6	1.0	0.5	0.4
Control Delay	0.0	0.0	0.0	0.0	0.0
Queue Delay	66.8	3.6	1.0	0.5	0.4
Total Delay	E	A	A	A	A
LOS	E	A	A	A	A
Approach Delay	35.5	1.0	0.4		
Approach LOS	D	A	A		
Queue Length 50th (ft)	41	0	24	0	0
Queue Length 95th (ft)	44	6	32	m0	0
Internal Link Dist (ft)	313	500			1719
Turn Bay Length (ft)	150				125
Base Capacity (vph)	458	581	2949	297	3106
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.12	0.09	0.39	0.09	0.37

Intersection Summary  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 87 (73%), Referenced to phase 2.SBTTL and 6.NBTTL, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.49  
 Intersection Signal Delay: 2.3  
 Intersection Capacity Utilization 40.9%  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
 2. Pvt. Home Drwy & Glenridge Dr

Existing PM  
 2/15/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	1.00	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	0.95	1.00	0.85	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Flt Protected	1770	1583	3520	1770	1583	3520	1770	1583	1770	1583	3520	1770
Satd. Flow (prot)	0.76	1.00	0.95	0.76	1.00	0.95	0.76	1.00	0.76	1.00	0.95	1.00
Flt Permitted	1410	1583	3360	1410	1583	3360	1410	1583	1410	1583	3360	1410
Satd. Flow (perm)	0	0	0	27	0	44	1	1056	32	24	1110	0
Volume (vph)	0.92	0.92	0.92	0.50	0.92	0.83	0.92	0.96	0.77	0.86	0.97	0.92
Peak-hour factor, PHF	0	0	0	54	0	53	1	1100	42	28	1144	0
Adj. Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	49	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	0	0	54	4	0	0	1142	0	28	1144	0
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm						
Protected Phases	8	8	8	4	4	4	6	6	6	6	2	2
Permitted Phases	8	8	8	4	4	4	6	6	6	6	2	2
Actuated Green, G (s)	8.3	8.3	8.3	8.3	8.3	8.3	103.7	103.7	103.7	103.7	103.7	103.7
Effective Green, g (s)	8.3	8.3	8.3	8.3	8.3	8.3	103.7	103.7	103.7	103.7	103.7	103.7
Actuated g/C Ratio	0.07	0.07	0.07	0.07	0.07	0.07	0.86	0.86	0.86	0.86	0.86	0.86
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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)	98	109	109	98	109	109	2904	2904	384	3058	3058	3058
v/s Ratio Prot	0.04	0.04	0.04	0.04	0.04	0.04	0.34	0.34	0.06	0.32	0.32	0.32
v/s Ratio Perm	0.55	0.03	0.03	0.55	0.03	0.03	0.39	0.39	0.07	0.37	0.37	0.37
v/c Ratio	54.0	52.1	52.1	54.0	52.1	52.1	1.7	1.7	1.2	1.6	1.6	1.6
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	1.00	0.35	0.35	0.04	0.10	0.10	0.10
Progression Factor	6.6	0.1	0.1	6.6	0.1	0.1	0.4	0.4	0.2	0.2	0.2	0.2
Incremental Delay, d2	60.6	52.2	52.2	60.6	52.2	52.2	1.0	1.0	0.3	0.4	0.4	0.4
Level of Service	E	D	D	E	D	D	A	A	A	A	A	A
Approach Delay (s)	0.0	0.0	0.0	56.5	56.5	56.5	1.0	1.0	0.4	0.4	0.4	0.4
Approach LOS	A	A	A	E	E	E	A	A	A	A	A	A

Intersection Summary  
 HCM Average Control Delay 3.1 HCM Level of Service A  
 HCM Volume to Capacity ratio 0.41  
 Actuated Cycle Length (s) 120.0 Sum of lost time (s) 8.0  
 Intersection Capacity Utilization 40.9% ICU Level of Service A  
 Analysis Period (min) 15  
 c Critical Lane Group

# EXHIBIT 3

## HCM Signalized Intersection Capacity Analysis 3. Glenforest Rd & Glenridge Dr

## Lanes, Volumes, Timings 3. Glenforest Rd & Glenridge Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	0.95	0.95	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.95	1.00
Lane Util. Factor	0.85	1.00	1.00	0.85	1.00	0.95	1.00	0.85	1.00	0.95	1.00	1.00
Fit	1.00	0.95	0.95	1.00	0.96	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Flt Protected	1583	1681	1681	1583	1770	1583	1770	1583	1770	1583	1770	1583
Satd. Flow (prot)	1.00	0.76	0.74	1.00	0.16	1.00	0.16	1.00	0.16	1.00	0.24	1.00
Flt Permitted	1583	1340	1310	1583	292	3539	1583	292	3539	1583	3535	1583
Satd. Flow (perm)	0	52	155	2	53	39	1005	12	13	1129	6	1129
Volume (vph)	0.62	0.62	0.63	0.71	0.25	0.44	0.75	0.96	0.91	0.61	0.83	0.50
Peak-hour factor, PHF	0	0	83	218	8	120	52	1047	13	21	1360	12
Adj. Flow (vph)	0	0	72	0	0	0	0	0	0	1	0	0
RTOR Reduction (vph)	0	0	11	109	117	120	52	1047	12	21	1372	0
Lane Group Flow (vph)	0	0	11	109	117	120	52	1047	12	21	1372	0
Turn Type	Perm	Perm	Perm	Perm	Free	Perm	Perm	Perm	Perm	Perm	Perm	Perm
Protected Phases	8	8	8	4	4	4	1	6	6	5	2	2
Permitted Phases	8	8	8	4	4	4	1	6	6	5	2	2
Actuated Green, G (s)	15.5	15.5	15.5	15.5	120.0	96.3	90.2	90.2	90.2	86.7	86.4	86.4
Effective Green, g (s)	15.5	15.5	15.5	15.5	120.0	96.3	90.2	90.2	90.2	86.7	86.4	86.4
Actuated g/C Ratio	0.13	0.13	0.13	0.13	1.00	0.80	0.75	0.75	0.75	0.74	0.72	0.72
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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)	204	173	169	1583	309	2660	1190	362	2545	0.00	c0.39	0.00
v/s Ratio Prot	0.01	0.08	c0.09	c0.08	0.13	c0.01	0.30	0.01	0.04	0.01	0.06	0.54
v/s Ratio Perm	0.05	0.63	0.69	0.08	0.17	0.39	0.01	0.01	0.06	0.01	0.06	0.54
v/c Ratio	45.8	49.5	50.0	0.0	8.6	5.3	3.7	7.1	7.7	3.7	7.1	7.7
Uniform Delay, d1	1.00	1.00	1.00	1.00	0.59	0.45	0.29	0.22	0.17	0.22	0.17	0.17
Progression Factor	0.1	7.3	11.6	0.1	0.3	0.4	0.0	0.1	0.1	0.1	0.1	0.1
Incremental Delay, d2	45.9	56.8	61.6	0.1	5.4	2.8	1.1	1.7	2.1	1.7	2.1	2.1
Delay (s)	D	E	E	E	A	A	A	A	A	A	A	A
Level of Service	D	E	E	E	A	A	A	A	A	A	A	A
Approach Delay (s)	45.9			38.7			2.9				2.1	
Approach LOS	D			D			A				A	

Lane Group	EBL	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	83	109	117	120	52	1047	13	21	1372	
Act Effct Green (s)	15.5	15.5	15.5	120.0	96.0	92.7	92.7	94.4	88.9	
Actuated g/C Ratio	0.13	0.13	0.13	1.00	0.80	0.77	0.77	0.79	0.74	
v/c Ratio	0.20	0.63	0.69	0.08	0.24	0.38	0.01	0.06	0.52	
Control Delay	1.1	64.7	69.8	0.1	6.2	2.9	1.2	1.2	2.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1	
Total Delay	1.1	64.7	69.8	0.1	6.2	3.1	1.2	1.2	2.1	
LOS	A	E	E	A	A	A	A	A	A	
Approach Delay				44.0					2.1	
Approach LOS				D					A	
Queue Length 50th (ft)	0	85	92	0	4	43	0	1	30	
Queue Length 95th (ft)	0	108	37	0	9	70	3	2	65	
Internal Link Dist (ft)			233			158			93	
Turn Bay Length (ft)	150	150	306	150	55	2733	1224	490	2619	
Base Capacity (vph)	558	313	306	1583	367	2733	1224	490	2619	
Starvation Cap Reductn	0	0	0	0	0	678	0	0	180	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.15	0.35	0.38	0.08	0.14	0.51	0.01	0.04	0.56	

Intersection Summary  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 84 (70%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.69  
 Intersection Signal Delay: 7.4  
 Intersection Capacity Utilization: 48.1%  
 Analysis Period (min): 15

Intersection Summary  
 HCM Average Control Delay: 8.0  
 HCM Level of Service: A  
 HCM Volume to Capacity ratio: 0.52  
 Actuated Cycle Length (s): 120.0  
 Sum of lost time (s): 8.0  
 Intersection Capacity Utilization: 48.1%  
 ICU Level of Service: A  
 Analysis Period (min): 15  
 Critical Lane Group

Queues  
4: I-285 Westbound On-Ramp & Glenridge Dr

	NBL	NBT	SBT	SBR
Lane Group	645	1054	785	626
Lane Group Flow (vph)	0.99	0.21	0.66	0.96
v/c Ratio	50.0	0.1	21.5	38.9
Control Delay	0.0	0.0	0.0	6.0
Queue Delay	50.0	0.1	21.5	45.0
Total Delay	413	0	179	203
Queue Length 50th (ft)	#703	0	258	#291
Queue Length 95th (ft)	339	233		
Internal Link Dist (ft)				
Turn Bay Length (ft)	651	5085	1192	651
Base Capacity (vph)	0	0	0	21
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0.99	0.21	0.66	0.99
Reduced v/c Ratio				

Intersection Summary  
# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis  
4: I-285 Westbound On-Ramp & Glenridge Dr

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations			↑↑↑	↑↑↑	↑↑	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	0.95	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	900	5085	3539	900		
Flt Permitted	0.17	1.00	1.00	1.00		
Satd. Flow (perm)	308	5085	3539	1583		
Volume (vph)	0	0	593	1033	746	557
Peak-hour factor, PHF	0.92	0.92	0.99	0.95	0.89	0.89
Adj. Flow (vph)	0	0	645	1054	785	626
RTOR Reduction (vph)	0	0	0	0	0	117
Lane Group Flow (vph)	0	0	645	1054	785	509
Turn Type			pm+pt			Perm
Protected Phases			1	6	2	
Permitted Phases			6		2	
Actuated Green, G (s)			116.0	120.0	40.4	40.4
Effective Green, g (s)			116.0	120.0	40.4	40.4
Actuated g/C Ratio			0.97	1.00	0.34	0.34
Clearance Time (s)			4.0	4.0	4.0	4.0
Vehicle Extension (s)			3.0	3.0	3.0	3.0
Lane Grp Cap (vph)			651	5085	1191	533
v/s Ratio Prot			c0.59	0.21	0.22	
v/s Ratio Perm			c0.37			0.32
w/c Ratio			0.99	0.21	0.66	0.95
Uniform Delay, d1			15.0	0.0	33.9	38.9
Progression Factor			1.26	1.00	0.55	0.42
Incremental Delay, d2			31.5	0.1	2.5	26.5
Delay (s)			50.4	0.1	21.3	42.7
Level of Service			D	A	C	D
Approach Delay (s)			19.2	30.8		
Approach LOS			A	B	C	C

Intersection Summary		
HCM Average Control Delay	24.4	HCM Level of Service C
HCM Volume to Capacity ratio	0.98	
Actuated Cycle Length (s)	120.0	Sum of lost time (s) 4.0
Intersection Capacity Utilization	74.0%	ICU Level of Service D
Analysis Period (min)	15	
c Critical Lane Group		

Lanes, Volumes, Timings  
5: I-285 Eastbound Off-Ramp & Glenridge Dr

	EBL	EBR	NBT	SBT
Lane Group	160	191	1601	791
Lane Group Flow (vph)	14.9	120.0	97.1	97.1
Act Effct Green (s)	0.12	1.00	0.81	0.81
Actuated g/C Ratio	0.73	0.07	0.39	0.28
v/c Ratio	69.0	0.0	2.7	1.1
Control Delay	0.0	0.0	0.0	0.1
Queue Delay	69.0	0.0	2.7	1.1
Total Delay	E	A	A	A
LOS	31.5	2.7	1.1	1.1
Approach Delay	C	A	A	A
Approach LOS	121	0	83	8
Queue Length 50th (ft)	174	0	m99	30
Queue Length 95th (ft)	644	0	961	339
Internal Link Dist (ft)	634	2787	4114	2864
Turn Bay Length (ft)	0	0	0	592
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.25	0.07	0.39	0.35

Intersection Summary  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 71 (59%), Referenced to phase 2:SBT and 6:NBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.73  
 Intersection Signal Delay: 5.9  
 Intersection Capacity Utilization 74.0%  
 Analysis Period (min): 15  
 m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
5: I-285 Eastbound Off-Ramp & Glenridge Dr

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.88	0.91	0.95	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1770	2787	5085	3539	5085	3539
Flt Permitted	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	1770	2787	5085	3539	5085	3539
Volume (vph)	136	170	0	1457	728	0
Peak-hour factor, PHF	0.85	0.89	0.92	0.91	0.92	0.88
Adj. Flow (vph)	160	191	0	1601	791	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	160	191	0	1601	791	0
Turn Type	Free					
Protected Phases	8					
Permitted Phases	Free					
Actuated Green, G (s)	14.9					
Effective Green, g (s)	14.9					
Actuated g/C Ratio	0.12					
Clearance Time (s)	4.0					
Vehicle Extension (s)	3.0					
Lane Grp Cap (vph)	220					
v/s Ratio Prot	c0.09					
v/s Ratio Perm	0.07					
v/c Ratio	0.73					
Uniform Delay, d1	50.6					
Progression Factor	1.00					
Incremental Delay, d2	11.3					
Delay (s)	61.9					
Level of Service	E					
Approach Delay (s)	28.3					
Approach LOS	C					

Intersection Summary  
 HCM Average Control Delay: 5.3  
 HCM Volume to Capacity ratio: 0.43  
 Actuated Cycle Length (s): 120.0  
 Intersection Capacity Utilization: 74.0%  
 Analysis Period (min): 15  
 c Critical Lane Group

# EXHIBIT 3

## HCM Signalized Intersection Capacity Analysis 6: Johnson Ferry Rd & Glenridge Connector

## Lanes, Volumes, Timings 6: Johnson Ferry Rd & Glenridge Connector

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.95
Fit Protected	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	1.00
Fit Permitted	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	1583	1770	1863	1583	1770	5085	1583	3433	3461	3461
Satd. Flow (perm)	242	3539	1583	1052	1863	1583	1770	5085	1583	3433	3461	3461
Volume (vph)	306	282	510	95	370	541	512	582	39	211	390	59
Peak-hour factor, PHF	0.91	0.92	0.89	0.80	0.93	0.85	0.95	0.84	0.90	0.92	0.92	0.81
Adj. Flow (vph)	336	307	573	119	398	636	539	693	43	229	424	73
RTOR Reduction (vph)	0	0	367	0	0	30	0	0	0	33	0	12
Lane Group Flow (vph)	336	307	186	119	398	606	539	693	10	229	485	0
Turn Type	pm+pt	Perm	pm+pt	pm+ov	Prot	Perm	Prot	Perm	Prot	Perm	Prot	Perm
Protected Phases	3	8	7	4	5	1	6	5	2			
Permitted Phases	8	8	4	4	4	4	6	6	6	6	6	6
Actuated Green, G (s)	50.7	38.9	34.6	26.8	55.8	37.5	28.3	28.3	29.0	19.8	19.8	19.8
Effective Green, g (s)	50.7	38.9	34.6	26.8	55.8	37.5	28.3	28.3	29.0	19.8	19.8	19.8
Actuated g/C Ratio	0.42	0.32	0.32	0.28	0.22	0.46	0.31	0.24	0.24	0.24	0.24	0.16
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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 Grn Cap (vph)	356	1147	513	350	416	736	553	1199	373	830	571	571
v/s Ratio Prot	0.16	0.09	0.02	0.02	0.21	0.20	0.30	0.14	0.01	0.07	0.14	0.14
v/s Ratio Perm	0.24	0.27	0.36	0.34	0.96	0.62	0.97	0.58	0.03	0.28	0.85	0.85
Uniform Delay, d1	34.5	30.0	31.0	32.5	46.0	27.8	40.8	40.6	35.3	37.0	48.7	48.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.56	0.67
Incremental Delay, d2	33.2	0.1	0.4	0.6	32.8	7.4	31.6	2.0	0.1	0.2	14.5	14.5
Delay (s)	67.7	30.1	31.5	33.2	78.8	35.3	72.4	42.6	35.4	21.0	46.9	46.9
Level of Service	E	C	C	C	E	D	E	D	D	D	C	D
Approach Delay (s)	41.1			50.1			55.0				38.7	
Approach LOS	D			D			D				D	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	336	307	573	119	398	636	539	693	43	229	497	497
Act Effct Green (s)	50.6	36.8	34.6	26.8	55.8	37.5	28.4	28.4	29.0	19.9	19.9	19.9
Actuated g/C Ratio	0.42	0.32	0.29	0.22	0.46	0.31	0.24	0.24	0.24	0.24	0.17	0.17
v/c Ratio	0.95	0.27	0.64	0.34	0.96	0.83	0.97	0.58	0.11	0.28	0.85	0.85
Control Delay	69.3	30.8	6.1	25.8	81.3	24.2	73.8	42.9	11.3	21.8	46.7	46.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.3	30.8	6.1	25.8	81.3	24.2	73.8	42.9	11.3	21.8	46.7	46.7
LOS	E	C	A	C	F	C	E	D	B	C	D	D
Approach Delay	29.8			44.1			54.9				38.8	
Approach LOS	C			D			D				D	
Queue Length 50th (ft)	207	92	0	56	306	198	409	175	0	77	197	197
Queue Length 95th (ft)	#390	130	78	85	#500	259	#633	201	30	105	#292	#292
Internal Link Dist (ft)	275	418	230	205	450	375	677	240	405	405	566	566
Turn Bay Length (ft)	356	1150	901	353	419	766	561	1202	407	830	566	566
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.27	0.64	0.34	0.95	0.83	0.96	0.58	0.11	0.28	0.85	0.85

**Intersection Summary**

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 16 (13%), Referenced to phase 2: SBT and 6: NBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.97  
 Intersection Signal Delay: 42.4  
 Intersection Capacity Utilization: 90.8%  
 Analysis Period (min): 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Intersection Summary	47.1	HCM Level of Service	D
HCM Average Control Delay	47.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.91	Sum of lost time (s)	8.0
Actuated Cycle Length (s)	120.0	ICU Level of Service	E
Intersection Capacity Utilization	90.8%	Analysis Period (min)	15
Analysis Period (min)	15		
c Critical Lane Group			

Intersection Summary	41.1	D	D
Approach Delay (s)	41.1	D	D
Approach LOS	D	D	D

# EXHIBIT 3

## Base AM Intersection Analysis

# EXHIBIT 3

Base 2012 AM

# EXHIBIT 3

## HCM Signalized Intersection Capacity Analysis 1: Hammond Dr & Glenridge Dr

## Lanes, Volumes, Timings 1: Hammond Dr & Glenridge Dr

Base AM  
2/15/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	0.95	1.00	0.97	1.00	1.00	0.95	1.00	1.00	0.85	1.00	0.85
Lane Util. Factor	1.00	0.96	1.00	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95
Satd. Flow (prot)	1770	3402	1770	3433	1793	1770	3539	1583	1770	3539	1583	1583
Flt Permitted	0.55	1.00	0.55	1.00	0.55	1.00	0.36	1.00	0.36	1.00	0.61	1.00
Satd. Flow (perm)	1030	3402	1030	3433	1793	1030	3539	1583	1030	3539	1583	1583
Volume (vph)	14	804	235	379	219	63	63	154	707	250	506	10
Peak-hour factor, PHF	0.79	0.94	0.79	0.91	0.84	0.73	0.82	0.90	0.95	0.76	0.94	0.69
Adj. Flow (vph)	18	855	297	416	261	86	77	171	744	329	538	14
RTOR Reduction (vph)	0	29	0	0	9	0	0	0	217	0	0	5
Lane Group Flow (vph)	18	1123	0	416	338	0	77	171	527	329	538	9
Turn Type	pm+pt	pm+pt	Prot	pm+pt	Perm							
Protected Phases	1	6	5	2	7	4	7	4	7	4	3	8
Permitted Phases	6	40.2	15.0	52.0	47.0	40.8	40.8	50.6	42.6	42.6	42.6	42.6
Actuated Green, G (s)	40.2	40.2	15.0	52.0	47.0	40.8	40.8	50.6	42.6	42.6	42.6	42.6
Effective Green, g (s)	0.34	0.34	0.12	0.43	0.39	0.34	0.34	0.42	0.36	0.36	0.36	0.36
Actuated g/C Ratio	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Clearance Time (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
Vehicle Extension (s)	365	1140	429	777	317	1203	538	524	1256	562	562	562
Lane Grp Cap (vph)	0.00	c0.33	c0.12	0.19	0.08	0.08	0.08	c0.33	0.22	0.01	0.15	0.01
v/s Ratio Prot	0.02	0.98	0.97	0.43	0.24	0.14	0.98	0.63	0.43	0.02	0.02	0.02
v/s Ratio Perm	27.0	39.6	52.3	23.7	23.6	27.5	39.2	26.2	29.4	25.1	25.1	25.1
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	0.70	0.71	0.63	1.00	1.00	1.00	1.00
Progression Factor	0.1	23.3	35.1	1.8	0.4	0.1	32.4	2.4	0.2	0.0	0.0	0.0
Incremental Delay, d2	27.1	62.9	87.4	25.5	16.9	19.4	57.2	28.5	29.7	25.1	25.1	25.1
Level of Service	C	E	F	C	B	B	E	C	C	C	C	C
Approach Delay (s)	62.3	59.3	E	E	D	D	D	D	D	D	D	D
Approach LOS	E	E	E	E	E	E	E	E	E	E	E	E

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	18	1152	416	347	77	171	744	329	538	14	42.6	42.6
Act Effct Green (s)	41.0	41.0	15.0	55.2	47.4	40.0	40.0	49.0	42.6	0.36	0.36	0.36
Actuated g/C Ratio	0.34	0.34	0.12	0.46	0.40	0.33	0.33	0.41	0.36	0.02	0.02	0.02
v/c Ratio	0.05	0.97	0.97	0.42	0.25	0.14	1.00	0.63	0.43	19.2	19.2	19.2
Control Delay	27.1	57.0	89.0	23.7	16.1	20.1	47.4	32.4	31.5	0.0	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.1	57.0	89.0	23.7	16.1	20.1	47.4	32.4	31.5	0.0	0.0	0.0
LOS	C	E	F	C	B	C	D	C	C	C	C	B
Approach Delay	56.6	E	E	59.3	E	D	40.3	D	31.7	C	C	C
Approach LOS	E	E	E	E	E	D	D	D	D	D	D	D
Queue Length 50th (ft)	9	445	167	153	25	37	414	174	171	4	4	4
Queue Length 95th (ft)	23	#566	#270	251	36	65	#623	204	224	14	14	14
Internal Link Dist (ft)	667	667	649	649	1719	1719	1719	675	675	50	50	50
Turn Bay Length (ft)	220	260	260	260	150	150	150	115	115	566	566	566
Base Capacity (vph)	401	1191	429	834	322	1180	747	525	1255	0.00	0.00	0.00
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.97	0.97	0.42	0.24	0.14	1.00	0.63	0.43	0.02	0.02	0.02

Intersection Summary

Cycle Length, 120	
Actuated Cycle Length, 120	
Offset: 70 (58%), Referenced to phase 2:WBT and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.00	Intersection LOS: D
Intersection Signal Delay, 47.1	ICU Level of Service F
Intersection Capacity Utilization 97.4%	
Analysis Period (min) 15	

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Intersection Summary

HCM Average Control Delay	50.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.99	Sum of lost time (s)	20.0
Actuated Cycle Length (s)	120.0	ICU Level of Service	F
Intersection Capacity Utilization	97.4%	Analysis Period (min)	15
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings  
2: Pvt. Home Drwy & Glenridge Dr

HCM Signalized Intersection Capacity Analysis  
2: Pvt. Home Drwy & Glenridge Dr

Base AM  
2/15/2010

Base AM  
2/15/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1	14	13	1084	37	1083						
Act Effct Green (s)	6.4	6.6	6.6	113.7	113.7	113.7						
Actuated g/C Ratio	0.05	0.06	0.06	0.95	0.95	0.95						
v/c Ratio	0.01	0.18	0.07	0.33	0.11	0.33						
Control Delay	0.0	58.9	0.7	1.1	0.8	0.4						
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0						
Total Delay	0.0	58.9	0.7	1.1	0.8	0.4						
LOS	A	E	A	A	A	A						
Approach Delay	0.0	30.9	1.1	0.4								
Approach LOS	A	C	A	A								
Queue Length 50th (ft)	0	11	0	0	0	0						
Queue Length 95th (ft)	0	18	0	101	m2	m23						
Internal Link Dist (ft)	280			313	500	1719						
Turn Bay Length (ft)	150					125						
Base Capacity (vph)	612	482	614	3323	342	3353						
Starvation Cap Reductn	0	0	0	0	0	0						
Spillback Cap Reductn	0	0	0	0	0	0						
Storage Cap Reductn	0	0	0	0	0	0						
Reduced v/c Ratio	0.00	0.03	0.02	0.33	0.11	0.33						

Intersection Summary  
Cycle Length: 120  
Actuated Cycle Length: 120  
Offset: 113 (94%), Referenced to phase 2:SBTL and 6:NBT, Start of Green  
Control Type: Actuated-Coordinated  
Maximum v/c Ratio: 0.33  
Intersection Signal Delay: 1.1  
Intersection Capacity Utilization 41.8%  
Analysis Period (min) 15  
Volume for 95th percentile queue is metered by upstream signal.

