

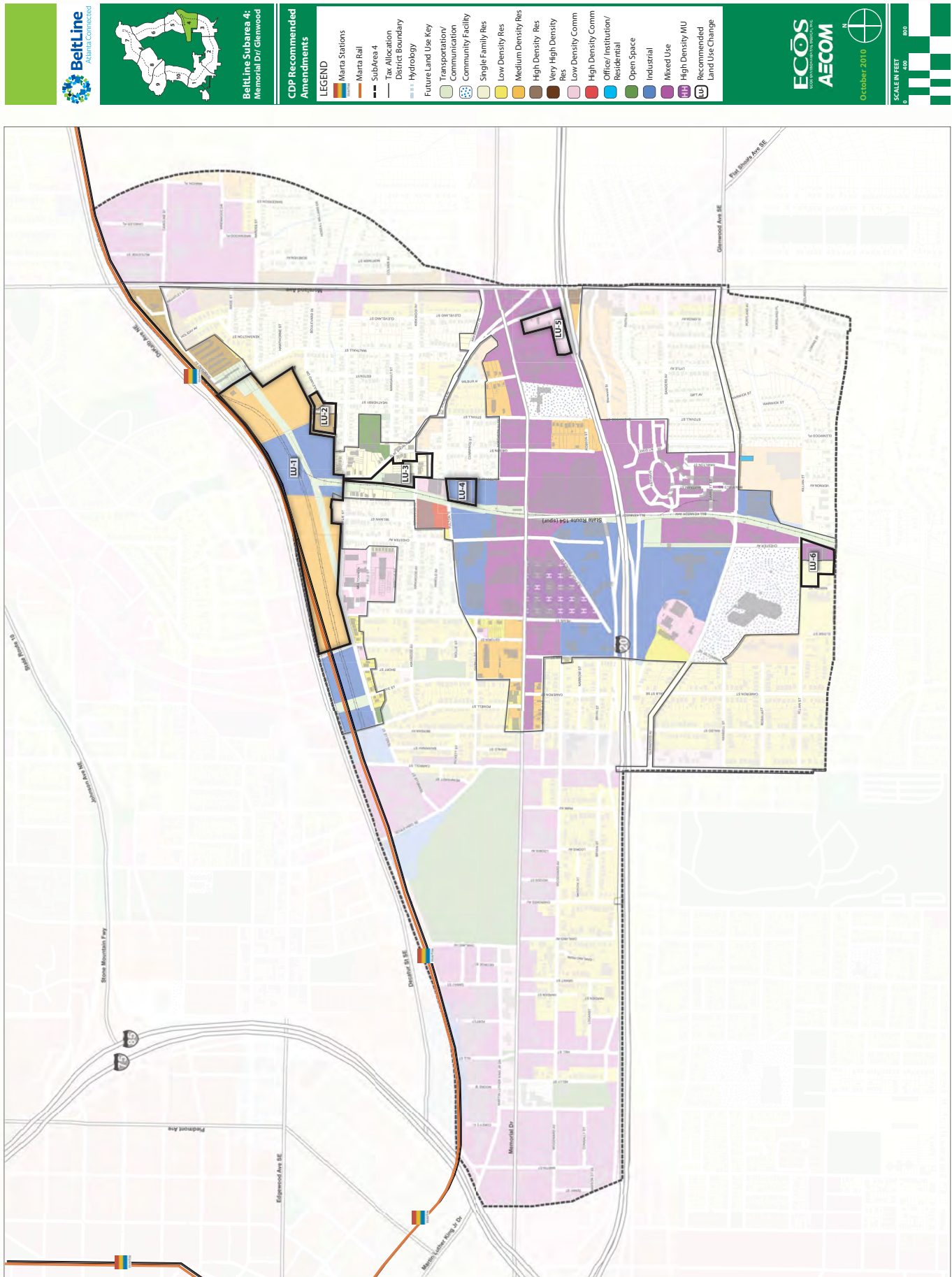
Appendices

Subarea 4 - Plan Recommendations Report

Appendix A: CDP Amendments

CDP Future Land Use Recommendations				
Location:	CDP Future Land Use:	Subarea 4 Master Plan Proposed Land Use:	Recommended CDP Future Land Use:	Notes on Recommendation:
LU-1: Hulsey Yard	Medium Density Residential, Industrial and TCU Corridor	TCU	Industrial	All areas within Hulsey Yard should be industrial
LU-2: Boulevard Dr, south of Hulsey Yard, north of Wylie St.	High Density Residential	Residential (1-4 stories)	Medium Density Residential	
LU-3: Stein Steel Property. Portions along Flat Shoals Ave, Kirkwood Ave, Gibson St and Holtzclaw St	TCU Corridor and Low Density Residential	Mixed Use (5-9 stories), Mixed Use (1-4 stories), Residential (1-4 stories), Proposed Open Space	Industrial	All of Stein Steel property should be industrial
LU-4: Fulton Terrace and Holtzclaw St	Industrial	Residential (5-9 stories)	High Density Residential	
LU-5: Memorial Dr, Howell Dr and I-20	Low Density Residential	Mixed Use (5-9 stories)	Mixed Use	Update so one parcel does not have two different land uses
LU-6: Southeast of Maynard Jackson High School. Bounded by Killian St, Marion St, Berne St, BeltLine ROW	Mixed Use and Single Family Residential	Residential (5-9 stories)	High Density Residential	

Appendix A: Table 01: CDP Recommended Land Use Amendments

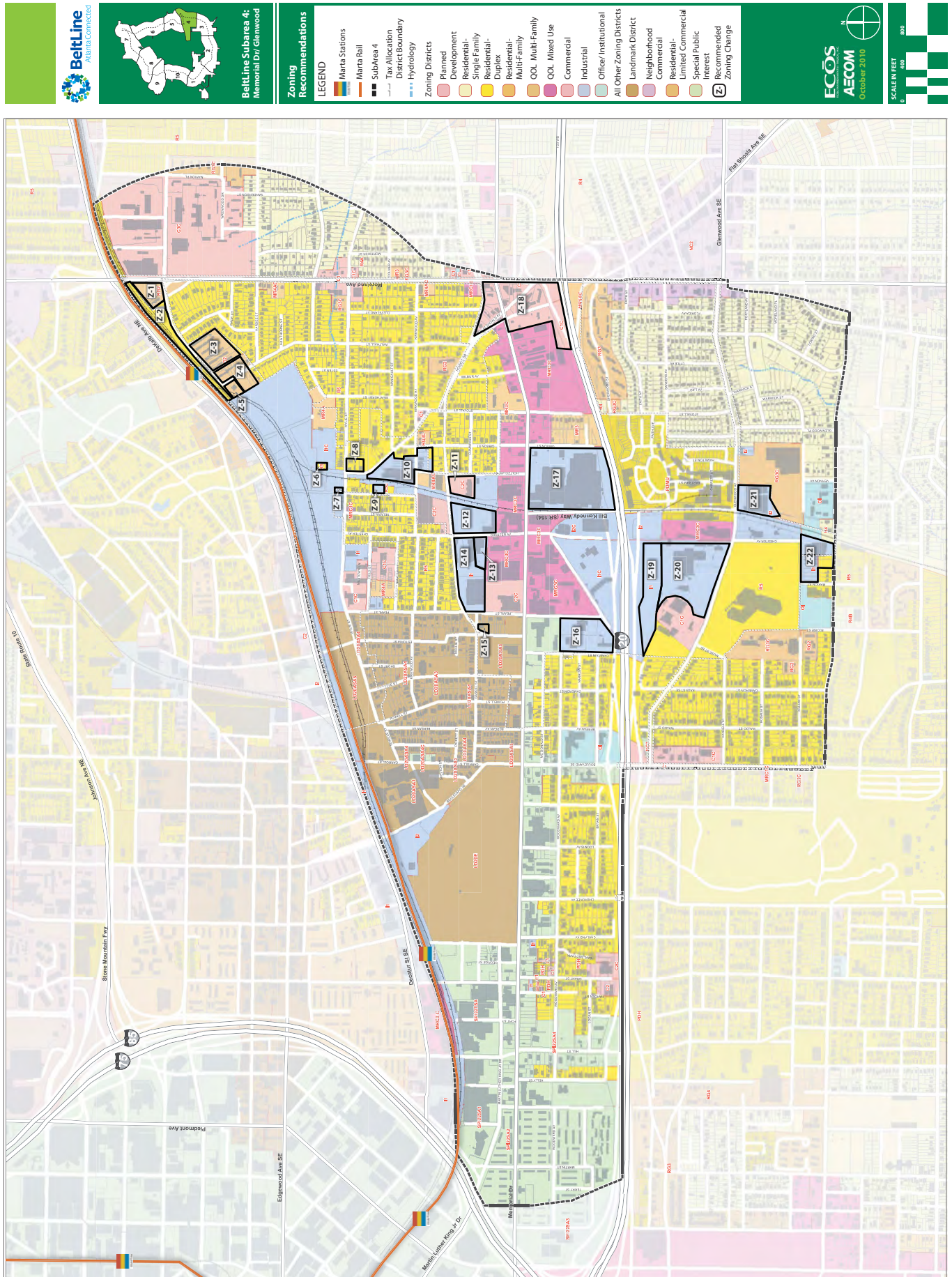


Appendix A: Figure 02: CDP Recommended Land Use Amendments

Appendix B: Zoning Recommendations

Zoning Recommendations			
(Final zoning determination to be made by City of Atlanta at time of rezoning in accordance with recommended BeltLine land uses).			
Location:	Current Zoning:	Recommended Zoning:	Notes on Recommendation:
Z-1: Moreland Ave and Seaboard Ave	RG-2	MR-4A	
Z-2: Dekalb Ave and Seaboard Ave	R-5	MR-4A	
Z-3: Seaboard Ave	RG-2	MR-4A	
Z-4: Seaboard Ave at MARTA	RG-2	MRC-3	
Z-5: MARTA and Hulsey Yards	RG-2	I-2	
Z-6: Hulsey Yards	R-5	I-2	
Z-7: Wylie St and Kenyon St	I-2	I-1	
Z-8: Wylie St and Flat Shoals Ave	R-5	NC, LW, or MRC-2	
Z-9: Kenyon St	I-2	R-5	
Z-10: Portions along Flat Shoals Ave, Kirkwood Ave, Gibson St & Holtzclaw St	I-2	MR-5 or MRC-3	
Z-11: Fulton Terrace and Holtzclaw St	C-2-C	MR-4	
Z-12: Fulton Terrace and Chester Ave	I-2	MR-4	
Z-13: Chester Ave	I-1	MRC-3	
Z-14: Fulton Terrace and Pearl St	I-1	MR-4	
Z-15: Estoria St and Gaskill St	LD-20A-SA3	LD-20A-SA4	
Z-16: Chastain St and Woodward Ave	I-1	MRC-3	
Z-17: Bill Kennedy Way, Memorial Dr, Gibson St	1-2-C	MRC-3	
Z-18: Memorial Dr, Moreland Ave, Arkwright Pl, Howell Dr, Flat Shoals Ave	C-1-C & C-2	MRC-2	
Z-19: South of I-20 exit ramp at Bill Kennedy Way	I-1	I-1, or C-2	
Z-20: Glenwood Ave	I-1	MR-5	
Z-21: Glenwood Ave and BeltLine Corridor	I-2	MR-4 or MRC-3	
Z-22: Southeast of Maynard Jackson High School. Bounded by Killian St, Marion St, Berne St, BeltLine ROW	I-1	MR-4	

Appendix B: Table 01: Zoning Recommendations



Appendix B: Figure 01: Zoning Recommendations



Atlanta BeltLine Master Plan

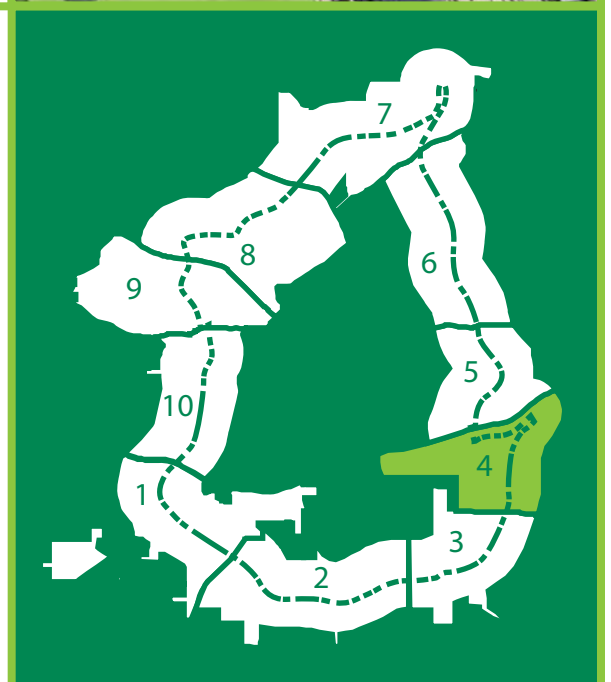
SUBAREA 4

MEMORIAL DRIVE

TRANSPORTATION ANALYSIS REPORT

Prepared for
Atlanta BeltLine, Inc.
by ECOS and AECOM

August 2011





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Appendix A: Traffic Analysis Synchro Reports

Appendix B: Alternative Analysis of 2030 Scenarios Based on Market Study

1.0 Introduction

This report documents a detailed traffic and transportation analysis performed for BeltLine Subarea 4. It supports the overall recommendations of the Subarea 4 Master Plan and provides descriptions of several transportation project recommendations.

1.1 BeltLine Subarea 4 Overview

The Atlanta BeltLine follows a 22-mile corridor of largely abandoned and underutilized railroad rights-of-way encircling the business districts and neighborhoods of central Atlanta. For community planning purposes, the BeltLine study area includes all properties within a half-mile distance from the conceptual BeltLine alignment; this area has been further subdivided into 10 master planning subareas.

Subarea 4 is in the southeastern portion of the BeltLine ring and encompasses the Atlanta neighborhoods of Cabbagetown, Reynoldstown and the northern portions of Grant Park. It is generally bounded on the north by the CSX Railroad (with a significant portion

of this boundary comprising the railroad's Hulsey Yard intermodal transfer facility), on the east generally by Moreland Avenue (although a small portion of the subarea extends east of Moreland), on the west by Interstates 75 and 85, and on the south by Interstate 20 (west of Boulevard) and Berne Street (east of Boulevard).

Perhaps the most remarkable challenge in Subarea 4 relative to alignment of the overall BeltLine corridor is the navigation around Hulsey Yard. The transit alignment of the BeltLine Redevelopment Plan followed the unused rail alignments that branch out from the yard at its eastern and western ends, connecting to MARTA at the Inman Park/Reynoldstown station and using the yard's edge as a de facto alignment. The three principal alignment alternatives proposed as part of the DEIS have depicted more feasible ways of crossing the yard, including extensive use of Memorial Drive between Bill Kennedy Way and Grant Street, Wylie Street, and a new tunnel under the yard west of Krog Street, or a new tunnel near the Inman Park/Reynoldstown MARTA station.

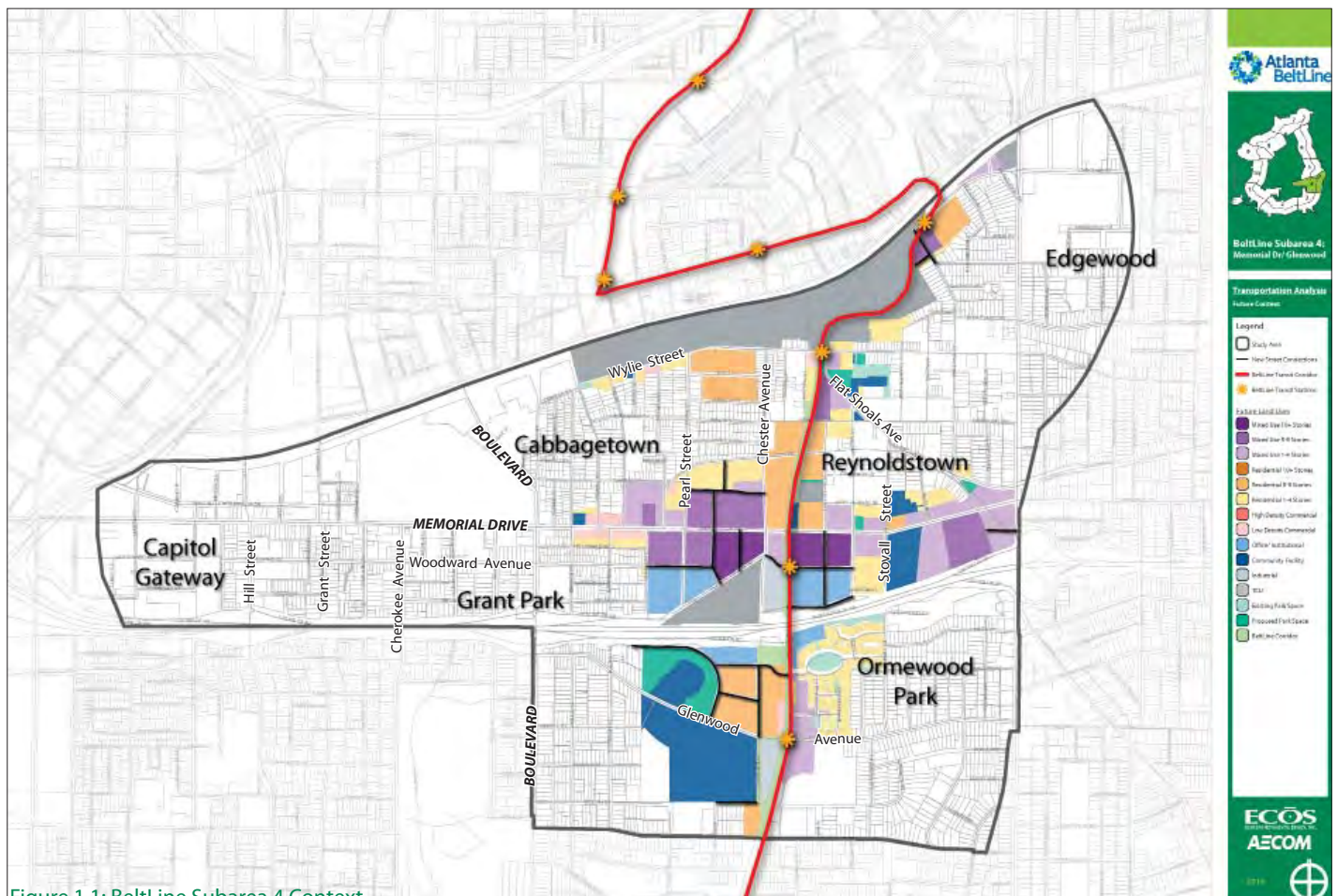


Figure 1.1: BeltLine Subarea 4 Context

1.2 Opportunities of this Study

Discussions with community residents and stakeholders in the subarea suggested several opportunities for capital projects or policy change that could enhance the subarea's connection to the BeltLine corridor. Many of these ideas had been developed in previous plans and studies, including the Connect Atlanta transportation plan and the various Livable Centers Initiative (LCI) studies undertaken in the area. The following sections detail the major opportunities and describe how they were incorporated into the transportation analysis.

Memorial Road Diet

Among the major recommendations for transportation improvement in Subarea 4 is a reconfiguration of Memorial Drive's street design. Given the relatively low traffic volumes along Memorial Drive (between 11,000 and 12,000 cars per day) and the community's desire to have better access to greenspace and the Beltline, the idea of a "road diet" was explored. Road diets are most commonly employed to reduce a four lane street to a three lane street and use the extra space for some purpose other than driving.

This change would reduce the current four- and five-lane sections to a three-lane section of two travel lanes and a continuous two-way left turn lane. The intent of this is to allow space within Memorial's constrained right-of-way to be used for a broader balance of travel modes and street functions, especially expansion of sidewalk and streetscape envelope. The conclusions and recommendations discuss different strategies for achieving this road diet (with different implications for street design), but for purposes of traffic analysis it was considered functionally to be a three-lane street as described above.

Three lane sections have a number of advantages over four lanes. For one, they are safer. The ability to decrease blind spots for left turning drivers, as illustrated in Figures 1.2.1 and 1.2.2, provides a much safer condition for drivers in that it allows a turning vehicle to see all oncoming traffic, not just that in the closest lane. A diet also tends to slow traffic speeds, creating a safer

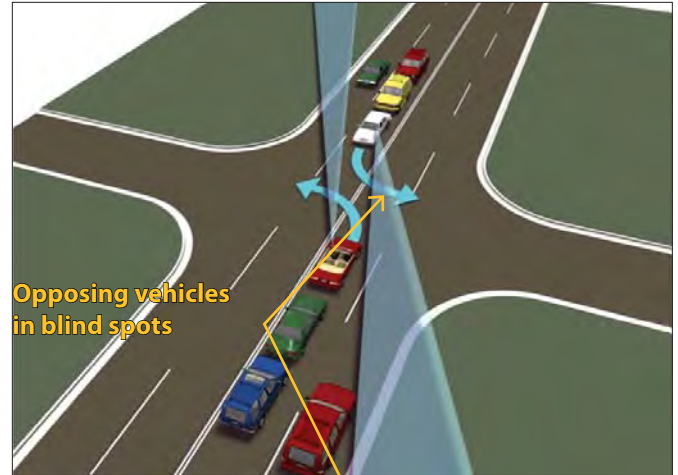


Figure 1.2.1 - Visibility associated with left hand turns on a 4-lane road.



Figure 1.2.2 - Visibility associated with left hand turns on a 3-lane road.

Table 1.2 - Areas of Successful Road Diet Implementation

Location	Street	ADT Before	ADT After
Duluth, MN	21st Avenue East	17,000	17,000
Toronto, ON	St. George Street	15,000	15,000
Kirkland, WA	Lake Washington Boulevard	23,000	25,900
Seattle, WA	North 45th Street	19,400	20,300
Covington, WA	State Road 516	29,900	32,800
Bellvue, WA	Montana Street	18,500	18,500
East Lansing, MI	Grand River Boulevard	23,000	23,000
Santa Monica, CA	Main Street	20,000	18,000
Helen, MT	U.S. 12	18,000	18,000
San Francisco, CA	Valencia Street	22,200	20,000
Oakland, CA	High Street	22,000	24,000
Orlando, FL	Edgewater Drive	20,500	21,000
Seattle, WA	Madison Street	17,000	18,000
University Place, WA	67th Avenue	17,000	15,000
East Lansing, MI	West Grand River Avenue	18,000	18,000
East Lansing, MI	Abbott Road	15,000	21,000
Charlotte, NC	East Boulevard	21,400	18,400

pedestrian environment, and allows for improvements such as wider sidewalks or the addition of a landscaped buffer from traffic.

What makes these projects feasible is that three lane sections carry almost as many cars as four lane sections. The reason is that during the peak hours, the middle two lanes of a four lane section tend to be frequently blocked by left turning vehicles. Data from streets that have made this conversion bear this out, as shown in Table 1.2. It is also worth noting that many of the successful conversions shown in the table had higher traffic volumes than Memorial Drive.

Memorial Drive Reversible Middle Lane

East of Pearl Street, Memorial Drive takes a three-lane section today where the middle lane traffic flow is reversed as needed to provide two lanes of capacity to peak directional flow. The reversal allows this lane to carry westbound traffic in the morning weekday peak and eastbound traffic in the afternoons. In off-peak and weekend times, the reversible lane is typically set to allow eastbound movement.

Although Memorial Drive is controlled by the Georgia Department of Transportation (GDOT) and there is no current GDOT project plan to change Memorial, GDOT has demonstrated an interest in removing similar roadway cross sections on other streets within its system. One example is Northside Drive north of Interstate 75, where the middle reversible lane has been converted to a two-way left turn lane. For purposes of this subarea plan, the reversible lane has been removed in all future scenarios and Memorial is treated as a three-lane section with two travel lanes and a two-way left turn lane.

Local Street Bicycle Routes

With the BeltLine's overall emphasis on a multi-use trail system and its promotion of increased multi-modal travel choices, the Subarea 4 planning efforts sought opportunities for enhancing the formalized network of bicycle facilities throughout the subarea neighborhoods. This relied primarily on the bicycle master plan of the Connect Atlanta comprehensive transportation plan for guidance of route alignment

and implementation techniques. However, other opportunities were explored and advanced in the Subarea 4 plan, the most significant of them being the designation of a bicycle boulevard on Woodward Avenue. This is intended to provide a well-signed, clearly marked bicycle corridor that provides direct and relatively free-moving east-west connection through the Subarea 4 neighborhoods and a cycling alternative to Memorial Drive that is nonetheless close to its businesses and attractions.

Green Streets

The BeltLine has also focused community discussion on parks, green space, and sustainability. Its commitment to increasing Atlanta's public park inventory has been most notably expressed through its acquisition of new land for parks, yet each of its planning subareas has opportunities to enrich basic infrastructure through more sustainable, impact-conscious design methods.

Green streets are an emerging practice in street design and landscape architecture that seek to use the street more broadly to mitigate its own impacts. The most common form of this practice is a system of streetscaping that increases permeable surface area in order to reduce stormwater runoff and to use natural percolation and soil treatment to reduce the amount that must be processed through a treatment system.

2.0 Existing Roadway Facilities

Subarea 4 is defined largely by two major transportation facilities across which the surface street network has limited access: the Georgia Railroad and MARTA rail corridor to the north and Interstate 20 to the south. Each of these is crossed only by bridges and tunnels at a small number of points: Interstate 20 is largely channelized below the surrounding grade and is crossed by bridges at Moreland Avenue, Bill Kennedy Way, Boulevard, Cherokee Avenue and Hill Street. The rail corridor is largely built at or above its surrounding grades and has tunnel crossings at Moreland Avenue, Krog Street, Boulevard and Grant Street. Partly for this reason, east-west travel through Subarea 4 is highly important, and Memorial Drive is the primary roadway accommodating this movement both within and to and from the subarea.

Apart from these major streets, the subarea is marked by a network of smaller local streets that are internally well-connected with regular spacing of intersections along Moreland Avenue and Boulevard.

2.1 Roadway Functional Classification

Urban Interstate

Approximately 0.6 roadway miles of urban interstate are contained within subarea 4, which represents the portion of Interstate 20 from Boulevard to Moreland Avenue and corresponding access ramps.

Urban Minor Arterial Street

Memorial Drive, Boulevard, Moreland Avenue, and portions of Hill Street and MLK Jr Drive are classified as urban minor arterials and represent 6.2 roadway miles within the study area.

Urban Collector

Urban collector streets make up 2.1 roadway miles within this subarea, including Bill Kennedy Way, Glenwood Avenue, and portions of Cherokee Avenue and Hosea L. Williams Drive.

Urban Local Access

This classification contains the majority of streets within the study area, roughly 26.5 roadway miles, and represents most neighborhood access and residential streets.

Although the functional classification system within the subarea includes a substantial amount of arterial roadways, it is important to emphasize the urban land use environment that these roads serve and to note that they are not purely consistent in character and function with the conventional classification system. Memorial Drive, Bill Kennedy Way, and Boulevard are the only roadways passing through the subarea that truly function as arterial roadways, or roads designed more for a mobility function than for a local access function. However, each of these roads carries a significant level of local traffic and accommodates relatively frequent cross-street and driveway access. Along some portions of these streets where development has focused on buildings against the right-of-way edge and where driveway access is not as frequent, on-street parking is provided. For this reason, a highway-oriented functional classification system has limitations and a more nuanced understanding of the street's multiple roles is important to keep in mind. Neither Memorial Drive, Boulevard, nor Bill Kennedy is entirely a movement-oriented street.

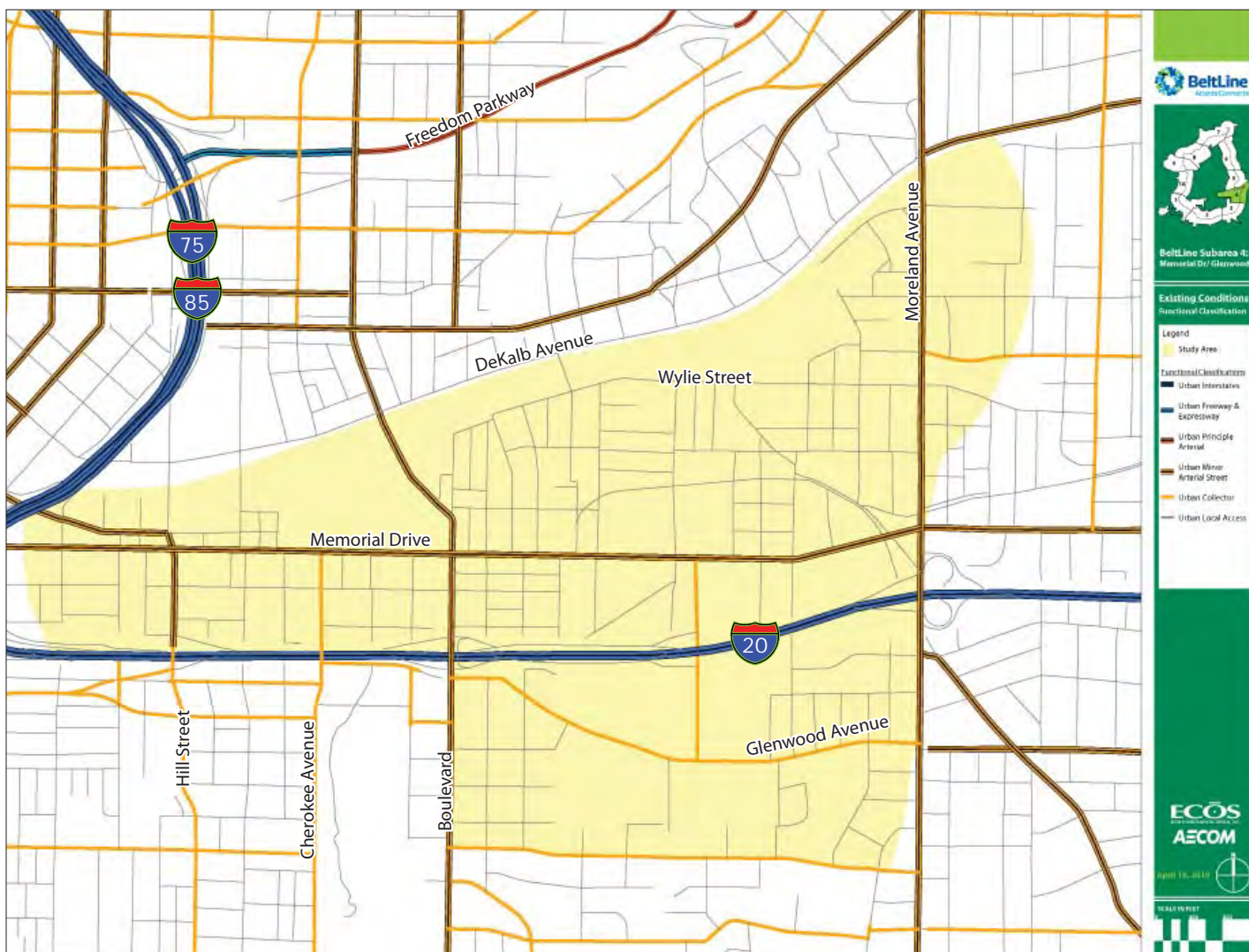


Figure 2.1: Functional Classification

Source: GDOT, Atlanta Regional Commission, City of Atlanta

Table 2.1: Functional Classification

Classification	Description
Urban Interstate Principal Arterial	Uninterrupted, high-speed flow
Urban Freeways & Expressways	Uninterrupted, high-speed flow
Urban Principal Arterial	Serves the major activity centers of a metropolitan area; the highest traffic volume corridors and longest trips. The principal arterial will carry important intra-urban as well as inter-city bus routes.
Urban Minor Arterial	Provides service to trips of moderate length; distributes travel to smaller areas.
Urban Collector Street	Provide access and traffic circulation within residential neighborhoods, commercial, and industrial areas. The collector also collects traffic from local streets and channels it into the arterial street system.
Urban Local Road	Primarily provides access to residences, businesses, or other abutting properties. Traffic is local in nature and extent rather than regional, intrastate, or interstate.

Source: Georgia Department of Transportation, AASHTO

2.2 Existing Traffic Volumes

In order to establish a baseline for the traffic scenario analysis, traffic data collection was conducted throughout the study area.

For daily traffic volumes, the Georgia Department of Transportation's Statewide Traffic and Accident Reporting System (STARS) was used as a primary data source. Figure 2.2, Existing Traffic Volumes on the following page is a map of the count locations that graphically represents volumes according to the STARS records.

To augment the STARS data, weekday intersection turning movement counts were taken during the morning (7 to 9 AM) and evening (4 to 6 PM) peak periods in February 2010. The four consecutive 15-minute interval volumes resulting in the highest traffic volume at each intersection were designated as the peak hour traffic volumes and used as the basis of intersection capacity analyses in sections 4, 5 and 6 of this report. Diagrams of these peak hour traffic counts for existing conditions are illustrated in the diagrams in Section 4.

Key Findings

In Subarea 4, traffic volumes are highest on Memorial Drive, which provides service for downtown and commuters who live in Atlanta's intown neighborhoods

and eastern suburbs. Moreland Avenue carries significantly more traffic than Memorial Drive, but it is not as central to Subarea 4 and its traffic operations as Memorial. According to the most recent GDOT counts available, Memorial carries 11,700 vehicles per day (VPD) between Hill Street and Boulevard and 11,010 from Boulevard to Moreland Avenue. Other streets in Subarea 4 for which traffic counts are available, including Bill Kennedy Way, Glenwood Avenue and Berne Avenue, carry generally lower traffic volumes on a daily basis.

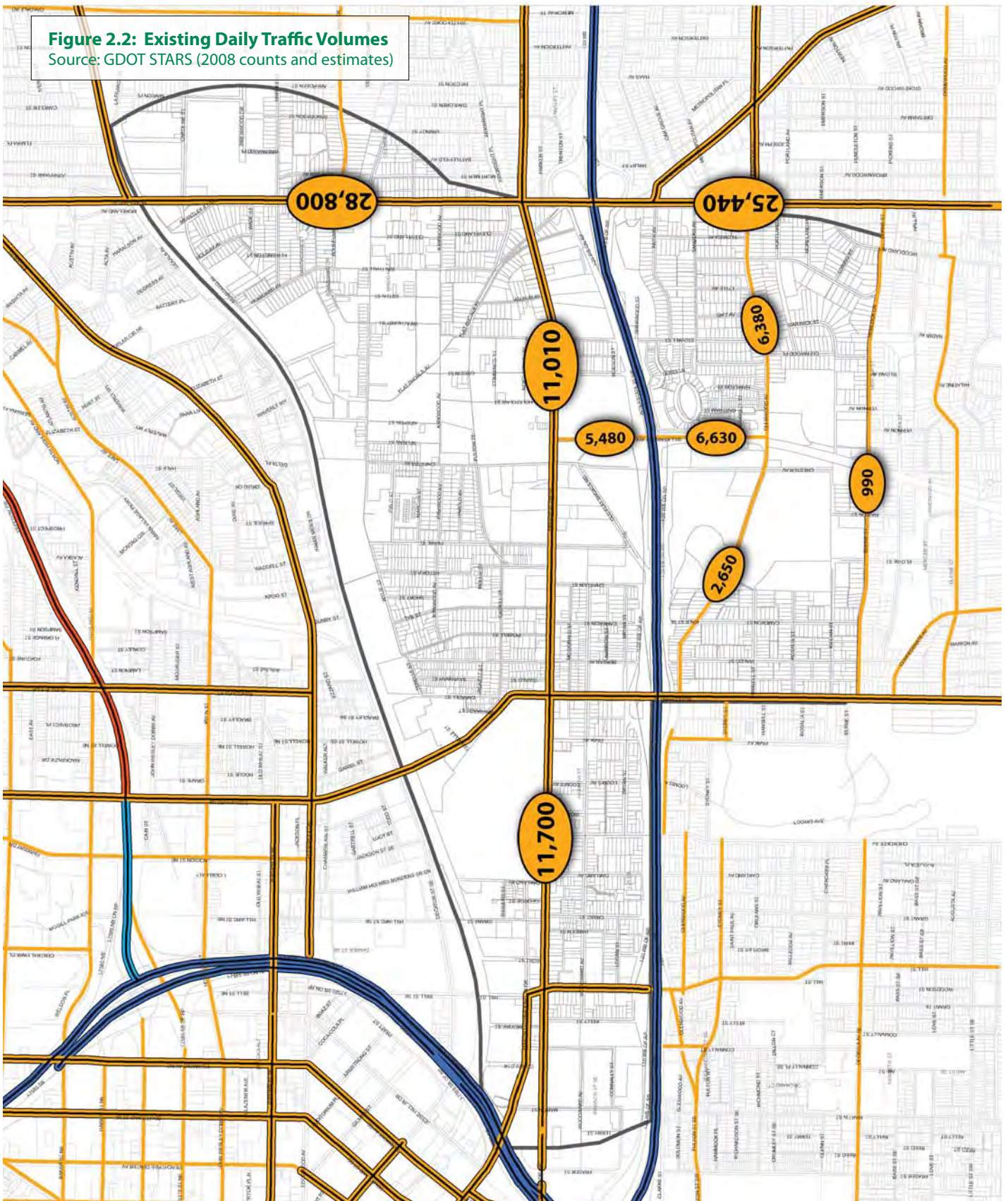
Data Sources and Methodology for Analysis of Future Conditions

To examine the effects of traffic in future scenarios related to the Subarea 4 plan, the study team relied on future traffic projections to understand likely growth rates to apply to current traffic volumes. For the purposes of this study, the Atlanta Regional Commission's Travel Demand Model estimations were used to determine the relative growth in traffic for two separate periods: between 2005 and 2020 and between 2020 and 2030. The 2005-to-2020 growth rates were used as the background assumption for growth from the existing traffic volumes. Note that although existing volumes were counted in 2010, a 2010 database from the ARC model was not available to the study team and consequently 2005 was used for the base year. Table 2.2 below lists the volume assignments for each of these model years, and the

Table 2.2: Volume Assignments and Projections from ARC Travel Demand Model

Street	Volume Assignments from ARC Travel Demand Model			Percentage Change in Volume	
	2005	2020	2030	% Change 2005 to 2020	% Change 2020 to 2030
Moreland Ave (North of I-20)	61,469	54,227	59,545	-11.8%	9.8%
Moreland Ave (South of I-20)	41,720	41,556	46,478	-0.4%	11.8%
Memorial Dr (East of Boulevard)	31,811	23,462	26,210	-26.2%	11.7%
Memorial Dr (West of Boulevard)	23,280	22,103	26,824	-5.1%	21.4%
Boulevard	18,605	19,514	22,098	4.9%	13.2%
Glenwood Ave (East of Bill Kennedy)	12,990	15,520	15,226	19.5%	-1.9%
Glenwood Ave (West of Bill Kennedy)	8,452	10,809	8,945	27.9%	-17.2%
Bill Kennedy (North of I-20)	7,930	8,556	8,836	7.9%	3.3%
Bill Kennedy (South of I-20)	5,123	5,974	6,667	16.6%	11.6%
Average Percent Change				3.7%	7.1%

Figure 2.2: Existing Daily Traffic Volumes
Source: GDOT STARS (2008 counts and estimates)



calculated percentage change in volume.

The average percentage change in volume for the time period between 2005 and 2020 is 3.7%, or approximately 0.24% annual growth. A conservative estimate of twice this amount, or 0.5% annual growth, is used to calculate the background growth in traffic from the turning movement count year (2010) to 2020.

The average percentage change for the time period between 2020 and 2030 is slightly higher, with a value of 7.1% over ten years, or roughly 0.69% annually. Again, a higher, more conservative annual growth rate of 1% was applied to traffic volumes in 2020 to determine traffic in 2030, for a total growth of approximately 10.5% over the ten years.

It is worth noting that the volume assignments listed in Table 2.2 do not always correspond with actual traffic volumes. This is due to the way in which regional travel demand models operate: they distribute traffic onto a roadway network based on roadway capacity and adjacent population and employment concentration, but these do not always reflect real-world travel patterns. As a result, actual volumes (such as those shown in Figure 2.2) are not always consistent with volume assignments as reflected in the travel demand model. The travel demand model assignments are typically the only available projections of traffic in the future, and it is for this reason that they are used in this study to estimate traffic growth rates.

3.0 Study Methodology

The traffic analysis for Subarea 4 used a methodology based on intersection and corridor facility performance standards as defined by the Transportation Research Board's Highway Capacity Manual 2000, a technical manual providing national guidance on traffic operations and facility capacity. It also used the Synchro corridor traffic simulation software to gauge performance of intersections relative to one another in a simulated real-time traffic environment.

3.1 General Parameters and Input Assumptions for Traffic Analyses

In terms of input data for the analysis, morning and afternoon peak period intersection turning movement counts were taken in February 2010 and served as the basis for existing traffic conditions. The Subarea 4 traffic study accounted for future traffic based on a series of land use and development scenarios while making consistent use of a series of basic assumptions. The global parameters and assumptions used for the analysis and their explanations are as follows:

- 1. Background growth, or regional traffic growth that is likely to occur regardless of new planned growth or development in Subarea 4.** This used average daily traffic assignments from the Atlanta Regional Commission travel demand forecasting model. It compared overall change in average daily traffic (ADT) throughout the subarea between 2005 (the model's base year at the time of the Subarea 4 study) and 2030 (the model future horizon year). All model roadway links inside the Subarea were considered, with the sum total of 2005 ADT for all links being compared to the sum total of 2030 ADT for those same links. The difference between the two was divided by 2005 ADT to calculate an aggregate rate of growth, and this was decomposed into an annual rate to allow calculation of background growth for an interim year between 2005 and 2030.
- 2. Likely levels of development in future years.** BeltLine developed a real estate market study for its entire planning area that forecast likely levels of market absorption in the years 2020 and 2030. These market levels were expressed in terms of development in each subarea and were used as a basis for how much development would be added in the traffic analysis. For 2020 traffic, the market

study was used as a basic development program for calculation of trip generation. For 2030 traffic, these figures were increased with an annual growth rate derived from the ARC travel demand model.

- 3. Trip generation.** All calculations of new traffic expected from added future development were made according to guidance in the Institute of Traffic Engineers (ITE) Trip Generation Handbook, Eighth Edition. This includes regular peak-hour-based traffic generation rates per different land use categories as well as calculation of internal capture and pass-by trip reductions.
- 4. Traffic analysis zones and trip distribution.** The study used a series of traffic analysis zones (TAZ) from the ARC travel demand model as the base geographic unit for aggregating traffic growth and distributing it onto the roadway network. These are shown in Figure 3.1.1 below. This was most applicable for the distribution of newly-generated traffic in the BeltLine Subarea 4 plan, which was based on existing travel patterns as observed in the regional travel demand model and through existing intersection traffic counts. The subdivision of the subarea into TAZs with the distribution of traffic onto the street network is illustrated in Figure 3.1.2.
- 5. Transit reductions.** In all future development scenarios, including the baseline scenarios, the amount of vehicle traffic added by development

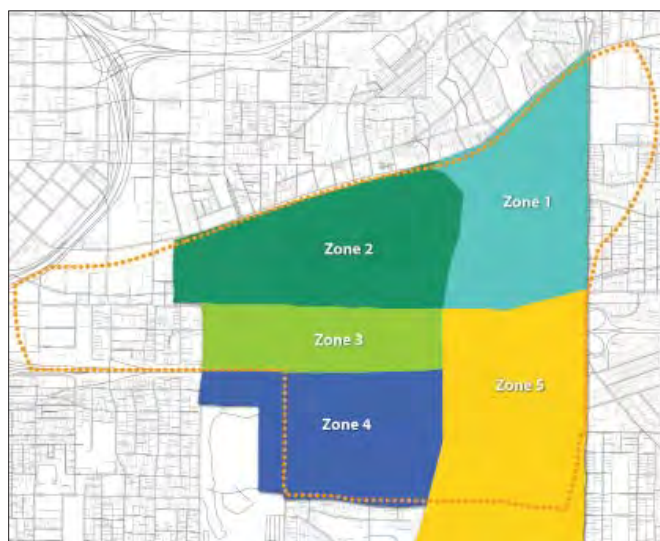
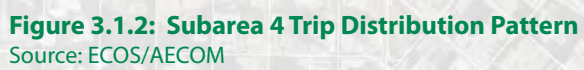


Figure 3.1.1: TAZ boundaries in Subarea 4

Source: Atlanta Regional Commission Travel Demand Model



that was likely to be captured by transit use or other non-vehicular modes was calculated according to a standard series of guidelines used in all BeltLine subarea plans. The metrics used to measure propensity for transit use include walking distance to transit; the balance of residential, retail and employment land uses; and neighborhood socioeconomic indicators that provide an understanding of likely transit dependency. For purposes of this analysis, the original conceptual BeltLine alignment was used as the basis for the transit corridor. Transit reduction potential was not determined for the existing conditions analysis, which relied simply on 2010 traffic counts.

6. **Signal Timing.** The 2010 Existing Traffic scenarios used current traffic counts and signal timing plans, but all future scenarios used Synchro to optimize signal cycle lengths and splits for the Memorial and Bill Kennedy corridors in order to facilitate signal coordination and reduce corridor-wide delay. Intersections were assigned into zones in the Synchro models, allowing the entire Memorial Drive corridor to be optimized at once. This set signal cycle lengths and splits to reduce delay on Memorial Drive as a whole.

3.2 Analysis Scenarios

Future traffic analysis scenarios are based on two major conditions related to the Subarea 4 plan: a baseline condition where BeltLine transit infrastructure is not constructed and the land use plan does not guide future development, and a build condition where BeltLine transit may be constructed and new development is based on the subarea plan. In the baseline conditions, the City of Atlanta's Comprehensive Development Plan (CDP) future land use map has been assumed as the framework for guiding growth and development. The City's recent focus on the Memorial Drive corridor as an Economic Development Priority district coupled with strong development activity beginning to appear along Memorial just prior to the 2008-2009 downturn in the real estate and development industry and recent rezonings to the SPI-22 and MRC districts all suggest that Memorial is a strong corridor for redevelopment projects. With that, baseline scenarios have assumed that the full market study estimates can be achieved within the land development that would be entitled

by the CDP future land use map. Land development program amounts forecast in the subarea in a BeltLine real estate market study for the year 2020 were used as the basis for development program. The different land use-transportation scenarios can be summarized as follows:

1. **Existing Conditions.** Existing traffic counts and existing roadway design characteristics (such as number of lanes, lane assignments, intersection turn lane configuration and traffic signal timing) were used to determine level of service and discuss any notable traffic-related issues or challenges.
2. **2020 Baseline (Development without BeltLine Subarea 4).** Using existing traffic counts as a basis, traffic resulting from background growth (as expressed in the ARC travel demand model) was added to new development allowed under CDP and projected in the BeltLine market study, which was expressed in terms of vehicle trips added and calculated using the ITE Trip Generation Handbook.
3. **2030 Baseline (Development without BeltLine Subarea 4).** This uses the 2020 traffic levels (from Scenario 2) and assumes a growth rate derived from the ARC travel demand model to forecast likely 2030 traffic volumes.
4. **2020 Build, Worst Case (Development with BeltLine Subarea 4).** This scenario assumes the same amount of development from the BeltLine market study to occur by 2020 but assigns this development based on the Subarea 4 future land use plan, which differs from the CDP. However, it assumes that BeltLine transit is not constructed by 2020 and therefore that development in the subarea sees a reduction of trips through alternative mode share on a level similar to the baseline scenario.
5. **2020 Build Best Case (Development with BeltLine Subarea 4).** This is the same development program as the 2020 Build Worst Case but assumes a higher transit mode share to account for BeltLine transit construction by 2020.
6. **2030 Build (Development with BeltLine Subarea 4).** This uses the 2020 traffic levels from the Build Best Case (from Scenario 5) and assumes a growth rate derived from the ARC travel demand model to forecast likely 2030 traffic volumes (the same growth rate used in Scenario 3).

4.0 Existing Conditions Traffic Analysis

The existing conditions analysis is based on intersection turning movement traffic counts taken in February 2010 and includes both morning and afternoon peak hours. Counts were taken at the following intersections:

1. Grant Street at Memorial Drive
2. Grant Street at Decatur Street
3. Boulevard at Memorial Drive
4. Pearl Street at Memorial Drive
5. Bill Kennedy Way at Memorial Drive
6. Bill Kennedy Way at Glenwood Avenue
7. Bill Kennedy Way at Interstate 20 westbound entry ramp
8. Bill Kennedy Way at Interstate 20 eastbound exit ramp
9. Krog Street at Wylie Street
10. Arkwright Street at Flat Shoals Avenue

Existing roadway geometries and lane configurations for each of these intersections are shown in Figure 4.1.1. The existing traffic counts are shown in Figures 4.1.2 (for AM peak hour) and 4.1.3 (for PM peak hour). Using the HCM-based intersection level of service methodology along with Synchro's corridor-based analysis, the corridor levels of service were calculated for all intersections as well as the Memorial Drive and Bill Kennedy Way corridors.

4.1 Existing Traffic with Current Geometry

In terms of input data for the analysis, morning and afternoon peak period intersection turning movement counts were taken in February 2010 and served as the basis for current traffic analyses in this section. Current levels of service were also calculated using existing signal timing plans.

The corridor's current traffic operations are, by and large, not problematic from the perspective of traffic volumes and operations. However, several complications discussed in community stakeholder conversations should be noted in considering existing traffic. One of these is that the intersection of Bill Kennedy Way and Memorial Drive carries a relatively heavy volume of trucks and heavy vehicles. This complicates northbound right turns, which do not always have an ample turning radius when westbound vehicles are queued in the center lane against the stop bar. Synchro analyses can emulate conditions based on truck movements, but they do not always recognize the temporary interruptions to flow that occur when trucks or other large vehicles need to wait on cross-street traffic to adjust and move out of their path.

Table 4.1: Existing Level of Service (2010)

<i>Intersection</i>	<i>AM Peak LOS</i>	<i>AM Peak V/C Ratio</i>	<i>AM Peak Overall Delay</i>	<i>PM Peak LOS</i>	<i>PM Peak V/C Ratio</i>	<i>PM Peak Overall Delay</i>	<i>Problematic Movements</i>
Grant/Decatur	B	0.79	17 sec	B	0.55	12 sec	
Grant/Memorial	B	0.45	12 sec	B	0.36	10 sec	
Memorial/Boulevard	C	0.90	31 sec	C	0.62	21 sec	
Memorial/Pearl	B	0.37	11 sec	B	0.43	12 sec	
Memorial/Bill Kennedy	B	0.51	11 sec	B	0.72	15 sec	
Bill Kennedy/I-20 Westbound	A	N/A	2 sec	A	N/A	2 sec	
Bill Kennedy/I-20 Eastbound	A	0.48	10 sec	A	0.27	10 sec	
Bill Kennedy/Glenwood	B	0.41	11 sec	B	0.48	11 sec	
Krog/Wylie	B	N/A	11 sec	C	N/A	22 sec	

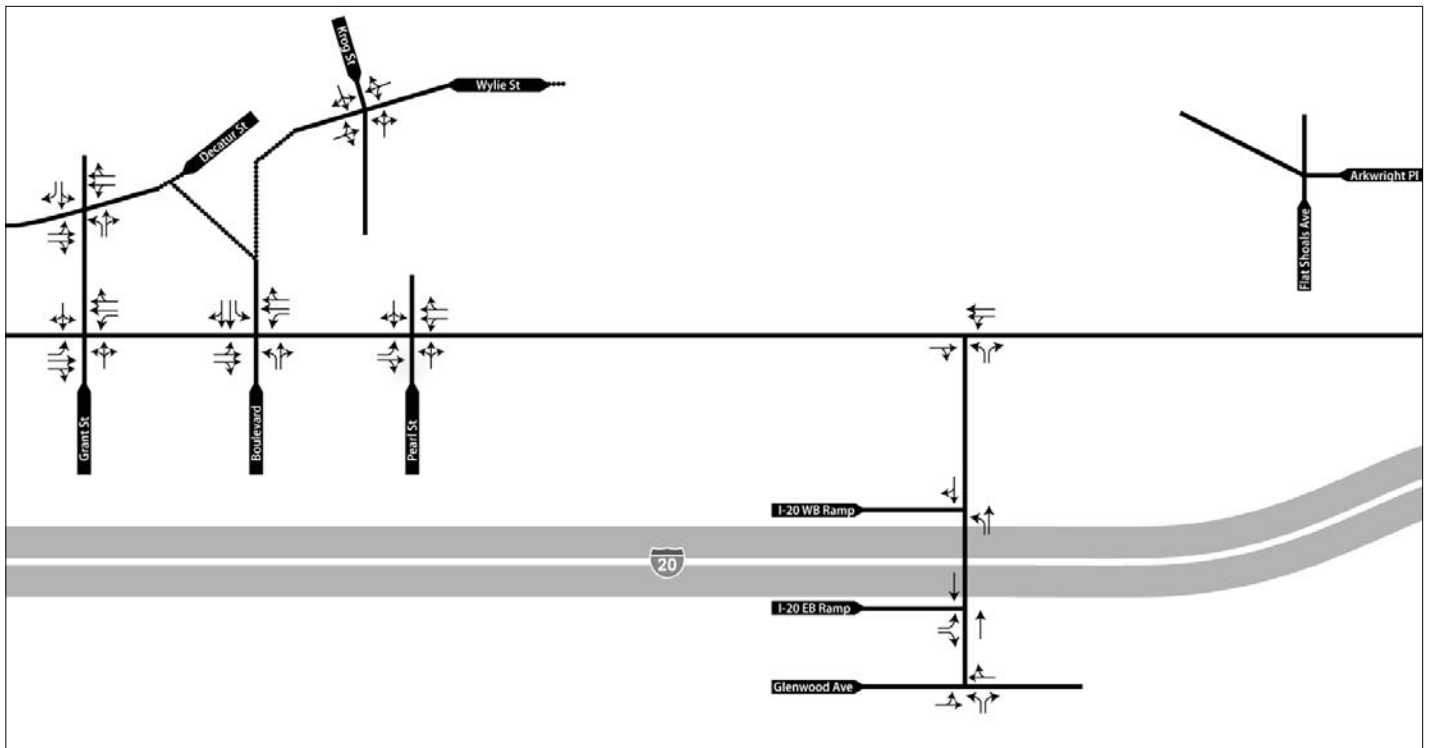


Figure 4.1.1
BeltLine Subarea 4
AM Peak Hour Existing Laneage
(Memorial Drive Reversible Lane is Westbound)

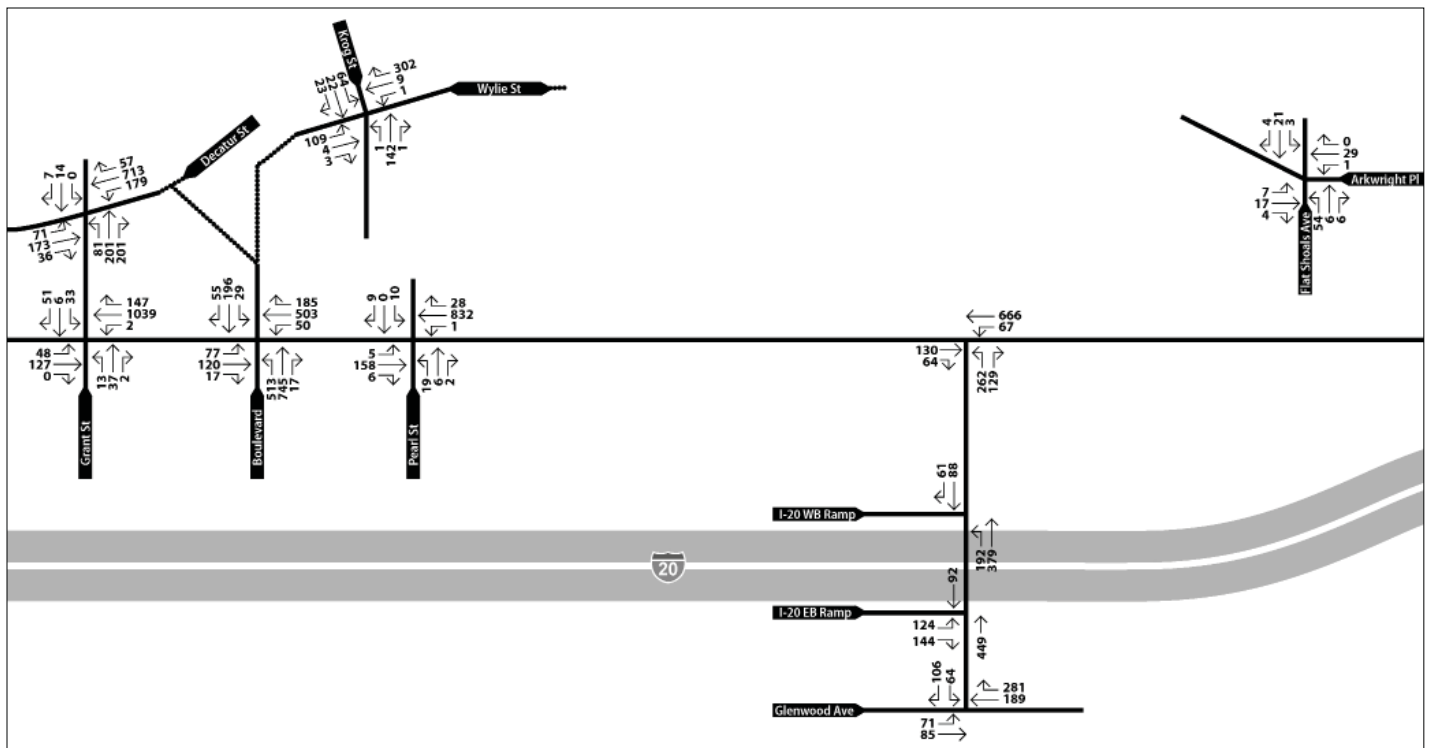


Figure 4.1.2
BeltLine Subarea 4
Existing Conditions Traffic Volumes
2010 AM Peak Hour

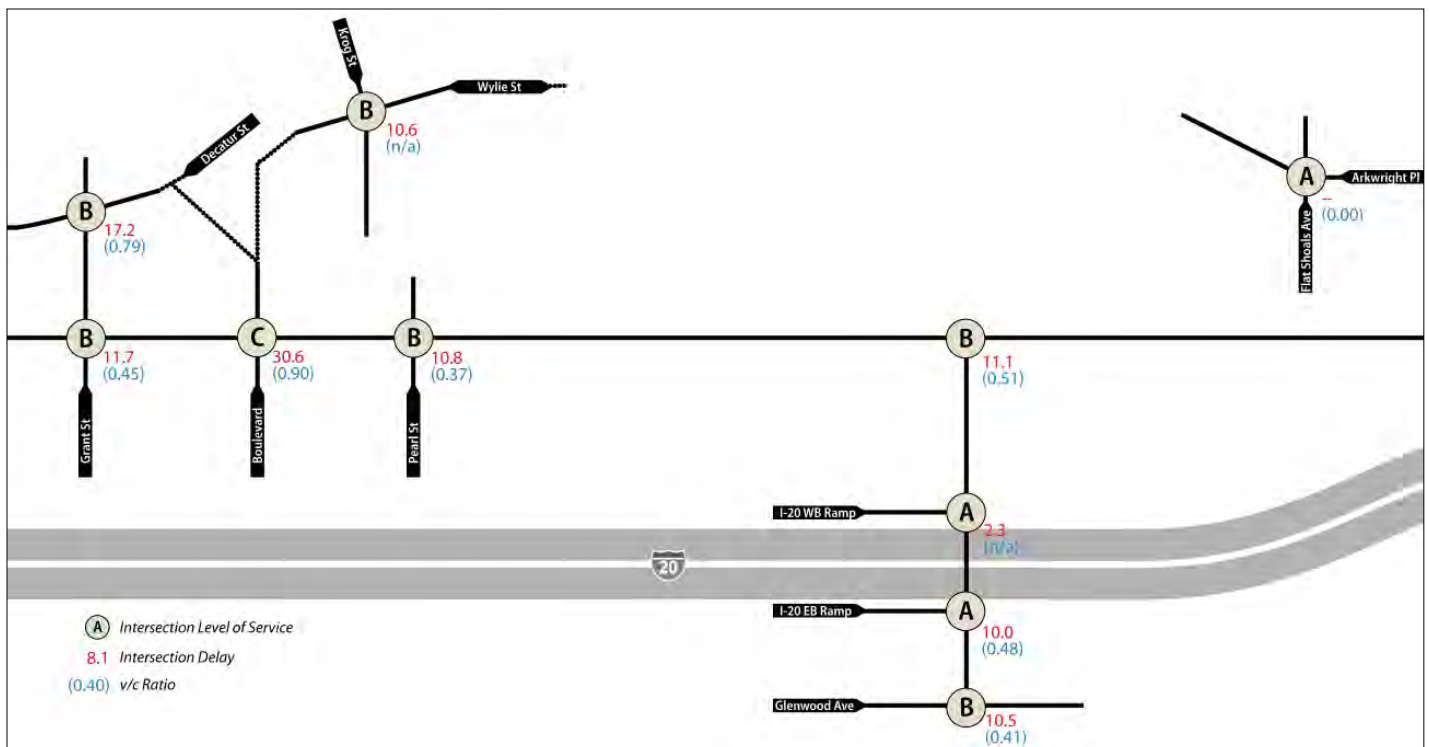


Figure 4.1.3
BeltLine Subarea 4
Existing Conditions Level of Service
2010 AM Peak Hour

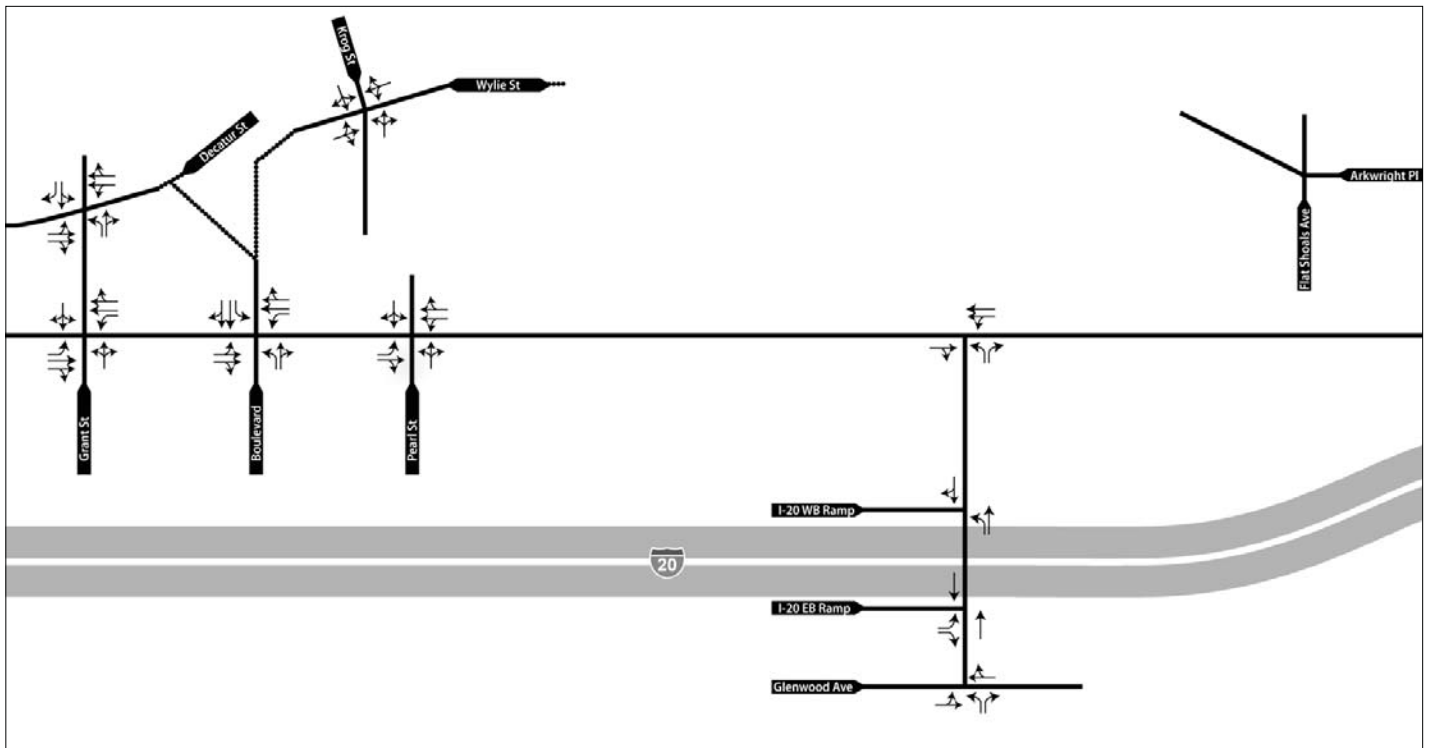


Figure 4.1.4
BeltLine Subarea 4
PM Peak Hour Existing Laneage
(Memorial Drive Reversible Lane is Eastbound)

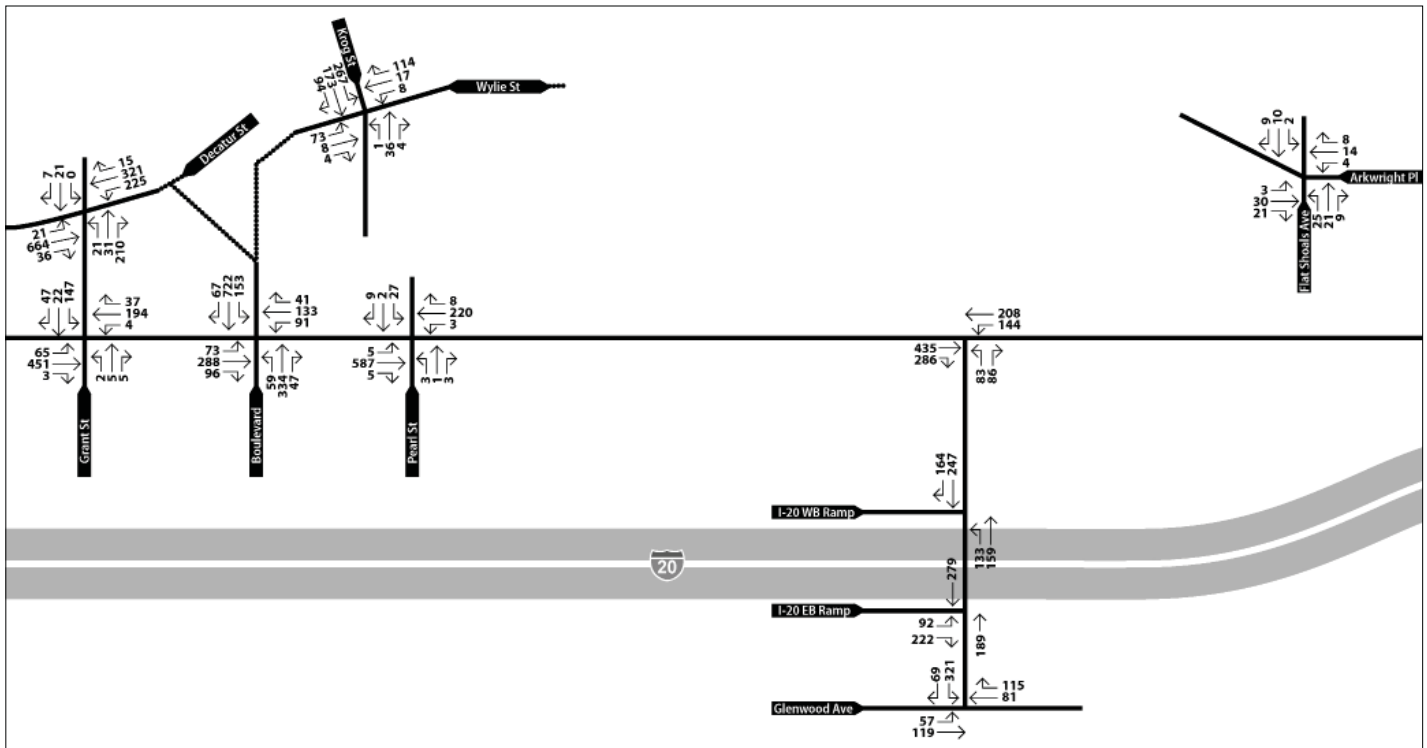


Figure 4.1.5
BeltLine Subarea 4
Existing Conditions Traffic Volumes
2010 PM Peak Hour

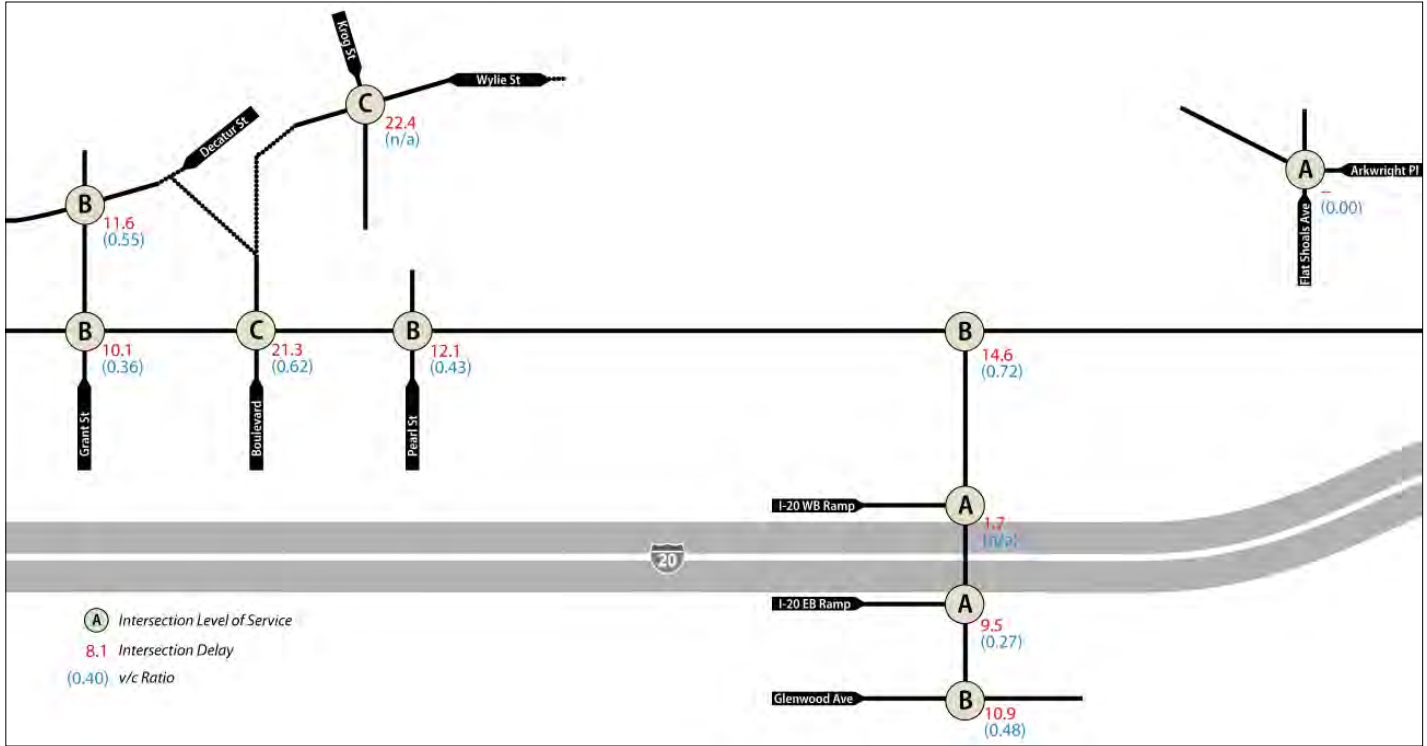


Figure 4.1.6
BeltLine Subarea 4
Existing Conditions Level of Service
2010 PM Peak Hour

4.2 Traffic Operations with the Memorial Road Diet and Reversible Lane Removed

Currently, few areas in the subarea experience congestion and its major thoroughfares carry traffic volumes below their capacity. Memorial Drive in particular carries between 11,000 and 12,000 vehicles per day according to recent GDOT traffic counts, even though its multi-lane road design has a far greater capacity. This apparent mismatch, coupled with community desire for Memorial Drive to be a more attractive and livable street as the Memorial corridor redevelops and evolves, suggested an opportunity to change Memorial Drive's cross-section to one where capacity is more closely aligned with actual travel demand. In order to understand impacts of the changes to Memorial on traffic operations, the Subarea 4 study evaluated both of these major reconfigurations on overall traffic operations, especially intersection and corridor levels of service.