Baseline  
A & R Engineering Inc.  
Synchro 6 Report  
Page 3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	4	4	4	4	4	4	4	4	4	4	4	4
Ideal Flow (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	1.00	0.95
Frt	0.86	1.00	0.85	1.00	0.85	1.00	0.98	1.00	0.95	1.00	1.00	0.95
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00	1.00	1.00	0.95	1.00	1.00	0.95
Satd. Flow (prot)	1611	1770	1583	3508	1770	1583	3508	1770	1583	3508	1770	1583
Flt Permitted	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	1611	1863	1583	3508	1863	1583	3508	1863	1583	3508	1863	1583
Volume (vph)	0	0	1	7	0	11	0	979	49	32	1060	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.50	0.92	0.63	0.92	0.96	0.77	0.86	0.97	0.92
Adj. Flow (vph)	0	0	1	14	0	13	0	1020	64	37	1093	0
RTOR Reduction (vph)	0	1	0	0	13	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	0	0	14	0	0	0	1083	0	37	1093	0
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm						
Protected Phases	8	8	8	4	4	4	6	6	6	2	2	2
Permitted Phases	8	8	8	4	4	4	6	6	6	2	2	2
Actuated Green, G (s)	3.1	3.1	3.1	3.1	3.1	3.1	108.9	108.9	108.9	108.9	108.9	108.9
Effective Green, g (s)	3.1	3.1	3.1	3.1	3.1	3.1	108.9	108.9	108.9	108.9	108.9	108.9
Actuated g/C Ratio	0.03	0.03	0.03	0.03	0.03	0.03	0.91	0.91	0.91	0.91	0.91	0.91
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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)	42	48	41	48	41	41	3184	441	3212	441	3212	441
v/s Ratio Prot	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.31	0.31	0.08	0.31	0.08
v/s Ratio Perm	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.34	0.34	0.08	0.34	0.08
v/c Ratio	0.00	0.29	0.01	0.29	0.01	0.01	0.7	0.7	0.6	0.6	0.7	0.6
Uniform Delay, d1	56.9	57.4	57.0	57.4	57.0	57.0	1.12	1.12	0.38	0.35	1.12	0.38
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.3	0.3	0.2	0.2	0.3	0.2
Incremental Delay, d2	0.0	3.4	0.1	3.4	0.1	0.1	1.1	1.1	0.5	0.4	1.1	0.5
Delay (s)	56.9	60.7	57.0	60.7	57.0	57.0	1.1	1.1	0.5	0.4	1.1	0.5
Level of Service	E	E	E	E	E	E	A	A	A	A	A	A
Approach Delay (s)	56.9	59.0	57.0	59.0	57.0	57.0	1.1	1.1	0.5	0.4	1.1	0.5
Approach LOS	E	E	E	E	E	E	A	A	A	A	A	A

Intersection Summary  
HCM Average Control Delay: 15  
HCM Level of Service: A  
HCM Volume to Capacity ratio: 0.34  
Actuated Cycle Length (s): 120.0  
Intersection Capacity Utilization: 41.8%  
Analysis Period (min): 15  
Sum of lost time (s): 8.0  
ICU Level of Service: A

Baseline  
A & R Engineering Inc.  
Synchro 6 Report  
Page 4

EXHIBIT 3

Lanes, Volumes, Timings  
3: Glenforest Rd & Glenridge Dr

HCM Signalized Intersection Capacity Analysis  
3: Glenforest Rd & Glenridge Dr

Base AM  
2/15/2010

Base AM  
2/15/2010

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	14	116	7	7	14	13	1031	124	144
Act Effct Green (s)	7.3	7.3	7.3	7.3	120.0	98.7	93.2	104.7	100.9
Actuated g/C Ratio	0.06	0.06	0.06	0.06	0.82	0.78	0.78	0.87	0.84
v/c Ratio	0.14	0.57	0.09	0.09	0.01	0.05	0.38	0.10	0.39
Control Delay	55.2	20.6	54.0	54.0	0.0	1.1	1.9	0.6	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Total Delay	55.2	20.6	54.0	54.0	0.0	1.1	2.1	0.6	5.5
LOS	E	C	D	D	A	A	A	A	A
Approach Delay	24.3		27.0		1.9		2.3		
Approach LOS	C		C		A		A		A
Queue Length 50th (ft)	11	0	5	5	0	0	32	0	4
Queue Length 95th (ft)	22	13	16	6	0	2	66	6	3
Internal Link Dist (ft)	582		233		150	55	158	75	130
Turn Bay Length (ft)	369	446	298	298	1583	461	2749	1241	606
Base Capacity (vph)	0	0	0	0	0	0	689	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.26	0.02	0.02	0.01	0.03	0.50	0.10	0.24

Intersection Summary  
Cycle Length: 120  
Actuated Cycle Length: 120  
Offset: 88 (73%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green  
Control Type: Actuated-Coordinated  
Maximum v/c Ratio: 0.57  
Intersection Signal Delay: 3.5  
Intersection Capacity Utilization: 48.4%  
Analysis Period (min): 15

Baseline  
A & R Engineering Inc.  
Synchro 6 Report  
Page 5

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	0.95
Lane Util. Factor	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00
Fit Protected	0.96	1.00	0.95	0.95	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1792	1583	1681	1681	1583	1770	3539	1583	1770
Flt Permitted	0.79	1.00	0.75	0.75	1.00	0.22	1.00	0.25	1.00
Satd. Flow (perm)	1466	1583	1324	1324	1583	412	3539	1583	471
Volume (vph)	7	2	73	10	6	10	990	113	88
Peak-hour factor, PHF	0.62	0.62	0.63	0.71	0.25	0.44	0.75	0.96	0.61
Adj. Flow (vph)	11	3	116	14	0	14	131	124	144
RTOR Reduction (vph)	0	0	109	0	0	0	0	13	0
Lane Group Flow (vph)	0	14	7	7	7	14	13	1031	111
Turn Type	Perm	Perm	Perm	Perm	Free pm+pt	Free pm+pt	Perm	pm+pt	Perm
Protected Phases	8	8	4	4	6	6	6	2	2
Permitted Phases	8	8	4	4	6	6	6	2	2
Actuated Green, G (s)	7.3	7.3	7.3	7.3	120.0	93.0	90.8	104.7	98.5
Effective Green, g (s)	7.3	7.3	7.3	7.3	120.0	93.0	90.8	104.7	98.5
Actuated g/C Ratio	0.06	0.06	0.06	0.06	1.00	0.78	0.76	0.87	0.82
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	89	96	81	81	1583	344	2678	1198	518
vis Ratio Prot					0.00	0.29		c0.02	c0.33
vis Ratio Perm	0.01	0.00	0.01	0.01	0.03	0.07	0.07	0.22	0.41
v/c Ratio	0.16	0.07	0.09	0.09	0.01	0.04	0.38	0.09	0.28
Uniform Delay, d1	53.4	53.2	53.2	53.2	0.0	5.0	3.8	3.3	2.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	0.46	0.33	0.17	0.89
Incremental Delay, d2	0.8	0.3	0.5	0.5	0.0	0.4	0.2	0.3	0.4
Level of Service	D	D	D	D	A	A	A	A	A
Approach Delay (s)	53.6		26.8		1.9		2.1		2.1
Approach LOS	D		C		A		A		A

Intersection Summary  
HCM Average Control Delay: 4.8  
HCM Volume to Capacity ratio: 0.38  
Actuated Cycle Length (s): 120.0  
Intersection Capacity Utilization: 48.4%  
Analysis Period (min): 15  
c Critical Lane Group

Baseline  
A & R Engineering Inc.  
Synchro 6 Report  
Page 6

EXHIBIT 3

	NBL	NBT	SBT	SBR
Lane Group	468	1172	940	218
Lane Group Flow (vph)	0.75	0.23	0.80	0.38
v/c Ratio	23.2	0.1	31.3	14.6
Control Delay	6.4	0.0	0.4	0.0
Queue Delay	29.6	0.1	31.7	14.6
Total Delay	181	0	285	77
Queue Length 50th (ft)	m283	m0	323	131
Queue Length 95th (ft)	m283	m0	323	131
Internal Link Dist (ft)		339	233	
Turn Bay Length (ft)				55
Base Capacity (vph)	623	5085	1180	570
Starvation Cap Reductn	110	0	40	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.91	0.23	0.62	0.38

Intersection Summary  
m. Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations			↑↑↑	↑↑↑	↑↑	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	0.95	1.00	0.95	1.00
Fr	1.00	1.00	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	900	5085	3539	900	3539	900
Flt Permitted	0.12	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	228	5085	3539	1583	3539	1583
Volume (vph)	0	0	451	1149	893	194
Peak-hour factor, PHF	0.92	0.92	0.98	0.98	0.95	0.89
Adj. Flow (vph)	0	0	468	1172	940	218
RTOR Reduction (vph)	0	0	0	0	0	42
Lane Group Flow (vph)	0	0	468	1172	940	176

Turn Type	pm	pt	Perm
Protected Phases	1	6	2
Permitted Phases	6	120.0	40.0
Actuated Green, G (s)	116.0	120.0	40.0
Effective Green, g (s)	116.0	120.0	40.0
Actuated g/C Ratio	0.97	1.00	0.33
Clearance Time (s)	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0
Lane Grp Cap (vph)	624	5085	1180
v/s Ratio Prot	0.45	0.23	0.27
v/c Ratio Perm	0.28	0.75	0.33
v/c Ratio	0.75	0.23	0.80
Uniform Delay, d1	9.3	0.0	36.3
Progression Factor	1.58	1.00	0.71
Incremental Delay, d2	4.2	0.1	5.3
Delay (s)	19.0	0.1	31.0
Level of Service	B	A	C
Approach Delay (s)	0.0	5.5	28.8
Approach LOS	A	A	C

Intersection Summary	
HCM Average Control Delay	15.1
HCM Volume to Capacity ratio	0.74
Actuated Cycle Length (s)	120.0
Intersection Capacity Utilization	57.6%
Analysis Period (min)	15
c Critical Lane Group	

Intersection Summary	
HCM Level of Service	B
Sum of lost time (s)	4.0
ICU Level of Service	B

# EXHIBIT 3

Lanes, Volumes, Timings  
5. I-285 Eastbound Off-Ramp & Glenridge Dr

	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	565	934	1190	959
Act Effct Green (s)	40.8	120.0	71.2	71.2
Actuated g/C Ratio	0.34	1.00	0.59	0.59
v/c Ratio	0.94	0.34	0.39	0.46
Control Delay	62.0	0.3	7.2	8.2
Queue Delay	0.0	0.0	0.0	0.2
Total Delay	62.0	0.3	7.2	8.4
LOS	E	A	A	A
Approach Delay	23.6	A	7.2	8.4
Approach LOS	C	A	A	A
Queue Length 50th (ft)	424	0	104	110
Queue Length 95th (ft)	443	0	m183	295
Internal Link Dist (ft)	644		961	339
Turn Bay Length (ft)				
Base Capacity (vph)	915	2787	3019	2101
Starvation Cap Reductn	0	0	0	381
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.62	0.34	0.39	0.56

Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 94 (78%), Referenced to phase 2:SBT and 6:NBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.94  
 Intersection Signal Delay: 14.3  
 Intersection Capacity Utilization 57.6%  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
5. I-285 Eastbound Off-Ramp & Glenridge Dr

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T	T	T	T	T	T
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.88	0.91	0.95	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1770	2787	5085	3539		
Flt Permitted	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	1770	2787	5085	3539		
Volume (vph)	480	831	0	1083	882	0
Peak-hour factor, PHF	0.85	0.89	0.92	0.91	0.92	0.88
Adj. Flow (vph)	565	934	0	1190	959	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	565	934	0	1190	959	0
Turn Type	Free	Free	Free	6	2	2
Protected Phases	8					
Permitted Phases	Free	Free				
Actuated Green, G (s)	40.8	120.0		71.2	71.2	
Effective Green, g (s)	40.8	120.0		71.2	71.2	
Actuated g/C Ratio	0.34	1.00		0.59	0.59	
Clearance Time (s)	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	602	2787		3017	2100	
v/s Ratio Prot	0.32			0.23	0.27	
v/c Ratio Perm	0.94	0.34		0.39	0.46	
Uniform Delay, d1	38.4	0.0		13.0	13.6	
Progression Factor	1.00	1.00		0.49	0.50	
Incremental Delay, d2	22.4	0.3		0.3	0.7	
Delay (s)	60.8	0.3		6.6	7.5	
Level of Service	E	A		A	A	
Approach Delay (s)	23.1			6.6	7.5	
Approach LOS	C			A	A	

Intersection Summary

HCM Average Control Delay: 13.6 HCM Level of Service: B  
 HCM Volume to Capacity ratio: 0.63  
 Actuated Cycle Length (s): 120.0 Sum of lost time (s): 8.0  
 Intersection Capacity Utilization: 57.6% ICU Level of Service: B  
 Analysis Period (min): 15  
 c. Critical Lane Group

# EXHIBIT 3

## HCM Signalized Intersection Capacity Analysis 6: Johnson Ferry Rd & Glenridge Connector

## Lanes, Volumes, Timings 6: Johnson Ferry Rd & Glenridge Connector

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.95	0.95
Lane Util. Factor	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	0.99
Flt Protected	0.95	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	1583	1770	1863	1583	1770	5085	1583	3433	3491	3491
Flt Permitted	0.20	1.00	1.00	0.40	1.00	0.40	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	380	3539	1583	753	1863	1583	1770	5085	1583	3433	3491	3491
Volume (vph)	356	599	548	59	218	341	363	361	179	885	531	46
Peak-hour factor, PHF	0.91	0.92	0.89	0.80	0.93	0.85	0.95	0.84	0.90	0.92	0.92	0.81
Adj. Flow (vph)	391	651	616	74	234	401	382	430	199	962	577	57
RTOR Reduction (vph)	0	0	365	0	0	53	0	0	125	0	6	0
Lane Group Flow (vph)	391	651	231	74	234	348	382	430	74	962	628	0
Turn Type	pm+pt	Perm	pm+pt	pm+ov	Prot	Perm	Prot	Perm	Prot	Perm	Prot	Prot
Protected Phases	3	8	8	7	4	5	1	6	5	6	5	2
Permitted Phases	8	8	4	4	4	4	4	6	6	6	6	2
Actuated Green, G (s)	47.7	37.4	37.4	25.0	18.7	56.7	28.5	22.3	22.3	38.0	31.8	31.8
Effective Green, g (s)	47.7	37.4	37.4	25.0	18.7	56.7	28.5	22.3	22.3	38.0	31.8	31.8
Actuated g/C Ratio	0.40	0.31	0.21	0.16	0.47	0.24	0.19	0.19	0.19	0.32	0.26	0.26
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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)	441	1103	493	210	290	748	420	945	294	1087	925	925
v/s Ratio Prot	c0.18	0.18	0.15	0.02	0.13	0.15	c0.22	0.08	0.05	c0.28	0.18	0.18
v/s Ratio Perm	c0.17	0.15	0.05	0.07	0.07	0.07	0.07	0.05	0.05	0.05	0.05	0.05
v/c Ratio	0.89	0.59	0.47	0.35	0.81	0.46	0.91	0.46	0.25	0.89	0.68	0.68
Uniform Delay, d1	29.9	34.8	33.3	39.2	48.9	21.4	44.5	43.4	41.7	38.9	39.5	39.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.80	0.80
Incremental Delay, d2	18.8	0.9	0.7	1.0	15.0	0.5	23.1	1.6	2.0	8.3	3.8	3.8
Delay (s)	48.7	35.7	34.0	40.3	63.9	21.9	67.6	45.0	43.7	39.5	35.5	35.5
Level of Service	D	D	C	D	E	C	E	D	D	D	D	D
Approach Delay (s)	38.1	38.1	38.1	37.7	37.7	37.7	37.7	53.3	53.3	37.9	37.9	37.9
Approach LOS	D	D	D	D	D	D	D	D	D	D	D	D

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	391	651	616	74	234	401	382	430	199	962	634	634
Act Effct Green (s)	46.9	37.4	37.4	25.4	17.9	55.9	28.5	23.1	23.1	38.0	32.6	32.6
Actuated g/C Ratio	0.39	0.31	0.31	0.21	0.15	0.47	0.24	0.19	0.19	0.32	0.27	0.27
v/c Ratio	0.89	0.59	0.70	0.33	0.84	0.51	0.91	0.44	0.46	0.89	0.66	0.66
Control Delay	52.6	37.4	37.4	9.2	28.5	75.3	10.5	70.6	45.3	41.8	35.9	35.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.6	37.4	37.4	9.2	28.5	75.3	10.5	70.6	45.3	41.8	35.9	35.9
LOS	D	D	A	C	E	B	E	D	B	D	D	D
Approach Delay	30.5	30.5	30.5	33.8	33.8	33.8	49.1	49.1	39.4	39.4	39.4	39.4
Approach LOS	C	C	C	C	C	C	D	D	D	D	D	D
Queue Length 50th (ft)	223	221	31	34	176	74	281	112	30	364	243	243
Queue Length 95th (ft)	#392	283	145	58	#302	109	#441	137	103	#477	314	314
Internal Link Dist (ft)	418	418	418	450	450	450	677	677	240	405	961	961
Turn Bay Length (ft)	275	230	205	205	205	375	375	429	1087	954	954	954
Base Capacity (vph)	464	1124	884	230	297	791	457	978	429	1087	954	954
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.58	0.70	0.32	0.79	0.51	0.84	0.44	0.46	0.89	0.66	0.66

**Intersection Summary**

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 12 (10%), Referenced to phase 2.SBT and 6.NBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.91  
 Intersection Signal Delay: 37.6  
 Intersection Capacity Utilization 80.8%  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

**Intersection Summary**

Intersection LOS: D  
 ICU Level of Service D

**Intersection Summary**

HCM Average Control Delay	41.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.87	Sum of lost time (s)	8.0
Actuated Cycle Length (s)	120.0	ICU Level of Service	D
Intersection Capacity Utilization	80.8%		
Analysis Period (min)	15		

c Critical Lane Group

**Intersection Summary**

HCM Average Control Delay	41.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.87	Sum of lost time (s)	8.0
Actuated Cycle Length (s)	120.0	ICU Level of Service	D
Intersection Capacity Utilization	80.8%		
Analysis Period (min)	15		

c Critical Lane Group

# **EXHIBIT 3**

## **Base PM Intersection Analysis**

**EXHIBIT 3**

**Base 2012 PM**

# EXHIBIT 3

## HCM Signalized Intersection Capacity Analysis

1: Hammond Dr & Glenridge Dr

## Queues

1: Hammond Dr & Glenridge Dr

Base PM  
3/8/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Lane Group Flow (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	0.96	1.00	0.97	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.85
Lane Util. Factor	1.00	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.85
Flt Protected	0.95	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.85
Satd. Flow (prot)	1770	3411	1770	3433	1777	1770	3539	1583	1770	3539	1583	1583
Flt Permitted	0.10	1.00	0.95	0.95	1.00	1.00	0.26	1.00	1.00	0.25	1.00	1.00
Satd. Flow (perm)	184	3411	3433	1777	1777	1770	484	3539	1583	466	3539	1583
Volume (vph)	19	354	95	749	601	230	198	558	399	97	300	46
Peak-hour factor, PHF	0.79	0.94	0.79	0.91	0.84	0.73	0.82	0.90	0.94	0.76	0.94	0.69
Adj. Flow (vph)	24	377	120	823	715	315	241	620	424	128	319	67
RTOR Reduction (vph)	0	24	0	0	12	0	0	0	0	117	0	36
Lane Group Flow (vph)	24	473	0	823	1018	0	241	620	307	128	319	31
Turn Type	pm+pt	pm+pt	Prot	pm+pt	Perm							
Protected Phases	1	6	5	2	7	4	4	3	8	3	8	8
Permitted Phases	6	44.5	40.6	33.4	70.1	34.0	22.0	22.0	24.0	16.0	16.0	16.0
Actuated Green, G (s)	44.5	40.6	33.4	70.1	34.0	22.0	22.0	24.0	16.0	16.0	16.0	16.0
Effective Green, g (s)	44.5	40.6	33.4	70.1	34.0	22.0	22.0	24.0	16.0	16.0	16.0	16.0
Actuated g/C Ratio	0.37	0.34	0.28	0.58	0.28	0.18	0.18	0.20	0.13	0.13	0.13	0.13
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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)	120	1154	956	1038	287	649	280	180	472	211	211	211
v/s Ratio Prot	0.01	0.14	c0.24	c0.57	c0.10	0.18	c0.19	0.05	0.09	0.02	0.02	0.02
v/s Ratio Perm	0.07	0.20	0.41	0.86	0.98	0.84	0.96	1.06	0.71	0.68	0.15	0.15
Uniform Delay, d1	28.8	30.5	41.1	24.3	36.3	48.5	49.0	42.0	49.5	46.0	46.0	46.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	0.80	0.86	0.77	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	1.1	8.0	23.7	18.1	23.7	67.9	12.4	3.8	0.3	0.3	0.3
Delay (s)	29.6	31.6	49.1	47.9	47.0	65.3	105.6	54.5	53.3	46.3	46.3	46.3
Level of Service	C	C	D	D	D	D	E	F	D	D	D	D
Approach Delay (s)	31.5	31.5	48.5	48.5	48.5	48.5	75.1	52.7	52.7	52.7	52.7	52.7
Approach LOS	C	C	D	D	D	D	E	E	E	E	E	E

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	24	497	823	1030	241	620	424	620	424	128	319	67
Act Effct Green (s)	46.7	40.6	33.4	71.7	34.0	22.0	22.0	24.0	16.0	16.0	16.0	16.0
Actualized g/C Ratio	0.39	0.34	0.28	0.60	0.28	0.18	0.18	0.20	0.13	0.13	0.13	0.13
v/c Ratio	0.15	0.42	0.86	0.96	0.84	0.96	1.04	0.71	0.67	0.27	0.27	0.27
Control Delay	15.7	30.5	50.8	43.2	54.0	67.3	80.8	57.2	57.4	25.3	25.3	25.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.7	30.5	50.8	43.2	54.0	67.3	80.8	57.2	57.4	25.3	25.3	25.3
LOS	B	C	D	D	D	D	E	F	E	E	E	C
Approach Delay	29.8	29.8	46.6	46.6	46.6	69.3	69.3	53.2	53.2	53.2	53.2	53.2
Approach LOS	C	C	D	D	D	E	E	D	D	D	D	D
Queue Length 50th (ft)	6	144	310	~780	158	254	~258	77	125	18	18	18
Queue Length 95th (ft)	14	205	369	#867	#195	#372	#464	108	176	40	40	40
Internal Link Dist (ft)	667	667	649	649	649	1719	1719	675	675	675	675	675
Turn Bay Length (ft)	220	260	260	260	150	150	115	115	115	50	50	50
Base Capacity (vph)	188	1178	1087	1074	287	649	407	180	473	247	247	247
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.42	0.76	0.96	0.84	0.96	1.04	0.71	0.67	0.27	0.27	0.27

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 89 (74%), Referenced to phase 2:WBT and 6:EBTL, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.04

Intersection Signal Delay: 52.3

Intersection Capacity Utilization 83.1%

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Intersection Summary

HCM Average Control Delay: 55.1

HCM Level of Service: E

HCM Volume to Capacity ratio: 0.97

Actuated Cycle Length (s): 120.0

Sum of lost time (s): 12.0

Intersection Capacity Utilization: 83.1%

ICU Level of Service: E

Analysis Period (min): 15

c Critical Lane Group

Baseline  
A & R Engineering Inc.

Baseline  
A & R Engineering Inc.

Synchro 6 Report

	WBL	WBT	NBT	SBL	SBT
Lane Group	56	55	1188	29	1190
Lane Group Flow (vph)	9.6	9.6	105.2	105.2	105.2
Act Effct Green (s)	0.08	0.08	0.88	0.88	0.88
Actuated g/C Ratio	0.50	0.26	0.40	0.10	0.38
v/c Ratio	67.0	5.4	1.1	0.6	0.4
Control Delay	0.0	0.0	0.0	0.0	0.0
Queue Delay	67.0	5.4	1.1	0.6	0.4
Total Delay	E	A	A	A	A
LOS	E	A	A	A	A
Approach Delay	36.4	1.1			0.4
Approach LOS	D	A			A
Queue Length 50th (ft)	42	0	26	0	0
Queue Length 95th (ft)	45	12	30	m0	0
Internal Link Dist (ft)	313	500			1719
Turn Bay Length (ft)	150				125
Base Capacity (vph)	447	565	2948	280	3101
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.13	0.10	0.40	0.10	0.38

Intersection Summary  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 90 (75%), Referenced to phase 2, SBTTL and 6, NBTTL, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.50  
 Intersection Signal Delay: 2.3  
 Intersection Capacity Utilization 42.1%  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	4	4	4	4	4	4	4	4	4	4	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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
Flt Protected	0.95	0.85	0.95	1.00	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	1583	1770	1583	3520	1770	1583	1770	1583	3539
Flt Permitted	0.23	1.00	0.95	0.95	1.00	0.23	1.00	0.95	1.00	0.23	1.00	0.95
Satd. Flow (perm)	1410	1583	1410	1583	1410	1583	3360	1410	1583	1410	1583	3539
Volume (vph)	0	0	0	28	0	46	1	1098	33	25	1154	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.50	0.92	0.83	0.92	0.96	0.77	0.86	0.97	0.92
Adj. Flow (vph)	0	0	0	56	0	55	1	1144	43	29	1190	0
RTOR Reduction (vph)	0	0	0	0	51	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	0	0	56	4	0	0	1187	0	29	1190	0
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm						
Protected Phases	8	8	8	4	4	4	6	6	6	6	2	2
Permitted Phases	8	8	8	4	4	4	6	6	6	6	2	2
Actuated Green, G (s)	8.4	8.4	8.4	8.4	8.4	8.4	103.6	103.6	103.6	103.6	103.6	103.6
Effective Green, g (s)	8.4	8.4	8.4	8.4	8.4	8.4	103.6	103.6	103.6	103.6	103.6	103.6
Actuated g/C Ratio	0.07	0.07	0.07	0.07	0.07	0.07	0.86	0.86	0.86	0.86	0.86	0.86
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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)	99	111	99	111	99	111	2801	2801	2801	2801	364	3055
v/s Ratio Prot	0.00	0.00	0.00	0.00	0.00	0.00	c0.35	c0.35	c0.35	c0.35	0.07	0.34
v/c Ratio	0.57	0.03	0.41	0.08	0.08	0.39	0.41	0.08	0.08	0.08	0.39	0.39
Uniform Delay, d1	54.0	52.0	54.0	52.0	54.0	52.0	1.7	1.2	1.2	1.2	1.7	1.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.34	0.34	0.34	0.34	0.05	0.11
Incremental Delay, d2	7.2	0.1	7.2	0.1	7.2	0.1	0.4	0.3	0.2	0.3	0.2	0.2
Delay (s)	61.2	52.1	61.2	52.1	61.2	52.1	1.0	1.0	1.0	1.0	0.3	0.4
Level of Service	E	D	E	D	E	D	A	A	A	A	A	A
Approach Delay (s)	0.0	0.0	0.0	56.7	0.0	0.0	1.0	1.0	1.0	1.0	0.4	0.4
Approach LOS	A	A	A	E	A	A	A	A	A	A	A	A

Intersection Summary  
 HCM Average Control Delay 3.2 HCM Level of Service A  
 HCM Volume to Capacity ratio 0.42  
 Actuated Cycle Length (s) 120.0 Sum of lost time (s) 8.0  
 Intersection Capacity Utilization 42.1% ICU Level of Service A  
 Analysis Period (min) 15  
 c Critical Lane Group