Removal of the reversible lane on Memorial Drive between Pearl and Flat Shoals has little overall effect on corridor operations, largely because the middle lane in peak flow effectively functions as a left turn lane (and thus impedes through-movement flow) when left-turning vehicles are present.

As can be reasonably expected, the road diet of Memorial reduces capacity at the intersections west of and including Pearl Street in the subarea. However, the primary issue with traffic operations along the Memorial corridor is not the movement of traffic on Memorial, but rather the need for crossing traffic at major intersections, especially Boulevard, to take signal time in order to be sufficiently cleared through the intersection. This assignment of signal time compounds delay on Memorial.

One particular issue of note is the heavy westbound right turning movements at the Memorial/Boulevard intersection. When Memorial is reduced from the existing four-lane section to three lanes, this is the only intersection that experiences a significant decline in level of service. Although the issue of westbound movements in the morning peak hour being delayed by signal control while northbound traffic moves is already known, a major contributor to this westbound delay is the addition of right turns. Providing a dedicated right turn lane can help to reduce overall delay, keeping the intersection at a reasonably-operating LOS D (from LOS F without this turn lane), and greatly reducing movement-specific delay on these movements.

Table 4.2: Existing Level of Service (2010) with Memorial Road Diet & Reversible Lane Removed

Intersection	AM Peak LOS	AM Peak V/C Ratio	AM Peak Overall Delay	PM Peak LOS	PM Peak V/C Ratio	PM Peak Overall Delay	Problematic Movements
Grant/Decatur	B	0.79	17 sec	B	0.55	12 sec	
Grant/Memorial	B	0.80	16 sec	B	0.52	12 sec	
Memorial/Boulevard	D	1.03	51 sec	C	0.82	25 sec	WBT and NBT both experience delay at LOS E, but also carry highest volumes
Memorial/Pearl	A	0.57	9 sec	A	0.45	8 sec	
Memorial/Bill Kennedy	B	0.67	13 sec	B	0.57	11 sec	
Bill Kennedy/I-20 Westbound	A	N/A	2 sec	A	N/A	2 sec	
Bill Kennedy/I-20 Eastbound	A	0.48	10 sec	A	0.27	10 sec	
Bill Kennedy/Glenwood	B	0.41	11 sec	B	0.48	11 sec	
Krog/Wylie	B	N/A	11 sec	C	N/A	22 sec	

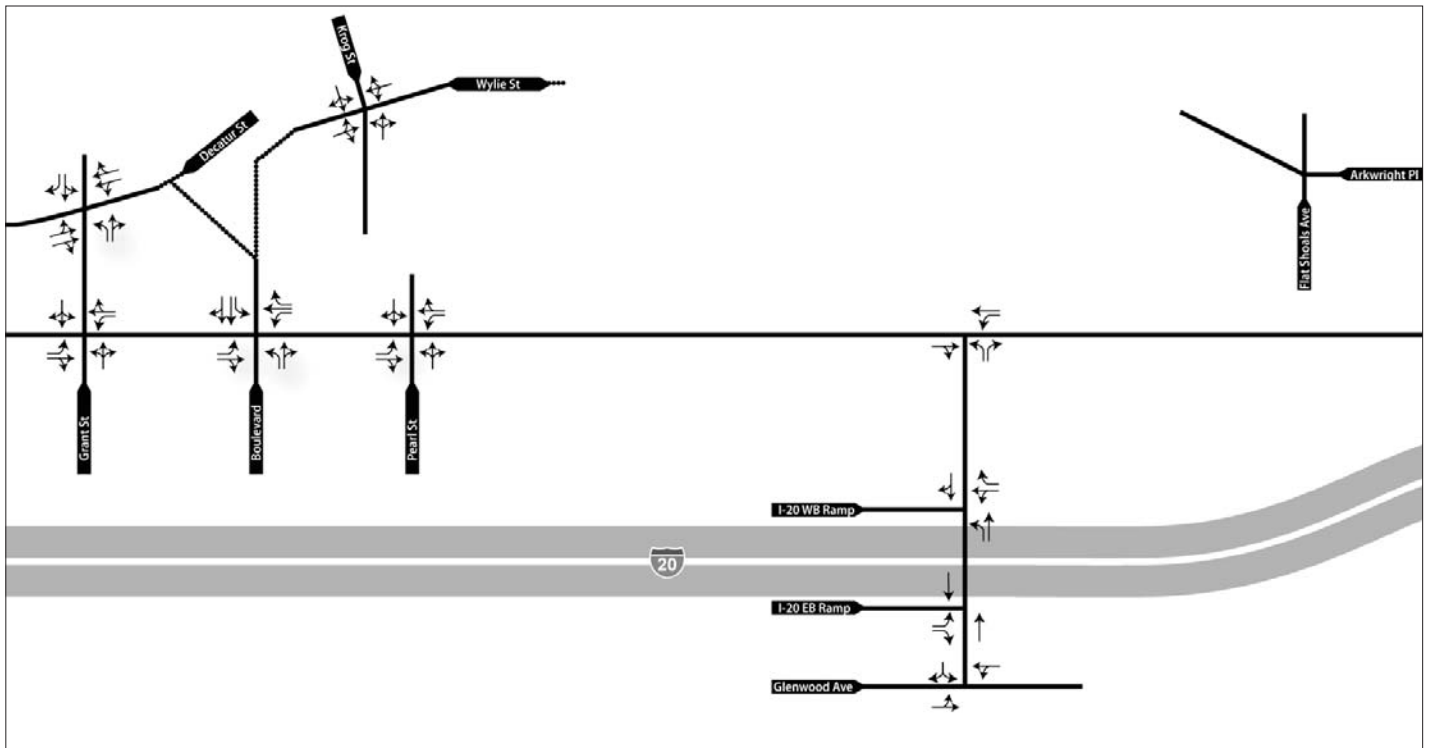


Figure 4.2.1: BeltLine Subarea 4
Proposed Laneage
Memorial Road Diet & Reversible Lane Removed
(Same laneage applies for both AM and PM peak hours)

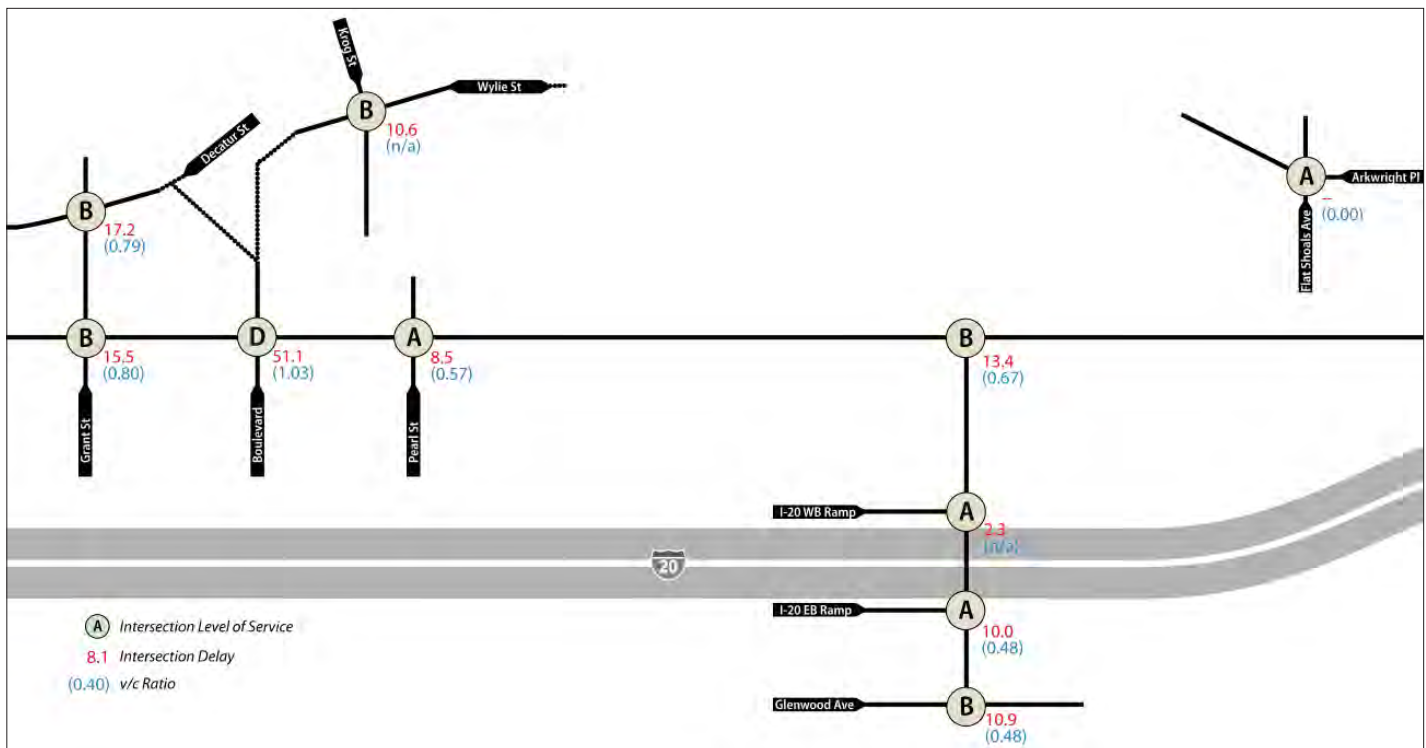


Figure 4.2.2: BeltLine Subarea 4
Existing Level of Service
Memorial Road Diet & Reversible Lane Removed
2010 AM Peak Hour

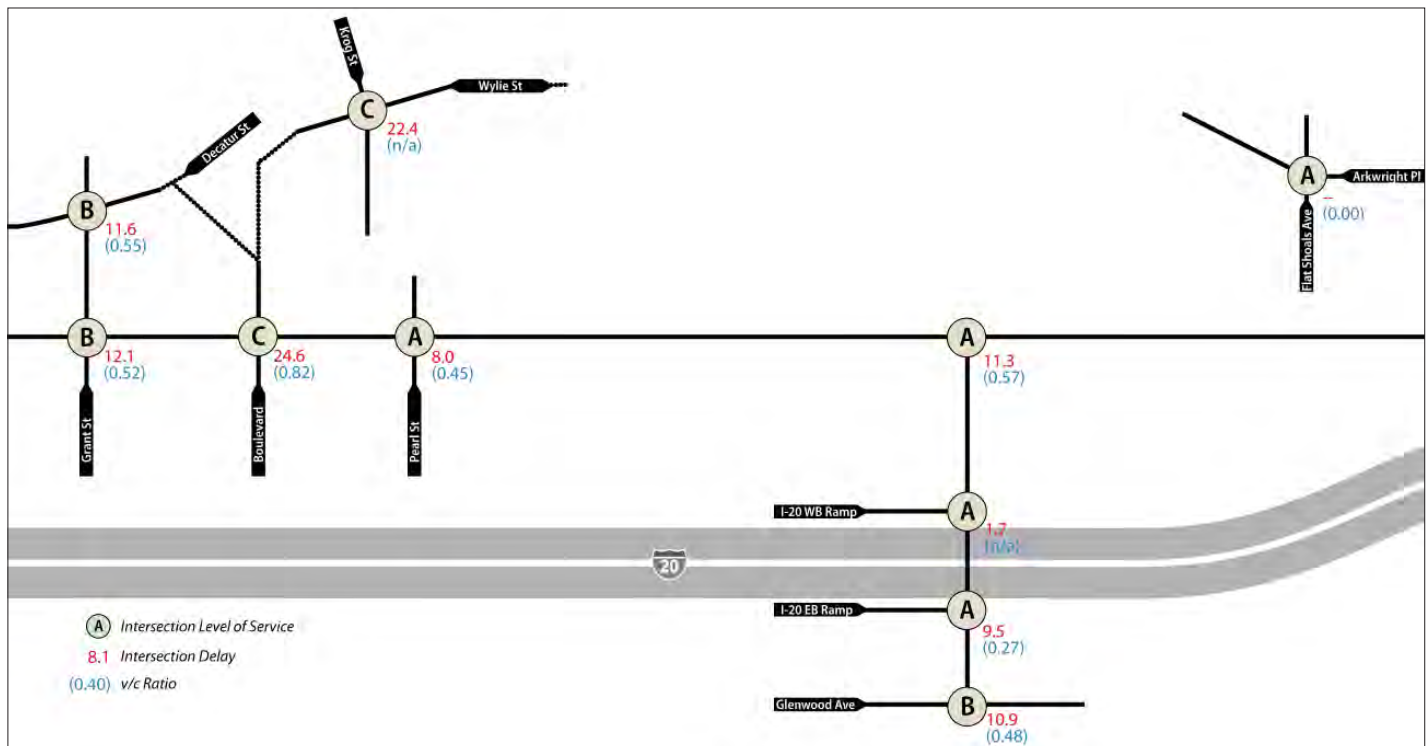


Figure 4.2.3: BeltLine Subarea 4
Existing Level of Service
Memorial Road Diet & Reversible Lane Removed
2010 PM Peak Hour

5.0 Traffic Analysis for Baseline Scenarios

5.1 2020 Baseline Scenario

This scenario considers the likely future land use in 2020 if the Beltline transit infrastructure is not constructed and the Subarea 4 land use plan is not used to guide future development. As discussed previously, this assumes that the current Comprehensive Development Plan (CDP) will continue to guide future development. Because of the City of Atlanta's focus on the Memorial corridor as a major economic development policy priority area and the robust development activity the corridor was beginning to see prior to the economic downturn of the late 2000s, it is also assumed that market demand in the future is consistent with the demand resulting if the BeltLine were to be constructed.

Trip generation calculations for this scenario, based on this assumed future development and following standard ITE methodology, are detailed in Tables 5.1.1 - 5.1.6 on the following pages.

In addition, the 2020 Baseline scenario accounts for a level of background traffic growth, or the added traffic likely to occur regardless of development activity specific to Subarea 4. The 0.5% annual growth rate used to add this amount of traffic is a conservative estimate derived from the ARC regional travel demand model and is discussed in additional detail in Section 2.2.

Planned Transportation Improvement Projects

The ARC Envision6 long-range transportation plan does not include any roadway improvement projects within Subarea 4. No added roadway capacity was assumed.

Added Local Street Network and Traffic Control

In anticipation of added growth and development even without the BeltLine Subarea 4 land use plan, it is likely that local street network would be added along with new development. The enhancement of

2020 Baseline Scenario: What would 2020 be like if we had today's traffic patterns and mode split and only the redevelopment allowed by the existing land use plan?

FACTOR	HOW IT APPEARS IN THIS ANALYSIS
Year of Analysis	2020
Road Network	2020 RTP Network and New Development Streets
Traffic Volumes	Existing Counts with 0.5% annual growth rate applied from 2010 to 2020 and CDP land use development added
Mode Split	Varies based on TAZ and location, but calculated according to BeltLine methodology
Trip Assignment	2005 Existing Pattern

existing street network as a part of new development has become a general City of Atlanta policy under the Connect Atlanta plan, and several specific locations with Subarea 4 have recommendations in Connect Atlanta for network connections to be made.

With this in mind, the baseline scenarios added street network to support the intensity and form of development envisioned in the CDP future land use recommendations. This included two new streets between Pearl Street and Chester Avenue and an extension of Holtzclaw Street south across Memorial Drive. This new addition also anticipated a need for signalization at the extended Holtzclaw and the westernmost new street between Pearl and Chester. Intersections with the new street between Pearl and Chester that only extended south of Memorial and Gibson Street were both left unsignalized.

Table 5.1.1: Baseline 2020 Trip Generation - Total

Land Use	ITE Code	Intensity		Daily Trip Ends	PM Peak-Hour Trip Ends					AM Peak-Hour Trip Ends				
					Total	In		Out		Total	In		Out	
						%	Trips	%	Trips		%	Trips	%	Trips
Multi-Family	220	418.0	DU	3,145	259	65%	168	35%	90	223	20%	45	80%	178
Townhouse/Condo	230	1,671.0	DU	9,709	869	67%	582	33%	287	735	17%	125	83%	610
Office	710	29.9	KSF	329	428	17%	73	83%	355	94	88%	82	12%	11
Retail	820	99.9	KSF	4,285	1,062	49%	520	51%	541	100	61%	61	39%	39
Total				17,468	2,617		1,343		1,274	1,152		313		839
Rates	<i>Daily</i>	<i>PM Peak</i>	<i>AM Peak</i>											
Internal Capture				978	276		141		134	14		34		88
Pass-By	20.00%	20.00%	20.00%	3,494	523		269		255	230		63		168
Modal Split		20.00%		3,755	552		286		266	247		65		181
Net External				9,242	1,266		647		619	661		151		402

Table 5.1.2: Baseline 2020 Trip Generation - Zone 1

Land Use	ITE Code	Intensity		Daily Trip Ends	PM Peak-Hour Trip Ends					AM Peak-Hour Trip Ends				
					Total	In		Out		Total	In		Out	
						%	Trips	%	Trips		%	Trips	%	Trips
Multi-Family	220	129.0	DU	905	80	65%	52	35%	28	67	20%	13	80%	54
Townhouse/Condo	230	515.0	DU	2,992	268	67%	179	33%	88	227	17%	39	83%	188
Office	710	3.8	KSF	42	83	17%	14	83%	69	14	88%	12	12%	2
Retail	820	11.5	KSF	494	149	49%	73	51%	76	12	61%	7	39%	4
Total				4,433	580		319		261	319		71	100%	248
Rates	<i>Daily</i>	<i>PM Peak</i>	<i>AM Peak</i>											
Internal Capture	3.96%	9.30%	1.01%	176	54		30		24	3		7		23
Pass-By	20.00%	20.00%	20.00%	887	116		64		52	64		14		50
Modal Split		20.00%		887	116		64		52	64		14		50
Net External				2,484	294		162		133	188		36		126

Table 5.1.3: Baseline 2020 Trip Generation - Zone 2

Land Use	ITE Code	Intensity		Daily Trip Ends	PM Peak-Hour Trip Ends					AM Peak-Hour Trip Ends				
					Total	In		Out		Total	In		Out	
						%	Trips	%	Trips		%	Trips	%	Trips
Multi-Family	220	77.0	DU	590	48	65%	31	35%	17	41	20%	8	80%	33
Townhouse/Condo	230	309.0	DU	1,795	161	67%	108	33%	53	136	17%	23	83%	113
Office	710	3.4	KSF	37	83	17%	14	83%	69	13	88%	11	12%	2
Retail	820	24.2	KSF	1,039	246	49%	120	51%	125	24	61%	15	39%	9
Total				3,462	537		273		264	214		57	100%	157
Rates	<i>Daily</i>	<i>PM Peak</i>	<i>AM Peak</i>											
Internal Capture	4.08%	8.74%	0.94%	141	47		24		23	2		5		14
Pass-By	20.00%	20.00%	20.00%	692	107		55		53	43		11		31
Modal Split		25.00%		866	134		68		66	54		14		39
Net External				1,763	248		126		122	116		26		73

Table 5.1.4: Baseline 2020 Trip Generation - Zone 3

Land Use	ITE Code	Intensity		Daily Trip Ends	PM Peak-Hour Trip Ends					AM Peak-Hour Trip Ends				
					Total	In		Out		Total	In		Out	
						%	Trips	%	Trips		%	Trips	%	Trips
Multi-Family	220	51.0	DU	433	32	65%	21	35%	11	29	20%	6	80%	23
Townhouse/Condo	230	206.0	DU	1,197	107	67%	72	33%	35	91	17%	15	83%	75
Office	710	16.3	KSF	179	97	17%	17	83%	81	44	88%	39	12%	5
Retail	820	17.4	KSF	747	197	49%	97	51%	101	17	61%	11	39%	7
Total				2,556	433		205		228	181		70	100%	110
Rates	Daily	PM Peak	AM Peak											
Internal Capture	8.68%	13.66%	1.76%	222	59		28		31	3		10		15
Pass-By	20.00%	20.00%	20.00%	511	87		41		46	36		14		22
Modal Split		15.00%		383	65		31		34	27		11		17
Net External				1,440	222		105		117	114		36		57

Table 5.1.5: Baseline 2020 Trip Generation - Zone 4

Land Use	ITE Code	Intensity		Daily Trip Ends	PM Peak-Hour Trip Ends					AM Peak-Hour Trip Ends				
					Total	In		Out		Total	In		Out	
						%	Trips	%	Trips		%	Trips	%	Trips
Multi-Family	220	22.0	DU	257	14	65%	9	35%	5	15	20%	3	80%	12
Townhouse/Condo	230	88.0	DU	511	46	67%	31	33%	15	39	17%	7	83%	32
Office	710	1.8	KSF	20	81	17%	14	83%	67	8	88%	7	12%	1
Retail	820	13.1	KSF	563	163	49%	80	51%	83	13	61%	8	39%	5
Total				1,350	303		133		170	74		24	100%	50
Rates	Daily	PM Peak	AM Peak											
Internal Capture	4.75%	9.35%	0.79%	64	28		12		16	1		2		5
Pass-By	20.00%	20.00%	20.00%	270	61		27		34	15		5		10
Modal Split		15.00%		203	45		20		26	11		4		7
Net External				814	169		74		95	47		13		28

Table 5.1.6: Baseline 2020 Trip Generation - Zone 5

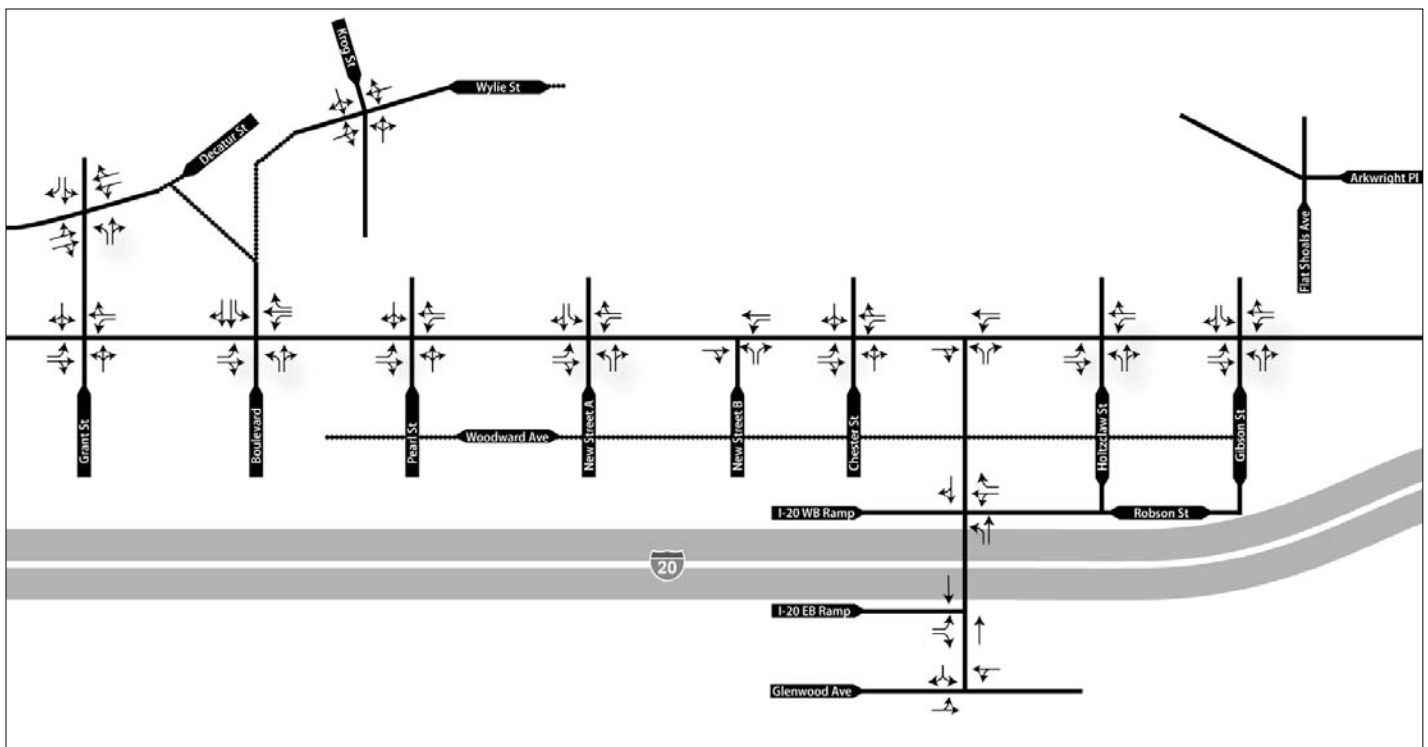
Land Use	ITE Code	Intensity		Daily Trip Ends	PM Peak-Hour Trip Ends					AM Peak-Hour Trip Ends				
					Total	In		Out		Total	In		Out	
						%	Trips	%	Trips		%	Trips	%	Trips
Multi-Family	220	138.0	DU	960	86	65%	56	35%	30	71	20%	14	80%	57
Townhouse/Condo	230	553.0	DU	3,213	288	67%	193	33%	95	243	17%	41	83%	202
Office	710	4.6	KSF	51	84	17%	14	83%	70	16	88%	14	12%	2
Retail	820	33.6	KSF	1,443	306	49%	150	51%	156	34	61%	20	39%	13
Total				5,666	763		413		351	364		90	100%	274
Rates	Daily	PM Peak	AM Peak											
Internal Capture	6.62%	11.44%	1.24%	375	87		47		40	5		10		31
Pass-By	20.00%	20.00%	20.00%	1,133	153		83		70	73		18		55
Modal Split		25.00%		1,417	191		103		88	91		23		69
Net External				2,741	333		180		153	196		39		119

As stated previously, it is assumed that by 2020 the reversible lane of Memorial Drive east of Pearl Street will have been converted to a two-way left turn lane. The default assumption was that a road diet of Memorial west of Pearl Street, even one that maintains existing curb-to-curb cartway dimensions and simply restripes travel lanes, could be completed by 2020 to establish this extent as the same cross-section. This is reflected in Figure 5.1.1 (below), the laneage configuration diagram, in that each direction of travel on Memorial has one travel lane sharing through and right-turn movements and one dedicated lane for left turns at intersections.

It is important to reiterate that the trip generation methods used are based on the traffic analysis zones and trip distribution pattern framework described in Section 3.1 and then applied to specific intersections for the basis of this level of analysis. Because the trip distribution framework focuses on where and to what degree traffic enters and exits Subarea 4, movements that would remain internal to the corridor are typically understood only at major intersections and especially intersections with Memorial Drive. For this reason, some intersections that were added with new streets

may feature volumes of turning traffic but no through traffic. For example, Chester Street, which does allow southbound through movements at Memorial Drive today but would if the new street network as presented in the Subarea 4 plan were added, experiences an increase in the volumes of southbound movements turning onto Memorial but has no traffic volume continuing southbound through the intersection. This is due to the emphasis of the distribution pattern on traffic coming into and out of the Subarea; the analysis assumed that traffic following these patterns would use the most direct means to reach entry/exit points for the Subarea.

As Table 5.1.7 (on page 27) shows, the subarea's roadway network experiences congestion primarily at the intersection of Memorial Drive and Boulevard in the AM peak hour. When particular turning movements at each of these intersections are analyzed, however, the most notable problem of each is not related to traffic volume on Memorial but instead to volume on Boulevard. Due to several factors, namely Boulevard's connection across I-20 to the Grant Park neighborhood (where it is a primary thoroughfare) and its interchange with the interstate allowing exiting traffic to use it,



**Figure 5.1.1: BeltLine Subarea 4
Proposed Laneage with New Street Network from Added Development**

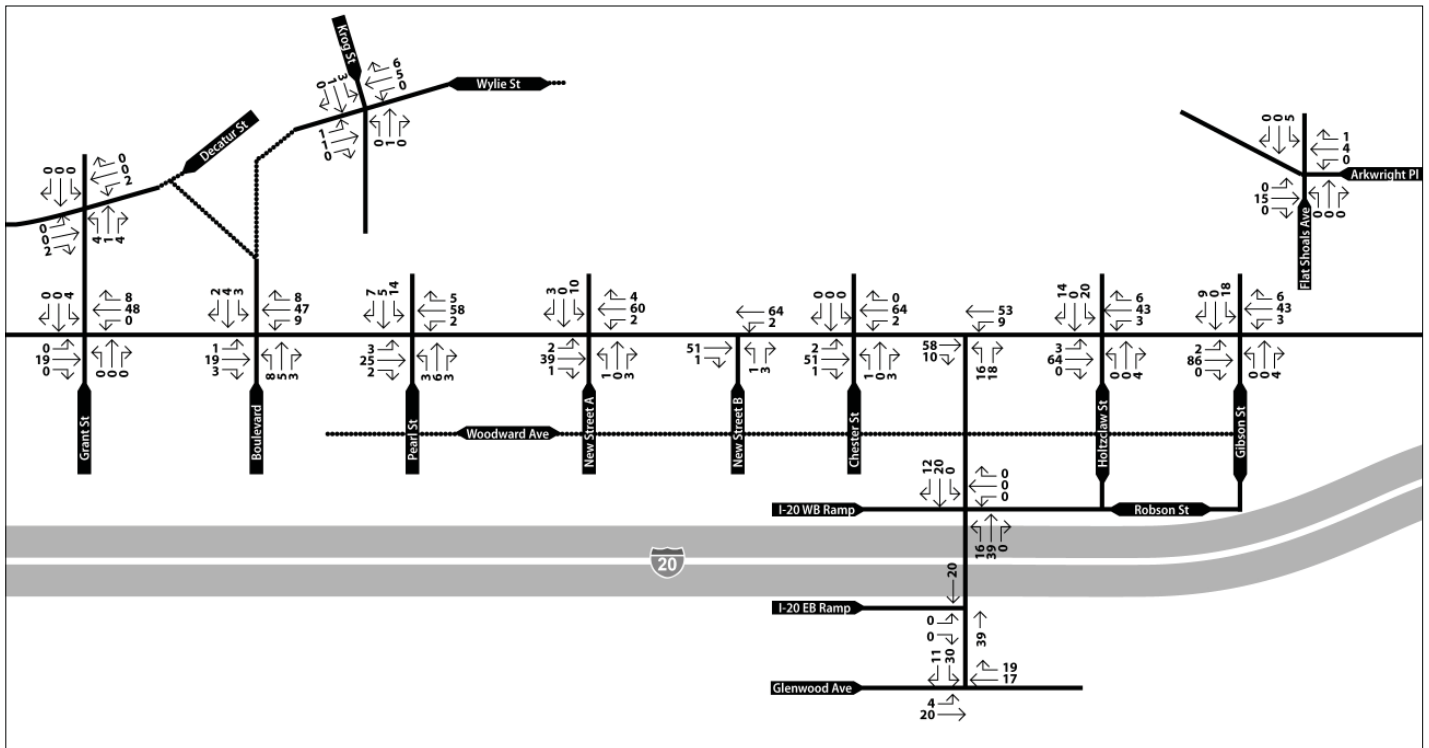


Figure 5.1.2: BeltLine Subarea 4
Baseline Scenario Trip Generation As Applied to Subarea Study Intersections
2020 AM Peak Hour

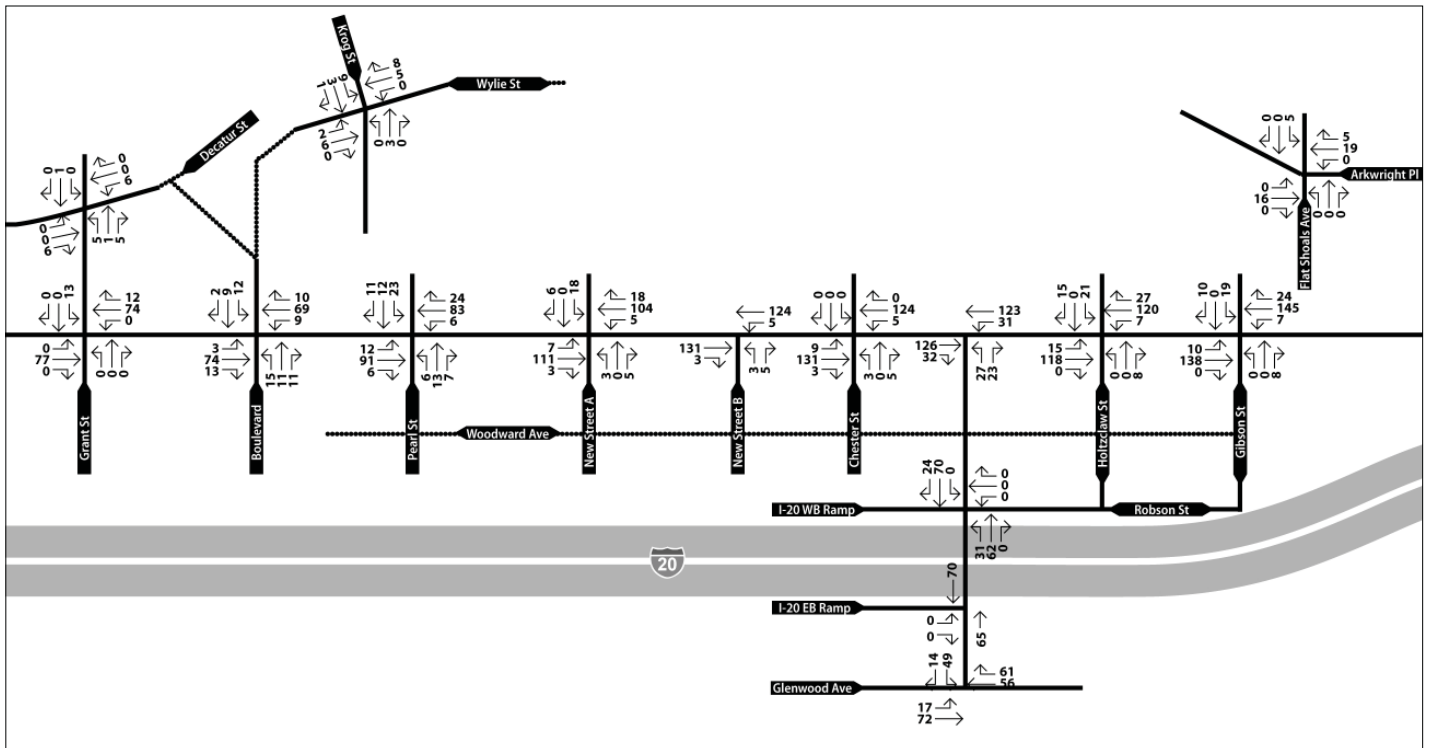


Figure 5.1.3: BeltLine Subarea 4
Baseline Scenario Trip Generation As Applied to Subarea Study Intersections
2020 PM Peak Hour

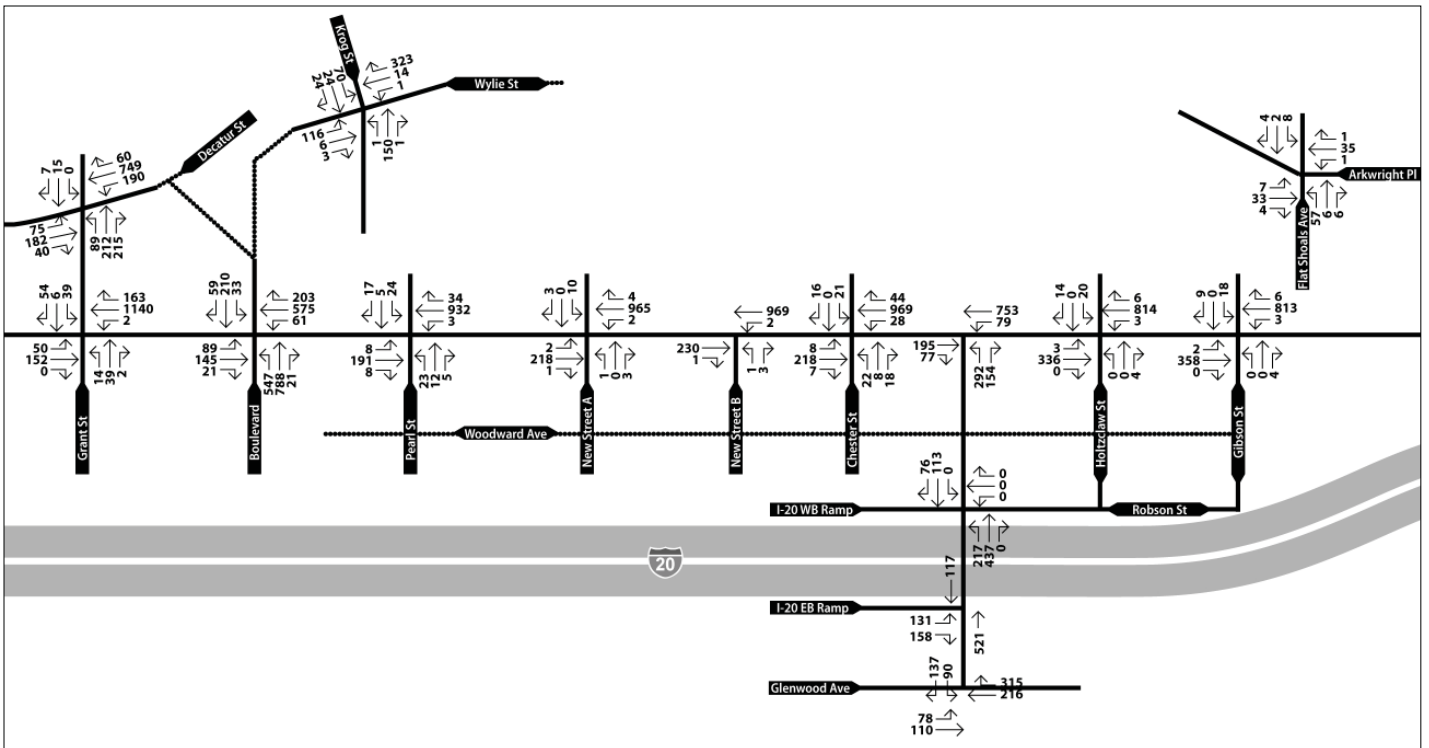


Figure 5.1.4: BeltLine Subarea 4
TOTAL Baseline Traffic Volumes (Trip Generation and Baseline Combined)
2020 AM Peak Hour

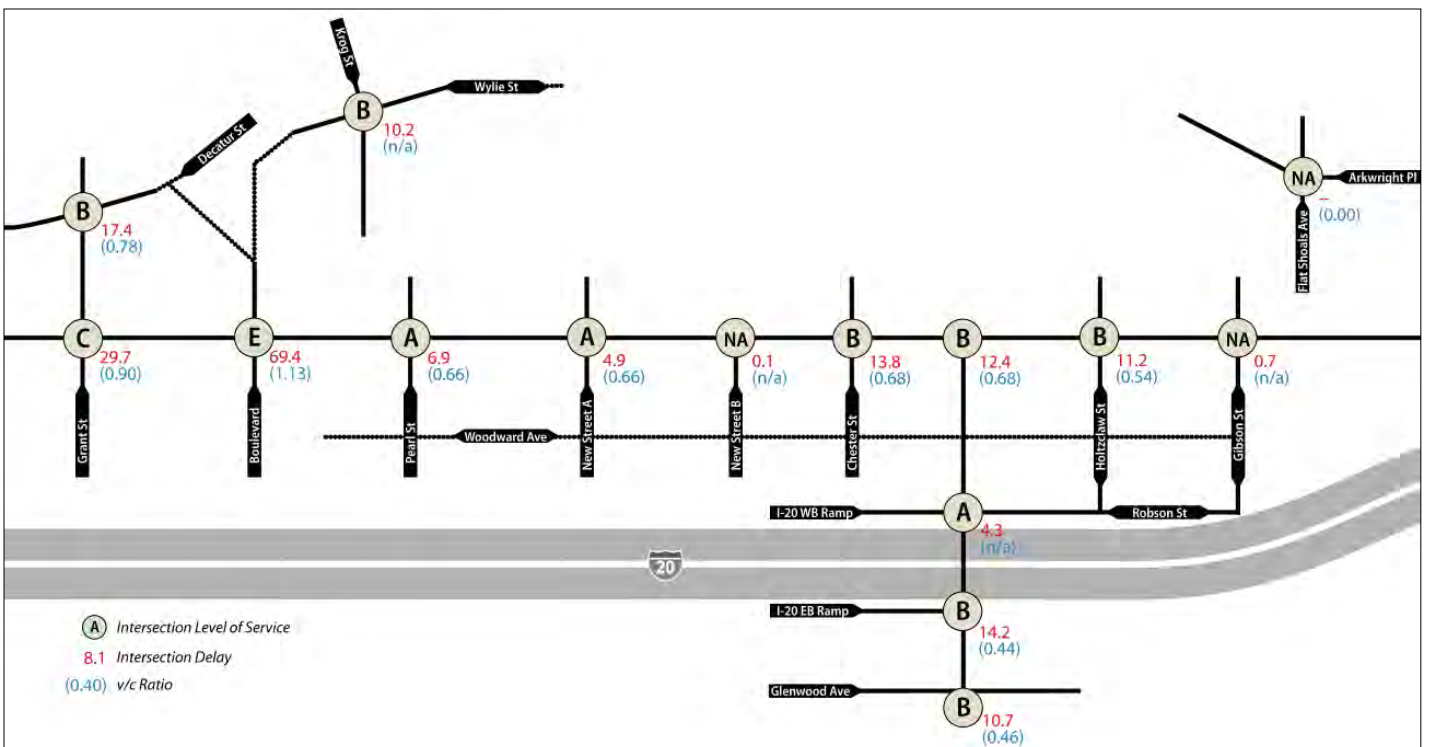


Figure 5.1.5: BeltLine Subarea 4
Baseline Level of Service
2020 AM Peak Hour

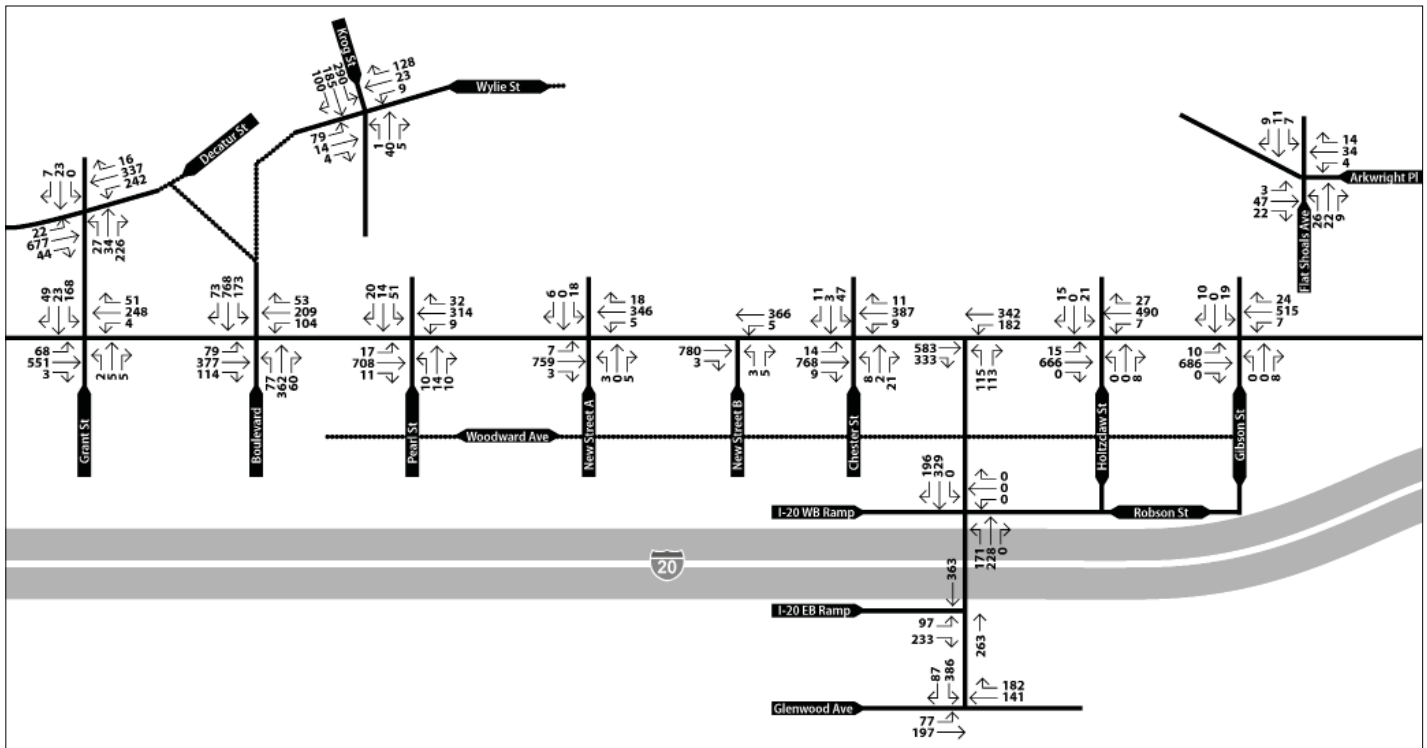


Figure 5.1.6: BeltLine Subarea 4
TOTAL Baseline Traffic Volumes (Trip Generation and Baseline Combined)
2020 PM Peak Hour

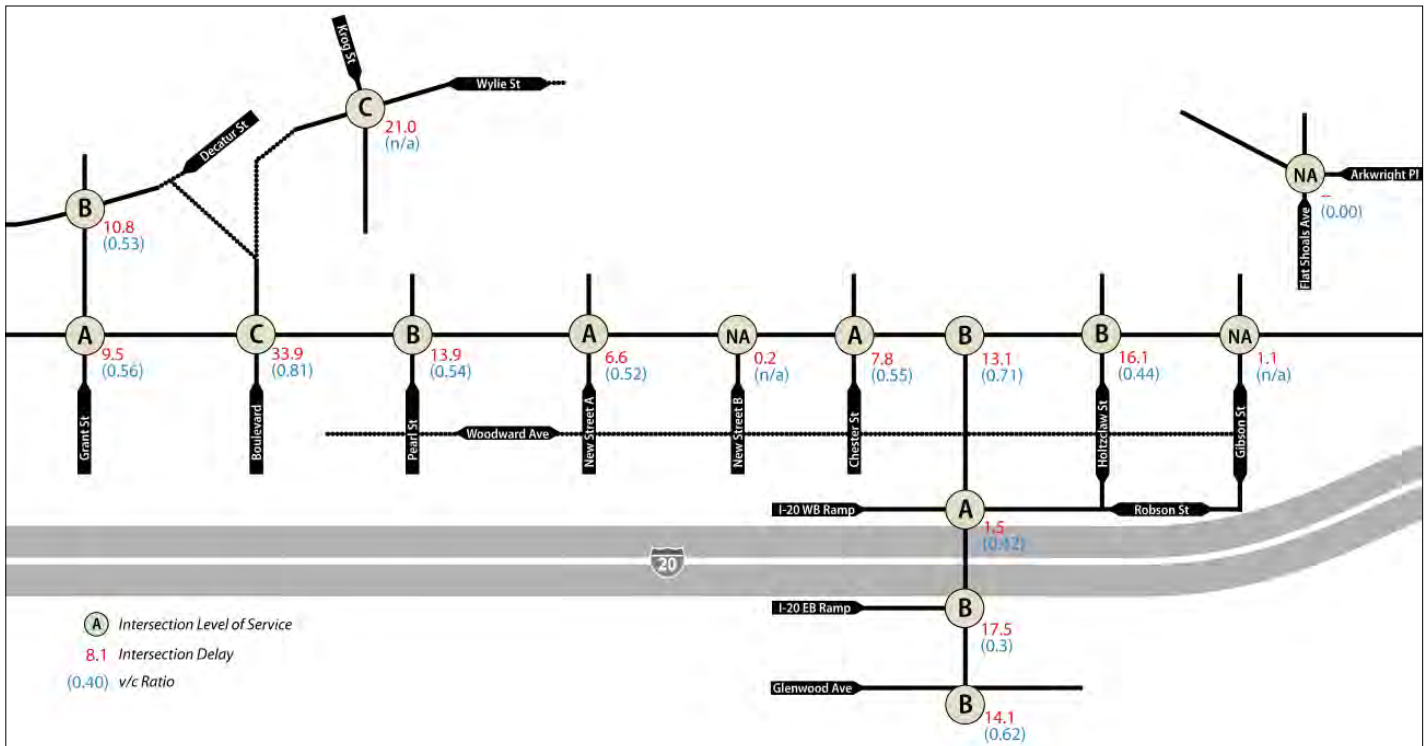


Figure 5.1.7: BeltLine Subarea 4
Baseline Level of Service
2020 PM Peak Hour

northbound volumes are heavy in the AM peak hour. Northbound left-turn volumes from Boulevard to Memorial exhaust the capacity of a single left turn lane according to HCM guidelines, with 547 vehicles making this movement in the peak hour and a resulting 95th percentile queue length of 485 feet. Most importantly, because of existing lane configurations on the northbound intersection approach, which require that left turns share a lane with through movements, through movement volume and insufficient capacity also result in long queues, with 788 vehicles (using both lanes) resulting in a 95th percentile queue length of 984 feet. In terms of individual movements, the sharing of these two causes the greatest delay for the northbound through movement. The time given to the signal phase for northbound movements to facilitate these movement requires that less time be given to westbound movements on Memorial Drive, thus compounding the overall delay that they face.

The recommendations section of the report describes this challenge in greater detail. However, any solution adding capacity to northbound movements at this intersection will require considerable property impacts and is likely to face significant feasibility difficulties to the north of the Boulevard/Memorial intersection,

especially due to the constraints presented by the Oakland Cemetery and historic properties in the Cabbagetown neighborhood near the intersection of Boulevard and Carroll Street. The analysis also considered signalization changes that may require different signal infrastructure, such as split phasing for northbound and southbound movements, although these did not help to reduce overall intersection delay.

In the PM peak hour, the subarea does not experience significant congestion at individual intersections, although overall travel times through the Memorial and Bill Kennedy corridors are greater than in the existing conditions. This is discussed in additional detail in Section 6.4.

Table 5.1.7: 2020 Baseline Level of Service

Intersection	AM Peak LOS	AM Peak V/C Ratio	AM Peak Overall Delay	PM Peak LOS	PM Peak V/C Ratio	PM Peak Overall Delay	Problematic Movements
Grant/Decatur	B	0.78	17 sec	B	0.53	11 sec	
Grant/Memorial	C	0.90	30 sec	A	0.56	10 sec	
Memorial/Boulevard	E	1.13	69 sec	C	0.81	34 sec	WBT and NBT both failing. Even with longer signal timing plan, green time is insufficient to clear both movements.
Memorial/Pearl	A	0.66	7 sec	B	0.54	14 sec	
Memorial/New Street A	A	0.66	5 sec	A	0.52	7 sec	
Memorial/Chester	B	0.68	14 sec	A	0.55	8 sec	
Memorial/Bill Kennedy	B	0.68	12 sec	B	0.71	13 sec	
Memorial/Holtzclaw	B	0.54	11 sec	B	0.44	16 sec	
Bill Kennedy/I-20 Westbound	A	0.34	4 sec	A	0.42	2 sec	
Bill Kennedy/I-20 Eastbound	B	0.44	14 sec	B	0.30	18 sec	
Bill Kennedy/Glenwood	B	0.46	11 sec	B	0.62	14 sec	
Krog/Wylie	B	N/A	10 sec	C	N/A	21 sec	

5.2 2030 Baseline Scenario

This scenario is similar to the 2020 Baseline but uses an average growth rate derived from the Atlanta Regional Commission travel demand model to forecast increases in traffic between 2020 and 2030. As discussed in Section 2.2, this is a different growth rate than that used to assume background growth between 2010 and 2020. The annual growth rate of 1 percent per year is a conservative estimate based on the difference of volume assignments from the ARC regional travel demand model for 2020 and 2030. All roadway assumptions for the 2020 Baseline scenario are incorporated into the 2030 Baseline scenario.

Planned Transportation Improvement Projects

The ARC Envision6 long-range transportation plan does not include any roadway improvement projects within Subarea 4 between 2020 and 2030.

Added Local Street Network and Traffic Control

The 2030 baseline scenarios used the same added street network as in the 2020 baseline scenarios. This included two new streets between Pearl Street and Chester Avenue and an extension of Holtzclaw Street south across Memorial Drive. This new addition also anticipated a need for signalization at the extended Holtzclaw and the westernmost new street between Pearl and Chester.

2030 Baseline Scenario: What would 2030 be like if we had today's traffic patterns and mode split and only the redevelopment allowed by the existing land use plan?

FACTOR	HOW IT APPEARS IN THIS ANALYSIS
Year of Analysis	2030
Road Network	2030 RTP Network and New Development Streets
Traffic Volumes	2020 Analysis Volumes (Background Growth to 2020 + Trip Generation from added development for 2020) increased with Background Growth from 2020 to 2030
Mode Split	Varies based on TAZ and location, but calculated according to BeltLine methodology
Trip Assignment	2005 Existing Pattern

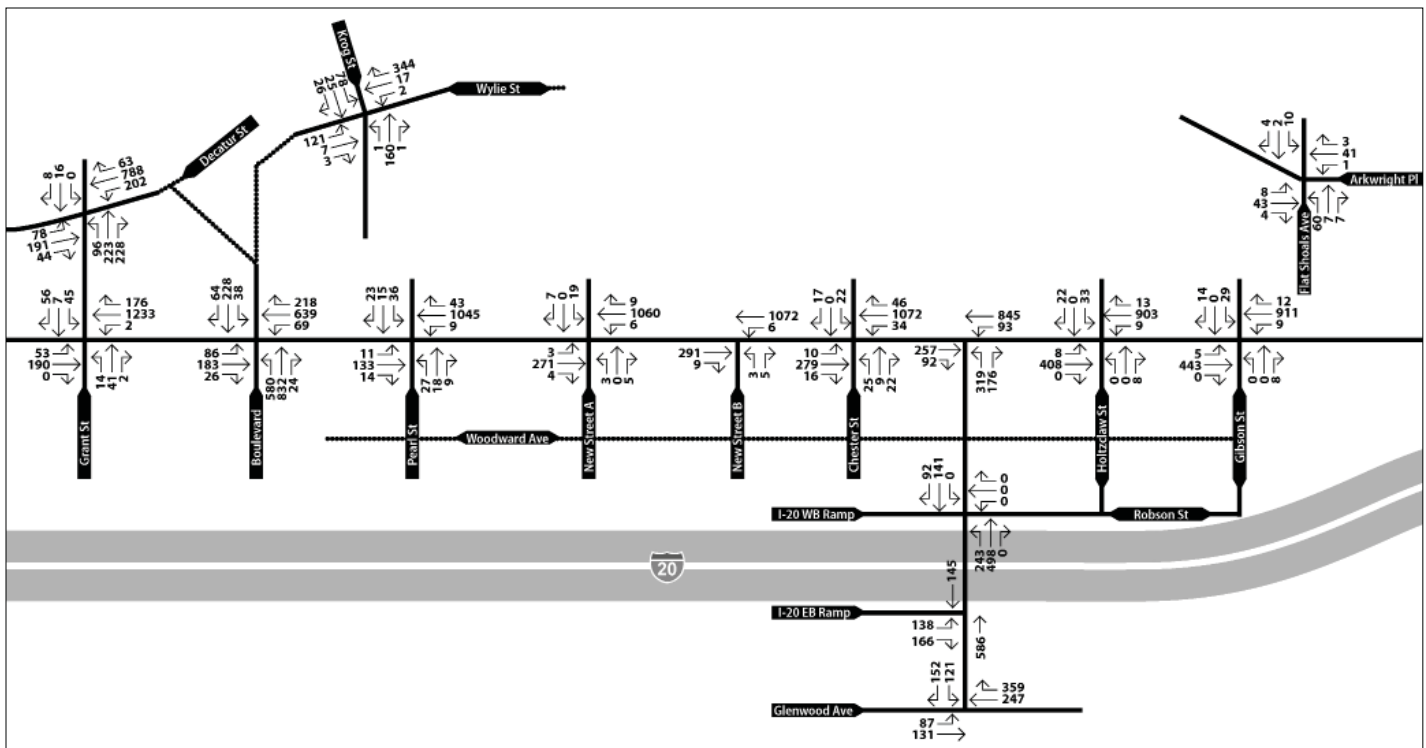


Figure 5.2.1: BeltLine Subarea 4
Baseline Traffic Volumes
2030 AM Peak Hour

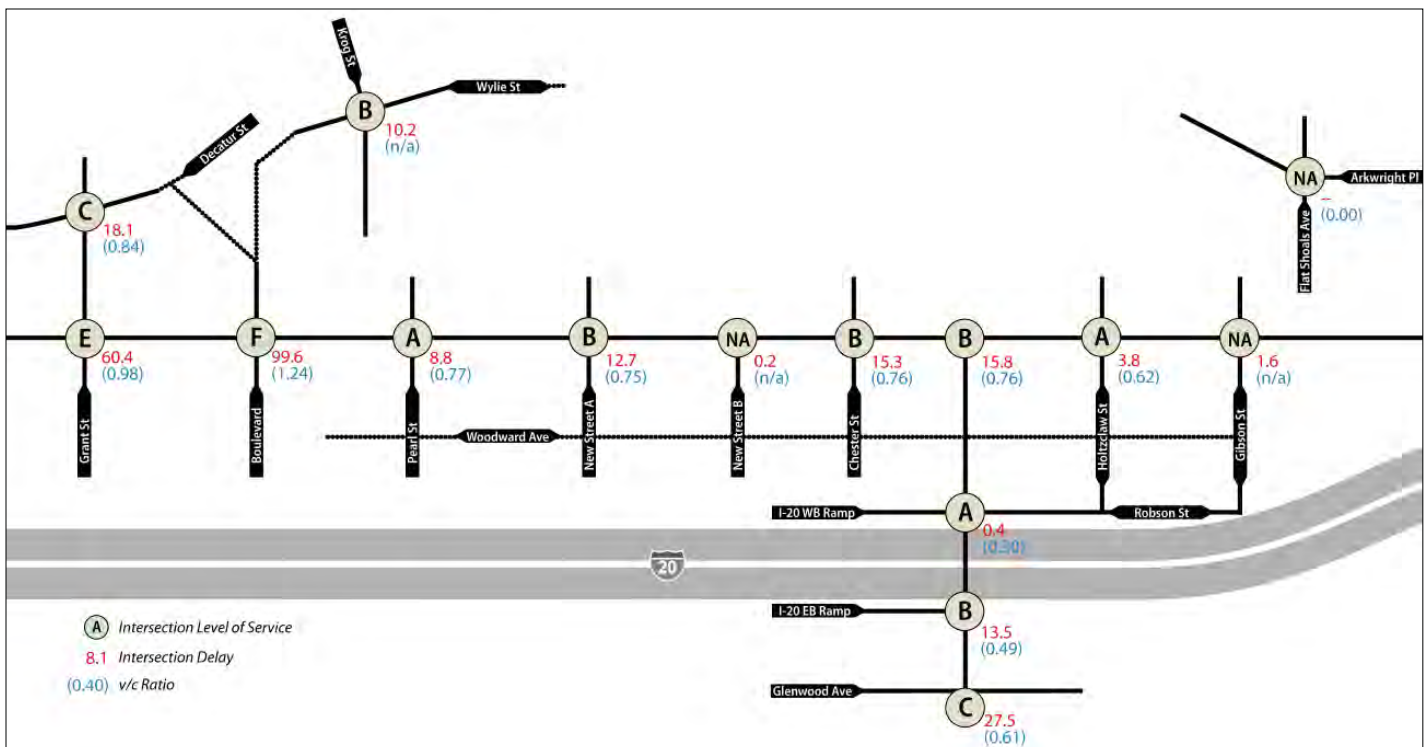
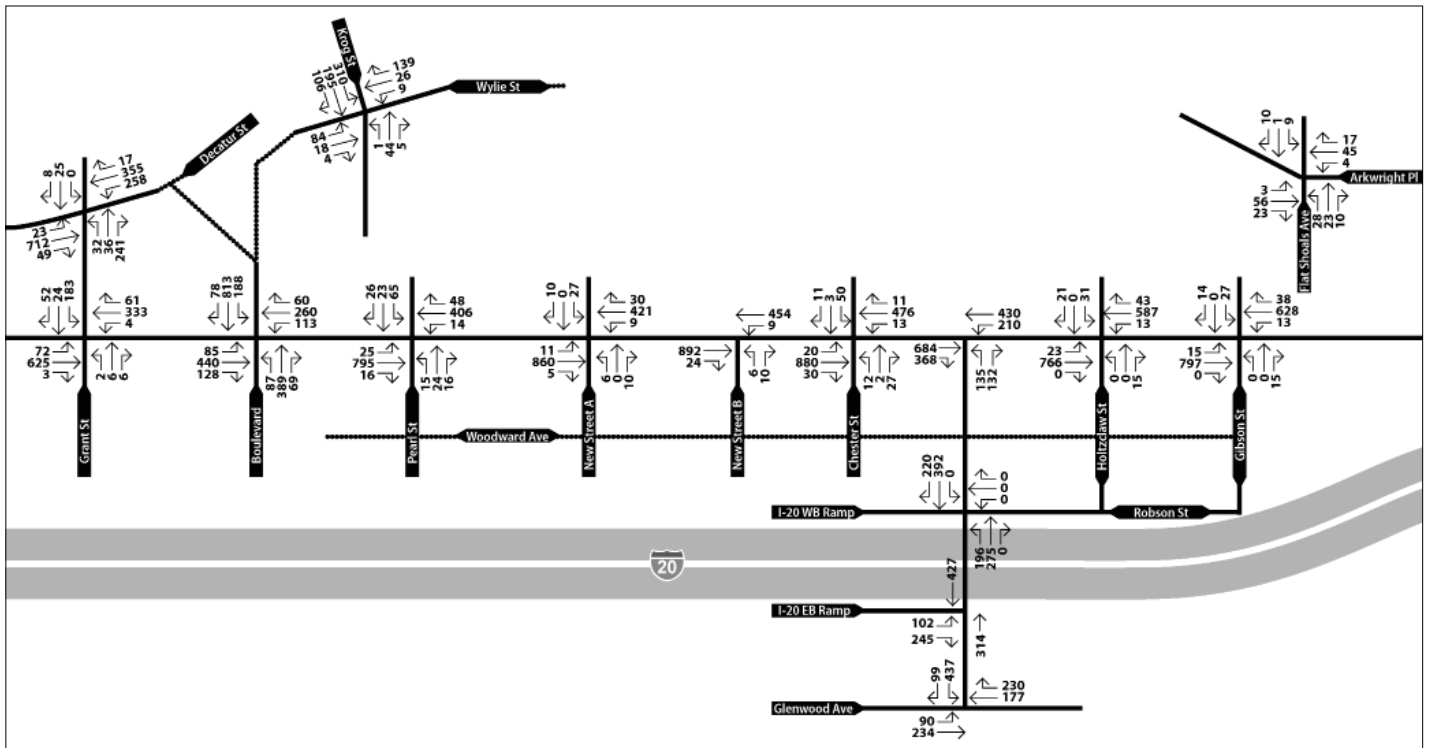
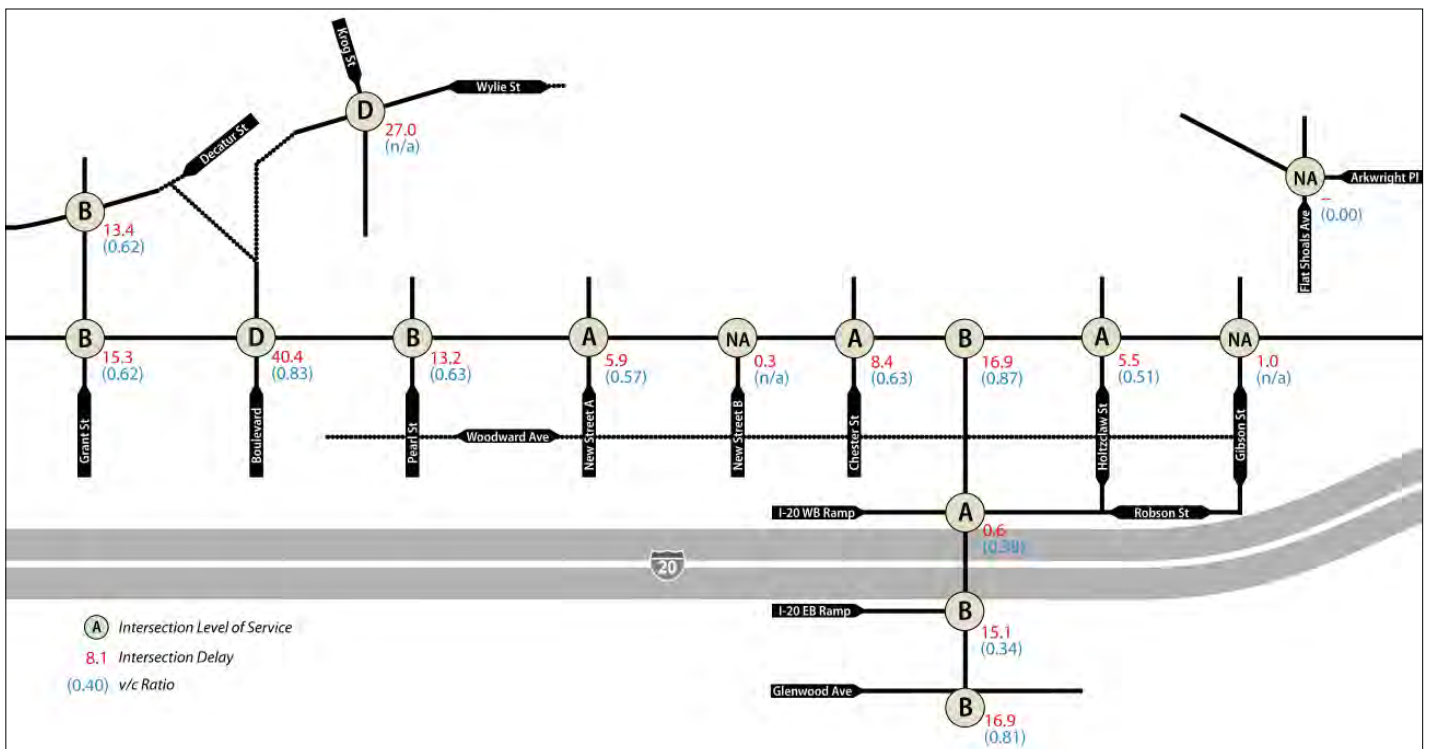


Figure 5.2.2: BeltLine Subarea 4
Baseline Level of Service
2030 AM Peak Hour



**Figure 5.2.3: BeltLine Subarea 4
Baseline Traffic Volumes
2030 PM Peak Hour**



**Figure 5.2.4: BeltLine Subarea 4
Baseline Level of Service
2030 PM Peak Hour**

As Table 5.2.7 shows, and as in the 2020 Baseline scenario, the subarea's roadway network experiences congestion primarily at the intersection of Memorial Drive and Boulevard in the AM peak hour. When particular turning movements at this intersection are analyzed, however, the most notable problem of each is not related to traffic volume on Memorial but instead to volume on Boulevard. Northbound left-turn volumes from Boulevard to Memorial exhaust the capacity of a single left turn lane according to HCM guidelines, and the time given to the signal phase to facilitate this movement requires that less time be given to westbound movements on Memorial Drive, thus compounding the overall delay that they face.

In the PM peak hour, the subarea does not experience significant congestion at individual intersections, although overall travel times through the Memorial and Bill Kennedy corridors are greater than in the existing conditions. This is discussed in additional detail in Section 6.4.

Table 5.2.1: 2030 Baseline Level of Service

Intersection	AM Peak LOS	AM Peak V/C Ratio	AM Peak Overall Delay	PM Peak LOS	PM Peak V/C Ratio	PM Peak Overall Delay	Problematic Movements
Grant/Decatur	B	0.84	18 sec	B	0.62	13 sec	
Grant/Memorial	E	0.98	60 sec	B	0.62	15 sec	
Memorial/Boulevard	F	1.24	100 sec	D	0.83	40 sec	In AM, both WBT and NBT continue to experience highest delay (as in other scenarios); NBT volume is in excess of single turn lane capacity.
Memorial/Pearl	B	0.77	9 sec	B	0.63	13 sec	
Memorial/New Street A	B	0.75	13 sec	A	0.57	6 sec	
Memorial/Chester	B	0.76	15 sec	A	0.63	8 sec	
Memorial/Bill Kennedy	B	0.76	16 sec	B	0.87	17 sec	NBL in PM experiences greatest delay because of full signal control (NBR is helped by permitting right turns on red)
Memorial/Holtzclaw	A	0.62	4 sec	A	0.51	6 sec	
Bill Kennedy/I-20 Westbound	A	0.30	less than 1 sec	A	0.40	less than 1 sec	
Bill Kennedy/I-20 Eastbound	B	0.49	14 sec	B	0.34	15 sec	
Bill Kennedy/Glenwood	C	0.61	28 sec	B	0.81	17 sec	
Krog/Wylie	B	N/A	11 sec	D	N/A	27 sec	SB approach experiences greatest delay in PM, but also by far the heaviest volumes due to tunnel crossing.

6.0 Traffic Analysis for BeltLine Scenarios

These scenarios use the BeltLine Subarea 4 land use plan as the basis for trip generation and distribution. Scenarios that include the BeltLine transit infrastructure also assume a generally higher transit mode share due to the immediate adjacency of premium transit within the subarea.

It is worth noting in all BeltLine land use scenarios that the intensity of development is concentrated closer to the BeltLine corridor than in the Comprehensive Development Plan land use scenario. That being said, the CDP land uses allow for more or less the same intensity of development. The subarea’s heavy reliance on Memorial Drive as a key transportation thoroughfare along with a generally consistent level of development between baseline and BeltLine traffic scenarios lead to comparable infrastructure performance.

All BeltLine scenarios for 2020 and 2030 use the same assumptions for roadway geometry as the baseline scenarios. Refer to Figure 5.1.1 (page 23) for a diagram illustrating the laneage assumptions used in the traffic models.

6.1 2020 BeltLine ‘Worst Case’ Scenario

This scenario is similar to the 2020 Baseline in that development forecasts are based on the BeltLine market study for 2020, but it uses the BeltLine land use plan as the basis for geographic distribution of new development and traffic distribution. The key factor in this scenario is that BeltLine development happens but that construction of premium transit does not, meaning that BeltLine development is subject to the same transit mode share as if BeltLine had not been planned (although it is important to note that this analysis performed transit mode share calculations using standard BeltLine methodology for each scenario, allowing different concentrations of land use and employment to result in different estimates for transit mode share).

This scenario assumes the same addition of local street network as in the baseline scenarios, with signalized traffic control at the Memorial/New Street A and Memorial/Holtzclaw intersections. Although not an integral factor in the analysis, the likelihood of difficulty in making left turns onto Memorial at unsignalized intersections during peak periods may mean that these intersections effectively function with right-in, right-out access.

Planned Transportation Improvement Projects

The ARC Envision6 long-range transportation plan does not include any roadway improvement projects within Subarea 4 between 2010 and 2020.

2020 Build Worst Case Scenario: What would 2020 be like if we had BeltLine development through 2020 without the BeltLine transit and transportation improvements to help improve mode split and traffic patterns?	
FACTOR	HOW IT APPEARS IN THIS ANALYSIS
Year of Analysis	2020
Road Network	2020 RTP Network and New Development Streets
Traffic Volumes	Existing Counts with 0.5% annual growth rate applied to 2020; BeltLine trip generation is applied to this all are modified based on current potential mode split (see below)
Mode Split	Varies based on TAZ and location, but calculated according to BeltLine methodology and does not assume premium transit in the subarea
Trip Assignment	Existing patterns modified with distribution of New Traffic based on new development

Table 6.1.1: BeltLine 2020 (Worst Case Scenario) Trip Generation - Total

Land Use	ITE Code	Intensity		Daily Trip Ends	PM Peak-Hour Trip Ends					AM Peak-Hour Trip Ends				
					Total	In		Out		Total	In		Out	
						%	Trips	%	Trips		%	Trips	%	Trips
Multi-Family	220	418.0	DU	3,151	259	65%	168	35%	91	223	20%	45	80%	179
Townhouse/Condo	230	1,671.0	DU	9,703	868	67%	582	33%	287	735	17%	125	83%	610
Office	710	29.9	KSF	330	191	17%	33	83%	159	82	88%	72	12%	10
Retail	820	99.9	KSF	4,711	1,135	49%	556	51%	579	110	61%	67	39%	43
Total				17,894	2,453		1,339		1,115	1,150		309		841
Rates	<i>Daily</i>	<i>PM Peak</i>	<i>AM Peak</i>											
Internal Capture				1,016	263		142		121	14		34		88
Pass-By	20.00%	20.00%	20.00%	3,579	491		268		223	230		62		168
Modal Split		20.00%		3,848	519		285		233	249		66		183
Net External				9,452	1,181		644		537	658		147		402

Table 6.1.2: BeltLine 2020 (Worst Case Scenario) Trip Generation - Zone 1

Land Use	ITE Code	Intensity		Daily Trip Ends	PM Peak-Hour Trip Ends					AM Peak-Hour Trip Ends				
					Total	In		Out		Total	In		Out	
						%	Trips	%	Trips		%	Trips	%	Trips
Multi-Family	220	78.0	DU	596	48	65%	31	35%	17	42	20%	8	80%	34
Townhouse/Condo	230	312.0	DU	1,813	162	67%	109	33%	54	137	17%	23	83%	114
Office	710	0.0	KSF	0	0	49%	0	51%	0	0	61%	0	39%	0
Retail	820	11.8	KSF	962	233	49%	114	51%	119	22	61%	14	39%	9
Total				3,371	444		255		190	202		45		156
Rates	<i>Daily</i>	<i>PM Peak</i>	<i>AM Peak</i>											
Internal Capture	3.96%	9.30%	1.01%	133	41		24		18	2		4		15
Pass-By	20.00%	20.00%	20.00%	674	89		51		38	40		9		31
Modal Split		20.00%		674	89		51		38	40		9		31
Net External				1,889	225		129		96	119		23		79

Table 6.1.3: BeltLine 2020 (Worst Case Scenario) Trip Generation - Zone 2

Land Use	ITE Code	Intensity		Daily Trip Ends	PM Peak-Hour Trip Ends					AM Peak-Hour Trip Ends				
					Total	In		Out		Total	In		Out	
						%	Trips	%	Trips		%	Trips	%	Trips
Multi-Family	220	131.0	DU	917	81	65%	53	35%	28	68	20%	14	80%	54
Townhouse/Condo	230	524.0	DU	3,044	272	67%	183	33%	90	231	17%	39	83%	191
Office	710	0.0	KSF	0	0	17%	0	83%	0	0	88%	0	12%	0
Retail	820	22.4	KSF	932	229	49%	112	51%	117	22	61%	13	39%	8
Total				4,894	582		347		235	320		66		254
Rates	<i>Daily</i>	<i>PM Peak</i>	<i>AM Peak</i>											
Internal Capture	4.08%	8.74%	0.94%	200	51		30		21	3		6		22
Pass-By	20.00%	20.00%	20.00%	979	116		69		47	64		13		51
Modal Split		25.00%		1,223	146		87		59	80		17		64
Net External				2,492	269		161		109	173		31		118

Table 6.1.4: BeltLine 2020 (Worst Case Scenario) Trip Generation - Zone 3

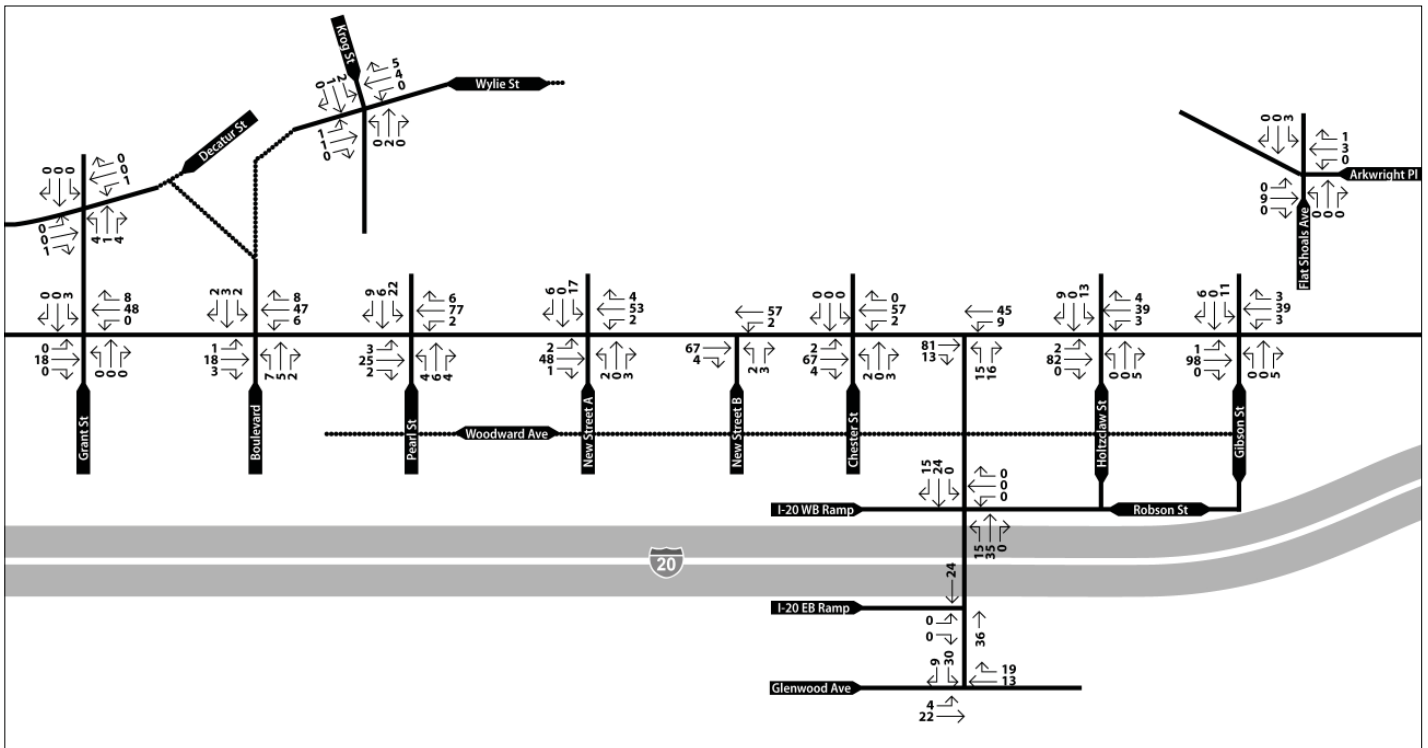
Land Use	ITE Code	Intensity		Daily Trip Ends	PM Peak-Hour Trip Ends					AM Peak-Hour Trip Ends				
					Total	In		Out		Total	In		Out	
						%	Trips	%	Trips		%	Trips	%	Trips
Multi-Family	220	66.0	DU	524	41	65%	27	35%	14	36	20%	7	80%	29
Townhouse/Condo	230	263.0	DU	1,528	137	67%	92	33%	45	116	17%	20	83%	96
Office	710	13.8	KSF	152	94	17%	16	83%	78	38	88%	34	12%	5
Retail	820	26.4	KSF	1,134	261	49%	128	51%	133	26	61%	16	39%	10
Total				3,337	533		262		271	217		77		140
Rates	Daily	PM Peak	AM Peak											
Internal Capture	8.68%	13.66%	1.76%	290	73		36		37	4		10		19
Pass-By	20.00%	20.00%	20.00%	667	107		52		54	43		15		28
Modal Split		15.00%		501	80		39		41	32		12		21
Net External				1,879	273		134		139	137		39		72

Table 6.1.5: BeltLine 2020 (Worst Case Scenario) Trip Generation - Zone 4

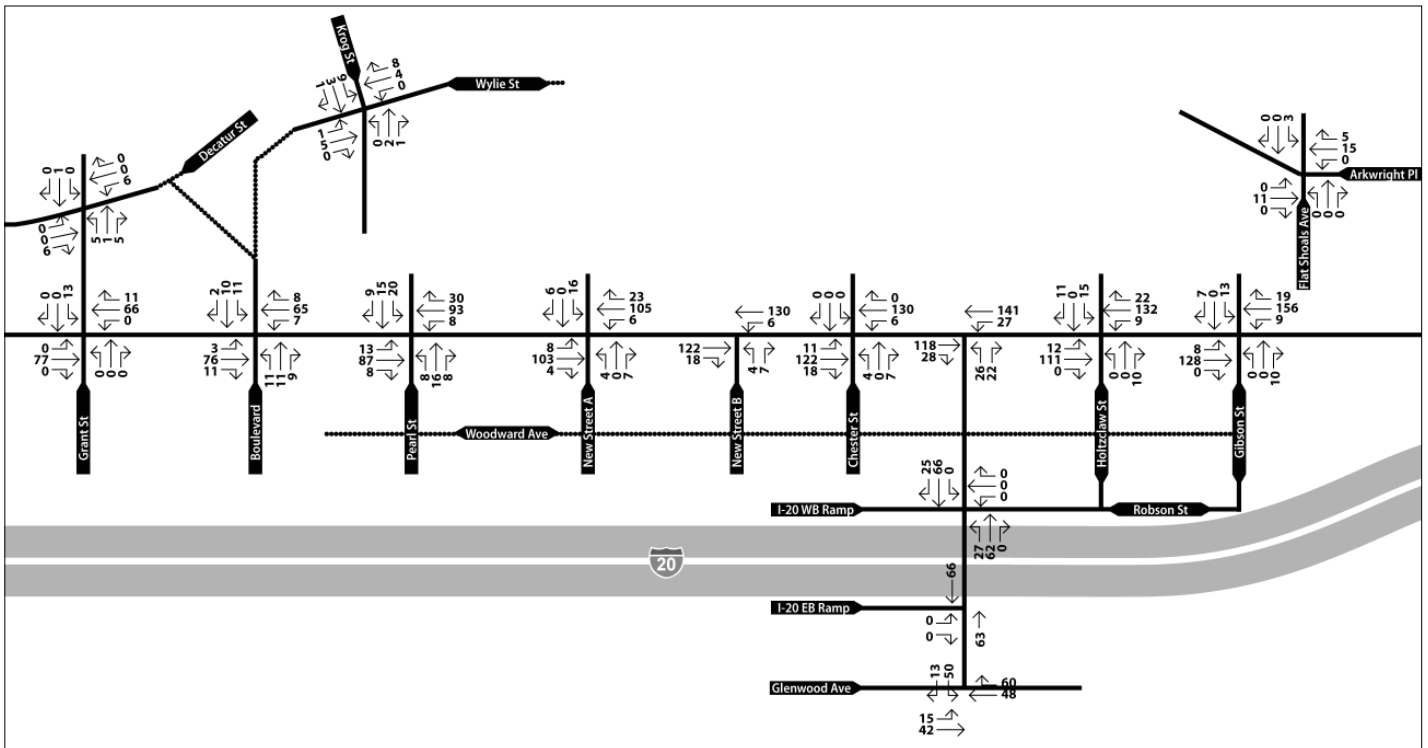
Land Use	ITE Code	Intensity		Daily Trip Ends	PM Peak-Hour Trip Ends					AM Peak-Hour Trip Ends				
					Total	In		Out		Total	In		Out	
						%	Trips	%	Trips		%	Trips	%	Trips
Multi-Family	220	25.0	DU	275	16	65%	10	35%	5	16	20%	3	80%	13
Townhouse/Condo	230	99.0	DU	575	51	67%	34	33%	17	44	17%	7	83%	36
Office	710	0.0	KSF	0	0	17%	0	83%	0	0	88%	0	12%	0
Retail	820	9.0	KSF	386	127	49%	62	51%	65	9	61%	5	39%	4
Total				1,237	194		107		87	69		16		52
Rates	Daily	PM Peak	AM Peak											
Internal Capture	4.75%	9.35%	0.79%	59	18		10		8	1		2		5
Pass-By	20.00%	20.00%	20.00%	247	39		21		17	14		3		10
Modal Split		15.00%		186	29		16		13	10		2		8
Net External				745	108		59		48	44		9		29

Table 6.1.6: BeltLine 2020 (Worst Case Scenario) Trip Generation - Zone 5

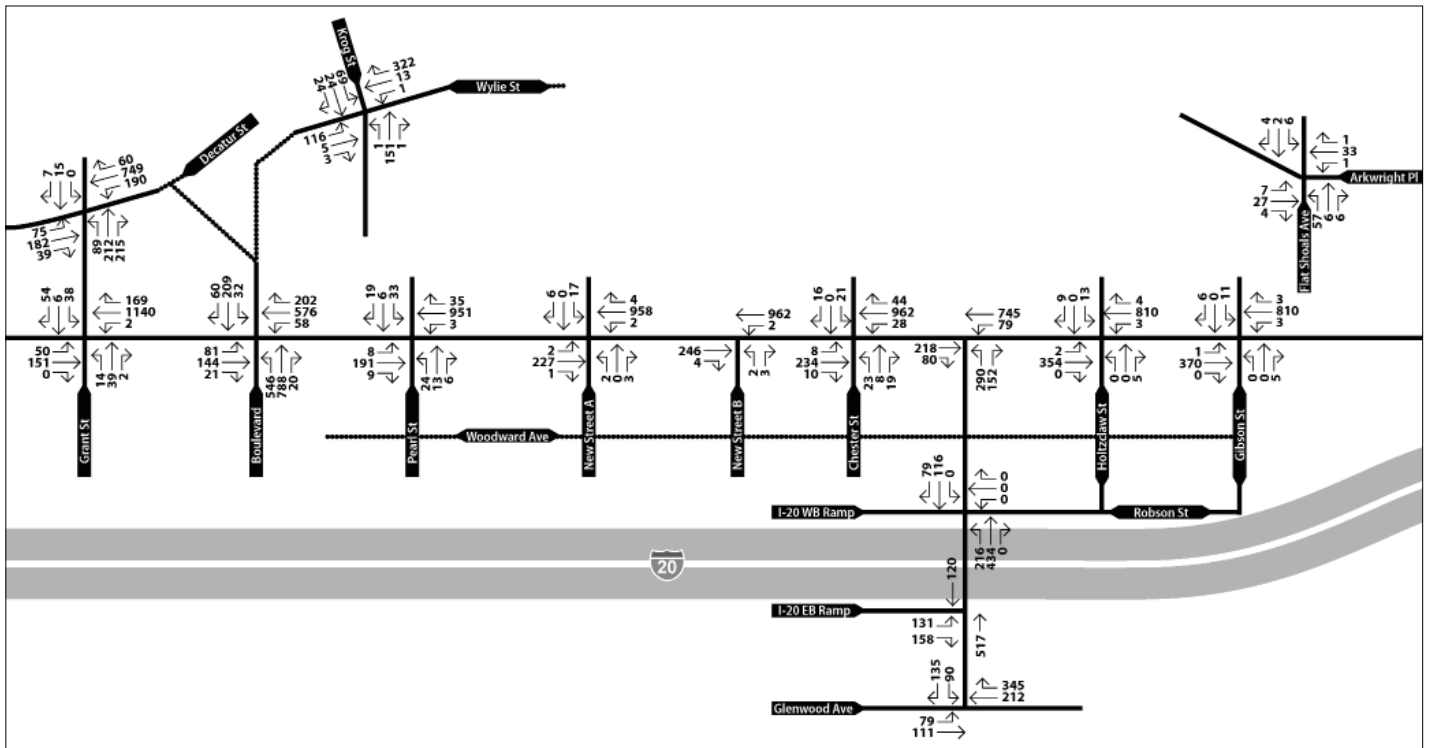
Land Use	ITE Code	Intensity		Daily Trip Ends	PM Peak-Hour Trip Ends					AM Peak-Hour Trip Ends				
					Total	In		Out		Total	In		Out	
						%	Trips	%	Trips		%	Trips	%	Trips
Multi-Family	220	118.0	DU	839	73	65%	48	35%	26	62	20%	12	80%	49
Townhouse/Condo	230	472.0	DU	2,742	245	67%	164	33%	81	208	17%	35	83%	172
Office	710	16.2	KSF	178	97	17%	16	83%	80	44	88%	38	12%	5
Retail	820	30.2	KSF	1,297	285	49%	140	51%	145	30	61%	18	39%	12
Total				5,056	701		368		333	343		105		239
Rates	Daily	PM Peak	AM Peak											
Internal Capture	6.62%	11.44%	1.24%	335	80		42		38	4		12		27
Pass-By	20.00%	20.00%	20.00%	1,011	140		74		67	69		21		48
Modal Split		25.00%		1,264	175		92		83	86		26		60
Net External				2,446	305		160		145	184		46		104



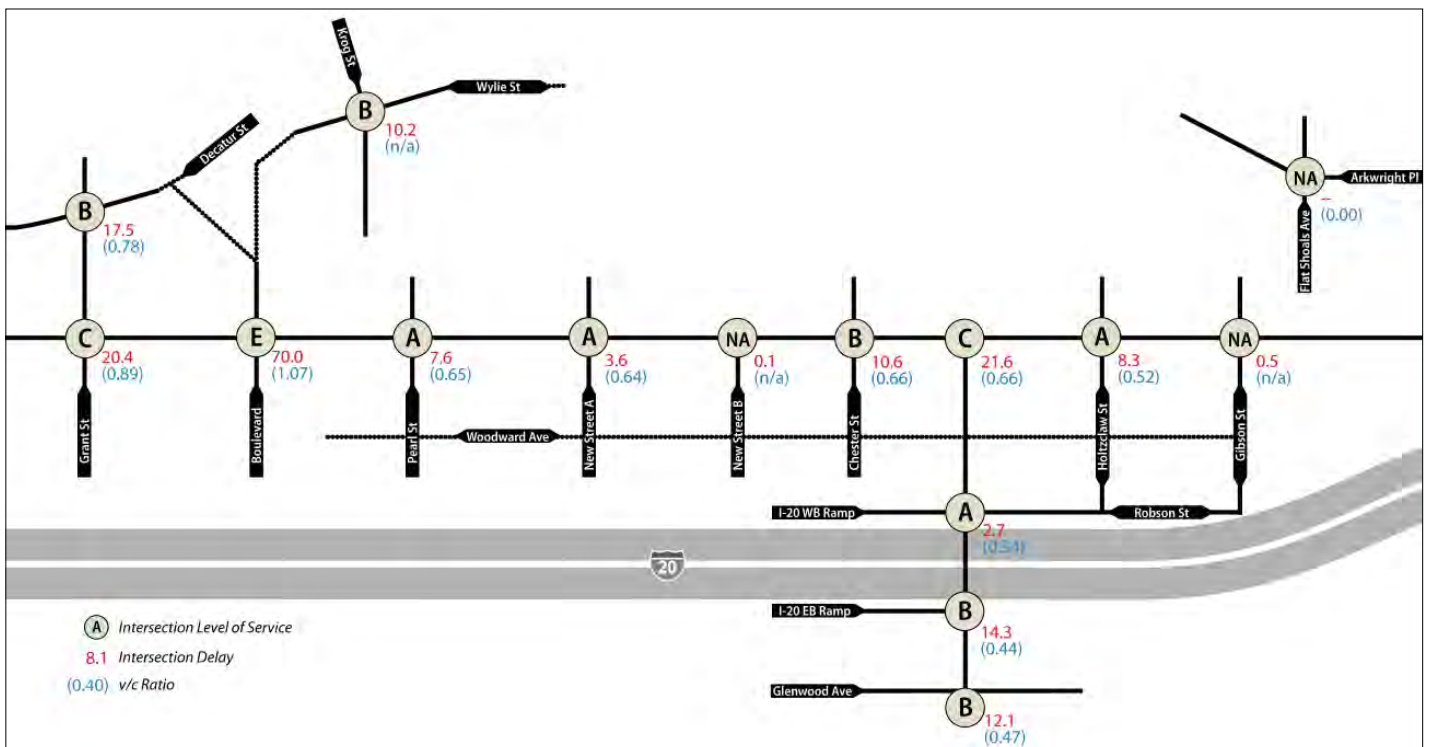
**Figure 6.1.1: BeltLine Subarea 4
Build - Worst Case Trip Generation As Applied to Subarea Study Intersections
2020 AM Peak Hour**



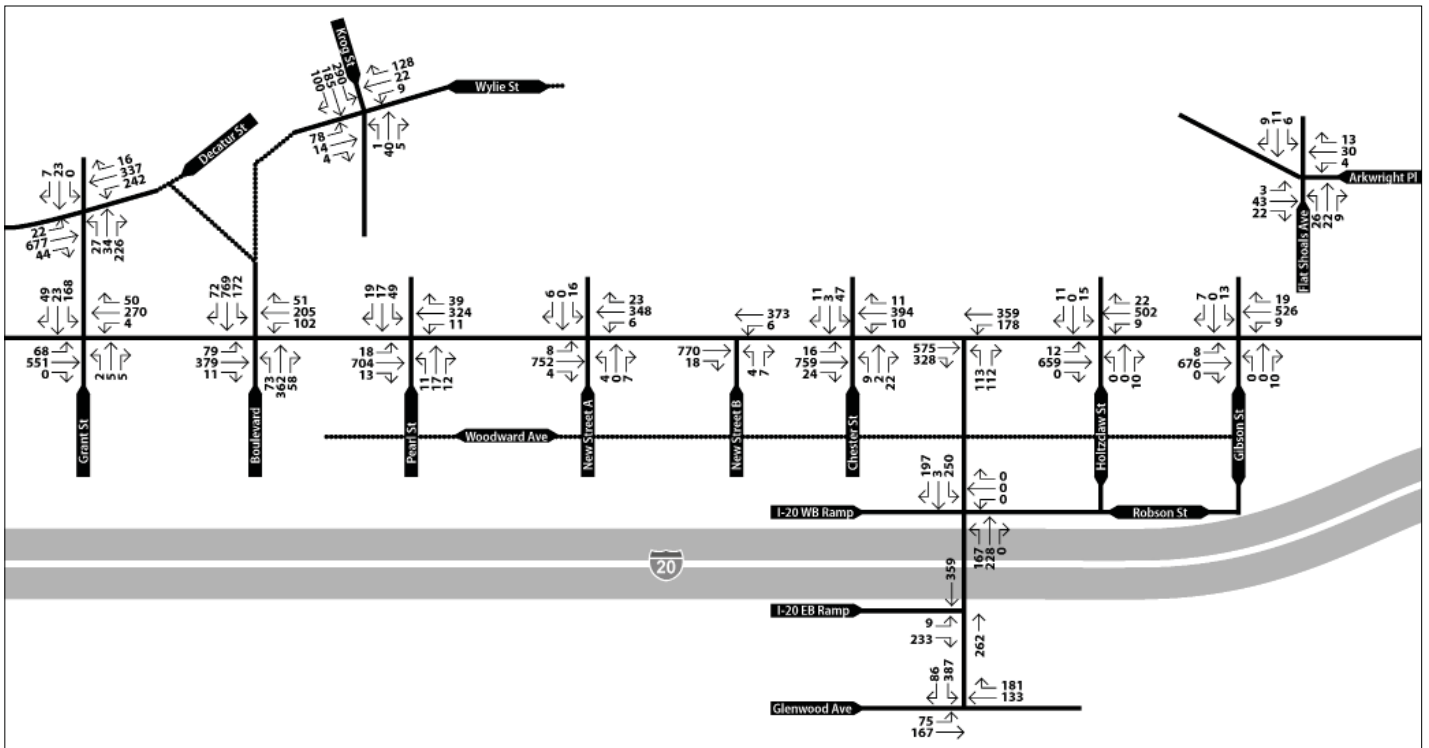
**Figure 6.1.2: BeltLine Subarea 4
Build - Worst Case Trip Generation As Applied to Subarea Study Intersections
2020 PM Peak Hour**



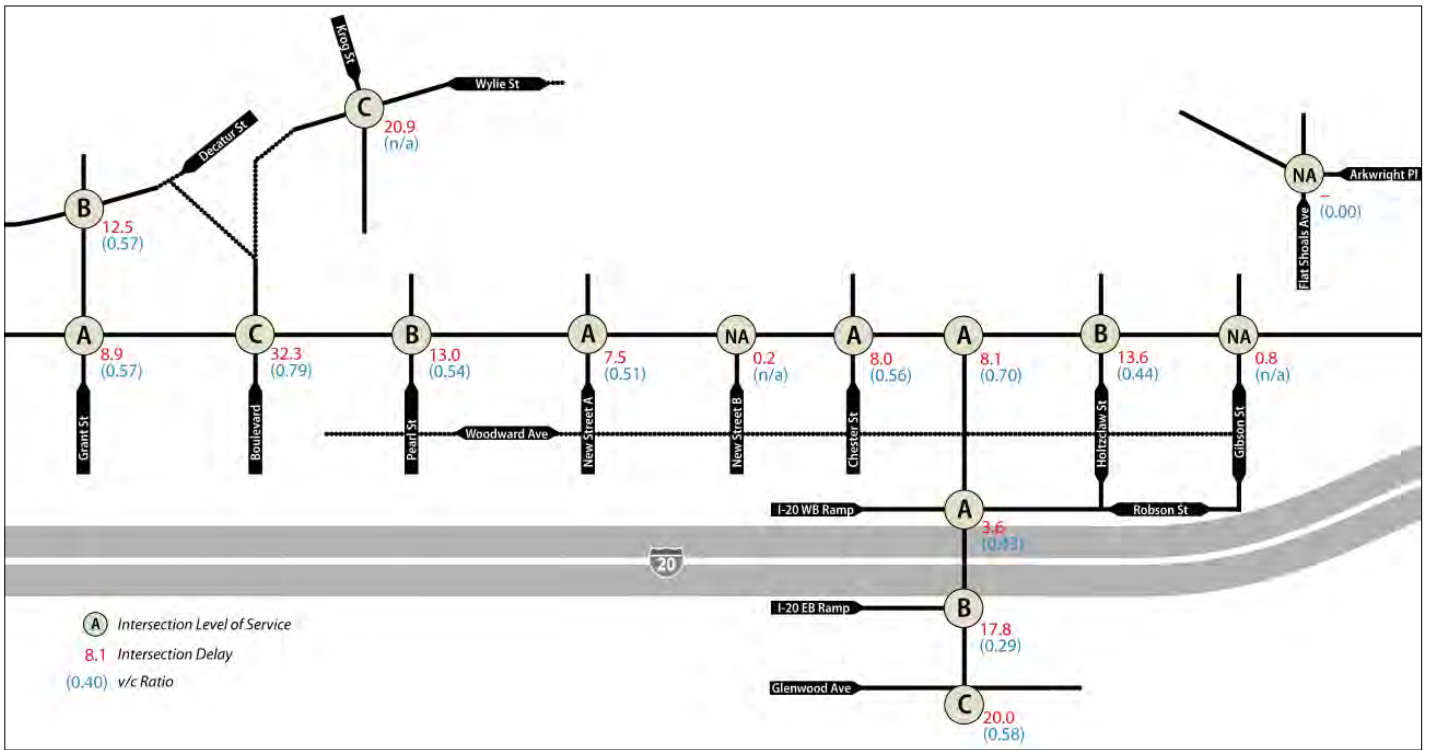
**Figure 6.1.3: BeltLine Subarea 4
Build - Worst Case Traffic Volumes (Trip Generation and Baseline Combined)
2020 AM Peak Hour**



**Figure 6.1.4: BeltLine Subarea 4
Build - Worst Case Level of Service
2020 AM Peak Hour**



**Figure 6.1.5: BeltLine Subarea 4
Build - Worst Case Traffic Volumes (Trip Generation and Baseline Combined)
2020 PM Peak Hour**



**Figure 6.1.6: BeltLine Subarea 4
Build - Worst Case Level of Service
2020 PM Peak Hour**

As Table 6.1.7 below details intersection performance for the 2020 BeltLine Worst Case Build scenario. Overall performance patterns are consistent with those seen in other scenarios, with the greatest concentration of delay at the Memorial/Boulevard intersection.

In the PM peak hour, the subarea does not experience significant congestion at individual intersections, although overall travel times through the Memorial and Bill Kennedy corridors are greater than in the existing conditions. This is discussed in additional detail in Section 6.4.

Table 6.1.7: 2020 BeltLine Built Worst Case Level of Service							
Intersection	AM Peak LOS	AM Peak V/C Ratio	AM Peak Overall Delay	PM Peak LOS	PM Peak V/C Ratio	PM Peak Overall Delay	Problematic Movements
Grant/Decatur	B	0.78	18 sec	B	0.57	13 sec	
Grant/Memorial	C	0.89	20 sec	A	0.57	9 sec	
Memorial/Boulevard	E	1.07	70 sec	C	0.79	32 sec	In AM, NBT and WBT are most delayed movements.
Memorial/Pearl	A	0.65	8 sec	B	0.54	13 sec	
Memorial/New Street A	A	0.64	4 sec	A	0.51	8 sec	
Memorial/Chester	B	0.66	11 sec	A	0.56	8 sec	
Memorial/Bill Kennedy	C	0.66	22 sec	A	0.70	8 sec	
Memorial/Holtzclaw	A	0.52	8 sec	B	0.44	14 sec	
Bill Kennedy/I-20 Westbound	A	0.34	3 sec	A	0.43	4 sec	
Bill Kennedy/I-20 Eastbound	B	0.44	14 sec	B	0.29	18 sec	
Bill Kennedy/Glenwood	B	0.47	12 sec	C	0.58	20 sec	
Krog/Wylie	B	N/A	10 sec	C	N/A	21 sec	

6.2 2020 Build 'Best Case' Scenario

This scenario is similar to the 2020 Baseline but uses 2030 market absorption estimates to account for new development. Accordingly, all roadway assumptions for the 2020 Baseline scenario are incorporated into the 2030 Baseline scenario.

Planned Transportation Improvement Projects

The ARC Envision6 long-range transportation plan does not include any roadway improvement projects within Subarea 4 between 2010 and 2020.

Added Local Street Network and Traffic Control

The 2020 BeltLine scenarios used the same added street network as in the 2020 baseline scenarios. This included two new signalized intersections, at Memorial and Holtzclaw and at Memorial and New Street A.

2020 Build Best Case Scenario: What would 2020 be like if we had BeltLine development through 2020 with the BeltLine transit and transportation improvements to help improve mode split and traffic patterns?

FACTOR	HOW IT APPEARS IN THIS ANALYSIS
Year of Analysis	2020
Road Network	2020 RTP Network and New Development Streets
Traffic Volumes	Existing Counts with 0.5% annual growth rate applied to 2020; BeltLine development trip generation is applied to this; all are modified based on BeltLine mode split (see below)
Mode Split	Varies based on TAZ and location, but calculated according to BeltLine methodology
Trip Assignment	Existing patterns modified with distribution of New Traffic based on new development

Table 6.2.1: BeltLine 2020 (Best Case Scenario) Trip Generation - Total

Land Use	ITE Code	Intensity		Daily Trip Ends	PM Peak-Hour Trip Ends					AM Peak-Hour Trip Ends				
					Total	In		Out		Total	In		Out	
						%	Trips	%	Trips		%	Trips	%	Trips
Multi-Family	220	418.0	DU	3,151	259	65%	168	35%	91	223	20%	45	80%	179
Townhouse/Condo	230	1,671.0	DU	9,703	868	67%	582	33%	287	735	17%	125	83%	610
Office	710	29.9	KSF	330	191	17%	33	83%	159	82	88%	72	12%	10
Retail	820	99.9	KSF	4,285	1,058	49%	518	51%	540	100	61%	61	39%	39
Total				17,469	2,377		1,301		1,076	1,140		303		837
Rates	Daily	PM Peak	AM Peak											
Internal Capture				999	256		138		118	14		33		88
Pass-By	20.00%	20.00%	20.00%	3,494	475		260		215	228		61		167
Modal Split		28.80%		5,091	691		379		313	333		88		244
Net External				7,885	954		524		430	566		121		338

Table 6.2.2: BeltLine 2020 (Best Case Scenario) Trip Generation - Zone 1

Land Use	ITE Code	Intensity		Daily Trip Ends	PM Peak-Hour Trip Ends					AM Peak-Hour Trip Ends				
					Total	In		Out		Total	In		Out	
						%	Trips	%	Trips		%	Trips	%	Trips
Multi-Family	220	78.0	DU	596	48	65%	31	35%	17	42	20%	8	80%	34
Townhouse/Condo	230	312.0	DU	1,813	162	67%	109	33%	54	137	17%	23	83%	114
Office	710	0.0	KSF	0	0	49%	0	51%	0	0	61%	0	39%	0
Retail	820	11.8	KSF	507	152	49%	74	51%	78	12	61%	7	39%	5
Total				2,916	363		215		148	191		39		152
Rates	Daily	PM Peak	AM Peak											
Internal Capture	3.96%	9.30%	1.01%	115	34		20		14	2		4		14
Pass-By	20.00%	20.00%	20.00%	583	73		43		30	38		8		30
Modal Split		28.00%		816	102		60		41	53		11		43
Net External				1,401	155		92		63	97		17		65

Table 6.2.3: BeltLine 2020 (Best Case Scenario) Trip Generation - Zone 2

Land Use	ITE Code	Intensity		Daily Trip Ends	PM Peak-Hour Trip Ends					AM Peak-Hour Trip Ends				
					Total	In		Out		Total	In		Out	
						%	Trips	%	Trips		%	Trips	%	Trips
Multi-Family	220	131.0	DU	917	81	65%	53	35%	28	68	20%	14	80%	54
Townhouse/Condo	230	524.0	DU	3,044	272	67%	183	33%	90	231	17%	39	83%	191
Office	710	0.0	KSF	0	0	17%	0	83%	0	0	88%	0	12%	0
Retail	820	22.4	KSF	962	233	49%	114	51%	119	22	61%	14	39%	9
Total				4,924	587		350		237	321		66		254
Rates	Daily	PM Peak	AM Peak											
Internal Capture	4.08%	8.74%	0.94%	201	51		31		21	3		6		22
Pass-By	20.00%	20.00%	20.00%	985	117		70		47	64		13		51
Modal Split		30.00%		1,477	176		105		71	96		20		76
Net External				2,261	242		144		98	157		27		105

Table 6.2.4: BeltLine 2020 (Best Case Scenario) Trip Generation - Zone 3

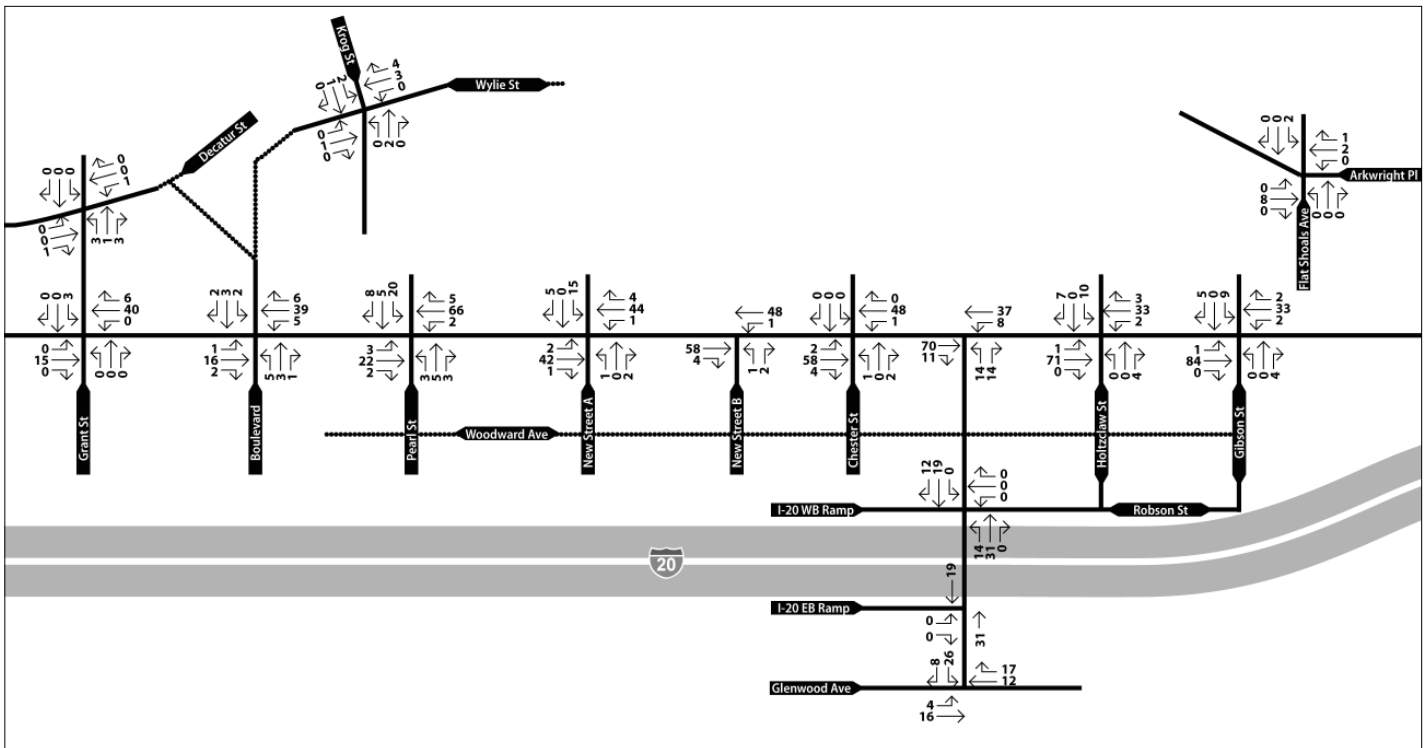
Land Use	ITE Code	Intensity		Daily Trip Ends	PM Peak-Hour Trip Ends					AM Peak-Hour Trip Ends				
					Total	In		Out		Total	In		Out	
						%	Trips	%	Trips		%	Trips	%	Trips
Multi-Family	220	66.0	DU	524	41	65%	27	35%	14	36	20%	7	80%	29
Townhouse/Condo	230	263.0	DU	1,528	137	67%	92	33%	45	116	17%	20	83%	96
Office	710	13.8	KSF	152	94	17%	16	83%	78	38	88%	34	12%	5
Retail	820	26.4	KSF	1,134	261	49%	128	51%	133	26	61%	16	39%	10
Total				3,337	533		262		271	217		77		140
Rates	Daily	PM Peak	AM Peak											
Internal Capture	8.68%	13.66%	1.76%	290	73		36		37	4		10		19
Pass-By	20.00%	20.00%	20.00%	667	107		52		54	43		15		28
Modal Split		28.00%		934	149		73		76	61		22		39
Net External				1,446	204		100		104	109		29		54

Table 6.2.5: BeltLine 2020 (Best Case Scenario) Trip Generation - Zone 4

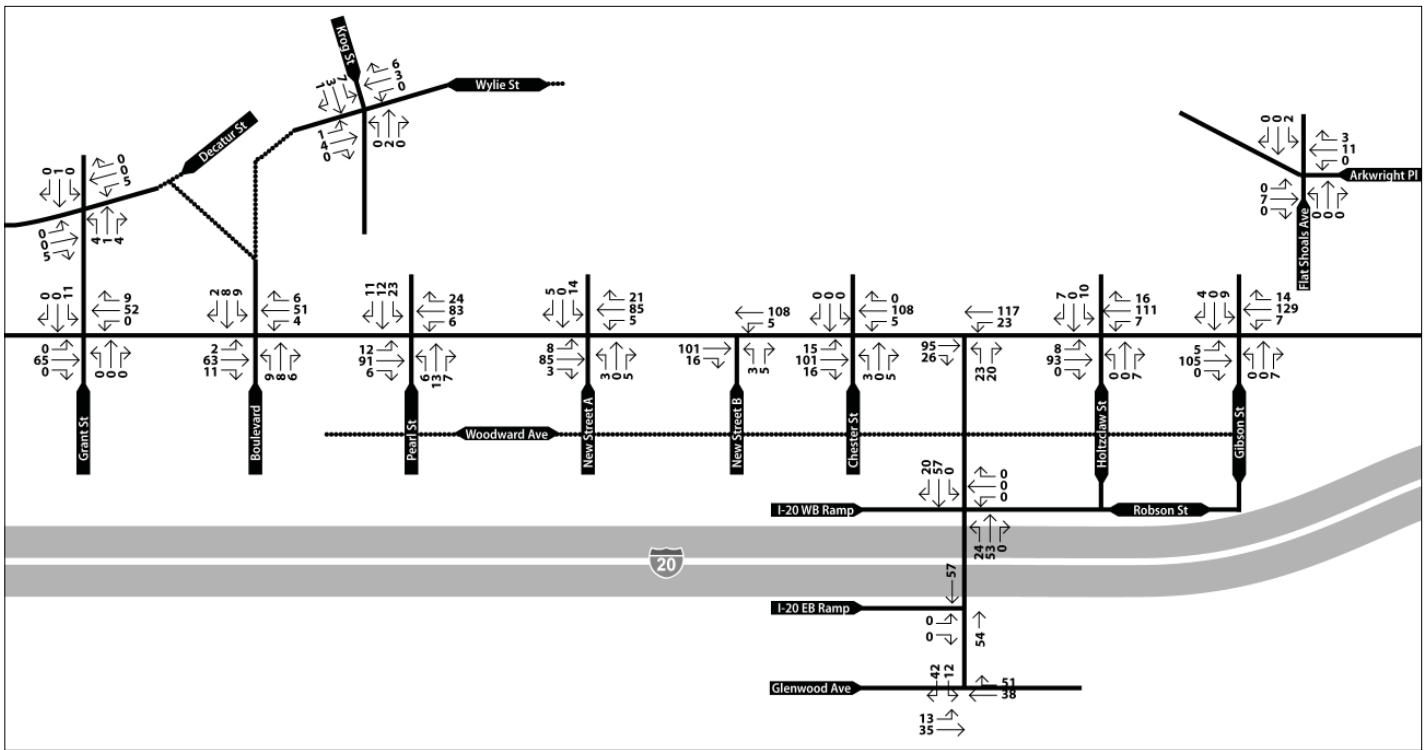
Land Use	ITE Code	Intensity		Daily Trip Ends	PM Peak-Hour Trip Ends					AM Peak-Hour Trip Ends				
					Total	In		Out		Total	In		Out	
						%	Trips	%	Trips		%	Trips	%	Trips
Multi-Family	220	25.0	DU	275	16	65%	10	35%	5	16	20%	3	80%	13
Townhouse/Condo	230	99.0	DU	575	51	67%	34	33%	17	44	17%	7	83%	36
Office	710	0.0	KSF	0	0	17%	0	83%	0	0	88%	0	12%	0
Retail	820	9.0	KSF	386	127	49%	62	51%	65	9	61%	5	39%	4
Total				1,237	194		107		87	69		16		52
Rates	Daily	PM Peak	AM Peak											
Internal Capture	4.75%	9.35%	0.79%	59	18		10		8	1		2		5
Pass-By	20.00%	20.00%	20.00%	247	39		21		17	14		3		10
Modal Split		28.00%		346	54		30		24	19		5		15
Net External				584	83		45		37	35		7		22

Table 6.2.6: BeltLine 2020 (Best Case Scenario) Trip Generation - Zone 5

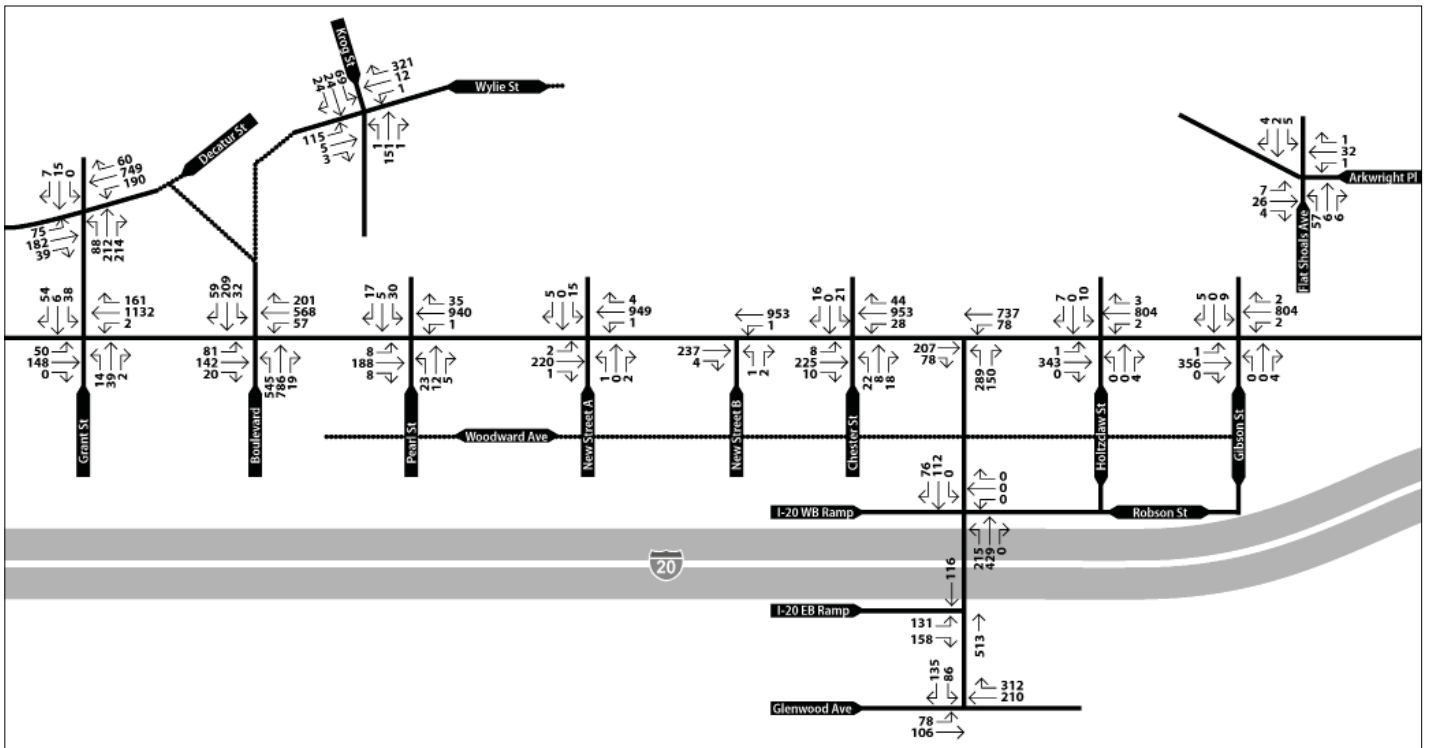
Land Use	ITE Code	Intensity		Daily Trip Ends	PM Peak-Hour Trip Ends					AM Peak-Hour Trip Ends				
					Total	In		Out		Total	In		Out	
						%	Trips	%	Trips		%	Trips	%	Trips
Multi-Family	220	118.0	DU	839	73	65%	48	35%	26	62	20%	12	80%	49
Townhouse/Condo	230	472.0	DU	2,742	245	67%	164	33%	81	208	17%	35	83%	172
Office	710	16.2	KSF	178	97	17%	16	83%	80	44	88%	38	12%	5
Retail	820	30.2	KSF	1,297	285	49%	140	51%	145	30	61%	18	39%	12
Total				5,056	701		368		333	343		105		239
Rates	Daily	PM Peak	AM Peak											
Internal Capture	6.62%	11.44%	1.24%	335	80		42		38	4		12		27
Pass-By	20.00%	20.00%	20.00%	1,011	140		74		67	69		21		48
Modal Split		30.00%		1,517	210		110		100	103		31		72
Net External				2,193	270		142		128	167		40		92



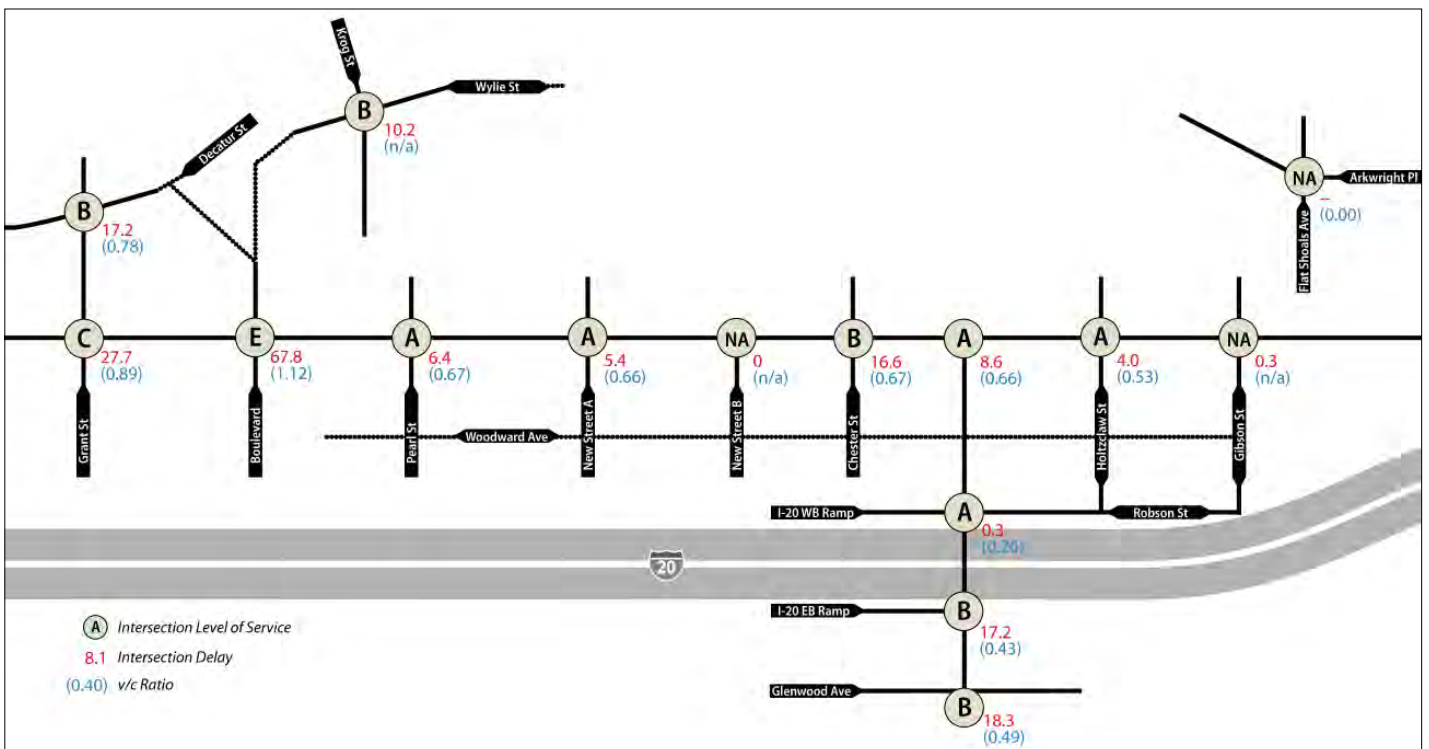
**Figure 6.2.1: BeltLine Subarea 4
Build - Best Case Trip Generation As Applied to Subarea Study Intersections
2020 AM Peak Hour**



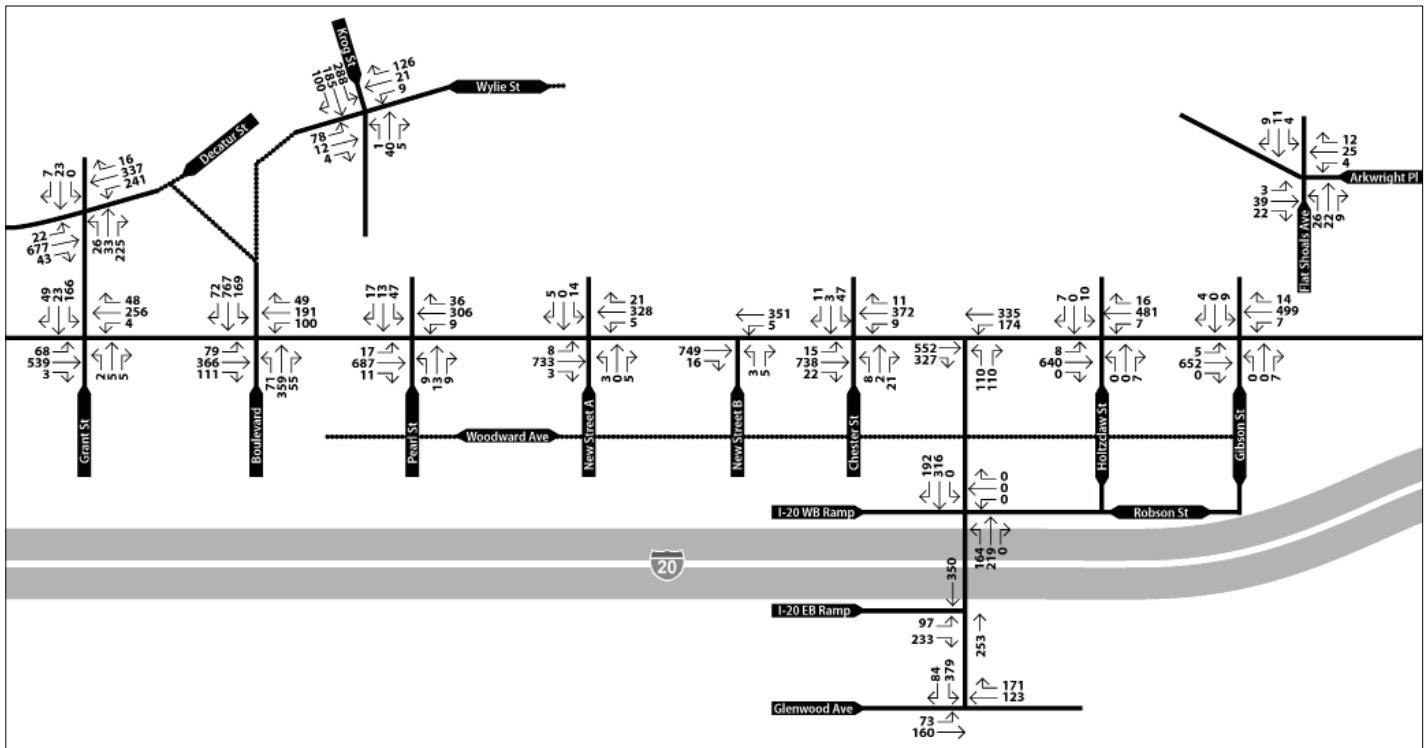
**Figure 6.2.2: BeltLine Subarea 4
Build - Best Case Trip Generation As Applied to Subarea Study Intersections
2020 AM Peak Hour**



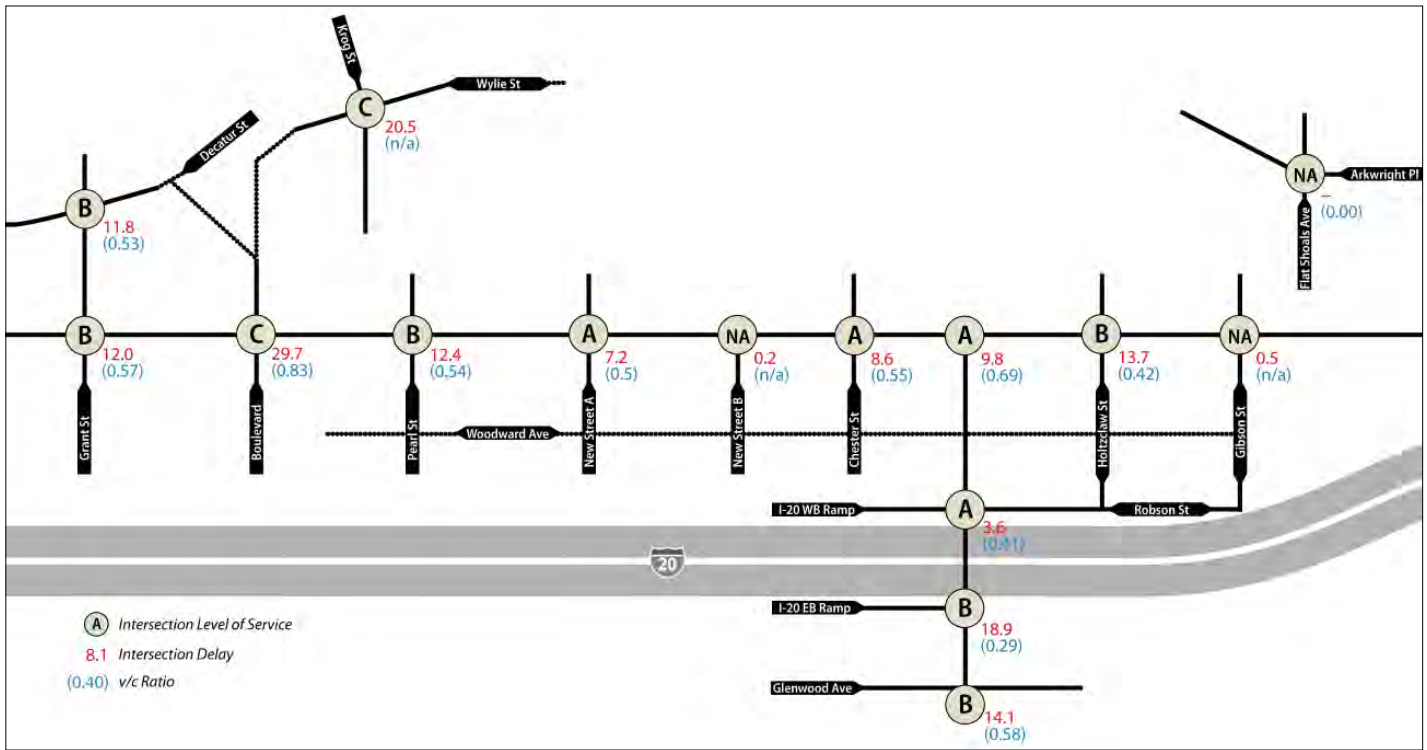
**Figure 6.2.3: BeltLine Subarea 4
Build - Best Case Traffic Volumes (Trip Generation and Baseline Combined)
2020 AM Peak Hour**



**Figure 6.2.4: BeltLine Subarea 4
Build - Best Case Level of Service
2020 AM Peak Hour**



**Figure 6.2.5: BeltLine Subarea 4
Build - Best Case Traffic Volumes (Trip Generation and Baseline Combined)
2020 PM Peak Hour**



**Figure 6.2.6: BeltLine Subarea 4
Build - Best Case Level of Service
2020 PM Peak Hour**

Table 6.2.7 details intersection performance for the 2020 BeltLine Best Case Build scenario. Overall performance patterns are consistent with those seen in other scenarios, with the greatest concentration of delay at the Memorial/Boulevard intersection. It is worth noting that overall delay is not significantly changed at this intersection even with the incidence of an increased BeltLine transit reduction. In fact, in spite of similar traffic volumes using the intersection, the overall average delay at this intersection is greater in the 2020 Best Case scenario than in the Worst Case scenario. Though this may at first seem counterintuitive, the difference comes from an optimization of corridor-wide signal timing that ultimately increases the average delay at this intersection for northbound Boulevard traffic but provides the shortest travel time through the corridor for Boulevard traffic. This further underscores the concentration of delay at the

Memorial/Boulevard intersection and particularly at the northbound approach: this is especially important given that the advent of BeltLine transit and the reduction in vehicle traffic that it offers would likely offset would-be Subarea 4 traffic using Memorial Drive but would not affect commuting traffic already on Boulevard coming from outside the Subarea.