# EXHIBIT 3

# EXHIBIT 3

## HCM Signalized Intersection Capacity Analysis 3: Glenforest Rd & Glenridge Dr

## Lanes, Volumes, Timings 3: Glenforest Rd & Glenridge Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Configurations	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95
Lane Util. Factor	0.85	1.00	1.00	0.85	1.00	0.85	1.00	1.00	0.85	1.00	0.85
Flt Protected	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95
Satd. Flow (prot)	1583	1681	1691	1583	1770	1583	1770	1583	1770	1770	1583
Flt Permitted	1.00	0.76	0.74	1.00	0.15	1.00	0.15	1.00	0.23	1.00	0.23
Satd. Flow (perm)	1583	1340	1310	1583	271	1583	271	1583	3539	1583	3535
Volume (vph)	0	54	155	2	53	41	1045	12	13	1174	6
Peak-hour factor, PHF	0.62	0.63	0.71	0.25	0.44	0.75	0.96	0.91	0.61	0.83	0.50
Adj. Flow (vph)	0	86	218	8	120	55	1089	13	21	1414	12
RTOR Reduction (vph)	0	0	75	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	11	109	117	120	55	1089	12	21	1426
Turn Type	Perm	Perm	Perm	Free	Free	Free	Perm	Perm	Perm	pm+pt	pm+pt
Protected Phases	8	8	4	4	4	4	6	6	6	2	2
Permitted Phases	8	8	4	4	4	4	6	6	6	2	2
Actuated Green, G (s)	15.5	15.5	15.5	15.5	120.0	96.3	90.2	90.2	90.2	86.7	86.4
Effective Green, g (s)	15.5	15.5	15.5	15.5	120.0	96.3	90.2	90.2	90.2	86.7	86.4
Actuated g/C Ratio	0.13	0.13	0.13	0.13	1.00	0.80	0.75	0.75	0.75	0.74	0.72
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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
Lane Grp Cap (vph)	204	173	169	1583	294	2660	1190	345	2545	0.00	60.40
v/s Ratio Prot	0.01	0.08	0.09	0.08	0.14	0.01	0.31	0.01	0.01	0.06	0.56
v/s Ratio Perm	0.05	0.63	0.69	0.08	0.19	0.41	0.01	0.06	0.06	0.56	0.56
Uniform Delay, d1	45.8	49.5	50.0	0.0	9.5	5.3	3.7	7.4	7.9	0.23	0.18
Progression Factor	1.00	1.00	1.00	1.00	0.68	0.48	0.30	0.23	0.18	0.9	0.9
Incremental Delay, d2	0.1	7.3	11.6	0.1	0.3	0.5	0.0	0.1	0.1	1.8	2.3
Delay (s)	D	E	E	E	A	A	A	A	A	A	A
Level of Service	D	E	E	E	A	A	A	A	A	A	A
Approach Delay (s)	45.9	38.7	D	D	D	D	A	A	A	A	A
Approach LOS	D	D	D	D	D	D	A	A	A	A	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	86	109	117	120	55	1089	13	21	1426	21	1426
Act Effct Green (s)	15.5	15.5	15.5	120.0	96.0	92.6	92.6	94.4	88.6	94.4	88.6
Actuated g/C Ratio	0.13	0.13	0.13	1.00	0.80	0.77	0.77	0.79	0.74	0.79	0.74
v/c Ratio	0.21	0.63	0.69	0.08	0.27	0.40	0.01	0.06	0.54	0.06	0.54
Control Delay	1.2	64.6	69.6	0.1	7.6	3.2	1.2	1.2	2.2	1.2	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.1
Total Delay	1.2	64.6	69.6	0.1	7.6	3.3	1.2	1.2	2.3	1.2	2.3
LOS	A	E	E	E	A	A	A	A	A	A	A
Approach Delay	A	E	E	E	A	A	A	A	A	A	A
Approach LOS	D	D	D	D	D	D	A	A	A	A	A
Queue Length 50th (ft)	0	85	92	0	4	46	1	1	34	1	34
Queue Length 95th (ft)	0	108	37	0	11	116	3	2	68	2	68
Internal Link Dist (ft)	0	0	233	0	0	158	0	0	93	0	93
Turn Bay Length (ft)	150	150	295	150	55	2732	1223	466	2618	150	130
Base Capacity (vph)	534	302	295	1583	346	2732	1223	466	2618	150	130
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.36	0.40	0.08	0.16	0.52	0.01	0.05	0.58	0.01	0.05

**Intersection Summary**

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 88 (73%), Referenced to phase 2 SBT/L and 6 NBT/L, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.69  
 Intersection Signal Delay: 7.4  
 Intersection Capacity Utilization: 50.3%  
 Analysis Period (min): 15

**Intersection Summary**

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.69  
 Intersection Signal Delay: 7.4  
 Intersection Capacity Utilization: 50.3%  
 Analysis Period (min): 15

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations			←←←	←←←	←←←	←
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.95	1.00	0.85
Fit Protected	900	5085	3539	900		
Satd. Flow (prot)	0.13	1.00	1.00	1.00		
Fit Permitted	248	5085	3539	1583		
Volume (vph)	0	0	617	1074	776	579
Peak-hour factor, PHF	0.92	0.92	0.98	0.95	0.89	0.89
Adj. Flow (vph)	0	0	671	1096	817	651
RTOR Reduction (vph)	0	0	0	0	0	146
Lane Group Flow (vph)	0	0	671	1096	817	505
Turn Type			pn+pt			Perm
Protected Phases			1	6	2	
Permitted Phases			6		2	
Actuated Green, G (s)			116.0	120.0	38.0	38.0
Effective Green, g (s)			116.0	120.0	38.0	38.0
Actuated g/C Ratio			0.97	1.00	0.32	0.32
Clearance Time (s)			4.0	4.0	4.0	4.0
Vehicle Extension (s)			3.0	3.0	3.0	3.0
Lane Grp Cap (vph)			642	5085	1121	501
v/s Ratio Prot			c0.64	0.22	0.23	
v/s Ratio Perm			c0.37			0.32
v/c Ratio			1.05	0.22	0.73	1.01
Uniform Delay, d1			16.4	0.0	36.4	41.0
Progression Factor			1.21	1.00	0.58	0.40
Incremental Delay, d2			46.4	0.1	3.6	39.3
Delay (s)			66.2	0.1	24.7	55.6
Level of Service			E	A	C	E
Approach Delay (s)			0.0	25.2	38.4	
Approach LOS			A	C	D	

Intersection Summary

Item	Value	Unit
HCM Average Control Delay	31.2	sec
HCM Volume to Capacity ratio	1.04	
Actuated Cycle Length (s)	120.0	
Intersection Capacity Utilization	76.7%	
Analysis Period (min)	15	

c Critical Lane Group

# EXHIBIT 3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	671	1096	817	651		
v/c Ratio	1.05	0.22	0.73	1.01		
Control Delay	65.7	0.1	25.0	48.2		
Queue Delay	0.0	0.0	0.0	13.0		
Total Delay	65.7	0.1	25.0	61.2		
Queue Length 50th (ft)	~493	0	193	~88		
Queue Length 95th (ft)	#764	0	304	#478		
Internal Link Dist (ft)	339	233				
Turn Bay Length (ft)				55		
Base Capacity (vph)	642	5085	1121	647		
Starvation Cap Reductn	0	0	0	26		
Spillback Cap Reductn	0	0	0	0		
Storage Cap Reductn	0	0	0	0		
Reduced v/c Ratio	1.05	0.22	0.73	1.05		

Intersection Summary

- Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.

Lanes, Volumes, Timings  
5: I-285 Eastbound Off-Ramp & Glenridge Dr

	EBL	EBR	NBT	SBT
Lane Group	166	199	1665	823
Lane Group Flow (vph)	15.3	120.0	96.7	96.7
Act Effct Green (s)	0.13	1.00	0.81	0.81
Actuated g/C Ratio	0.74	0.07	0.41	0.29
v/c Ratio	69.1	0.1	2.9	1.1
Control Delay	0.0	0.0	0.0	0.0
Queue Delay	69.1	0.1	2.9	1.1
Total Delay	E	A	A	A
LOS	E	A	A	A
Approach Delay	31.5		2.9	1.1
Approach LOS	C		A	A
Queue Length 50th (ft)	126	0	81	8
Queue Length 95th (ft)	180	0	m98	31
Internal Link Dist (ft)	644		961	339
Turn Bay Length (ft)				
Base Capacity (vph)	634	2787	4099	2853
Starvation Cap Reductn	0	0	0	519
Spillback Cap Reductn	0	0	4	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.26	0.07	0.41	0.35

Intersection Summary  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 76 (63%), Referenced to phase 2:SBT and 6:NBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.74  
 Intersection Signal Delay: 6.0  
 Intersection Capacity Utilization 76.7%  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
5: I-285 Eastbound Off-Ramp & Glenridge Dr

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		FF		FFF	FF	FF
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.88	1.00	0.91	1.00	0.95
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1770	2787	5085	3539	5085	3539
Flt Permitted	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	1770	2787	5085	3539	5085	3539
Volume (vph)	141	177	0	1515	757	0
Peak-hour factor, PHF	0.85	0.89	0.92	0.91	0.92	0.88
Adj. Flow (vph)	166	199	0	1665	823	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	166	199	0	1665	823	0
Turn Type	Free					
Protected Phases	8		6	2		
Permitted Phases	Free					
Actuated Green, G (s)	15.3	120.0		96.7	96.7	
Effective Green, g (s)	15.3	120.0		96.7	96.7	
Actuated g/C Ratio	0.13	1.00		0.81	0.81	
Clearance Time (s)	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	226	2787		4098	2852	
v/s Ratio Prot	c0.09			c0.33	0.23	
v/c Ratio Perm		0.07				
v/c Ratio	0.73	0.07		0.41	0.29	
Uniform Delay, d1	50.4	0.0		3.4	2.9	
Progression Factor	1.00	1.00		0.74	0.26	
Incremental Delay, d2	11.7	0.0		0.2	0.2	
Delay (s)	62.1	0.0		2.7	1.0	
Level of Service	E	A		A	A	
Approach Delay (s)	28.3			2.7	1.0	
Approach LOS	C			A	A	

Intersection Summary  
 HCM Average Control Delay 5.5 HCM Level of Service A  
 HCM Volume to Capacity ratio 0.45  
 Actuated Cycle Length (s) 120.0 Sum of lost time (s) 8.0  
 Intersection Capacity Utilization 76.7% ICU Level of Service D  
 Analysis Period (min) 15  
 c Critical Lane Group

# EXHIBIT 3

# EXHIBIT 3

## Base PM 2/15/2010 HCM Signalized Intersection Capacity Analysis 6: Johnson Ferry Rd & Glenridge Connector

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Total Lost time (s)	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.95	0.98	
Lane Util. Factor	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	1.00	
Fit Protected	1770	3539	1583	1770	1863	1583	1770	5085	1583	3433	3462	3462	
Satd. Flow (prot)	0.13	1.00	1.00	0.56	1.00	0.56	1.00	0.95	1.00	0.95	1.00	0.95	
Fit Permitted	240	3539	1583	1041	1863	1583	1770	5085	1583	3433	3462	3462	
Satd. Flow (perm)	318	293	530	99	385	563	532	605	41	219	406	61	
Volume (vph)	0.91	0.92	0.89	0.80	0.93	0.85	0.95	0.84	0.90	0.92	0.92	0.81	
Peak-hour factor, PHF	349	318	586	124	414	662	560	720	46	238	441	75	
Adj. Flow (vph)	0	0	402	0	0	25	0	0	0	36	0	11	
RTOR Reduction (vph)	349	318	194	124	414	637	560	720	10	238	505	0	
Lane Group Flow (vph)	pm+pt	pm+pt	pm+pt	pm+pt	pm+ov	pm+ov	pm+ov	pm+ov	Prot	Prot	Prot	Prot	
Turn Type	3	8	8	7	4	5	1	6	6	5	2	2	
Protected Phases	8	8	8	4	4	4							
Permitted Phases	51.0	39.1	39.1	34.9	27.0	58.0	38.9	26.0	26.0	31.0	18.1	18.1	
Actuated Green, G (s)	51.0	39.1	39.1	34.9	27.0	58.0	38.9	26.0	26.0	31.0	18.1	18.1	
Effective Green, g (s)	0.42	0.33	0.33	0.29	0.22	0.48	0.32	0.22	0.22	0.26	0.15	0.15	
Actuated g/C Ratio	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Clearance Time (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	
Vehicle Extension (s)	357	1153	516	351	419	785	574	1102	343	887	522	522	
Lane Grp Cap (vph)	c0.16	0.09	0.12	0.08	0.22	0.21	c0.32	0.14	0.07	c0.15	0.07	c0.15	
v/s Ratio Prot	c0.25	0.12	0.08	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	
v/s Ratio Perm	0.98	0.28	0.38	0.35	0.99	0.83	0.98	0.65	0.03	0.27	0.97	0.97	
Uniform Delay, d1	35.4	30.0	31.1	32.4	46.3	26.8	40.1	42.9	37.0	35.5	50.7	50.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.94	0.67	0.67	
Incremental Delay, d2	41.2	0.1	0.5	0.6	40.4	7.7	31.1	3.0	0.2	0.2	31.7	31.7	
Delay (s)	76.6	30.1	31.5	33.1	86.7	34.5	71.2	45.9	37.2	19.3	65.8	65.8	
Level of Service	E	C	C	C	F	C	E	D	D	D	B	E	
Approach Delay (s)	43.6	D		52.4	D		56.3	E			51.1	D	
Approach LOS	D			D			E				D		
Intersection Summary													
HCM Average Control Delay	50.9											HCM Level of Service	D
HCM Volume to Capacity ratio	0.96												
Actuated Cycle Length (s)	120.0											Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.9%											ICU Level of Service	F
Analysis Period (min)	15												
c Critical Lane Group													

Baseline  
A & R Engineering Inc.  
Synchro 6 Report  
Page 12

## Base PM 2/15/2010 Lanes, Volumes, Timings 6: Johnson Ferry Rd & Glenridge Connector

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	349	318	596	124	414	662	560	720	46	238	518	518
Act Effct Green (s)	51.0	39.1	39.1	34.9	27.0	58.0	38.9	26.0	26.0	31.0	18.1	18.1
Actuated g/C Ratio	0.42	0.33	0.33	0.29	0.22	0.48	0.32	0.22	0.22	0.26	0.15	0.15
v/c Ratio	0.98	0.28	0.65	0.35	0.99	0.84	0.98	0.65	0.12	0.27	0.97	0.97
Control Delay	76.1	30.8	31.5	33.1	86.7	34.5	71.2	45.9	37.2	19.3	65.8	65.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.1	30.8	31.5	33.1	86.7	34.5	71.2	45.9	37.2	19.3	65.8	65.8
LOS	E	C	A	C	F	C	E	D	B	C	E	E
Approach Delay	43.6	D		52.4	D		56.2	D			51.9	D
Approach LOS	D			D			E				D	
Queue Length 50th (ft)	219	95	0	58	322	202	427	187	0	79	208	208
Queue Length 95th (ft)	#413	134	79	87	#528	262	#658	215	32	97	#323	#323
Internal Link Dist (ft)	418			450			677				961	961
Turn Bay Length (ft)	275			205			375			240	405	405
Base Capacity (vph)	357	1154	918	352	419	790	575	1102	379	887	532	532
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.28	0.65	0.35	0.99	0.84	0.97	0.65	0.12	0.27	0.97	0.97
Intersection Summary												
Cycle Length: 120												
Offset: 19 (16%), Referenced to phase 2:SBT and 6:NBT, Start of Green												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.99												
Intersection Signal Delay: 46.0												
Intersection Capacity Utilization 93.9%												
ICU Level of Service F												
Analysis Period (min) 15												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												

Baseline  
A & R Engineering Inc.  
Synchro 6 Report  
Page 11

# **EXHIBIT 3**

## **Future AM Intersection Analysis**

# EXHIBIT 3

Future 2012 AM

# EXHIBIT 3

## HCM Signalized Intersection Capacity Analysis

1: Hammond Dr & Glenridge Dr

## Queues

1: Hammond Dr & Glenridge Dr

Future AM  
6/7/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	1.00	0.96	1.00	0.95	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.96	1.00	0.95	1.00	0.85	1.00	0.95	1.00
Satd. Flow (prot)	1770	3374	1770	3433	1793	1770	3539	1583	1770	3539	1583	1583
Flt Permitted	0.38	1.00	0.95	1.00	0.96	1.00	0.29	1.00	0.10	0.59	1.00	1.00
Satd. Flow (perm)	700	3374	3433	1793	3433	1793	539	3539	1583	1095	3539	1583
Volume (vph)	14	804	306	481	219	63	98	189	760	250	577	10
Peak-hour factor, PHF	0.79	0.94	0.79	0.91	0.84	0.73	0.82	0.90	0.95	0.76	0.94	0.69
Adj. Flow (vph)	18	855	387	529	261	86	120	210	800	329	614	14
RTOR Reduction (vph)	0	45	0	0	9	0	0	0	181	0	0	4
Lane Group Flow (vph)	18	1197	0	529	338	0	120	210	619	329	614	10
Turn Type	pm+pt	pm+pt	Prot	pm+pt								
Protected Phases	1	6	5	2	7	4	3	8	4	8	8	8
Permitted Phases	6	40.8	37.6	18.4	52.8	47.1	40.0	40.0	48.9	40.9	40.9	40.9
Actuated Green, G (s)	40.8	37.6	18.4	52.8	47.1	40.0	40.0	40.0	48.9	40.9	40.9	40.9
Effective Green, g (s)	40.8	37.6	18.4	52.8	47.1	40.0	40.0	40.0	48.9	40.9	40.9	40.9
Actuated g/C Ratio	0.34	0.31	0.15	0.44	0.39	0.33	0.33	0.41	0.34	0.34	0.34	0.34
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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)	267	1057	526	789	284	1180	528	491	1206	540	540	540
v/s Ratio Prot	0.00	0.35	0.15	0.19	0.02	0.06	0.04	0.06	0.04	0.17	0.01	0.01
v/s Ratio Perm	0.02	1.13	1.01	0.43	0.42	0.18	1.17	0.67	0.51	0.02	0.02	0.02
v/c Ratio	0.07	1.13	0.07	0.43	0.42	0.18	1.17	0.67	0.51	0.02	0.02	0.02
Uniform Delay, d1	35.3	41.2	50.8	23.2	24.5	28.3	40.0	27.7	31.5	26.2	26.2	26.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	0.25	0.25	0.57	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	71.8	40.7	1.7	1.0	0.1	95.2	3.6	0.3	0.0	0.0	0.0
Delay (s)	35.4	113.0	91.5	24.9	7.2	7.1	117.9	31.3	31.9	26.3	26.3	26.3
Level of Service	D	F	F	C	A	A	F	C	C	C	C	C
Approach Delay (s)	111.9	F	F	65.1	E	F	85.5	F	F	F	F	F
Approach LOS	F	F	F	E	E	F	F	F	F	F	F	F

Queue	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	18	1242	529	347	120	210	800	329	614	14	14	14
Lane Group Flow (vph)	46.5	40.0	16.0	55.2	47.1	40.0	40.0	48.9	40.9	40.9	40.9	40.9
Act Effct Green (s)	0.39	0.33	0.13	0.46	0.39	0.33	0.33	0.41	0.34	0.34	0.34	0.34
Actuated g/C Ratio	0.05	1.06	1.16	0.42	0.45	0.18	1.13	0.65	0.51	0.03	0.03	0.03
v/c Ratio	17.0	81.8	138.0	23.7	10.5	7.4	92.0	32.9	33.3	19.8	19.8	19.8
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	17.0	81.8	138.0	23.7	10.5	7.4	92.0	32.9	33.3	19.8	19.8	19.8
Total Delay	B	F	F	C	B	A	F	C	C	C	C	B
LOS	B	F	F	C	B	A	F	C	C	C	C	B
Approach Delay	80.9	F	F	92.7	67.6	67.6	33.0	C	C	C	C	C
Approach LOS	F	F	F	E	E	E	E	C	C	C	C	C
Queue Length 50th (ft)	7	-540	-249	153	10	17	-576	174	197	4	4	4
Queue Length 95th (ft)	17	#680	#359	251	15	21	#820	204	256	14	14	14
Internal Link Dist (ft)	667	667	649	649	1719	1719	50	115	50	50	50	50
Turn Bay Length (ft)	220	260	260	260	150	150	50	115	50	50	50	50
Base Capacity (vph)	348	1168	458	834	297	1180	709	509	1207	544	544	544
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	1.06	1.16	0.42	0.40	0.18	1.13	0.65	0.51	0.03	0.03	0.03

Intersection Summary	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Cycle Length: 120												
Actual Cycle Length: 120												
Offset: 90 (75%), Referenced to phase 2:WBT and 6:EBTL, Start of Green												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 1.16												
Intersection Signal Delay: 68.9												
Intersection Capacity Utilization 102.9%												
Analysis Period (min) 15												
~ Volume exceeds capacity, queue is theoretically infinite.												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												
Queue shown is maximum after two cycles.												

Intersection Summary	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
HCM Average Control Delay	76.9											
HCM Volume to Capacity ratio	1.09											
Actuated Cycle Length (s)	120.0											
Intersection Capacity Utilization	102.9%											
Analysis Period (min)	15											
c Critical Lane Group												

Baseline  
A & R Engineering Inc.

Baseline  
A & R Engineering Inc.

Synchro 6 Report  
Page 2

Synchro 6 Report  
Page 1

# EXHIBIT 3

## HCM Signalized Intersection Capacity Analysis 2: Pvt. Home Drwy & Glenridge Dr

## Queues 2: Pvt. Home Drwy & Glenridge Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	4	4	4	4	4	4	4	4	4	4	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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	0.86	1.00	1.00	0.85	1.00	1.00	0.99	1.00	0.95	1.00	0.95	1.00
Flt Protected	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1611	1770	1583	3511	1770	1583	3511	1770	1583	3511	1770	1583
Flt Permitted	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	1611	1693	1583	3511	1693	1583	3511	1693	1583	3511	1693	1583
Volume (vph)	0	0	1	7	0	18	0	1095	49	43	1291	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.50	0.92	0.83	0.92	0.96	0.77	0.86	0.97	0.92
Adj. Flow (vph)	0	0	1	14	0	22	0	1141	64	50	1331	0
RTOR Reduction (vph)	0	1	0	0	21	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	0	0	14	1	0	0	1204	0	50	1331	0
Turn Type	Perm	Perm	Perm	Perm	Perm	Perm						
Protected Phases	8	8	8	4	4	4	6	6	6	6	2	2
Permitted Phases	8	8	8	4	4	4	6	6	6	6	2	2
Actuated Green, G (s)	4.4	4.4	4.4	4.4	4.4	4.4	107.6	107.6	107.6	107.6	107.6	107.6
Effective Green, g (s)	4.4	4.4	4.4	4.4	4.4	4.4	107.6	107.6	107.6	107.6	107.6	107.6
Actuated g/C Ratio	0.04	0.04	0.04	0.04	0.04	0.04	0.90	0.90	0.90	0.90	0.90	0.90
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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)	59	62	58	3148	62	58	3148	380	3173	380	3173	380
v/s Ratio Prot	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.34	0.34	0.34	0.34	0.34
v/s Ratio Perm	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.12	0.12	0.12	0.12	0.12
v/c Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.38	0.38	0.38	0.38	0.38	0.38
Uniform Delay, d1	55.7	56.1	55.7	56.1	55.7	56.1	1.0	1.0	1.0	1.0	1.0	1.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.16	0.16	0.16	0.16	0.16	0.16
Incremental Delay, d2	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3
Delay (s)	55.7	56.1	55.7	56.1	55.7	56.1	1.1	1.1	1.1	1.1	1.1	1.1
Level of Service	E	E	E	E	E	E	A	A	A	A	A	A
Approach Delay (s)	55.7	56.1	55.7	56.1	55.7	56.1	0.4	0.4	0.4	0.4	0.4	0.4
Approach LOS	E	E	E	E	E	E	A	A	A	A	A	A

Lane Group	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	1	14	22	1205	50	1331
Act Effct Green (s)	6.6	6.7	110.8	110.8	110.8	110.8
Actuated g/C Ratio	0.06	0.06	0.06	0.92	0.92	0.92
v/c Ratio	0.01	0.18	0.12	0.37	0.17	0.41
Control Delay	0.0	58.7	1.4	0.4	1.9	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.0	58.7	1.4	0.4	1.9	1.3
LOS	A	E	A	A	A	A
Approach Delay	0.0	23.7	0.4	1.3	0.4	1.3
Approach LOS	A	C	A	A	A	A
Queue Length 50th (ft)	0	11	0	10	2	31
Queue Length 95th (ft)	0	18	0	13	m8	m88
Internal Link Dist (ft)	222	313	303			1719
Turn Bay Length (ft)	150					125
Base Capacity (vph)	540	435	555	3241	293	3266
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.03	0.04	0.37	0.17	0.41

Intersection Summary  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 20 (17%), Referenced to phase 2:SBTL and 6:NBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.41  
 Intersection Signal Delay: 1.2  
 Intersection Capacity Utilization: 48.2%  
 Analysis Period (min): 15  
 m Volume for 95th percentile queue is metered by upstream signal.

Intersection Summary  
 HCM Average Control Delay: 1.6  
 HCM Volume to Capacity ratio: 0.41  
 Actuated Cycle Length (s): 120.0  
 Intersection Capacity Utilization: 48.2%  
 Analysis Period (min): 15  
 c Critical Lane Group

# EXHIBIT 3

## HCM Signalized Intersection Capacity Analysis

### 3: Glenforest Rd & Glenridge Dr

## Queues

### 3: Glenforest Rd & Glenridge Dr

Future AM  
6/7/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.85	1.00	1.00
Lane Util. Factor	1.00	0.85	1.00	1.00	0.85	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Flt Protected	0.96	1.00	0.95	0.95	1.00	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1792	1583	1681	1583	1770	1583	1770	3539	1583	1770	3535	3535
Flt Permitted	0.80	1.00	0.75	1.00	0.75	1.00	0.17	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	1495	1583	1324	1324	1583	323	3539	1583	193	3535	3535	3535
Volume (vph)	7	2	73	238	0	80	10	1094	451	320	968	5
Peak-hour factor, PHF	0.62	0.62	0.73	0.71	0.25	0.44	0.75	0.96	0.91	0.61	0.83	0.50
Adj. Flow (vph)	11	3	116	335	0	182	13	1140	496	525	1166	10
RTOR Reduction (vph)	0	0	98	0	0	0	0	0	95	0	0	0
Lane Group Flow (vph)	0	14	18	168	167	182	13	1140	401	525	1176	0
Turn Type	Perm	Perm	Perm	Perm	Free	pm-pt	1	6	pm-pt	5	2	
Protected Phases	8	8	4	4	Free	6	6	6	2	2		
Permitted Phases	8	8	4	4	Free	6	6	6	2	2		
Actuated Green, G (s)	18.8	18.8	18.8	18.8	18.8	120.0	52.7	49.5	49.5	93.2	86.0	
Effective Green, g (s)	18.8	18.8	18.8	18.8	120.0	52.7	49.5	49.5	93.2	86.0		
Actuated g/C Ratio	0.16	0.16	0.16	0.16	1.00	0.44	0.41	0.41	0.41	0.78	0.72	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
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	
Lane Grp Cap (vph)	234	248	207	207	1583	180	1460	653	672	2533		
v/s Ratio Prot	0.01	0.01	c0.13	0.13	0.11	0.03	0.25	c0.26	c0.35	0.33		
v/s Ratio Perm	0.06	0.07	0.81	0.81	0.11	0.07	0.78	0.61	0.78	0.46		
v/c Ratio	43.1	43.2	48.9	48.8	0.0	19.8	30.5	27.7	26.0	7.2		
Uniform Delay, d1	1.00	1.00	1.00	1.00	1.00	0.62	0.65	0.46	0.87	1.31		
Progression Factor	0.1	0.1	20.9	20.1	0.1	0.2	4.1	4.1	5.7	0.6		
Incremental Delay, d2	43.2	43.3	69.8	68.9	0.1	12.5	23.9	16.9	28.4	10.0		
Delay (s)	D	D	E	E	A	B	C	B	C	B		
Level of Service	D	D	E	E	A	B	C	B	C	B		
Approach Delay (s)	43.3		45.0		D			21.7		15.7		
Approach LOS	D		D		D			C		B		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	14	116	168	167	182	13	1140	496	525	1176		
Lane Group Flow (vph)	18.8	18.8	18.8	18.8	120.0	58.4	51.9	51.9	93.2	86.4		
Act Effct Green (s)	0.16	0.16	0.16	0.16	1.00	0.49	0.43	0.43	0.78	0.74		
Actuated g/C Ratio	0.06	0.34	0.81	0.80	0.11	0.06	0.75	0.64	0.84	0.45		
v/c Ratio	41.7	10.3	76.4	75.8	0.1	6.5	23.1	12.8	40.8	10.4		
Control Delay	0.0	0.1	0.7	0.7	0.0	0.0	0.5	0.2	0.0	0.0		
Queue Delay	41.7	10.4	77.1	76.5	0.1	6.5	23.6	13.0	40.8	10.4		
Total Delay	D	B	E	E	A	A	C	B	D	B		
LOS	D	B	E	E	A	A	C	B	D	B		
Approach Delay	13.7		49.8		D		20.3		19.7			
Approach LOS	B		D		D		C		B			
Queue Length 50th (ft)	9	0	131	130	0	2	357	86	225	155		
Queue Length 95th (ft)	20	12	160	50	0	4	336	134	190	265		
Internal Link Dist (ft)	582			233			225			93		
Turn Bay Length (ft)	150	150		150	55		75	130				
Base Capacity (vph)	278	385	243	243	1583	235	1530	775	664	2605		
Starvation Cap Reductn	0	0	0	0	0	0	108	29	0	0		
Spillback Cap Reductn	0	12	8	8	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.05	0.31	0.71	0.71	0.11	0.06	0.80	0.66	0.79	0.46		