In the PM peak hour, the subarea does not experience significant congestion at individual intersections, although overall travel times through the Memorial and Bill Kennedy corridors are greater than in the existing conditions. This is discussed in additional detail in Section 6.4.

Table 6.2.7: 2020 BeltLine Built Best Case Level of Service

Intersection	AM Peak LOS	AM Peak V/C Ratio	AM Peak Overall Delay	PM Peak LOS	PM Peak V/C Ratio	PM Peak Overall Delay	Problematic Movements
Grant/Decatur	B	0.78	17 sec	B	0.53	12 sec	
Grant/Memorial	C	0.89	28 sec	B	0.57	12 sec	
Memorial/Boulevard	E	1.12	68 sec	C	0.83	30 sec	As in other scenarios, WBT and NBT continue to experience the greatest congestion in AM.
Memorial/Pearl	A	0.67	6 sec	B	0.54	12 sec	
Memorial/New Street A	A	0.66	5 sec	A	0.50	7 sec	
Memorial/Chester	B	0.67	17 sec	A	0.55	9 sec	
Memorial/Bill Kennedy	A	0.66	9 sec	A	0.69	10 sec	
Memorial/Holtzclaw	A	0.53	4 sec	B	0.42	14 sec	
Bill Kennedy/I-20 Westbound	A	0.26	less than 1 sec	A	0.41	4 sec	
Bill Kennedy/I-20 Eastbound	B	0.43	17 sec	B	0.29	19 sec	
Bill Kennedy/Glenwood	B	0.49	18 sec	B	0.58	14 sec	
Krog/Wylie	B	N/A	10 sec	C	N/A	21 sec	

6.3 2030 Build Scenario

This scenario is similar to the 2020 BeltLine 'Best Case' scenario but uses an average growth rate derived from the ARC travel demand model to forecast increases in traffic between 2020 and 2030. As discussed in Section 2.2, this is a different growth rate than that used to assume background growth between 2010 and 2020. The annual growth rate of 1 percent per year is a conservative estimate based on the difference of volume assignments from the ARC regional travel demand model for 2020 and 2030. All roadway assumptions for the 2020 Baseline scenario are incorporated into the 2030 Baseline scenario.

Planned Transportation Improvement Projects

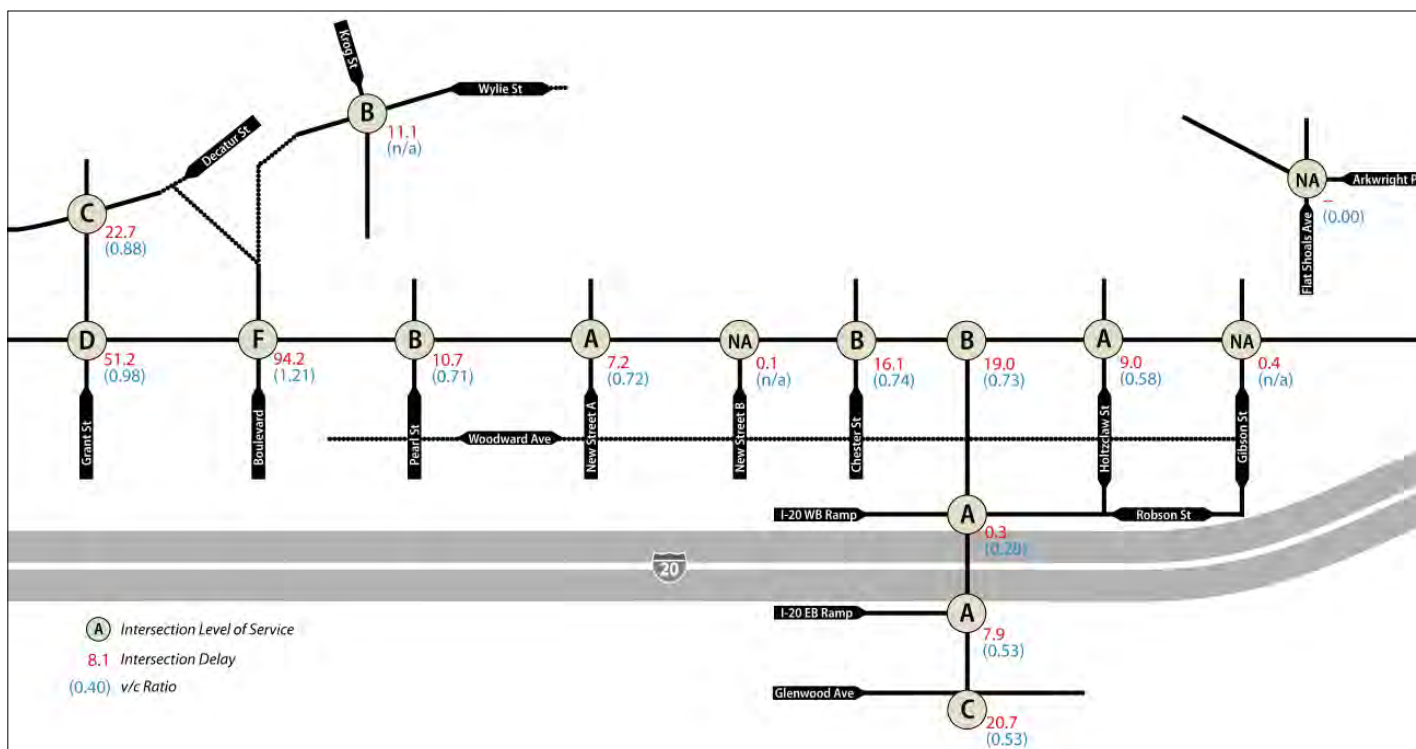
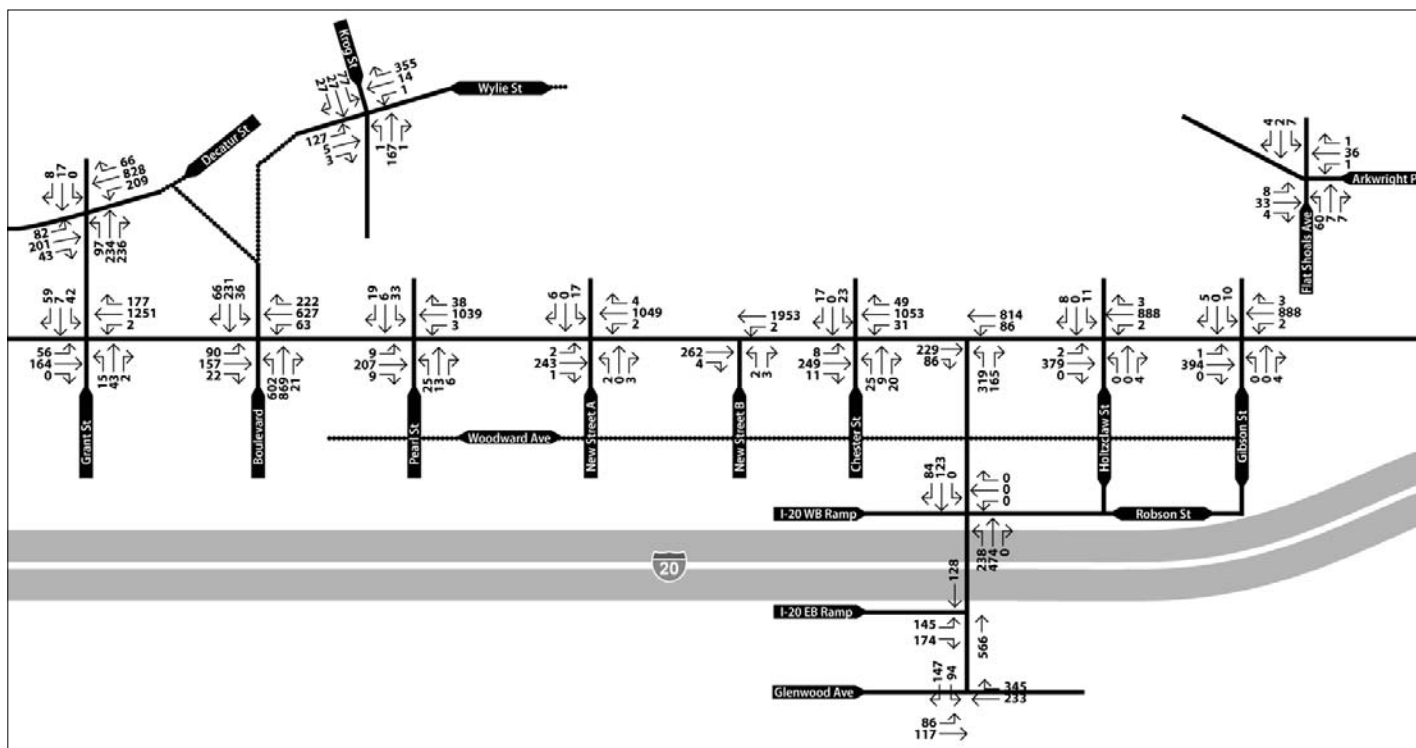
The ARC Envision6 long-range transportation plan does not include any roadway improvement projects within Subarea 4 between 2020 and 2030.

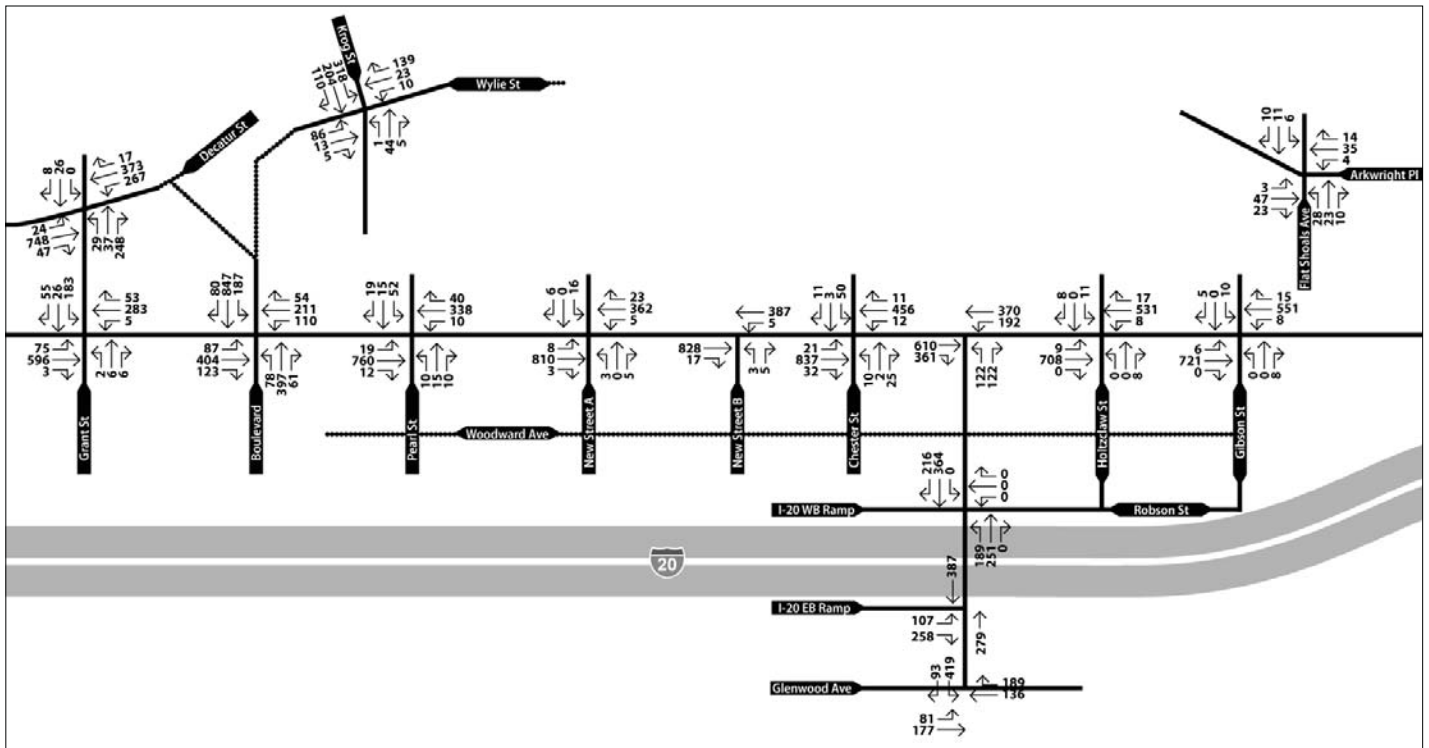
Added Local Street Network and Traffic Control

The 2030 BeltLine scenario used the same added street network as in the 2020 baseline and BeltLine scenarios. This included two new signalized intersections, at Memorial and Holtzclaw and at Memorial and New Street A.

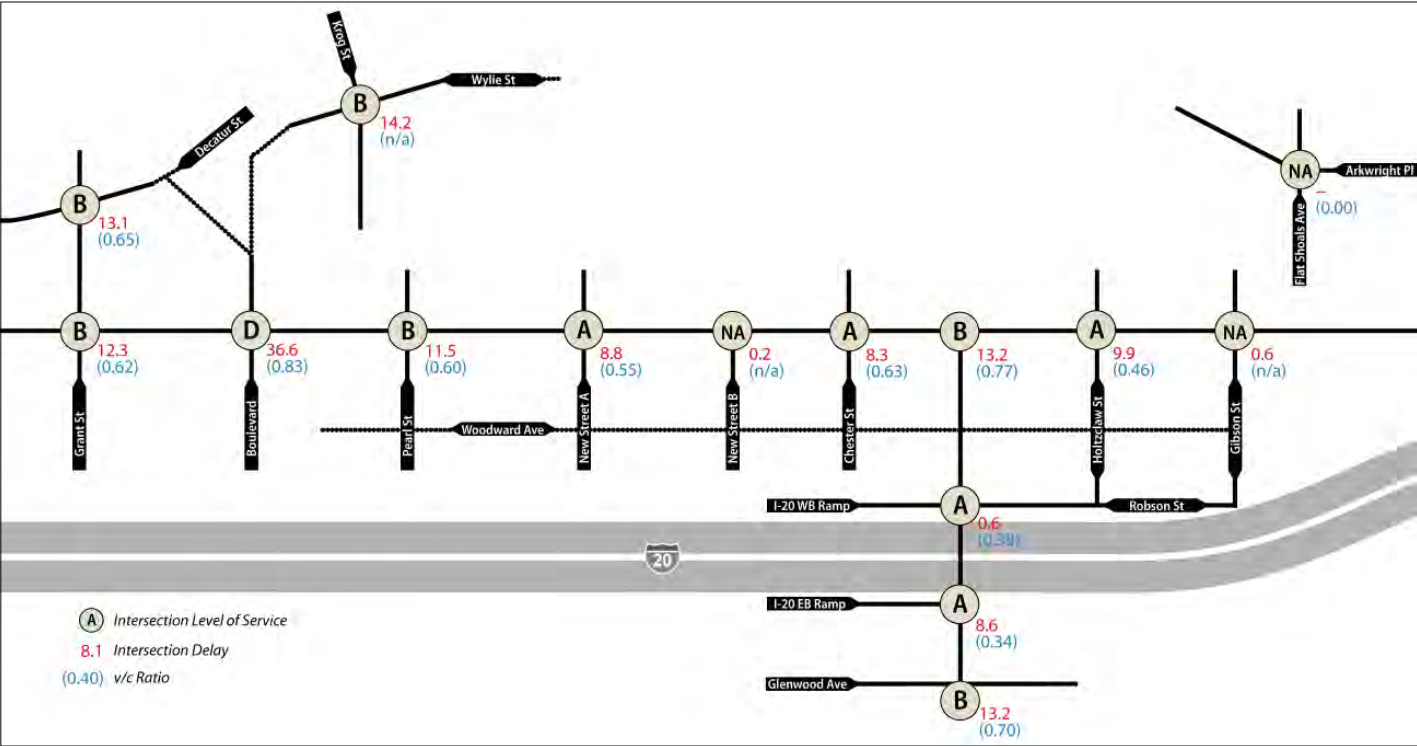
2030 Build Scenario: What would 2030 be like if we had significant BeltLine redevelopment and new roads, pedestrian connections and transit?

FACTOR	HOW IT APPEARS IN THIS ANALYSIS
Year of Analysis	2030
Road Network	2030 RTP Network and New Development Streets
Traffic Volumes	2020 BeltLine Build Analysis Volumes (Background Growth to 2020 + Trip Generation from added development for 2020) increased with Background Growth from 2020 to 2030
Mode Split	Varies based on TAZ and location, but calculated according to BeltLine methodology
Trip Assignment	Existing patterns modified with distribution of New Traffic based on new development





**Figure 6.3.3: BeltLine Subarea 4
Build in 2030 - Traffic Volumes
2030 PM Peak Hour**



**Figure 6.3.4: BeltLine Subarea 4
Build in 2030 - Level of Service
2030 PM Peak Hour**

As Table 6.3.7 details intersection performance for the 2030 Build scenario. Overall performance patterns are consistent with those seen in other scenarios, with the greatest concentration of delay at the Memorial/Boulevard intersection. Increased delay at this intersection in the PM is accordingly due largely to southbound movements (which are heavier than eastbound movements) and their need for increased signal time.

In the PM peak hour, the subarea does not experience significant congestion at individual intersections (with the possible aforementioned exception of Memorial/Boulevard), although overall intersection delay along the Memorial and Bill Kennedy corridors are generally greater than in the existing conditions. This is discussed in additional detail in Section 6.4.

Table 6.3.7: 2030 BeltLine Build Best Case Level of Service

Intersection	AM Peak LOS	AM Peak V/C Ratio	AM Peak Overall Delay	PM Peak LOS	PM Peak V/C Ratio	PM Peak Overall Delay	Problematic Movements
Grant/Decatur	B	0.84	18 sec	B	0.65	13 sec	
Grant/Memorial	D	0.98	51 sec	B	0.62	12 sec	
Memorial/Boulevard	F	1.21	94 sec	D	0.83	37 sec	Same degree of problems as in 2030 Baseline scenario; problems appear largely related to NBT movements in AM and insufficient NBL storage space
Memorial/Pearl	B	0.71	11 sec	B	0.60	12 sec	
Memorial/New Street A	A	0.70	7 sec	A	0.55	9 sec	
Memorial/Chester	B	0.74	16 sec	A	0.63	8 sec	
Memorial/Bill Kennedy	B	0.73	19 sec	B	0.77	13 sec	
Memorial/Holtzclaw	A	0.58	9 sec	A	0.46	10 sec	
Bill Kennedy/I-20 Westbound	A	0.28	less than 1 sec	A	0.38	less than 1 sec	
Bill Kennedy/I-20 Eastbound	A	0.53	8 sec	A	0.34	9 sec	
Bill Kennedy/Glenwood	C	0.53	21 sec	B	0.70	13 sec	
Krog/Wylie	C	N/A	11 sec	B	N/A	14 sec	

6.4 Comparison of Corridor Travel Times for All Scenarios

In addition to intersection level of service, Memorial Drive was analyzed to determine the overall delay experienced when traversing the entire corridor. Anecdotal accounts from community stakeholders suggest that the real phenomenon of delay is not always experienced at one intersection, but in terms of travel time. Table 6.4 lists the results of this corridor level of service analysis, where travel times and speeds are reported corresponding to the previously presented analysis scenarios.

As future development in this analysis was assumed to add new streets to the street network, some intersections of new streets with Memorial Drive were assumed to be signalized. Generally, travel time through a corridor slows when there are more signals.

The addition of the road diet and removal of the reversible lane under existing traffic conditions adds only about one minute to the morning westbound commute, while roughly remaining constant in the evening eastbound commute.

As is expected, travel times are longer and travel speeds lower when development and background growth are added under future scenarios. Part of this can be explained by background growth, which adds a portion of all traffic in the 2020 scenarios and the entire additional increment of traffic for 2030 scenarios. As this background growth is based on regional estimates, it affects traffic entering the corridor under current

travel patterns and is not generated by additional development.

Variations in the travel time and speeds represent the changes in development location, type, and intensity, but can also be a result of corridor optimization methods used to determine the area-wide signal timing plan. As stated previously, each corridor simulation model was constructed with a signal optimization being performed for the entire Memorial corridor once all input traffic values were added.

This is the reason that minor differences that may at first seem counterintuitive occur: in the case of the 2020 Build Scenarios, both of which are based on the BeltLine Subarea 4 land use plan, the 'best case' scenario actually has a slightly greater travel time (of approximately 20 seconds, in the context of a five-minute drive time) than the 'worst case.' This is largely due to corridor-wide signal timing optimization, which itself is largely driven by intersections where congestion and delay are concentrated (such as the Memorial/Boulevard intersection).

Table 6.4: Memorial Drive Corridor Travel Times and Speeds

Scenario	AM Travel Time (Westbound)	AM Speed (Westbound)	PM Travel Time (Eastbound)	PM Speed (Eastbound)
Existing Conditions	2.7 min	29 mph	2.5 min	31 mph
Existing Traffic, Memorial Drive as 3-lane	3.5 min	22 mph	2.3 min	34 mph
2020 Baseline Scenario	6.0 min	16 mph	4.9 min	21 mph
2030 Baseline Scenario	7.7 min	12 mph	5.9 min	18 mph
2020 Build Worst Case Scenario	5.3 min	17 mph	4.8 min	22 mph
2020 Build Best Case Scenario	5.6 min	15 mph	5.0 min	21 mph
2030 Build BeltLine Scenario	7.9 min	12 mph	5.3 min	20 mph

7.0 Conclusions and Recommendations

7.1 General Conclusions

Based on the analysis of traffic scenarios in the preceding sections, many of the initial recommendations and opportunities were found to be feasible from a planning standpoint, suggesting that these are recommendations of the overall Subarea plan. Specifically, the following basic points can be made to advance these recommendations.

- Traffic in Subarea 4 does not and will likely not exhaust the capacity of the subarea's roadway infrastructure.
- Mobility problems in the Subarea are intersection-specific and not constant throughout an entire corridor's length. This is particularly the case with regard to Memorial Drive and the Memorial/Boulevard intersection. Here, many of the problems related to traffic movement are due to heavy northbound through and left turn movements from Boulevard, themselves due in part to the connection to Grant Park and the interchange with Interstate 20. This intersection is a known problem to area mobility because of the heavy demands for signal time that this movement generates and the constraints on adding new vehicle-carrying capacity. However, the heavy northbound movements occur regardless of changes to land use and traffic within Subarea 4; new development within Subarea 4 that adds eastbound and westbound traffic to Memorial Drive will not worsen this movement.
- The limitations to street network, such as the barrier formed by Interstate 20 and the superblock formed by the Oakland Cemetery, require both Subarea-originating and regional traffic to pass through a small number of points, which consequently are the most congested intersections.
- New development scenarios will lead to longer travel times through the Memorial and Bill Kennedy corridors, but not primarily because of the volumes of traffic they add. The main reason for longer travel times is the increase in signalized intersections, although these are likely to be warranted as necessary because of new development. The additional signals are also desired to enhance pedestrian mobility by creating safer crossings.

7.2 Recommendations from Traffic

The following are recommendations for Subarea 4 based on traffic operations.

Memorial Road Diet

As described previously, Memorial is recommended to be changed from a four-lane and five-lane undivided roadway to a three-lane roadway from Hill Street to Pearl Street. In the short term, this would leave Memorial's existing curbs intact and simply restripe the roadway surface to accommodate the desired lane configurations, adding on-street parking where dimensions allow and where this space is not needed for other auxiliary lanes. In the long term, street reconstruction should relocate curbs to more closely fit a three-lane profile. This may require the removal of parking that is added in the short term, but this is recommended to increase sidewalk width, especially along the north side of Memorial adjacent to the Oakland Cemetery.

Section 7.3 discusses corridor-specific street improvements, where the major design details for Memorial Drive are presented more extensively.

Removal of Memorial Reversible Lane

Between Pearl Street and Flat Shoals Avenue, Memorial Drive is recommended to be a three-lane section with two travel lanes and a two-way left turn lane. This would replace its current configuration with the middle reversible travel lane.

When designed in conjunction with the road diet, the two-way left turn lane of Memorial east of Pearl should be aligned with the current reversible lane of Memorial.

Into the future, the entire Memorial Drive three-lane cross section as proposed through the road diet and the reversible lane can allow medians in place of the proposed two-way left turn lane where appropriate. In the short term, it is likely that a two-way left turn will be needed for access to parcels on Memorial that are currently served by driveways. However, as redevelopment continues along the corridor and mid-block driveway cuts are replaced with alternative forms of access (such as alleys and driveways from

cross-streets), the two-way left turn lane can be converted to raised medians as appropriate. Detailed study of intersection turning movements should be undertaken at the time that medians are being placed to determine what left turn lane lengths need to be preserved for left turning storage at intersections. In general, it is not recommended that any streets be closed from left turn access from Memorial by extending a median through the intersection. This compromises the effectiveness of new street network in being able to evenly accommodate traffic growth in the Subarea and in reducing the need for mid-block driveways directly on Memorial Drive.

Memorial/Boulevard intersection improvements

At the intersection of Memorial and Boulevard, a westbound right turn lane is recommended only in conjunction with the road diet along Memorial to maintain traffic flow and to reduce delay at the intersection in the morning peak period.

However, the core capacity problem with this intersection is related to northbound movements, specifically in the AM peak period. Both the northbound left turn and through movement experience lengthy queues and delay. Although additional northbound through-movement capacity would also help to alleviate congestion and delay at this intersection, such an approach is not recommended due to its impact on surrounding property and the difficulty of merging two lanes of northbound traffic back into a single lane north of the Boulevard/Memorial intersection. The short distance between this intersection and the Boulevard curve at Carroll Street suggest that such merging would need to happen immediately. This would likely result in slow and awkward traffic operations, potentially negating the benefit of the added capacity.

Memorial/Bill Kennedy intersection improvements

Although capacity at this intersection will remain adequate for future development, its current operational challenges due to insufficient lateral width for truck and heavy vehicle turning movements could be alleviated by modifying the southeast corner curb

radius and by relocating the stop bar of the middle lane. This allows trucks to make their movement without a possible stop and time spent waiting on westbound queued vehicles to reverse and allow sufficient clearance space.

Although the current turn radius at the southeast corner is designed to accommodate trucks to make this movement, detailed design of this recommended project should evaluate the effectiveness of the current radius to determine whether a larger curb radius is needed. This should be considered in light of the land use recommendations of the plan and the intersection design should consider the critical need for safe and



Figure 7.2.1: Current Truck Turning Conflict Potential
Source: ECOS/AECOM

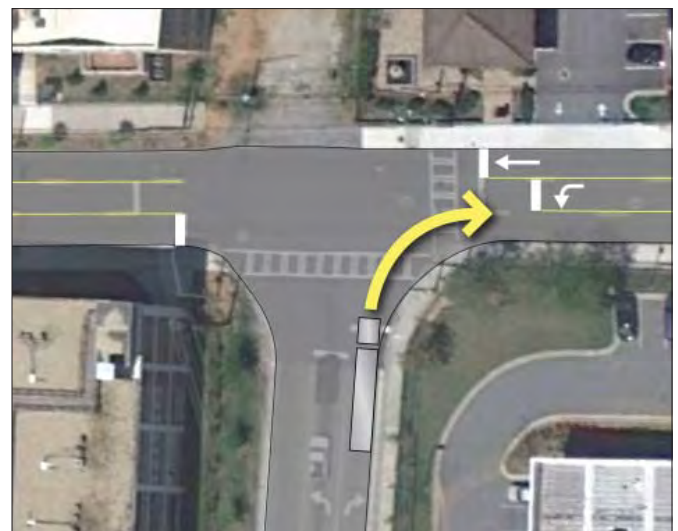


Figure 7.2.2: Relocation of Westbound Stop Bar
Source: ECOS/AECOM

convenient pedestrian access through this intersection, especially given the BeltLine corridor's use of Bill Kennedy and the Subarea Plan's recommendation for a transit station immediately north of the Memorial/Bill Kennedy intersection.

Refer to Figures 7.2.2 and 7.2.3 (below) for an illustration of these recommendations.

Howell Drive extension and connection to I-20/Moreland ramps

Although this is not a capacity-based recommendation at a given intersection, the extension of Howell Drive south and east to intersect with Moreland Avenue opposite the I-20 access ramps would create operational benefits for a larger area.

One of the principal operational benefits of this project is the ability for vehicles exiting from westbound Interstate 20 to cross Moreland Avenue (as opposed to turning right there) and to use the Howell extension to turn left on Memorial and proceed west. Currently, vehicles must turn right at the end of the ramp and then left immediately, forcing vehicles to merge across moving traffic lanes and potentially slowing traffic operations (or causing vehicle conflict).

This project was originally a recommendation of the Connect Atlanta transportation plan, which envisioned Flat Shoals as the street to be connected due to its existing signal with Moreland. However, upon closer analysis of property development potential that was performed for Subarea 4, the use of Howell Drive would allow for more flexibility in redevelopment of these properties.

Coordination with GDOT will be required to ensure the alignment of the ramps and the Howell Drive extension.

Arkwright/Moreland signal closure and right in/right out configuration

In addition to the Howell Drive extension, the removal of the Arkwright/Moreland signal would eliminate a problem of insufficient spacing between this signal and the Moreland/Memorial signal. Currently, turning traffic from Memorial may be 'trapped' at this signal and can quickly exhaust the storage capacity of the short block. To facilitate pedestrian crossings at this intersection, the signal should be replaced with a rectangular rapid flash beacon (RRFB), a pedestrian-activated traffic control device that alerts motorists to a pedestrian crossing with flashing lights and signage.



Figure 7.2.3: Extension of Howell Drive and Arkwright-Memorial Intersection

Source: ECOS/AECOM

7.3 Street Design Recommendations

Green Street program

The BeltLine seeks to be a transformative civic works endeavor for the City of Atlanta, and in so doing has promoted parks, greenspace and sustainable urban infrastructure as cornerstones of its mission. This can and should extend beyond the BeltLine's immediate corridor and be integrated into the day-to-day infrastructure of neighborhoods, especially streets. Subarea 4 is particularly well positioned to add a program of green streets that increase vegetation and tree cover and that introduce permeable

surfaces that can assist with stormwater collection and treatment.

The green streets recommended for Subarea 4 are based on the use of bioretention planters as a primary means of stormwater collection and distribution. Bioretention is the use of plants, engineered soils, and a rock sub-base to slow, store, and remove pollutants from stormwater runoff. Because of the use of plants and soil percolation, planters improve stormwater quality, reduce overall volumes of stormwater discharge that enter the stormwater processing system, and delay and reduce stormwater runoff peak flows. System designs can be adapted to a variety of physical conditions including parking lots, roadway median strips and right-of-ways, parks, residential yards, and other landscaped areas and can also be included in the retrofits of existing sites. These planters can vary in size from small, vegetated swales to multi-acre parks; however, there are limits to the size of the drainage area that can be handled and the narrow streets and rights-of-way in Subarea 4 suggest particularly limited

potential planter areas.

The following design factors should be applied in using bioretention planters in street design, and they have influenced the recommendation of candidate green streets in Subarea 4:

- Depth to bedrock must be more than 10 feet for infiltration-based systems.
- Typically limited to slopes less than 5 percent. On slopes greater than 5 percent, a double system with two different planes of elevation should be used with an internal catch-dam to allow the first level of soil to saturate before water flows into the next.
- Seasonal fluctuation in water quality benefits based on the plants' ability to filter pollutants will occur.
- Vegetation requires maintenance and can look overgrown or weedy; seasonally it may appear dead.
- Site conditions must be conducive to

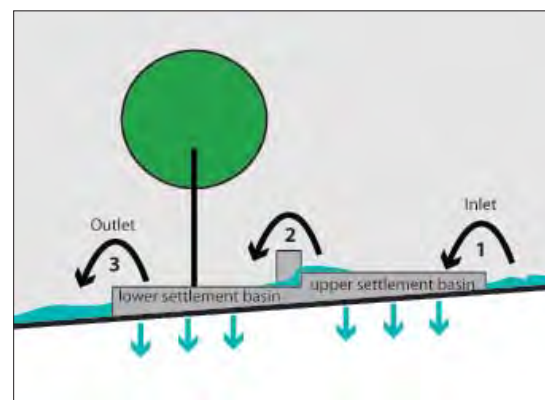


Figure 7.3.1 Bioretention Streetscape Enhancements

The use of 'rain gardens' or bioretention islands is an emerging technique to assist in stormwater mitigation while adding landscaping and trees to streets. This is particularly useful as an approach in the constrained street profiles of urban

neighborhoods such as those found in Subarea 4. They function as follows: stormwater follows the slope along a curb, as in typical curb-and-gutter drainage, but enter the bioretention area through a curb-break inlet. Water collects in a settlement basin and percolates; upon soil saturation it is allowed to continue draining and reach the curb again through an outlet. In areas of greater elevation (between 5 and 8 percent), the bioretention area should be divided into two level basin areas with a check dam between them. This ensures that water entering (movement 1 in the diagram above) can saturate soil before passing around the dam (movement 2) and have another collection opportunity before returning to regular curb-and-gutter flow on the street (movement 3).

partial or full infiltration and the growing of vegetation.

- 10-foot minimum separation from groundwater is required to allow for infiltration, unless the Regional Water Quality Control Board approves otherwise.
- Candidate sites must have minimum soil infiltration rates, no contaminated soils, no risk of land slippage if soils are heavily saturated, and a sufficient distance from existing foundations, roads, subsurface infrastructure, drinking water wells, septic tanks, drain fields, or other elements.

This plan recommends that, as a matter of policy, green street design be incorporated into all new streets in the Subarea Plan and, to the extent possible, be added to Bill Kennedy Way and Memorial Drive when those streets are reconstructed. They are likely to be most effective on sections with on-street parking, as they can be located in-line with parallel parking spaces and function as landscaped bulbout curb extensions that articulate parking and provide additional streetscaping.

Corridor Street Designs

Subarea 4 considered five principal street corridors for design recommendations, noting the unique needs and roles of each in serving new development and transportation infrastructure. The recommendations for street design are detailed for each of these five corridors here.

- **Grant Street.** Grant Street is a relatively narrow cartway and is likely to change in character only if the BeltLine transit alignment using Memorial and Grant is chosen. The cross-section on page 54 details what would be needed for appropriate transit accommodation and suitable pedestrian space given the street's potential transit needs. If Atlanta BeltLine transit uses Grant Street, a transit traffic queue bypass should be considered via widening Grant Street to the east.

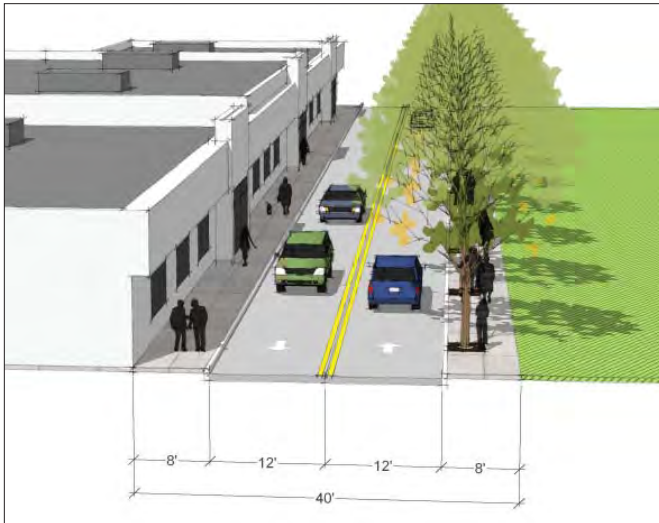
- **Memorial Drive.** Considerable attention has been given to the operational logistics of the Memorial Drive road diet. The cross-sections on pages 53 and 54 detail its overall design, illustrating one location in the current reversible-lane section (between Bill Kennedy Way and Chester Avenue, adjacent to the present A&P Lofts building) and another in the current four-lane section (adjacent to Oakland Cemetery near Cherokee Avenue).

- **Chester Avenue.** South of Interstate 20, Chester has been proposed for extension in the Subarea 4 Land Use Plan to accommodate currently-underway and potential future development at the 880 Glenwood and Lafarge properties, respectively. It is also the preferred location of this section of the BeltLine multi-use trail alignment, with the trail being located on the west side of the cartway. With these factors in mind, Chester is exemplary as a residential street with a trail envelope serving a higher-intensity land use context, although it is intended to be a local street in function. The diagram to the left details key design dimensions, especially travel lane widths and separation of the multi-use trail from the cartway.

- **Bill Kennedy Way.** Because of its bridge crossing over Interstate 20, Bill Kennedy will need to carry both BeltLine transit and the multi-use trail. The cross-section on page 55 illustrates the location of the multi-use trail on the west side of the street, with signposted crossings of the I-20 access ramps.

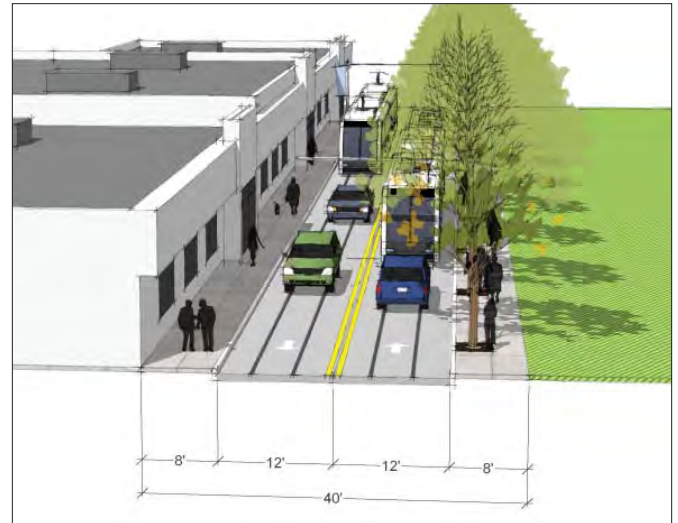
- **Wylie Street.** Wylie Street will likely carry the BeltLine multi-use trail and is one of the three alternatives to carry transit between the BeltLine rail right-of-way corridor and a tunnel crossing under the Hulsey Yard. As such, it will need reconfiguration to provide adequate width for the multi-use trail between the north curb of Wylie and the Hulsey Yard retaining wall, two 12-foot travel lanes that can accommodate light rail transit vehicles, and adequate sidewalk width to allow streetscaping and, if need be, a platform for a transit stop.

Grant Street Enhancements



Grant Street Alternative A

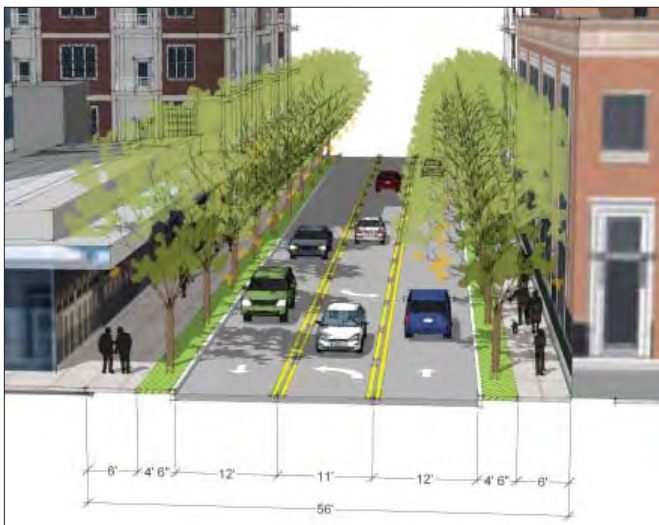
Existing lane geometries dictate 12-foot lanes in both the north and south directions, with no median or other separation between the directions. This allows for eight-foot sidewalks on both sides of the street.



Grant Street Alternative B

Lanes are again 12 feet wide, but this alternative indicates shared right-of-way by incorporating fixed guideway transit into existing vehicle lanes. Sidewalks remain eight feet wide. This alternative depends on the BeltLine transit alignment using Grant Street.

Memorial Drive at Chester



Memorial Drive at Chester Alternative A

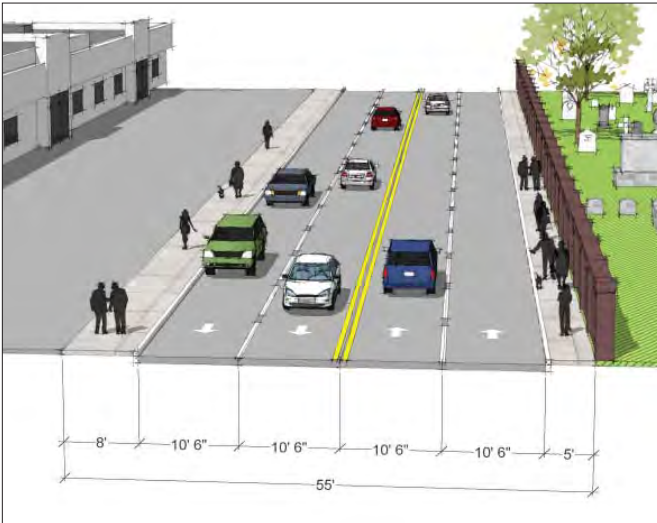
This section of Memorial is currently operated as a reversible lane. Alternative A shows Memorial Drive as a fixed three-lane section, with one lane in each direction and a shared left-turn lane. This provides for sidewalks on both sides of the street with a planted separation from vehicular traffic. The sidewalk profile illustrates how a public sector streetscape project could fit in existing right-of-way with minimum acquisition needs. As development occurs, private parties will abide by the sidewalk standards in their zoning district.



Memorial Drive at Chester Alternative B

Here, Memorial Drive is illustrated as a BeltLine transit corridor, where transit shares right-of-way with vehicular traffic. The center lane is maintained as a two-way left turn lane, and sidewalks remain unchanged. This alternative depends on the BeltLine transit alignment using Memorial Drive.

Memorial Drive at Oakland Cemetery



Existing Memorial Drive at Oakland Cemetery (Looking West)

Currently, Memorial Drive consists of two lanes in each direction, varying in width from 10 to 11 feet, with narrow sidewalks abutting Oakland Cemetery and storefront parking.



Proposed Memorial Drive Alternative A (No Transit)

Directional lanes are reduced to one in favor of adding a shared left-turn lane and providing additional space for pedestrians. Pedestrian safety and comfort is greatly improved with the addition of wider sidewalks and the use of plantings to separate pedestrians from vehicular traffic. The sidewalk profile illustrates how a public sector streetscape project could fit in existing right-of-way with minimum acquisition needs. As development occurs on the south side of Memorial Drive, private parties will abide by the sidewalk standards in their zoning district.



Proposed Memorial Drive Alternative B (Transit)

Directional lanes are reduced to one in favor of adding a shared left-turn lane and providing additional space for pedestrians. Pedestrian safety and comfort is greatly improved with the addition of wider sidewalks and the use of plantings to separate pedestrians from vehicular traffic. Transit service shares the directional lane with vehicular traffic, with some sidewalk space being used as neighborhood transit stops. The sidewalk profile illustrates how a public sector streetscape project could fit in existing right-of-way with minimum acquisition needs. As development occurs on the south side of Memorial Drive, private parties will abide by the sidewalk standards in their zoning district.

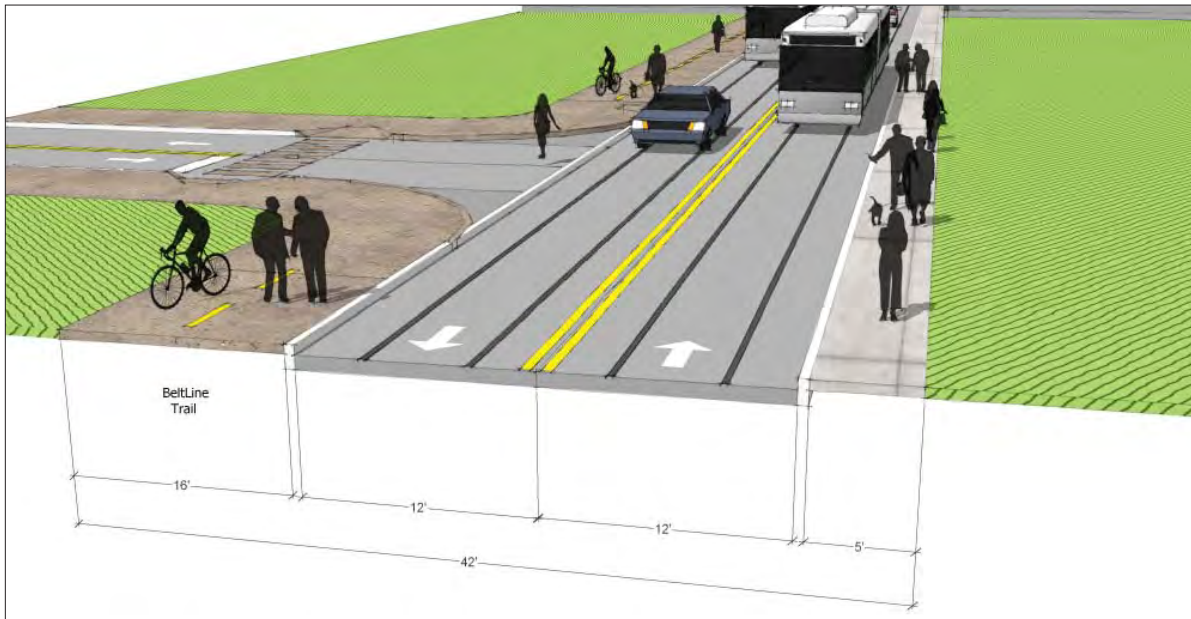
Chester Avenue (adjacent to LaFarge Property)



Chester Avenue Adjacent to LaFarge (Looking North)

Chester is recommended as a two-lane street with on-street parking on at least one side. The BeltLine trail alignment is on the west side of the street.

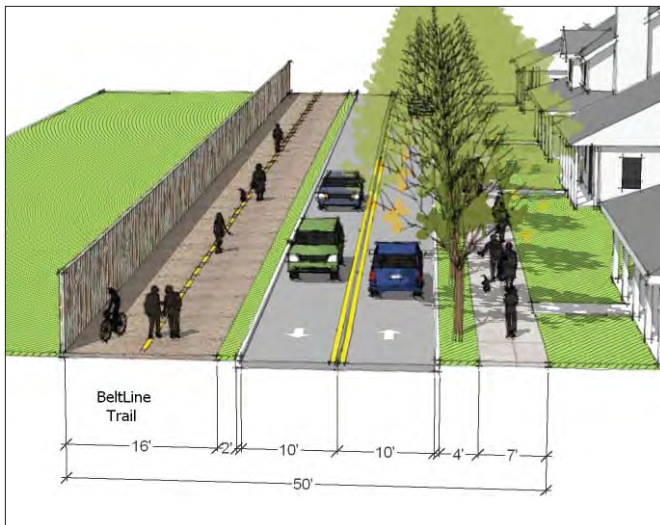
Bill Kennedy Way Enhancements



Bill Kennedy Way

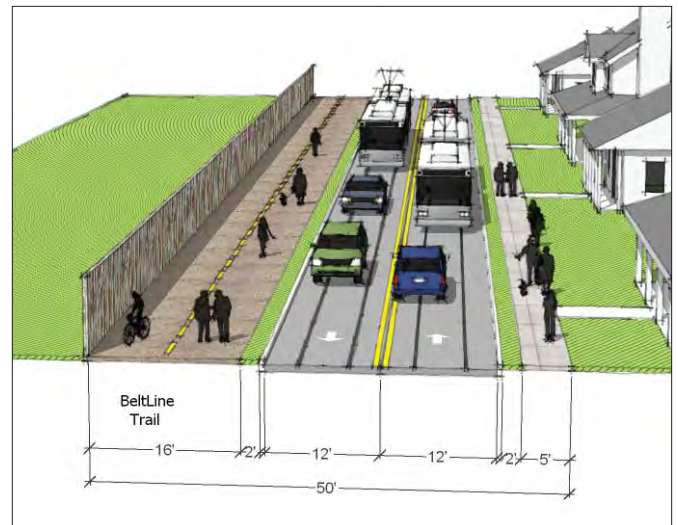
BeltLine Transit will likely use the existing Bill Kennedy Way crossing over I-20, as this image illustrates. Transit vehicles share the existing lanes dedicated to personal automobile traffic. The BeltLine trail remains on the western side of the roadway with an additional sidewalk to the east.

Wylie Street Enhancements



Wylie Street Alternative A

The BeltLine Trail runs adjacent to Wylie Street, as this cross-section displays. Lanes are demarcated as 12 feet in width, providing space for the trail on one side and an enhanced neighborhood sidewalk with a six-foot separation from the street along the other side.



Wylie Street Alternative B

Alternative B illustrates the addition of transit service along Wylie Street. In this case, transit service shares right-of-way with existing vehicle lanes. This alternative maintains the BeltLine trail and enhanced sidewalks seen in Alternative A.

7.4 Bicycle and Pedestrian Recommendations

The following are recommendations specific to bicycle and pedestrian safety and circulation. Although they may be related to other recommendations and may be tied into the operation of other modes of travel, their primary intent is to serve bicyclists and pedestrians.

Woodward Avenue Bicycle Corridor

Throughout the Subarea 4 planning process, community members expressed an interest in east-west bicycle facilities but emphasized their concerns and discomfort with use of Memorial as a primary bicycle corridor. The recommendation of the Subarea 4 plan is to use Woodward Avenue as a bicycle route from Hill Street to east of Boulevard, configured as a bicycle boulevard emphasizing free movement of bicycles and calmed vehicle traffic.



Woodward is recommended largely because of its parallel and proximate location relative to Memorial and because of its relative lack of dimensional constraints. It also coincides with current efforts of the City of Atlanta to establish an east-west bicycle corridor through downtown Atlanta and west to the Atlanta University Center. A street of ample width and paving such as Woodward allows both bicycles and vehicles to share the road without compromising safety or vehicular level of service.

Several design criteria should be met before designating a bicycle boulevard, particularly because once it is an established route, bicyclists will expect the roadway to be safe and efficient. Bicycle boulevards are intended to provide direct through-travel in high-demand bicycle corridors, and can be effective in connecting disconnected segments of other types of facilities (bicycle lanes, multi-use trails, etc.). The surface of the roadway where bicycles would generally travel should be smooth and the route should be maintained to keep roadway debris out of the bicycle

Figure 7.4.1: Woodward Bicycle Boulevard Sign Control

Existing stop-sign control should be modified to allow free-flow movement for bicycles and restrict stops to key locations where frequent cross-traffic may experience operational difficulty due to stop control. The reassignment of stop control is particularly prominent in the eastern end of existing Woodward Avenue.

The next page details operations of the pedestrian hybrid beacon that is recommended for Boulevard and Woodward.



travel areas. As one of the key principles of bicycle boulevards is priority to bicycle traffic at intersections it is recommended that stop-sign control on local streets be modified as needed to favor Woodward.

Figure 7.4.2 below details recommendations for phasing of the boulevard to follow likely addition of street network.

Also recommended is the placement of a pedestrian hybrid beacon at the intersection of Woodward and Boulevard. This signal is activated by the pedestrian or cyclist by hand (in the case of one of the beacon's early demonstration projects, the activation button is located within easy reach of a mounted cyclist in the roadway). It does not give full movement access to vehicles on the cross-street: these remain controlled by a stop sign. It is intended to control cross-street traffic long enough to ensure a safe crossing of Boulevard, but does not function as a regular signal and when no cyclists or pedestrians call it, it will shut off completely.

Its basic use is described as follows:

1. A pedestrian or cyclist approaches the intersection and pushes the button to activate the signal.
2. Signals controlling the main roadway flash a yellow beacon, then proceed on a solid yellow-

red sequence to stop motorists, just as a typical signal would.

3. The bicycles and pedestrians cross, guided by either a bicycle-based signal, a standard pedestrian signal, or both, while vehicle traffic on the same street remains controlled by a stop sign. Vehicle traffic can take advantage of the cross street being controlled by the HAWK's red light, but it must stop first and give priority to bicycles and pedestrians.
4. Bicycles and pedestrians are given warning that their phase ends and then controlled with a red beacon (or a 'do not walk' pedestrian signal beacon).
5. The main roadway's red beacon turns off and drivers proceed.

Woodward Bicycle Boulevard: Phases

The red portion of Woodward can be constructed today with stop-sign control reassignment and improved signage and marking. The pedestrian hybrid beacon signal is likely to be the most significant component of this effort in terms of cost and construction. As new phases of Subarea 4 potential development provide additions to the street network, the bicycle boulevard can be extended, potentially connecting to the core BeltLine alignment at Fulton Terrace and the extension of Woodward Street (green and yellow, respectively). The blue portion is a western extension per current City of Atlanta efforts to establish an east-west bike corridor between this area and the Atlanta University Center.



Figure 7.4.2: Woodward Avenue Bicycle Boulevard Phases

Boulevard/Glenwood Pedestrian Improvements

At the intersection of Boulevard and Glenwood, immediately south of the I-20 offramps, there is currently no designated pedestrian crosswalk. While there is a crosswalk at the intersection of the eastbound offramp with Boulevard, this is located approximately 120 feet from the Glenwood/Boulevard intersection and is in a far larger cross-section of Boulevard intended to promote vehicle mobility and storage capacity for turning onto I-20 ramps.

Although it is not common practice to designate a mid-block crossing within such close proximity to an existing signal-protected crosswalk, the Subarea 4 plan recognizes neighborhood pedestrian need. This study recommends that an additional crosswalk be signed and striped slightly south of the south side of Glenwood Avenue, allowing a more direct crossing of Boulevard for residents of Glenwood Avenue. This should be undertaken in conjunction with reducing turning radii for the eastbound right turns from the ramp to Boulevard in order to slow traffic transitioning from the expressway ramp to a city street. It is important that this crossing be enhanced with pavement markings, signage and, ideally, flashing lights or beacons activated by a push-button device that allow motorists to see that pedestrians wish to cross.

Appendix A




















Synchro Reports

Appendix A

Synchro Reports: Existing Conditions

Existing AM Peak Hour
8: Memorial Drive & Boulevard

















8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	77	120	17	50	503	185	513	745	17	29	196	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	9	9	12	10	9	12	11	10	12
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		0.95		1.00	0.95		1.00	1.00		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.99		1.00	0.96		1.00	0.99		1.00	0.96	
Flt Protected		0.98		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3339		1622	3072		1666	1662		1745	3020	
Flt Permitted		0.57		0.44	1.00		0.47	1.00		0.18	1.00	
Satd. Flow (perm)		1934		759	3072		819	1662		326	3020	
Peak-hour factor, PHF	0.88	0.83	0.71	0.83	0.93	0.80	0.92	0.94	0.47	0.81	0.88	0.76
Adj. Flow (vph)	88	145	24	60	541	231	558	793	36	36	223	72
RTOR Reduction (vph)	0	9	0	0	47	0	0	2	0	0	32	0
Lane Group Flow (vph)	0	248	0	60	725	0	558	827	0	36	263	0
Confl. Peds. (#/hr)			4	4			3		1	1		3
Heavy Vehicles (%)	0%	2%	0%	0%	1%	1%	1%	2%	5%	0%	9%	1%
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		17.3		25.4	25.4		51.4	44.1		28.2	25.9	
Effective Green, g (s)		18.3		26.4	26.4		52.4	45.1		30.2	26.9	
Actuated g/C Ratio		0.21		0.30	0.30		0.60	0.52		0.35	0.31	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		408		272	934		704	864		167	936	
v/s Ratio Prot				0.01	c0.24		c0.20	c0.50		0.01	0.09	
v/s Ratio Perm		0.13		0.06			0.28			0.07		
v/c Ratio		0.61		0.22	0.78		0.79	0.96		0.22	0.28	
Uniform Delay, d1		31.0		22.0	27.5		10.7	19.9		19.9	22.6	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.5		0.4	4.1		6.1	21.8		0.7	0.7	
Delay (s)		33.5		22.4	31.6		16.8	41.8		20.6	23.4	
Level of Service		C		C	C		B	D		C	C	
Approach Delay (s)		33.5			30.9			31.7			23.1	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM Average Control Delay			30.6			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.90									
Actuated Cycle Length (s)			86.8			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			83.8%			ICU Level of Service			E			
Analysis Period (min)			15									

c Critical Lane Group



















Existing AM Peak Hour
13: Wylie Street & Krog Street

8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	109	4	3	1	9	302	1	142	1	64	22	23
Peak Hour Factor	0.80	0.50	0.75	0.25	0.45	0.88	0.25	0.85	0.25	0.73	0.69	0.72
Hourly flow rate (vph)	136	8	4	4	20	343	4	167	4	88	32	32
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	148	367	175	151								
Volume Left (vph)	136	4	4	88								
Volume Right (vph)	4	343	4	32								
Hadj (s)	0.17	-0.56	-0.01	-0.01								
Departure Headway (s)	5.5	4.5	5.4	5.5								
Degree Utilization, x	0.23	0.46	0.26	0.23								
Capacity (veh/h)	599	756	595	592								
Control Delay (s)	10.1	11.2	10.4	10.1								
Approach Delay (s)	10.1	11.2	10.4	10.1								
Approach LOS	B	B	B	B								
Intersection Summary												
Delay				10.6								
HCM Level of Service				B								
Intersection Capacity Utilization				54.3%	ICU Level of Service	A						
Analysis Period (min)				15								


















Existing AM Peak Hour
16: Memorial Drive & Grant Street

8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	127	0	2	1039	147	13	37	2	33	6	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	9	11	12	9	11	12	12	15	12	12	15	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.99			0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1624	3455		1614	3381			2024			1857	
Flt Permitted	0.17	1.00		0.65	1.00			0.93			0.89	
Satd. Flow (perm)	288	3455		1104	3381			1906			1685	
Peak-hour factor, PHF	0.67	0.79	0.92	0.50	0.97	0.84	0.81	0.77	0.50	0.75	0.75	0.64
Adj. Flow (vph)	72	161	0	4	1071	175	16	48	4	44	8	80
RTOR Reduction (vph)	0	0	0	0	15	0	0	2	0	0	59	0
Lane Group Flow (vph)	72	161	0	4	1231	0	0	66	0	0	73	0
Confl. Peds. (#/hr)	1		3	3		1	3					3
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	5%	0%	0%	0%	0%	1%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases	4			8			2			6		
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	57.0	57.0		57.0	57.0			23.0			23.0	
Effective Green, g (s)	58.0	58.0		58.0	58.0			24.0			24.0	
Actuated g/C Ratio	0.64	0.64		0.64	0.64			0.27			0.27	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)	186	2227		711	2179			508			449	
v/s Ratio Prot	0.05			c0.36								
v/s Ratio Perm	0.25			0.00				0.03			c0.04	
v/c Ratio	0.39	0.07		0.01	0.57			0.13			0.16	
Uniform Delay, d1	7.6	6.0		5.7	8.9			25.1			25.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	6.0	0.1		0.0	1.1			0.5			0.8	
Delay (s)	13.6	6.0		5.7	10.0			25.6			26.1	
Level of Service	B	A		A	B			C			C	
Approach Delay (s)	8.4			10.0			25.6			26.1		
Approach LOS	A			B			C			C		
Intersection Summary												
HCM Average Control Delay			11.7		HCM Level of Service				B			
HCM Volume to Capacity ratio			0.45									
Actuated Cycle Length (s)			90.0		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			59.9%		ICU Level of Service				B			
Analysis Period (min)			15									
c Critical Lane Group												

Existing AM Peak Hour
17: Memorial Drive & Pearl Street

8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	158	6	1	832	28	19	6	2	10	0	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	12	12	10	10	10	10	10	10	10
Total Lost time (s)	4.0	4.0			4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00			0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00			1.00			1.00			0.99	
Flpb, ped/bikes	1.00	1.00			1.00			1.00			1.00	
Frt	1.00	0.99			0.99			0.99			0.92	
Flt Protected	0.95	1.00			1.00			0.97			0.98	
Satd. Flow (prot)	1491	1743			3545			1576			1590	
Flt Permitted	0.22	1.00			0.95			0.86			0.92	
Satd. Flow (perm)	352	1743			3383			1397			1490	
Peak-hour factor, PHF	0.63	0.90	0.75	0.25	0.94	0.64	0.59	0.50	0.50	0.83	0.92	0.56
Adj. Flow (vph)	8	176	8	4	885	44	32	12	4	12	0	16
RTOR Reduction (vph)	0	4	0	0	8	0	0	2	0	0	10	0
Lane Group Flow (vph)	8	180	0	0	925	0	0	46	0	0	18	0
Confl. Peds. (#/hr)			2	2			1		1	1		1
Heavy Vehicles (%)	17%	1%	0%	33%	1%	0%	7%	11%	0%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	19.0	19.0			19.0			16.0			16.0	
Effective Green, g (s)	20.0	20.0			20.0			17.0			17.0	
Actuated g/C Ratio	0.44	0.44			0.44			0.38			0.38	
Clearance Time (s)	5.0	5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)	156	775			1504			528			563	
v/s Ratio Prot		0.10										
v/s Ratio Perm	0.02				c0.27			c0.03			0.01	
v/c Ratio	0.05	0.23			0.62			0.09			0.03	
Uniform Delay, d1	7.1	7.7			9.6			9.0			8.8	
Progression Factor	1.00	1.00			1.00			1.00			1.00	
Incremental Delay, d2	0.6	0.7			1.9			0.3			0.1	
Delay (s)	7.7	8.4			11.5			9.3			8.9	
Level of Service	A	A			B			A			A	
Approach Delay (s)		8.4			11.5			9.3			8.9	
Approach LOS		A			B			A			A	
Intersection Summary												
HCM Average Control Delay			10.8		HCM Level of Service					B		
HCM Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			45.0		Sum of lost time (s)					8.0		
Intersection Capacity Utilization			44.6%		ICU Level of Service					A		
Analysis Period (min)			15									
c Critical Lane Group												

Existing AM Peak Hour
21: Memorial Drive & Bill Kennedy Way

8/13/2010



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱↰	↱	↱
Volume (vph)	130	64	67	666	262	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	11	12	12
Total Lost time (s)	4.0			4.0	4.0	4.0
Lane Util. Factor	1.00			0.95	1.00	1.00
Frpb, ped/bikes	1.00			1.00	1.00	0.98
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	0.95			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	1648			3442	1787	1575
Flt Permitted	1.00			0.89	0.95	1.00
Satd. Flow (perm)	1648			3095	1787	1575
Peak-hour factor, PHF	0.76	0.67	0.84	0.90	0.90	0.81
Adj. Flow (vph)	171	96	80	740	291	159
RTOR Reduction (vph)	41	0	0	0	0	102
Lane Group Flow (vph)	226	0	0	820	291	57
Confl. Peds. (#/hr)						3
Heavy Vehicles (%)	2%	3%	0%	1%	1%	0%
Turn Type			Perm			Perm
Protected Phases	4			8	2	
Permitted Phases			8			2
Actuated Green, G (s)	23.0			23.0	17.0	17.0
Effective Green, g (s)	24.0			24.0	18.0	18.0
Actuated g/C Ratio	0.48			0.48	0.36	0.36
Clearance Time (s)	5.0			5.0	5.0	5.0
Lane Grp Cap (vph)	791			1486	643	567
v/s Ratio Prot	0.14				c0.16	
v/s Ratio Perm				c0.26		0.04
v/c Ratio	0.29			0.55	0.45	0.10
Uniform Delay, d1	7.8			9.2	12.2	10.6
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.9			1.5	2.3	0.4
Delay (s)	8.7			10.7	14.5	11.0
Level of Service	A			B	B	B
Approach Delay (s)	8.7			10.7	13.3	
Approach LOS	A			B	B	
Intersection Summary						
HCM Average Control Delay			11.1		HCM Level of Service	B
HCM Volume to Capacity ratio			0.51			
Actuated Cycle Length (s)			50.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			55.6%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Existing AM Peak Hour
24: Glenwood Avenue & Bill Kennedy Way

8/13/2010



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	71	85	189	281	64	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	10	12
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		1.00	1.00		1.00	
Frpb, ped/bikes		1.00	0.98		0.98	
Flpb, ped/bikes		1.00	1.00		1.00	
Frt		1.00	0.92		0.92	
Flt Protected		0.98	1.00		0.98	
Satd. Flow (prot)		1718	1639		1522	
Flt Permitted		0.67	1.00		0.98	
Satd. Flow (perm)		1171	1639		1522	
Peak-hour factor, PHF	0.87	0.63	0.93	0.88	0.68	0.79
Adj. Flow (vph)	82	135	203	319	94	134
RTOR Reduction (vph)	0	0	123	0	84	0
Lane Group Flow (vph)	0	217	399	0	144	0
Confl. Peds. (#/hr)	6			6	6	5
Heavy Vehicles (%)	11%	1%	1%	1%	4%	3%
Turn Type	Perm					
Protected Phases		4	8		6	
Permitted Phases	4					
Actuated Green, G (s)		20.0	20.0		16.0	
Effective Green, g (s)		21.0	21.0		17.0	
Actuated g/C Ratio		0.46	0.46		0.37	
Clearance Time (s)		5.0	5.0		5.0	
Lane Grp Cap (vph)		535	748		562	
v/s Ratio Prot			c0.24		c0.09	
v/s Ratio Perm		0.19				
v/c Ratio		0.41	0.53		0.26	
Uniform Delay, d1		8.3	9.0		10.1	
Progression Factor		1.00	1.00		0.66	
Incremental Delay, d2		2.3	2.7		1.1	
Delay (s)		10.6	11.7		7.8	
Level of Service		B	B		A	
Approach Delay (s)		10.6	11.7		7.8	
Approach LOS		B	B		A	
Intersection Summary						
HCM Average Control Delay			10.5		HCM Level of Service	B
HCM Volume to Capacity ratio			0.41			
Actuated Cycle Length (s)			46.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			59.3%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Existing AM Peak Hour
33: I-20 WB Ramp & Bill Kennedy Way

8/13/2010



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	192	379	88	61
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.79	0.89	0.79	0.85
Hourly flow rate (vph)	0	0	243	426	111	72
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				420	930	
pX, platoon unblocked	0.97					
vC, conflicting volume	1059	147	183			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1045	147	183			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	82			
cM capacity (veh/h)	202	900	1380			
Direction, Lane #	NB 1	NB 2	SB 1			
Volume Total	243	426	183			
Volume Left	243	0	0			
Volume Right	0	0	72			
cSH	1380	1700	1700			
Volume to Capacity	0.18	0.25	0.11			
Queue Length 95th (ft)	16	0	0			
Control Delay (s)	8.2	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	3.0		0.0			
Approach LOS						
Intersection Summary						
Average Delay			2.3			
Intersection Capacity Utilization			37.2%	ICU Level of Service		A
Analysis Period (min)			15			

Existing AM Peak Hour
35: I-20 EB Ramp & Bill Kennedy Way

8/13/2010



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	124	144	0	449	92	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	10	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1770	1463		1739	1881	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1770	1463		1739	1881	
Peak-hour factor, PHF	0.69	0.89	0.92	0.88	0.58	0.92
Adj. Flow (vph)	180	162	0	510	159	0
RTOR Reduction (vph)	0	102	0	0	0	0
Lane Group Flow (vph)	180	60	0	510	159	0
Heavy Vehicles (%)	2%	3%	2%	2%	1%	1%
Turn Type	Perm					
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	16.0	16.0		20.0	20.0	
Effective Green, g (s)	17.0	17.0		21.0	21.0	
Actuated g/C Ratio	0.37	0.37		0.46	0.46	
Clearance Time (s)	5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	654	541		794	859	
v/s Ratio Prot	c0.10			c0.29	0.08	
v/s Ratio Perm		0.04				
v/c Ratio	0.28	0.11		0.64	0.19	
Uniform Delay, d1	10.2	9.5		9.6	7.4	
Progression Factor	1.00	1.00		0.68	1.00	
Incremental Delay, d2	1.0	0.4		3.6	0.5	
Delay (s)	11.2	9.9		10.2	7.9	
Level of Service	B	A		B	A	
Approach Delay (s)	10.6			10.2	7.9	
Approach LOS	B			B	A	
Intersection Summary						
HCM Average Control Delay			10.0		HCM Level of Service	A
HCM Volume to Capacity ratio			0.48			
Actuated Cycle Length (s)			46.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			37.2%		ICU Level of Service	A
Analysis Period (min)			15			

c Critical Lane Group

Existing AM Peak Hour
39: Decatur Street & Hilliard Street

8/13/2010






















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔		↔	↔			↔	↔
Volume (vph)	71	173	36	179	713	57	81	201	201	0	14	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	10	12	10	9	12	12	10	10
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	4.0
Lane Util. Factor		0.95			0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes		1.00			1.00		1.00	0.98			1.00	0.99
Flpb, ped/bikes		1.00			1.00		1.00	1.00			1.00	1.00
Frt		0.98			0.99		1.00	0.92			1.00	0.85
Flt Protected		0.99			0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)		3222			3258		1683	1543			1689	1488
Flt Permitted		0.65			0.80		0.74	1.00			1.00	1.00
Satd. Flow (perm)		2132			2619		1305	1543			1689	1488
Peak-hour factor, PHF	0.85	0.79	0.82	0.90	0.92	0.75	0.81	0.87	0.80	0.92	0.44	0.88
Adj. Flow (vph)	84	219	44	199	775	76	100	231	251	0	32	8
RTOR Reduction (vph)	0	24	0	0	13	0	0	85	0	0	0	5
Lane Group Flow (vph)	0	323	0	0	1038	0	100	397	0	0	32	3
Confl. Peds. (#/hr)	8		10	10		8	1		22	22		1
Heavy Vehicles (%)	1%	1%	0%	1%	1%	0%	0%	0%	1%	0%	5%	0%
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		20.0			20.0		16.0	16.0			16.0	16.0
Effective Green, g (s)		21.0			21.0		17.0	17.0			17.0	17.0
Actuated g/C Ratio		0.46			0.46		0.37	0.37			0.37	0.37
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	5.0
Lane Grp Cap (vph)		973			1196		482	570			624	550
v/s Ratio Prot								c0.26			0.02	
v/s Ratio Perm		0.15			c0.40		0.08					0.00
v/c Ratio		0.33			0.87		0.21	0.70			0.05	0.01
Uniform Delay, d1		8.0			11.2		9.9	12.3			9.3	9.2
Progression Factor		1.00			1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		0.9			8.6		1.0	6.9			0.2	0.0
Delay (s)		8.9			19.9		10.9	19.2			9.5	9.2
Level of Service		A			B		B	B			A	A
Approach Delay (s)		8.9			19.9			17.8			9.4	
Approach LOS		A			B			B			A	

Intersection Summary

HCM Average Control Delay	17.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	46.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Existing PM Peak Hour
8: Memorial Drive & Boulevard

















8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	73	288	96	91	133	41	59	334	47	153	722	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	9	9	12	10	9	12	11	10	12
Total Lost time (s)		4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		0.95		1.00	0.95		1.00	1.00		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt		0.97		1.00	0.96		1.00	0.98		1.00	0.98	
Flt Protected		0.99		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3313		1608	3112		1652	1590		1727	3195	
Flt Permitted		0.84		0.33	1.00		0.17	1.00		0.30	1.00	
Satd. Flow (perm)		2814		565	3112		296	1590		554	3195	
Peak-hour factor, PHF	0.73	0.87	0.86	0.81	0.85	0.79	0.82	0.87	0.78	0.87	0.84	0.70
Adj. Flow (vph)	100	331	112	112	156	52	72	384	60	176	860	96
RTOR Reduction (vph)	0	41	0	0	33	0	0	8	0	0	12	0
Lane Group Flow (vph)	0	502	0	112	175	0	72	436	0	176	944	0
Confl. Peds. (#/hr)			4	4			3		1	1		3
Heavy Vehicles (%)	1%	1%	0%	1%	0%	2%	2%	6%	0%	1%	4%	1%
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		14.4		22.4	22.4		24.8	22.6		26.4	23.4	
Effective Green, g (s)		15.4		23.4	23.4		26.8	23.6		28.4	24.4	
Actuated g/C Ratio		0.24		0.37	0.37		0.43	0.37		0.45	0.39	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		688		276	1156		195	596		324	1237	
v/s Ratio Prot				c0.03	0.06		0.02	0.27		c0.03	c0.30	
v/s Ratio Perm		c0.18		0.12			0.14			0.21		
v/c Ratio		0.73		0.41	0.15		0.37	0.73		0.54	0.76	
Uniform Delay, d1		21.9		18.5	13.2		11.8	17.0		11.5	16.8	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.9		1.0	0.1		1.2	7.7		1.9	4.5	
Delay (s)		25.8		19.5	13.2		13.0	24.7		13.4	21.3	
Level of Service		C		B	B		B	C		B	C	
Approach Delay (s)		25.8			15.4			23.1			20.0	
Approach LOS		C			B			C			C	
Intersection Summary												
HCM Average Control Delay			21.3			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			63.0			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



















Existing PM Peak Hour
13: Wylie Street & Krog Street

8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	73	8	4	8	17	114	1	36	4	267	173	94
Peak Hour Factor	0.83	0.50	0.50	0.67	0.85	0.89	0.25	0.81	0.50	0.83	0.90	0.73
Hourly flow rate (vph)	88	16	8	12	20	128	4	44	8	322	192	129
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	112	160	56	643								
Volume Left (vph)	88	12	4	322								
Volume Right (vph)	8	128	8	129								
Hadj (s)	0.12	-0.47	-0.07	-0.02								
Departure Headway (s)	6.1	5.4	5.5	4.8								
Degree Utilization, x	0.19	0.24	0.09	0.85								
Capacity (veh/h)	552	614	601	742								
Control Delay (s)	10.5	10.2	9.1	28.6								
Approach Delay (s)	10.5	10.2	9.1	28.6								
Approach LOS	B	B	A	D								
Intersection Summary												
Delay				22.4								
HCM Level of Service				C								
Intersection Capacity Utilization				61.5%	ICU Level of Service	B						
Analysis Period (min)				15								

Existing PM Peak Hour
16: Memorial Drive & Grant Street






8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	451	3	4	194	37	2	5	5	147	22	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	9	11	12	9	11	12	12	15	12	12	15	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.97			0.95			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.97	
Satd. Flow (prot)	1623	3447		1623	3351			1945			1943	
Flt Permitted	0.58	1.00		0.42	1.00			0.95			0.79	
Satd. Flow (perm)	987	3447		714	3351			1864			1590	
Peak-hour factor, PHF	0.81	0.83	0.38	0.33	0.85	0.66	0.50	0.63	0.63	0.88	0.79	0.84
Adj. Flow (vph)	80	543	8	12	228	56	4	8	8	167	28	56
RTOR Reduction (vph)	0	2	0	0	31	0	0	5	0	0	20	0
Lane Group Flow (vph)	80	549	0	12	253	0	0	15	0	0	231	0
Confl. Peds. (#/hr)	1		1	1		1			5	5		
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	1%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	21.0	21.0		21.0	21.0			19.0			19.0	
Effective Green, g (s)	22.0	22.0		22.0	22.0			20.0			20.0	
Actuated g/C Ratio	0.44	0.44		0.44	0.44			0.40			0.40	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)	434	1517		314	1474			746			636	
v/s Ratio Prot		c0.16			0.08							
v/s Ratio Perm	0.08			0.02				0.01			c0.15	
v/c Ratio	0.18	0.36		0.04	0.17			0.02			0.36	
Uniform Delay, d1	8.5	9.3		8.0	8.5			9.1			10.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.9	0.7		0.2	0.3			0.1			1.6	
Delay (s)	9.5	10.0		8.2	8.7			9.1			12.1	
Level of Service	A	A		A	A			A			B	
Approach Delay (s)		9.9			8.7			9.1			12.1	
Approach LOS		A			A			A			B	
Intersection Summary												
HCM Average Control Delay			10.1			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.36									
Actuated Cycle Length (s)			50.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			45.8%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

Existing PM Peak Hour
17: Memorial Drive & Pearl Street











8/13/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	587	5	3	220	8	3	1	3	27	2	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	12	12	10	10	10	10	10	10	10
Total Lost time (s)	4.0	4.0			4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00			1.00			0.99			1.00	
Flpb, ped/bikes	1.00	1.00			1.00			1.00			0.99	
Frt	1.00	1.00			0.99			0.92			0.95	
Flt Protected	0.95	1.00			1.00			0.99			0.97	
Satd. Flow (prot)	1739	1750			1863			1591			1607	
Flt Permitted	0.57	1.00			0.97			0.97			0.86	
Satd. Flow (perm)	1042	1750			1819			1557			1417	
Peak-hour factor, PHF	0.42	0.94	0.63	0.25	0.81	0.50	0.75	0.25	0.25	0.75	0.50	0.45
Adj. Flow (vph)	12	624	8	12	272	16	4	4	12	36	4	20
RTOR Reduction (vph)	0	0	0	0	2	0	0	9	0	0	14	0
Lane Group Flow (vph)	12	632	0	0	298	0	0	11	0	0	46	0
Confl. Peds. (#/hr)	2					2	1		6	6		1
Heavy Vehicles (%)	0%	1%	11%	0%	1%	0%	0%	0%	0%	2%	0%	0%
Turn Type	Perm		Perm			Perm			Perm			
Protected Phases	4		8			2			6			
Permitted Phases	4		8			2			6			
Actuated Green, G (s)	63.0	63.0	63.0			27.0			27.0			
Effective Green, g (s)	64.0	64.0	64.0			28.0			28.0			
Actuated g/C Ratio	0.64	0.64	0.64			0.28			0.28			
Clearance Time (s)	5.0	5.0	5.0			5.0			5.0			
Lane Grp Cap (vph)	667	1120	1164			436			397			
v/s Ratio Prot	c0.36											
v/s Ratio Perm	0.01		0.16			0.01			c0.03			
v/c Ratio	0.02	0.56	0.26			0.03			0.11			
Uniform Delay, d1	6.6	10.1	7.7			26.1			26.8			
Progression Factor	1.00	1.00	1.00			1.00			1.00			
Incremental Delay, d2	0.0	2.1	0.5			0.1			0.6			
Delay (s)	6.6	12.2	8.3			26.2			27.4			
Level of Service	A	B	A			C			C			
Approach Delay (s)	12.1		8.3			26.2			27.4			
Approach LOS	B		A			C			C			
Intersection Summary												
HCM Average Control Delay			12.1		HCM Level of Service				B			
HCM Volume to Capacity ratio			0.43									
Actuated Cycle Length (s)			100.0		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			51.2%		ICU Level of Service				A			
Analysis Period (min)			15									
c Critical Lane Group												

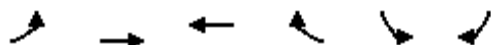
Existing PM Peak Hour
21: Memorial Drive & Bill Kennedy Way

8/13/2010

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	435	286	144	208	83	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	11	12	12
Total Lost time (s)	4.0			4.0	4.0	4.0
Lane Util. Factor	0.95			1.00	1.00	1.00
Frpb, ped/bikes	0.99			1.00	1.00	0.98
Flpb, ped/bikes	1.00			1.00	1.00	1.00
Frt	0.94			1.00	1.00	0.85
Flt Protected	1.00			0.98	0.95	1.00
Satd. Flow (prot)	3094			1773	1736	1579
Flt Permitted	1.00			0.45	0.95	1.00
Satd. Flow (perm)	3094			825	1736	1579
Peak-hour factor, PHF	0.92	0.86	0.60	0.85	0.83	0.86
Adj. Flow (vph)	473	333	240	245	100	100
RTOR Reduction (vph)	104	0	0	0	0	79
Lane Group Flow (vph)	702	0	0	485	100	21
Confl. Peds. (#/hr)		3	3			7
Heavy Vehicles (%)	1%	1%	1%	1%	4%	0%
Turn Type		Perm			Perm	
Protected Phases	4			8	2	
Permitted Phases			8			2
Actuated Green, G (s)	54.0			54.0	16.0	16.0
Effective Green, g (s)	55.0			55.0	17.0	17.0
Actuated g/C Ratio	0.69			0.69	0.21	0.21
Clearance Time (s)	5.0			5.0	5.0	5.0
Lane Grp Cap (vph)	2127			567	369	336
v/s Ratio Prot	0.23				c0.06	
v/s Ratio Perm				c0.59		0.01
v/c Ratio	0.33			0.86	0.27	0.06
Uniform Delay, d1	5.1			9.5	26.3	25.1
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.4			15.2	1.8	0.4
Delay (s)	5.5			24.7	28.1	25.5
Level of Service	A			C	C	C
Approach Delay (s)	5.5			24.7	26.8	
Approach LOS	A			C	C	
Intersection Summary						
HCM Average Control Delay		14.6		HCM Level of Service		B
HCM Volume to Capacity ratio		0.72				
Actuated Cycle Length (s)		80.0		Sum of lost time (s)		8.0
Intersection Capacity Utilization		63.6%		ICU Level of Service		B
Analysis Period (min)		15				
c Critical Lane Group						

Existing PM Peak Hour
24: Glenwood Avenue & Bill Kennedy Way

8/13/2010



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	57	119	81	115	321	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	10	12
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		1.00	1.00		1.00	
Frpb, ped/bikes		1.00	0.99		0.99	
Flpb, ped/bikes		1.00	1.00		1.00	
Frt		1.00	0.93		0.98	
Flt Protected		0.98	1.00		0.96	
Satd. Flow (prot)		1805	1691		1632	
Flt Permitted		0.83	1.00		0.96	
Satd. Flow (perm)		1524	1691		1632	
Peak-hour factor, PHF	0.90	0.93	0.61	0.85	0.82	0.93
Adj. Flow (vph)	63	128	133	135	391	74
RTOR Reduction (vph)	0	0	73	0	14	0
Lane Group Flow (vph)	0	191	195	0	451	0
Confl. Peds. (#/hr)	3			3	7	21
Heavy Vehicles (%)	0%	0%	0%	0%	1%	2%
Turn Type	Perm					
Protected Phases		4	8		6	
Permitted Phases	4					
Actuated Green, G (s)		17.0	17.0		23.0	
Effective Green, g (s)		18.0	18.0		24.0	
Actuated g/C Ratio		0.36	0.36		0.48	
Clearance Time (s)		5.0	5.0		5.0	
Lane Grp Cap (vph)		549	609		783	
v/s Ratio Prot			0.12		c0.28	
v/s Ratio Perm		c0.13				
v/c Ratio		0.35	0.32		0.58	
Uniform Delay, d1		11.7	11.6		9.3	
Progression Factor		1.00	1.00		0.62	
Incremental Delay, d2		1.7	1.4		2.9	
Delay (s)		13.4	13.0		8.7	
Level of Service		B	B		A	
Approach Delay (s)		13.4	13.0		8.7	
Approach LOS		B	B		A	
Intersection Summary						
HCM Average Control Delay			10.9		HCM Level of Service	B
HCM Volume to Capacity ratio			0.48			
Actuated Cycle Length (s)			50.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			55.1%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Existing PM Peak Hour
33: I-20 WB Ramp & Bill Kennedy Way

8/13/2010



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	133	159	247	164
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.81	0.86	0.87	0.66
Hourly flow rate (vph)	0	0	164	185	284	248
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				420	930	
pX, platoon unblocked						
vC, conflicting volume	921	408	532			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	921	408	532			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	84			
cM capacity (veh/h)	253	643	1045			
Direction, Lane #	NB 1	NB 2	SB 1			
Volume Total	164	185	532			
Volume Left	164	0	0			
Volume Right	0	0	248			
cSH	1045	1700	1700			
Volume to Capacity	0.16	0.11	0.31			
Queue Length 95th (ft)	14	0	0			
Control Delay (s)	9.1	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	4.3		0.0			
Approach LOS						
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization			37.0%	ICU Level of Service		A
Analysis Period (min)			15			

Existing PM Peak Hour
35: I-20 EB Ramp & Bill Kennedy Way

8/13/2010



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	92	222	0	189	279	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	10	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1736	1492		1773	1881	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1736	1492		1773	1881	
Peak-hour factor, PHF	0.79	0.96	0.92	0.93	0.92	0.92
Adj. Flow (vph)	116	231	0	203	303	0
RTOR Reduction (vph)	0	129	0	0	0	0
Lane Group Flow (vph)	116	102	0	203	303	0
Heavy Vehicles (%)	4%	1%	0%	0%	1%	0%
Turn Type	Perm					
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	21.0	21.0		19.0	19.0	
Effective Green, g (s)	22.0	22.0		20.0	20.0	
Actuated g/C Ratio	0.44	0.44		0.40	0.40	
Clearance Time (s)	5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	764	656		709	752	
v/s Ratio Prot	0.07			0.11	c0.16	
v/s Ratio Perm		c0.07				
v/c Ratio	0.15	0.15		0.29	0.40	
Uniform Delay, d1	8.4	8.4		10.2	10.7	
Progression Factor	1.00	1.00		0.55	1.00	
Incremental Delay, d2	0.4	0.5		1.0	1.6	
Delay (s)	8.8	8.9		6.5	12.3	
Level of Service	A	A		A	B	
Approach Delay (s)	8.9			6.5	12.3	
Approach LOS	A			A	B	
Intersection Summary						
HCM Average Control Delay			9.5		HCM Level of Service	A
HCM Volume to Capacity ratio			0.27			
Actuated Cycle Length (s)			50.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			37.0%		ICU Level of Service	A
Analysis Period (min)			15			

c Critical Lane Group

Existing PM Peak Hour
39: Decatur Street & Hilliard Street

8/13/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔		↔	↔			↔	↔
Volume (vph)	21	664	36	225	321	15	21	31	210	0	21	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	10	12	10	9	12	12	10	10
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	4.0
Lane Util. Factor		0.95			0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes		1.00			1.00		1.00	0.97			1.00	0.98
Flpb, ped/bikes		1.00			1.00		1.00	1.00			1.00	1.00
Frt		0.99			0.99		1.00	0.87			1.00	0.85
Flt Protected		1.00			0.98		0.95	1.00			1.00	1.00
Satd. Flow (prot)		3301			3250		1678	1443			1773	1484
Flt Permitted		0.92			0.57		0.74	1.00			1.00	1.00
Satd. Flow (perm)		3029			1893		1306	1443			1773	1484
Peak-hour factor, PHF	0.66	0.95	0.90	0.88	0.94	0.38	0.53	0.86	0.77	0.92	0.75	0.58
Adj. Flow (vph)	32	699	40	256	341	39	40	36	273	0	28	12
RTOR Reduction (vph)	0	8	0	0	9	0	0	119	0	0	0	8
Lane Group Flow (vph)	0	763	0	0	627	0	40	190	0	0	28	4
Confl. Peds. (#/hr)	10		3	3		10	4		20	20		4
Heavy Vehicles (%)	0%	1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		25.0			25.0		16.0	16.0			16.0	16.0
Effective Green, g (s)		26.0			26.0		17.0	17.0			17.0	17.0
Actuated g/C Ratio		0.51			0.51		0.33	0.33			0.33	0.33
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	5.0
Lane Grp Cap (vph)		1544			965		435	481			591	495
v/s Ratio Prot								c0.13			0.02	
v/s Ratio Perm		0.25			c0.33		0.03					0.00
v/c Ratio		0.49			0.88dl		0.09	0.40			0.05	0.01
Uniform Delay, d1		8.2			9.2		11.7	13.1			11.5	11.4
Progression Factor		1.00			1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		1.1			3.4		0.4	2.4			0.2	0.0
Delay (s)		9.3			12.5		12.1	15.5			11.7	11.4
Level of Service		A			B		B	B			B	B
Approach Delay (s)		9.3			12.5			15.1			11.6	
Approach LOS		A			B			B			B	























Intersection Summary

HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	51.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		
dl Defacto Left Lane. Recode with 1 though lane as a left lane.			
c Critical Lane Group			

Existing AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

8: Memorial Drive & Boulevard

8/13/2010

















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	77	120	17	50	503	185	513	745	17	29	196	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	9	9	12	10	9	12	11	10	12
Total Lost time (s)	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	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1762		1619	1693	1599	1665	1662		1745	3010	
Flt Permitted	0.12	1.00		0.58	1.00	1.00	0.41	1.00		0.16	1.00	
Satd. Flow (perm)	225	1762		981	1693	1599	724	1662		294	3010	
Peak-hour factor, PHF	0.88	0.83	0.71	0.83	0.93	0.80	0.92	0.94	0.47	0.81	0.88	0.76
Adj. Flow (vph)	88	145	24	60	541	231	558	793	36	36	223	72
RTOR Reduction (vph)	0	6	0	0	0	96	0	2	0	0	27	0
Lane Group Flow (vph)	88	163	0	60	541	135	558	827	0	36	268	0
Confl. Peds. (#/hr)			4	4			3		1	1		3
Heavy Vehicles (%)	0%	2%	0%	0%	1%	1%	1%	2%	5%	0%	9%	1%
Turn Type	pm+pt			pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	36.0	32.8		36.0	32.8	32.8	59.0	51.6		26.4	24.0	
Effective Green, g (s)	38.0	33.8		38.0	33.8	33.8	60.0	52.6		28.4	25.0	
Actuated g/C Ratio	0.35	0.31		0.35	0.31	0.31	0.55	0.48		0.26	0.23	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
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)	138	541		363	520	491	660	795		121	684	
v/s Ratio Prot	c0.02	0.09		0.01	c0.32		c0.24	c0.50		0.01	0.09	
v/s Ratio Perm	0.20			0.05		0.08	0.22			0.07		
v/c Ratio	0.64	0.30		0.17	1.04	0.28	0.85	1.04		0.30	0.39	
Uniform Delay, d1	28.8	29.1		24.5	38.1	28.8	17.8	28.7		32.3	36.1	
Progression Factor	1.04	1.04		0.83	0.81	0.73	1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.3	0.3		0.2	45.6	0.2	9.7	43.0		1.4	1.7	
Delay (s)	39.3	30.5		20.5	76.5	21.4	27.5	71.7		33.7	37.7	
Level of Service	D	C		C	E	C	C	E		C	D	
Approach Delay (s)		33.5			57.2			53.9			37.3	
Approach LOS		C			E			D			D	
Intersection Summary												
HCM Average Control Delay			51.1			HCM Level of Service				D		
HCM Volume to Capacity ratio			1.03									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			87.6%			ICU Level of Service			E			
Analysis Period (min)			15									

c Critical Lane Group

Existing AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

13: Wylie Street & Krog Street




















8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	109	4	3	1	9	302	1	142	1	64	22	23
Peak Hour Factor	0.80	0.50	0.75	0.25	0.45	0.88	0.25	0.85	0.25	0.73	0.69	0.72
Hourly flow rate (vph)	136	8	4	4	20	343	4	167	4	88	32	32
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	148	367	175	151								
Volume Left (vph)	136	4	4	88								
Volume Right (vph)	4	343	4	32								
Hadj (s)	0.17	-0.56	-0.01	-0.01								
Departure Headway (s)	5.5	4.5	5.4	5.5								
Degree Utilization, x	0.23	0.46	0.26	0.23								
Capacity (veh/h)	599	756	595	592								
Control Delay (s)	10.1	11.2	10.4	10.1								
Approach Delay (s)	10.1	11.2	10.4	10.1								
Approach LOS	B	B	B	B								
Intersection Summary												
Delay				10.6								
HCM Level of Service				B								
Intersection Capacity Utilization				54.3%	ICU Level of Service		A					
Analysis Period (min)				15								

Existing AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

16: Memorial Drive & Grant Street



















8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	127	0	2	1039	147	13	37	2	33	6	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	9	11	12	9	11	12	12	15	12	12	15	12
Total Lost time (s)	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	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.98	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.99			0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1624	1818		1611	1779			2022			1842	
Flt Permitted	0.08	1.00		0.66	1.00			0.93			0.90	
Satd. Flow (perm)	143	1818		1111	1779			1907			1678	
Peak-hour factor, PHF	0.67	0.79	0.92	0.50	0.97	0.84	0.81	0.77	0.50	0.75	0.75	0.64
Adj. Flow (vph)	72	161	0	4	1071	175	16	48	4	44	8	80
RTOR Reduction (vph)	0	0	0	0	5	0	0	2	0	0	50	0
Lane Group Flow (vph)	72	161	0	4	1241	0	0	66	0	0	82	0
Confl. Peds. (#/hr)	1		3	3		1	3					3
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	5%	0%	0%	0%	0%	1%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	83.0	83.0		83.0	83.0			17.0			17.0	
Effective Green, g (s)	84.0	84.0		84.0	84.0			18.0			18.0	
Actuated g/C Ratio	0.76	0.76		0.76	0.76			0.16			0.16	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)	109	1388		848	1359			312			275	
v/s Ratio Prot		0.09			c0.70							
v/s Ratio Perm	0.50			0.00				0.03			c0.05	
v/c Ratio	0.66	0.12		0.00	0.91			0.21			0.30	
Uniform Delay, d1	6.2	3.4		3.1	10.1			39.9			40.4	
Progression Factor	1.00	1.00		0.81	0.51			1.00			1.00	
Incremental Delay, d2	27.3	0.2		0.0	6.5			1.6			2.7	
Delay (s)	33.5	3.5		2.5	11.7			41.4			43.2	
Level of Service	C	A		A	B			D			D	
Approach Delay (s)		12.8			11.6			41.4			43.2	
Approach LOS		B			B			D			D	
Intersection Summary												
HCM Average Control Delay			15.5			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			83.6%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

Existing AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]












17: Memorial Drive & Pearl Street

8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	158	6	1	832	28	19	6	2	10	0	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	12	12	10	10	10	10	10	10	10
Total Lost time (s)	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	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			0.99			0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.98	
Satd. Flow (prot)	1491	1743		1350	1869			1573			1579	
Flt Permitted	0.23	1.00		0.64	1.00			0.82			0.90	
Satd. Flow (perm)	354	1743		911	1869			1341			1454	
Peak-hour factor, PHF	0.63	0.90	0.75	0.25	0.94	0.64	0.59	0.50	0.50	0.83	0.92	0.56
Adj. Flow (vph)	8	176	8	4	885	44	32	12	4	12	0	16
RTOR Reduction (vph)	0	1	0	0	2	0	0	3	0	0	13	0
Lane Group Flow (vph)	8	183	0	4	927	0	0	45	0	0	15	0
Confl. Peds. (#/hr)			2	2			1		1	1		1
Heavy Vehicles (%)	17%	1%	0%	33%	1%	0%	7%	11%	0%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	82.0	82.0		82.0	82.0			18.0			18.0	
Effective Green, g (s)	83.0	83.0		83.0	83.0			19.0			19.0	
Actuated g/C Ratio	0.75	0.75		0.75	0.75			0.17			0.17	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)	267	1315		687	1410			232			251	
v/s Ratio Prot		0.10			c0.50							
v/s Ratio Perm	0.02			0.00				c0.03			0.01	
v/c Ratio	0.03	0.14		0.01	0.66			0.19			0.06	
Uniform Delay, d1	3.4	3.7		3.3	6.6			38.9			38.0	
Progression Factor	0.61	0.61		0.72	0.83			1.00			1.00	
Incremental Delay, d2	0.2	0.2		0.0	1.7			1.8			0.4	
Delay (s)	2.3	2.5		2.4	7.2			40.8			38.5	
Level of Service	A	A		A	A			D			D	
Approach Delay (s)		2.5			7.2			40.8			38.5	
Approach LOS		A			A			D			D	
Intersection Summary												
HCM Average Control Delay			8.5			HCM Level of Service				A		
HCM Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			65.5%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

Existing AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]
21: Memorial Drive & Bill Kennedy Way

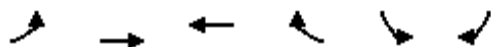
8/13/2010

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	130	64	67	666	262	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	11	12	12
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.95		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1648		1805	1818	1787	1575
Flt Permitted	1.00		0.59	1.00	0.95	1.00
Satd. Flow (perm)	1648		1117	1818	1787	1575
Peak-hour factor, PHF	0.76	0.67	0.84	0.90	0.90	0.81
Adj. Flow (vph)	171	96	80	740	291	159
RTOR Reduction (vph)	37	0	0	0	0	110
Lane Group Flow (vph)	230	0	80	740	291	49
Confl. Peds. (#/hr)						3
Heavy Vehicles (%)	2%	3%	0%	1%	1%	0%
Turn Type			Perm			Perm
Protected Phases	4			8	2	
Permitted Phases			8			2
Actuated Green, G (s)	29.0		29.0	29.0	16.0	16.0
Effective Green, g (s)	30.0		30.0	30.0	17.0	17.0
Actuated g/C Ratio	0.55		0.55	0.55	0.31	0.31
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	899		609	992	552	487
v/s Ratio Prot	0.14			c0.41	c0.16	
v/s Ratio Perm			0.07			0.03
v/c Ratio	0.26		0.13	0.75	0.53	0.10
Uniform Delay, d1	6.6		6.1	9.6	15.7	13.5
Progression Factor	0.66		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7		0.4	5.1	3.6	0.4
Delay (s)	5.1		6.6	14.7	19.3	14.0
Level of Service	A		A	B	B	B
Approach Delay (s)	5.1			13.9	17.4	
Approach LOS	A			B	B	
Intersection Summary						
HCM Average Control Delay			13.4		HCM Level of Service	B
HCM Volume to Capacity ratio			0.67			
Actuated Cycle Length (s)			55.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			56.2%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Existing AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

24: Glenwood Avenue & Bill Kennedy Way

8/13/2010



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	71	85	189	281	64	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	10	12
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		1.00	1.00		1.00	
Frpb, ped/bikes		1.00	0.98		0.98	
Flpb, ped/bikes		1.00	1.00		1.00	
Frt		1.00	0.92		0.92	
Flt Protected		0.98	1.00		0.98	
Satd. Flow (prot)		1718	1639		1522	
Flt Permitted		0.67	1.00		0.98	
Satd. Flow (perm)		1171	1639		1522	
Peak-hour factor, PHF	0.87	0.63	0.93	0.88	0.68	0.79
Adj. Flow (vph)	82	135	203	319	94	134
RTOR Reduction (vph)	0	0	123	0	84	0
Lane Group Flow (vph)	0	217	399	0	144	0
Confl. Peds. (#/hr)	6			6	6	5
Heavy Vehicles (%)	11%	1%	1%	1%	4%	3%
Turn Type	Perm					
Protected Phases		4	8		6	
Permitted Phases	4					
Actuated Green, G (s)		20.0	20.0		16.0	
Effective Green, g (s)		21.0	21.0		17.0	
Actuated g/C Ratio		0.46	0.46		0.37	
Clearance Time (s)		5.0	5.0		5.0	
Lane Grp Cap (vph)		535	748		562	
v/s Ratio Prot			c0.24		c0.09	
v/s Ratio Perm		0.19				
v/c Ratio		0.41	0.53		0.26	
Uniform Delay, d1		8.3	9.0		10.1	
Progression Factor		1.00	1.00		0.66	
Incremental Delay, d2		2.3	2.7		1.1	
Delay (s)		10.6	11.7		7.8	
Level of Service		B	B		A	
Approach Delay (s)		10.6	11.7		7.8	
Approach LOS		B	B		A	
Intersection Summary						
HCM Average Control Delay			10.5		HCM Level of Service	B
HCM Volume to Capacity ratio			0.41			
Actuated Cycle Length (s)			46.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			59.3%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Existing AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]
 33: I-20 WB Ramp & Bill Kennedy Way

8/13/2010



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	192	379	88	61
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.79	0.89	0.79	0.85
Hourly flow rate (vph)	0	0	243	426	111	72
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				420	930	
pX, platoon unblocked	0.97					
vC, conflicting volume	1059	147	183			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1045	147	183			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	82			
cM capacity (veh/h)	202	900	1380			
Direction, Lane #	NB 1	NB 2	SB 1			
Volume Total	243	426	183			
Volume Left	243	0	0			
Volume Right	0	0	72			
cSH	1380	1700	1700			
Volume to Capacity	0.18	0.25	0.11			
Queue Length 95th (ft)	16	0	0			
Control Delay (s)	8.2	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	3.0		0.0			
Approach LOS						
Intersection Summary						
Average Delay			2.3			
Intersection Capacity Utilization			37.2%	ICU Level of Service		A
Analysis Period (min)			15			

Existing AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]
 35: I-20 EB Ramp & Bill Kennedy Way

8/13/2010



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	124	144	0	449	92	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	10	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1770	1463		1739	1881	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1770	1463		1739	1881	
Peak-hour factor, PHF	0.69	0.89	0.92	0.88	0.58	0.92
Adj. Flow (vph)	180	162	0	510	159	0
RTOR Reduction (vph)	0	102	0	0	0	0
Lane Group Flow (vph)	180	60	0	510	159	0
Heavy Vehicles (%)	2%	3%	2%	2%	1%	1%
Turn Type	Perm					
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	16.0	16.0		20.0	20.0	
Effective Green, g (s)	17.0	17.0		21.0	21.0	
Actuated g/C Ratio	0.37	0.37		0.46	0.46	
Clearance Time (s)	5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	654	541		794	859	
v/s Ratio Prot	c0.10			c0.29	0.08	
v/s Ratio Perm		0.04				
v/c Ratio	0.28	0.11		0.64	0.19	
Uniform Delay, d1	10.2	9.5		9.6	7.4	
Progression Factor	1.00	1.00		0.68	1.00	
Incremental Delay, d2	1.0	0.4		3.6	0.5	
Delay (s)	11.2	9.9		10.2	7.9	
Level of Service	B	A		B	A	
Approach Delay (s)	10.6			10.2	7.9	
Approach LOS	B			B	A	
Intersection Summary						
HCM Average Control Delay			10.0		HCM Level of Service	A
HCM Volume to Capacity ratio			0.48			
Actuated Cycle Length (s)			46.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			37.2%		ICU Level of Service	A
Analysis Period (min)			15			

c Critical Lane Group

Existing AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

39: Decatur Street & Hilliard Street

8/13/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔		↔	↔			↔	↔
Volume (vph)	71	173	36	179	713	57	81	201	201	0	14	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	10	12	10	9	12	12	10	10
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	4.0
Lane Util. Factor		0.95			0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes		1.00			1.00		1.00	0.98			1.00	0.99
Flpb, ped/bikes		1.00			1.00		1.00	1.00			1.00	1.00
Frt		0.98			0.99		1.00	0.92			1.00	0.85
Flt Protected		0.99			0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)		3222			3258		1683	1543			1689	1488
Flt Permitted		0.65			0.80		0.74	1.00			1.00	1.00
Satd. Flow (perm)		2132			2619		1305	1543			1689	1488
Peak-hour factor, PHF	0.85	0.79	0.82	0.90	0.92	0.75	0.81	0.87	0.80	0.92	0.44	0.88
Adj. Flow (vph)	84	219	44	199	775	76	100	231	251	0	32	8
RTOR Reduction (vph)	0	24	0	0	13	0	0	85	0	0	0	5
Lane Group Flow (vph)	0	323	0	0	1038	0	100	397	0	0	32	3
Confl. Peds. (#/hr)	8		10	10		8	1		22	22		1
Heavy Vehicles (%)	1%	1%	0%	1%	1%	0%	0%	0%	1%	0%	5%	0%
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		20.0			20.0		16.0	16.0			16.0	16.0
Effective Green, g (s)		21.0			21.0		17.0	17.0			17.0	17.0
Actuated g/C Ratio		0.46			0.46		0.37	0.37			0.37	0.37
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	5.0
Lane Grp Cap (vph)		973			1196		482	570			624	550
v/s Ratio Prot							c0.26				0.02	
v/s Ratio Perm		0.15			c0.40		0.08					0.00
v/c Ratio		0.33			0.87		0.21	0.70			0.05	0.01
Uniform Delay, d1		8.0			11.2		9.9	12.3			9.3	9.2
Progression Factor		1.00			1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		0.9			8.6		1.0	6.9			0.2	0.0
Delay (s)		8.9			19.9		10.9	19.2			9.5	9.2
Level of Service		A			B		B	B			A	A
Approach Delay (s)		8.9			19.9			17.8			9.4	
Approach LOS		A			B			B			A	

Intersection Summary

HCM Average Control Delay	17.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	46.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Existing PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

8: Memorial Drive & Boulevard

8/13/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	73	288	96	91	133	41	59	334	47	153	722	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	9	9	12	10	9	12	11	10	12
Total Lost time (s)	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	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1787	1746		1608	1710	1583	1651	1588		1727	3192	
Flt Permitted	0.64	1.00		0.23	1.00	1.00	0.18	1.00		0.25	1.00	
Satd. Flow (perm)	1199	1746		394	1710	1583	313	1588		463	3192	
Peak-hour factor, PHF	0.73	0.87	0.86	0.81	0.85	0.79	0.82	0.87	0.78	0.87	0.84	0.70
Adj. Flow (vph)	100	331	112	112	156	52	72	384	60	176	860	96
RTOR Reduction (vph)	0	18	0	0	0	38	0	9	0	0	13	0
Lane Group Flow (vph)	100	425	0	112	156	14	72	435	0	176	943	0
Confl. Peds. (#/hr)			4	4			3		1	1		3
Heavy Vehicles (%)	1%	1%	0%	1%	0%	2%	2%	6%	0%	1%	4%	1%
Turn Type	pm+pt			pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	19.4	16.2		19.4	16.2	16.2	23.6	21.2		27.6	23.2	
Effective Green, g (s)	21.4	17.2		21.4	17.2	17.2	25.6	22.2		29.6	24.2	
Actuated g/C Ratio	0.33	0.26		0.33	0.26	0.26	0.39	0.34		0.46	0.37	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
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)	433	462		208	452	419	193	542		316	1188	
v/s Ratio Prot	0.01	c0.24		c0.03	0.09		0.02	0.27		c0.05	c0.30	
v/s Ratio Perm	0.06			0.14		0.01	0.13			0.21		
v/c Ratio	0.23	0.92		0.54	0.35	0.03	0.37	0.80		0.56	0.79	
Uniform Delay, d1	15.5	23.2		16.9	19.3	17.7	13.3	19.4		12.1	18.2	
Progression Factor	0.75	0.73		0.49	0.60	0.82	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	20.7		2.6	0.5	0.0	1.2	12.0		2.1	5.5	
Delay (s)	11.9	37.6		10.9	12.2	14.6	14.6	31.4		14.2	23.7	
Level of Service	B	D		B	B	B	B	C		B	C	
Approach Delay (s)		32.9			12.1			29.0			22.2	
Approach LOS		C			B			C			C	

Intersection Summary

















HCM Average Control Delay	24.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Existing PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

13: Wylie Street & Krog Street

8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	73	8	4	8	17	114	1	36	4	267	173	94
Peak Hour Factor	0.83	0.50	0.50	0.67	0.85	0.89	0.25	0.81	0.50	0.83	0.90	0.73
Hourly flow rate (vph)	88	16	8	12	20	128	4	44	8	322	192	129
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	112	160	56	643								
Volume Left (vph)	88	12	4	322								
Volume Right (vph)	8	128	8	129								
Hadj (s)	0.12	-0.47	-0.07	-0.02								
Departure Headway (s)	6.1	5.4	5.5	4.8								
Degree Utilization, x	0.19	0.24	0.09	0.85								
Capacity (veh/h)	552	614	601	742								
Control Delay (s)	10.5	10.2	9.1	28.6								
Approach Delay (s)	10.5	10.2	9.1	28.6								
Approach LOS	B	B	A	D								
Intersection Summary												
Delay			22.4									
HCM Level of Service			C									
Intersection Capacity Utilization			61.5%	ICU Level of Service		B						
Analysis Period (min)			15									

Existing PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

16: Memorial Drive & Grant Street

8/13/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	451	3	4	194	37	2	5	5	147	22	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	9	11	12	9	11	12	12	15	12	12	15	12
Total Lost time (s)	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	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Frt	1.00	1.00		1.00	0.97			0.95			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.97	
Satd. Flow (prot)	1623	1814		1623	1764			1934			1936	
Flt Permitted	0.56	1.00		0.34	1.00			0.95			0.79	
Satd. Flow (perm)	954	1814		576	1764			1854			1576	
Peak-hour factor, PHF	0.81	0.83	0.38	0.33	0.85	0.66	0.50	0.63	0.63	0.88	0.79	0.84
Adj. Flow (vph)	80	543	8	12	228	56	4	8	8	167	28	56
RTOR Reduction (vph)	0	1	0	0	13	0	0	5	0	0	16	0
Lane Group Flow (vph)	80	550	0	12	271	0	0	15	0	0	235	0
Confl. Peds. (#/hr)	1		1	1		1			5	5		
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	1%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	34.0	34.0		34.0	34.0			21.0			21.0	
Effective Green, g (s)	35.0	35.0		35.0	35.0			22.0			22.0	
Actuated g/C Ratio	0.54	0.54		0.54	0.54			0.34			0.34	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)	514	977		310	950			628			533	
v/s Ratio Prot		c0.30			0.15							
v/s Ratio Perm	0.08			0.02				0.01			c0.15	
v/c Ratio	0.16	0.56		0.04	0.28			0.02			0.44	
Uniform Delay, d1	7.6	9.9		7.1	8.2			14.3			16.7	
Progression Factor	1.00	1.00		0.73	0.70			1.00			1.00	
Incremental Delay, d2	0.6	2.3		0.2	0.7			0.1			2.6	
Delay (s)	8.2	12.3		5.3	6.4			14.4			19.4	
Level of Service	A	B		A	A			B			B	
Approach Delay (s)		11.8			6.3			14.4			19.4	
Approach LOS		B			A			B			B	

Intersection Summary

HCM Average Control Delay	12.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Existing PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

17: Memorial Drive & Pearl Street

8/13/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	587	5	3	220	8	3	1	3	27	2	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	12	12	10	10	10	10	10	10	10
Total Lost time (s)	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	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.98			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Frt	1.00	1.00		1.00	0.99			0.92			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.97	
Satd. Flow (prot)	1740	1750		1805	1864			1582			1601	
Flt Permitted	0.57	1.00		0.31	1.00			0.97			0.86	
Satd. Flow (perm)	1037	1750		582	1864			1542			1418	
Peak-hour factor, PHF	0.42	0.94	0.63	0.25	0.81	0.50	0.75	0.25	0.25	0.75	0.50	0.45
Adj. Flow (vph)	12	624	8	12	272	16	4	4	12	36	4	20
RTOR Reduction (vph)	0	1	0	0	3	0	0	8	0	0	14	0
Lane Group Flow (vph)	12	631	0	12	285	0	0	12	0	0	46	0
Confl. Peds. (#/hr)	2					2	1		6	6		1
Heavy Vehicles (%)	0%	1%	11%	0%	1%	0%	0%	0%	0%	2%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases	4			8			2			6		
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	37.0	37.0		37.0	37.0			18.0			18.0	
Effective Green, g (s)	38.0	38.0		38.0	38.0			19.0			19.0	
Actuated g/C Ratio	0.58	0.58		0.58	0.58			0.29			0.29	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)	606	1023		340	1090			451			414	
v/s Ratio Prot	c0.36			0.15								
v/s Ratio Perm	0.01			0.02				0.01			c0.03	
v/c Ratio	0.02	0.62		0.04	0.26			0.03			0.11	
Uniform Delay, d1	5.7	8.8		5.7	6.6			16.4			16.8	
Progression Factor	0.68	0.53		1.23	1.24			1.00			1.00	
Incremental Delay, d2	0.0	2.0		0.2	0.6			0.1			0.5	
Delay (s)	3.9	6.6		7.2	8.8			16.5			17.4	
Level of Service	A	A		A	A			B			B	
Approach Delay (s)	6.6			8.7			16.5			17.4		
Approach LOS	A			A			B			B		

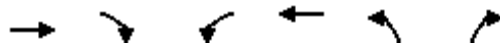
Intersection Summary

HCM Average Control Delay	8.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Existing PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

21: Memorial Drive & Bill Kennedy Way

8/13/2010



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	↩
Volume (vph)	435	286	144	208	83	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	11	12	12
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.99		1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.94		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1636		1787	1818	1736	1538
Flt Permitted	1.00		0.29	1.00	0.95	1.00
Satd. Flow (perm)	1636		548	1818	1736	1538
Peak-hour factor, PHF	0.92	0.86	0.60	0.85	0.83	0.86
Adj. Flow (vph)	473	333	240	245	100	100
RTOR Reduction (vph)	19	0	0	0	0	84
Lane Group Flow (vph)	787	0	240	245	100	16
Confl. Peds. (#/hr)		3	3			7
Heavy Vehicles (%)	1%	1%	1%	1%	4%	0%
Turn Type			Perm			Perm
Protected Phases	4			8	2	
Permitted Phases			8			2
Actuated Green, G (s)	100.0		100.0	100.0	20.0	20.0
Effective Green, g (s)	101.0		101.0	101.0	21.0	21.0
Actuated g/C Ratio	0.78		0.78	0.78	0.16	0.16
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	1271		426	1412	280	248
v/s Ratio Prot	c0.48			0.13	c0.06	
v/s Ratio Perm			0.44			0.01
v/c Ratio	0.62		0.56	0.17	0.36	0.07
Uniform Delay, d1	6.2		5.8	3.7	48.5	46.2
Progression Factor	0.34		1.00	1.00	1.00	1.00
Incremental Delay, d2	2.0		5.3	0.3	3.5	0.5
Delay (s)	4.1		11.1	4.0	52.0	46.7
Level of Service	A		B	A	D	D
Approach Delay (s)	4.1			7.5	49.4	
Approach LOS	A			A	D	
Intersection Summary						
HCM Average Control Delay			11.3		HCM Level of Service	B
HCM Volume to Capacity ratio			0.57			
Actuated Cycle Length (s)			130.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			71.8%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

Existing PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

24: Glenwood Avenue & Bill Kennedy Way

8/13/2010



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	57	119	81	115	321	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	10	12
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		1.00	1.00		1.00	
Frpb, ped/bikes		1.00	0.99		0.99	
Flpb, ped/bikes		1.00	1.00		1.00	
Frt		1.00	0.93		0.98	
Flt Protected		0.98	1.00		0.96	
Satd. Flow (prot)		1805	1691		1632	
Flt Permitted		0.83	1.00		0.96	
Satd. Flow (perm)		1524	1691		1632	
Peak-hour factor, PHF	0.90	0.93	0.61	0.85	0.82	0.93
Adj. Flow (vph)	63	128	133	135	391	74
RTOR Reduction (vph)	0	0	73	0	14	0
Lane Group Flow (vph)	0	191	195	0	451	0
Confl. Peds. (#/hr)	3			3	7	21
Heavy Vehicles (%)	0%	0%	0%	0%	1%	2%
Turn Type	Perm					
Protected Phases		4	8		6	
Permitted Phases	4					
Actuated Green, G (s)		17.0	17.0		23.0	
Effective Green, g (s)		18.0	18.0		24.0	
Actuated g/C Ratio		0.36	0.36		0.48	
Clearance Time (s)		5.0	5.0		5.0	
Lane Grp Cap (vph)		549	609		783	
v/s Ratio Prot			0.12		c0.28	
v/s Ratio Perm		c0.13				
v/c Ratio		0.35	0.32		0.58	
Uniform Delay, d1		11.7	11.6		9.3	
Progression Factor		1.00	1.00		0.62	
Incremental Delay, d2		1.7	1.4		2.9	
Delay (s)		13.4	13.0		8.7	
Level of Service		B	B		A	
Approach Delay (s)		13.4	13.0		8.7	
Approach LOS		B	B		A	
Intersection Summary						
HCM Average Control Delay			10.9		HCM Level of Service	B
HCM Volume to Capacity ratio			0.48			
Actuated Cycle Length (s)			50.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			55.1%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Existing PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]
 33: I-20 WB Ramp & Bill Kennedy Way

8/13/2010



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	133	159	247	164
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.81	0.86	0.87	0.66
Hourly flow rate (vph)	0	0	164	185	284	248
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				420	930	
pX, platoon unblocked						
vC, conflicting volume	921	408	532			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	921	408	532			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	84			
cM capacity (veh/h)	253	643	1045			
Direction, Lane #	NB 1	NB 2	SB 1			
Volume Total	164	185	532			
Volume Left	164	0	0			
Volume Right	0	0	248			
cSH	1045	1700	1700			
Volume to Capacity	0.16	0.11	0.31			
Queue Length 95th (ft)	14	0	0			
Control Delay (s)	9.1	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	4.3		0.0			
Approach LOS						
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization			37.0%	ICU Level of Service		A
Analysis Period (min)			15			

Existing PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]
 35: I-20 EB Ramp & Bill Kennedy Way

8/13/2010



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	92	222	0	189	279	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	10	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1736	1492		1773	1881	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1736	1492		1773	1881	
Peak-hour factor, PHF	0.79	0.96	0.92	0.93	0.92	0.92
Adj. Flow (vph)	116	231	0	203	303	0
RTOR Reduction (vph)	0	129	0	0	0	0
Lane Group Flow (vph)	116	102	0	203	303	0
Heavy Vehicles (%)	4%	1%	0%	0%	1%	0%
Turn Type	Perm					
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	21.0	21.0		19.0	19.0	
Effective Green, g (s)	22.0	22.0		20.0	20.0	
Actuated g/C Ratio	0.44	0.44		0.40	0.40	
Clearance Time (s)	5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	764	656		709	752	
v/s Ratio Prot	0.07			0.11	0.16	
v/s Ratio Perm		0.07				
v/c Ratio	0.15	0.15		0.29	0.40	
Uniform Delay, d1	8.4	8.4		10.2	10.7	
Progression Factor	1.00	1.00		0.55	1.00	
Incremental Delay, d2	0.4	0.5		1.0	1.6	
Delay (s)	8.8	8.9		6.5	12.3	
Level of Service	A	A		A	B	
Approach Delay (s)	8.9			6.5	12.3	
Approach LOS	A			A	B	

Intersection Summary



















HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	37.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Existing PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

39: Decatur Street & Hilliard Street

8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	21	664	36	225	321	15	21	31	210	0	21	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	10	12	10	9	12	12	10	10
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	4.0
Lane Util. Factor		0.95			0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes		1.00			1.00		1.00	0.97			1.00	0.98
Flpb, ped/bikes		1.00			1.00		1.00	1.00			1.00	1.00
Frt		0.99			0.99		1.00	0.87			1.00	0.85
Flt Protected		1.00			0.98		0.95	1.00			1.00	1.00
Satd. Flow (prot)		3301			3250		1678	1443			1773	1484
Flt Permitted		0.92			0.57		0.74	1.00			1.00	1.00
Satd. Flow (perm)		3029			1893		1306	1443			1773	1484
Peak-hour factor, PHF	0.66	0.95	0.90	0.88	0.94	0.38	0.53	0.86	0.77	0.92	0.75	0.58
Adj. Flow (vph)	32	699	40	256	341	39	40	36	273	0	28	12
RTOR Reduction (vph)	0	8	0	0	9	0	0	119	0	0	0	8
Lane Group Flow (vph)	0	763	0	0	627	0	40	190	0	0	28	4
Confl. Peds. (#/hr)	10		3	3		10	4		20	20		4
Heavy Vehicles (%)	0%	1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		25.0			25.0		16.0	16.0			16.0	16.0
Effective Green, g (s)		26.0			26.0		17.0	17.0			17.0	17.0
Actuated g/C Ratio		0.51			0.51		0.33	0.33			0.33	0.33
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	5.0
Lane Grp Cap (vph)		1544			965		435	481			591	495
v/s Ratio Prot								c0.13			0.02	
v/s Ratio Perm		0.25			c0.33		0.03					0.00
v/c Ratio		0.49			0.88dl		0.09	0.40			0.05	0.01
Uniform Delay, d1		8.2			9.2		11.7	13.1			11.5	11.4
Progression Factor		1.00			1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		1.1			3.4		0.4	2.4			0.2	0.0
Delay (s)		9.3			12.5		12.1	15.5			11.7	11.4
Level of Service		A			B		B	B			B	B
Approach Delay (s)		9.3			12.5			15.1			11.6	
Approach LOS		A			B			B			B	

Intersection Summary

HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	51.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		
dl Defacto Left Lane. Recode with 1 though lane as a left lane.			
c Critical Lane Group			























Appendix A

Synchro Reports: Baseline Analysis

Baseline 2020 AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

8: Memorial Drive & Boulevard

8/13/2010

















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	82	145	21	61	575	203	547	788	21	33	210	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	9	9	12	10	9	12	11	10	12
Total Lost time (s)	4.0	4.0		4.0	4.0	5.0	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	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1766		1620	1693	1599	1665	1668		1745	3018	
Flt Permitted	0.11	1.00		0.57	1.00	1.00	0.38	1.00		0.19	1.00	
Satd. Flow (perm)	212	1766		965	1693	1599	674	1668		347	3018	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	89	158	23	66	625	221	595	857	23	36	228	64
RTOR Reduction (vph)	0	5	0	0	0	102	0	1	0	0	23	0
Lane Group Flow (vph)	89	176	0	66	625	119	595	879	0	36	269	0
Confl. Peds. (#/hr)			4	4			3		1	1		3
Heavy Vehicles (%)	0%	2%	0%	0%	1%	1%	1%	2%	5%	0%	9%	1%
Turn Type	pm+pt			pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	38.0	34.8		38.0	34.8	34.8	57.0	49.6		22.6	20.2	
Effective Green, g (s)	40.0	35.8		40.0	35.8	34.8	58.0	50.6		24.6	21.2	
Actuated g/C Ratio	0.36	0.33		0.36	0.33	0.32	0.53	0.46		0.22	0.19	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
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)	138	575		376	551	506	651	767		121	582	
v/s Ratio Prot	c0.02	0.10		0.01	c0.37		c0.27	c0.53		0.01	0.09	
v/s Ratio Perm	0.21			0.06		0.07	0.21			0.06		
v/c Ratio	0.64	0.31		0.18	1.13	0.24	0.91	1.15		0.30	0.46	
Uniform Delay, d1	28.3	27.8		23.3	37.1	27.8	19.9	29.7		35.2	39.4	
Progression Factor	1.05	1.04		0.56	0.63	0.56	1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.9	0.3		0.1	74.4	0.2	17.4	80.7		1.4	2.6	
Delay (s)	39.6	29.3		13.1	97.8	15.7	37.3	110.4		36.6	42.0	
Level of Service	D	C		B	F	B	D	F		D	D	
Approach Delay (s)		32.7			71.8			80.9			41.4	
Approach LOS		C			E			F			D	
Intersection Summary												
HCM Average Control Delay			69.4			HCM Level of Service			E			
HCM Volume to Capacity ratio			1.13									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			94.2%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group

Baseline 2020 AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

13: Wylie Street & Krog Street

8/13/2010







												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	116	6	3	1	14	323	1	150	1	70	24	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	126	7	3	1	15	351	1	163	1	76	26	26
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	136	367	165	128								
Volume Left (vph)	126	1	1	76								
Volume Right (vph)	3	351	1	26								
Hadj (s)	0.17	-0.57	0.00	0.00								
Departure Headway (s)	5.4	4.3	5.3	5.4								
Degree Utilization, x	0.20	0.44	0.24	0.19								
Capacity (veh/h)	616	784	608	601								
Control Delay (s)	9.7	10.8	10.0	9.6								
Approach Delay (s)	9.7	10.8	10.0	9.6								
Approach LOS	A	B	B	A								
Intersection Summary												
Delay				10.2								
HCM Level of Service				B								
Intersection Capacity Utilization				57.2%	ICU Level of Service	B						
Analysis Period (min)				15								

Baseline 2020 AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

16: Memorial Drive & Grant Street

8/13/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	152	0	2	1140	163	14	39	2	39	6	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	9	11	12	9	11	12	12	15	12	12	15	12
Total Lost time (s)	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	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.98	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			1.00			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1624	1818		1611	1781			2025			1858	
Flt Permitted	0.05	1.00		0.65	1.00			0.93			0.88	
Satd. Flow (perm)	80	1818		1107	1781			1909			1670	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	165	0	2	1239	177	15	42	2	42	7	59
RTOR Reduction (vph)	0	0	0	0	5	0	0	1	0	0	40	0
Lane Group Flow (vph)	54	165	0	2	1411	0	0	58	0	0	68	0
Confl. Peds. (#/hr)	1		3	3		1	3					3
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	5%	0%	0%	0%	0%	1%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases	4			8			2			6		
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	84.0	84.0		84.0	84.0			16.0			16.0	
Effective Green, g (s)	85.0	85.0		85.0	85.0			17.0			17.0	
Actuated g/C Ratio	0.77	0.77		0.77	0.77			0.15			0.15	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)	62	1405		855	1376			295			258	
v/s Ratio Prot	0.09			c0.79								
v/s Ratio Perm	0.67			0.00				0.03			c0.04	
v/c Ratio	0.87	0.12		0.00	1.03			0.20			0.26	
Uniform Delay, d1	8.7	3.1		2.8	12.5			40.5			41.0	
Progression Factor	1.00	1.00		0.80	0.53			1.00			0.81	
Incremental Delay, d2	81.5	0.2		0.0	22.9			1.5			1.7	
Delay (s)	90.2	3.3		2.3	29.6			42.0			35.0	
Level of Service	F	A		A	C			D			D	
Approach Delay (s)	24.7			29.5			42.0			35.0		
Approach LOS	C			C			D			D		
Intersection Summary												
HCM Average Control Delay			29.7		HCM Level of Service				C			
HCM Volume to Capacity ratio			0.90									
Actuated Cycle Length (s)			110.0		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			89.9%		ICU Level of Service				E			
Analysis Period (min)			15									
c Critical Lane Group												

Baseline 2020 AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

17: Memorial Drive & Pearl Street

8/13/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	191	8	3	932	34	23	12	5	24	5	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	12	12	10	10	10	10	10	10	10
Total Lost time (s)	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	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			0.98			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.97	
Satd. Flow (prot)	1491	1744		1353	1872			1572			1625	
Flt Permitted	0.12	1.00		0.62	1.00			0.85			0.86	
Satd. Flow (perm)	195	1744		879	1872			1370			1432	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	208	9	3	1013	37	25	13	5	26	5	18
RTOR Reduction (vph)	0	2	0	0	1	0	0	4	0	0	15	0
Lane Group Flow (vph)	9	215	0	3	1049	0	0	39	0	0	34	0
Confl. Peds. (#/hr)			2	2			1		1	1		1
Heavy Vehicles (%)	17%	1%	0%	33%	1%	0%	7%	11%	0%	0%	0%	0%
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	76.0	75.2		76.0	75.2			19.0			19.0	
Effective Green, g (s)	78.0	76.2		78.0	76.2			20.0			20.0	
Actuated g/C Ratio	0.71	0.69		0.71	0.69			0.18			0.18	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	159	1208		631	1297			249			260	
v/s Ratio Prot	c0.00	0.12		0.00	c0.56							
v/s Ratio Perm	0.04			0.00				c0.03			0.02	
v/c Ratio	0.06	0.18		0.00	0.81			0.16			0.13	
Uniform Delay, d1	13.4	5.9		4.7	11.8			37.9			37.7	
Progression Factor	1.36	1.82		0.14	0.09			1.00			1.00	
Incremental Delay, d2	0.1	0.1		0.0	2.2			1.3			1.0	
Delay (s)	18.3	10.9		0.7	3.2			39.2			38.8	
Level of Service	B	B		A	A			D			D	
Approach Delay (s)		11.2			3.2			39.2			38.8	
Approach LOS		B			A			D			D	

Intersection Summary

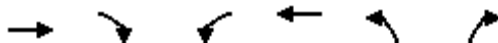
HCM Average Control Delay	6.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Baseline 2020 AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

21: Memorial Drive & Bill Kennedy Way

8/13/2010



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰		↱	↱	↱	↱
Volume (vph)	195	77	79	753	292	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	11	12	12
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.96		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1667		1805	1818	1787	1566
Flt Permitted	1.00		0.53	1.00	0.95	1.00
Satd. Flow (perm)	1667		1007	1818	1787	1566
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	212	84	86	818	317	167
RTOR Reduction (vph)	15	0	0	0	0	78
Lane Group Flow (vph)	281	0	86	818	317	89
Confl. Peds. (#/hr)						3
Heavy Vehicles (%)	2%	3%	0%	1%	1%	0%
Turn Type			Perm			Perm
Protected Phases	4			8	2	
Permitted Phases			8			2
Actuated Green, G (s)	61.7		61.7	61.7	38.3	38.3
Effective Green, g (s)	62.7		62.7	62.7	39.3	39.3
Actuated g/C Ratio	0.57		0.57	0.57	0.36	0.36
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	950		574	1036	638	559
v/s Ratio Prot	0.17			c0.45	c0.18	
v/s Ratio Perm			0.09			0.06
v/c Ratio	0.30		0.15	0.79	0.50	0.16
Uniform Delay, d1	12.2		11.1	18.5	27.6	24.1
Progression Factor	0.49		0.19	0.45	0.72	0.56
Incremental Delay, d2	0.2		0.1	3.2	2.6	0.6
Delay (s)	6.2		2.2	11.5	22.5	14.0
Level of Service	A		A	B	C	B
Approach Delay (s)	6.2			10.6	19.5	
Approach LOS	A			B	B	

Intersection Summary

HCM Average Control Delay	12.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Baseline 2020 AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]
 24: Glenwood Avenue & Bill Kennedy Way