Intersection Summary  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 110 (92%), Referenced to phase 2 SBT, and 6 NBTL, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.84  
 Intersection Signal Delay: 23.7  
 Intersection Capacity Utilization 71.2%  
 Analysis Period (min) 15

Intersection Summary  
 HCM Average Control Delay: 22.9  
 HCM Volume to Capacity ratio: 0.77  
 Actuated Cycle Length (s): 120.0  
 Intersection Capacity Utilization: 71.2%  
 Analysis Period (min): 15  
 Critical Lane Group: C

Queues  
4: I-285 Westbound On-Ramp & Glenridge Dr

	NBL	NBT	SBT	SBR
Lane Group	468	1626	1088	317
Lane Group Flow (vph)	116.0	120.0	43.0	43.0
Act Effct Green (s)	0.97	1.00	0.36	0.36
Actuated g/C Ratio	0.81	0.32	0.86	0.51
v/c Ratio	29.4	0.1	37.6	21.8
Control Delay	146.8	0.0	1.6	0.0
Queue Delay	178.2	0.1	39.3	21.8
Total Delay	F	A	D	C
LOS	F	A	D	C
Approach Delay			39.9	35.3
Approach LOS			D	D
Queue Length 50th (ft)	228	0	372	106
Queue Length 95th (ft)	m333	m0	459	m168
Internal Link Dist (ft)			339	166
Turn Bay Length (ft)				55
Base Capacity (vph)	579	5085	1268	621
Starvation Cap Reductn	226	0	71	0
Spillback Cap Reductn	0	59	54	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.33	0.32	0.91	0.51

Intersection Summary  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 88 (73%), Referenced to phase 2.SBT and 6.NBTL, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.86  
 Intersection Signal Delay: 38.1  
 Intersection Capacity Utilization 71.0%  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
4: I-285 Westbound On-Ramp & Glenridge Dr

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations			↑↑↑	↑↑↑	↑↑	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0	4.0	4.0	4.0
Lane Util. Factor			1.00	0.91	0.95	1.00
Flt Protected			1.00	1.00	1.00	1.00
Satd. Flow (prot)			900	5085	3539	900
Flt Permitted			0.09	1.00	1.00	1.00
Satd. Flow (perm)			159	5085	3539	1583
Volume (vph)	0	0	431	1593	1034	282
Peak-hour factor, PHF	0.92	0.92	0.98	0.98	0.95	0.89
Adj. Flow (vph)	0	0	468	1626	1088	317
RTOR Reduction (vph)	0	0	0	0	0	53
Lane Group Flow (vph)	0	0	468	1626	1088	284
Turn Type			pm+pt			Perm
Protected Phases			1	6	2	
Permitted Phases			6		2	
Actuated Green, G (s)			116.0	120.0	43.0	43.0
Effective Green, g (s)			116.0	120.0	43.0	43.0
Actuated g/C Ratio			0.97	1.00	0.36	0.36
Clearance Time (s)			4.0	4.0	4.0	4.0
Vehicle Extension (s)			3.0	3.0	3.0	3.0
Lane Grp Cap (vph)			580	5085	1268	567
v/s Ratio Prot			c0.46	0.32	c0.31	
v/s Ratio Perm			0.32		0.17	
v/c Ratio			0.81	0.32	0.86	0.47
Uniform Delay, d1			13.3	0.0	35.7	29.6
Progression Factor			1.45	1.00	0.85	0.86
Incremental Delay, d2			5.5	0.1	6.7	2.4
Delay (s)			24.7	0.1	37.2	27.9
Level of Service			C	A	D	C
Approach Delay (s)			0.0	5.6	35.1	
Approach LOS			A	A	D	

Intersection Summary  
 HCM Average Control Delay 17.4 HCM Level of Service B  
 HCM Volume to Capacity ratio 0.60  
 Actuated Cycle Length (s) 120.0 Sum of lost time (s) 4.0  
 Intersection Capacity Utilization 71.0% ICU Level of Service C  
 Analysis Period (min) 15  
 c Critical Lane Group

# EXHIBIT 3

	EBL	EBR	NBT	SBT
Lane Group	767	934	1489	1111
Lane Group Flow (vph)	54.7	120.0	57.3	57.3
Act Effct Green (s)	0.46	1.00	0.48	0.48
Actuated g/C Ratio	0.95	0.34	0.61	0.66
v/c Ratio	52.2	0.3	14.0	3.0
Control Delay	0.1	0.0	0.0	0.6
Queue Delay	52.3	0.3	14.0	3.5
Total Delay	D	A	B	A
LOS	D	A	B	A
Approach Delay	23.8	A	14.0	3.5
Approach LOS	C	B	A	A
Queue Length 50th (ft)	545	0	187	4
Queue Length 95th (ft)	575	0	m256	6
Internal Link Dist (ft)	644	0	961	339
Turn Bay Length (ft)				
Base Capacity (vph)	959	2787	2426	1689
Starvation Cap Reductn	0	0	0	229
Spillback Cap Reductn	7	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.81	0.34	0.61	0.76

Intersection Summary  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 100 (83%), Referenced to phase 2:SBT and 6:NBT, Start of Green  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.95  
 Intersection Signal Delay: 15.2  
 Intersection Capacity Utilization 71.0%  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	FF	FF	FF	FF	FF	FF
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.88	1.00	0.91	1.00	0.95
Flt Protected	1.00	0.85	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1770	2787	5085	3539	5085	3539
Flt Permitted	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	1770	2787	5085	3539	5085	3539
Volume (vph)	652	931	0	1355	1022	0
Peak-hour factor, PHF	0.85	0.89	0.92	0.91	0.92	0.88
Adj. Flow (vph)	767	934	0	1489	1111	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	767	934	0	1489	1111	0
Turn Type	Free					
Protected Phases	8					
Permitted Phases	Free					
Actuated Green, G (s)	54.7					
Effective Green, g (s)	54.7					
Actuated g/C Ratio	0.46					
Clearance Time (s)	4.0					
Vehicle Extension (s)	3.0					
Lane Grp Cap (vph)	807					
v/s Ratio Prot	cd.43					
v/c Ratio Perm	0.34					
Uniform Delay, d1	31.3					
Progression Factor	1.00					
Incremental Delay, d2	20.5					
Delay (s)	51.9					
Level of Service	D					
Approach Delay (s)	23.6					
Approach LOS	C					

Intersection Summary		HCM Level of Service	
HCM Average Control Delay	14.6	B	
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	120.0	8.0	
Intersection Capacity Utilization	71.0%	C	
Analysis Period (min)	15		
c Critical Lane Group			

# EXHIBIT 3

# EXHIBIT 3

## HCM Signalized Intersection Capacity Analysis 6: Johnson Ferry Rd & Glenridge Connector

## Queues 6: Johnson Ferry Rd & Glenridge Connector

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	0.95	1.00
Lane Util. Factor	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	1.00
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	3539	1583	1770	1863	1583	1770	5085	1583	3433	3493	3493
Flt Permitted	0.20	1.00	1.00	0.40	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	364	3539	1583	753	1863	1583	1770	5085	1583	3433	3493	3493
Volume (vph)	375	599	548	59	218	406	363	549	179	920	630	53
Peak-hour factor, PHF	0.91	0.92	0.89	0.80	0.93	0.85	0.95	0.84	0.90	0.92	0.92	0.81
Adj. Flow (vph)	412	651	616	74	234	478	382	654	199	1000	685	65
RTOR Reduction (vph)	0	0	350	0	0	39	0	0	125	0	6	0
Lane Group Flow (vph)	412	651	266	74	234	439	382	654	74	1000	744	0
Turn Type	pm+pt	pm+pt	pm+pt	pm+ov	pm+ov	pm+ov	Prot	Prot	Prot	Prot	Prot	Prot
Protected Phases	3	8	7	4	5	1	6	5	2			
Permitted Phases	8	8	4	4	4	4	6	6	6	6	6	2
Actuated Green, G (s)	48.2	37.9	37.9	24.6	18.3	57.3	27.9	20.8	20.8	39.0	31.9	31.9
Effective Green, g (s)	48.2	37.9	37.9	24.6	18.3	57.3	27.9	20.8	20.8	39.0	31.9	31.9
Actuated g/C Ratio	0.40	0.32	0.32	0.21	0.15	0.48	0.23	0.17	0.17	0.32	0.27	0.27
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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)	450	1118	500	208	284	756	412	681	274	1116	929	929
via Ratio Prot	c0.20	0.18	0.02	0.13	0.19	c0.22	0.13	0.05	0.05	c0.29	0.21	0.21
via Ratio Perm	c0.17	0.17	0.05	0.09	0.09	0.09	0.09	0.05	0.05	0.05	0.05	0.05
v/c Ratio	0.92	0.58	0.53	0.36	0.82	0.58	0.93	0.74	0.27	0.90	0.80	0.80
Uniform Delay, d1	31.5	34.4	33.7	39.6	49.3	22.7	45.1	47.1	43.0	38.6	41.1	41.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.56	0.59	0.59
Incremental Delay, d2	23.1	0.8	1.1	1.0	17.3	1.1	26.7	5.6	2.4	8.5	6.3	6.3
Delay (s)	54.6	35.2	34.8	40.6	66.6	23.8	71.8	52.7	45.4	30.2	30.4	30.4
Level of Service	D	D	C	D	E	C	E	D	D	D	C	C
Approach Delay (s)	39.8			38.1			57.4					
Approach LOS	D			D			E					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	412	651	616	74	234	478	382	654	199	1000	750	750
Act Effct Green (s)	47.4	37.9	37.9	25.0	17.5	56.5	27.9	21.6	21.6	39.0	32.7	32.7
Actuated g/C Ratio	0.40	0.32	0.32	0.21	0.15	0.47	0.23	0.16	0.16	0.32	0.27	0.27
v/c Ratio	0.93	0.58	0.72	0.33	0.86	0.61	0.93	0.71	0.49	0.90	0.78	0.78
Control Delay	60.1	37.2	12.2	29.0	79.2	13.9	74.6	51.8	17.3	32.5	30.2	30.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.1	37.2	12.2	29.0	79.2	13.9	74.6	51.8	17.3	32.5	30.2	30.2
LOS	E	D	B	C	E	B	E	D	B	C	C	C
Approach Delay	33.6			34.8			53.3					
Approach LOS	C			C			D					
Queue Length 50th (ft)	265	224	60	35	178	112	288	179	32	384	302	302
Queue Length 95th (ft)	#440	287	199	59	#315	153	#464	208	106	#483	#342	#342
Internal Link Dist (ft)	275	570	230	205	450	375	375	677	240	405	961	961
Turn Bay Length (ft)	457	1118	850	228	282	764	428	916	409	1116	956	956
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.58	0.72	0.32	0.83	0.61	0.89	0.71	0.49	0.90	0.78	0.78

Control Type	Actuated-Coordinated	Intersection LOS: D	ICU Level of Service E
Intersection Signal Delay: 37.6			
Intersection Capacity Utilization 84.8%			
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Intersection Summary	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 11 (9%), Referenced to phase 2, SBT and 6, NBT, Start of Green												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.93												
Intersection Signal Delay: 37.6												
Intersection Capacity Utilization 84.8%												
Analysis Period (min) 15												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												

# EXHIBIT 3

## HCM Unsignalized Intersection Capacity Analysis

23: I-285 Westbound On-Ramp &

## HCM Unsignalized Intersection Capacity Analysis

7: RIRO Dr. & Glenridge Dr

Future AM  
6/7/2010

Future AM  
6/7/2010

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop	Stop	Stop	Stop
Volume (vph)	0	0	713	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	775	0	0	0
Direction, Lane #	WB 1					
Volume Total (vph)	775					
Volume Left (vph)	0					
Volume Right (vph)	0					
Head (s)	0.03					
Departure Headway (s)	3.9					
Degree Utilization, x	0.85					
Capacity (veh/h)	906					
Control Delay (s)	24.3					
Approach Delay (s)	24.3					
Approach LOS	C					
<b>Intersection Summary</b>						
Delay	24.3					
HCM Level of Service	C					
Intersection Capacity Utilization	40.9%					
Analysis Period (min)	15					
ICU Level of Service	A					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Free	Free	Free	Free	Free	Free
Grade	0%	0%	0%	0%	0%	0%
Volume (veh/h)	0	42	1102	104	0	1300
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	45	1198	113	0	1413
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked	0.76	0.73	370	0.73	0.73	383
vC, conflicting volume	1904	599				1198
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1606	69				894
tC, single (s)	6.8	6.9				4.1
tC, 2 stage (s)						
tF (s)	3.5	3.3				2.2
p0 queue free %	100	94				100
cM capacity (veh/h)	73	711				547
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	46	599	599	113	707	707
Volume Left	0	0	0	0	0	0
Volume Right	46	0	0	113	0	0
cSH	711	1700	1700	1700	1700	1700
Volume to Capacity	0.06	0.35	0.35	0.07	0.42	0.42
Queue Length 95th (ft)	5	0	0	0	0	0
Control Delay (s)	10.4	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	B	B	B	B	B
Approach Delay (s)	10.4	0.0	0.0	0.0	0.0	0.0
Approach LOS	B	B	B	B	B	B
<b>Intersection Summary</b>						
Average Delay	0.2					
Intersection Capacity Utilization	40.5%					
Analysis Period (min)	15					
ICU Level of Service	A					

# **EXHIBIT 3**

## **Future PM Intersection Analysis**

# EXHIBIT 3

Future 2012 PM

# EXHIBIT 3

## HCM Signalized Intersection Capacity Analysis

1: Hammond Dr & Glenridge Dr

## Queues

1: Hammond Dr & Glenridge Dr

Movement	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	24	526	862	1030	309	682	506	128	344	67
Lane Group Flow (vph)	0.15	0.59	0.85	1.09	0.70	0.75	0.96	0.75	0.72	0.27
v/c Ratio	18.7	39.0	48.6	84.4	44.7	36.6	53.0	69.3	58.9	25.5
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	18.7	39.0	48.6	84.4	44.7	36.6	53.0	69.3	58.9	25.5
Total Delay	7	172	313	~902	224	278	~323	71	135	19
Queue Length 50th (ft)	15	232	381	#1029	#267	#583	#562	103	185	40
Queue Length 95th (ft)	667	649	1719					675		50
Internal Link Dist (ft)	220	260	150	150	115	50	115	50	115	273
Turn Bay Length (ft)	180	890	1144	946	442	904	525	174	535	273
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.59	0.75	1.09	0.70	0.75	0.96	0.74	0.64	0.25

Movement	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.95	1.00	0.85
Lane Util. Factor	1.00	0.96	1.00	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Flt Protected	1770	3389	3433	1777	1770	3539	1583	1770	3539	1583
Satd. Flow (prot)	0.14	1.00	0.95	1.00	0.34	1.00	0.25	1.00	1.00	1.00
Flt Permitted	261	3389	3433	1777	630	3539	1583	463	3539	1583
Satd. Flow (perm)	19	354	118	784	601	253	614	481	97	323
Volume (vph)	0.79	0.94	0.79	0.91	0.84	0.73	0.82	0.90	0.95	0.76
Peak-hour factor, PHF	24	377	149	862	715	315	309	682	506	128
Adj. Flow (vph)	0	36	0	0	13	0	0	0	121	0
RTOR Reduction (vph)	24	490	0	862	1017	0	309	682	385	128
Lane Group Flow (vph)	pm+pt	pm+pt	Prot	pm+pt	pm+pt	pm+pt	pm+pt	pm+pt	pm+pt	Perm
Turn Type	1	6	5	2	7	4	3	4	8	8
Protected Phases	6				4			4		
Permitted Phases	32.7	28.6	36.9	61.4	42.5	30.7	30.7	23.9	16.1	16.1
Actuated Green, G (s)	32.7	28.6	36.9	61.4	42.5	30.7	30.7	23.9	16.1	16.1
Effective Green, g (s)	0.27	0.24	0.31	0.51	0.35	0.26	0.26	0.20	0.13	0.13
Actuated g/C Ratio	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Clearance Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Vehicle Extension (s)	123	808	1056	909	436	905	405	177	475	212
Lane Grp Cap (vph)	0.01	0.14	0.25	0.57	0.12	0.19	0.05	0.10	0.02	0.02
v/s Ratio Prot	0.05	0.61	0.82	1.12	0.71	0.75	0.95	0.72	0.72	0.16
v/s Ratio Perm	56.0	40.7	38.4	29.3	37.5	41.2	43.9	53.4	49.8	45.9
Uniform Delay, d1	1.00	1.00	1.00	1.00	0.88	0.72	0.68	1.00	1.00	1.00
Progression Factor	0.8	3.4	5.0	68.0	4.8	3.3	30.7	13.6	5.4	0.3
Incremental Delay, d2	56.7	44.1	43.4	97.3	37.9	33.1	60.5	67.0	55.2	46.3
Delay (s)	E	D	D	F	D	C	E	E	E	D
Level of Service	44.6	D	D	72.8	D	C	E	E	E	D
Approach Delay (s)	D	D	E		D	D				
Approach LOS	D	D	E		D	D				

Intersection Summary

HCM Average Control Delay	57.6	HCM Level of Service	E
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	85.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Queues  
2: Pvt. Home Drwy & Glenridge Dr

	WBL	WBT	NBT	SBL	SBT
Lane Group	56	67	1378	34	1271
Lane Group Flow (vph)	0.49	0.35	0.47	0.15	0.41
v/c Ratio	66.5	15.6	1.1	4.0	3.5
Control Delay	0.0	0.0	0.3	0.0	0.0
Queue Delay	66.5	15.6	1.4	4.0	3.5
Total Delay	42	0	19	1	163
Queue Length 50th (ft)	45	40	30	m8	250
Queue Length 95th (ft)	313	303			1719
Internal Link Dist (ft)	150				125
Turn Bay Length (ft)	400	499	2945	220	3098
Base Capacity (vph)	0	0	777	0	0
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	23
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.14	0.13	0.64	0.15	0.41

Intersection Summary  
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
2: Pvt. Home Drwy & Glenridge Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	1.00	1.00	0.85	1.00	1.00	1.00	0.95	1.00	1.00	1.00	0.95
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00	1.00	0.95
Flt Protected	1770	1583	3523	1770	1583	3523	1770	1583	1770	3539	1770	3539
Satd. Flow (prot)	1410	1583	3363	1410	1583	3363	1410	1583	1410	3363	1410	3363
Satd. Flow (perm)	0	0	0	28	0	56	1	1281	33	29	1233	0
Volume (vph)	0.92	0.92	0.50	0.92	0.83	0.92	0.96	0.77	0.86	0.97	0.92	0
Peak-hour factor, PHF	0	0	0	56	0	67	1	1334	43	34	1271	0
Adj. Flow (vph)	0	0	0	62	0	0	1	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	56	5	0	0	1377	0	34	1271	0
Lane Group Flow (vph)	Perm	Perm	Perm	Perm	Perm	Perm						
Turn Type	8	8	4	4	4	4	6	6	6	2	2	2
Permitted Phases	8	8	4	4	4	4	6	6	6	2	2	2
Actuated Green, G (s)	8.5	8.5	8.5	8.5	8.5	8.5	103.5	103.5	103.5	103.5	103.5	103.5
Effective Green, g (s)	8.5	8.5	8.5	8.5	8.5	8.5	103.5	103.5	103.5	103.5	103.5	103.5
Actuated g/C Ratio	0.07	0.07	0.07	0.07	0.07	0.07	0.86	0.86	0.86	0.86	0.86	0.86
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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)	100	112	2801	100	112	2801	100	112	2801	100	112	2801
v/s Ratio Prot	0.04	0.04	0.04	0.04	0.04	0.04	0.41	0.41	0.41	0.10	0.10	0.36
v/c Ratio	0.56	0.56	0.56	0.56	0.56	0.56	0.47	0.47	0.47	0.12	0.12	0.42
Uniform Delay, d1	53.9	52.0	1.9	1.8	1.8	1.8	1.3	1.3	1.3	1.3	1.3	1.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.27	0.27	0.27	1.47	1.56	1.56
Incremental Delay, d2	7.0	0.2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.2	0.2
Delay (s)	E	D	E	D	D	D	A	A	A	A	A	A
Level of Service	E	D	E	D	D	D	A	A	A	A	A	A
Approach Delay (s)	0.0	A	56.1	E	E	E	1.0	1.0	1.0	3.0	3.0	3.0
Approach LOS	A	A	E	E	E	E	A	A	A	A	A	A

Intersection Summary

HCM Average Control Delay	4.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# EXHIBIT 3

Queues  
3: Glenforest Rd & Glenridge Dr

	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	Future PM 6/7/2010
Lane Group	86	368	375	393	55	1127	137	151	1426	
Lane Flow (vph)	0.14	0.86	0.91	0.25	0.30	0.64	0.17	0.68	0.75	
v/c Ratio	0.5	56.0	65.6	0.4	25.8	17.2	7.0	33.3	17.7	
Control Delay	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.2	
Queue Delay	0.5	58.0	65.6	0.4	25.8	17.6	7.0	33.3	17.9	
Total Delay	0	272	283	0	19	256	27	49	446	
Queue Length 50th (ft)	0	272	283	0	36	363	68	73	410	
Queue Length 95th (ft)	0	275	277	0	36	363	68	73	410	
Internal Link Dist (ft)	150	150	150	150	55	55	75	130	130	
Turn Bay Length (ft)	682	491	474	1583	191	1769	816	251	1892	
Base Capacity (vph)	0	0	0	0	0	204	0	0	26	
Starvation Cap Reductn	2	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.13	0.75	0.79	0.25	0.29	0.72	0.17	0.60	0.78	

Intersection Summary

Baseline  
A & R Engineering Inc.  
Synchro 6 Report  
Page 5

HCM Signalized Intersection Capacity Analysis  
3: Glenforest Rd & Glenridge Dr

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Future PM 6/7/2010
Lane Configurations	4	4	4	4	4	4	4	4	4	4	4	4	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Flt Protected	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Satd. Flow (prot)	1583	1681	1687	1583	1770	1583	1770	3539	1583	1770	3535	1770	
Flt Permitted	1.00	0.76	0.73	1.00	1.00	0.76	1.00	1.00	0.76	1.00	1.00	0.76	
Satd. Flow (perm)	1583	1340	1293	1583	201	1583	201	3539	1583	212	3535	212	
Volume (vph)	0	54	522	2	173	41	1082	125	92	1174	6	1174	
Peak-hour factor, PHF	0.62	0.63	0.71	0.25	0.44	0.75	0.96	0.91	0.61	0.83	0.50	0.83	
Adj. Flow (vph)	0	86	735	8	393	55	1127	137	151	1414	12	1414	
RTOR Reduction (vph)	0	0	59	0	0	0	0	0	25	0	0	0	
Lane Group Flow (vph)	0	0	27	368	375	393	55	1127	113	151	1426	0	
Turn Type	Perm	Perm	Perm	Perm	Free	Perm	Free	Perm	Perm	Perm	Perm	Perm	
Protected Phases	8	8	4	4	4	4	6	6	6	6	2	2	
Permitted Phases	8	8	4	4	4	4	6	6	6	6	2	2	
Actuated Green, G (s)	38.2	38.2	38.2	38.2	120.0	60.0	60.0	60.0	60.0	60.0	63.4	63.4	
Effective Green, g (s)	38.2	38.2	38.2	38.2	120.0	60.0	60.0	60.0	60.0	60.0	63.4	63.4	
Actuated g/C Ratio	0.32	0.32	0.32	1.00	0.50	0.50	0.50	0.50	0.50	0.50	0.53	0.53	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
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)	504	427	412	1563	184	1770	792	239	1868	60.40	60.40	60.40	
v/s Ratio Prot.	0.02	0.27	0.29	0.25	0.13	0.02	0.02	0.07	0.28	0.05	0.05	0.05	
v/s Ratio Perm	0.05	0.86	0.91	0.25	0.30	0.64	0.14	0.63	0.76	0.14	0.63	0.76	
Uniform Delay, d1	28.4	38.4	39.3	0.0	33.8	22.0	16.1	19.9	22.4	16.1	19.9	22.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	0.68	0.65	0.52	0.88	0.61	0.61	0.61	
Incremental Delay, d2	0.0	16.2	23.8	0.4	0.9	1.7	0.4	5.1	2.9	1.7	0.4	5.1	
Delay (s)	28.4	54.6	63.1	0.4	23.9	15.9	8.8	22.7	16.6	8.8	22.7	16.6	
Level of Service	C	D	E	A	C	B	A	C	B	A	C	B	
Approach Delay (s)	28.4	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6	
Approach LOS	C	C	C	D	D	D	D	D	D	D	D	D	
Intersection Summary													
HCM Average Control Delay	22.8 HCM Level of Service C												
HCM Volume to Capacity ratio	0.79												
Actuated Cycle Length (s)	120.0 Sum of lost time (s) 8.0												
Intersection Capacity Utilization	60.5% ICU Level of Service B												
Analysis Period (min)	15												
c. Critical Lane Group													

Intersection Summary

Baseline  
A & R Engineering Inc.  
Synchro 6 Report  
Page 6

	NBL	NBT	SBT	SBR
Lane Group	671	1251	1054	810
Lane Group Flow (vph)	1.17	0.25	0.81	1.12
v/c Ratio	116.9	0.1	27.4	88.9
Control Delay	0.0	0.0	1.7	29.1
Queue Delay	116.9	0.1	29.1	118.0
Total Delay	-602	0	293	-609
Queue Length 50th (ft)	#809	0	m#420	m#816
Queue Length 95th (ft)	339	166		55
Internal Link Dist (ft)	572	5085	1298	720
Turn Bay Length (ft)	0	0	114	41
Base Capacity (vph)	0	0	0	0
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.17	0.25	0.89	1.19

Intersection Summary  
 ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 m Queue shown is maximum after two cycles.  
 n Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations			←←←	←←←	←←	←
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	0.95	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	900	5085	3539	900		
Flt Permitted	0.08	1.00	1.00	1.00		
Satd. Flow (perm)	155	5085	3539	1583		
Volume (vph)	0	0	617	1226	1001	721
Peak-hour factor, PHF	0.92	0.92	0.98	0.95	0.89	0.89
Adj. Flow (vph)	0	0	671	1251	1054	810
RTOR Reduction (vph)	0	0	0	0	0	140
Lane Group Flow (vph)	0	0	671	1251	1054	670

Turn Type	pm+pt	1	6	2	Perm
Protected Phases					
Permitted Phases	6				2
Actuated Green, G (s)	116.0	120.0	44.0	44.0	44.0
Effective Green, g (s)	116.0	120.0	44.0	44.0	44.0
Actuated g/C Ratio	0.97	1.00	0.37	0.37	0.37
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	572	5085	1298	580	
v/c Ratio Prot	c0.66	0.25	0.30	0.42	
v/c Ratio Perm	c0.47			1.16	
v/c Ratio	1.17	0.25	0.81	1.16	
Uniform Delay, d1	21.1	0.0	34.3	38.0	
Progression Factor	1.12	1.00	0.69	0.71	
Incremental Delay, d2	93.6	0.1	3.5	81.9	
Delay (s)	117.2	0.1	27.1	108.9	
Level of Service	F	A	C	F	
Approach Delay (s)	0.0		41.0	62.6	
Approach LOS	A		D	E	

Intersection Summary

HCM Average Control Delay	51.6	HCM Level of Service	D
HCM Volume to Capacity ratio	1.16	Sum of lost time (s)	4.0
Actuated Cycle Length (s)	120.0	ICU Level of Service	E
Intersection Capacity Utilization	85.5%	Analysis Period (min)	15

c Critical Lane Group

# EXHIBIT 3

Queues  
5: I-285 Eastbound Off-Ramp & Glenridge Dr

HCM Signalized Intersection Capacity Analysis  
5: I-285 Eastbound Off-Ramp & Glenridge Dr

Future PM  
6/7/2010

	EBL	EBR	NBT	SBT
Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	234	199	1768	1068
v/c Ratio	0.81	0.07	0.45	0.39
Control Delay	69.3	0.1	3.5	0.4
Queue Delay	0.2	0.0	0.0	0.1
Total Delay	69.6	0.1	3.6	0.5
Queue Length 50th (ft)	177	0	81	1
Queue Length 95th (ft)	234	0	m134	1
Internal Link Dist (ft)	644		961	339
Turn Bay Length (ft)				
Base Capacity (vph)	649	2787	3919	2728
Starvation Cap Reductn	0	0	0	582
Spillback Cap Reductn	95	0	121	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.42	0.07	0.47	0.50

Intersection Summary  
m Volume for 95th percentile queue is metered by upstream signal.

	EBL	EBR	NBL	NBT	SBT	SBR
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.88	0.91	0.95	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (prot)	1770	2787	5085	3539		
Flt Permitted	0.95	1.00	1.00	1.00	1.00	1.00
Satd. Flow (perm)	1770	2787	5085	3539		
Volume (vph)	199	177	0	1609	983	0
Peak-hour factor, PHF	0.85	0.89	0.92	0.91	0.92	0.88
Adj. Flow (vph)	234	199	0	1768	1068	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	234	199	0	1768	1068	0
Turn Type	Free					
Protected Phases	8					
Permitted Phases	Free					
Actuated Green, G (s)	19.5					
Effective Green, g (s)	19.5					
Actuated g/C Ratio	0.16					
Clearance Time (s)	4.0					
Vehicle Extension (s)	3.0					
Lane Grp Cap (vph)	288					
v/s Ratio Prot	0.13					
v/c Ratio Perm	0.81					
Uniform Delay, d1	48.5					
Progression Factor	1.00					
Incremental Delay, d2	15.9					
Delay (s)	64.4					
Level of Service	E					
Approach Delay (s)	34.8					
Approach LOS	C					

Intersection Summary		HCM Level of Service	
HCM Average Control Delay	6.5	A	
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	
Intersection Capacity Utilization	85.5%	ICU Level of Service	
Analysis Period (min)	15	E	

c. Critical Lane Group

# EXHIBIT 3

# EXHIBIT 3

## HCM Signalized Intersection Capacity Analysis

## Queues

6: Johnson Ferry Rd & Glenridge Connector

6: Johnson Ferry Rd & Glenridge Connector

Future PM  
6/7/2010

Future PM  
6/7/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Total Lost time (s)	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.91	1.00	0.97	1.00	0.98
Lane Util. Factor	0.95	1.00	0.85	1.00	0.95	1.00	0.85	1.00	0.95	1.00	0.95	1.00
Flt Protected	1770	3539	1583	1770	1863	1583	1770	5085	1583	3433	3472	
Satd. Flow (prot)	0.14	1.00	1.00	0.56	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Flt Permitted	257	3539	1583	1041	1863	1583	1770	5085	1583	3433	3472	
Satd. Flow (perm)	323	293	530	99	385	586	532	671	41	281	560	71
Volumes (vph)	0.91	0.92	0.89	0.80	0.93	0.85	0.85	0.95	0.84	0.90	0.92	0.81
Peak-hour factor, PHF	355	318	596	124	414	689	580	799	46	305	608	88
Adj. Flow (vph)	0	0	422	0	0	17	0	0	0	36	0	10
RTOR Reduction (vph)	355	318	174	124	414	672	560	799	10	305	688	0
Lane Group Flow (vph)	pm+pt			pm+ov			Prot			Prot		
Turn Type	3	8	8	7	4	5	1	6	6	5	5	2
Protected Phases	8			4			6			2		
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	47.0	35.1	32.9	25.0	60.0	36.0	26.0	26.0	26.0	35.0	25.0	25.0
Effective Green, g (s)	47.0	35.1	32.9	25.0	60.0	36.0	26.0	26.0	26.0	35.0	25.0	25.0
Actuated g/C Ratio	0.39	0.29	0.28	0.27	0.21	0.50	0.30	0.22	0.22	0.29	0.21	0.21
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
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)	328	1035	463	333	388	792	531	1102	343	1001	723	
v/s Ratio Prot	c0.16	0.09	0.02	0.22	0.22	0.25	c0.32	0.16	0.01	0.09	c0.20	
v/s Ratio Perm	c0.26	0.11	0.08	0.18	0.18	0.18	0.18	0.01	0.01	0.03	0.30	0.95
v/c Ratio	1.08	0.31	0.38	0.37	1.07	0.85	1.05	0.73	0.03	0.30	0.95	
Uniform Delay, d1	35.4	33.0	33.8	34.0	47.5	26.1	42.0	43.7	37.0	33.0	46.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.20	0.37
Incremental Delay, d2	73.4	0.2	0.5	0.7	64.6	8.4	54.2	4.2	0.2	0.2	22.7	
Delay (s)	108.9	33.2	34.3	34.7	112.1	34.5	96.2	47.8	37.2	6.8	39.9	
Level of Service	F	C	C	C	F	C	F	D	D	D	A	D
Approach Delay (s)	54.9			60.7			66.8			29.8		
Approach LOS	D			E			E			C		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	355	318	596	124	414	689	580	799	46	305	608	88
v/c Ratio	1.08	0.31	0.67	0.37	1.07	0.85	1.05	0.73	0.12	0.30	0.95	0.95
Control Delay	106.3	34.0	6.9	28.9	110.1	24.8	95.2	48.1	11.7	7.4	41.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	106.3	34.0	6.9	28.9	110.1	24.8	95.2	48.1	11.7	7.4	41.5	
Queue Length 50th (ft)	~257	101	0	62	~355	223	~475	212	0	31	274	
Queue Length 95th (ft)	#451	141	86	93	#553	289	#694	239	32	42	#385	
Internal Link Dist (ft)	570	230	205	450			375	677	240	405	961	
Turn Bay Length (ft)	275						375		240	405		
Base Capacity (vph)	328	1036	885	335	388	809	531	1102	379	1001	733	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.08	0.31	0.67	0.37	1.07	0.85	1.05	0.73	0.12	0.30	0.95	

Intersection Summary  
 ~ Volume exceeds capacity, queue is theoretically infinite.  
 # Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 # Queue shown is maximum after two cycles.

Intersection Summary  
 ~ Volume exceeds capacity, queue is theoretically infinite.  
 # Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 # Queue shown is maximum after two cycles.

Baseline  
A & R Engineering Inc.

Baseline  
A & R Engineering Inc.

Synchro 6 Report  
Page 12

Synchro 6 Report  
Page 11

# EXHIBIT 3

## HCM Unsignalized Intersection Capacity Analysis

24: I-285 Westbound On-Ramp & Future PM 6/7/2010

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Volume (vph)	0	0	1338	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	1454	0	0	0
Direction, Lane #	WB 1					
Volume Total (vph)	1454					
Volume Left (vph)	0					
Volume Right (vph)	0					
Head (s)	0.03					
Departure Headway (s)	3.9					
Degree Utilization, x	1.59					
Capacity (veh/h)	924					
Control Delay (s)	282.3					
Approach Delay (s)	282.3					
Approach LOS	F					
<b>Intersection Summary</b>						
Delay	282.3					
HCM Level of Service	F					
Intersection Capacity Utilization	73.8%					
Analysis Period (min)	15					
ICU Level of Service	D					

Baseline  
A & R Engineering Inc.

Baseline  
A & R Engineering Inc.

## HCM Unsignalized Intersection Capacity Analysis

7: RIRO Dr & Glenridge Dr Future PM 6/7/2010

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Free	Free	Free	Free	Free	Free
Grade	0%	0%	0%	0%	0%	0%
Volume (veh/h)	0	63	1252	37	0	1261
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	68	1361	40	0	1371
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked	0.81	0.77	370	0.77	0.77	383
vC, conflicting volume	2046	680		1361		
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1751	290		1172		
tC, single (s)	6.8	6.9		4.1		
tC, 2 stage (s)						
tF (s)	3.5	3.3		2.2		
p0 queue free %	100	87		100		
cM capacity (veh/h)	62	545		457		
Direction, Lane #	WB 1 NB 1 NB 2 NB 3 SB 1 SB 2					
Volume Total	68	680	680	40	685	685
Volume Left	0	0	0	0	0	0
Volume Right	68	0	0	40	0	0
cSH	545	1700	1700	1700	1700	1700
Volume to Capacity	0.13	0.40	0.40	0.02	0.40	0.40
Queue Length 95th (ft)	11	0	0	0	0	0
Control Delay (s)	12.5	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	B	B	B	B	B
Approach Delay (s)	12.5	0.0	0.0	0.0	0.0	0.0
Approach LOS	B	B	B	B	B	B
<b>Intersection Summary</b>						
Average Delay	0.3					
Intersection Capacity Utilization	45.2%					
Analysis Period (min)	15					
ICU Level of Service	A					

Baseline  
A & R Engineering Inc.

Baseline  
A & R Engineering Inc.

# **EXHIBIT 3**

## **Traffic Volume Worksheets**





A&R Engineering  
June-10

10-010 Lakeside Office Park DRI  
Traffic Volumes  
Future Conditions

Glenridge Drive / Glenforest Road / Lakeside Office Park Driveway

A.M. Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound							
	L	T	R	L	T	R	L	T	R	L	T	R					
Existing (2010):	10	952	113	1075	88	931	5	1024	7	2	70	79	10	0	6	16	
Growth Factor (%):	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	0.0	0.0	
Base Condition:	10	990	113	1113	88	968	5	1061	7	2	73	82	10	0	6	16	
New Trips From Existing Vacant Office	0	0	23	23	18	0	0	18	0	0	0	0	0	2	0	1	3
New Trips From Proposed Office	0	104	315	419	214	0	0	214	0	0	0	0	226	0	73	299	
Future Traffic Volumes:	10	1094	451	1555	320	968	5	1293	7	2	73	82	238	0	80	318	

P.M. Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound							
	L	T	R	L	T	R	L	T	R	L	T	R					
Existing (2010):	39	1005	12	1056	13	1129	6	1148	0	0	52	52	155	2	53	210	
Growth Factor (%):	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	0.0	0.0	
Base Condition:	41	1045	12	1098	13	1174	6	1193	0	0	54	54	155	2	53	210	
New Trips From Existing Vacant Office	0	0	2	2	3	0	0	3	0	0	0	0	0	31	0	11	42
New Trips From Proposed Office	0	37	111	148	76	0	0	76	0	0	0	0	336	0	109	445	
Future Traffic Volumes:	41	1082	125	1248	92	1174	6	1272	0	0	54	54	522	2	173	697	

A&R Engineering  
June-10

10-010 Lakeside Office Park DRI  
Traffic Volumes  
Future Conditions

Glenridge Drive / I-285 Westbound On-Ramp

A.M. Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Existing (2010):	414	1105	0	0	859	187	0	0	0	0	0	0
Growth Factor (%):	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Base Condition:	431	1149	0	0	893	194	0	0	0	0	0	0
New Trips From Existing Vacant Office	0	23	0	0	1	1	0	0	0	0	0	0
New Trips From Proposed Office	0	421	0	0	139	87	0	0	0	0	0	0
Future Traffic Volumes:	431	1593	0	0	1034	282	0	0	0	0	0	0
			Tot			Tot			Tot			Tot
			1519			1046			0			0
			1580			1088			2			2
			2023			1316			0			0

P.M. Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Existing (2010):	593	1033	0	0	746	557	0	0	0	0	0	0
Growth Factor (%):	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Base Condition:	617	1074	0	0	776	579	0	0	0	0	0	0
New Trips From Existing Vacant Office	0	2	0	0	19	12	0	0	0	0	0	0
New Trips From Proposed Office	0	149	0	0	207	129	0	0	0	0	0	0
Future Traffic Volumes:	617	1226	0	0	1001	721	0	0	0	0	0	0
			Tot			Tot			Tot			Tot
			1626			1303			0			0
			1691			1355			2			2
			1842			1722			0			0

A&R Engineering  
June-10

10-010 Lakeside Office Park DRI  
Traffic Volumes  
Future Conditions

Glenridge Drive / I-285 Eastbound Off-Ramp

A.M. Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Existing (2010):	0	1041	0	0	848	0	462	0	799	0	0	0
Growth Factor (%):	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Base Condition:	0	1083	0	0	882	0	480	0	831	0	0	0
New Trips From Existing Vacant Office	0	14	0	0	1	0	9	0	0	0	0	0
New Trips From Proposed Office	0	259	0	0	139	0	162	0	0	0	0	0
Future Traffic Volumes:	0	1355	0	0	1022	0	652	0	831	0	0	0
		Tot		Tot		Tot	Tot		Tot		Tot	
		1041		848		848	1261		1261		0	0
		1083		882		882	1311		1311		0	0
		14		1		1	9		9		0	0
		259		139		139	162		162		0	0
		1355		1022		1022	1482		1482		0	0

P.M. Peak Hour

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Existing (2010):	0	1457	0	0	728	0	136	0	170	0	0	0
Growth Factor (%):	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Base Condition:	0	1515	0	0	757	0	141	0	177	0	0	0
New Trips From Existing Vacant Office	0	1	0	0	19	0	1	0	0	0	0	0
New Trips From Proposed Office	0	92	0	0	207	0	57	0	0	0	0	0
Future Traffic Volumes:	0	1609	0	0	983	0	199	0	177	0	0	0
		Tot		Tot		Tot	Tot		Tot		Tot	
		1457		728		728	306		306		0	0
		1515		757		757	318		318		0	0
		1		19		19	1		1		0	0
		92		207		207	57		57		0	0
		1609		983		983	376		376		0	0



**10-010 Lakeside Office Park DRI**  
**Traffic Volumes**  
**Future Conditions**

A&R Engineering  
 June-10

Glenridge Drive / Lakeside Office Park Right In-Right Out Driveway

**A.M. Peak Hour**

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Existing (2010):	0	988	0	0	1027	0	0	0	0	0	0	0
Growth Factor (%):	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Base Condition:	0	1028	0	0	1068	0	0	0	0	0	0	0
New Trips From Existing Vacant Office	0	1	0	0	18	0	0	0	0	0	0	0
New Trips From Proposed Office	0	73	104	0	214	0	0	0	0	0	0	42
Future Traffic Volumes:	0	1102	104	0	1300	0	0	0	0	0	0	42

**P.M. Peak Hour**

Condition	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Existing (2010):	0	1089	0	0	1137	0	0	0	0	0	0	0
Growth Factor (%):	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Base Condition:	0	1133	0	0	1182	0	0	0	0	0	0	0
New Trips From Existing Vacant Office	0	11	0	0	3	0	0	0	0	0	0	0
New Trips From Proposed Office	0	109	37	0	76	0	0	0	0	0	0	63
Future Traffic Volumes:	0	1252	37	0	1261	0	0	0	0	0	0	63

# **EXHIBIT 3**

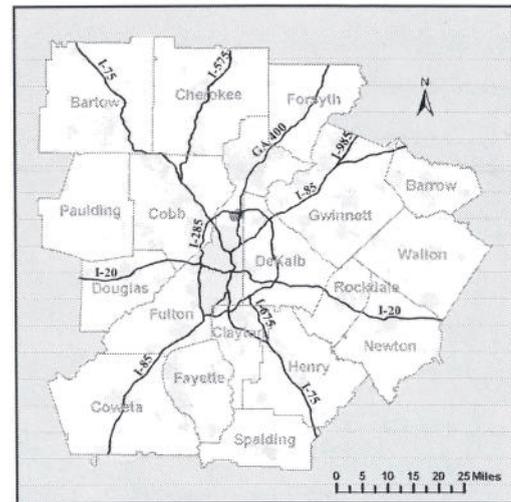
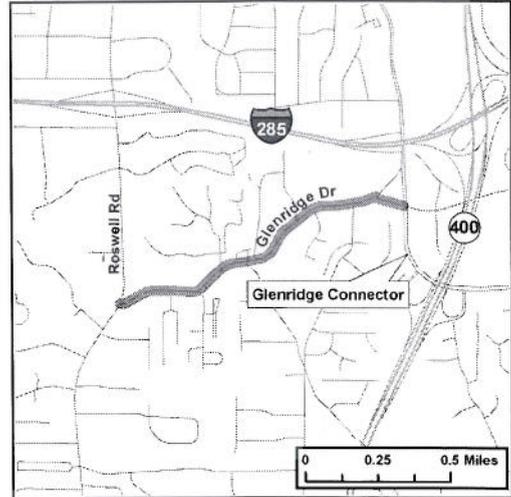
## **Planned and Programmed Improvements**

# EXHIBIT 3

**FN-103A**

## Atlanta Region - Mobility2030 Transportation Plan PROJECT FACT SHEET

<b>Short Title</b>	GLENRIDGE DRIVE FROM SR 9 (ROSWELL ROAD) TO GLENRIDGE CONNECTOR
<b>GDOT Project No.</b>	753054-
<b>Federal ID No.</b>	STP-9258(3)
<b>Status</b>	Programmed
<b>Detailed Description and Justification</b>	FN 103A includes improvements along Glenridge Drive from the Glenridge Connector to Roswell Rd/SR 9. Improvements include adding a median and right and left turn lanes. The purpose of this project is to create a median barrier/crash cushion, improving safety along this corridor.
<b>Service Type</b>	Roadway Operational Upgrades
<b>Sponsor</b>	GRTA
<b>Jurisdiction</b>	Fulton (North)
<b>Existing Thru Lane</b>	2 (applicable for road projects only)
<b>Planned Thru Lane</b>	2 (applicable for road projects only)
<b>Corridor Length</b>	1.16 miles (not applicable for all project types)
<b>Network Year</b>	2010 (required if modeled for conformity)
<b>Completion Date</b>	2007
<b>Analysis Level</b>	Exempt from Air Quality Analysis (40 CFR 93)



Phase Status & Funding Information for 06-11 TIP		FISCAL YEAR	TOTAL PHASE COST	BREAKDOWN OF TOTAL PHASE COST BY FUNDING SOURCE			
				FEDERAL	STATE	BONDS	LOCAL/OTHER
PE	State Bonds	AUTH	\$0,000	\$0,000	\$0,000	\$0,000	\$0,000
ROW	State Bonds	AUTH	\$0,000	\$0,000	\$0,000	\$0,000	\$0,000
CST	State Bonds	2007	\$3,300,000	\$0,000	\$0,000	\$3,300,000	\$0,000
				\$0,000	\$0,000	\$3,300,000	\$0,000

PE: Preliminary Engineering / Design / Study

ROW: Right-of-way Acquisition

CST: Construction / Implementation



For additional information about this project, please visit the Atlanta Regional Commission at [www.atlantaregional.com](http://www.atlantaregional.com) or call (404) 463-3100.



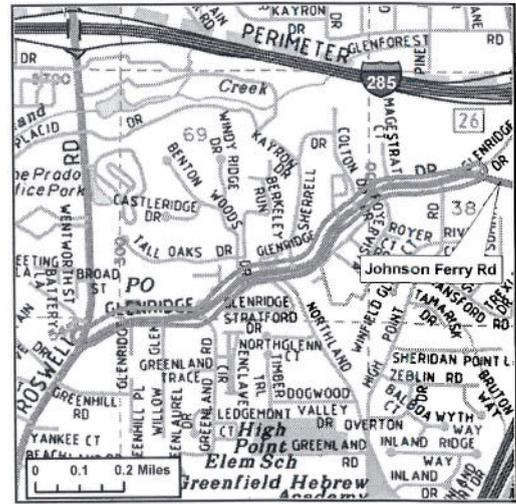
Report Generated: 6/12/2007

# EXHIBIT 3

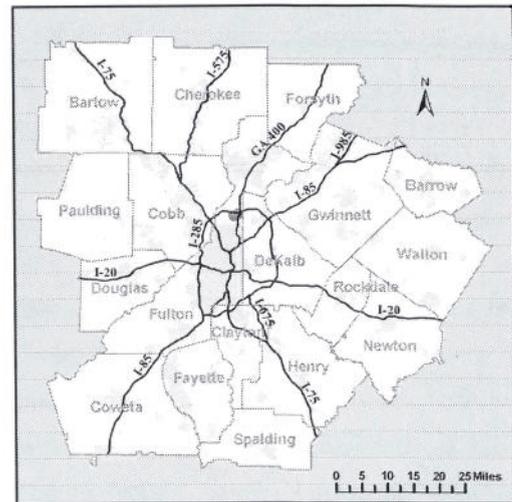
**FN-103B**

## Atlanta Region - Mobility2030 Transportation Plan PROJECT FACT SHEET

<b>Short Title</b>	GLENRIDGE DRIVE FROM SR 9 (ROSWELL ROAD) TO JOHNSON FERRY ROAD
<b>GDOT Project No.</b>	N/A
<b>Federal ID No.</b>	
<b>Status</b>	Long Range
<b>Detailed Description and Justification</b>	FN 103B includes improvements along Glenridge Drive from the Roswell Rd/SR 9 to Johnson Ferry Road. Improvements include adding a median and right and left turn lanes. The purpose of this project is to create a median barrier/crash cushion, improving safety along this corridor.
<b>Service Type</b>	General Purpose Roadway Capacity
<b>Sponsor</b>	City of Sandy Springs
<b>Jurisdiction</b>	Fulton (North)
<b>Existing Thru Lane</b>	2 (applicable for road projects only)
<b>Planned Thru Lane</b>	4 (applicable for road projects only)
<b>Corridor Length</b>	1.02 miles (not applicable for all project types)
<b>Network Year</b>	2020 (required if modeled for conformity)
<b>Completion Date</b>	2020
<b>Analysis Level</b>	In the Region's Air Quality Conformity Analysis



Copyright 2005 Aero Surveys of Georgia, Inc. Reproduced by permission of the copyright owner. Contact <http://www.aerotlas.com>



Phase Status & Funding Information for 06-11 TIP		FISCAL YEAR	TOTAL PHASE COST	BREAKDOWN OF TOTAL PHASE COST BY FUNDING SOURCE			
				FEDERAL	STATE	BONDS	LOCAL/OTHER
PE	Local Jurisdiction/Municipality Funds	LR 2014-2020	\$100,000	\$0,000	\$0,000	\$0,000	\$100,000
ROW	Local Jurisdiction/Municipality Funds	LR 2014-2020	\$1,000,000	\$0,000	\$0,000	\$0,000	\$1,000,000
CST	General Federal Aid - 2014-2030	LR 2014-2020	\$5,385,600	\$4,308,480	\$0,000	\$0,000	\$1,077,120
				\$4,308,480	\$0,000	\$0,000	\$2,177,120

PE: Preliminary Engineering / Design / Study

ROW: Right-of-way Acquisition

CST: Construction / Implementation



For additional information about this project, please visit the Atlanta Regional Commission at [www.atlantaregional.com](http://www.atlantaregional.com) or call (404) 463-3100.



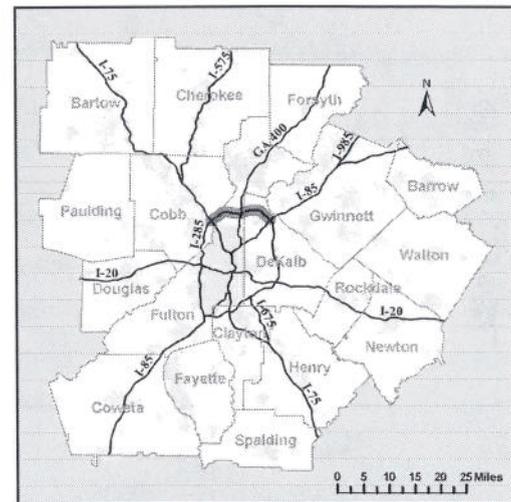
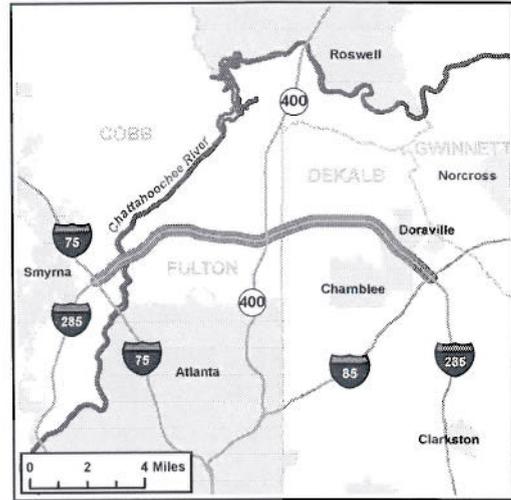
Report Generated: 6/12/2007

# EXHIBIT 3

**AR-H-300**

## Atlanta Region - Mobility2030 Transportation Plan PROJECT FACT SHEET

<b>Short Title</b>	I-285 NORTH HOV LANES FROM I-75 NORTH IN COBB COUNTY TO I-85 NORTH IN DEKALB COUNTY
<b>GDOT Project No.</b>	0001758
<b>Federal ID No.</b>	NHS-0001-00(758)
<b>Status</b>	Programmed
<b>Detailed Description and Justification</b>	Addition of 1 HOV lane in both directions for 13 miles from I-75 to I-85. Dedicated HOV-only ramps will be provided but have not been determined at this time. The HOV lanes will be barrier-separated with median breaks in certain locations to allow for ingress and egress from the HOV lanes as well as emergency vehicle access.
<b>Service Type</b>	HOV Lanes
<b>Sponsor</b>	GDOT
<b>Jurisdiction</b>	Multi-County
<b>Existing Thru Lane</b>	0 (applicable for road projects only)
<b>Planned Thru Lane</b>	2/4 (applicable for road projects only)
<b>Corridor Length</b>	13.1 miles (not applicable for all project types)
<b>Network Year</b>	2015 (required if modeled for conformity)
<b>Completion Date</b>	2015
<b>Analysis Level</b>	In the Region's Air Quality Conformity Analysis



Phase Status & Funding Information for 06-11 TIP	FISCAL YEAR	TOTAL PHASE COST	BREAKDOWN OF TOTAL PHASE COST BY FUNDING SOURCE			
			FEDERAL	STATE	BONDS	LOCAL/OTHER
PE National Highway System	2006	\$0,000	\$0,000	\$0,000	\$0,000	\$0,000
PE Interstate Maintenance	2007	\$1,250,000	\$1,125,000	\$125,000	\$0,000	\$0,000
PE National Highway System	2007	\$0,000	\$0,000	\$0,000	\$0,000	\$0,000
PE SAFETEA-LU Earmark	2007	\$3,750,000	\$3,000,000	\$750,000	\$0,000	\$0,000
PE GRV BONDS (GARVEE Bond Program)	2009	\$30,000,000	\$0,000	\$0,000	\$30,000,000	\$0,000
ROW GRV BONDS (GARVEE Bond Program)	2010	\$99,000,000	\$0,000	\$0,000	\$99,000,000	\$0,000
CST National Highway System	LR 2012-2020	\$407,000,000	\$325,600,000	\$81,400,000	\$0,000	\$0,000
			<b>\$329,725,000</b>	<b>\$82,275,000</b>	<b>\$129,000,000</b>	<b>\$0,000</b>

PE: Preliminary Engineering / Design / Study

ROW: Right-of-way Acquisition

CST: Construction / Implementation



For additional information about this project, please visit the Atlanta Regional Commission at [www.atlantaregional.com](http://www.atlantaregional.com) or call (404) 463-3100.