8/13/2010























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	78	110	216	315	90	137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	10	12
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		1.00	1.00		1.00	
Frpb, ped/bikes		1.00	0.98		0.98	
Flpb, ped/bikes		1.00	1.00		1.00	
Frt		1.00	0.92		0.92	
Flt Protected		0.98	1.00		0.98	
Satd. Flow (prot)		1709	1643		1518	
Flt Permitted		0.63	1.00		0.98	
Satd. Flow (perm)		1105	1643		1518	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	85	120	235	342	98	149
RTOR Reduction (vph)	0	0	95	0	98	0
Lane Group Flow (vph)	0	205	482	0	149	0
Confl. Peds. (#/hr)	6			6	6	5
Heavy Vehicles (%)	11%	1%	1%	1%	4%	3%
Turn Type	Perm					
Protected Phases		4	8		6	
Permitted Phases	4					
Actuated Green, G (s)		27.0	27.0		18.0	
Effective Green, g (s)		28.0	28.0		19.0	
Actuated g/C Ratio		0.51	0.51		0.35	
Clearance Time (s)		5.0	5.0		5.0	
Lane Grp Cap (vph)		563	836		524	
v/s Ratio Prot			c0.29		c0.10	
v/s Ratio Perm		0.19				
v/c Ratio		0.36	0.58		0.29	
Uniform Delay, d1		8.1	9.4		13.1	
Progression Factor		1.00	1.00		0.50	
Incremental Delay, d2		1.8	2.9		1.3	
Delay (s)		10.0	12.3		7.8	
Level of Service		A	B		A	
Approach Delay (s)		10.0	12.3		7.8	
Approach LOS		A	B		A	
Intersection Summary						
HCM Average Control Delay			10.7		HCM Level of Service	B
HCM Volume to Capacity ratio			0.46			
Actuated Cycle Length (s)			55.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			64.9%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

Baseline 2020 AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

25: Memorial Drive & New Street A


8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	218	1	2	965	4	1	0	3	10	0	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1862		1770	1862		1770	1583		1770	1583	
Flt Permitted	0.12	1.00		0.61	1.00		0.76	1.00		0.76	1.00	
Satd. Flow (perm)	218	1862		1132	1862		1408	1583		1408	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	237	1	2	1049	4	1	0	3	11	0	3
RTOR Reduction (vph)	0	0	0	0	0	0	0	2	0	0	2	0
Lane Group Flow (vph)	2	238	0	2	1053	0	1	1	0	11	1	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	75.8	75.0		75.8	75.0		19.2	19.2		19.2	19.2	
Effective Green, g (s)	75.8	75.0		75.8	75.0		19.2	19.2		19.2	19.2	
Actuated g/C Ratio	0.69	0.68		0.69	0.68		0.17	0.17		0.17	0.17	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	162	1270		785	1270		246	276		246	276	
v/s Ratio Prot	c0.00	0.13		0.00	c0.57			0.00			0.00	
v/s Ratio Perm	0.01			0.00			0.00			c0.01		
v/c Ratio	0.01	0.19		0.00	0.83		0.00	0.00		0.04	0.00	
Uniform Delay, d1	14.3	6.4		5.3	12.8		37.5	37.5		37.8	37.5	
Progression Factor	0.54	0.44		0.33	0.18		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.1		0.0	2.5		0.0	0.0		0.3	0.0	
Delay (s)	7.7	2.9		1.8	4.8		37.5	37.5		38.1	37.5	
Level of Service	A	A		A	A		D	D		D	D	
Approach Delay (s)		2.9			4.8			37.5			38.0	
Approach LOS		A			A			D			D	
Intersection Summary												
HCM Average Control Delay			4.9			HCM Level of Service				A		
HCM Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			66.6%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

Baseline 2020 AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

33: I-20 WB Ramp & Bill Kennedy Way

8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	0	0	217	437	0	0	113	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	11	12	12	11	12
Total Lost time (s)							5.0	5.0			5.0	
Lane Util. Factor							1.00	1.00			1.00	
Frt							1.00	1.00			0.95	
Flt Protected							0.95	1.00			1.00	
Satd. Flow (prot)							1736	1818			1670	
Flt Permitted							0.63	1.00			1.00	
Satd. Flow (perm)							1149	1818			1670	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	236	475	0	0	123	83
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	20	0
Lane Group Flow (vph)	0	0	0	0	0	0	236	475	0	0	186	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	1%	2%	2%	4%	4%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)							84.0	84.0			84.0	
Effective Green, g (s)							84.0	84.0			84.0	
Actuated g/C Ratio							0.76	0.76			0.76	
Clearance Time (s)							5.0	5.0			5.0	
Lane Grp Cap (vph)							877	1388			1275	
v/s Ratio Prot								c0.26			0.11	
v/s Ratio Perm							0.21					
v/c Ratio							0.27	0.34			0.15	
Uniform Delay, d1							3.9	4.2			3.5	
Progression Factor							0.95	0.93			1.10	
Incremental Delay, d2							0.7	0.6			0.2	
Delay (s)							4.4	4.5			4.0	
Level of Service							A	A			A	
Approach Delay (s)		0.0			0.0			4.4			4.0	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM Average Control Delay			4.3				HCM Level of Service				A	
HCM Volume to Capacity ratio			0.34									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)			26.0		
Intersection Capacity Utilization			41.3%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

Baseline 2020 AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

35: I-20 EB Ramp & Bill Kennedy Way

8/13/2010



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	131	158	0	521	117	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	10	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1770	1463		1739	1881	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1770	1463		1739	1881	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	142	172	0	566	127	0
RTOR Reduction (vph)	0	131	0	0	0	0
Lane Group Flow (vph)	142	41	0	566	127	0
Heavy Vehicles (%)	2%	3%	2%	2%	1%	1%
Turn Type	Perm					
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	25.0	25.0		75.0	75.0	
Effective Green, g (s)	26.0	26.0		76.0	76.0	
Actuated g/C Ratio	0.24	0.24		0.69	0.69	
Clearance Time (s)	5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	418	346		1201	1300	
v/s Ratio Prot	c0.08			c0.33	0.07	
v/s Ratio Perm		0.03				
v/c Ratio	0.34	0.12		0.47	0.10	
Uniform Delay, d1	34.9	33.0		7.8	5.6	
Progression Factor	1.00	1.00		0.29	1.70	
Incremental Delay, d2	2.2	0.7		1.3	0.1	
Delay (s)	37.1	33.7		3.5	9.7	
Level of Service	D	C		A	A	
Approach Delay (s)	35.2			3.5	9.7	
Approach LOS	D			A	A	

Intersection Summary


HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Baseline 2020 AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

39: Decatur Street & Hilliard Street



















8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔		↔	↔			↔	↔
Volume (vph)	75	182	40	190	749	60	89	212	215	0	15	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	10	12	10	9	12	12	10	10
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	4.0
Lane Util. Factor		0.95			0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes		1.00			1.00		1.00	0.98			1.00	0.99
Flpb, ped/bikes		1.00			1.00		1.00	1.00			1.00	1.00
Frt		0.98			0.99		1.00	0.92			1.00	0.85
Flt Protected		0.99			0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)		3215			3263		1683	1546			1689	1488
Flt Permitted		0.65			0.80		0.75	1.00			1.00	1.00
Satd. Flow (perm)		2108			2630		1323	1546			1689	1488
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	198	43	207	814	65	97	230	234	0	16	8
RTOR Reduction (vph)	0	22	0	0	8	0	0	67	0	0	0	5
Lane Group Flow (vph)	0	301	0	0	1078	0	97	397	0	0	16	3
Confl. Peds. (#/hr)	8		10	10		8	1		22	22		1
Heavy Vehicles (%)	1%	1%	0%	1%	1%	0%	0%	0%	1%	0%	5%	0%
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		26.0			26.0		19.0	19.0			19.0	19.0
Effective Green, g (s)		27.0			27.0		20.0	20.0			20.0	20.0
Actuated g/C Ratio		0.49			0.49		0.36	0.36			0.36	0.36
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	5.0
Lane Grp Cap (vph)		1035			1291		481	562			614	541
v/s Ratio Prot							c0.26				0.01	
v/s Ratio Perm		0.14			c0.41		0.07					0.00
v/c Ratio		0.29			0.83		0.20	0.71			0.03	0.01
Uniform Delay, d1		8.3			12.1		12.0	15.0			11.2	11.2
Progression Factor		1.00			1.00		0.99	1.00			1.00	1.00
Incremental Delay, d2		0.7			6.5		0.9	6.8			0.1	0.0
Delay (s)		9.0			18.6		12.8	21.8			11.3	11.2
Level of Service		A			B		B	C			B	B
Approach Delay (s)		9.0			18.6			20.2			11.3	
Approach LOS		A			B			C			B	
Intersection Summary												
HCM Average Control Delay			17.4			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			55.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			76.9%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

Baseline 2020 AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

48: Memorial Drive & Chester Avenue





















8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	218	7	28	969	44	22	8	18	21	0	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.95			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1770	1854		1770	1851			1729			1707	
Flt Permitted	0.09	1.00		0.59	1.00			0.88			0.85	
Satd. Flow (perm)	159	1854		1092	1851			1548			1484	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	237	8	30	1053	48	24	9	20	23	0	17
RTOR Reduction (vph)	0	1	0	0	2	0	0	16	0	0	14	0
Lane Group Flow (vph)	9	244	0	30	1099	0	0	37	0	0	26	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	73.3	72.5		76.5	74.1			20.1			20.1	
Effective Green, g (s)	73.3	72.5		76.5	74.1			20.1			20.1	
Actuated g/C Ratio	0.67	0.66		0.70	0.67			0.18			0.18	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	118	1222		774	1247			283			271	
v/s Ratio Prot	0.00	0.13		c0.00	c0.59							
v/s Ratio Perm	0.05			0.03				c0.02			0.02	
v/c Ratio	0.08	0.20		0.04	0.88			0.13			0.10	
Uniform Delay, d1	17.7	7.4		5.2	14.4			37.6			37.4	
Progression Factor	0.45	0.40		0.80	0.59			1.00			1.00	
Incremental Delay, d2	0.3	0.1		0.0	5.9			0.9			0.7	
Delay (s)	8.2	3.0		4.2	14.4			38.6			38.1	
Level of Service	A	A		A	B			D			D	
Approach Delay (s)		3.2			14.1			38.6			38.1	
Approach LOS		A			B			D			D	
Intersection Summary												
HCM Average Control Delay			13.8			HCM Level of Service					B	
HCM Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			65.3%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

Baseline 2020 AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

61: Memorial Drive & Holtzclaw Street





















8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	336	0	3	814	6	0	0	4	20	0	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00			0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863		1770	1861			1583		1770	1583	
Flt Permitted	0.19	1.00		0.51	1.00			1.00		0.76	1.00	
Satd. Flow (perm)	363	1863		955	1861			1583		1407	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	365	0	3	885	7	0	0	4	22	0	15
RTOR Reduction (vph)	0	0	0	0	0	0	0	3	0	0	11	0
Lane Group Flow (vph)	3	365	0	3	892	0	0	1	0	22	4	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases	4			8			2			6		
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	73.7	73.7		73.7	73.7			26.3		26.3	26.3	
Effective Green, g (s)	73.7	73.7		73.7	73.7			26.3		26.3	26.3	
Actuated g/C Ratio	0.67	0.67		0.67	0.67			0.24		0.24	0.24	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	243	1248		640	1247			378		336	378	
v/s Ratio Prot		0.20			c0.48			0.00			0.00	
v/s Ratio Perm	0.01			0.00						c0.02		
v/c Ratio	0.01	0.29		0.00	0.72			0.00		0.07	0.01	
Uniform Delay, d1	6.0	7.4		6.0	11.5			31.9		32.4	31.9	
Progression Factor	0.53	0.45		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.1		0.0	2.0			0.0		0.4	0.0	
Delay (s)	3.2	3.5		6.0	13.5			31.9		32.7	32.0	
Level of Service	A	A		A	B			C		C	C	
Approach Delay (s)		3.5			13.4			31.9			32.4	
Approach LOS		A			B			C			C	
Intersection Summary												
HCM Average Control Delay			11.2		HCM Level of Service			B				
HCM Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			110.0		Sum of lost time (s)			10.0				
Intersection Capacity Utilization			59.3%		ICU Level of Service			B				
Analysis Period (min)			15									
c Critical Lane Group												

Baseline 2020 AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]












67: Memorial Drive & Gibson Street

8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	358	0	3	813	6	0	0	4	18	0	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	389	0	3	884	7	0	0	4	20	0	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		315			379							
pX, platoon unblocked				0.92			0.92	0.92	0.92	0.92	0.92	
vC, conflicting volume	890			389			1293	1290	389	1291	1287	887
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	890			291			1275	1272	291	1273	1268	887
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	99	85	100	97
cM capacity (veh/h)	761			1168			128	153	688	131	154	343
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	2	389	3	890	0	4	20	10				
Volume Left	2	0	3	0	0	0	20	0				
Volume Right	0	0	0	7	0	4	0	10				
cSH	761	1700	1168	1700	1700	688	131	343				
Volume to Capacity	0.00	0.23	0.00	0.52	0.00	0.01	0.15	0.03				
Queue Length 95th (ft)	0	0	0	0	0	0	13	2				
Control Delay (s)	9.7	0.0	8.1	0.0	0.0	10.3	37.2	15.8				
Lane LOS	A		A		A	B	E	C				
Approach Delay (s)	0.1		0.0		10.3		30.1					
Approach LOS					B		D					
Intersection Summary												
Average Delay			0.7									
Intersection Capacity Utilization			57.5%		ICU Level of Service			B				
Analysis Period (min)			15									

Baseline 2020 AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]
101: Memorial Drive & New Street B























8/13/2010

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	230	1	2	969	1	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	250	1	2	1053	1	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)	313			274		
pX, platoon unblocked			0.96		0.36	0.96
vC, conflicting volume			251		1308	251
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			195		708	194
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	100
cM capacity (veh/h)			1319		146	811
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	
Volume Total	251	2	1053	1	3	
Volume Left	0	2	0	1	0	
Volume Right	1	0	0	0	3	
cSH	1700	1319	1700	146	811	
Volume to Capacity	0.15	0.00	0.62	0.01	0.00	
Queue Length 95th (ft)	0	0	0	1	0	
Control Delay (s)	0.0	7.7	0.0	29.8	9.5	
Lane LOS		A		D	A	
Approach Delay (s)	0.0	0.0		14.5		
Approach LOS				B		
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			61.0%	ICU Level of Service		B
Analysis Period (min)			15			

Baseline 2020 PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

8: Memorial Drive & Boulevard

8/13/2010

















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	79	377	114	104	209	53	77	362	60	173	768	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	9	9	12	10	9	12	11	10	12
Total Lost time (s)	4.0	4.0		4.0	4.0	5.0	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	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1737		1624	1693	1599	1668	1628		1745	3062	
Flt Permitted	0.57	1.00		0.12	1.00	1.00	0.21	1.00		0.23	1.00	
Satd. Flow (perm)	1082	1737		199	1693	1599	361	1628		430	3062	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	86	410	124	113	227	58	84	393	65	188	835	79
RTOR Reduction (vph)	0	9	0	0	0	37	0	5	0	0	6	0
Lane Group Flow (vph)	86	525	0	113	227	21	84	453	0	188	908	0
Confl. Peds. (#/hr)			4	4			3		1	1		3
Heavy Vehicles (%)	0%	2%	0%	0%	1%	1%	1%	2%	5%	0%	9%	1%
Turn Type	pm+pt			pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	42.8	39.6		50.4	43.4	43.4	47.3	43.5		58.4	49.6	
Effective Green, g (s)	44.8	40.6		52.4	44.4	43.4	49.3	44.5		59.4	50.6	
Actuated g/C Ratio	0.37	0.34		0.44	0.37	0.36	0.41	0.37		0.49	0.42	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
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)	429	588		182	626	578	201	604		332	1291	
v/s Ratio Prot	0.01	c0.30		c0.04	0.13		0.02	c0.28		c0.05	0.30	
v/s Ratio Perm	0.07			0.23		0.01	0.16			0.23		
v/c Ratio	0.20	0.89		0.62	0.36	0.04	0.42	0.75		0.57	0.70	
Uniform Delay, d1	24.8	37.6		25.8	27.5	24.8	23.1	32.9		20.6	28.5	
Progression Factor	0.85	0.86		0.72	0.83	1.14	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	13.5		6.3	0.4	0.0	1.4	8.3		2.2	3.2	
Delay (s)	21.3	45.8		25.0	23.2	28.3	24.5	41.2		22.8	31.8	
Level of Service	C	D		C	C	C	C	D		C	C	
Approach Delay (s)		42.4			24.4			38.6			30.2	
Approach LOS		D			C			D			C	
Intersection Summary												
HCM Average Control Delay			33.9			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			78.3%			ICU Level of Service			D			
Analysis Period (min)			15									

c Critical Lane Group

Baseline 2020 PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

13: Wylie Street & Krog Street

8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	79	14	4	9	23	128	1	40	5	290	185	100
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	86	15	4	10	25	139	1	43	5	315	201	109
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	105	174	50	625								
Volume Left (vph)	86	10	1	315								
Volume Right (vph)	4	139	5	109								
Hadj (s)	0.14	-0.47	-0.06	0.00								
Departure Headway (s)	6.1	5.4	5.5	4.8								
Degree Utilization, x	0.18	0.26	0.08	0.83								
Capacity (veh/h)	549	618	597	738								
Control Delay (s)	10.4	10.2	9.0	26.7								
Approach Delay (s)	10.4	10.2	9.0	26.7								
Approach LOS	B	B	A	D								
Intersection Summary												
Delay			21.0									
HCM Level of Service			C									
Intersection Capacity Utilization			64.8%		ICU Level of Service					C		
Analysis Period (min)			15									

Baseline 2020 PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

16: Memorial Drive & Grant Street

8/13/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	68	551	3	4	248	51	2	5	5	168	23	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	9	11	12	9	11	12	12	15	12	12	15	12
Total Lost time (s)	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	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.97			0.94			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.97	
Satd. Flow (prot)	1623	1817		1622	1769			1939			1950	
Flt Permitted	0.53	1.00		0.31	1.00			0.96			0.78	
Satd. Flow (perm)	906	1817		530	1769			1873			1582	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	74	599	3	4	270	55	2	5	5	183	25	53
RTOR Reduction (vph)	0	0	0	0	12	0	0	3	0	0	15	0
Lane Group Flow (vph)	74	602	0	4	313	0	0	9	0	0	246	0
Confl. Peds. (#/hr)	1		3	3		1	3					3
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	5%	0%	0%	0%	0%	1%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases	4			8			2			6		
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	32.0	32.0		32.0	32.0			18.0			18.0	
Effective Green, g (s)	33.0	33.0		33.0	33.0			19.0			19.0	
Actuated g/C Ratio	0.55	0.55		0.55	0.55			0.32			0.32	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)	498	999		292	973			593			501	
v/s Ratio Prot	c0.33			0.18								
v/s Ratio Perm	0.08			0.01				0.00			c0.16	
v/c Ratio	0.15	0.60		0.01	0.32			0.01			0.49	
Uniform Delay, d1	6.6	9.1		6.1	7.4			14.1			16.6	
Progression Factor	1.00	1.00		0.49	0.46			1.00			0.51	
Incremental Delay, d2	0.6	2.7		0.1	0.8			0.0			2.8	
Delay (s)	7.2	11.8		3.1	4.2			14.1			11.3	
Level of Service	A	B		A	A			B			B	
Approach Delay (s)	11.3			4.2			14.1			11.3		
Approach LOS	B			A			B			B		

Intersection Summary

HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Baseline 2020 PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

17: Memorial Drive & Pearl Street

8/13/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	17	708	11	9	314	32	10	14	10	51	14	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	12	12	10	10	10	10	10	10	10
Total Lost time (s)	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	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.96			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.97	
Satd. Flow (prot)	1491	1751		1357	1857			1562			1653	
Flt Permitted	0.46	1.00		0.20	1.00			0.93			0.83	
Satd. Flow (perm)	726	1751		280	1857			1480			1411	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	770	12	10	341	35	11	15	11	55	15	22
RTOR Reduction (vph)	0	0	0	0	4	0	0	8	0	0	8	0
Lane Group Flow (vph)	18	782	0	10	372	0	0	29	0	0	84	0
Confl. Peds. (#/hr)			2	2			1		1	1		1
Heavy Vehicles (%)	17%	1%	0%	33%	1%	0%	7%	11%	0%	0%	0%	0%
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	71.5	69.9		69.9	69.1			34.3			34.3	
Effective Green, g (s)	73.5	70.9		71.9	70.1			35.3			35.3	
Actuated g/C Ratio	0.61	0.59		0.60	0.58			0.29			0.29	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	461	1035		184	1085			435			415	
v/s Ratio Prot	c0.00	c0.45		0.00	0.20							
v/s Ratio Perm	0.02			0.03				0.02			c0.06	
v/c Ratio	0.04	0.76		0.05	0.34			0.07			0.20	
Uniform Delay, d1	9.5	18.1		14.3	13.0			30.5			31.8	
Progression Factor	0.49	0.81		0.18	0.12			1.00			1.00	
Incremental Delay, d2	0.0	2.5		0.1	0.2			0.3			1.1	
Delay (s)	4.7	17.1		2.6	1.7			30.8			32.9	
Level of Service	A	B		A	A			C			C	
Approach Delay (s)		16.9			1.7			30.8			32.9	
Approach LOS		B			A			C			C	

Intersection Summary

HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Baseline 2020 PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

21: Memorial Drive & Bill Kennedy Way

8/13/2010



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	↩
Volume (vph)	583	333	182	342	115	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	11	12	12
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.95		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1647		1805	1818	1787	1565
Flt Permitted	1.00		0.19	1.00	0.95	1.00
Satd. Flow (perm)	1647		368	1818	1787	1565
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	634	362	198	372	125	123
RTOR Reduction (vph)	19	0	0	0	0	101
Lane Group Flow (vph)	977	0	198	372	125	22
Confl. Peds. (#/hr)						3
Heavy Vehicles (%)	2%	3%	0%	1%	1%	0%
Turn Type			Perm			Perm
Protected Phases	4			8	2	
Permitted Phases			8			2
Actuated Green, G (s)	89.5		89.5	89.5	20.5	20.5
Effective Green, g (s)	90.5		90.5	90.5	21.5	21.5
Actuated g/C Ratio	0.75		0.75	0.75	0.18	0.18
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1242		278	1371	320	280
v/s Ratio Prot	c0.59			0.20	c0.07	
v/s Ratio Perm			0.54			0.01
v/c Ratio	0.79		0.71	0.27	0.39	0.08
Uniform Delay, d1	8.9		7.8	4.6	43.5	41.0
Progression Factor	0.30		0.86	0.06	0.81	2.08
Incremental Delay, d2	2.8		7.9	0.1	3.5	0.5
Delay (s)	5.4		14.7	0.4	38.7	85.8
Level of Service	A		B	A	D	F
Approach Delay (s)	5.4			5.3	62.1	
Approach LOS	A			A	E	

Intersection Summary

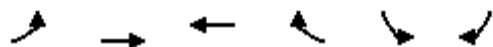
HCM Average Control Delay	13.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Baseline 2020 PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

24: Glenwood Avenue & Bill Kennedy Way

8/13/2010























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	77	197	141	182	386	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	10	12
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		1.00	1.00		1.00	
Frpb, ped/bikes		1.00	0.98		0.99	
Flpb, ped/bikes		1.00	1.00		1.00	
Frt		1.00	0.92		0.98	
Flt Protected		0.99	1.00		0.96	
Satd. Flow (prot)		1742	1651		1592	
Flt Permitted		0.77	1.00		0.96	
Satd. Flow (perm)		1362	1651		1592	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	84	214	153	198	420	95
RTOR Reduction (vph)	0	0	78	0	13	0
Lane Group Flow (vph)	0	298	273	0	502	0
Confl. Peds. (#/hr)	6			6	6	5
Heavy Vehicles (%)	11%	1%	1%	1%	4%	3%
Turn Type	Perm					
Protected Phases		4	8		6	
Permitted Phases	4					
Actuated Green, G (s)		22.0	22.0		28.0	
Effective Green, g (s)		23.0	23.0		29.0	
Actuated g/C Ratio		0.38	0.38		0.48	
Clearance Time (s)		5.0	5.0		5.0	
Lane Grp Cap (vph)		522	633		769	
v/s Ratio Prot			0.17		c0.32	
v/s Ratio Perm		c0.22				
v/c Ratio		0.57	0.43		0.65	
Uniform Delay, d1		14.6	13.7		11.7	
Progression Factor		1.00	1.00		0.54	
Incremental Delay, d2		4.5	2.1		3.8	
Delay (s)		19.1	15.8		10.1	
Level of Service		B	B		B	
Approach Delay (s)		19.1	15.8		10.1	
Approach LOS		B	B		B	
Intersection Summary						
HCM Average Control Delay			14.1		HCM Level of Service	B
HCM Volume to Capacity ratio			0.62			
Actuated Cycle Length (s)			60.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			70.3%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

Baseline 2020 PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

25: Memorial Drive & New Street A


8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	759	3	5	346	18	3	0	5	18	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1862		1770	1849		1770	1583		1770	1583	
Flt Permitted	0.46	1.00		0.17	1.00		0.75	1.00		0.75	1.00	
Satd. Flow (perm)	865	1862		324	1849		1403	1583		1405	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	825	3	5	376	20	3	0	5	20	0	7
RTOR Reduction (vph)	0	0	0	0	2	0	0	4	0	0	5	0
Lane Group Flow (vph)	8	828	0	5	394	0	3	1	0	20	2	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	72.3	71.5		72.3	71.5		32.7	32.7		32.7	32.7	
Effective Green, g (s)	72.3	71.5		72.3	71.5		32.7	32.7		32.7	32.7	
Actuated g/C Ratio	0.60	0.60		0.60	0.60		0.27	0.27		0.27	0.27	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	527	1109		205	1102		382	431		383	431	
v/s Ratio Prot	0.00	c0.44		c0.00	0.21			0.00			0.00	
v/s Ratio Perm	0.01			0.01			0.00			c0.01		
v/c Ratio	0.02	0.75		0.02	0.36		0.01	0.00		0.05	0.00	
Uniform Delay, d1	9.8	17.7		15.0	12.5		31.8	31.8		32.2	31.8	
Progression Factor	0.44	0.23		0.57	0.41		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	2.2		0.0	0.2		0.0	0.0		0.3	0.0	
Delay (s)	4.3	6.2		8.7	5.3		31.9	31.8		32.5	31.8	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s)		6.2			5.4			31.8			32.3	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM Average Control Delay			6.6			HCM Level of Service				A		
HCM Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			56.1%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

Baseline 2020 PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

33: I-20 WB Ramp & Bill Kennedy Way

8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	0	0	171	228	0	0	329	196
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	11	12	12	11	12
Total Lost time (s)							5.0	5.0			5.0	
Lane Util. Factor							1.00	1.00			1.00	
Frt							1.00	1.00			0.95	
Flt Protected							0.95	1.00			1.00	
Satd. Flow (prot)							1736	1818			1677	
Flt Permitted							0.42	1.00			1.00	
Satd. Flow (perm)							760	1818			1677	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	186	248	0	0	358	213
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	18	0
Lane Group Flow (vph)	0	0	0	0	0	0	186	248	0	0	553	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	1%	2%	2%	4%	4%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)							94.0	94.0			94.0	
Effective Green, g (s)							94.0	94.0			94.0	
Actuated g/C Ratio							0.78	0.78			0.78	
Clearance Time (s)							5.0	5.0			5.0	
Lane Grp Cap (vph)							595	1424			1314	
v/s Ratio Prot								0.14			c0.33	
v/s Ratio Perm							0.24					
v/c Ratio							0.31	0.17			0.42	
Uniform Delay, d1							3.7	3.3			4.2	
Progression Factor							0.29	0.31			0.08	
Incremental Delay, d2							1.3	0.3			0.9	
Delay (s)							2.4	1.3			1.3	
Level of Service							A	A			A	
Approach Delay (s)		0.0			0.0			1.8			1.3	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM Average Control Delay			1.5				HCM Level of Service				A	
HCM Volume to Capacity ratio			0.42									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			26.0		
Intersection Capacity Utilization			54.6%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

Baseline 2020 PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

35: I-20 EB Ramp & Bill Kennedy Way

8/13/2010



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	97	233	0	263	363	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	10	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1770	1463		1739	1881	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1770	1463		1739	1881	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	105	253	0	286	395	0
RTOR Reduction (vph)	0	156	0	0	0	0
Lane Group Flow (vph)	105	97	0	286	395	0
Heavy Vehicles (%)	2%	3%	2%	2%	1%	1%
Turn Type	Perm					
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	45.0	45.0		65.0	65.0	
Effective Green, g (s)	46.0	46.0		66.0	66.0	
Actuated g/C Ratio	0.38	0.38		0.55	0.55	
Clearance Time (s)	5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	679	561		956	1035	
v/s Ratio Prot	0.06			0.16	c0.21	
v/s Ratio Perm		c0.07				
v/c Ratio	0.15	0.17		0.30	0.38	
Uniform Delay, d1	24.3	24.4		14.5	15.4	
Progression Factor	1.00	1.00		1.03	0.72	
Incremental Delay, d2	0.5	0.7		0.8	1.0	
Delay (s)	24.7	25.1		15.8	12.0	
Level of Service	C	C		B	B	
Approach Delay (s)	25.0			15.8	12.0	
Approach LOS	C			B	B	

Intersection Summary


HCM Average Control Delay	17.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Baseline 2020 PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

39: Decatur Street & Hilliard Street

8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔		↔	↔			↔	↔
Volume (vph)	22	677	44	242	337	16	27	34	226	0	23	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	10	12	10	9	12	12	10	10
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	4.0
Lane Util. Factor		0.95			0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes		1.00			1.00		1.00	0.97			1.00	0.99
Flpb, ped/bikes		1.00			1.00		1.00	1.00			1.00	1.00
Frt		0.99			1.00		1.00	0.87			1.00	0.85
Flt Protected		1.00			0.98		0.95	1.00			1.00	1.00
Satd. Flow (prot)		3295			3247		1683	1428			1689	1488
Flt Permitted		0.93			0.56		0.74	1.00			1.00	1.00
Satd. Flow (perm)		3065			1850		1313	1428			1689	1488
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	736	48	263	366	17	29	37	246	0	25	8
RTOR Reduction (vph)	0	8	0	0	3	0	0	123	0	0	0	5
Lane Group Flow (vph)	0	800	0	0	643	0	29	160	0	0	25	3
Confl. Peds. (#/hr)	8		10	10		8	1		22	22		1
Heavy Vehicles (%)	1%	1%	0%	1%	1%	0%	0%	0%	1%	0%	5%	0%
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		32.0			32.0		18.0	18.0			18.0	18.0
Effective Green, g (s)		33.0			33.0		19.0	19.0			19.0	19.0
Actuated g/C Ratio		0.55			0.55		0.32	0.32			0.32	0.32
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	5.0
Lane Grp Cap (vph)		1686			1018		416	452			535	471
v/s Ratio Prot								c0.11			0.01	
v/s Ratio Perm		0.26			c0.35		0.02					0.00
v/c Ratio		0.47			0.90dl		0.07	0.35			0.05	0.01
Uniform Delay, d1		8.2			9.3		14.3	15.8			14.2	14.0
Progression Factor		1.00			1.00		0.79	0.60			1.00	1.00
Incremental Delay, d2		1.0			3.0		0.3	2.2			0.2	0.0
Delay (s)		9.2			12.3		11.6	11.6			14.4	14.1
Level of Service		A			B		B	B			B	B
Approach Delay (s)		9.2			12.3			11.6			14.3	
Approach LOS		A			B			B			B	

Intersection Summary

HCM Average Control Delay	10.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		



















dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

Baseline 2020 PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

48: Memorial Drive & Chester Avenue





















8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	768	9	9	387	11	8	2	21	47	3	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.91			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.96	
Satd. Flow (prot)	1770	1859		1770	1855			1671			1749	
Flt Permitted	0.40	1.00		0.19	1.00			0.95			0.79	
Satd. Flow (perm)	742	1859		363	1855			1601			1433	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	15	835	10	10	421	12	9	2	23	51	3	12
RTOR Reduction (vph)	0	0	0	0	1	0	0	17	0	0	6	0
Lane Group Flow (vph)	15	845	0	10	432	0	0	17	0	0	60	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	71.9	71.9		71.1	71.1			32.3			32.3	
Effective Green, g (s)	71.9	71.9		71.1	71.1			32.3			32.3	
Actuated g/C Ratio	0.60	0.60		0.59	0.59			0.27			0.27	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	458	1114		224	1099			431			386	
v/s Ratio Prot	0.00	c0.45		0.00	c0.23							
v/s Ratio Perm	0.02			0.03				0.01			c0.04	
v/c Ratio	0.03	0.76		0.04	0.39			0.04			0.16	
Uniform Delay, d1	10.7	17.7		27.0	13.0			32.4			33.5	
Progression Factor	0.27	0.11		0.94	0.63			1.00			1.00	
Incremental Delay, d2	0.0	2.4		0.1	0.2			0.2			0.9	
Delay (s)	2.9	4.3		25.4	8.4			32.6			34.3	
Level of Service	A	A		C	A			C			C	
Approach Delay (s)		4.3			8.8			32.6			34.3	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM Average Control Delay			7.8			HCM Level of Service					A	
HCM Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			57.9%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

Baseline 2020 PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

61: Memorial Drive & Holtzclaw Street





















8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	666	0	7	490	27	0	0	8	21	0	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99			0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863		1770	1848			1583		1770	1583	
Flt Permitted	0.33	1.00		0.22	1.00			1.00		0.75	1.00	
Satd. Flow (perm)	610	1863		401	1848			1583		1400	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	724	0	8	533	29	0	0	9	23	0	16
RTOR Reduction (vph)	0	0	0	0	3	0	0	6	0	0	10	0
Lane Group Flow (vph)	16	724	0	8	559	0	0	3	0	23	6	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases	4			8			2			6		
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	67.6	67.6		67.6	67.6			42.4		42.4	42.4	
Effective Green, g (s)	67.6	67.6		67.6	67.6			42.4		42.4	42.4	
Actuated g/C Ratio	0.56	0.56		0.56	0.56			0.35		0.35	0.35	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	344	1049		226	1041			559		495	559	
v/s Ratio Prot	c0.39			0.30			0.00			0.00		
v/s Ratio Perm	0.03			0.02						c0.02		
v/c Ratio	0.05	0.69		0.04	0.54			0.01		0.05	0.01	
Uniform Delay, d1	11.7	18.7		11.7	16.4			25.1		25.5	25.2	
Progression Factor	0.79	0.73		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.0	1.4		0.1	0.5			0.0		0.2	0.0	
Delay (s)	9.4	15.1		11.7	16.9			25.2		25.7	25.2	
Level of Service	A	B		B	B			C		C	C	
Approach Delay (s)	14.9			16.9			25.2			25.5		
Approach LOS	B			B			C			C		
Intersection Summary												
HCM Average Control Delay			16.1	HCM Level of Service			B					
HCM Volume to Capacity ratio			0.44									
Actuated Cycle Length (s)			120.0	Sum of lost time (s)			10.0					
Intersection Capacity Utilization			51.2%	ICU Level of Service			A					
Analysis Period (min)			15									
c Critical Lane Group												

Baseline 2020 PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]












67: Memorial Drive & Gibson Street

8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	686	0	7	515	24	0	0	8	19	0	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	746	0	8	560	26	0	0	9	21	0	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		315			379							
pX, platoon unblocked				0.71			0.71	0.71	0.71	0.71	0.71	
vC, conflicting volume	586			746			1353	1368	746	1364	1355	573
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	586			439			1294	1315	439	1309	1297	573
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	100	98	78	100	98
cM capacity (veh/h)	989			797			96	110	439	93	113	519
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	11	746	8	586	0	9	21	11				
Volume Left	11	0	8	0	0	0	21	0				
Volume Right	0	0	0	26	0	9	0	11				
cSH	989	1700	797	1700	1700	439	93	519				
Volume to Capacity	0.01	0.44	0.01	0.34	0.00	0.02	0.22	0.02				
Queue Length 95th (ft)	1	0	1	0	0	2	20	2				
Control Delay (s)	8.7	0.0	9.6	0.0	0.0	13.4	54.1	12.1				
Lane LOS	A		A		A	B	F	B				
Approach Delay (s)	0.1		0.1		13.4		39.6					
Approach LOS					B		E					
Intersection Summary												
Average Delay			1.1									
Intersection Capacity Utilization			50.5%		ICU Level of Service			A				
Analysis Period (min)			15									

Baseline 2020 PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]
101: Memorial Drive & New Street B























8/13/2010

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	780	3	5	366	3	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	848	3	5	398	3	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)	313			274		
pX, platoon unblocked			0.66		0.72	0.66
vC, conflicting volume			851		1258	849
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			512		787	509
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		99	99
cM capacity (veh/h)			692		256	370
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	
Volume Total	851	5	398	3	5	
Volume Left	0	5	0	3	0	
Volume Right	3	0	0	0	5	
cSH	1700	692	1700	256	370	
Volume to Capacity	0.50	0.01	0.23	0.01	0.01	
Queue Length 95th (ft)	0	1	0	1	1	
Control Delay (s)	0.0	10.2	0.0	19.2	14.9	
Lane LOS		B		C	B	
Approach Delay (s)	0.0	0.1		16.5		
Approach LOS				C		
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			51.2%	ICU Level of Service		A
Analysis Period (min)			15			

Baseline 2030 AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

8: Memorial Drive & Boulevard

9/6/2011

















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	86	183	26	69	639	218	580	832	24	38	228	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	9	9	12	10	9	12	11	10	12
Total Lost time (s)	4.0	4.0		4.0	4.0	5.0	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	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1767		1621	1693	1599	1666	1667		1745	3019	
Flt Permitted	0.12	1.00		0.52	1.00	1.00	0.33	1.00		0.24	1.00	
Satd. Flow (perm)	225	1767		880	1693	1599	583	1667		432	3019	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	93	199	28	75	695	237	630	904	26	41	248	70
RTOR Reduction (vph)	0	5	0	0	0	108	0	1	0	0	27	0
Lane Group Flow (vph)	93	222	0	75	695	129	630	929	0	41	291	0
Confl. Peds. (#/hr)			4	4			3		1	1		3
Heavy Vehicles (%)	0%	2%	0%	0%	1%	1%	1%	2%	5%	0%	9%	1%
Turn Type	pm+pt			pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	36.0	32.8		36.0	32.8	32.8	49.0	41.6		18.4	16.0	
Effective Green, g (s)	38.0	33.8		38.0	33.8	32.8	50.0	42.6		20.4	17.0	
Actuated g/C Ratio	0.38	0.34		0.38	0.34	0.33	0.50	0.43		0.20	0.17	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
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)	152	597		366	572	524	606	710		133	513	
v/s Ratio Prot	c0.03	0.13		0.01	c0.41		c0.30	c0.56		0.01	0.10	
v/s Ratio Perm	0.21			0.07		0.08	0.22			0.05		
v/c Ratio	0.61	0.37		0.20	1.22	0.25	1.04	1.31		0.31	0.57	
Uniform Delay, d1	24.9	25.1		20.3	33.1	24.6	21.2	28.7		33.3	38.1	
Progression Factor	0.99	0.99		0.51	0.65	0.61	1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.1	0.4		0.1	104.0	0.1	47.2	148.7		1.3	4.5	
Delay (s)	31.7	25.3		10.4	125.4	15.1	68.5	177.4		34.6	42.6	
Level of Service	C	C		B	F	B	E	F		C	D	
Approach Delay (s)		27.1			90.9			133.4			41.7	
Approach LOS		C			F			F			D	
Intersection Summary												
HCM Average Control Delay			99.6			HCM Level of Service				F		
HCM Volume to Capacity ratio			1.24									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			100.3%			ICU Level of Service			G			
Analysis Period (min)			15									

c Critical Lane Group

Baseline 2030 AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

13: Wylie Street & Krog Street




















9/6/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	121	7	3	2	17	344	1	160	1	78	25	26
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	132	8	3	2	18	374	1	174	1	85	27	28
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	142	395	176	140								
Volume Left (vph)	132	2	1	85								
Volume Right (vph)	3	374	1	28								
Hadj (s)	0.17	-0.57	0.00	0.00								
Departure Headway (s)	5.5	4.5	5.5	5.5								
Degree Utilization, x	0.22	0.49	0.27	0.22								
Capacity (veh/h)	597	766	591	583								
Control Delay (s)	10.0	11.6	10.4	10.0								
Approach Delay (s)	10.0	11.6	10.4	10.0								
Approach LOS	B	B	B	B								
Intersection Summary												
Delay				10.8								
HCM Level of Service				B								
Intersection Capacity Utilization				60.1%	ICU Level of Service	B						
Analysis Period (min)				15								

Baseline 2030 AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

16: Memorial Drive & Grant Street

9/6/2011



















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	53	190	0	2	1233	176	14	41	2	45	7	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	9	11	12	9	11	12	12	15	12	12	15	12
Total Lost time (s)	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	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.98	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			1.00			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1624	1818		1613	1782			2028			1866	
Flt Permitted	0.05	1.00		0.63	1.00			0.93			0.87	
Satd. Flow (perm)	91	1818		1067	1782			1903			1657	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	58	207	0	2	1340	191	15	45	2	49	8	61
RTOR Reduction (vph)	0	0	0	0	5	0	0	1	0	0	38	0
Lane Group Flow (vph)	58	207	0	2	1526	0	0	61	0	0	80	0
Confl. Peds. (#/hr)	1		3	3		1	3					3
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	5%	0%	0%	0%	0%	1%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	74.0	74.0		74.0	74.0			16.0			16.0	
Effective Green, g (s)	75.0	75.0		75.0	75.0			17.0			17.0	
Actuated g/C Ratio	0.75	0.75		0.75	0.75			0.17			0.17	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	68	1364		800	1337			324			282	
v/s Ratio Prot		0.11			c0.86							
v/s Ratio Perm	0.64			0.00				0.03			c0.05	
v/c Ratio	0.85	0.15		0.00	1.14			0.19			0.28	
Uniform Delay, d1	8.7	3.5		3.1	12.5			35.6			36.2	
Progression Factor	1.00	1.00		0.68	0.52			1.00			0.81	
Incremental Delay, d2	60.8	0.1		0.0	64.5			1.3			1.7	
Delay (s)	69.5	3.6		2.1	71.0			36.9			31.0	
Level of Service	E	A		A	E			D			C	
Approach Delay (s)		18.0			71.0			36.9			31.0	
Approach LOS		B			E			D			C	
Intersection Summary												
HCM Average Control Delay			60.4			HCM Level of Service				E		
HCM Volume to Capacity ratio			0.98									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			95.6%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group

Baseline 2030 AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

17: Memorial Drive & Pearl Street

9/6/2011

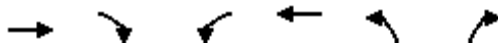
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	233	14	9	1045	43	27	18	9	36	15	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	12	12	10	10	10	10	10	10	10
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			0.98			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1491	1739		1354	1871			1570			1644	
Flt Permitted	0.06	1.00		0.58	1.00			0.85			0.84	
Satd. Flow (perm)	92	1739		828	1871			1363			1422	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	253	15	10	1136	47	29	20	10	39	16	25
RTOR Reduction (vph)	0	2	0	0	1	0	0	7	0	0	16	0
Lane Group Flow (vph)	12	266	0	10	1182	0	0	52	0	0	64	0
Confl. Peds. (#/hr)			2	2			1		1	1		1
Heavy Vehicles (%)	17%	1%	0%	33%	1%	0%	7%	11%	0%	0%	0%	0%
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	68.1	67.3		68.1	67.3			16.9			16.9	
Effective Green, g (s)	70.1	68.3		70.1	68.3			17.9			17.9	
Actuated g/C Ratio	0.70	0.68		0.70	0.68			0.18			0.18	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	90	1188		590	1278			244			255	
v/s Ratio Prot	c0.00	0.15		0.00	c0.63							
v/s Ratio Perm	0.09			0.01				0.04			c0.04	
v/c Ratio	0.13	0.22		0.02	0.92			0.21			0.25	
Uniform Delay, d1	21.0	5.9		4.5	13.6			35.0			35.3	
Progression Factor	0.70	0.98		0.08	0.03			1.00			1.00	
Incremental Delay, d2	0.6	0.1		0.0	5.6			2.0			2.3	
Delay (s)	15.3	5.9		0.4	6.1			37.0			37.6	
Level of Service	B	A		A	A			D			D	
Approach Delay (s)		6.3			6.0			37.0			37.6	
Approach LOS		A			A			D			D	
Intersection Summary												
HCM Average Control Delay			8.8			HCM Level of Service				A		
HCM Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			77.6%			ICU Level of Service			D			
Analysis Period (min)			15									

c Critical Lane Group

Baseline 2030 AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

21: Memorial Drive & Bill Kennedy Way

9/6/2011



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	↩
Volume (vph)	257	92	93	845	319	176
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	11	12	12
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.96		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1672		1805	1818	1787	1568
Flt Permitted	1.00		0.48	1.00	0.95	1.00
Satd. Flow (perm)	1672		905	1818	1787	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	279	100	101	918	347	191
RTOR Reduction (vph)	14	0	0	0	0	95
Lane Group Flow (vph)	365	0	101	918	347	96
Confl. Peds. (#/hr)						3
Heavy Vehicles (%)	2%	3%	0%	1%	1%	0%
Turn Type			Perm			Perm
Protected Phases	4			8	2	
Permitted Phases			8			2
Actuated Green, G (s)	58.8		58.8	58.8	31.2	31.2
Effective Green, g (s)	59.8		59.8	59.8	32.2	32.2
Actuated g/C Ratio	0.60		0.60	0.60	0.32	0.32
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1000		541	1087	575	505
v/s Ratio Prot	0.22			c0.50	c0.19	
v/s Ratio Perm			0.11			0.06
v/c Ratio	0.36		0.19	0.84	0.60	0.19
Uniform Delay, d1	10.3		9.1	16.3	28.5	24.5
Progression Factor	0.51		0.95	0.59	0.89	0.93
Incremental Delay, d2	0.2		0.1	4.3	4.5	0.8
Delay (s)	5.5		8.8	13.9	29.9	23.5
Level of Service	A		A	B	C	C
Approach Delay (s)	5.5			13.4	27.7	
Approach LOS	A			B	C	

Intersection Summary

HCM Average Control Delay	15.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Baseline 2030 AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]
24: Glenwood Avenue & Bill Kennedy Way

9/6/2011























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	87	131	247	359	121	152
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	10	12
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		1.00	1.00		1.00	
Frpb, ped/bikes		1.00	0.98		0.98	
Flpb, ped/bikes		1.00	1.00		1.00	
Frt		1.00	0.92		0.92	
Flt Protected		0.98	1.00		0.98	
Satd. Flow (prot)		1715	1635		1521	
Flt Permitted		0.35	1.00		0.98	
Satd. Flow (perm)		610	1635		1521	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	95	142	268	390	132	165
RTOR Reduction (vph)	0	0	70	0	36	0
Lane Group Flow (vph)	0	237	588	0	261	0
Confl. Peds. (#/hr)	6			6	6	5
Heavy Vehicles (%)	11%	1%	1%	1%	4%	3%
Turn Type	Perm					
Protected Phases		4	8		6	
Permitted Phases	4					
Actuated Green, G (s)		44.4	44.4		45.6	
Effective Green, g (s)		45.4	45.4		46.6	
Actuated g/C Ratio		0.45	0.45		0.47	
Clearance Time (s)		5.0	5.0		5.0	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		277	742		709	
v/s Ratio Prot			0.36		c0.17	
v/s Ratio Perm		c0.39				
v/c Ratio		0.86	0.79		0.37	
Uniform Delay, d1		24.4	23.3		17.2	
Progression Factor		0.42	1.00		1.10	
Incremental Delay, d2		21.8	5.8		1.4	
Delay (s)		32.0	29.1		20.4	
Level of Service		C	C		C	
Approach Delay (s)		32.0	29.1		20.4	
Approach LOS		C	C		C	
Intersection Summary						
HCM Average Control Delay			27.5		HCM Level of Service	C
HCM Volume to Capacity ratio			0.61			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			73.4%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

Baseline 2030 AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

25: Memorial Drive & New Street A

9/6/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	271	4	6	1060	9	3	0	5	19	0	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1859		1770	1860		1770	1583		1770	1583	
Flt Permitted	0.06	1.00		0.56	1.00		0.75	1.00		0.75	1.00	
Satd. Flow (perm)	111	1859		1052	1860		1402	1583		1405	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	295	4	7	1152	10	3	0	5	21	0	8
RTOR Reduction (vph)	0	0	0	0	0	0	0	4	0	0	7	0
Lane Group Flow (vph)	3	299	0	7	1162	0	3	1	0	21	1	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	68.2	67.4		68.2	67.4		16.8	16.8		16.8	16.8	
Effective Green, g (s)	68.2	67.4		68.2	67.4		16.8	16.8		16.8	16.8	
Actuated g/C Ratio	0.68	0.67		0.68	0.67		0.17	0.17		0.17	0.17	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	89	1253		723	1254		236	266		236	266	
v/s Ratio Prot	c0.00	0.16		0.00	c0.62			0.00			0.00	
v/s Ratio Perm	0.02			0.01			0.00			c0.01		
v/c Ratio	0.03	0.24		0.01	0.93		0.01	0.00		0.09	0.01	
Uniform Delay, d1	19.9	6.3		5.1	14.1		34.7	34.6		35.1	34.6	
Progression Factor	0.72	0.59		0.89	0.59		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.1		0.0	5.9		0.1	0.0		0.7	0.0	
Delay (s)	14.5	3.8		4.5	14.3		34.8	34.7		35.9	34.7	
Level of Service	B	A		A	B		C	C		D	C	
Approach Delay (s)		3.9			14.3			34.7			35.5	
Approach LOS		A			B			C			D	
Intersection Summary												
HCM Average Control Delay			12.7			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			72.4%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

Baseline 2030 AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

33: I-20 WB Ramp & Bill Kennedy Way

9/6/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	0	0	243	498	0	0	141	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	11	12	12	11	12
Total Lost time (s)							5.0	5.0			5.0	
Lane Util. Factor							1.00	1.00			1.00	
Frt							1.00	1.00			0.95	
Flt Protected							0.95	1.00			1.00	
Satd. Flow (prot)							1736	1818			1672	
Flt Permitted							0.60	1.00			1.00	
Satd. Flow (perm)							1100	1818			1672	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	264	541	0	0	153	100
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	264	541	0	0	253	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	1%	2%	2%	4%	4%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)							100.0	100.0			100.0	
Effective Green, g (s)							100.0	100.0			100.0	
Actuated g/C Ratio							1.00	1.00			1.00	
Clearance Time (s)							5.0	5.0			5.0	
Vehicle Extension (s)							3.0	3.0			3.0	
Lane Grp Cap (vph)							1100	1818			1672	
v/s Ratio Prot								c0.30			0.15	
v/s Ratio Perm							0.24					
v/c Ratio							0.24	0.30			0.15	
Uniform Delay, d1							0.0	0.0			0.0	
Progression Factor							1.00	1.00			1.00	
Incremental Delay, d2							0.5	0.4			0.2	
Delay (s)							0.5	0.4			0.2	
Level of Service							A	A			A	
Approach Delay (s)		0.0			0.0			0.4			0.2	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM Average Control Delay		0.4										
HCM Volume to Capacity ratio		0.30										
Actuated Cycle Length (s)		100.0										
Intersection Capacity Utilization		45.2%										
Analysis Period (min)		15										
c Critical Lane Group												

Baseline 2030 AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]
 35: I-20 EB Ramp & Bill Kennedy Way

9/6/2011





















Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	138	166	0	586	145	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	10	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1770	1463		1739	1881	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1770	1463		1739	1881	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	150	180	0	637	158	0
RTOR Reduction (vph)	0	154	0	0	0	0
Lane Group Flow (vph)	150	26	0	637	158	0
Heavy Vehicles (%)	2%	3%	2%	2%	1%	1%
Turn Type	Perm					
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	13.7	13.7		76.3	76.3	
Effective Green, g (s)	14.7	14.7		77.3	77.3	
Actuated g/C Ratio	0.15	0.15		0.77	0.77	
Clearance Time (s)	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	260	215		1344	1454	
v/s Ratio Prot	c0.08			c0.37	0.08	
v/s Ratio Perm		0.02				
v/c Ratio	0.58	0.12		0.47	0.11	
Uniform Delay, d1	39.8	37.1		4.1	2.8	
Progression Factor	1.00	1.00		0.25	1.37	
Incremental Delay, d2	3.1	0.3		1.1	0.2	
Delay (s)	42.8	37.3		2.2	4.0	
Level of Service	D	D		A	A	
Approach Delay (s)	39.8			2.2	4.0	
Approach LOS	D			A	A	
Intersection Summary						
HCM Average Control Delay			13.5		HCM Level of Service	B
HCM Volume to Capacity ratio			0.49			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			45.2%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Baseline 2030 AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

39: Decatur Street & Hilliard Street

9/6/2011



















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	78	191	44	202	788	63	96	223	228	0	16	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	10	12	10	9	12	12	10	10
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	4.0
Lane Util. Factor		0.95			0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes		1.00			1.00		1.00	0.98			1.00	0.99
Flpb, ped/bikes		1.00			1.00		1.00	1.00			1.00	1.00
Frt		0.98			0.99		1.00	0.92			1.00	0.85
Flt Protected		0.99			0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)		3212			3264		1683	1547			1689	1488
Flt Permitted		0.64			0.79		0.75	1.00			1.00	1.00
Satd. Flow (perm)		2079			2616		1322	1547			1689	1488
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	85	208	48	220	857	68	104	242	248	0	17	9
RTOR Reduction (vph)	0	24	0	0	9	0	0	73	0	0	0	6
Lane Group Flow (vph)	0	317	0	0	1136	0	104	417	0	0	17	3
Confl. Peds. (#/hr)	8		10	10		8	1		22	22		1
Heavy Vehicles (%)	1%	1%	0%	1%	1%	0%	0%	0%	1%	0%	5%	0%
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		23.5			23.5		16.5	16.5			16.5	16.5
Effective Green, g (s)		24.5			24.5		17.5	17.5			17.5	17.5
Actuated g/C Ratio		0.49			0.49		0.35	0.35			0.35	0.35
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)		1019			1282		463	541			591	521
v/s Ratio Prot								c0.27			0.01	
v/s Ratio Perm		0.15			c0.43		0.08					0.00
v/c Ratio		0.31			0.89		0.22	0.77			0.03	0.01
Uniform Delay, d1		7.7			11.5		11.5	14.5			10.7	10.6
Progression Factor		1.00			1.00		1.01	1.03			1.00	1.00
Incremental Delay, d2		0.2			7.7		1.0	9.3			0.1	0.0
Delay (s)		7.8			19.2		12.6	24.1			10.8	10.6
Level of Service		A			B		B	C			B	B
Approach Delay (s)		7.8			19.2			22.1			10.7	
Approach LOS		A			B			C			B	
Intersection Summary												
HCM Average Control Delay			18.1			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			50.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			79.8%			ICU Level of Service			D			
Analysis Period (min)			15									

c Critical Lane Group

Baseline 2030 AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

48: Memorial Drive & Chester Avenue





















9/6/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	279	16	34	1072	46	25	9	22	22	0	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			0.95			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1770	1848		1770	1851			1726			1706	
Flt Permitted	0.06	1.00		0.54	1.00			0.85			0.82	
Satd. Flow (perm)	119	1848		1011	1851			1501			1436	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	303	17	37	1165	50	27	10	24	24	0	18
RTOR Reduction (vph)	0	2	0	0	1	0	0	21	0	0	16	0
Lane Group Flow (vph)	11	318	0	37	1214	0	0	40	0	0	26	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	71.0	70.2		74.2	71.8			12.4			12.4	
Effective Green, g (s)	71.0	70.2		74.2	71.8			12.4			12.4	
Actuated g/C Ratio	0.71	0.70		0.74	0.72			0.12			0.12	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	98	1297		768	1329			186			178	
v/s Ratio Prot	0.00	0.17		c0.00	c0.66							
v/s Ratio Perm	0.08			0.03				c0.03			0.02	
v/c Ratio	0.11	0.25		0.05	0.91			0.21			0.15	
Uniform Delay, d1	18.1	5.4		3.4	11.6			39.4			39.1	
Progression Factor	0.37	0.29		1.04	0.90			1.00			1.00	
Incremental Delay, d2	0.5	0.1		0.0	6.7			2.6			1.7	
Delay (s)	7.2	1.7		3.6	17.1			42.0			40.8	
Level of Service	A	A		A	B			D			D	
Approach Delay (s)		1.9			16.7			42.0			40.8	
Approach LOS		A			B			D			D	
Intersection Summary												
HCM Average Control Delay			15.3			HCM Level of Service					B	
HCM Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			71.2%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

Baseline 2030 AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

61: Memorial Drive & Holtzclaw Street





















9/6/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	408	0	9	903	13	0	0	8	33	0	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00			0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863		1770	1859			1583		1770	1583	
Flt Permitted	0.15	1.00		0.47	1.00			1.00		0.75	1.00	
Satd. Flow (perm)	286	1863		871	1859			1583		1400	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	443	0	10	982	14	0	0	9	36	0	24
RTOR Reduction (vph)	0	0	0	0	1	0	0	7	0	0	19	0
Lane Group Flow (vph)	9	443	0	10	995	0	0	2	0	36	5	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases	4			8			2			6		
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	68.7	68.7		68.7	68.7			21.3		21.3	21.3	
Effective Green, g (s)	68.7	68.7		68.7	68.7			21.3		21.3	21.3	
Actuated g/C Ratio	0.69	0.69		0.69	0.69			0.21		0.21	0.21	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	196	1280		598	1277			337		298	337	
v/s Ratio Prot		0.24			c0.54			0.00			0.00	
v/s Ratio Perm	0.03			0.01						c0.03		
v/c Ratio	0.05	0.35		0.02	0.78			0.01		0.12	0.02	
Uniform Delay, d1	5.1	6.4		5.0	10.5			31.0		31.8	31.1	
Progression Factor	0.71	0.66		0.03	0.02			1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.2		0.0	1.5			0.0		0.8	0.1	
Delay (s)	3.7	4.4		0.2	1.6			31.0		32.6	31.2	
Level of Service	A	A		A	A			C		C	C	
Approach Delay (s)		4.4			1.6			31.0			32.0	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM Average Control Delay	3.8			HCM Level of Service			A					
HCM Volume to Capacity ratio	0.62											
Actuated Cycle Length (s)	100.0			Sum of lost time (s)			10.0					
Intersection Capacity Utilization	65.1%			ICU Level of Service			C					
Analysis Period (min)	15											
c Critical Lane Group												

Baseline 2030 AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]












67: Memorial Drive & Gibson Street

9/6/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	443	0	9	911	12	0	0	8	29	0	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	482	0	10	990	13	0	0	9	32	0	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		315			379							
pX, platoon unblocked	0.45			0.90			0.50	0.50	0.90	0.50	0.50	0.45
vC, conflicting volume	1003			482			1517	1515	482	1517	1509	997
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	392			368			1083	1078	368	1083	1065	378
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	100	99	67	100	95
cM capacity (veh/h)	523			1071			91	107	609	94	109	300
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	5	482	10	1003	0	9	32	15				
Volume Left	5	0	10	0	0	0	32	0				
Volume Right	0	0	0	13	0	9	0	15				
cSH	523	1700	1071	1700	1700	609	94	300				
Volume to Capacity	0.01	0.28	0.01	0.59	0.00	0.01	0.33	0.05				
Queue Length 95th (ft)	1	0	1	0	0	1	32	4				
Control Delay (s)	12.0	0.0	8.4	0.0	0.0	11.0	61.2	17.6				
Lane LOS	B		A		A	B	F	C				
Approach Delay (s)	0.1		0.1		11.0		47.0					
Approach LOS					B		E					
Intersection Summary												
Average Delay			1.6									
Intersection Capacity Utilization			63.6%		ICU Level of Service			B				
Analysis Period (min)			15									

Baseline 2030 AM Peak Hour [Memorial Road Diet, Reversible Lane Removed]
101: Memorial Drive & New Street B























9/6/2011

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	291	9	6	1072	3	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	316	10	7	1165	3	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	313			274		
pX, platoon unblocked			0.94		0.33	0.94
vC, conflicting volume			326		1499	321
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			251		1085	246
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		96	99
cM capacity (veh/h)			1235		78	745
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	
Volume Total	326	7	1165	3	5	
Volume Left	0	7	0	3	0	
Volume Right	10	0	0	0	5	
cSH	1700	1235	1700	78	745	
Volume to Capacity	0.19	0.01	0.69	0.04	0.01	
Queue Length 95th (ft)	0	0	0	3	1	
Control Delay (s)	0.0	7.9	0.0	53.0	9.9	
Lane LOS		A		F	A	
Approach Delay (s)	0.0	0.0		26.0		
Approach LOS				D		
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			66.4%	ICU Level of Service		C
Analysis Period (min)			15			

Baseline 2030 PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

8: Memorial Drive & Boulevard

9/6/2011

















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	85	440	128	113	260	60	87	389	69	188	813	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	9	9	12	10	9	12	11	10	12
Total Lost time (s)	4.0	4.0		4.0	4.0	5.0	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	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1739		1624	1693	1599	1668	1625		1745	3062	
Flt Permitted	0.38	1.00		0.13	1.00	1.00	0.16	1.00		0.19	1.00	
Satd. Flow (perm)	724	1739		223	1693	1599	284	1625		354	3062	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	92	478	139	123	283	65	95	423	75	204	884	85
RTOR Reduction (vph)	0	8	0	0	0	41	0	5	0	0	5	0
Lane Group Flow (vph)	92	609	0	123	283	24	95	493	0	204	964	0
Confl. Peds. (#/hr)			4	4			3		1	1		3
Heavy Vehicles (%)	0%	2%	0%	0%	1%	1%	1%	2%	5%	0%	9%	1%
Turn Type	pm+pt			pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	46.8	46.8		48.8	48.8	48.8	52.5	47.2		61.9	51.9	
Effective Green, g (s)	47.8	47.8		49.8	49.8	48.8	54.5	48.2		63.2	52.9	
Actuated g/C Ratio	0.37	0.37		0.38	0.38	0.38	0.42	0.37		0.49	0.41	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
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)	308	639		161	649	600	186	603		290	1246	
v/s Ratio Prot	0.01	c0.35		c0.04	0.17		0.02	c0.30		c0.06	0.31	
v/s Ratio Perm	0.10			0.25		0.02	0.19			0.28		
v/c Ratio	0.30	0.95		0.76	0.44	0.04	0.51	0.82		0.70	0.77	
Uniform Delay, d1	28.3	40.0		52.8	29.7	25.8	25.5	36.9		24.3	33.4	
Progression Factor	0.87	0.82		0.66	0.66	0.72	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	20.8		18.2	0.4	0.0	2.4	11.7		7.5	4.7	
Delay (s)	25.1	53.5		53.2	20.1	18.6	27.8	48.6		31.9	38.1	
Level of Service	C	D		D	C	B	C	D		C	D	
Approach Delay (s)		49.8			28.6			45.3			37.0	
Approach LOS		D			C			D			D	
Intersection Summary												
HCM Average Control Delay			40.4			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			130.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			85.7%			ICU Level of Service			E			
Analysis Period (min)			15									

c Critical Lane Group

Baseline 2030 PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

13: Wylie Street & Krog Street



















9/6/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	84	18	4	9	26	139	1	44	5	310	195	106
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	91	20	4	10	28	151	1	48	5	337	212	115
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	115	189	54	664								
Volume Left (vph)	91	10	1	337								
Volume Right (vph)	4	151	5	115								
Hadj (s)	0.14	-0.47	-0.06	0.00								
Departure Headway (s)	6.3	5.5	5.7	4.9								
Degree Utilization, x	0.20	0.29	0.09	0.90								
Capacity (veh/h)	545	615	584	725								
Control Delay (s)	10.9	10.8	9.3	35.9								
Approach Delay (s)	10.9	10.8	9.3	35.9								
Approach LOS	B	B	A	E								
Intersection Summary												
Delay				27.0								
HCM Level of Service				D								
Intersection Capacity Utilization				68.0%	ICU Level of Service		C					
Analysis Period (min)				15								

Baseline 2030 PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

16: Memorial Drive & Grant Street

9/6/2011



















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	72	625	3	4	333	61	2	6	6	183	24	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	9	11	12	9	11	12	12	15	12	12	15	12
Total Lost time (s)	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	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.94			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.97	
Satd. Flow (prot)	1623	1817		1624	1773			1941			1949	
Flt Permitted	0.40	1.00		0.19	1.00			0.97			0.78	
Satd. Flow (perm)	690	1817		319	1773			1899			1575	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	78	679	3	4	362	66	2	7	7	199	26	57
RTOR Reduction (vph)	0	1	0	0	12	0	0	4	0	0	13	0
Lane Group Flow (vph)	78	681	0	4	416	0	0	12	0	0	269	0
Confl. Peds. (#/hr)	1		3	3		1	3					3
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	5%	0%	0%	0%	0%	1%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	30.0	30.0		30.0	30.0			25.0			25.0	
Effective Green, g (s)	31.0	31.0		31.0	31.0			26.0			26.0	
Actuated g/C Ratio	0.48	0.48		0.48	0.48			0.40			0.40	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	329	867		152	846			760			630	
v/s Ratio Prot		c0.38			0.23							
v/s Ratio Perm	0.11			0.01				0.01			c0.17	
v/c Ratio	0.24	0.79		0.03	0.49			0.02			0.43	
Uniform Delay, d1	10.0	14.2		9.0	11.6			11.8			14.1	
Progression Factor	1.00	1.00		0.89	0.81			1.00			1.00	
Incremental Delay, d2	0.4	4.7		0.1	0.4			0.0			2.1	
Delay (s)	10.4	19.0		8.1	9.8			11.8			16.2	
Level of Service	B	B		A	A			B			B	
Approach Delay (s)		18.1			9.8			11.8			16.2	
Approach LOS		B			A			B			B	
Intersection Summary												
HCM Average Control Delay			15.3			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			65.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			67.7%			ICU Level of Service			C			
Analysis Period (min)			15									

c Critical Lane Group

Baseline 2030 PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

17: Memorial Drive & Pearl Street

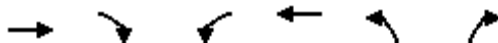
9/6/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	795	16	14	406	48	15	24	16	65	23	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	12	12	10	10	10	10	10	10	10
Total Lost time (s)	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	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.96			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.97	
Satd. Flow (prot)	1491	1750		1357	1853			1563			1659	
Flt Permitted	0.40	1.00		0.18	1.00			0.92			0.82	
Satd. Flow (perm)	632	1750		260	1853			1457			1395	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	864	17	15	441	52	16	26	17	71	25	28
RTOR Reduction (vph)	0	1	0	0	4	0	0	11	0	0	8	0
Lane Group Flow (vph)	27	880	0	15	489	0	0	48	0	0	116	0
Confl. Peds. (#/hr)			2	2			1		1	1		1
Heavy Vehicles (%)	17%	1%	0%	33%	1%	0%	7%	11%	0%	0%	0%	0%
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	86.1	83.7		84.5	82.9			29.7			29.7	
Effective Green, g (s)	88.1	84.7		86.5	83.9			30.7			30.7	
Actuated g/C Ratio	0.68	0.65		0.67	0.65			0.24			0.24	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	451	1140		195	1196			344			329	
v/s Ratio Prot	c0.00	c0.50		0.00	0.26							
v/s Ratio Perm	0.04			0.05				0.03			c0.08	
v/c Ratio	0.06	0.77		0.08	0.41			0.14			0.35	
Uniform Delay, d1	7.7	15.9		13.3	11.1			39.2			41.4	
Progression Factor	0.74	0.69		0.35	0.23			1.00			1.00	
Incremental Delay, d2	0.0	2.3		0.2	0.2			0.9			3.0	
Delay (s)	5.7	13.3		4.8	2.8			40.1			44.3	
Level of Service	A	B		A	A			D			D	
Approach Delay (s)		13.1			2.8			40.1			44.3	
Approach LOS		B			A			D			D	
Intersection Summary												
HCM Average Control Delay			13.2			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			130.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			62.8%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