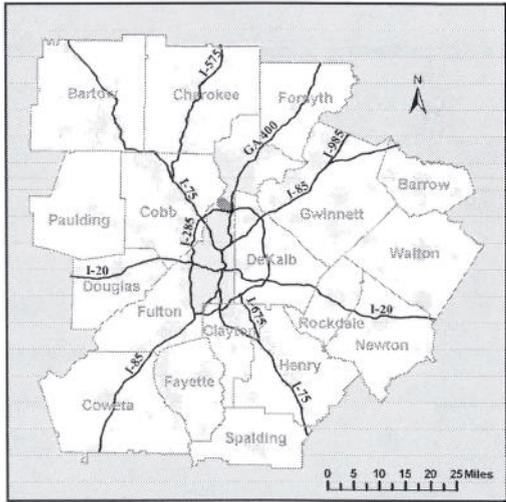
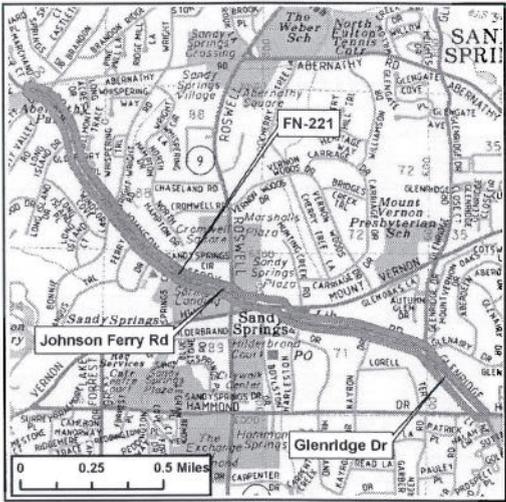
Report Generated: 6/12/2007

# EXHIBIT 3

**FN-221**

**Atlanta Region - Mobility2030 Transportation Plan  
PROJECT FACT SHEET**

<b>Short Title</b>	JOHNSON FERRY ROAD / GLENRIDGE DRIVE (INCLUDE ONE-WAY PAIR) FROM ABERNATHY ROAD TO HAMMOND DRIVE
<b>GDOT Project No.</b>	751420-
<b>Federal ID No.</b>	STP-9252(7)
<b>Status</b>	Programmed
<b>Detailed Description and Justification</b>	This project is the widening of Johnson Ferry Road/Glenridge Parkway from Abernathy Road to Hammond Drive. This project will be 3.24 miles in length.
<b>Service Type</b>	General Purpose Roadway Capacity
<b>Sponsor</b>	City of Sandy Springs
<b>Jurisdiction</b>	Fulton (North)
<b>Existing Thru Lane</b>	<input type="text" value="2"/> (applicable for road projects only)
<b>Planned Thru Lane</b>	<input type="text" value="4"/> (applicable for road projects only)
<b>Corridor Length</b>	<input type="text" value="3"/> miles (not applicable for all project types)
<b>Network Year</b>	<input type="text" value="2020"/> (required if modeled for conformity)
<b>Completion Date</b>	<input type="text" value="2013"/>
<b>Analysis Level</b>	In the Region's Air Quality Conformity Analysis



Phase Status & Funding Information for 06-11 TIP	FISCAL YEAR	TOTAL PHASE COST	BREAKDOWN OF TOTAL PHASE COST BY FUNDING SOURCE			
			FEDERAL	STATE	BONDS	LOCAL/OTHER
PE High Priority Projects from TEA-21	2007	\$0,000	\$0,000	\$0,000	\$0,000	\$0,000
PE SAFETEA-LU Earmark	2007	\$0,000	\$0,000	\$0,000	\$0,000	\$0,000
ROW Local Jurisdiction/Municipality Funds	2009	\$700,000	\$0,000	\$0,000	\$0,000	\$700,000
ROW SAFETEA-LU Earmark	2009	\$647,000	\$517,600	\$129,400	\$0,000	\$0,000
CST STP - Urban (>200K) (ARC)	2011	\$2,204,000	\$1,763,200	\$440,800	\$0,000	\$0,000
CST SAFETEA-LU Earmark	2011	\$2,500,000	\$2,000,000	\$500,000	\$0,000	\$0,000
CST SAFETEA-LU Earmark	2011	\$1,481,000	\$1,184,800	\$296,200	\$0,000	\$0,000
			<b>\$5,465,600</b>	<b>\$1,366,400</b>	<b>\$0,000</b>	<b>\$700,000</b>

PE: Preliminary Engineering / Design / Study

ROW: Right-of-way Acquisition

CST: Construction / Implementation



For additional information about this project, please visit the Atlanta Regional Commission at [www.atlantaregional.com](http://www.atlantaregional.com) or call (404) 463-3100.

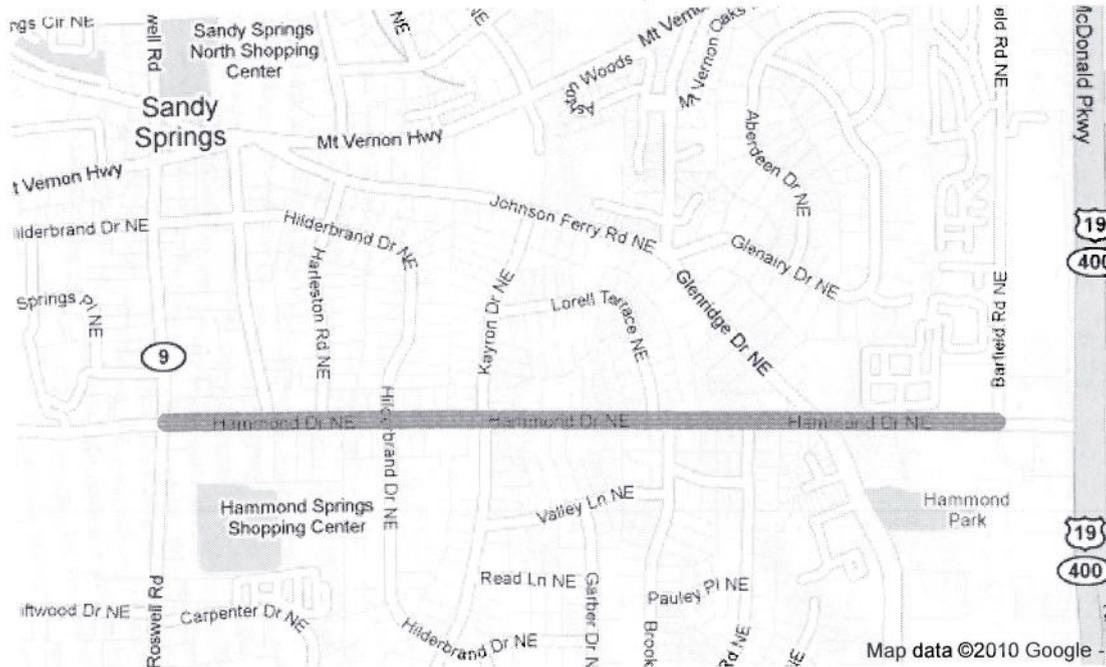


# EXHIBIT 3



## T-0024

### Hammond Widening from Roswell Road to Barfield



[View Larger Map](#)

### Project Description

The project consists of the widening of Hammond Drive to accommodate the traffic volumes along this corridor.

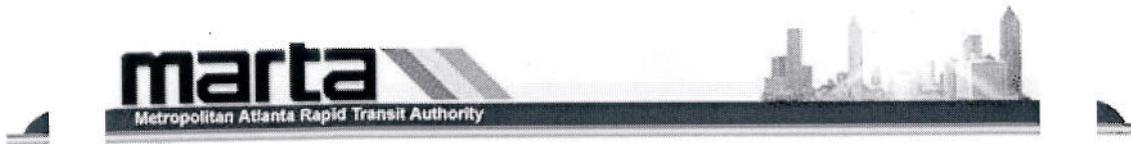
### Project Status

Concept development underway

The City of Sandy Springs, Georgia | © 2005-2010 | All Rights Reserved

# EXHIBIT 3

## MARTA Information



## **Route 87 - Roswell Rd. - Description**

[Return to Route 87 home page](#)

*Void links have been placed on all headings in this description, use the tab key to navigate between sections.*

### **FROM DUNWOODY STN. TO NORTH SPRINGS STATION: Right onto Hammond Dr.**

1. Right onto Roswell Rd.
2. Right onto Dunwoody Place
3. Continue onto Ga. 400 Southbound
4. Right onto Ramp North Springs Station

[back to top](#)

### **FROM DUNWOODY STATION TO DUNWOODY PLACE & ROSWELL RD. VIA Right onto Hammond Dr.**

1. Right onto Roswell Rd.
2. Right onto Dunwoody Pl.
3. End of Line

[back to top](#)

### **FROM DUNWOODY STATION TO DUNWOODY PLACE & ROSWELL RD. VIA Right onto Hammond Dr.**

1. Right onto Roswell Rd.
2. Right onto Dunwoody Pl.
3. End of Line

[back to top](#)

### **FROM NORTH SPRINGS STATION TO DUNWOODY STATION VIA: Continue onto Ga 400 Northbound**

1. Right onto Ramp Northridge Rd.
2. Continue onto - Northridge Rd.
3. Right onto Dunwoody Pl.
4. Left onto Roswell Rd.
5. Left onto Hammond Dr.

## EXHIBIT 3

6. Left onto into Dunwoody Stn.

[back to top](#)

### **FROM DUNWOODY PLACE AND ROSWELL RD TO DUNWOODY STATION: Continue onto Dunwoody Place**

1. Right onto Northridge Rd.
2. Left onto Roswell Rd.
3. Left onto Hammond Dr.
4. Left onto into Dunwoody Station

[back to top](#)

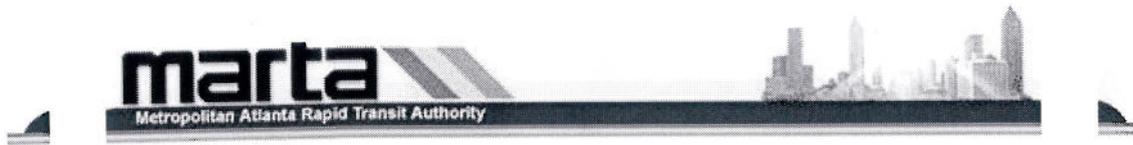
### **FROM DUNWOODY PLACE AND ROSWELL RD TO DUNWOODY STATION: Continue onto Dunwoody Place**

1. Right onto Northridge Rd.
2. Left onto Roswell Rd.
3. Left onto Hammond Dr.
4. Left onto into Dunwoody Station

[back to top](#)

[Return to Route 87 home page](#)

[Home](#) | [Getting There](#) | [How To Ride MARTA](#) | [News Room](#) | [Working At MARTA](#)  
[Vendor Opportunities](#) | [Board of Directors](#) | [MARTA Police](#) | [Contact Us](#)



## **Route 5 - Sandy Springs - Description**

[Return to Route 5 home page](#)

*Void links have been placed on all headings in this description, use the tab key to navigate between sections.*

### **FROM LINDBERGH STATION TO DUNWOODY STATION VIA: Left onto Morosgo Dr.**

1. Right onto Sidney Marcus Blvd.
2. Left onto Piedmont Rd.
3. Right onto Roswell Rd.
4. Right onto Mt. Vernon Rd.
5. Right onto Johnson Ferry Rd.
6. Right onto Glenridge Dr.
7. Left onto Hammond Dr.
8. Left onto DUNWOODY STATION.
9. MILES 9.67

[back to top](#)

### **FROM DUNWOODY STATION TO LINDBERGH STATION VIA: Left onto Perimeter Center Pkwy.**

1. Right onto Hammond Dr.
2. Right onto Glenridge Dr.
3. Left onto Johnson Ferry
4. Left onto Mt. Vernon
5. Left onto Roswell Rd.
6. Left onto Piedmont Rd.
7. Right onto Sidney Marcus Blvd.
8. Left onto Sidney Marcus Dr. across Morosgo to Bus Intermodal. Entrance.

[back to top](#)

### **FROM DUNWOODY STATION TO LINDBERGH STATION VIA: KINGSPOUR DR.**

1. Left onto Perimeter Center Pkwy.
2. Right onto Hammond Dr.
3. Right onto Glenridge Dr.
4. Left onto Johnson Ferry

## EXHIBIT 3

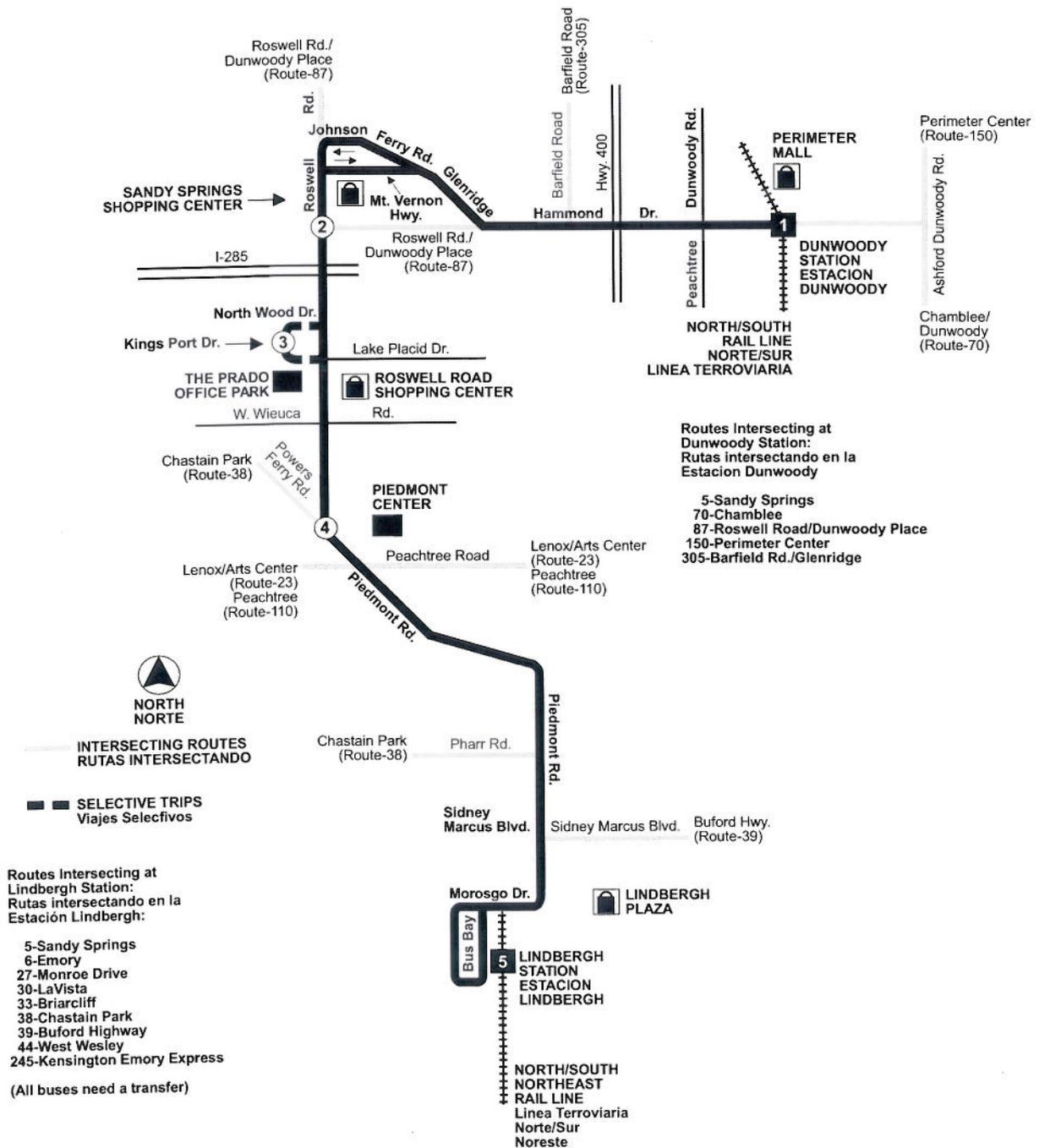
5. Left onto Mount Vernon Hwy.
6. Left onto Roswell Rd. Pass over I-285.
7. Right onto Northwood Dr.
8. Left onto Kingsport Dr.
9. Left onto Lake Placid Dr.
10. Right onto Roswell Rd.
11. Left onto Piedmont Rd.
12. Right onto Sidney Marcus Blvd.
13. Left onto Sidney Marcus Dr.
14. Continue onto across to Bus Bay

[back to top](#)

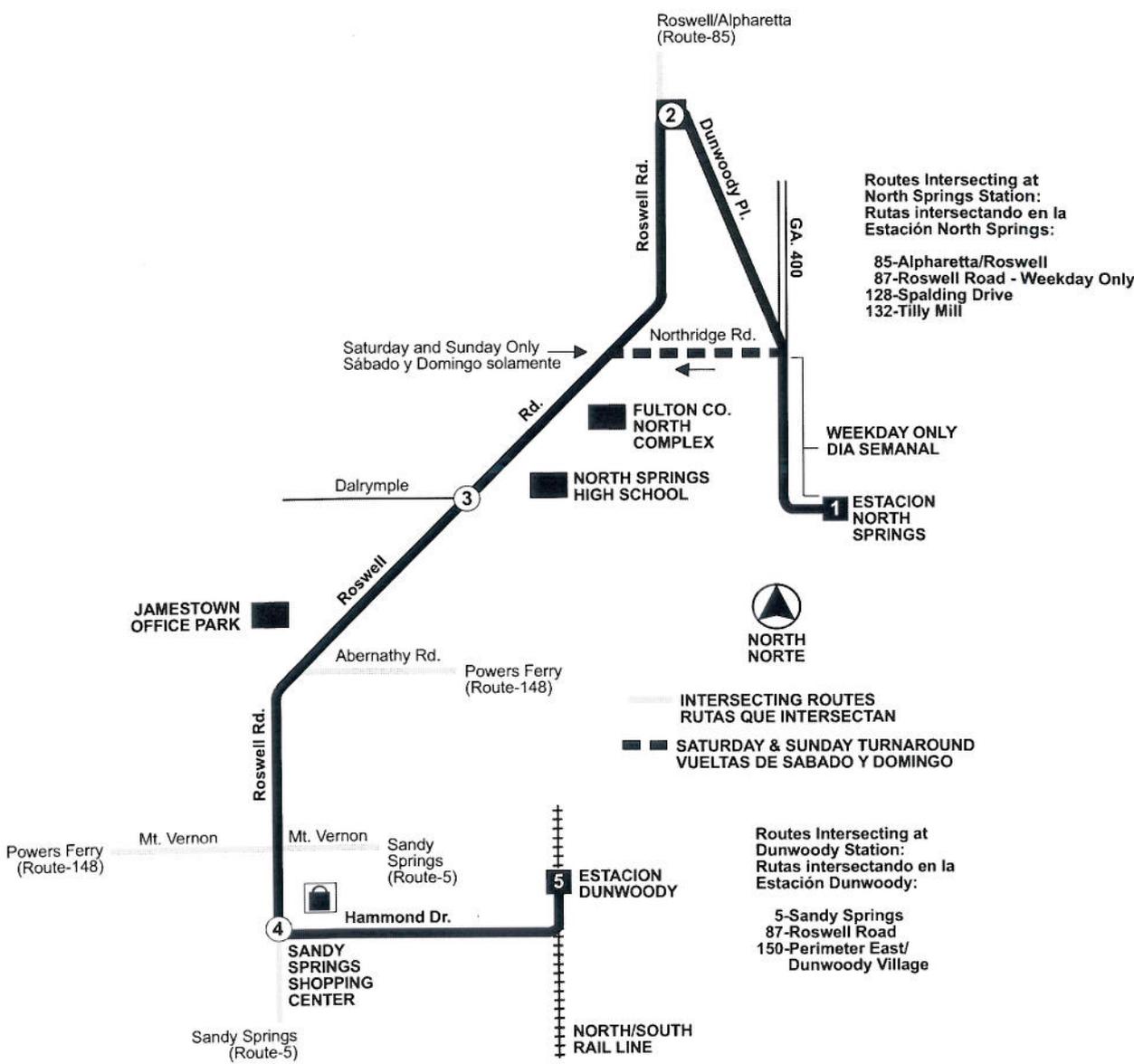
[Return to Route 5 home page](#)

[Home](#) | [Getting There](#) | [How To Ride MARTA](#) | [News Room](#) | [Working At MARTA](#)  
[Vendor Opportunities](#) | [Board of Directors](#) | [MARTA Police](#) | [Contact Us](#)

# EXHIBIT 3



# EXHIBIT 3



## Exhibit 4

### Portulas, Stasi

---

**From:** Portulas, Stasi on behalf of Westmoreland, Carl  
**Sent:** Tuesday, June 22, 2010 3:58 PM  
**To:** 'dmr3@juno.com'  
**Cc:** 'wrunge@metlife.com'; 'jcdickson@metlife.com'; 'tcoakley@metlife.com'; 'Peg McCue'  
**Subject:** MetLife/Lakeside

**Attachments:** 07037PW1-P-1-2010-06-22.pdf; Document.pdf; 07037Buffer Study Board-2010-06-22.pdf; Table - Lakeside Office Park DRI 06-21-10.pdf; Document.pdf

Doug - I have attached several items which I hope will respond to the issues which we discussed at last Thursday's meeting:

1. Revised site plan indicating additional retail (consistent with traffic study) to be included within the existing and proposed buildings and increase of restaurant size from 5,000 to 8,000 square feet.
2. Letter from Mike Grill of Preston Partnership regarding the infeasibility of relocating the northernmost residential building farther from Glenridge in exchange for an increase in height.
3. Exhibit showing the replanted buffer from Glenridge.
4. Chart, based on form suggested by Mark Sample, regarding existing and new square footage and traffic.
5. Email from GDOT responding to our request for approval of driveways aligning with GM building or I-285 on-ramp.

In addition, we are attempting to contact the hospitals about their emergency vehicle traffic issues. We would also agree to a condition prohibiting retail in the residential buildings facing Glenridge and a condition that we would construct the residential buildings to condominium standards in accordance with the Sandy Springs ordinance.

I hope that this is clear and helpful. We look forward to seeing you tomorrow at 6:30. If you have questions in the meantime, please give me a call.

      
07037PW1-P-1-2010Document.pdf (526 KB) 07037Buffer Study Board-2010-0... Table - Lakeside Office Park D... Document.pdf (922 KB)

# RECEIVED

JUN 23 2010

City of Sandy Springs  
Community Development

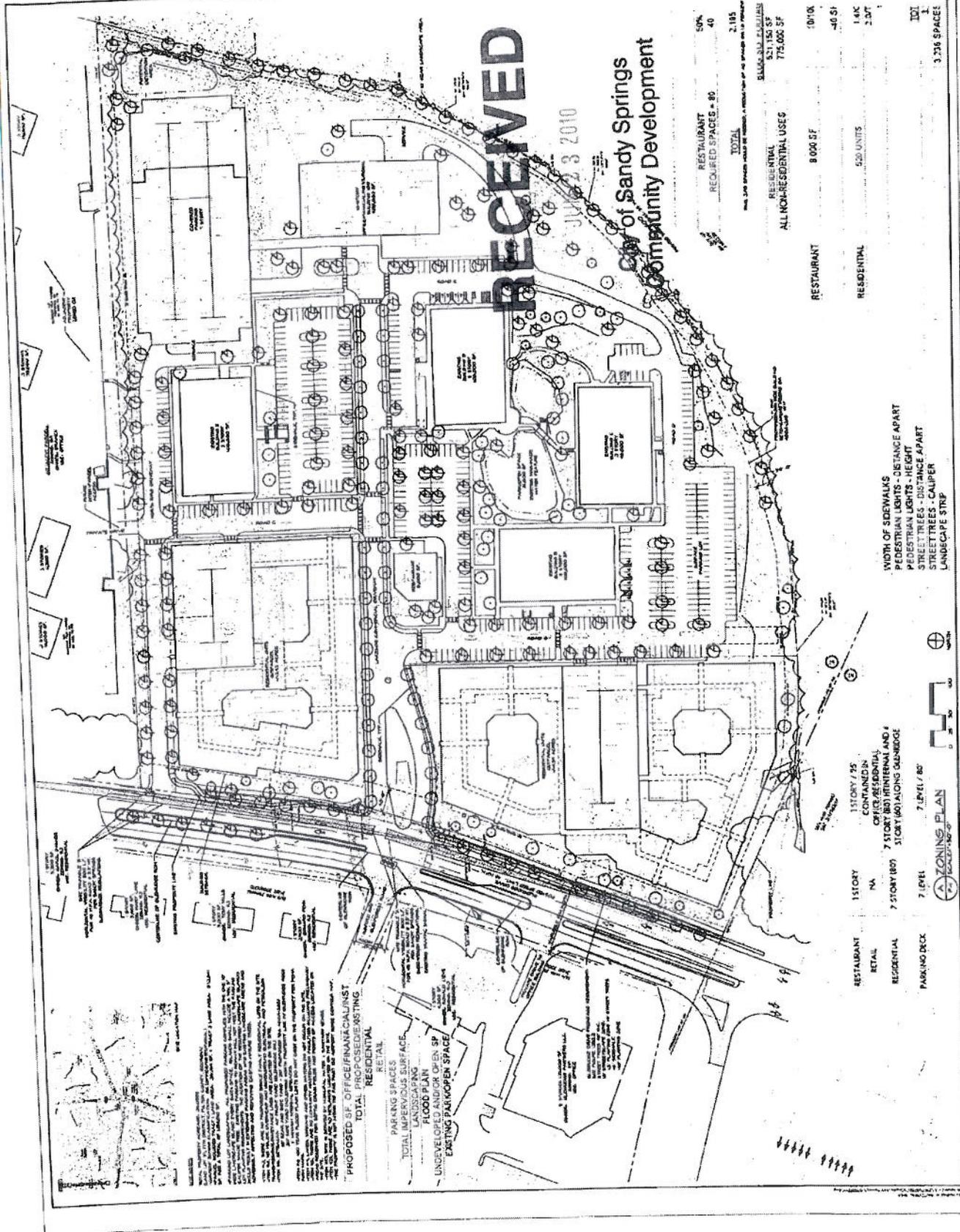
# Exhibit 4

DE OFFICE MASTERPLAN  
 CA VNE PROPERTIES

HCBOR  
 1000 S. GATEWAY BLVD  
 SUITE 100  
 SAN ANTONIO, TX 78210  
 TEL: 214.343.1000  
 FAX: 214.343.1001

NO.	REVISION	DATE
1	ISSUED FOR PERMITS	07/23/2010
2	REVISED PER COMMENTS	08/10/2010
3	REVISED PER COMMENTS	08/24/2010
4	REVISED PER COMMENTS	09/07/2010
5	REVISED PER COMMENTS	09/21/2010
6	REVISED PER COMMENTS	10/05/2010
7	REVISED PER COMMENTS	10/19/2010
8	REVISED PER COMMENTS	11/02/2010
9	REVISED PER COMMENTS	11/16/2010
10	REVISED PER COMMENTS	12/01/2010
11	REVISED PER COMMENTS	12/15/2010
12	REVISED PER COMMENTS	12/29/2010
13	REVISED PER COMMENTS	01/12/2011
14	REVISED PER COMMENTS	01/26/2011
15	REVISED PER COMMENTS	02/09/2011
16	REVISED PER COMMENTS	02/23/2011
17	REVISED PER COMMENTS	03/07/2011
18	REVISED PER COMMENTS	03/21/2011
19	REVISED PER COMMENTS	04/04/2011
20	REVISED PER COMMENTS	04/18/2011
21	REVISED PER COMMENTS	05/02/2011
22	REVISED PER COMMENTS	05/16/2011
23	REVISED PER COMMENTS	05/30/2011
24	REVISED PER COMMENTS	06/13/2011
25	REVISED PER COMMENTS	06/27/2011
26	REVISED PER COMMENTS	07/11/2011
27	REVISED PER COMMENTS	07/25/2011
28	REVISED PER COMMENTS	08/08/2011
29	REVISED PER COMMENTS	08/22/2011
30	REVISED PER COMMENTS	09/05/2011
31	REVISED PER COMMENTS	09/19/2011
32	REVISED PER COMMENTS	10/03/2011
33	REVISED PER COMMENTS	10/17/2011
34	REVISED PER COMMENTS	10/31/2011
35	REVISED PER COMMENTS	11/14/2011
36	REVISED PER COMMENTS	11/28/2011
37	REVISED PER COMMENTS	12/11/2011
38	REVISED PER COMMENTS	12/25/2011
39	REVISED PER COMMENTS	01/08/2012
40	REVISED PER COMMENTS	01/22/2012
41	REVISED PER COMMENTS	02/05/2012
42	REVISED PER COMMENTS	02/19/2012
43	REVISED PER COMMENTS	03/05/2012
44	REVISED PER COMMENTS	03/19/2012
45	REVISED PER COMMENTS	04/02/2012
46	REVISED PER COMMENTS	04/16/2012
47	REVISED PER COMMENTS	04/30/2012
48	REVISED PER COMMENTS	05/14/2012
49	REVISED PER COMMENTS	05/28/2012
50	REVISED PER COMMENTS	06/11/2012
51	REVISED PER COMMENTS	06/25/2012
52	REVISED PER COMMENTS	07/09/2012
53	REVISED PER COMMENTS	07/23/2012
54	REVISED PER COMMENTS	08/06/2012
55	REVISED PER COMMENTS	08/20/2012
56	REVISED PER COMMENTS	09/03/2012
57	REVISED PER COMMENTS	09/17/2012
58	REVISED PER COMMENTS	09/30/2012
59	REVISED PER COMMENTS	10/14/2012
60	REVISED PER COMMENTS	10/28/2012
61	REVISED PER COMMENTS	11/11/2012
62	REVISED PER COMMENTS	11/25/2012
63	REVISED PER COMMENTS	12/09/2012
64	REVISED PER COMMENTS	12/23/2012
65	REVISED PER COMMENTS	01/06/2013
66	REVISED PER COMMENTS	01/20/2013
67	REVISED PER COMMENTS	02/03/2013
68	REVISED PER COMMENTS	02/17/2013
69	REVISED PER COMMENTS	03/03/2013
70	REVISED PER COMMENTS	03/17/2013
71	REVISED PER COMMENTS	03/31/2013
72	REVISED PER COMMENTS	04/14/2013
73	REVISED PER COMMENTS	04/28/2013
74	REVISED PER COMMENTS	05/12/2013
75	REVISED PER COMMENTS	05/26/2013
76	REVISED PER COMMENTS	06/09/2013
77	REVISED PER COMMENTS	06/23/2013
78	REVISED PER COMMENTS	07/07/2013
79	REVISED PER COMMENTS	07/21/2013
80	REVISED PER COMMENTS	08/04/2013
81	REVISED PER COMMENTS	08/18/2013
82	REVISED PER COMMENTS	09/01/2013
83	REVISED PER COMMENTS	09/15/2013
84	REVISED PER COMMENTS	09/29/2013
85	REVISED PER COMMENTS	10/13/2013
86	REVISED PER COMMENTS	10/27/2013
87	REVISED PER COMMENTS	11/10/2013
88	REVISED PER COMMENTS	11/24/2013
89	REVISED PER COMMENTS	12/08/2013
90	REVISED PER COMMENTS	12/22/2013
91	REVISED PER COMMENTS	01/05/2014
92	REVISED PER COMMENTS	01/19/2014
93	REVISED PER COMMENTS	02/02/2014
94	REVISED PER COMMENTS	02/16/2014
95	REVISED PER COMMENTS	02/28/2014
96	REVISED PER COMMENTS	03/14/2014
97	REVISED PER COMMENTS	03/28/2014
98	REVISED PER COMMENTS	04/11/2014
99	REVISED PER COMMENTS	04/25/2014
100	REVISED PER COMMENTS	05/09/2014

**RECEIVED**  
 JUL 23 2010  
 City of Sandy Springs  
 Community Development



RESTAURANT	8,000 SF	1010K
RESIDENTIAL	520 UNITS	1.6K 2.3K
TOTAL	2,185	101
REQUIRED SPACES = 80	40	3,236 SPACES
50%	2,185	
RESTAURANT	8,000 SF	
RESIDENTIAL	520 UNITS	
ALL NON-RESIDENTIAL USES	775,000 SF	
RESIDENTIAL	9,211,150 SF	
TOTAL	10,000,000 SF	

WIDTH OF SIDEWALKS  
 PEDESTRIAN LIGHTS - DISTANCE APART  
 PEDESTRIAN LIGHTS - HEIGHT  
 STREET TREES - DISTANCE APART  
 STREET TREES - CALIPER  
 LANDSCAPE STRIP

1 STORY / 75  
 CONTAINED IN  
 OFFICE/RESIDENTIAL  
 7 STORY (B0) INTERNAL AND 4  
 STORY (A0) ALONG QUADRIDGE  
 7 LEVEL  
 7 LEVEL / 80'

RESTAURANT  
 RETAIL  
 RESIDENTIAL  
 PARKING/DCK

PROPOSED SF OFFICE/INTERNAL/ST  
 TOTAL PROPOSED EXISTING  
 RESIDENTIAL  
 PARKING SPACES  
 TOTAL IMPERVIOUS SURFACE  
 LANDSCAPING  
 FLOOD PLAN  
 UNDEVELOPED AND/OR OPEN SF  
 EXISTING PARKING SPACE

Portulas, Stasi

**From:** Mike Grill [MGrill@theprestonpartnership.com]  
**Sent:** Monday, June 21, 2010 4:17 PM  
**To:** Westmoreland, Carl  
**Cc:** Shea Hendress  
**Subject:** Lakeside Apartment Layout

**RECEIVED**

JUN 23 2010

City of Sandy Springs  
Community Development

Carl,

As requested, we have taken a look at the apartment layout for the Lakeside Masterplan to determine the impact of increasing the setback along Glenridge Drive. As discussed, the density would be offset by potentially increasing the building height. Please note that the position of the apartment building(s) is determined by the existing office buildings to the east and we feel that reducing the separation between the apartments and the office building would further compromise the units at this location. Here are some additional factors that need to be taken into consideration in regard to increasing the building setback:

- A. The decrease in buildable land area will create parcels that are not conducive to a mid-density apartment building. The resulting narrow and odd proportions will make the building less efficient and increase construction costs.
- B. Adding a level would change the construction type of the building from Type V to Type III which would increase the construction cost by as much as \$20 per square foot.
- C. A smaller footprint would increase the overall circulation and increase the efficiency ratio of the building which will impact feasibility.
- D. The parking deck footprints would be decreased, losing valuable on-grade parking at the first level and adding more structured parking which also impacts feasibility.
- E. The current double courtyard scheme allows buildings to work with existing grades by stepping the building at the courtyards. The increased setback would eliminate the double courtyards on both parcels and the single courtyard on the southern parcel would probably be eliminated which may reduce the opportunity for outdoor amenities below market expectations.
- F. The current double courtyard scheme also allows for additional terrace units corresponding to existing grades which would be reduced or eliminated by the proposed setback increase resulting in a potential reduction in the total number of units.
- G. Driveways would need to be added within the front setback (parallel to Glenridge Drive) in order to provide proper fire department vehicular access due to the remoteness of the building which may affect the existing trees or other landscaping proposed within the setback.

Let me know if there are any questions.

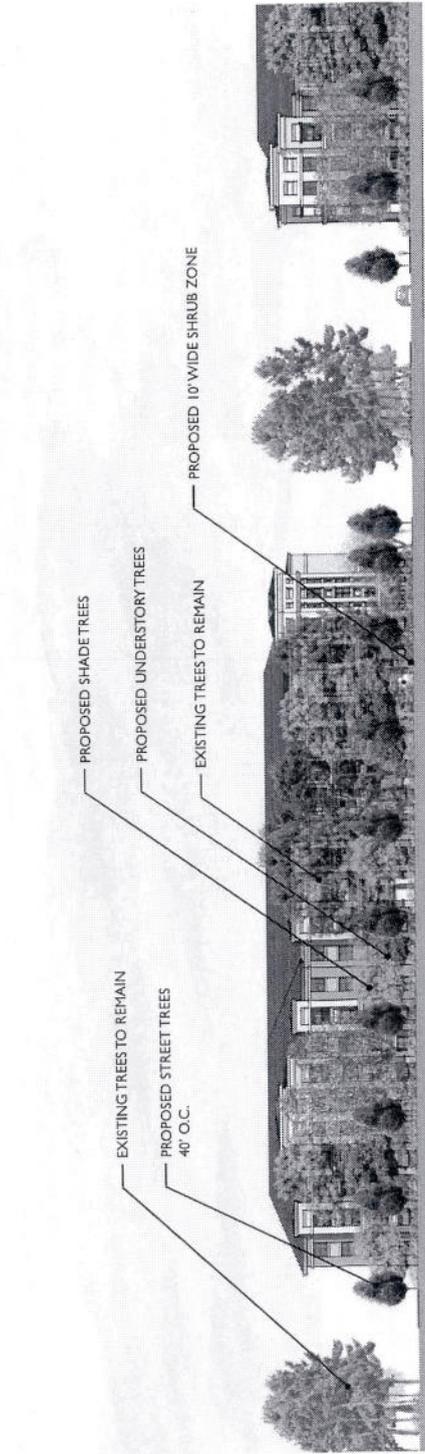
Thanks,

Michael J. Grill  
Principal

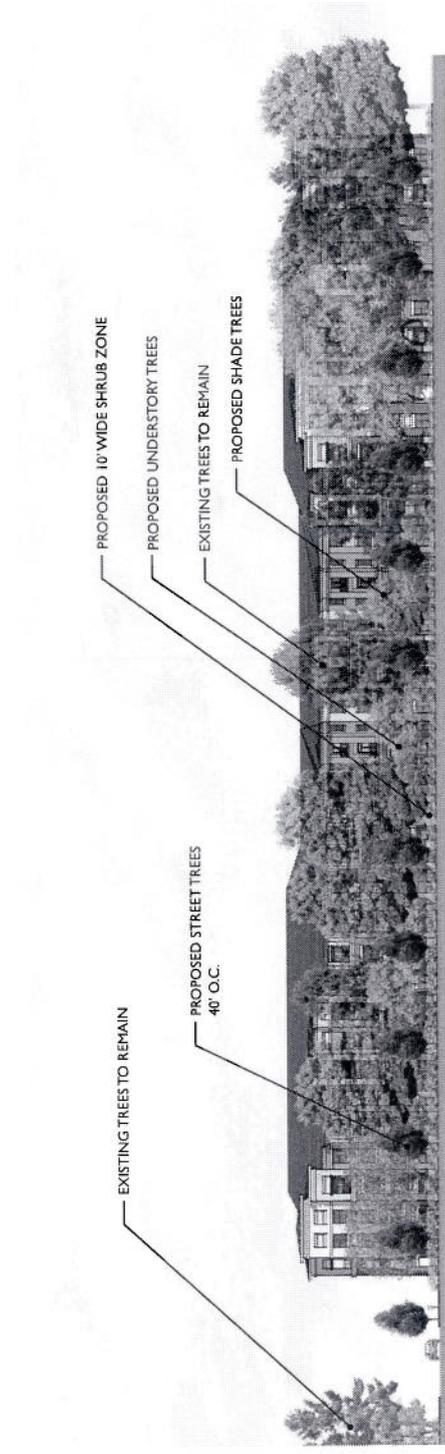
**The Preston Partnership, LLC**  
1000 Abernathy Road NE, Suite 550  
Northpark Towncenter, Building 400  
Atlanta, Georgia 30328

6/22/2010

**EXHIBIT 4**



PHASE I ELEVATION AT GLENRIDGE DRIVE



PHASE II ELEVATION AT GLENRIDGE DRIVE

**LAKESIDE OFFICE ZONING PLAN**

**GLENRIDGE ELEVATIONS** | SANDY SPRINGS, GA  
 JUNE 22, 2010



As shown in Table 1A and 1B, the revised site plan that was used in this traffic study will generate significantly low traffic compared to the previous site plan that was used to calculate the trip generation in the previous traffic study dated in August 2007. Table 2 shows the trip comparison between existing condition, previous site plan and current site plan.

Land Use	Current		Additional New Net Trips Previous Zoning Application	Additional New Net Trips Current Site Plan
	Trips from Current Occupancy Existing Buildings	Trips for Stabilized Occupancy Existing Buildings		
Office	2,275	2,925	5,850 (715,000 s.f. addition)	3,449 (360,000 s.f. addition)
Residential	N/A	N/A	1,095 (300 condo units)	2,042 (520 Apartment Units)
Hotel	N/A	N/A	1,389 (200 rooms)	N/A
Retail	N/A	N/A	1,845 (50,000 s.f.)	272 (Ancillary / supportive retail in office 42,000 s.f.)
Restaurant	N/A	N/A	N/A	610 (8,000 s.f.)
<b>Total</b>	<b>2,275</b>	<b>2,925</b>	<b>10,179</b>	<b>6,373</b>

The new traffic from the proposed expansion is shown in Figure 7A. The existing office complex was 70% occupied at the time of the traffic counts were conducted. Typical stabilized occupancy rate for office buildings is 90%. Therefore, existing site traffic from the office complex has also been increased to reflect occupancy increase in the existing office complex. The new traffic from the existing occupancy change is shown in Figure 7B.

### 3. TRIP DISTRIBUTION & ASSIGNMENT

The trip distribution is the percentage of the traffic generated by the site that travels to and from the site on each segment of the surrounding roadway network. The trip distribution was based on the location of major roadways, highways and residential concentrations that will serve the development. The trip distribution is shown in Figure 3. The distribution was discussed and agreed upon in the methodology meeting. The site-generated volumes were then distributed to the surrounding roadway network based on the driver's destination, and the most easily accessible route.

**RECEIVED**

JUN 23 2010

City of Sandy Springs  
Community Development  
A&R Engineering Inc.

Portulas, Stasi

**From:** Abdul Amer [AAmer@areng.com]  
**Sent:** Tuesday, June 22, 2010 9:49 AM  
**To:** Westmoreland, Carl  
**Cc:** jcdickson@metlife.com; tcoakley@metlife.com; pmccue@metlife.com; Moore, Mark  
**Subject:** FW: Lakeside Office Park - GDOT Response  
**Attachments:** 10 010 - Concept Design 06 21 10 P-1 (1).pdf

Carl,

Please see the response below from Georgia DOT staff regarding the two alternate access points that I was asked by the neighbors to pursue. Unfortunately, GDOT is not willing to recommend any of those two options. Attached is the concept plan that I submitted to GDOT with the two options shown on it.

**Abdul K. Amer, PE**  
**Presidnet**  
**A&R Engineering, Inc.**  
T:(770) 690-9255

**From:** Mullins, Katie [mailto:kmullins@dot.ga.gov]  
**Sent:** Tuesday, June 22, 2010 9:04 AM  
**To:** Abdul Amer  
**Cc:** Duncan, Calvin; Poole, Bryant; Brown, Rachel  
**Subject:** RE: Lakeside Office Park

Abdul,

After careful review of the two proposals for the relocation of the Lakeside Office Park driveway, the Department cannot recommend either. Option 1 does not meet the proper spacing for the 1000 ft minimum from the interstate ramp that the Department requires. Option 2 would require a private entity/private drive onto limited access right of way. The Department does not allow this. Therefore, at this time we cannot recommend either of the proposed options. Should you have any questions or would like to speak on this matter further, please feel free to give me a call.

Katie Mullins  
Georgia Department of Transportation  
District 7  
District Access Management Supervisor  
770-986-1768

**RECEIVED**

JUN 23 2010

City of Sandy Springs  
Community Development

**From:** Abdul Amer [mailto:AAmer@areng.com]  
**Sent:** Monday, June 21, 2010 6:39 PM  
**To:** Mullins, Katie  
**Subject:** Lakeside Office Park

Katie:

6/22/2010

## Exhibit 4

Attached is a concept plan for couple of options for alternate access. Currently the main access to this office park is located across from Glenforest Road on Glenridge Drive at an existing traffic signal north of I-285 westbound off ramp which is also signalized. In a recent meeting with neighborhood groups, they suggested that we explore with GDOT two options for alternate access. Option 1 as shown in the attached concept moves the main entrance further south to a location about 300 ft north of the existing signal. To accommodate the traffic from this development, it will have to be full access and signalized. The Option 2 which is also shown on the same concept is to create a new main access to the site directly across from I-285 westbound ramp so the exiting vehicles from the site can directly access the ramp.

Please let me know if the Department would be willing to allow any of these two options. Please call me in the morning when you get a chance to review this. I can be reached on my mobile at 404-610-1431. Thanks,

**Abdul K. Amer, PE**

**President**

**A&R Engineering, Inc.**

2160 Kingston Court, Suite O  
Marietta, GA 30067

T:(770) 690-9255 F:(770) 690-9210

[www.areng.com](http://www.areng.com)

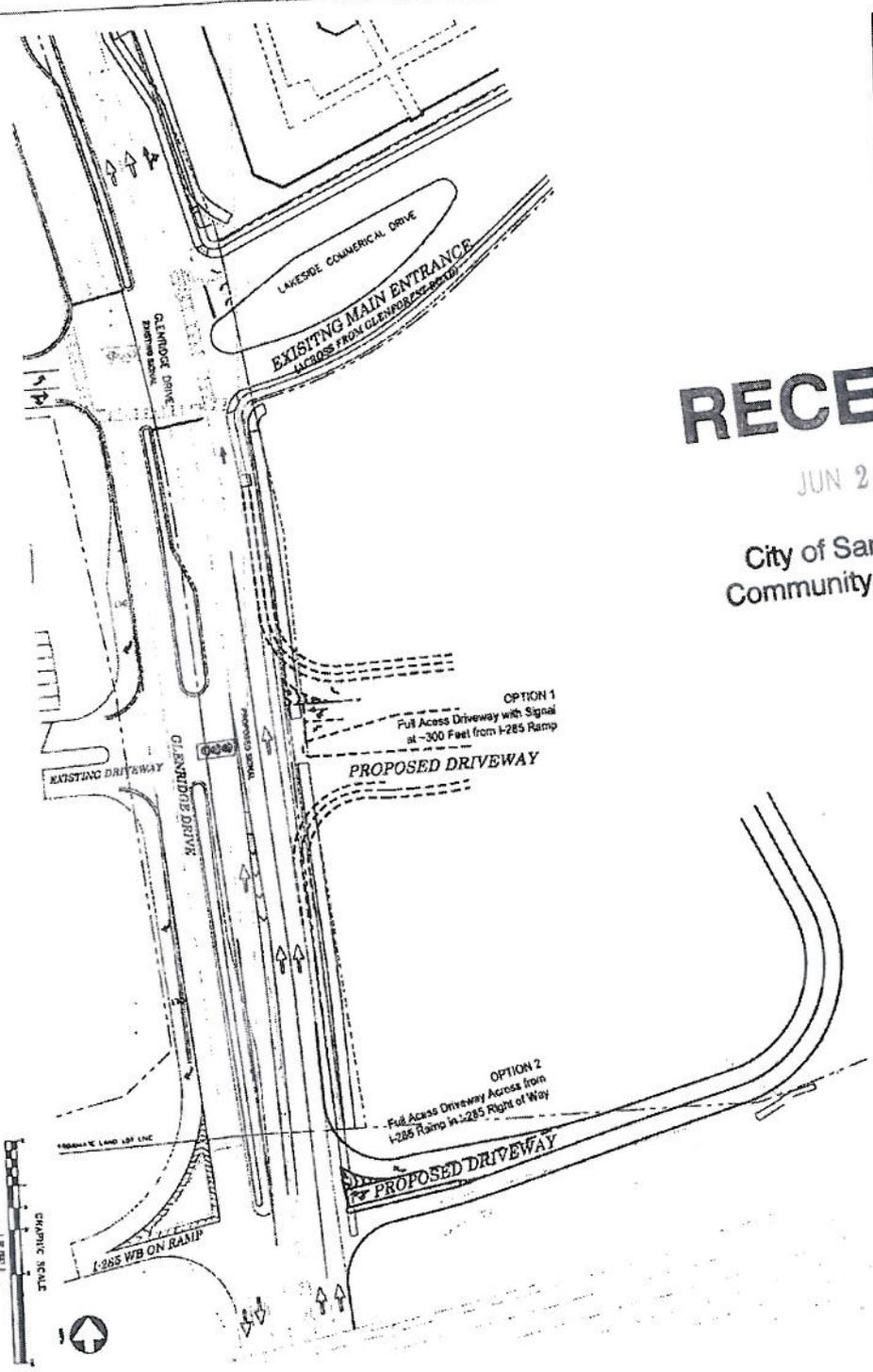
**RECEIVED**

JUN 23 2010

City of Sandy Springs  
Community Development

6/22/2010

CONCEPT DRAWING



RECEIVED

JUN 23 2010

City of Sandy Springs  
Community Development

PROJECT CONCEPT	DATE 5/11/10	DRAWN BY JMW	CHECKED BY JMW	DATE 5/11/10	SHEET NO. 001	TOTAL SHEETS 001	PROJECT NO. 10-00000000	CLIENT A&R Engineering Inc.	PROJECT NAME LAKESIDE OFFICE PARK	PROJECT LOCATION Sandy Springs, GA	PROJECT STATUS CONCEPT	PROJECT PHASE CONCEPT	PROJECT DESCRIPTION LAKESIDE OFFICE PARK DRIVEWAY CONCEPT PLAN	PROJECT CONTACT Lakeside Office Park

## Exhibit 5

**Ruffin, Patrice**

---

**From:** Stephens, Scott [StephensJS@fultonschools.org]  
**Sent:** Tuesday, July 06, 2010 3:12 PM  
**To:** Ruffin, Patrice  
**Subject:** Lakeside

Patrice,

Below is our assessment of the Lakeside (RZ09-010/U09-009/CV09-019) project with 520 apartment (multi-family) units:

The schools serving this location are High Point Elementary, Ridgeview Middle, and Riverwood High School. Based on current conditions, one apartment unit in this area generates:

0.0748 to 0.2238 ES students  
0.0148 to 0.0394 MS students  
0.0246 to 0.0689 HS students

(The above numbers represent average to average plus one standard deviation.)

Which results in this project producing an estimated:

39 to 116 ES students  
8 to 20 MS students  
13 to 36 HS students  
60 to 172 total students

Our forecasts for the 2010-11 school year have High Point at 644 students, and a GA Department of Education state capacity of 850, Ridgeview forecasted at 823 (1,200 capacity), and Riverwood at 1,618 (1,325 capacity).

Please let me know if there is anything else I can do to help.

Scott

J. Scott Stephens, AICP  
Planning Analyst  
Fulton County Schools  
404.763.5525 | fax: 404.763.6771  
[stephensjs@fultonschools.org](mailto:stephensjs@fultonschools.org)

## Exhibit 6

### LETTER OF INTENT

This application is submitted by authorization of the City Council in an attempt to settle litigation between MLGP Lakeside, LLC (the "Owner") and the City arising from the City's denial of application RZ07-021/U-07-008/CV07-020. This application proposes a different mix of use from the preview application, including deletion of a second 400,000 sf. office building. The Owner reserves the right to request such additional office building or other uses in subsequent applications, in accordance with City procedures.

The Owner proposes to develop a mixed use project consisting of 520 residential units, 770,000 square feet of new and existing office and financial institutional uses, 42,000 square feet of retail located inside the office and residential buildings, and an 8,000 square foot restaurant. The residential units will be located in two new buildings along the Glenridge Drive frontage. Due to the sloping topography, the residential buildings will range in height from four to seven stories (60' to 80') both maintaining the four story (60') height along the Glenridge Drive façade. The office uses will be provided in four existing two and five story buildings and one new sixteen story building as shown on the site plan included in this application. The maximum height of the new office building is 240 feet (excluding any penthouses for mechanical equipment). The restaurant use will be a stand alone restaurant located interior to the development as shown on the site plan.

The site is currently improved with office uses incorporated into five, two and five story office buildings. At present, parking is provided in surface parking areas that span the site. Upon redevelopment, four of the existing office buildings consisting of approximately 370,000 square feet will remain. Parking for the proposed development will be accommodated in three parking decks and in limited surface parking areas. By this application, the Owner requests: (a) to rezone the subject tract to MIX; (b) to obtain a use permit to increase the permitted height of the buildings from sixty feet to eighty feet (residential) and two hundred forty feet (office); and (c) to obtain a variance to modify the surface parking landscape island requirement to provide for the existing landscaping.

As part of its application to rezone to MIX the Owner proposes the following specific regulations:

1. Minimum front yard: 40 feet;
2. Minimum side yard: 10 feet;
3. Minimum rear yard: 10 feet;
4. Minimum internal setback: 0 feet;
5. Minimum landscaping and buffering between uses: 0 feet;
6. Minimum heated floor area per unit: 700 square feet; and
7. Maximum building height: 240 feet (excluding any penthouses for mechanical equipment).

**RECEIVED**

JUN 23 2010

**City of Sandy Springs  
Community Development**

The site plan enclosed with this application provides further detail regarding the proposed development.

The Sandy Springs Zoning Ordinance permits a variance upon a showing that: (1) the relief, if granted, would be in harmony with, or could be made to be in harmony with, the general purpose and intent of the Zoning Ordinance; (2) the application of a particular provision of the Zoning Ordinance to a particular piece of property, due to extraordinary and exceptional conditions

pertaining to that property because of its size, shape or topography, would create an unnecessary hardship for the owner while causing no detriment to the public; or (3) conditions resulting from an existing foliage or structures bring about a hardship whereby a sign meeting minimum letter size, square footage and height requirements can not be read from an adjoining public road. The proposed variance meets the first criteria.

To grant a variance to provide the existing alternative parking lot landscaping in lieu of the current surface parking landscape island requirement could be made to be in harmony with the general purpose and intent of the Zoning Ordinance. The Owner is retrofitting portions of an existing surface parking area for continued use in the proposed development to service the existing office uses. In lieu of providing landscape islands every sixth space, the Owner proposes to utilize the existing landscaped areas in the existing parking lot and around the site to address the landscaping needs of the development. Approximately thirty-four percent (34%) of the entire site is landscaped space which exceeds the City's target of ten percent (10%) green space for Live Work Community properties and fifteen percent (15%) for Live Work Regional properties. Furthermore, a benefit will be received by the community through the relocation of some of the existing parking into the proposed parking decks.



---

Carl E. Westmoreland, Jr.  
Attorney for Owner

**Exhibit 6**

**RECEIVED**

JUN 23 2010

**Exhibit 7**

**IMPACT ANALYSIS  
ZONING**

City of Sandy Springs  
Community Development

- (a) Whether the zoning proposal will permit a use that is suitable in view of the use and development of adjacent and nearby property:

The subject property is suitable for the proposed use. The only adjacent site is currently developed with office uses and will also likely be redeveloped when market conditions allow. Nearby properties are developed with a mix of uses mainly consisting of commercial and office developments. The residential subdivision across Glenridge Drive has coexisted with office development for many years. The proposed mix of uses will be consistent with the adjacent and nearby property.

- (b) Whether the zoning proposal will adversely affect the existing use or usability of adjacent or near property:

This proposal will benefit neighboring properties by converting an outdated office development with surface parking lots to a more urban, mixed use development with parking decks. Furthermore, the Owner has designed the proposed development to incorporate the more intensive use on the site at the rear of the project, adjacent to Georgia 400 and Interstate 285. The location of the proposed residential buildings will complement the residential neighborhood immediately across Glenridge Drive and continue the transformation of this node into a mixed use community. The zoning proposal will not adversely affect the existing use or usability of adjacent or nearby property.

- (c) Whether the property to be affected by the zoning proposal has a reasonable economic use as currently zoned:

The majority of the property is currently zoned for O-I compatible uses. Although the property could be and is developed under the existing zoning, the location adjacent to I-285 and Georgia 400 and the size of the site make it more suitable for a mixed use development.

- (d) Whether the zoning proposal will result in a use which will or could cause an excessive or burdensome use of existing streets, transportation facilities, utilities or schools:

The mix of uses proposed will help balance the impact on existing streets, transportation facilities and utilities. The Development of Regional Impact review and analysis required in conjunction with this application confirmed the impact of the project on transportation and streets and addressed the necessary improvements in the Notice of Decision issued by the Georgia

Regional Transportation Authority. The provision of multi-family units could have an effect on the schools, however, the effect will be mitigated due to the targeted young professional market for the units and the lack of three bedroom or family oriented units in the development.