Baseline 2030 PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

21: Memorial Drive & Bill Kennedy Way

9/6/2011



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰		↰	↱	↰	↱
Volume (vph)	684	368	210	430	135	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	11	12	12
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.95		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1651		1805	1818	1787	1563
Flt Permitted	1.00		0.16	1.00	0.95	1.00
Satd. Flow (perm)	1651		312	1818	1787	1563
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	743	400	228	467	147	143
RTOR Reduction (vph)	15	0	0	0	0	124
Lane Group Flow (vph)	1128	0	228	467	147	19
Confl. Peds. (#/hr)						3
Heavy Vehicles (%)	2%	3%	0%	1%	1%	0%
Turn Type			Perm			Perm
Protected Phases	4			8	2	
Permitted Phases			8			2
Actuated Green, G (s)	104.0		104.0	104.0	16.0	16.0
Effective Green, g (s)	105.0		105.0	105.0	17.0	17.0
Actuated g/C Ratio	0.81		0.81	0.81	0.13	0.13
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1334		252	1468	234	204
v/s Ratio Prot	0.68			0.26	c0.08	
v/s Ratio Perm			c0.73			0.01
v/c Ratio	0.85		0.90	0.32	0.63	0.09
Uniform Delay, d1	7.6		8.9	3.2	53.5	49.7
Progression Factor	0.40		1.86	0.10	1.00	1.00
Incremental Delay, d2	4.1		30.5	0.1	12.1	0.9
Delay (s)	7.1		47.1	0.4	65.6	50.6
Level of Service	A		D	A	E	D
Approach Delay (s)	7.1			15.7	58.2	
Approach LOS	A			B	E	

Intersection Summary

HCM Average Control Delay	16.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	93.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Baseline 2030 PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]
 24: Glenwood Avenue & Bill Kennedy Way

9/6/2011























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	90	234	177	230	437	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	10	12
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		1.00	1.00		1.00	
Frpb, ped/bikes		1.00	0.98		0.99	
Flpb, ped/bikes		1.00	1.00		1.00	
Frt		1.00	0.92		0.97	
Flt Protected		0.99	1.00		0.96	
Satd. Flow (prot)		1743	1652		1592	
Flt Permitted		0.61	1.00		0.96	
Satd. Flow (perm)		1075	1652		1592	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	254	192	250	475	108
RTOR Reduction (vph)	0	0	99	0	15	0
Lane Group Flow (vph)	0	352	343	0	568	0
Confl. Peds. (#/hr)	6			6	6	5
Heavy Vehicles (%)	11%	1%	1%	1%	4%	3%
Turn Type	Perm					
Protected Phases		4	8		6	
Permitted Phases	4					
Actuated Green, G (s)		17.3	17.3		22.7	
Effective Green, g (s)		18.3	18.3		23.7	
Actuated g/C Ratio		0.37	0.37		0.47	
Clearance Time (s)		5.0	5.0		5.0	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		393	605		755	
v/s Ratio Prot			0.21		c0.36	
v/s Ratio Perm		c0.33				
v/c Ratio		0.90	0.57		0.75	
Uniform Delay, d1		14.9	12.7		10.7	
Progression Factor		0.37	1.00		0.68	
Incremental Delay, d2		21.0	1.2		6.0	
Delay (s)		26.5	13.9		13.3	
Level of Service		C	B		B	
Approach Delay (s)		26.5	13.9		13.3	
Approach LOS		C	B		B	
Intersection Summary						
HCM Average Control Delay			16.9		HCM Level of Service	B
HCM Volume to Capacity ratio			0.81			
Actuated Cycle Length (s)			50.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			81.4%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

Baseline 2030 PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

25: Memorial Drive & New Street A


















9/6/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	860	5	9	421	30	6	0	10	27	0	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1861		1770	1844		1770	1583		1770	1583	
Flt Permitted	0.42	1.00		0.18	1.00		0.75	1.00		0.75	1.00	
Satd. Flow (perm)	790	1861		339	1844		1398	1583		1398	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	935	5	10	458	33	7	0	11	29	0	11
RTOR Reduction (vph)	0	0	0	0	2	0	0	9	0	0	9	0
Lane Group Flow (vph)	12	940	0	10	489	0	7	2	0	29	2	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	91.4	89.8		89.8	89.0		24.4	24.4		24.4	24.4	
Effective Green, g (s)	91.4	89.8		89.8	89.0		24.4	24.4		24.4	24.4	
Actuated g/C Ratio	0.70	0.69		0.69	0.68		0.19	0.19		0.19	0.19	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	567	1286		243	1262		262	297		262	297	
v/s Ratio Prot	c0.00	c0.50		0.00	0.27			0.00			0.00	
v/s Ratio Perm	0.01			0.03			0.01			c0.02		
v/c Ratio	0.02	0.73		0.04	0.39		0.03	0.01		0.11	0.01	
Uniform Delay, d1	6.3	12.6		11.9	8.8		43.1	42.9		43.8	42.9	
Progression Factor	0.42	0.25		0.58	0.41		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	1.6		0.1	0.2		0.2	0.0		0.9	0.0	
Delay (s)	2.6	4.6		7.0	3.8		43.3	43.0		44.7	43.0	
Level of Service	A	A		A	A		D	D		D	D	
Approach Delay (s)		4.6			3.8			43.1			44.2	
Approach LOS		A			A			D			D	
Intersection Summary												
HCM Average Control Delay			5.9			HCM Level of Service				A		
HCM Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			130.0			Sum of lost time (s)				10.0		
Intersection Capacity Utilization			62.1%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

Baseline 2030 PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

33: I-20 WB Ramp & Bill Kennedy Way

9/6/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	0	0	196	275	0	0	392	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	11	12	12	11	12
Total Lost time (s)							5.0	5.0			5.0	
Lane Util. Factor							1.00	1.00			1.00	
Frt							1.00	1.00			0.95	
Flt Protected							0.95	1.00			1.00	
Satd. Flow (prot)							1736	1818			1680	
Flt Permitted							0.41	1.00			1.00	
Satd. Flow (perm)							753	1818			1680	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	213	299	0	0	426	239
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	213	299	0	0	665	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	1%	2%	2%	4%	4%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)							100.0	100.0			100.0	
Effective Green, g (s)							100.0	100.0			100.0	
Actuated g/C Ratio							1.00	1.00			1.00	
Clearance Time (s)							5.0	5.0			5.0	
Vehicle Extension (s)							3.0	3.0			3.0	
Lane Grp Cap (vph)							753	1818			1680	
v/s Ratio Prot								0.16			c0.40	
v/s Ratio Perm							0.28					
v/c Ratio							0.28	0.16			0.40	
Uniform Delay, d1							0.0	0.0			0.0	
Progression Factor							1.00	1.00			1.00	
Incremental Delay, d2							0.9	0.2			0.7	
Delay (s)							0.9	0.2			0.7	
Level of Service							A	A			A	
Approach Delay (s)		0.0			0.0			0.5			0.7	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM Average Control Delay		0.6										
HCM Volume to Capacity ratio		0.40										
Actuated Cycle Length (s)		100.0										
Intersection Capacity Utilization		60.7%										
Analysis Period (min)		15										
c Critical Lane Group												

Baseline 2030 PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]
 35: I-20 EB Ramp & Bill Kennedy Way

9/6/2011




Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	102	245	0	314	427	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	10	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1770	1463		1739	1881	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1770	1463		1739	1881	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	111	266	0	341	464	0
RTOR Reduction (vph)	0	232	0	0	0	0
Lane Group Flow (vph)	111	34	0	341	464	0
Heavy Vehicles (%)	2%	3%	2%	2%	1%	1%
Turn Type	Perm					
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	11.6	11.6		78.4	78.4	
Effective Green, g (s)	12.6	12.6		79.4	79.4	
Actuated g/C Ratio	0.13	0.13		0.79	0.79	
Clearance Time (s)	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	223	184		1381	1494	
v/s Ratio Prot	c0.06			0.20	c0.25	
v/s Ratio Perm		0.02				
v/c Ratio	0.50	0.18		0.25	0.31	
Uniform Delay, d1	40.7	39.1		2.6	2.8	
Progression Factor	1.00	1.00		1.07	1.00	
Incremental Delay, d2	1.7	0.5		0.4	0.5	
Delay (s)	42.5	39.6		3.2	3.3	
Level of Service	D	D		A	A	
Approach Delay (s)	40.4			3.2	3.3	
Approach LOS	D			A	A	
Intersection Summary						
HCM Average Control Delay			15.1		HCM Level of Service	B
HCM Volume to Capacity ratio			0.34			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			60.7%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Baseline 2030 PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

39: Decatur Street & Hilliard Street



















9/6/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔		↔	↔			↔	↔
Volume (vph)	23	712	49	258	355	17	32	36	241	0	25	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	10	12	10	9	12	12	10	10
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	4.0
Lane Util. Factor		0.95			0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes		1.00			1.00		1.00	0.97			1.00	0.99
Flpb, ped/bikes		1.00			1.00		1.00	1.00			1.00	1.00
Frt		0.99			1.00		1.00	0.87			1.00	0.85
Flt Protected		1.00			0.98		0.95	1.00			1.00	1.00
Satd. Flow (prot)		3294			3249		1683	1433			1689	1488
Flt Permitted		0.93			0.56		0.74	1.00			1.00	1.00
Satd. Flow (perm)		3055			1855		1310	1433			1689	1488
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	774	53	280	386	18	35	39	262	0	27	9
RTOR Reduction (vph)	0	10	0	0	4	0	0	83	0	0	0	6
Lane Group Flow (vph)	0	842	0	0	680	0	35	218	0	0	27	3
Confl. Peds. (#/hr)	8		10	10		8	1		22	22		1
Heavy Vehicles (%)	1%	1%	0%	1%	1%	0%	0%	0%	1%	0%	5%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		21.9			21.9		18.1	18.1			18.1	18.1
Effective Green, g (s)		22.9			22.9		19.1	19.1			19.1	19.1
Actuated g/C Ratio		0.46			0.46		0.38	0.38			0.38	0.38
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)		1399			850		500	547			645	568
v/s Ratio Prot								c0.15			0.02	
v/s Ratio Perm		0.28			c0.37		0.03					0.00
v/c Ratio		0.60			1.31dl		0.07	0.40			0.04	0.01
Uniform Delay, d1		10.1			11.6		9.8	11.3			9.7	9.6
Progression Factor		1.00			1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		0.7			5.3		0.3	2.2			0.1	0.0
Delay (s)		10.9			16.9		10.1	13.4			9.8	9.6
Level of Service		B			B		B	B			A	A
Approach Delay (s)		10.9			16.9			13.1			9.8	
Approach LOS		B			B			B			A	
Intersection Summary												
HCM Average Control Delay		13.4			HCM Level of Service			B				
HCM Volume to Capacity ratio		0.62										
Actuated Cycle Length (s)		50.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		68.4%			ICU Level of Service			C				
Analysis Period (min)		15										
dl Defacto Left Lane. Recode with 1 though lane as a left lane.												
c Critical Lane Group												

Baseline 2030 PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

48: Memorial Drive & Chester Avenue





















9/6/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	880	30	13	476	11	12	2	27	50	3	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.91			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.96	
Satd. Flow (prot)	1770	1853		1770	1856			1672			1751	
Flt Permitted	0.41	1.00		0.17	1.00			0.92			0.77	
Satd. Flow (perm)	759	1853		316	1856			1560			1394	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	957	33	14	517	12	13	2	29	54	3	12
RTOR Reduction (vph)	0	1	0	0	1	0	0	24	0	0	6	0
Lane Group Flow (vph)	22	989	0	14	528	0	0	20	0	0	63	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	94.6	92.2		93.0	91.4			21.2			21.2	
Effective Green, g (s)	94.6	92.2		93.0	91.4			21.2			21.2	
Actuated g/C Ratio	0.73	0.71		0.72	0.70			0.16			0.16	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	571	1314		244	1305			254			227	
v/s Ratio Prot	c0.00	c0.53		0.00	0.28							
v/s Ratio Perm	0.03			0.04				0.01			c0.05	
v/c Ratio	0.04	0.75		0.06	0.40			0.08			0.28	
Uniform Delay, d1	5.4	11.8		11.7	8.0			46.1			47.7	
Progression Factor	0.64	0.26		0.88	0.74			1.00			1.00	
Incremental Delay, d2	0.0	2.0		0.1	0.2			0.6			3.0	
Delay (s)	3.5	5.1		10.4	6.1			46.7			50.7	
Level of Service	A	A		B	A			D			D	
Approach Delay (s)		5.0			6.2			46.7			50.7	
Approach LOS		A			A			D			D	
Intersection Summary												
HCM Average Control Delay			8.4			HCM Level of Service				A		
HCM Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			130.0			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			64.8%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

Baseline 2030 PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]

61: Memorial Drive & Holtzclaw Street





















9/6/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	766	0	13	587	43	0	0	15	31	0	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99			0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863		1770	1844			1583		1770	1583	
Flt Permitted	0.31	1.00		0.23	1.00			1.00		0.75	1.00	
Satd. Flow (perm)	582	1863		432	1844			1583		1392	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	833	0	14	638	47	0	0	16	34	0	23
RTOR Reduction (vph)	0	0	0	0	3	0	0	12	0	0	17	0
Lane Group Flow (vph)	25	833	0	14	682	0	0	4	0	34	6	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases	4			8			2			6		
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	88.9	88.9		88.9	88.9			31.1		31.1	31.1	
Effective Green, g (s)	88.9	88.9		88.9	88.9			31.1		31.1	31.1	
Actuated g/C Ratio	0.68	0.68		0.68	0.68			0.24		0.24	0.24	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	398	1274		295	1261			379		333	379	
v/s Ratio Prot	c0.45			0.37			0.00			0.00		
v/s Ratio Perm	0.04			0.03						c0.02		
v/c Ratio	0.06	0.65		0.05	0.54			0.01		0.10	0.01	
Uniform Delay, d1	6.8	11.8		6.7	10.3			37.7		38.6	37.8	
Progression Factor	0.53	0.48		0.07	0.06			1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.7		0.1	0.4			0.0		0.6	0.1	
Delay (s)	3.6	6.4		0.5	1.0			37.8		39.2	37.8	
Level of Service	A	A		A	A			D		D	D	
Approach Delay (s)	6.3			1.0			37.8			38.6		
Approach LOS	A			A			D			D		
Intersection Summary												
HCM Average Control Delay			5.5	HCM Level of Service			A					
HCM Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			130.0	Sum of lost time (s)			10.0					
Intersection Capacity Utilization			57.0%	ICU Level of Service			B					
Analysis Period (min)			15									
c Critical Lane Group												

Baseline 2030 PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]












67: Memorial Drive & Gibson Street

9/6/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	797	0	13	628	38	0	0	15	27	0	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	866	0	14	683	41	0	0	16	29	0	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		315			379							
pX, platoon unblocked	0.75			0.73			0.85	0.85	0.73	0.85	0.85	0.75
vC, conflicting volume	724			866			1625	1651	866	1647	1630	703
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	467			629			989	1020	629	1015	996	439
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			100	100	95	83	100	97
cM capacity (veh/h)	822			693			180	194	351	171	200	464
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	16	866	14	724	0	16	29	15				
Volume Left	16	0	14	0	0	0	29	0				
Volume Right	0	0	0	41	0	16	0	15				
cSH	822	1700	693	1700	1700	351	171	464				
Volume to Capacity	0.02	0.51	0.02	0.43	0.00	0.05	0.17	0.03				
Queue Length 95th (ft)	2	0	2	0	0	4	15	3				
Control Delay (s)	9.5	0.0	10.3	0.0	0.0	15.8	30.4	13.0				
Lane LOS	A		B		A	C	D	B				
Approach Delay (s)	0.2		0.2		15.8		24.5					
Approach LOS					C		C					
Intersection Summary												
Average Delay			1.0									
Intersection Capacity Utilization			56.8%		ICU Level of Service					B		
Analysis Period (min)			15									

Baseline 2030 PM Peak Hour [Memorial Road Diet, Reversible Lane Removed]
101: Memorial Drive & New Street B

9/6/2011

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	892	24	9	454	6	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	970	26	10	493	7	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	313			274		
pX, platoon unblocked			0.65		0.71	0.65
vC, conflicting volume			996		1496	983
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			725		1125	705
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		96	96
cM capacity (veh/h)			571		158	284
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	
Volume Total	996	10	493	7	11	
Volume Left	0	10	0	7	0	
Volume Right	26	0	0	0	11	
cSH	1700	571	1700	158	284	
Volume to Capacity	0.59	0.02	0.29	0.04	0.04	
Queue Length 95th (ft)	0	1	0	3	3	
Control Delay (s)	0.0	11.4	0.0	28.8	18.2	
Lane LOS		B		D	C	
Approach Delay (s)	0.0	0.2		22.1		
Approach LOS				C		
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			58.4%	ICU Level of Service		B
Analysis Period (min)			15			























Appendix A

Synchro Reports: BeltLine Analysis without BeltLine Transit

BeltLine 2020 AM Peak Hour [No Transit]

8: Memorial Drive & Boulevard

8/13/2010

















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	81	144	21	58	576	202	546	788	20	32	209	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	9	9	12	10	9	12	11	10	12
Total Lost time (s)	4.0	4.0		4.0	4.0	5.0	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	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1765		1618	1693	1599	1664	1668		1745	3015	
Flt Permitted	0.07	1.00		0.57	1.00	1.00	0.40	1.00		0.12	1.00	
Satd. Flow (perm)	141	1765		975	1693	1599	700	1668		227	3015	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	88	157	23	63	626	220	593	857	22	35	227	65
RTOR Reduction (vph)	0	3	0	0	0	75	0	1	0	0	17	0
Lane Group Flow (vph)	88	177	0	63	626	145	593	878	0	35	275	0
Confl. Peds. (#/hr)			4	4			3		1	1		3
Heavy Vehicles (%)	0%	2%	0%	0%	1%	1%	1%	2%	5%	0%	9%	1%
Turn Type	pm+pt			pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	56.8	52.8		55.2	52.0	52.0	79.0	70.8		34.5	31.3	
Effective Green, g (s)	58.8	53.8		57.2	53.0	52.0	80.0	71.8		36.5	32.3	
Actuated g/C Ratio	0.39	0.36		0.38	0.35	0.35	0.53	0.48		0.24	0.22	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
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)	111	633		390	598	554	654	798		98	649	
v/s Ratio Prot	c0.03	0.10		0.00	c0.37		c0.26	c0.53		0.01	0.09	
v/s Ratio Perm	0.28			0.06		0.09	0.22			0.08		
v/c Ratio	0.79	0.28		0.16	1.05	0.26	0.91	1.10		0.36	0.42	
Uniform Delay, d1	37.5	34.3		30.0	48.5	35.2	26.4	39.1		46.5	50.8	
Progression Factor	1.14	1.07		0.94	0.90	0.88	1.00	1.00		1.00	1.00	
Incremental Delay, d2	30.9	0.2		0.1	43.0	0.2	16.2	63.1		2.2	2.0	
Delay (s)	73.8	36.9		28.4	86.8	31.2	42.6	102.2		48.8	52.8	
Level of Service	E	D		C	F	C	D	F		D	D	
Approach Delay (s)		49.0			69.3			78.2			52.4	
Approach LOS		D			E			E			D	
Intersection Summary												
HCM Average Control Delay			70.0			HCM Level of Service				E		
HCM Volume to Capacity ratio			1.07									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)				16.0		
Intersection Capacity Utilization			94.2%			ICU Level of Service				F		
Analysis Period (min)			15									

c Critical Lane Group

BeltLine 2020 AM Peak Hour [No Transit]

13: Wylie Street & Krog Street



















8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	116	5	3	1	13	322	1	151	1	69	24	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	126	5	3	1	14	350	1	164	1	75	26	26
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	135	365	166	127								
Volume Left (vph)	126	1	1	75								
Volume Right (vph)	3	350	1	26								
Hadj (s)	0.17	-0.57	0.00	-0.01								
Departure Headway (s)	5.3	4.3	5.3	5.4								
Degree Utilization, x	0.20	0.44	0.24	0.19								
Capacity (veh/h)	616	784	609	602								
Control Delay (s)	9.7	10.7	10.0	9.6								
Approach Delay (s)	9.7	10.7	10.0	9.6								
Approach LOS	A	B	B	A								
Intersection Summary												
Delay				10.2								
HCM Level of Service				B								
Intersection Capacity Utilization				57.0%	ICU Level of Service	B						
Analysis Period (min)				15								

BeltLine 2020 AM Peak Hour [No Transit]

16: Memorial Drive & Grant Street



















8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	151	0	2	1140	169	14	39	2	38	6	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	9	11	12	9	11	12	12	15	12	12	15	12
Total Lost time (s)	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	
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.98	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			1.00			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1624	1818		1606	1780			2024			1852	
Flt Permitted	0.05	1.00		0.65	1.00			0.90			0.85	
Satd. Flow (perm)	83	1818		1105	1780			1852			1610	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	164	0	2	1239	184	15	42	2	41	7	59
RTOR Reduction (vph)	0	0	0	0	4	0	0	1	0	0	30	0
Lane Group Flow (vph)	54	164	0	2	1419	0	0	58	0	0	77	0
Confl. Peds. (#/hr)	1		3	3		1	3					3
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	5%	0%	0%	0%	0%	1%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases	4			8			2			6		
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	123.0	123.0		123.0	123.0			17.0			17.0	
Effective Green, g (s)	124.0	124.0		124.0	124.0			18.0			18.0	
Actuated g/C Ratio	0.83	0.83		0.83	0.83			0.12			0.12	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)	69	1503		913	1471			222			193	
v/s Ratio Prot	0.09			c0.80								
v/s Ratio Perm	0.65			0.00				0.03			c0.05	
v/c Ratio	0.78	0.11		0.00	0.96			0.26			0.40	
Uniform Delay, d1	6.4	2.5		2.3	11.1			60.0			61.0	
Progression Factor	1.00	1.00		0.77	0.46			1.00			1.00	
Incremental Delay, d2	58.7	0.1		0.0	10.3			2.9			6.1	
Delay (s)	65.1	2.6		1.7	15.5			62.8			67.1	
Level of Service	E	A		A	B			E			E	
Approach Delay (s)	18.1			15.5			62.8			67.1		
Approach LOS	B			B			E			E		
Intersection Summary												
HCM Average Control Delay			20.4		HCM Level of Service			C				
HCM Volume to Capacity ratio			0.89									
Actuated Cycle Length (s)			150.0		Sum of lost time (s)			8.0				
Intersection Capacity Utilization			90.3%		ICU Level of Service			E				
Analysis Period (min)			15									
c Critical Lane Group												

BeltLine 2020 AM Peak Hour [No Transit]

17: Memorial Drive & Pearl Street

8/13/2010

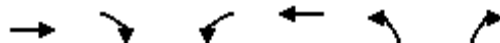
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	191	9	3	951	35	24	13	6	33	6	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	12	12	10	10	10	10	10	10	10
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			0.98			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.97	
Satd. Flow (prot)	1491	1742		1353	1872			1569			1631	
Flt Permitted	0.17	1.00		0.59	1.00			0.85			0.83	
Satd. Flow (perm)	272	1742		846	1872			1365			1386	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	208	10	3	1034	38	26	14	7	36	7	21
RTOR Reduction (vph)	0	1	0	0	1	0	0	4	0	0	11	0
Lane Group Flow (vph)	9	217	0	3	1071	0	0	43	0	0	53	0
Confl. Peds. (#/hr)			2	2			1		1	1		1
Heavy Vehicles (%)	17%	1%	0%	33%	1%	0%	7%	11%	0%	0%	0%	0%
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	113.0	113.0		113.0	113.0			21.2			21.2	
Effective Green, g (s)	114.0	114.0		114.0	114.0			22.2			22.2	
Actuated g/C Ratio	0.76	0.76		0.76	0.76			0.15			0.15	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	221	1324		649	1423			202			205	
v/s Ratio Prot	0.00	c0.12		0.00	c0.57							
v/s Ratio Perm	0.03			0.00				0.03			c0.04	
v/c Ratio	0.04	0.16		0.00	0.75			0.21			0.26	
Uniform Delay, d1	21.3	4.9		4.4	10.1			56.2			56.6	
Progression Factor	0.71	0.73		0.05	0.13			1.00			1.00	
Incremental Delay, d2	0.1	0.1		0.0	1.6			2.4			3.0	
Delay (s)	15.2	3.6		0.2	3.0			58.6			59.6	
Level of Service	B	A		A	A			E			E	
Approach Delay (s)		4.1			3.0			58.6			59.6	
Approach LOS		A			A			E			E	
Intersection Summary												
HCM Average Control Delay			7.6			HCM Level of Service				A		
HCM Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			72.2%			ICU Level of Service			C			
Analysis Period (min)			15									

c Critical Lane Group

BeltLine 2020 AM Peak Hour [No Transit]

21: Memorial Drive & Bill Kennedy Way

8/13/2010



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	↩
Volume (vph)	218	80	79	745	290	152
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	11	12	12
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.96		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1671		1805	1818	1787	1560
Flt Permitted	1.00		0.50	1.00	0.95	1.00
Satd. Flow (perm)	1671		956	1818	1787	1560
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	237	87	86	810	315	165
RTOR Reduction (vph)	10	0	0	0	0	58
Lane Group Flow (vph)	314	0	86	810	315	107
Confl. Peds. (#/hr)						3
Heavy Vehicles (%)	2%	3%	0%	1%	1%	0%
Turn Type			Perm			Perm
Protected Phases	4			8	2	
Permitted Phases			8			2
Actuated Green, G (s)	87.2		87.2	87.2	52.8	52.8
Effective Green, g (s)	88.2		88.2	88.2	53.8	53.8
Actuated g/C Ratio	0.59		0.59	0.59	0.36	0.36
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	983		562	1069	641	560
v/s Ratio Prot	0.19			c0.45	c0.18	
v/s Ratio Perm			0.09			0.07
v/c Ratio	0.32		0.15	0.76	0.49	0.19
Uniform Delay, d1	15.7		14.0	23.0	37.4	33.1
Progression Factor	0.74		0.76	0.63	1.00	1.00
Incremental Delay, d2	0.2		0.1	2.6	2.7	0.8
Delay (s)	11.7		10.8	17.1	40.1	33.9
Level of Service	B		B	B	D	C
Approach Delay (s)	11.7			16.5	38.0	
Approach LOS	B			B	D	
Intersection Summary						
HCM Average Control Delay			21.6		HCM Level of Service	C
HCM Volume to Capacity ratio			0.66			
Actuated Cycle Length (s)			150.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			61.9%		ICU Level of Service	B
Analysis Period (min)			15			

c Critical Lane Group

BeltLine 2020 AM Peak Hour [No Transit]
 24: Glenwood Avenue & Bill Kennedy Way

8/13/2010























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	79	111	212	345	90	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	10	12
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		1.00	1.00		1.00	
Frpb, ped/bikes		1.00	0.98		0.98	
Flpb, ped/bikes		1.00	1.00		1.00	
Frt		1.00	0.92		0.92	
Flt Protected		0.98	1.00		0.98	
Satd. Flow (prot)		1709	1635		1519	
Flt Permitted		0.60	1.00		0.98	
Satd. Flow (perm)		1051	1635		1519	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	86	121	230	375	98	147
RTOR Reduction (vph)	0	0	107	0	96	0
Lane Group Flow (vph)	0	207	498	0	149	0
Confl. Peds. (#/hr)	6			6	6	5
Heavy Vehicles (%)	11%	1%	1%	1%	4%	3%
Turn Type	Perm					
Protected Phases		4	8		6	
Permitted Phases	4					
Actuated Green, G (s)		27.0	27.0		18.0	
Effective Green, g (s)		28.0	28.0		19.0	
Actuated g/C Ratio		0.51	0.51		0.35	
Clearance Time (s)		5.0	5.0		5.0	
Lane Grp Cap (vph)		535	832		525	
v/s Ratio Prot			c0.30		c0.10	
v/s Ratio Perm		0.20				
v/c Ratio		0.39	0.60		0.28	
Uniform Delay, d1		8.3	9.5		13.1	
Progression Factor		1.00	1.00		0.82	
Incremental Delay, d2		2.1	3.2		1.3	
Delay (s)		10.4	12.7		12.1	
Level of Service		B	B		B	
Approach Delay (s)		10.4	12.7		12.1	
Approach LOS		B	B		B	
Intersection Summary						
HCM Average Control Delay			12.1		HCM Level of Service	B
HCM Volume to Capacity ratio			0.47			
Actuated Cycle Length (s)			55.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			66.5%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

BeltLine 2020 AM Peak Hour [No Transit]

25: Memorial Drive & New Street A


8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	227	1	2	958	4	2	0	3	17	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1862		1770	1862		1770	1583		1770	1583	
Flt Permitted	0.19	1.00		0.60	1.00		0.75	1.00		0.76	1.00	
Satd. Flow (perm)	359	1862		1126	1862		1403	1583		1408	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	247	1	2	1041	4	2	0	3	18	0	7
RTOR Reduction (vph)	0	0	0	0	0	0	0	3	0	0	6	0
Lane Group Flow (vph)	2	248	0	2	1045	0	2	0	0	18	1	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	118.8	118.0		118.8	118.0		16.2	16.2		16.2	16.2	
Effective Green, g (s)	118.8	118.0		118.8	118.0		16.2	16.2		16.2	16.2	
Actuated g/C Ratio	0.79	0.79		0.79	0.79		0.11	0.11		0.11	0.11	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	292	1465		895	1465		152	171		152	171	
v/s Ratio Prot	c0.00	0.13		0.00	c0.56			0.00			0.00	
v/s Ratio Perm	0.01			0.00			0.00			c0.01		
v/c Ratio	0.01	0.17		0.00	0.71		0.01	0.00		0.12	0.00	
Uniform Delay, d1	8.4	3.9		3.2	7.8		59.8	59.7		60.4	59.7	
Progression Factor	0.74	0.85		0.30	0.12		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.1		0.0	1.1		0.2	0.0		1.6	0.0	
Delay (s)	6.2	3.4		1.0	2.0		59.9	59.7		62.0	59.8	
Level of Service	A	A		A	A		E	E		E	E	
Approach Delay (s)		3.4			2.0			59.8			61.4	
Approach LOS		A			A			E			E	
Intersection Summary												
HCM Average Control Delay			3.6			HCM Level of Service				A		
HCM Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			66.6%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

BeltLine 2020 AM Peak Hour [No Transit]

33: I-20 WB Ramp & Bill Kennedy Way

8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	0	0	216	434	0	0	116	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	11	12	12	11	12
Total Lost time (s)							5.0	5.0			5.0	
Lane Util. Factor							1.00	1.00			1.00	
Frt							1.00	1.00			0.95	
Flt Protected							0.95	1.00			1.00	
Satd. Flow (prot)							1736	1818			1669	
Flt Permitted							0.63	1.00			1.00	
Satd. Flow (perm)							1142	1818			1669	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	235	472	0	0	126	86
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	20	0
Lane Group Flow (vph)	0	0	0	0	0	0	235	472	0	0	192	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	1%	2%	2%	4%	4%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)							84.0	84.0			84.0	
Effective Green, g (s)							84.0	84.0			84.0	
Actuated g/C Ratio							0.76	0.76			0.76	
Clearance Time (s)							5.0	5.0			5.0	
Lane Grp Cap (vph)							872	1388			1275	
v/s Ratio Prot								c0.26			0.11	
v/s Ratio Perm							0.21					
v/c Ratio							0.27	0.34			0.15	
Uniform Delay, d1							3.9	4.2			3.5	
Progression Factor							0.42	0.45			0.97	
Incremental Delay, d2							0.7	0.6			0.2	
Delay (s)							2.3	2.5			3.6	
Level of Service							A	A			A	
Approach Delay (s)		0.0			0.0			2.4			3.6	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM Average Control Delay		2.7			HCM Level of Service			A				
HCM Volume to Capacity ratio		0.34										
Actuated Cycle Length (s)		110.0			Sum of lost time (s)			26.0				
Intersection Capacity Utilization		41.1%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

BeltLine 2020 AM Peak Hour [No Transit]

35: I-20 EB Ramp & Bill Kennedy Way

8/13/2010



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	131	158	0	517	120	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	10	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1770	1463		1739	1881	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1770	1463		1739	1881	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	142	172	0	562	130	0
RTOR Reduction (vph)	0	131	0	0	0	0
Lane Group Flow (vph)	142	41	0	562	130	0
Heavy Vehicles (%)	2%	3%	2%	2%	1%	1%
Turn Type	Perm					
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	25.0	25.0		75.0	75.0	
Effective Green, g (s)	26.0	26.0		76.0	76.0	
Actuated g/C Ratio	0.24	0.24		0.69	0.69	
Clearance Time (s)	5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	418	346		1201	1300	
v/s Ratio Prot	c0.08			c0.32	0.07	
v/s Ratio Perm		0.03				
v/c Ratio	0.34	0.12		0.47	0.10	
Uniform Delay, d1	34.9	33.0		7.8	5.6	
Progression Factor	1.00	1.00		0.35	1.45	
Incremental Delay, d2	2.2	0.7		1.2	0.2	
Delay (s)	37.1	33.7		3.9	8.3	
Level of Service	D	C		A	A	
Approach Delay (s)	35.2			3.9	8.3	
Approach LOS	D			A	A	

Intersection Summary



















HCM Average Control Delay	14.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	41.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

BeltLine 2020 AM Peak Hour [No Transit]

39: Decatur Street & Hilliard Street



















8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	75	182	39	190	749	60	89	212	215	0	15	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	10	12	10	9	12	12	10	10
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	4.0
Lane Util. Factor		0.95			0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes		1.00			1.00		1.00	0.98			1.00	0.99
Flpb, ped/bikes		1.00			1.00		1.00	1.00			1.00	1.00
Frt		0.98			0.99		1.00	0.92			1.00	0.85
Flt Protected		0.99			0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)		3216			3263		1683	1546			1689	1488
Flt Permitted		0.65			0.80		0.75	1.00			1.00	1.00
Satd. Flow (perm)		2108			2631		1323	1546			1689	1488
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	198	42	207	814	65	97	230	234	0	16	8
RTOR Reduction (vph)	0	21	0	0	8	0	0	67	0	0	0	5
Lane Group Flow (vph)	0	301	0	0	1078	0	97	397	0	0	16	3
Confl. Peds. (#/hr)	8		10	10		8	1		22	22		1
Heavy Vehicles (%)	1%	1%	0%	1%	1%	0%	0%	0%	1%	0%	5%	0%
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		26.0			26.0		19.0	19.0			19.0	19.0
Effective Green, g (s)		27.0			27.0		20.0	20.0			20.0	20.0
Actuated g/C Ratio		0.49			0.49		0.36	0.36			0.36	0.36
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	5.0
Lane Grp Cap (vph)		1035			1292		481	562			614	541
v/s Ratio Prot							c0.26				0.01	
v/s Ratio Perm		0.14			c0.41		0.07					0.00
v/c Ratio		0.29			0.83		0.20	0.71			0.03	0.01
Uniform Delay, d1		8.3			12.1		12.0	15.0			11.2	11.2
Progression Factor		1.00			1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		0.7			6.5		0.9	7.3			0.1	0.0
Delay (s)		9.0			18.5		13.0	22.3			11.3	11.2
Level of Service		A			B		B	C			B	B
Approach Delay (s)		9.0			18.5			20.7			11.3	
Approach LOS		A			B			C			B	
Intersection Summary												
HCM Average Control Delay			17.5			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			55.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			76.9%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

BeltLine 2020 AM Peak Hour [No Transit]

48: Memorial Drive & Chester Avenue





















8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	234	10	28	962	44	23	8	19	21	0	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			0.95			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1770	1851		1770	1850			1727			1707	
Flt Permitted	0.17	1.00		0.59	1.00			0.85			0.85	
Satd. Flow (perm)	311	1851		1094	1850			1508			1494	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	254	11	30	1046	48	25	9	21	23	0	17
RTOR Reduction (vph)	0	1	0	0	1	0	0	15	0	0	15	0
Lane Group Flow (vph)	9	264	0	30	1093	0	0	40	0	0	25	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	117.6	116.0		119.2	116.8			16.6			16.6	
Effective Green, g (s)	117.6	116.0		119.2	116.8			16.6			16.6	
Actuated g/C Ratio	0.78	0.77		0.79	0.78			0.11			0.11	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	259	1431		880	1441			167			165	
v/s Ratio Prot	0.00	0.14		c0.00	c0.59							
v/s Ratio Perm	0.03			0.03				c0.03			0.02	
v/c Ratio	0.03	0.18		0.03	0.76			0.24			0.15	
Uniform Delay, d1	10.6	4.5		3.2	9.0			60.9			60.3	
Progression Factor	0.60	0.57		0.74	0.71			1.00			1.00	
Incremental Delay, d2	0.1	0.1		0.0	1.8			3.3			1.9	
Delay (s)	6.4	2.6		2.4	8.2			64.3			62.3	
Level of Service	A	A		A	A			E			E	
Approach Delay (s)		2.7			8.0			64.3			62.3	
Approach LOS		A			A			E			E	
Intersection Summary												
HCM Average Control Delay			10.6			HCM Level of Service					B	
HCM Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)				10.0		
Intersection Capacity Utilization			65.0%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

BeltLine 2020 AM Peak Hour [No Transit]

61: Memorial Drive & Holtzclaw Street





















8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	354	0	3	810	4	0	0	5	13	0	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00			0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863		1770	1861			1583		1770	1583	
Flt Permitted	0.25	1.00		0.51	1.00			1.00		0.75	1.00	
Satd. Flow (perm)	458	1863		951	1861			1583		1405	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	385	0	3	880	4	0	0	5	14	0	10
RTOR Reduction (vph)	0	0	0	0	0	0	0	4	0	0	8	0
Lane Group Flow (vph)	2	385	0	3	884	0	0	1	0	14	2	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases	4			8			2			6		
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	113.3	113.3		113.3	113.3			26.7		26.7	26.7	
Effective Green, g (s)	113.3	113.3		113.3	113.3			26.7		26.7	26.7	
Actuated g/C Ratio	0.76	0.76		0.76	0.76			0.18		0.18	0.18	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	346	1407		718	1406			282		250	282	
v/s Ratio Prot		0.21			c0.47			0.00			0.00	
v/s Ratio Perm	0.00			0.00						c0.01		
v/c Ratio	0.01	0.27		0.00	0.63			0.00		0.06	0.01	
Uniform Delay, d1	4.5	5.7		4.5	8.5			50.7		51.2	50.7	
Progression Factor	0.42	0.41		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.1		0.0	0.9			0.0		0.4	0.0	
Delay (s)	1.9	2.4		4.5	9.4			50.7		51.6	50.8	
Level of Service	A	A		A	A			D		D	D	
Approach Delay (s)		2.4			9.4			50.7			51.3	
Approach LOS		A			A			D			D	
Intersection Summary												
HCM Average Control Delay			8.3	HCM Level of Service			A					
HCM Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			150.0	Sum of lost time (s)			10.0					
Intersection Capacity Utilization			58.6%	ICU Level of Service			B					
Analysis Period (min)			15									
c Critical Lane Group												

BeltLine 2020 AM Peak Hour [No Transit]

67: Memorial Drive & Gibson Street












8/13/2010

																		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
Lane Configurations																		
Volume (veh/h)	1	370	0	3	810	3	0	0	5	11	0	6						
Sign Control	Free				Free				Stop									
Grade	0%				0%				0%									
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92						
Hourly flow rate (vph)	1	402	0	3	880	3	0	0	5	12	0	7						
Pedestrians																		
Lane Width (ft)																		
Walking Speed (ft/s)																		
Percent Blockage																		
Right turn flare (veh)																		
Median type	None				None													
Median storage (veh)																		
Upstream signal (ft)	315				379													
pX, platoon unblocked				0.94				0.94	0.94	0.94	0.94	0.94						
vC, conflicting volume	884			402				1298	1295	402	1298	1293						
vC1, stage 1 conf vol																		
vC2, stage 2 conf vol																		
vCu, unblocked vol	884			326				1284	1280	326	1284	1279						
tC, single (s)	4.1			4.1				7.1	6.5	6.2	7.1	6.5						
tC, 2 stage (s)																		
tF (s)	2.2			2.2				3.5	4.0	3.3	3.5	4.0						
p0 queue free %	100			100				100	100	99	91	100						
cM capacity (veh/h)	766			1154				130	154	669	131	155						
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2										
Volume Total	1	402	3	884	0	5	12	7										
Volume Left	1	0	3	0	0	0	12	0										
Volume Right	0	0	0	3	0	5	0	7										
cSH	766	1700	1154	1700	1700	669	131	345										
Volume to Capacity	0.00	0.24	0.00	0.52	0.00	0.01	0.09	0.02										
Queue Length 95th (ft)	0	0	0	0	0	1	7	1										
Control Delay (s)	9.7	0.0	8.1	0.0	0.0	10.4	35.2	15.6										
Lane LOS	A		A		A	B	E	C										
Approach Delay (s)	0.0		0.0		10.4		28.3											
Approach LOS					B		D											
Intersection Summary																		
Average Delay			0.5															
Intersection Capacity Utilization			56.8%		ICU Level of Service				B									
Analysis Period (min)			15															

BeltLine 2020 AM Peak Hour [No Transit]

101: Memorial Drive & New Street B























8/13/2010

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	246	4	2	962	2	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	267	4	2	1046	2	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	313			274		
pX, platoon unblocked			0.97		0.25	0.97
vC, conflicting volume			272		1320	270
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			234		503	231
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		98	100
cM capacity (veh/h)			1294		131	783
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	
Volume Total	272	2	1046	2	3	
Volume Left	0	2	0	2	0	
Volume Right	4	0	0	0	3	
cSH	1700	1294	1700	131	783	
Volume to Capacity	0.16	0.00	0.62	0.02	0.00	
Queue Length 95th (ft)	0	0	0	1	0	
Control Delay (s)	0.0	7.8	0.0	32.9	9.6	
Lane LOS		A		D	A	
Approach Delay (s)	0.0	0.0		18.9		
Approach LOS				C		
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			60.6%	ICU Level of Service		B
Analysis Period (min)			15			

BeltLine 2020 PM Peak Hour [No Transit]

8: Memorial Drive & Boulevard

8/13/2010

















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	79	379	112	102	205	51	73	362	58	172	769	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	9	9	12	10	9	12	11	10	12
Total Lost time (s)	4.0	4.0		4.0	4.0	5.0	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	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1739		1624	1693	1599	1668	1630		1745	3063	
Flt Permitted	0.57	1.00		0.13	1.00	1.00	0.20	1.00		0.22	1.00	
Satd. Flow (perm)	1081	1739		218	1693	1599	345	1630		410	3063	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	86	412	122	111	223	55	79	393	63	187	836	78
RTOR Reduction (vph)	0	10	0	0	0	35	0	5	0	0	6	0
Lane Group Flow (vph)	86	524	0	111	223	20	79	451	0	187	908	0
Confl. Peds. (#/hr)			4	4			3		1	1		3
Heavy Vehicles (%)	0%	2%	0%	0%	1%	1%	1%	2%	5%	0%	9%	1%
Turn Type	pm+pt			pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	39.8	36.6		45.4	39.4	39.4	42.1	38.3		52.4	43.6	
Effective Green, g (s)	41.8	37.6		47.4	40.4	39.4	44.1	39.3		53.4	44.6	
Actuated g/C Ratio	0.38	0.34		0.43	0.37	0.36	0.40	0.36		0.49	0.41	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
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)	438	594		183	622	573	196	582		322	1242	
v/s Ratio Prot	0.01	c0.30		c0.04	0.13		0.02	0.28		c0.05	c0.30	
v/s Ratio Perm	0.07			0.22		0.01	0.14			0.23		
v/c Ratio	0.20	0.88		0.61	0.36	0.03	0.40	0.77		0.58	0.73	
Uniform Delay, d1	22.2	34.1		23.7	25.4	22.9	21.8	31.4		19.6	27.6	
Progression Factor	0.85	0.85		0.68	0.80	1.05	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	12.1		5.4	0.3	0.0	1.4	9.7		2.7	3.8	
Delay (s)	19.0	41.1		21.5	20.6	24.0	23.2	41.1		22.3	31.5	
Level of Service	B	D		C	C	C	C	D		C	C	
Approach Delay (s)		38.0			21.4			38.5			29.9	
Approach LOS		D			C			D			C	
Intersection Summary												
HCM Average Control Delay			32.3			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			78.0%			ICU Level of Service			D			
Analysis Period (min)			15									

c Critical Lane Group

BeltLine 2020 PM Peak Hour [No Transit]

13: Wylie Street & Krog Street




















8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	78	14	4	9	22	128	1	40	5	290	185	100
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	85	15	4	10	24	139	1	43	5	315	201	109
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	104	173	50	625								
Volume Left (vph)	85	10	1	315								
Volume Right (vph)	4	139	5	109								
Hadj (s)	0.14	-0.47	-0.06	0.00								
Departure Headway (s)	6.1	5.4	5.5	4.8								
Degree Utilization, x	0.18	0.26	0.08	0.83								
Capacity (veh/h)	550	618	598	739								
Control Delay (s)	10.4	10.2	9.0	26.5								
Approach Delay (s)	10.4	10.2	9.0	26.5								
Approach LOS	B	B	A	D								
Intersection Summary												
Delay			20.9									
HCM Level of Service			C									
Intersection Capacity Utilization			64.7%	ICU Level of Service					C			
Analysis Period (min)			15									

BeltLine 2020 PM Peak Hour [No Transit]

16: Memorial Drive & Grant Street



















8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	68	551	3	4	270	50	2	5	5	168	23	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	9	11	12	9	11	12	12	15	12	12	15	12
Total Lost time (s)	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	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.94			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.97	
Satd. Flow (prot)	1623	1817		1622	1773			1939			1950	
Flt Permitted	0.51	1.00		0.30	1.00			0.96			0.78	
Satd. Flow (perm)	872	1817		513	1773			1871			1582	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	74	599	3	4	293	54	2	5	5	183	25	53
RTOR Reduction (vph)	0	0	0	0	12	0	0	3	0	0	17	0
Lane Group Flow (vph)	74	602	0	4	335	0	0	9	0	0	244	0
Confl. Peds. (#/hr)	1		3	3		1	3					3
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	5%	0%	0%	0%	0%	1%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	28.0	28.0		28.0	28.0			17.0			17.0	
Effective Green, g (s)	29.0	29.0		29.0	29.0			18.0			18.0	
Actuated g/C Ratio	0.53	0.53		0.53	0.53			0.33			0.33	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Grp Cap (vph)	460	958		270	935			612			518	
v/s Ratio Prot		c0.33			0.19							
v/s Ratio Perm	0.08			0.01				0.00			c0.15	
v/c Ratio	0.16	0.63		0.01	0.36			0.01			0.47	
Uniform Delay, d1	6.7	9.2		6.2	7.6			12.5			14.7	
Progression Factor	1.00	1.00		0.55	0.42			1.00			0.35	
Incremental Delay, d2	0.7	3.1		0.1	1.0			0.0			2.4	
Delay (s)	7.5	12.3		3.5	4.2			12.5			7.6	
Level of Service	A	B		A	A			B			A	
Approach Delay (s)		11.8			4.2			12.5			7.6	
Approach LOS		B			A			B			A	
Intersection Summary												
HCM Average Control Delay			8.9			HCM Level of Service				A		
HCM Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			55.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			62.8%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

BeltLine 2020 PM Peak Hour [No Transit]

17: Memorial Drive & Pearl Street

8/13/2010

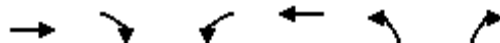
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	18	704	13	11	324	39	11	17	12	49	17	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	12	12	10	10	10	10	10	10	10
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.96			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.97	
Satd. Flow (prot)	1491	1751		1357	1853			1562			1659	
Flt Permitted	0.45	1.00		0.19	1.00			0.94			0.83	
Satd. Flow (perm)	699	1751		269	1853			1482			1424	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	765	14	12	352	42	12	18	13	53	18	21
RTOR Reduction (vph)	0	1	0	0	5	0	0	9	0	0	8	0
Lane Group Flow (vph)	20	778	0	12	389	0	0	34	0	0	84	0
Confl. Peds. (#/hr)			2	2			1		1	1		1
Heavy Vehicles (%)	17%	1%	0%	33%	1%	0%	7%	11%	0%	0%	0%	0%
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	64.0	62.4		62.4	61.6			31.8			31.8	
Effective Green, g (s)	66.0	63.4		64.4	62.6			32.8			32.8	
Actuated g/C Ratio	0.60	0.58		0.59	0.57			0.30			0.30	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	438	1009		175	1055			442			425	
v/s Ratio Prot	0.00	c0.44		c0.00	0.21							
v/s Ratio Perm	0.03			0.04				0.02			c0.06	
v/c Ratio	0.05	0.77		0.07	0.37			0.08			0.20	
Uniform Delay, d1	9.4	17.8		13.9	12.9			27.7			28.8	
Progression Factor	0.54	0.71		0.23	0.23			1.00			1.00	
Incremental Delay, d2	0.0	2.9		0.2	0.2			0.3			1.0	
Delay (s)	5.1	15.6		3.4	3.1			28.1			29.8	
Level of Service	A	B		A	A			C			C	
Approach Delay (s)		15.3			3.1			28.1			29.8	
Approach LOS		B			A			C			C	
Intersection Summary												
HCM Average Control Delay			13.0			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			57.8%			ICU Level of Service			B			
Analysis Period (min)			15									

c Critical Lane Group

BeltLine 2020 PM Peak Hour [No Transit]

21: Memorial Drive & Bill Kennedy Way

8/13/2010



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	↩
Volume (vph)	575	328	178	359	113	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	11	12	12
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.95		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1647		1805	1818	1787	1566
Flt Permitted	1.00		0.19	1.00	0.95	1.00
Satd. Flow (perm)	1647		354	1818	1787	1566
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	625	357	193	390	123	122
RTOR Reduction (vph)	20	0	0	0	0	98
Lane Group Flow (vph)	962	0	193	390	123	24
Confl. Peds. (#/hr)						3
Heavy Vehicles (%)	2%	3%	0%	1%	1%	0%
Turn Type			Perm			Perm
Protected Phases	4			8	2	
Permitted Phases			8			2
Actuated Green, G (s)	79.4		79.4	79.4	20.6	20.6
Effective Green, g (s)	80.4		80.4	80.4	21.6	21.6
Actuated g/C Ratio	0.73		0.73	0.73	0.20	0.20
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1204		259	1329	351	308
v/s Ratio Prot	c0.58			0.21	c0.07	
v/s Ratio Perm			0.55			0.02
v/c Ratio	0.80		0.75	0.29	0.35	0.08
Uniform Delay, d1	9.6		8.7	5.1	38.1	36.1
Progression Factor	0.22		0.90	0.17	0.67	0.46
Incremental Delay, d2	3.1		10.4	0.1	2.7	0.5
Delay (s)	5.2		18.3	1.0	28.5	17.2
Level of Service	A		B	A	C	B
Approach Delay (s)	5.2			6.7	22.9	
Approach LOS	A			A	C	

Intersection Summary

HCM Average Control Delay	8.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

BeltLine 2020 PM Peak Hour [No Transit]
24: Glenwood Avenue & Bill Kennedy Way

8/13/2010























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	75	167	133	181	387	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	10	12
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		1.00	1.00		1.00	
Frpb, ped/bikes		1.00	0.98		0.99	
Flpb, ped/bikes		1.00	1.00		1.00	
Frt		1.00	0.92		0.98	
Flt Protected		0.98	1.00		0.96	
Satd. Flow (prot)		1734	1648		1593	
Flt Permitted		0.82	1.00		0.96	
Satd. Flow (perm)		1443	1648		1593	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	182	145	197	421	93
RTOR Reduction (vph)	0	0	89	0	14	0
Lane Group Flow (vph)	0	264	253	0	500	0
Confl. Peds. (#/hr)	6			6	6	5
Heavy Vehicles (%)	11%	1%	1%	1%	4%	3%
Turn Type	Perm					
Protected Phases		4	8		6	
Permitted Phases	4					
Actuated Green, G (s)		27.0	27.0		18.0	
Effective Green, g (s)		28.0	28.0		19.0	
Actuated g/C Ratio		0.51	0.51		0.35	
Clearance Time (s)		5.0	5.0		5.0	
Lane Grp Cap (vph)		735	839		550	
v/s Ratio Prot			0.15		c0.31	
v/s Ratio Perm		c0.18				
v/c Ratio		0.36	0.30		0.91	
Uniform Delay, d1		8.1	7.8		17.2	
Progression Factor		1.00	1.00		0.81	
Incremental Delay, d2		1.4	0.9		19.0	
Delay (s)		9.5	8.8		32.9	
Level of Service		A	A		C	
Approach Delay (s)		9.5	8.8		32.9	
Approach LOS		A	A		C	
Intersection Summary						
HCM Average Control Delay			20.0		HCM Level of Service	C
HCM Volume to Capacity ratio			0.58			
Actuated Cycle Length (s)			55.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			68.2%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

BeltLine 2020 PM Peak Hour [No Transit]

25: Memorial Drive & New Street A


















8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	752	4	6	348	23	4	0	7	16	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1861		1770	1845		1770	1583		1770	1583	
Flt Permitted	0.41	1.00		0.19	1.00		0.75	1.00		0.75	1.00	
Satd. Flow (perm)	766	1861		360	1845		1403	1583		1402	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	817	4	7	378	25	4	0	8	17	0	7
RTOR Reduction (vph)	0	0	0	0	3	0	0	6	0	0	5	0
Lane Group Flow (vph)	9	821	0	7	400	0	4	2	0	17	2	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	63.1	63.1		63.1	63.1		31.1	31.1		31.1	31.1	
Effective Green, g (s)	63.1	63.1		63.1	63.1		31.1	31.1		31.1	31.1	
Actuated g/C Ratio	0.57	0.57		0.57	0.57		0.28	0.28		0.28	0.28	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	447	1068		217	1058		397	448		396	448	
v/s Ratio Prot	0.00	c0.44		0.00	c0.22			0.00			0.00	
v/s Ratio Perm	0.01			0.02			0.00			c0.01		
v/c Ratio	0.02	0.77		0.03	0.38		0.01	0.01		0.04	0.00	
Uniform Delay, d1	10.9	17.9		26.1	12.8		28.4	28.3		28.6	28.3	
Progression Factor	0.46	0.23		0.53	0.54		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	2.6		0.1	0.2		0.0	0.0		0.2	0.0	
Delay (s)	5.0	6.8		13.9	7.1		28.4	28.4		28.8	28.3	
Level of Service	A	A		B	A		C	C		C	C	
Approach Delay (s)		6.8			7.2			28.4			28.7	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM Average Control Delay			7.5	HCM Level of Service			A					
HCM Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			110.0	Sum of lost time (s)			10.0					
Intersection Capacity Utilization			55.7%	ICU Level of Service			B					
Analysis Period (min)			15									
c Critical Lane Group												

BeltLine 2020 PM Peak Hour [No Transit]

33: I-20 WB Ramp & Bill Kennedy Way

8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	0	0	167	228	0	0	325	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	11	12	12	11	12
Total Lost time (s)							5.0	5.0			5.0	
Lane Util. Factor							1.00	1.00			1.00	
Frt							1.00	1.00			0.95	
Flt Protected							0.95	1.00			1.00	
Satd. Flow (prot)							1736	1818			1676	
Flt Permitted							0.41	1.00			1.00	
Satd. Flow (perm)							756	1818			1676	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	182	248	0	0	353	214
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	20	0
Lane Group Flow (vph)	0	0	0	0	0	0	182	248	0	0	547	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	1%	2%	2%	4%	4%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)							84.0	84.0			84.0	
Effective Green, g (s)							84.0	84.0			84.0	
Actuated g/C Ratio							0.76	0.76			0.76	
Clearance Time (s)							5.0	5.0			5.0	
Lane Grp Cap (vph)							577	1388			1280	
v/s Ratio Prot								0.14			c0.33	
v/s Ratio Perm							0.24					
v/c Ratio							0.32	0.18			0.43	
Uniform Delay, d1							4.0	3.6			4.6	
Progression Factor							0.48	0.47			0.76	
Incremental Delay, d2							1.4	0.3			1.0	
Delay (s)							3.3	1.9			4.5	
Level of Service							A	A			A	
Approach Delay (s)		0.0			0.0			2.5			4.5	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM Average Control Delay			3.6				HCM Level of Service				A	
HCM Volume to Capacity ratio			0.43									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)			26.0		
Intersection Capacity Utilization			54.2%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

BeltLine 2020 PM Peak Hour [No Transit]

35: I-20 EB Ramp & Bill Kennedy Way

8/13/2010



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	97	233	0	262	359	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	10	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1770	1463		1739	1881	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1770	1463		1739	1881	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	105	253	0	285	390	0
RTOR Reduction (vph)	0	193	0	0	0	0
Lane Group Flow (vph)	105	60	0	285	390	0
Heavy Vehicles (%)	2%	3%	2%	2%	1%	1%
Turn Type	Perm					
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	25.0	25.0		75.0	75.0	
Effective Green, g (s)	26.0	26.0		76.0	76.0	
Actuated g/C Ratio	0.24	0.24		0.69	0.69	
Clearance Time (s)	5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	418	346		1201	1300	
v/s Ratio Prot	c0.06			0.16	c0.21	
v/s Ratio Perm		0.04				
v/c Ratio	0.25	0.17		0.24	0.30	
Uniform Delay, d1	34.1	33.4		6.3	6.6	
Progression Factor	1.00	1.00		0.50	1.83	
Incremental Delay, d2	1.4	1.1		0.5	0.6	
Delay (s)	35.5	34.5		3.6	12.7	
Level of Service	D	C		A	B	
Approach Delay (s)	34.8			3.6	12.7	
Approach LOS	C			A	B	

Intersection Summary

HCM Average Control Delay	17.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

BeltLine 2020 PM Peak Hour [No Transit]

39: Decatur Street & Hilliard Street

8/13/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔		↔	↔			↔	↔
Volume (vph)	22	677	44	242	337	16	27	34	226	0	23	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	10	12	10	9	12	12	10	10
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	4.0
Lane Util. Factor		0.95			0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes		1.00			1.00		1.00	0.97			1.00	0.99
Flpb, ped/bikes		1.00			1.00		1.00	1.00			1.00	1.00
Frt		0.99			1.00		1.00	0.87			1.00	0.85
Flt Protected		1.00			0.98		0.95	1.00			1.00	1.00
Satd. Flow (prot)		3296			3248		1683	1430			1689	1488
Flt Permitted		0.93			0.56		0.74	1.00			1.00	1.00
Satd. Flow (perm)		3064			1841		1313	1430			1689	1488
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	736	48	263	366	17	29	37	246	0	25	8
RTOR Reduction (vph)	0	8	0	0	4	0	0	91	0	0	0	5
Lane Group Flow (vph)	0	800	0	0	642	0	29	192	0	0	25	3
Confl. Peds. (#/hr)	8		10	10		8	1		22	22		1
Heavy Vehicles (%)	1%	1%	0%	1%	1%	0%	0%	0%	1%	0%	5%	0%
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		26.0			26.0		19.0	19.0			19.0	19.0
Effective Green, g (s)		27.0			27.0		20.0	20.0			20.0	20.0
Actuated g/C Ratio		0.49			0.49		0.36	0.36			0.36	0.36
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	5.0
Lane Grp Cap (vph)		1504			904		477	520			614	541
v/s Ratio Prot								c0.13			0.01	
v/s Ratio Perm		0.26			c0.35		0.02					0.00
v/c Ratio		0.53			1.05dl		0.06	0.37			0.04	0.01
Uniform Delay, d1		9.6			10.9		11.4	12.9			11.3	11.2
Progression Factor		1.00			1.00		0.80	0.62			1.00	1.00
Incremental Delay, d2		1.4			4.7		0.2	2.0			0.1	0.0
Delay (s)		11.0			15.7		9.3	9.9			11.4	11.2
Level of Service		B			B		A	A			B	B
Approach Delay (s)		11.0			15.7			9.9			11.4	
Approach LOS		B			B			A			B	



















Intersection Summary

HCM Average Control Delay	12.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		
dl Defacto Left Lane. Recode with 1 though lane as a left lane.			
c Critical Lane Group			

BeltLine 2020 PM Peak Hour [No Transit]

48: Memorial Drive & Chester Avenue





















8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	16	759	24	10	394	11	9	2	22	47	3	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.91			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.96	
Satd. Flow (prot)	1770	1854		1770	1855			1672			1749	
Flt Permitted	0.39	1.00		0.19	1.00			0.94			0.79	
Satd. Flow (perm)	721	1854		347	1855			1595			1433	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	825	26	11	428	12	10	2	24	51	3	12
RTOR Reduction (vph)	0	1	0	0	1	0	0	18	0	0	7	0
Lane Group Flow (vph)	17	850	0	11	439	0	0	18	0	0	59	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	64.6	64.6		63.8	63.8			29.6			29.6	
Effective Green, g (s)	64.6	64.6		63.8	63.8			29.6			29.6	
Actuated g/C Ratio	0.59	0.59		0.58	0.58			0.27			0.27	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	439	1089		212	1076			429			386	
v/s Ratio Prot	0.00	c0.46		0.00	c0.24							
v/s Ratio Perm	0.02			0.03				0.01			c0.04	
v/c Ratio	0.04	0.78		0.05	0.41			0.04			0.15	
Uniform Delay, d1	10.5	17.3		26.2	12.7			29.7			30.7	
Progression Factor	0.18	0.08		0.98	0.73			1.00			1.00	
Incremental Delay, d2	0.0	2.9		0.1	0.2			0.2			0.8	
Delay (s)	1.9	4.4		25.8	9.5			29.9			31.5	
Level of Service	A	A		C	A			C			C	
Approach Delay (s)		4.3			9.9			29.9			31.5	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM Average Control Delay	8.0			HCM Level of Service			A					
HCM Volume to Capacity ratio	0.56											
Actuated Cycle Length (s)	110.0			Sum of lost time (s)			10.0					
Intersection Capacity Utilization	58.0%			ICU Level of Service			B					
Analysis Period (min)	15											
c Critical Lane Group												

BeltLine 2020 PM Peak Hour [No Transit]

61: Memorial Drive & Holtzclaw Street





















8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	659	0	9	502	22	0	0	10	15	0	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99			0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863		1770	1851			1583		1770	1583	
Flt Permitted	0.32	1.00		0.21	1.00			1.00		0.75	1.00	
Satd. Flow (perm)	592	1863		400	1851			1583		1398	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	716	0	10	546	24	0	0	11	16	0	12
RTOR Reduction (vph)	0	0	0	0	2	0	0	7	0	0	8	0
Lane Group Flow (vph)	13	716	0	10	568	0	0	4	0	16	4	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases	4			8			2			6		
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	60.7	60.7		60.7	60.7			39.3		39.3	39.3	
Effective Green, g (s)	60.7	60.7		60.7	60.7			39.3		39.3	39.3	
Actuated g/C Ratio	0.55	0.55		0.55	0.55			0.36		0.36	0.36	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	327	1028		221	1021			566		499	566	
v/s Ratio Prot	c0.38			0.31				0.00		0.00		
v/s Ratio Perm	0.02			0.03						c0.01		
v/c Ratio	0.04	0.70		0.05	0.56			0.01		0.03	0.01	
Uniform Delay, d1	11.3	17.9		11.3	15.9			22.8		23.0	22.8	
Progression Factor	0.54	0.53		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.0	1.5		0.1	0.7			0.0		0.1	0.0	
Delay (s)	6.2	10.9		11.4	16.6			22.8		23.1	22.8	
Level of Service	A	B		B	B			C		C	C	
Approach Delay (s)	10.8			16.5				22.8		23.0		
Approach LOS	B			B				C		C		
Intersection Summary												
HCM Average Control Delay			13.6	HCM Level of Service			B					
HCM Volume to Capacity ratio			0.44									
Actuated Cycle Length (s)			110.0	Sum of lost time (s)			10.0					
Intersection Capacity Utilization			50.5%	ICU Level of Service			A					
Analysis Period (min)			15									
c Critical Lane Group												

BeltLine 2020 PM Peak Hour [No Transit]

67: Memorial Drive & Gibson Street












8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	676	0	9	526	19	0	0	10	13	0	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	735	0	10	572	21	0	0	11	14	0	8
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		315			379							
pX, platoon unblocked				0.71			0.71	0.71	0.71	0.71	0.71	
vC, conflicting volume	592			735			1351	1364	735	1365	1354	582
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	592			419			1290	1308	419	1309	1293	582
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	100	98	85	100	99
cM capacity (veh/h)	983			807			96	110	449	93	113	513
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	9	735	10	592	0	11	14	8				
Volume Left	9	0	10	0	0	0	14	0				
Volume Right	0	0	0	21	0	11	0	8				
cSH	983	1700	807	1700	1700	449	93	513				
Volume to Capacity	0.01	0.43	0.01	0.35	0.00	0.02	0.15	0.01				
Queue Length 95th (ft)	1	0	1	0	0	2	13	1				
Control Delay (s)	8.7	0.0	9.5	0.0	0.0	13.2	50.7	12.1				
Lane LOS	A		A		A	B	F	B				
Approach Delay (s)	0.1		0.2		13.2		37.2					
Approach LOS					B		E					
Intersection Summary												
Average Delay			0.8									
Intersection Capacity Utilization			49.6%		ICU Level of Service			A				
Analysis Period (min)			15									

BeltLine 2020 PM Peak Hour [No Transit]