- (e) Whether the zoning proposal is in conformity with the policy and intent of the land use plan:

The land use plan designates the subject property as Live Work Community and Live Work Regional. The placement of the more intensive use at the rear of the property in the Live Work Regional portion of the site is in conformity with the policy and intent of the land use plan. The proposed height of the residential building along Glenridge Drive is not consistent with the four story living working community land use plan suggestion, however, the proposed height will not adversely impact nearby properties due to the location of the site near the Interstate and Georgia 400 and the forty foot (40') building setback along Glenridge Drive in that portion of the site. Further, the increased height will allow more open space and green space on the site due to the vertical development.

- (f) Whether there are other existing or changing conditions affecting the use and development of the property which give supporting grounds for either the approval or disapproval of the zoning proposal:

The proposed development is consistent with the trend of converting office zoned parcels into mixed use projects. Mixed use developments provide a greater diversity to the uses in the area and generate traffic benefits through internal trip capture and staggered peak hour traffic.

- (g) Whether the zoning proposal permits a use that can be considered environmentally adverse to the natural resources, environment and citizens of the City of Sandy Springs.

The zoning proposal does not permit a use that is environmentally adverse to natural resources, environment and the citizens of the City of Sandy Springs. Conversely, the proposed mixed use development of the subject property will permit a more efficient and urban use of the site than the existing office building and surface parking lot provide.

**Exhibit 7**

## Exhibit 8

### JSE PERMIT CONSIDERATIONS

City of Sandy Springs  
Community Development

JUN 23 2010

RECEIVED

- 1) Whether the proposed use is consistent with the Comprehensive Land Use Plan and/or Economic Development Revitalization plans adopted by the City Council:

The subject property contains both the Live Work Regional and Live Work Community Comprehensive Land Use Plan designations. Although the proposed residential use is taller than contemplated by the underlying Live Work Community designation, to comply with the intent of the Comprehensive Land Use Plan, the Owner proposes to maintain a four story (60') façade along Glenridge Drive and then increase the building height as the development extends back into the Live Work Regional portion of the site. The types of uses proposed are consistent with the existing designations.

- 2) Compatibility with land uses and zoning districts in the vicinity of the property for which the use permit is proposed:

Approval of the use permit would permit building heights that would be consistent with other properties along Glenridge Drive and parcels that border Interstate 285 and Georgia 400. The majority of the nearby properties are developed with commercial and office uses that are consistent with the proposal.

- 3) Whether the proposed use may violate local, state and/or federal statutes, ordinances or regulations governing land development:

The proposed mixed use development will not violate local, state and/or federal ordinances or regulations governing land development.

- 4) The effect of the proposed use on traffic flow, vehicular and pedestrian, along adjoining streets:

The increase in the height permitted by the MIX zoning district will not adversely affect traffic flow along adjoining streets. A Development of Regional Impact review was conducted in conjunction with the proposed development and the redevelopment was found to be within the best interest of the State subject to adherence to certain planning and transportation requirements.

- 5) The location and number of off street parking spaces:

The majority of the off street parking spaces will be located in three parking decks. Some of the existing surface parking spaces will be maintained

to serve the existing offices uses and the proposed restaurant use. A total of approximately 3,292 parking spaces are proposed for the entire development.

6) The amount and location of open space:

Approximately 34% of the site is proposed to be landscaped open space. Approval of a use permit to increase the permitted height facilitates the projected amount of open space through vertical stacking of the development. The location of the open space is shown on the site plan included in this application.

7) Protective screening:

The site will be screened by landscaping and trees along the perimeter of the subject property.

8) Hours and manner of operation:

The proposed development will have a twenty-four hour, seven days a week presence due to the mix of uses proposed.

9) Outdoor lighting:

Outdoor lighting will be provided for the safety of the residents, employees and guests. The location of the lighting will be determined when the plans are developed for permitting.

10) Ingress and egress to the property.

The site has two ingress and egress points proposed along Glenridge Drive. The primary ingress and egress will be the full access curb cut in the center of the project. This access point is managed through a traffic signal. The curb cut at the northern end of the property will be right-in, right-out only.

## Exhibit 8



MEMORANDUM

**TO:** Patrice S. Ruffin, AICP, Assistant Director of Planning & Community Development  
 City of Sandy Springs, Department of Community Development

**FROM:** Monica Robinson, B.S., M.B.A., Environmental Planner  
 Department of Health Services, Office of the Director

**DATE:** June 17, 2010

**SUBJECT:** Zoning Comments for July 15, 2010 Planning Commission

**RECEIVED**  
 JUN 21 2010  
 City of Sandy Springs  
 Community Development

AGENDA ITEM	ZONING COMMENTS
RZ09-010/ U09-009/ CV09-019	<p>The Fulton County Department of Health Services recommends that the applicant be required to connect the proposed development to public water and public sanitary sewer available to the site.</p> <p>Since this proposed development constitutes a premise where people work, live, or congregate, onsite sanitary facilities will be mandatory, prior to use or occupancy.</p> <p>This facility must comply with the Georgia Smokefree Act of 2005.</p> <p>Since this proposed development includes a food service facility, the owner must submit kitchen plans for review and approval by this department before issuance of a building permit and beginning construction. The owner must obtain a food service permit prior to opening.</p> <p>If this proposed development includes a public swimming pool as defined in the regulations including spas, whirlpools, etc., the owner or contractor must submit plans for review and approval by this department and must obtain a Department of Health Services permit to construct before issuance of a building permit. Also, the owner of the facility must obtain a Department of Health Services permit to operate the pool prior to opening.</p> <p>This department is requiring that plans indicating the number and location of outside refuse containers along with typical details of the pad and approach area for the refuse containers be submitted for review and approval.</p> <p>This department is requiring that all existing structures to be demolished must be inspected by a certified pest control operator to insure that the premise is rat free. If evidence of rodent infestation is found, the property must be baited prior to demolition.</p> <p>To protect public health concerning injury and morbidity within this proposed development, this department recommends that the proposed buildings be designed for natural surveillance and/or that other security measures are taken as needed to reduce the likelihood of violent crimes.</p> <p>The Department of Health Services recommends that healthy food access be encouraged for the proposed food service facility to promote healthy eating, which is directly linked to decrease in obesity and chronic diseases.</p>

Exhibit 9

AGENDA ITEM	ZONING COMMENT
RZ10-005/ CV10-008	<p>This facility must comply with the Georgia Smokefree Act of 2005.</p> <p>The Fulton County Department of Health Services recommends that this proposed synagogue be approved, provided the internal plumbing is inspected and adequate for the proposed use.</p> <p>This department is requiring that plans indicating the number and location of outside refuse containers along with typical details of the pad and approach area for the refuse containers be submitted for review and approval.</p>

**Exhibit 9**



**RECEIVED**

JUL 21 2010

City of Sandy Springs  
Community Development

**CITY OF ATLANTA**

DEPARTMENT OF WATERSHED MANAGEMENT  
BUREAU OF DRINKING WATER  
TECHNICAL SERVICES GROUP

KASIM REED  
MAYOR

651 FOURTEENTH STREET  
ATLANTA, GEORGIA 30318  
OFFICE 404-235-2007  
FAX 404-982-1400

ROBERT J. HUNTER  
COMMISSIONER

June 28, 2010

Ms. Patrice S. Ruffin  
City Of Sandy Springs  
Department of Community Development  
Planning and Zoning Division  
7840 Roswell Road, Building 500  
Sandy Springs, GA 30350

Subject: Water Availability at 5775 & 5795 Glenridge Drive

Dear Ms. Ruffin,

In response to your letter we offer the following:

1. There is an existing 8-inch water main along Glen Forest Drive. This water main is owned and maintained by the City of Atlanta.
2. Our calculations based on the reported fire flow test results indicate the 8" main has a capacity of 6378 gpm.
3. If further investigation is required, please complete the attached Basis of Design Data form along with site utility plan.

In order to access the water you must develop a set of stamped engineering drawings, and submit three copies to the City of Atlanta, Bureau of Drinking Water for approval and review.

Should additional information be needed, please contact me at 404-235-2085.

Sincerely,

Eric Glover, PE  
Chief Civil Engineer

cc: file



## NORTHSIDE HOSPITAL

July 14, 2010

**RECEIVED**

JUL 14 2010

Mr. Lee Duncan, Chairman  
Members of the Sandy Springs Planning Commission  
Sandy Springs City Hall  
7840 Roswell Road, Building 500  
Morgan Falls Office Park  
Sandy Springs, GA 30350

**City of Sandy Springs  
Community Development**

**Re: RZ09-10/U009/CV09-019 (5775 & 5795 Glenridge Drive)**

Dear Chairman Duncan and Members of the Planning Commission:

As a nearby property owner with significant business operations in the area, we at Northside Hospital are compelled to express our concerns regarding the above-referenced application. Northside Hospital has approximately 450,000 patient encounters per year including 50,000 ER visits and 15,000 deliveries.

We have reviewed and analyzed the Traffic Impact Study and the Development of Regional Impact Regional Review Finding issued by the Atlanta Regional Commission in September 2007 (the "DRI"). We are very concerned about the amount of additional traffic that would be created by the development that would be allowed pursuant to this rezoning. Although the scope and scale are reduced from the original 2007 zoning application, the traffic impacts from the new scope proposed in this application are considerable.

In particular, we are concerned about the impact of this additional traffic volume on the arrival of emergency vehicles and obstetric patients as they approach the hospital, especially from the north, east and west. Any time lost in transporting patients to the hospital in an emergency situation can be critical to the outcome for that patient. In addition to adversely affecting emergency operations, the increased traffic also will negatively affect the routes regularly used by Northside Hospitals non-emergency patients, staff and physicians, especially during the peak travel hours.

We would urge the Planning Commission to recommend denial of this application because of the significant negative impact the development will create for nearby businesses and residents. At the very least, we request that this application not be approved unless extensive traffic mitigation conditions are made a part of an approval. A number of conditions were identified in the original DRI of September 2007, but it appears from our review that many of those are not included as conditions in the recommendation that is before the Commission.

Thus, we would urge the Commission to include all the traffic mitigation measures from the 2007 DRI if this application were to be approved at its current scale of proposed development.

We appreciate your consideration.

Sincerely,



Deborah S. Mitcham  
Vice President of Finance & CFO

cc: Ms. Nancy Leathers, Director of Community Development  
Ms. Patrice Ruffin, Planner

**RECEIVED**

JUL 15 2010

**To: City of Sandy Springs Planning/Zoning Commission:**

**Re: Rezoning Proposal for "Lakeside"**

City of Sandy Springs  
Community Development

I am a resident of Sandy Springs and reside in the Glenforest Subdivision. This subdivision is accessible from Glenridge Drive, and is located across from the proposed redevelopment of an area called "Lakeside." A zoning variance for this project is scheduled for public comment and review by the planning commission on July 15, 2010.

I am against granting the variance. Presently, the traffic capacity of Glenridge Drive is insufficient for handling traffic at peak rush hour. Cars are backed-up to Hammond during rush hour, and many commuters are already using the neighborhood as a "cut-through." Providing access from the proposed hotel/condominium redevelopment onto Glenridge Drive will only make a poor situation worse.

Further, Hammond drive itself is expected to handle more traffic with the re-development of the interchange with state route GA-400. Since Hammond and Glenridge form the boundaries of the neighborhood, providing additional density in the Lakeside development is only going to further erode the character of our neighborhood.

There already are numerous areas around Lakewood that show the effects of unsuccessful redevelopment. Within a mile are recently constructed townhouses in foreclosure, partially developed parcels, and vacant lots. With commercial real estate vacancy at a peak, it is unrealistic to believe that there is sufficient demand for additional office space or additional condominiums. We have seen developers propose rezoning, with the result that projects were not completed, partially completed, or partially vacant. Sandy Springs should not let this irresponsible development continue in the present economic climate, and ignore its citizen's requests merely at the prospect of a potential increase in the city's tax base.

When the city of Sandy Springs was formed several years ago, one of the reasons for justifying the formation of the city was that Fulton County did not adequately consider the input of Sandy Springs' residents. Please, consider our input in this matter.

*William D. Mitchell* #1 5795 Pine Brook Rd 7-14-2010

Name Address Date

To: City of Sandy Springs Planning/Zoning Commission

**RECEIVED**

JUL 15 2010

Email To: [linda.abaray@sandyspringsga.org](mailto:linda.abaray@sandyspringsga.org)

City of Sandy Springs  
Community Development

**Re: Rezoning Proposal for "Lakeside"**

I am a resident of Sandy Springs and reside in the Glenforest Subdivision. This subdivision is accessible from Glenridge Drive, and is located across from the proposed redevelopment of an area called "Lakeside." A zoning variance for this project is scheduled for public comment and review by the planning commission on July 15, 2010.

I am **against** granting the variance. Although I may not be able to attend, I would like my opinion to be registered.

  
\_\_\_\_\_  
Name (Signed) 7.14.10  
Date

BRENT CONWAY  
Name (Printed)

600 GLENFOREST ROAD  
Address

*Eliz Bruscato* 7/14/10  
Eliza Bruscato  
670 Glenforest Road 30328

**RECEIVED**

JUL 15 2010

To: City of Sandy Springs Planning/Zoning Commission

Email To: [linda.abaray@sandyspringsga.org](mailto:linda.abaray@sandyspringsga.org)

City of Sandy Springs  
Community Development

**Re: Rezoning Proposal for "Lakeside"**

I am a resident of Sandy Springs and reside in the Glenforest Subdivision. This subdivision is accessible from Glenridge Drive, and is located across from the proposed redevelopment of an area called "Lakeside." A zoning variance for this project is scheduled for public comment and review by the planning commission on July 15, 2010.

I am **against** granting the variance. Although I may not be able to attend, I would like my opinion to be registered.

John Goldman 7/14/10  
Name (Signed) Date

John Goldman  
Name (Printed)

5800 Timberlane Tr  
Address

KARL Koster  
Karl Koster 7/15/10  
5880 Pine Brook Rd

**RECEIVED**

JUL 15 2010

To: City of Sandy Springs Planning/Zoning Commission

Email To: [linda.abaray@sandyspringsga.org](mailto:linda.abaray@sandyspringsga.org)

City of Sandy Springs  
Community Development

**Re: Rezoning Proposal for "Lakeside"**

I am a resident of Sandy Springs and reside in the Glenforest Subdivision. This subdivision is accessible from Glenridge Drive, and is located across from the proposed redevelopment of an area called "Lakeside." A zoning variance for this project is scheduled for public comment and review by the planning commission on July 15, 2010.

I am **against** granting the variance. Although I may not be able to attend, I would like my opinion to be registered.

*Ellen Komisarow* 7-14-2010  
Name (Signed) Date

*ELLEN KOMISAROW*  
Name (Printed)

*770 Glen Forest Rd,*  
Address

**RECEIVED**

JUL 15 2010

To: City of Sandy Springs Planning/Zoning Commission

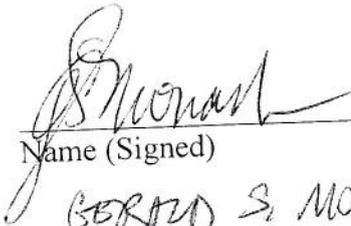
Email To: [linda.abaray@sandyspringsga.org](mailto:linda.abaray@sandyspringsga.org)

City of Sandy Springs  
Community Development

**Re: Rezoning Proposal for "Lakeside"**

I am a resident of Sandy Springs and reside in the Glenforest Subdivision. This subdivision is accessible from Glenridge Drive, and is located across from the proposed redevelopment of an area called "Lakeside." A zoning variance for this project is scheduled for public comment and review by the planning commission on July 15, 2010.

I am **against** granting the variance. Although I may not be able to attend, I would like my opinion to be registered.

  
 Name (Signed) \_\_\_\_\_ Date: 07/13/10  
 GERARDO S. MOMASA  
 Name (Printed)

5795 TIMBERLANE TERR, NE  
 Address  
 Darlys J. Ausec 7/14/10  
 Darlys L. Ausec  
 5785 Timberlane Terrace

**RECEIVED**

JUL 15 2010

To: City of Sandy Springs Planning/Zoning Commission

Email To: [linda.abaray@sandyspringsga.org](mailto:linda.abaray@sandyspringsga.org)

City of Sandy Springs  
Community Development

**Re: Rezoning Proposal for "Lakeside"**

I am a resident of Sandy Springs and reside in the Glenforest Subdivision. This subdivision is accessible from Glenridge Drive, and is located across from the proposed redevelopment of an area called "Lakeside." A zoning variance for this project is scheduled for public comment and review by the planning commission on July 15, 2010.

I am **against** granting the variance. Although I may not be able to attend, I would like my opinion to be registered.

	7-13-10
Name (Signed)	Date
Ted Strange	
Name (Printed)	
135 Glenforest Rd Atlanta, GA 30328	
Address	

RECEIVED

JUL 15 2010

To: City of Sandy Springs Planning/Zoning Commission:

Re: Rezoning Proposal for "Lakeside"

City of Sandy Springs

Community Development

I am a resident of Sandy Springs and reside in the Glenridge Community Development subdivision is accessible from Glenridge Drive, and is located across from the proposed redevelopment of an area called "Lakeside." A zoning variance for this project is scheduled for public comment and review by the planning commission on July 15, 2010.

I am against granting the variance. Presently, the traffic capacity of Glenridge Drive is insufficient for handling traffic at peak rush hour. Cars are backed-up to Hammond during rush hour, and many commuters are already using the neighborhood as a "cut-through." Providing access from the proposed hotel/condominium redevelopment onto Glenridge Drive will only make a poor situation worse.

Further, Hammond drive itself is expected to handle more traffic with the re-development of the interchange with state route GA-400. Since Hammond and Glenridge form the boundaries of the neighborhood, providing additional density in the Lakeside development is only going to further erode the character of our neighborhood.

There already are numerous areas around Lakewood that show the effects of unsuccessful redevelopment. Within a mile are recently constructed townhouses in foreclosure, partially developed parcels, and vacant lots. With commercial real estate vacancy at a peak, it is unrealistic to believe that there is sufficient demand for additional office space or additional condominiums. We have seen developers propose rezoning, with the result that projects were not completed, partially completed, or partially vacant. Sandy Springs should not let this irresponsible development continue in the present economic climate, and ignore its citizen's requests merely at the prospect of a potential increase in the city's tax base.

When the city of Sandy Springs was formed several years ago, one of the reasons for justifying the formation of the city was that Fulton County did not adequately consider the input of Sandy Springs' residents. Please, consider our input in this matter.

Shay Edy  
Name

5815 Timberlane Ter  
Atlanta 30328  
Address

7/15/10  
Date

To: City of Sandy Springs Planning/Zoning Commission

**RECEIVED**

JUL 15 2010

Email To: [linda.abaray@sandyspringsga.org](mailto:linda.abaray@sandyspringsga.org)

City of Sandy Springs  
Community Development

Re: Rezoning Proposal for "Lakeside"

I am a resident of Sandy Springs and reside in the Glenforest Subdivision. This subdivision is accessible from Glenridge Drive, and is located across from the proposed redevelopment of an area called "Lakeside." A zoning variance for this project is scheduled for public comment and review by the planning commission on July 15, 2010.

I am **against** granting the variance. Although I may not be able to attend, I would like my opinion to be registered.

*Ethan Zweigel*

7/14/10

Name (Signed)

Date

Ethan Zweigel

Name (Printed)

715 Glenforest Road Atlanta, GA 30328

Address

Dorothy Kelly

705 Glenforest Rd ATLANTA, GA-30328



To: City of Sandy Springs Planning/Zoning Commission

**RECEIVED**

JUL 15 2010

Email To: [linda.abaray@sandyspringsga.org](mailto:linda.abaray@sandyspringsga.org)

City of Sandy Springs  
Community Development

**Re: Rezoning Proposal for "Lakeside"**

I am a resident of Sandy Springs and reside in the Glenforest Subdivision. This subdivision is accessible from Glenridge Drive, and is located across from the proposed redevelopment of an area called "Lakeside." A zoning variance for this project is scheduled for public comment and review by the planning commission on July 15, 2010.

I am **against** granting the variance. Although I may not be able to attend, I would like my opinion to be registered.

Al Di Fiore                      7-14-10  
Name (Signed)                      Date

AL DIFIORE  
Name (Printed)

5810 Timberlane Terr  
Address                      Sandy Springs



To: City of Sandy Springs Planning/Zoning Commission

**RECEIVED**

JUL 15 2010

Email To: [linda.abarav@sandyspringsga.org](mailto:linda.abarav@sandyspringsga.org)

City of Sandy Springs  
Community Development

**Re: Rezoning Proposal for "Lakeside"**

I am a resident of Sandy Springs and reside in the Glenforest Subdivision. This subdivision is accessible from Glenridge Drive, and is located across from the proposed redevelopment of an area called "Lakeside." A zoning variance for this project is scheduled for public comment and review by the planning commission on July 15, 2010.

I am **against** granting the variance. Although I may not be able to attend, I would like my opinion to be registered.

Quinn Ham                      7/12/10  
Name (Signed)                      Date

Jeanne Flauk  
Name (Printed)

5650 Pinebrook Rd.  
Address

**RECEIVED**

JUL 15 2010

To: City of Sandy Springs Planning/Zoning Commission

Email To: [linda.abarav@sandyspringsga.org](mailto:linda.abarav@sandyspringsga.org)

City of Sandy Springs  
Community Development

**Re: Rezoning Proposal for "Lakeside"**

I am a resident of Sandy Springs and reside in the Glenforest Subdivision. This subdivision is accessible from Glenridge Drive, and is located across from the proposed redevelopment of an area called "Lakeside." A zoning variance for this project is scheduled for public comment and review by the planning commission on July 15, 2010.

I am **against** granting the variance. Although I may not be able to attend, I would like my opinion to be registered.

Margaret S. Haskell      7/12/2010  
Name (Signed)                      Date

Margaret S. Haskell  
Name (Printed)

5825 Pine Brook Rd. NE  
Address  
Atlanta, GA 30328

To: City of Sandy Springs Planning/Zoning Commission

**RECEIVED**

JUL 15 2010

Email To: [linda.abarav@sandyspringsga.org](mailto:linda.abarav@sandyspringsga.org)

City of Sandy Springs  
Community Development

**Re: Rezoning Proposal for "Lakeside"**

I am a resident of Sandy Springs and reside in the Glenforest Subdivision. This subdivision is accessible from Glenridge Drive, and is located across from the proposed redevelopment of an area called "Lakeside." A zoning variance for this project is scheduled for public comment and review by the planning commission on July 15, 2010.

I am **against** granting the variance. Although I may not be able to attend, I would like my opinion to be registered.

  
\_\_\_\_\_  
Name (Signed) 7/12/10  
Date

S. Abarav  
\_\_\_\_\_  
Name (Printed)

5810 Pine Brook Road.  
Address Sandy Springs, GA 30328



RECEIVED

JUL 15 2010

To: City of Sandy Springs Planning/Zoning Commission:

Re: Rezoning Proposal for "Lakeside"

City of Sandy Springs  
Community Development

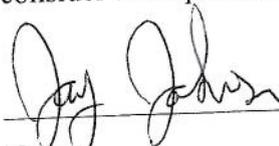
I am a resident of Sandy Springs and reside in the Glenforest Subdivision. This subdivision is accessible from Glenridge Drive, and is located across from the proposed redevelopment of an area called "Lakeside." A zoning variance for this project is scheduled for public comment and review by the planning commission on July 15, 2010.

I am against granting the variance. Presently, the traffic capacity of Glenridge Drive is insufficient for handling traffic at peak rush hour. Cars are backed-up to Hammond during rush hour, and many commuters are already using the neighborhood as a "cut-through." Providing access from the proposed hotel/condominium redevelopment onto Glenridge Drive will only make a poor situation worse.

Further, Hammond drive itself is expected to handle more traffic with the re-development of the interchange with state route GA-400. Since Hammond and Glenridge form the boundaries of the neighborhood, providing additional density in the Lakeside development is only going to further erode the character of our neighborhood.

There already are numerous areas around Lakewood that show the effects of unsuccessful redevelopment. Within a mile are recently constructed townhouses in foreclosure, partially developed parcels, and vacant lots. With commercial real estate vacancy at a peak, it is unrealistic to believe that there is sufficient demand for additional office space or additional condominiums. We have seen developers propose rezoning, with the result that projects were not completed, partially completed, or partially vacant. Sandy Springs should not let this irresponsible development continue in the present economic climate, and ignore its citizen's requests merely at the prospect of a potential increase in the city's tax base.

When the city of Sandy Springs was formed several years ago, one of the reasons for justifying the formation of the city was that Fulton County did not adequately consider the input of Sandy Springs' residents. Please, consider our input in this matter.

  
Name

5870 PINE BROOK RD

7-11-10

Address

Date



5890 PINE BROOK RD

7-12-10



5865 PINE BROOK RD

7-12-10

5855 PINE BROOK RD 7/12/10

**RECEIVED**

JUL 15 2010

**To: City of Sandy Springs Planning/Zoning Commission:**

**Re: Rezoning Proposal for "Lakeside"**

City of Sandy Springs  
Community Development

I am a resident of Sandy Springs and reside in the Glenforest Subdivision. This subdivision is accessible from Glenridge Drive, and is located across from the proposed redevelopment of an area called "Lakeside." A zoning variance for this project is scheduled for public comment and review by the planning commission on July 15, 2010.

I am against granting the variance. Presently, the traffic capacity of Glenridge Drive is insufficient for handling traffic at peak rush hour. Cars are backed-up to Hammond during rush hour, and many commuters are already using the neighborhood as a "cut-through." Providing access from the proposed hotel/condominium redevelopment onto Glenridge Drive will only make a poor situation worse.

Further, Hammond drive itself is expected to handle more traffic with the re-development of the interchange with state route GA-400. Since Hammond and Glenridge form the boundaries of the neighborhood, providing additional density in the Lakeside development is only going to further erode the character of our neighborhood.

There already are numerous areas around Lakewood that show the effects of unsuccessful redevelopment. Within a mile are recently constructed townhouses in foreclosure, partially developed parcels, and vacant lots. With commercial real estate vacancy at a peak, it is unrealistic to believe that there is sufficient demand for additional office space or additional condominiums. We have seen developers propose rezoning, with the result that projects were not completed, partially completed, or partially vacant. Sandy Springs should not let this irresponsible development continue in the present economic climate, and ignore its citizen's requests merely at the prospect of a potential increase in the city's tax base.

When the city of Sandy Springs was formed several years ago, one of the reasons for justifying the formation of the city was that Fulton County did not adequately consider the input of Sandy Springs' residents. Please, consider our input in this matter.

DAVID WALLIS

5860 PIPE BROOK RD  
SANDY SPRINGS, GA 30328

7/12/10

Name

Address

Date

To: City of Sandy Springs Planning/Zoning Commission

RECEIVED

JUL 15 2010

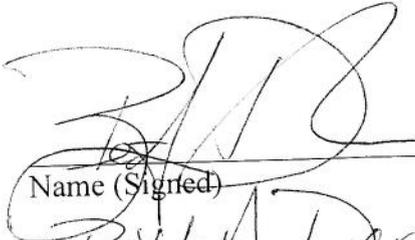
Email To: [linda.abaray@sandyspringsga.org](mailto:linda.abaray@sandyspringsga.org)

City of Sandy Springs  
Community Development

Re: Rezoning Proposal for "Lakeside"

I am a resident of Sandy Springs and reside in the Glenforest Subdivision. This subdivision is accessible from Glenridge Drive, and is located across from the proposed redevelopment of an area called "Lakeside." A zoning variance for this project is scheduled for public comment and review by the planning commission on July 15, 2010.

I am **against** granting the variance. Although I may not be able to attend, I would like my opinion to be registered.

  
Name (Signed) \_\_\_\_\_ Date \_\_\_\_\_  
Beth A. Denker  
Name (Printed)  
5885 Pine Brook Rd.  
Address