101: Memorial Drive & New Street B

8/13/2010

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	770	18	6	373	4	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	837	20	7	405	4	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	313			274		
pX, platoon unblocked			0.64		0.71	0.64
vC, conflicting volume			857		1265	847
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			499		767	484
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		98	98
cM capacity (veh/h)			685		259	375
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	
Volume Total	857	7	405	4	8	
Volume Left	0	7	0	4	0	
Volume Right	20	0	0	0	8	
cSH	1700	685	1700	259	375	
Volume to Capacity	0.50	0.01	0.24	0.02	0.02	
Queue Length 95th (ft)	0	1	0	1	2	
Control Delay (s)	0.0	10.3	0.0	19.1	14.8	
Lane LOS		B		C	B	
Approach Delay (s)	0.0	0.2		16.4		
Approach LOS				C		
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			51.6%	ICU Level of Service		A
Analysis Period (min)			15			























Appendix A

Synchro Reports: BeltLine Analysis with BeltLine Transit

BeltLine 2020 AM Peak Hour [with BeltLine Transit]

8: Memorial Drive & Boulevard

8/13/2010

















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	81	142	20	57	568	201	545	786	19	32	209	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	9	9	12	10	9	12	11	10	12
Total Lost time (s)	4.0	4.0		4.0	4.0	5.0	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	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1767		1619	1693	1599	1665	1668		1745	3018	
Flt Permitted	0.11	1.00		0.57	1.00	1.00	0.39	1.00		0.19	1.00	
Satd. Flow (perm)	212	1767		977	1693	1599	679	1668		343	3018	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	88	154	22	62	617	218	592	854	21	35	227	64
RTOR Reduction (vph)	0	5	0	0	0	102	0	1	0	0	23	0
Lane Group Flow (vph)	88	171	0	62	617	116	592	874	0	35	268	0
Confl. Peds. (#/hr)			4	4			3		1	1		3
Heavy Vehicles (%)	0%	2%	0%	0%	1%	1%	1%	2%	5%	0%	9%	1%
Turn Type	pm+pt			pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	38.0	34.8		38.0	34.8	34.8	57.0	49.6		22.8	20.4	
Effective Green, g (s)	40.0	35.8		40.0	35.8	34.8	58.0	50.6		24.8	21.4	
Actuated g/C Ratio	0.36	0.33		0.36	0.33	0.32	0.53	0.46		0.23	0.19	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
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)	138	575		380	551	506	650	767		121	587	
v/s Ratio Prot	c0.02	0.10		0.01	c0.36		c0.27	c0.52		0.01	0.09	
v/s Ratio Perm	0.21			0.05		0.07	0.21			0.06		
v/c Ratio	0.64	0.30		0.16	1.12	0.23	0.91	1.14		0.29	0.46	
Uniform Delay, d1	28.2	27.7		23.2	37.1	27.7	19.8	29.7		35.1	39.2	
Progression Factor	1.05	1.04		0.54	0.65	0.66	1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.3	0.3		0.1	68.6	0.1	17.0	78.4		1.3	2.5	
Delay (s)	39.0	29.1		12.8	92.8	18.4	36.8	108.1		36.4	41.7	
Level of Service	D	C		B	F	B	D	F		D	D	
Approach Delay (s)		32.4			69.2			79.3			41.1	
Approach LOS		C			E			E			D	
Intersection Summary												
HCM Average Control Delay			67.8			HCM Level of Service				E		
HCM Volume to Capacity ratio			1.12									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			93.6%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group

BeltLine 2020 AM Peak Hour [with BeltLine Transit]

13: Wylie Street & Krog Street



















8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	115	5	3	1	12	321	1	151	1	69	24	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	125	5	3	1	13	349	1	164	1	75	26	26
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	134	363	166	127								
Volume Left (vph)	125	1	1	75								
Volume Right (vph)	3	349	1	26								
Hadj (s)	0.17	-0.58	0.00	-0.01								
Departure Headway (s)	5.3	4.3	5.3	5.4								
Degree Utilization, x	0.20	0.44	0.24	0.19								
Capacity (veh/h)	617	785	611	603								
Control Delay (s)	9.7	10.7	10.0	9.6								
Approach Delay (s)	9.7	10.7	10.0	9.6								
Approach LOS	A	B	A	A								
Intersection Summary												
Delay				10.2								
HCM Level of Service				B								
Intersection Capacity Utilization				56.9%	ICU Level of Service	B						
Analysis Period (min)				15								

BeltLine 2020 AM Peak Hour [with BeltLine Transit]

16: Memorial Drive & Grant Street

8/13/2010



















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	148	0	2	1132	161	14	39	2	38	6	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	9	11	12	9	11	12	12	15	12	12	15	12
Total Lost time (s)	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	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.98	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			1.00			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1624	1818		1611	1782			2025			1856	
Flt Permitted	0.05	1.00		0.66	1.00			0.93			0.88	
Satd. Flow (perm)	80	1818		1111	1782			1908			1670	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	161	0	2	1230	175	15	42	2	41	7	59
RTOR Reduction (vph)	0	0	0	0	5	0	0	1	0	0	41	0
Lane Group Flow (vph)	54	161	0	2	1400	0	0	58	0	0	66	0
Confl. Peds. (#/hr)	1		3	3		1	3					3
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	5%	0%	0%	0%	0%	1%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases	4			8			2			6		
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	84.0	84.0		84.0	84.0			16.0			16.0	
Effective Green, g (s)	85.0	85.0		85.0	85.0			17.0			17.0	
Actuated g/C Ratio	0.77	0.77		0.77	0.77			0.15			0.15	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	62	1405		859	1377			295			258	
v/s Ratio Prot		0.09			c0.79							
v/s Ratio Perm	0.67			0.00				0.03			c0.04	
v/c Ratio	0.87	0.11		0.00	1.02			0.20			0.26	
Uniform Delay, d1	8.7	3.1		2.8	12.5			40.5			40.9	
Progression Factor	1.00	1.00		0.82	0.53			1.00			0.86	
Incremental Delay, d2	70.2	0.0		0.0	20.7			1.5			1.7	
Delay (s)	78.9	3.2		2.3	27.3			42.0			37.1	
Level of Service	E	A		A	C			D			D	
Approach Delay (s)		22.2			27.2			42.0			37.1	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM Average Control Delay			27.7			HCM Level of Service					C	
HCM Volume to Capacity ratio			0.89									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			89.4%			ICU Level of Service				E		
Analysis Period (min)			15									

c Critical Lane Group

BeltLine 2020 AM Peak Hour [with BeltLine Transit]

17: Memorial Drive & Pearl Street

8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	188	8	3	940	35	23	12	5	30	5	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	12	12	10	10	10	10	10	10	10
Total Lost time (s)	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	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			0.98			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.97	
Satd. Flow (prot)	1491	1743		1353	1872			1572			1632	
Flt Permitted	0.12	1.00		0.62	1.00			0.84			0.83	
Satd. Flow (perm)	189	1743		884	1872			1364			1403	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	204	9	3	1022	38	25	13	5	33	5	18
RTOR Reduction (vph)	0	2	0	0	1	0	0	4	0	0	15	0
Lane Group Flow (vph)	9	211	0	3	1059	0	0	39	0	0	41	0
Confl. Peds. (#/hr)			2	2			1		1	1		1
Heavy Vehicles (%)	17%	1%	0%	33%	1%	0%	7%	11%	0%	0%	0%	0%
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	76.2	75.4		76.2	75.4			18.8			18.8	
Effective Green, g (s)	78.2	76.4		78.2	76.4			19.8			19.8	
Actuated g/C Ratio	0.71	0.69		0.71	0.69			0.18			0.18	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	156	1211		636	1300			246			253	
v/s Ratio Prot	c0.00	0.12		0.00	c0.57							
v/s Ratio Perm	0.04			0.00				0.03			c0.03	
v/c Ratio	0.06	0.17		0.00	0.81			0.16			0.16	
Uniform Delay, d1	13.7	5.8		4.6	11.8			38.1			38.1	
Progression Factor	0.86	1.47		0.02	0.02			1.00			1.00	
Incremental Delay, d2	0.1	0.1		0.0	2.5			1.4			1.4	
Delay (s)	11.8	8.6		0.1	2.8			39.4			39.5	
Level of Service	B	A		A	A			D			D	
Approach Delay (s)		8.8			2.8			39.4			39.5	
Approach LOS		A			A			D			D	
Intersection Summary												
HCM Average Control Delay			6.4			HCM Level of Service				A		
HCM Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			71.6%			ICU Level of Service			C			
Analysis Period (min)			15									

c Critical Lane Group

BeltLine 2020 AM Peak Hour [with BeltLine Transit]

21: Memorial Drive & Bill Kennedy Way

8/13/2010



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	↩
Volume (vph)	207	78	78	737	289	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	11	12	12
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.96		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1670		1805	1818	1787	1566
Flt Permitted	1.00		0.51	1.00	0.95	1.00
Satd. Flow (perm)	1670		977	1818	1787	1566
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	225	85	85	801	314	163
RTOR Reduction (vph)	15	0	0	0	0	103
Lane Group Flow (vph)	295	0	85	801	314	60
Confl. Peds. (#/hr)						3
Heavy Vehicles (%)	2%	3%	0%	1%	1%	0%
Turn Type			Perm			Perm
Protected Phases	4			8	2	
Permitted Phases			8			2
Actuated Green, G (s)	60.2		60.2	60.2	39.8	39.8
Effective Green, g (s)	61.2		61.2	61.2	40.8	40.8
Actuated g/C Ratio	0.56		0.56	0.56	0.37	0.37
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	929		544	1011	663	581
v/s Ratio Prot	0.18			c0.44	c0.18	
v/s Ratio Perm			0.09			0.04
v/c Ratio	0.32		0.16	0.79	0.47	0.10
Uniform Delay, d1	13.2		11.9	19.4	26.4	22.6
Progression Factor	0.46		0.04	0.03	0.80	0.45
Incremental Delay, d2	0.2		0.1	3.4	2.4	0.4
Delay (s)	6.3		0.6	4.1	23.6	10.4
Level of Service	A		A	A	C	B
Approach Delay (s)	6.3			3.7	19.1	
Approach LOS	A			A	B	
Intersection Summary						
HCM Average Control Delay			8.6		HCM Level of Service	A
HCM Volume to Capacity ratio			0.66			
Actuated Cycle Length (s)			110.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			61.5%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

BeltLine 2020 AM Peak Hour [with BeltLine Transit]

24: Glenwood Avenue & Bill Kennedy Way

8/13/2010























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↱		↰	↱
Volume (vph)	78	106	210	312	86	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	10	12
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		1.00	1.00		1.00	
Frpb, ped/bikes		1.00	0.98		0.98	
Flpb, ped/bikes		1.00	1.00		1.00	
Frt		1.00	0.92		0.92	
Flt Protected		0.98	1.00		0.98	
Satd. Flow (prot)		1707	1643		1518	
Flt Permitted		0.39	1.00		0.98	
Satd. Flow (perm)		681	1643		1518	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	85	115	228	339	93	147
RTOR Reduction (vph)	0	0	138	0	78	0
Lane Group Flow (vph)	0	200	429	0	162	0
Confl. Peds. (#/hr)	6			6	6	5
Heavy Vehicles (%)	11%	1%	1%	1%	4%	3%
Turn Type	Perm					
Protected Phases		4	8		6	
Permitted Phases	4					
Actuated Green, G (s)		15.0	15.0		20.0	
Effective Green, g (s)		16.0	16.0		21.0	
Actuated g/C Ratio		0.36	0.36		0.47	
Clearance Time (s)		5.0	5.0		5.0	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		242	584		708	
v/s Ratio Prot			0.26		c0.11	
v/s Ratio Perm		c0.29				
v/c Ratio		0.83	0.73		0.23	
Uniform Delay, d1		13.2	12.6		7.2	
Progression Factor		1.00	1.00		1.00	
Incremental Delay, d2		20.1	4.8		0.8	
Delay (s)		33.3	17.4		7.9	
Level of Service		C	B		A	
Approach Delay (s)		33.3	17.4		7.9	
Approach LOS		C	B		A	
Intersection Summary						
HCM Average Control Delay			18.3		HCM Level of Service	B
HCM Volume to Capacity ratio			0.49			
Actuated Cycle Length (s)			45.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			63.8%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

BeltLine 2020 AM Peak Hour [with BeltLine Transit]

25: Memorial Drive & New Street A


















8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	220	1	1	949	4	1	0	2	15	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1862		1770	1862		1770	1583		1770	1583	
Flt Permitted	0.13	1.00		0.61	1.00		0.75	1.00		0.76	1.00	
Satd. Flow (perm)	234	1862		1129	1862		1405	1583		1409	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	239	1	1	1032	4	1	0	2	16	0	5
RTOR Reduction (vph)	0	0	0	0	0	0	0	2	0	0	4	0
Lane Group Flow (vph)	2	240	0	1	1036	0	1	0	0	16	1	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	75.7	74.9		75.7	74.9		19.3	19.3		19.3	19.3	
Effective Green, g (s)	75.7	74.9		75.7	74.9		19.3	19.3		19.3	19.3	
Actuated g/C Ratio	0.69	0.68		0.69	0.68		0.18	0.18		0.18	0.18	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	172	1268		782	1268		247	278		247	278	
v/s Ratio Prot	c0.00	0.13		0.00	c0.56			0.00			0.00	
v/s Ratio Perm	0.01			0.00			0.00			c0.01		
v/c Ratio	0.01	0.19		0.00	0.82		0.00	0.00		0.06	0.00	
Uniform Delay, d1	13.6	6.4		5.4	12.6		37.4	37.4		37.8	37.4	
Progression Factor	0.72	0.59		0.28	0.21		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.1		0.0	2.4		0.0	0.0		0.5	0.0	
Delay (s)	9.9	3.9		1.5	5.0		37.4	37.4		38.3	37.4	
Level of Service	A	A		A	A		D	D		D	D	
Approach Delay (s)		3.9			5.0			37.4			38.1	
Approach LOS		A			A			D			D	
Intersection Summary												
HCM Average Control Delay			5.4	HCM Level of Service			A					
HCM Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			110.0	Sum of lost time (s)			15.0					
Intersection Capacity Utilization			66.0%	ICU Level of Service			C					
Analysis Period (min)			15									
c Critical Lane Group												

BeltLine 2020 AM Peak Hour [with BeltLine Transit]

33: I-20 WB Ramp & Bill Kennedy Way

8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	0	0	215	429	0	0	112	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	11	12	12	11	12
Total Lost time (s)							5.0	5.0			5.0	
Lane Util. Factor							1.00	1.00			1.00	
Frt							1.00	1.00			0.95	
Flt Protected							0.95	1.00			1.00	
Satd. Flow (prot)							1736	1818			1669	
Flt Permitted							0.63	1.00			1.00	
Satd. Flow (perm)							1150	1818			1669	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	234	466	0	0	122	83
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	234	466	0	0	205	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	1%	2%	2%	4%	4%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)							110.0	110.0			110.0	
Effective Green, g (s)							110.0	110.0			110.0	
Actuated g/C Ratio							1.00	1.00			1.00	
Clearance Time (s)							5.0	5.0			5.0	
Vehicle Extension (s)							3.0	3.0			3.0	
Lane Grp Cap (vph)							1150	1818			1669	
v/s Ratio Prot								c0.26			0.12	
v/s Ratio Perm							0.20					
v/c Ratio							0.20	0.26			0.12	
Uniform Delay, d1							0.0	0.0			0.0	
Progression Factor							1.00	1.00			1.00	
Incremental Delay, d2							0.4	0.3			0.1	
Delay (s)							0.4	0.3			0.1	
Level of Service							A	A			A	
Approach Delay (s)		0.0			0.0			0.3			0.1	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM Average Control Delay			0.3				HCM Level of Service				A	
HCM Volume to Capacity ratio			0.26									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)			0.0		
Intersection Capacity Utilization			40.9%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

BeltLine 2020 AM Peak Hour [with BeltLine Transit]

35: I-20 EB Ramp & Bill Kennedy Way

8/13/2010



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	131	158	0	513	116	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	10	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1770	1463		1739	1881	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1770	1463		1739	1881	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	142	172	0	558	126	0
RTOR Reduction (vph)	0	148	0	0	0	0
Lane Group Flow (vph)	142	24	0	558	126	0
Heavy Vehicles (%)	2%	3%	2%	2%	1%	1%
Turn Type	Perm					
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	14.1	14.1		85.9	85.9	
Effective Green, g (s)	15.1	15.1		86.9	86.9	
Actuated g/C Ratio	0.14	0.14		0.79	0.79	
Clearance Time (s)	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	243	201		1374	1486	
v/s Ratio Prot	c0.08			c0.32	0.07	
v/s Ratio Perm		0.02				
v/c Ratio	0.58	0.12		0.41	0.08	
Uniform Delay, d1	44.5	41.6		3.6	2.6	
Progression Factor	1.00	1.00		1.00	1.91	
Incremental Delay, d2	3.6	0.3		0.9	0.1	
Delay (s)	48.1	41.9		4.5	5.1	
Level of Service	D	D		A	A	
Approach Delay (s)	44.7			4.5	5.1	
Approach LOS	D			A	A	



















Intersection Summary

HCM Average Control Delay	17.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	110.0	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			

BeltLine 2020 AM Peak Hour [with BeltLine Transit]

39: Decatur Street & Hilliard Street

8/13/2010



















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	75	182	39	190	749	60	88	212	214	0	15	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	10	12	10	9	12	12	10	10
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	4.0
Lane Util. Factor		0.95			0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes		1.00			1.00		1.00	0.98			1.00	0.99
Flpb, ped/bikes		1.00			1.00		1.00	1.00			1.00	1.00
Frt		0.98			0.99		1.00	0.92			1.00	0.85
Flt Protected		0.99			0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)		3216			3263		1683	1546			1689	1488
Flt Permitted		0.64			0.80		0.75	1.00			1.00	1.00
Satd. Flow (perm)		2087			2632		1323	1546			1689	1488
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	198	42	207	814	65	96	230	233	0	16	8
RTOR Reduction (vph)	0	22	0	0	8	0	0	65	0	0	0	5
Lane Group Flow (vph)	0	300	0	0	1078	0	96	398	0	0	16	3
Confl. Peds. (#/hr)	8		10	10		8	1		22	22		1
Heavy Vehicles (%)	1%	1%	0%	1%	1%	0%	0%	0%	1%	0%	5%	0%
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		25.2			25.2		19.8	19.8			19.8	19.8
Effective Green, g (s)		26.2			26.2		20.8	20.8			20.8	20.8
Actuated g/C Ratio		0.48			0.48		0.38	0.38			0.38	0.38
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)		994			1254		500	585			639	563
v/s Ratio Prot								c0.26			0.01	
v/s Ratio Perm		0.14			c0.41		0.07					0.00
v/c Ratio		0.30			0.86		0.19	0.68			0.03	0.01
Uniform Delay, d1		8.8			12.8		11.5	14.3			10.7	10.7
Progression Factor		1.00			1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		0.2			6.1		0.8	5.8			0.1	0.0
Delay (s)		9.0			18.8		12.2	20.2			10.8	10.7
Level of Service		A			B		B	C			B	B
Approach Delay (s)		9.0			18.8			18.8			10.8	
Approach LOS		A			B			B			B	
Intersection Summary												
HCM Average Control Delay			17.2			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			55.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			76.8%			ICU Level of Service			D			
Analysis Period (min)			15									

c Critical Lane Group

BeltLine 2020 AM Peak Hour [with BeltLine Transit]

48: Memorial Drive & Chester Avenue





















8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	225	10	28	953	44	22	8	18	21	0	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			0.95			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1770	1851		1770	1850			1729			1707	
Flt Permitted	0.10	1.00		0.58	1.00			0.87			0.84	
Satd. Flow (perm)	185	1851		1078	1850			1546			1481	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	245	11	30	1036	48	24	9	20	23	0	17
RTOR Reduction (vph)	0	2	0	0	2	0	0	16	0	0	14	0
Lane Group Flow (vph)	9	254	0	30	1082	0	0	37	0	0	26	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	73.8	73.0		77.0	74.6			19.6			19.6	
Effective Green, g (s)	73.8	73.0		77.0	74.6			19.6			19.6	
Actuated g/C Ratio	0.67	0.66		0.70	0.68			0.18			0.18	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	136	1228		770	1255			275			264	
v/s Ratio Prot	0.00	0.14		c0.00	c0.58							
v/s Ratio Perm	0.04			0.03				c0.02			0.02	
v/c Ratio	0.07	0.21		0.04	0.86			0.13			0.10	
Uniform Delay, d1	16.2	7.2		5.1	13.7			38.0			37.8	
Progression Factor	0.36	0.36		1.19	0.98			1.00			1.00	
Incremental Delay, d2	0.2	0.1		0.0	5.0			1.0			0.7	
Delay (s)	6.0	2.7		6.1	18.4			39.0			38.6	
Level of Service	A	A		A	B			D			D	
Approach Delay (s)		2.8			18.0			39.0			38.6	
Approach LOS		A			B			D			D	
Intersection Summary												
HCM Average Control Delay			16.6			HCM Level of Service					B	
HCM Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			64.5%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

BeltLine 2020 AM Peak Hour [with BeltLine Transit]

61: Memorial Drive & Holtzclaw Street





















8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	343	0	2	804	3	0	0	4	10	0	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00			0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863		1770	1862			1583		1770	1583	
Flt Permitted	0.20	1.00		0.51	1.00			1.00		0.76	1.00	
Satd. Flow (perm)	377	1863		944	1862			1583		1407	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	373	0	2	874	3	0	0	4	11	0	8
RTOR Reduction (vph)	0	0	0	0	0	0	0	3	0	0	6	0
Lane Group Flow (vph)	1	373	0	2	877	0	0	1	0	11	2	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases	4			8			2			6		
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	73.6	73.6		73.6	73.6			26.4		26.4	26.4	
Effective Green, g (s)	73.6	73.6		73.6	73.6			26.4		26.4	26.4	
Actuated g/C Ratio	0.67	0.67		0.67	0.67			0.24		0.24	0.24	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	252	1247		632	1246			380		338	380	
v/s Ratio Prot	0.20			c0.47			0.00			0.00		
v/s Ratio Perm	0.00			0.00						c0.01		
v/c Ratio	0.00	0.30		0.00	0.70			0.00		0.03	0.01	
Uniform Delay, d1	6.0	7.5		6.0	11.4			31.8		32.0	31.8	
Progression Factor	0.69	0.67		0.13	0.15			1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.1		0.0	1.0			0.0		0.2	0.0	
Delay (s)	4.2	5.2		0.8	2.7			31.8		32.2	31.8	
Level of Service	A	A		A	A			C		C	C	
Approach Delay (s)	5.2			2.7			31.8			32.0		
Approach LOS	A			A			C			C		
Intersection Summary												
HCM Average Control Delay			4.0	HCM Level of Service			A					
HCM Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			110.0	Sum of lost time (s)			10.0					
Intersection Capacity Utilization			58.1%	ICU Level of Service			B					
Analysis Period (min)			15									
c Critical Lane Group												

BeltLine 2020 AM Peak Hour [with BeltLine Transit]

67: Memorial Drive & Gibson Street












8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	356	0	2	804	2	0	0	4	9	0	5
Sign Control	Free				Free		Stop				Stop	
Grade	0%				0%		0%				0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	387	0	2	874	2	0	0	4	10	0	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)	315			379								
pX, platoon unblocked	0.56			0.92			0.60	0.60	0.92	0.60	0.60	0.56
vC, conflicting volume	876			387			1273	1270	387	1273	1268	875
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	386			285			808	803	285	808	801	384
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	99	95	100	99
cM capacity (veh/h)	657			1170			177	190	691	179	191	372
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	1	387	2	876	0	4	10	5				
Volume Left	1	0	2	0	0	0	10	0				
Volume Right	0	0	0	2	0	4	0	5				
cSH	657	1700	1170	1700	1700	691	179	372				
Volume to Capacity	0.00	0.23	0.00	0.52	0.00	0.01	0.05	0.01				
Queue Length 95th (ft)	0	0	0	0	0	0	4	1				
Control Delay (s)	10.5	0.0	8.1	0.0	0.0	10.2	26.3	14.8				
Lane LOS	B		A		A	B	D	B				
Approach Delay (s)	0.0		0.0		10.2		22.2					
Approach LOS					B		C					
Intersection Summary												
Average Delay	0.3											
Intersection Capacity Utilization	56.3%			ICU Level of Service					B			
Analysis Period (min)	15											

BeltLine 2020 AM Peak Hour [with BeltLine Transit]

101: Memorial Drive & New Street B























8/13/2010

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	237	4	1	953	1	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	258	4	1	1036	1	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)	313			274		
pX, platoon unblocked			0.96		0.48	0.96
vC, conflicting volume			262		1298	260
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			205		874	203
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		99	100
cM capacity (veh/h)			1306		154	801
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	
Volume Total	262	1	1036	1	2	
Volume Left	0	1	0	1	0	
Volume Right	4	0	0	0	2	
cSH	1700	1306	1700	154	801	
Volume to Capacity	0.15	0.00	0.61	0.01	0.00	
Queue Length 95th (ft)	0	0	0	1	0	
Control Delay (s)	0.0	7.8	0.0	28.6	9.5	
Lane LOS		A		D	A	
Approach Delay (s)	0.0	0.0		15.9		
Approach LOS				C		
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			60.2%	ICU Level of Service		B
Analysis Period (min)			15			

BeltLine 2020 PM Peak Hour [with BeltLine Transit]

8: Memorial Drive & Boulevard

8/13/2010

















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	79	366	111	100	191	49	71	359	55	169	767	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	9	9	12	10	9	12	11	10	12
Total Lost time (s)	4.0	4.0		4.0	4.0	5.0	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	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1738		1624	1693	1599	1668	1631		1745	3063	
Flt Permitted	0.58	1.00		0.14	1.00	1.00	0.19	1.00		0.24	1.00	
Satd. Flow (perm)	1096	1738		236	1693	1599	340	1631		438	3063	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	86	398	121	109	208	53	77	390	60	184	834	78
RTOR Reduction (vph)	0	11	0	0	0	35	0	6	0	0	7	0
Lane Group Flow (vph)	86	508	0	109	208	18	77	444	0	184	905	0
Confl. Peds. (#/hr)			4	4			3		1	1		3
Heavy Vehicles (%)	0%	2%	0%	0%	1%	1%	1%	2%	5%	0%	9%	1%
Turn Type	pm+pt			pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	35.5	32.3		39.1	34.1	34.1	38.8	35.3		46.6	39.2	
Effective Green, g (s)	37.5	33.3		41.1	35.1	34.1	40.8	36.3		48.6	40.2	
Actuated g/C Ratio	0.38	0.33		0.41	0.35	0.34	0.41	0.36		0.49	0.40	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
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)	441	579		180	594	545	198	592		323	1231	
v/s Ratio Prot	0.01	c0.29		c0.04	0.12		0.02	0.27		c0.05	c0.30	
v/s Ratio Perm	0.06			0.21		0.01	0.14			0.23		
v/c Ratio	0.20	0.88		0.61	0.35	0.03	0.39	0.75		0.57	0.74	
Uniform Delay, d1	20.5	31.4		22.2	24.0	22.0	19.5	27.9		17.6	25.4	
Progression Factor	0.90	0.87		0.64	0.74	0.89	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	11.8		5.5	0.3	0.0	1.3	8.5		2.3	3.9	
Delay (s)	18.6	39.1		19.6	18.1	19.5	20.8	36.4		19.9	29.3	
Level of Service	B	D		B	B	B	C	D		B	C	
Approach Delay (s)		36.2			18.7			34.1			27.7	
Approach LOS		D			B			C			C	
Intersection Summary												
HCM Average Control Delay			29.7			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			20.0			
Intersection Capacity Utilization			76.6%			ICU Level of Service			D			
Analysis Period (min)			15									

c Critical Lane Group

BeltLine 2020 PM Peak Hour [with BeltLine Transit]

13: Wylie Street & Krog Street



















8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	78	12	4	9	21	126	1	40	5	288	185	100
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	85	13	4	10	23	137	1	43	5	313	201	109
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	102	170	50	623								
Volume Left (vph)	85	10	1	313								
Volume Right (vph)	4	137	5	109								
Hadj (s)	0.14	-0.47	-0.06	0.00								
Departure Headway (s)	6.1	5.3	5.5	4.8								
Degree Utilization, x	0.17	0.25	0.08	0.82								
Capacity (veh/h)	550	619	601	742								
Control Delay (s)	10.3	10.1	8.9	25.9								
Approach Delay (s)	10.3	10.1	8.9	25.9								
Approach LOS	B	B	A	D								
Intersection Summary												
Delay			20.5									
HCM Level of Service			C									
Intersection Capacity Utilization			64.3%	ICU Level of Service					C			
Analysis Period (min)			15									

BeltLine 2020 PM Peak Hour [with BeltLine Transit]

16: Memorial Drive & Grant Street

8/13/2010



















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	68	539	3	4	256	48	2	5	5	166	23	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	9	11	12	9	11	12	12	15	12	12	15	12
Total Lost time (s)	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	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.94			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.97	
Satd. Flow (prot)	1623	1817		1622	1772			1939			1950	
Flt Permitted	0.50	1.00		0.24	1.00			0.96			0.79	
Satd. Flow (perm)	854	1817		412	1772			1880			1588	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	74	586	3	4	278	52	2	5	5	180	25	53
RTOR Reduction (vph)	0	1	0	0	15	0	0	3	0	0	17	0
Lane Group Flow (vph)	74	588	0	4	315	0	0	9	0	0	241	0
Confl. Peds. (#/hr)	1		3	3		1	3					3
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	5%	0%	0%	0%	0%	1%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	20.6	20.6		20.6	20.6			19.4			19.4	
Effective Green, g (s)	21.6	21.6		21.6	21.6			20.4			20.4	
Actuated g/C Ratio	0.43	0.43		0.43	0.43			0.41			0.41	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	369	785		178	766			767			648	
v/s Ratio Prot		c0.32			0.18							
v/s Ratio Perm	0.09			0.01				0.00			c0.15	
v/c Ratio	0.20	0.75		0.02	0.41			0.01			0.37	
Uniform Delay, d1	8.8	11.9		8.1	9.8			8.8			10.3	
Progression Factor	1.00	1.00		0.76	0.55			1.00			1.00	
Incremental Delay, d2	0.3	4.0		0.0	0.3			0.0			1.6	
Delay (s)	9.1	15.9		6.2	5.8			8.8			12.0	
Level of Service	A	B		A	A			A			B	
Approach Delay (s)		15.1			5.8			8.8			12.0	
Approach LOS		B			A			A			B	
Intersection Summary												
HCM Average Control Delay			12.0			HCM Level of Service					B	
HCM Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			50.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			62.0%			ICU Level of Service				B		
Analysis Period (min)			15									

c Critical Lane Group

BeltLine 2020 PM Peak Hour [with BeltLine Transit]

17: Memorial Drive & Pearl Street

8/13/2010

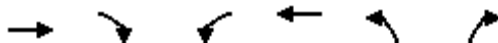
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	17	687	11	9	306	36	9	13	9	47	13	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	12	12	10	10	10	10	10	10	10
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.96			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.97	
Satd. Flow (prot)	1491	1751		1357	1854			1563			1659	
Flt Permitted	0.41	1.00		0.21	1.00			0.94			0.84	
Satd. Flow (perm)	651	1751		305	1854			1490			1428	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	747	12	10	333	39	10	14	10	51	14	18
RTOR Reduction (vph)	0	1	0	0	5	0	0	7	0	0	9	0
Lane Group Flow (vph)	18	758	0	10	367	0	0	27	0	0	74	0
Confl. Peds. (#/hr)			2	2			1		1	1		1
Heavy Vehicles (%)	17%	1%	0%	33%	1%	0%	7%	11%	0%	0%	0%	0%
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	53.5	53.5		52.7	52.7			30.7			30.7	
Effective Green, g (s)	54.5	54.5		53.7	53.7			31.7			31.7	
Actuated g/C Ratio	0.54	0.54		0.54	0.54			0.32			0.32	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	377	954		183	996			472			453	
v/s Ratio Prot	0.00	c0.43		0.00	c0.20							
v/s Ratio Perm	0.02			0.03				0.02			c0.05	
v/c Ratio	0.05	0.79		0.05	0.37			0.06			0.16	
Uniform Delay, d1	11.2	18.3		24.2	13.4			23.8			24.6	
Progression Factor	0.59	0.63		0.16	0.23			1.00			1.00	
Incremental Delay, d2	0.0	3.6		0.1	0.2			0.2			0.8	
Delay (s)	6.7	15.1		4.0	3.3			24.0			25.4	
Level of Service	A	B		A	A			C			C	
Approach Delay (s)		14.9			3.4			24.0			25.4	
Approach LOS		B			A			C			C	
Intersection Summary												
HCM Average Control Delay			12.4			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			56.8%			ICU Level of Service			B			
Analysis Period (min)			15									

c Critical Lane Group

BeltLine 2020 PM Peak Hour [with BeltLine Transit]

21: Memorial Drive & Bill Kennedy Way

8/13/2010



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	↩
Volume (vph)	552	327	174	335	110	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	11	12	12
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.95		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1645		1805	1818	1787	1568
Flt Permitted	1.00		0.19	1.00	0.95	1.00
Satd. Flow (perm)	1645		354	1818	1787	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	600	355	189	364	120	120
RTOR Reduction (vph)	24	0	0	0	0	95
Lane Group Flow (vph)	931	0	189	364	120	25
Confl. Peds. (#/hr)						3
Heavy Vehicles (%)	2%	3%	0%	1%	1%	0%
Turn Type			Perm			Perm
Protected Phases	4			8	2	
Permitted Phases			8			2
Actuated Green, G (s)	69.9		69.9	69.9	20.1	20.1
Effective Green, g (s)	70.9		70.9	70.9	21.1	21.1
Actuated g/C Ratio	0.71		0.71	0.71	0.21	0.21
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1166		251	1289	377	331
v/s Ratio Prot	c0.57			0.20	c0.07	
v/s Ratio Perm			0.53			0.02
v/c Ratio	0.80		0.75	0.28	0.32	0.08
Uniform Delay, d1	9.8		9.1	5.3	33.4	31.6
Progression Factor	0.18		0.99	0.21	1.00	1.00
Incremental Delay, d2	3.2		11.4	0.1	2.2	0.4
Delay (s)	4.9		20.3	1.2	35.6	32.1
Level of Service	A		C	A	D	C
Approach Delay (s)	4.9			7.7	33.8	
Approach LOS	A			A	C	

Intersection Summary

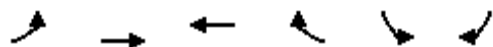
HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	82.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

BeltLine 2020 PM Peak Hour [with BeltLine Transit]

24: Glenwood Avenue & Bill Kennedy Way

8/13/2010























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	73	160	123	171	379	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	10	12
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		1.00	1.00		1.00	
Frpb, ped/bikes		1.00	0.98		0.99	
Flpb, ped/bikes		1.00	1.00		1.00	
Frt		1.00	0.92		0.98	
Flt Protected		0.98	1.00		0.96	
Satd. Flow (prot)		1733	1646		1592	
Flt Permitted		0.74	1.00		0.96	
Satd. Flow (perm)		1299	1646		1592	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	79	174	134	186	412	91
RTOR Reduction (vph)	0	0	83	0	13	0
Lane Group Flow (vph)	0	253	237	0	490	0
Confl. Peds. (#/hr)	6			6	6	5
Heavy Vehicles (%)	11%	1%	1%	1%	4%	3%
Turn Type	Perm					
Protected Phases		4	8		6	
Permitted Phases	4					
Actuated Green, G (s)		19.0	19.0		31.0	
Effective Green, g (s)		20.0	20.0		32.0	
Actuated g/C Ratio		0.33	0.33		0.53	
Clearance Time (s)		5.0	5.0		5.0	
Lane Grp Cap (vph)		433	549		849	
v/s Ratio Prot			0.14		c0.31	
v/s Ratio Perm		c0.19				
v/c Ratio		0.58	0.43		0.58	
Uniform Delay, d1		16.6	15.6		9.4	
Progression Factor		1.00	1.00		0.52	
Incremental Delay, d2		5.7	2.5		2.6	
Delay (s)		22.2	18.0		7.5	
Level of Service		C	B		A	
Approach Delay (s)		22.2	18.0		7.5	
Approach LOS		C	B		A	
Intersection Summary						
HCM Average Control Delay			14.1		HCM Level of Service	B
HCM Volume to Capacity ratio			0.58			
Actuated Cycle Length (s)			60.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			66.0%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

BeltLine 2020 PM Peak Hour [with BeltLine Transit]

25: Memorial Drive & New Street A


















8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	733	3	5	328	21	3	0	5	14	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1862		1770	1846		1770	1583		1770	1583	
Flt Permitted	0.42	1.00		0.19	1.00		0.75	1.00		0.75	1.00	
Satd. Flow (perm)	775	1862		359	1846		1405	1583		1405	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	797	3	5	357	23	3	0	5	15	0	5
RTOR Reduction (vph)	0	0	0	0	3	0	0	4	0	0	4	0
Lane Group Flow (vph)	9	800	0	5	377	0	3	1	0	15	1	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	54.8	54.8		54.8	54.8		29.4	29.4		29.4	29.4	
Effective Green, g (s)	54.8	54.8		54.8	54.8		29.4	29.4		29.4	29.4	
Actuated g/C Ratio	0.55	0.55		0.55	0.55		0.29	0.29		0.29	0.29	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	433	1020		208	1012		413	465		413	465	
v/s Ratio Prot	0.00	c0.43		0.00	c0.20			0.00			0.00	
v/s Ratio Perm	0.01			0.01			0.00			c0.01		
v/c Ratio	0.02	0.78		0.02	0.37		0.01	0.00		0.04	0.00	
Uniform Delay, d1	11.0	17.9		25.1	12.8		25.0	24.9		25.2	24.9	
Progression Factor	0.36	0.19		0.50	0.56		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	3.0		0.0	0.2		0.0	0.0		0.2	0.0	
Delay (s)	4.0	6.4		12.5	7.4		25.0	25.0		25.4	25.0	
Level of Service	A	A		B	A		C	C		C	C	
Approach Delay (s)		6.4			7.4			25.0			25.3	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM Average Control Delay	7.2			HCM Level of Service			A					
HCM Volume to Capacity ratio	0.50											
Actuated Cycle Length (s)	100.0			Sum of lost time (s)			10.0					
Intersection Capacity Utilization	54.5%			ICU Level of Service			A					
Analysis Period (min)	15											
c Critical Lane Group												

BeltLine 2020 PM Peak Hour [with BeltLine Transit]

33: I-20 WB Ramp & Bill Kennedy Way

8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	0	0	164	219	0	0	316	192
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	11	12	12	11	12
Total Lost time (s)							5.0	5.0			5.0	
Lane Util. Factor							1.00	1.00			1.00	
Frt							1.00	1.00			0.95	
Flt Protected							0.95	1.00			1.00	
Satd. Flow (prot)							1736	1818			1676	
Flt Permitted							0.43	1.00			1.00	
Satd. Flow (perm)							778	1818			1676	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	178	238	0	0	343	209
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	18	0
Lane Group Flow (vph)	0	0	0	0	0	0	178	238	0	0	534	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	1%	2%	2%	4%	4%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)							94.0	94.0			94.0	
Effective Green, g (s)							94.0	94.0			94.0	
Actuated g/C Ratio							0.78	0.78			0.78	
Clearance Time (s)							5.0	5.0			5.0	
Lane Grp Cap (vph)							609	1424			1313	
v/s Ratio Prot								0.13			c0.32	
v/s Ratio Perm							0.23					
v/c Ratio							0.29	0.17			0.41	
Uniform Delay, d1							3.7	3.2			4.1	
Progression Factor							0.29	0.31			1.00	
Incremental Delay, d2							1.2	0.2			0.9	
Delay (s)							2.3	1.2			5.1	
Level of Service							A	A			A	
Approach Delay (s)		0.0			0.0			1.7			5.1	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM Average Control Delay			3.6				HCM Level of Service				A	
HCM Volume to Capacity ratio			0.41									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			26.0		
Intersection Capacity Utilization			53.3%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

BeltLine 2020 PM Peak Hour [with BeltLine Transit]

35: I-20 EB Ramp & Bill Kennedy Way

8/13/2010



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	97	233	0	253	350	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	10	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1770	1463		1739	1881	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1770	1463		1739	1881	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	105	253	0	275	380	0
RTOR Reduction (vph)	0	156	0	0	0	0
Lane Group Flow (vph)	105	97	0	275	380	0
Heavy Vehicles (%)	2%	3%	2%	2%	1%	1%
Turn Type	Perm					
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	45.0	45.0		65.0	65.0	
Effective Green, g (s)	46.0	46.0		66.0	66.0	
Actuated g/C Ratio	0.38	0.38		0.55	0.55	
Clearance Time (s)	5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)	679	561		956	1035	
v/s Ratio Prot	0.06			0.16	c0.20	
v/s Ratio Perm		c0.07				
v/c Ratio	0.15	0.17		0.29	0.37	
Uniform Delay, d1	24.3	24.4		14.4	15.2	
Progression Factor	1.00	1.00		1.25	0.81	
Incremental Delay, d2	0.5	0.7		0.8	0.9	
Delay (s)	24.7	25.1		18.8	13.2	
Level of Service	C	C		B	B	
Approach Delay (s)	25.0			18.8	13.2	
Approach LOS	C			B	B	

Intersection Summary

HCM Average Control Delay	18.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

BeltLine 2020 PM Peak Hour [with BeltLine Transit]

39: Decatur Street & Hilliard Street

8/13/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔		↔	↔			↔	↔
Volume (vph)	22	677	43	241	337	16	26	33	225	0	23	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	10	12	10	9	12	12	10	10
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	4.0
Lane Util. Factor		0.95			0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes		1.00			1.00		1.00	0.97			1.00	0.99
Flpb, ped/bikes		1.00			1.00		1.00	1.00			1.00	1.00
Frt		0.99			1.00		1.00	0.87			1.00	0.85
Flt Protected		1.00			0.98		0.95	1.00			1.00	1.00
Satd. Flow (prot)		3296			3248		1683	1427			1689	1488
Flt Permitted		0.93			0.56		0.74	1.00			1.00	1.00
Satd. Flow (perm)		3065			1851		1313	1427			1689	1488
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	736	47	262	366	17	28	36	245	0	25	8
RTOR Reduction (vph)	0	8	0	0	3	0	0	123	0	0	0	5
Lane Group Flow (vph)	0	799	0	0	642	0	28	158	0	0	25	3
Confl. Peds. (#/hr)	8		10	10		8	1		22	22		1
Heavy Vehicles (%)	1%	1%	0%	1%	1%	0%	0%	0%	1%	0%	5%	0%
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		32.0			32.0		18.0	18.0			18.0	18.0
Effective Green, g (s)		33.0			33.0		19.0	19.0			19.0	19.0
Actuated g/C Ratio		0.55			0.55		0.32	0.32			0.32	0.32
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	5.0
Lane Grp Cap (vph)		1686			1018		416	452			535	471
v/s Ratio Prot								c0.11			0.01	
v/s Ratio Perm		0.26			c0.35		0.02					0.00
v/c Ratio		0.47			0.89dl		0.07	0.35			0.05	0.01
Uniform Delay, d1		8.2			9.3		14.3	15.8			14.2	14.0
Progression Factor		1.00			1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		1.0			3.0		0.3	2.1			0.2	0.0
Delay (s)		9.2			12.3		14.6	17.9			14.4	14.1
Level of Service		A			B		B	B			B	B
Approach Delay (s)		9.2			12.3			17.6			14.3	
Approach LOS		A			B			B			B	



















Intersection Summary

HCM Average Control Delay	11.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		
dl Defacto Left Lane. Recode with 1 though lane as a left lane.			
c Critical Lane Group			

BeltLine 2020 PM Peak Hour [with BeltLine Transit]

48: Memorial Drive & Chester Avenue





















8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	738	22	9	372	11	8	2	21	47	3	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.91			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.96	
Satd. Flow (prot)	1770	1855		1770	1855			1671			1749	
Flt Permitted	0.39	1.00		0.19	1.00			0.95			0.79	
Satd. Flow (perm)	727	1855		348	1855			1602			1441	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	802	24	10	404	12	9	2	23	51	3	12
RTOR Reduction (vph)	0	1	0	0	1	0	0	17	0	0	7	0
Lane Group Flow (vph)	16	825	0	10	415	0	0	17	0	0	59	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	56.0	56.0		55.2	55.2			28.2			28.2	
Effective Green, g (s)	56.0	56.0		55.2	55.2			28.2			28.2	
Actuated g/C Ratio	0.56	0.56		0.55	0.55			0.28			0.28	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	424	1039		203	1024			452			406	
v/s Ratio Prot	0.00	c0.44		0.00	c0.22							
v/s Ratio Perm	0.02			0.03				0.01			c0.04	
v/c Ratio	0.04	0.79		0.05	0.40			0.04			0.14	
Uniform Delay, d1	10.7	17.4		25.2	12.9			26.1			26.9	
Progression Factor	0.20	0.12		1.02	0.79			1.00			1.00	
Incremental Delay, d2	0.0	3.3		0.1	0.3			0.2			0.7	
Delay (s)	2.2	5.4		25.9	10.5			26.2			27.6	
Level of Service	A	A		C	B			C			C	
Approach Delay (s)		5.3			10.8			26.2			27.6	
Approach LOS		A			B			C			C	
Intersection Summary												
HCM Average Control Delay			8.6	HCM Level of Service			A					
HCM Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			100.0	Sum of lost time (s)			10.0					
Intersection Capacity Utilization			57.1%	ICU Level of Service			B					
Analysis Period (min)			15									
c Critical Lane Group												

BeltLine 2020 PM Peak Hour [with BeltLine Transit]

61: Memorial Drive & Holtzclaw Street





















8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	640	0	7	481	16	0	0	7	10	0	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00			0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863		1770	1854			1583		1770	1583	
Flt Permitted	0.33	1.00		0.21	1.00			1.00		0.75	1.00	
Satd. Flow (perm)	616	1863		399	1854			1583		1402	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	696	0	8	523	17	0	0	8	11	0	8
RTOR Reduction (vph)	0	0	0	0	2	0	0	5	0	0	5	0
Lane Group Flow (vph)	9	696	0	8	538	0	0	3	0	11	3	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases	4			8			2			6		
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	53.0	53.0		53.0	53.0			37.0		37.0	37.0	
Effective Green, g (s)	53.0	53.0		53.0	53.0			37.0		37.0	37.0	
Actuated g/C Ratio	0.53	0.53		0.53	0.53			0.37		0.37	0.37	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	326	987		211	983			586		519	586	
v/s Ratio Prot	c0.37			0.29			0.00			0.00		
v/s Ratio Perm	0.01			0.02						c0.01		
v/c Ratio	0.03	0.71		0.04	0.55			0.01		0.02	0.01	
Uniform Delay, d1	11.2	17.6		11.3	15.6			19.9		20.0	19.9	
Progression Factor	0.57	0.56		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.0	1.7		0.1	0.6			0.0		0.1	0.0	
Delay (s)	6.4	11.6		11.3	16.2			19.9		20.1	19.9	
Level of Service	A	B		B	B			B		C	B	
Approach Delay (s)	11.6			16.1			19.9			20.0		
Approach LOS	B			B			B			C		
Intersection Summary												
HCM Average Control Delay			13.7	HCM Level of Service			B					
HCM Volume to Capacity ratio			0.42									
Actuated Cycle Length (s)			100.0	Sum of lost time (s)			10.0					
Intersection Capacity Utilization			49.2%	ICU Level of Service			A					
Analysis Period (min)			15									
c Critical Lane Group												

BeltLine 2020 PM Peak Hour [with BeltLine Transit]

67: Memorial Drive & Gibson Street












8/13/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	652	0	7	499	14	0	0	7	9	0	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	709	0	8	542	15	0	0	8	10	0	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		315			379							
pX, platoon unblocked				0.71			0.71	0.71	0.71	0.71	0.71	
vC, conflicting volume	558			709			1282	1292	709	1292	1285	550
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	558			381			1191	1206	381	1206	1196	550
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	100	98	91	100	99
cM capacity (veh/h)	1013			833			114	128	471	110	130	535
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	5	709	8	558	0	8	10	4				
Volume Left	5	0	8	0	0	0	10	0				
Volume Right	0	0	0	15	0	8	0	4				
cSH	1013	1700	833	1700	1700	471	110	535				
Volume to Capacity	0.01	0.42	0.01	0.33	0.00	0.02	0.09	0.01				
Queue Length 95th (ft)	0	0	1	0	0	1	7	1				
Control Delay (s)	8.6	0.0	9.4	0.0	0.0	12.8	40.8	11.8				
Lane LOS	A		A		A	B	E	B				
Approach Delay (s)	0.1		0.1		12.8		31.9					
Approach LOS					B		D					
Intersection Summary												
Average Delay			0.5									
Intersection Capacity Utilization			48.1%		ICU Level of Service			A				
Analysis Period (min)			15									

BeltLine 2020 PM Peak Hour [with BeltLine Transit]

101: Memorial Drive & New Street B























8/13/2010

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	749	16	5	351	3	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	814	17	5	382	3	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	313			274		
pX, platoon unblocked			0.64		0.70	0.64
vC, conflicting volume			832		1215	823
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			453		697	440
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		99	99
cM capacity (veh/h)			707		283	394
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	
Volume Total	832	5	382	3	5	
Volume Left	0	5	0	3	0	
Volume Right	17	0	0	0	5	
cSH	1700	707	1700	283	394	
Volume to Capacity	0.49	0.01	0.22	0.01	0.01	
Queue Length 95th (ft)	0	1	0	1	1	
Control Delay (s)	0.0	10.1	0.0	17.9	14.3	
Lane LOS		B		C	B	
Approach Delay (s)	0.0	0.1		15.6		
Approach LOS				C		
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			50.4%	ICU Level of Service		A
Analysis Period (min)			15			

BeltLine 2030 AM Peak Hour [with BeltLine Transit]

8: Memorial Drive & Boulevard

10/6/2010

















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	157	22	63	627	222	602	869	21	36	231	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	9	9	12	10	9	12	11	10	12
Total Lost time (s)	4.0	4.0		4.0	4.0	5.0	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	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1767		1619	1693	1599	1666	1668		1745	3016	
Flt Permitted	0.10	1.00		0.55	1.00	1.00	0.30	1.00		0.21	1.00	
Satd. Flow (perm)	191	1767		945	1693	1599	531	1668		385	3016	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	171	24	68	682	241	654	945	23	39	251	72
RTOR Reduction (vph)	0	4	0	0	0	94	0	1	0	0	22	0
Lane Group Flow (vph)	98	191	0	68	682	147	654	967	0	39	301	0
Confl. Peds. (#/hr)			4	4			3		1	1		3
Heavy Vehicles (%)	0%	2%	0%	0%	1%	1%	1%	2%	5%	0%	9%	1%
Turn Type	pm+pt			pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	42.8	38.8		41.2	38.0	38.0	63.0	55.6		20.5	18.1	
Effective Green, g (s)	44.8	39.8		43.2	39.0	38.0	64.0	56.6		22.5	19.1	
Actuated g/C Ratio	0.37	0.33		0.36	0.32	0.32	0.53	0.47		0.19	0.16	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
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)	139	586		364	550	506	670	787		111	480	
v/s Ratio Prot	c0.03	0.11		0.01	c0.40		c0.33	c0.58		0.01	0.10	
v/s Ratio Perm	0.23			0.06		0.09	0.19			0.06		
v/c Ratio	0.71	0.33		0.19	1.24	0.29	0.98	1.23		0.35	0.63	
Uniform Delay, d1	30.5	30.0		25.8	40.5	30.8	26.1	31.7		41.5	47.1	
Progression Factor	1.11	1.08		0.50	0.61	0.52	1.00	1.00		1.00	1.00	
Incremental Delay, d2	15.0	0.3		0.1	116.0	0.2	28.6	114.3		1.9	6.1	
Delay (s)	48.8	32.7		13.0	140.7	16.3	54.7	146.0		43.4	53.2	
Level of Service	D	C		B	F	B	D	F		D	D	
Approach Delay (s)		38.1			101.7			109.2			52.2	
Approach LOS		D			F			F			D	
Intersection Summary												
HCM Average Control Delay			94.2			HCM Level of Service				F		
HCM Volume to Capacity ratio			1.21									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			101.7%			ICU Level of Service			G			
Analysis Period (min)			15									

c Critical Lane Group

BeltLine 2030 AM Peak Hour [with BeltLine Transit]

13: Wylie Street & Krog Street



















10/6/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	127	5	3	1	14	355	1	167	1	77	27	27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	138	5	3	1	15	386	1	182	1	84	29	29
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	147	402	184	142								
Volume Left (vph)	138	1	1	84								
Volume Right (vph)	3	386	1	29								
Hadj (s)	0.17	-0.58	0.00	-0.01								
Departure Headway (s)	5.6	4.5	5.5	5.6								
Degree Utilization, x	0.23	0.50	0.28	0.22								
Capacity (veh/h)	589	760	586	574								
Control Delay (s)	10.2	11.9	10.6	10.1								
Approach Delay (s)	10.2	11.9	10.6	10.1								
Approach LOS	B	B	B	B								
Intersection Summary												
Delay				11.1								
HCM Level of Service				B								
Intersection Capacity Utilization				61.2%	ICU Level of Service	B						
Analysis Period (min)				15								

BeltLine 2030 AM Peak Hour [with BeltLine Transit]

16: Memorial Drive & Grant Street

10/6/2010



















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	56	164	0	2	1251	177	15	43	2	42	7	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	9	11	12	9	11	12	12	15	12	12	15	12
Total Lost time (s)	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	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.98	
Flpb, ped/bikes	1.00	1.00		0.99	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			1.00			0.93	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1624	1818		1610	1782			2027			1858	
Flt Permitted	0.04	1.00		0.64	1.00			0.92			0.87	
Satd. Flow (perm)	72	1818		1093	1782			1893			1645	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	61	178	0	2	1360	192	16	47	2	46	8	64
RTOR Reduction (vph)	0	0	0	0	4	0	0	1	0	0	35	0
Lane Group Flow (vph)	61	178	0	2	1548	0	0	64	0	0	83	0
Confl. Peds. (#/hr)	1		3	3		1	3					3
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	5%	0%	0%	0%	0%	1%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	94.0	94.0		94.0	94.0			16.0			16.0	
Effective Green, g (s)	95.0	95.0		95.0	95.0			17.0			17.0	
Actuated g/C Ratio	0.79	0.79		0.79	0.79			0.14			0.14	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	57	1439		865	1411			268			233	
v/s Ratio Prot		0.10			c0.87							
v/s Ratio Perm	0.85			0.00				0.03			c0.05	
v/c Ratio	1.07	0.12		0.00	1.10			0.24			0.36	
Uniform Delay, d1	12.5	2.9		2.6	12.5			45.8			46.5	
Progression Factor	1.00	1.00		0.77	0.48			1.00			1.00	
Incremental Delay, d2	140.1	0.0		0.0	47.0			2.1			4.2	
Delay (s)	152.6	2.9		2.0	52.9			47.9			50.7	
Level of Service	F	A		A	D			D			D	
Approach Delay (s)		41.1			52.9			47.9			50.7	
Approach LOS		D			D			D			D	
Intersection Summary												
HCM Average Control Delay			51.2			HCM Level of Service					D	
HCM Volume to Capacity ratio			0.98									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			96.6%			ICU Level of Service				F		
Analysis Period (min)			15									

c Critical Lane Group

BeltLine 2030 AM Peak Hour [with BeltLine Transit]

17: Memorial Drive & Pearl Street

10/6/2010

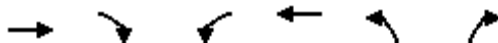
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	9	207	9	3	1039	38	25	13	6	33	6	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	12	12	10	10	10	10	10	10	10
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			0.98			0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.97			0.97	
Satd. Flow (prot)	1491	1743		1354	1872			1570			1633	
Flt Permitted	0.09	1.00		0.58	1.00			0.84			0.83	
Satd. Flow (perm)	146	1743		819	1872			1352			1397	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	225	10	3	1129	41	27	14	7	36	7	21
RTOR Reduction (vph)	0	1	0	0	1	0	0	5	0	0	14	0
Lane Group Flow (vph)	10	234	0	3	1169	0	0	43	0	0	50	0
Confl. Peds. (#/hr)			2	2			1		1	1		1
Heavy Vehicles (%)	17%	1%	0%	33%	1%	0%	7%	11%	0%	0%	0%	0%
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	84.9	84.9		84.9	84.9			19.3			19.3	
Effective Green, g (s)	85.9	85.9		85.9	85.9			20.3			20.3	
Actuated g/C Ratio	0.72	0.72		0.72	0.72			0.17			0.17	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	125	1248		594	1340			229			236	
v/s Ratio Prot	0.00	c0.13		0.00	c0.62							
v/s Ratio Perm	0.06			0.00				0.03			c0.04	
v/c Ratio	0.08	0.19		0.01	0.87			0.19			0.21	
Uniform Delay, d1	32.8	5.6		5.0	12.9			42.8			43.0	
Progression Factor	3.38	2.59		0.17	0.16			1.00			1.00	
Incremental Delay, d2	0.3	0.1		0.0	3.8			1.8			2.0	
Delay (s)	111.2	14.6		0.9	5.8			44.6			45.0	
Level of Service	F	B		A	A			D			D	
Approach Delay (s)		18.5			5.8			44.6			45.0	
Approach LOS		B			A			D			D	
Intersection Summary												
HCM Average Control Delay			10.7			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			77.0%			ICU Level of Service			D			
Analysis Period (min)			15									

c Critical Lane Group

BeltLine 2030 AM Peak Hour [with BeltLine Transit]

21: Memorial Drive & Bill Kennedy Way

10/6/2010

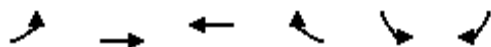


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰		↰	↱	↰	↱
Volume (vph)	229	86	86	814	319	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	11	12	12
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.96		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1670		1805	1818	1787	1565
Flt Permitted	1.00		0.50	1.00	0.95	1.00
Satd. Flow (perm)	1670		944	1818	1787	1565
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	249	93	93	885	347	179
RTOR Reduction (vph)	13	0	0	0	0	73
Lane Group Flow (vph)	329	0	93	885	347	106
Confl. Peds. (#/hr)						3
Heavy Vehicles (%)	2%	3%	0%	1%	1%	0%
Turn Type			Perm			Perm
Protected Phases	4			8	2	
Permitted Phases			8			2
Actuated Green, G (s)	70.1		70.1	70.1	39.9	39.9
Effective Green, g (s)	71.1		71.1	71.1	40.9	40.9
Actuated g/C Ratio	0.59		0.59	0.59	0.34	0.34
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	989		559	1077	609	533
v/s Ratio Prot	0.20			c0.49	c0.19	
v/s Ratio Perm			0.10			0.07
v/c Ratio	0.33		0.17	0.82	0.57	0.20
Uniform Delay, d1	12.4		11.1	19.4	32.4	28.0
Progression Factor	0.75		0.81	0.57	1.00	1.00
Incremental Delay, d2	0.2		0.1	3.9	3.8	0.8
Delay (s)	9.5		9.1	14.9	36.2	28.8
Level of Service	A		A	B	D	C
Approach Delay (s)	9.5			14.4	33.7	
Approach LOS	A			B	C	
Intersection Summary						
HCM Average Control Delay			19.0		HCM Level of Service	B
HCM Volume to Capacity ratio			0.73			
Actuated Cycle Length (s)			120.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			67.2%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

BeltLine 2030 AM Peak Hour [with BeltLine Transit]

24: Glenwood Avenue & Bill Kennedy Way

10/6/2010























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	86	117	233	345	94	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	10	12
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		1.00	1.00		1.00	
Frpb, ped/bikes		1.00	0.98		0.98	
Flpb, ped/bikes		1.00	1.00		1.00	
Frt		1.00	0.92		0.92	
Flt Protected		0.98	1.00		0.98	
Satd. Flow (prot)		1708	1643		1517	
Flt Permitted		0.38	1.00		0.98	
Satd. Flow (perm)		658	1643		1517	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	93	127	253	375	102	162
RTOR Reduction (vph)	0	0	128	0	90	0
Lane Group Flow (vph)	0	220	500	0	174	0
Confl. Peds. (#/hr)	6			6	6	5
Heavy Vehicles (%)	11%	1%	1%	1%	4%	3%
Turn Type	Perm					
Protected Phases		4	8		6	
Permitted Phases	4					
Actuated Green, G (s)		18.9	18.9		21.1	
Effective Green, g (s)		19.9	19.9		22.1	
Actuated g/C Ratio		0.40	0.40		0.44	
Clearance Time (s)		5.0	5.0		5.0	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		262	654		671	
v/s Ratio Prot			0.30		c0.11	
v/s Ratio Perm		c0.33				
v/c Ratio		0.84	0.76		0.26	
Uniform Delay, d1		13.6	13.0		8.8	
Progression Factor		1.78	1.00		0.62	
Incremental Delay, d2		20.3	5.3		0.9	
Delay (s)		44.5	18.3		6.4	
Level of Service		D	B		A	
Approach Delay (s)		44.5	18.3		6.4	
Approach LOS		D	B		A	
Intersection Summary						
HCM Average Control Delay			20.7		HCM Level of Service	C
HCM Volume to Capacity ratio			0.53			
Actuated Cycle Length (s)			50.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			69.4%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

BeltLine 2030 AM Peak Hour [with BeltLine Transit]

25: Memorial Drive & New Street A

10/6/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	243	1	2	1049	4	2	0	3	17	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1862		1770	1862		1770	1583		1770	1583	
Flt Permitted	0.10	1.00		0.59	1.00		0.75	1.00		0.76	1.00	
Satd. Flow (perm)	190	1862		1100	1862		1403	1583		1408	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	264	1	2	1140	4	2	0	3	18	0	7
RTOR Reduction (vph)	0	0	0	0	0	0	0	3	0	0	6	0
Lane Group Flow (vph)	2	265	0	2	1144	0	2	0	0	18	1	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	87.5	86.7		87.5	86.7		17.5	17.5		17.5	17.5	
Effective Green, g (s)	87.5	86.7		87.5	86.7		17.5	17.5		17.5	17.5	
Actuated g/C Ratio	0.73	0.72		0.73	0.72		0.15	0.15		0.15	0.15	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	149	1345		807	1345		205	231		205	231	
v/s Ratio Prot	c0.00	0.14		0.00	c0.61			0.00			0.00	
v/s Ratio Perm	0.01			0.00			0.00			c0.01		
v/c Ratio	0.01	0.20		0.00	0.85		0.01	0.00		0.09	0.00	
Uniform Delay, d1	16.2	5.4		4.4	12.0		43.8	43.8		44.3	43.8	
Progression Factor	0.54	0.55		0.81	0.40		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.1		0.0	2.5		0.1	0.0		0.8	0.0	
Delay (s)	8.7	3.0		3.6	7.2		43.9	43.8		45.2	43.8	
Level of Service	A	A		A	A		D	D		D	D	
Approach Delay (s)		3.1			7.2			43.9			44.8	
Approach LOS		A			A			D			D	
Intersection Summary												
HCM Average Control Delay			7.2			HCM Level of Service				A		
HCM Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			71.4%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

BeltLine 2030 AM Peak Hour [with BeltLine Transit]

33: I-20 WB Ramp & Bill Kennedy Way

10/6/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	0	0	238	474	0	0	123	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	11	12	12	11	12
Total Lost time (s)							5.0	5.0			5.0	
Lane Util. Factor							1.00	1.00			1.00	
Frt							1.00	1.00			0.95	
Flt Protected							0.95	1.00			1.00	
Satd. Flow (prot)							1736	1818			1670	
Flt Permitted							0.62	1.00			1.00	
Satd. Flow (perm)							1129	1818			1670	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	259	515	0	0	134	91
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	259	515	0	0	225	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	1%	2%	2%	4%	4%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)							50.0	50.0			50.0	
Effective Green, g (s)							50.0	50.0			50.0	
Actuated g/C Ratio							1.00	1.00			1.00	
Clearance Time (s)							5.0	5.0			5.0	
Vehicle Extension (s)							3.0	3.0			3.0	
Lane Grp Cap (vph)							1129	1818			1670	
v/s Ratio Prot								c0.28			0.13	
v/s Ratio Perm							0.23					
v/c Ratio							0.23	0.28			0.13	
Uniform Delay, d1							0.0	0.0			0.0	
Progression Factor							1.00	1.00			1.00	
Incremental Delay, d2							0.4	0.3			0.2	
Delay (s)							0.4	0.3			0.2	
Level of Service							A	A			A	
Approach Delay (s)		0.0			0.0			0.4			0.2	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM Average Control Delay		0.3			HCM Level of Service			A				
HCM Volume to Capacity ratio		0.28										
Actuated Cycle Length (s)		50.0			Sum of lost time (s)			0.0				
Intersection Capacity Utilization		44.5%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

BeltLine 2030 AM Peak Hour [with BeltLine Transit]

35: I-20 EB Ramp & Bill Kennedy Way

10/6/2010



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	145	174	0	566	128	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	10	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1770	1463		1739	1881	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1770	1463		1739	1881	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	158	189	0	615	139	0
RTOR Reduction (vph)	0	148	0	0	0	0
Lane Group Flow (vph)	158	41	0	615	139	0
Heavy Vehicles (%)	2%	3%	2%	2%	1%	1%
Turn Type	Perm					
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	9.9	9.9		30.1	30.1	
Effective Green, g (s)	10.9	10.9		31.1	31.1	
Actuated g/C Ratio	0.22	0.22		0.62	0.62	
Clearance Time (s)	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	386	319		1082	1170	
v/s Ratio Prot	c0.09			c0.35	0.07	
v/s Ratio Perm		0.03				
v/c Ratio	0.41	0.13		0.57	0.12	
Uniform Delay, d1	16.8	15.7		5.5	3.9	
Progression Factor	1.00	1.00		0.31	1.00	
Incremental Delay, d2	0.7	0.2		2.1	0.2	
Delay (s)	17.5	15.9		3.8	4.1	
Level of Service	B	B		A	A	
Approach Delay (s)	16.6			3.8	4.1	
Approach LOS	B			A	A	
Intersection Summary						
HCM Average Control Delay			7.9	HCM Level of Service		A
HCM Volume to Capacity ratio			0.53			
Actuated Cycle Length (s)			50.0	Sum of lost time (s)		8.0
Intersection Capacity Utilization			44.5%	ICU Level of Service		A
Analysis Period (min)			15			
c Critical Lane Group						

BeltLine 2030 AM Peak Hour [with BeltLine Transit]

39: Decatur Street & Hilliard Street

10/6/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔		↔	↔			↔	↔
Volume (vph)	82	201	43	209	828	66	97	234	236	0	17	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	10	12	10	9	12	12	10	10
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	4.0
Lane Util. Factor		0.95			0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes		1.00			1.00		1.00	0.98			1.00	0.99
Flpb, ped/bikes		1.00			1.00		1.00	1.00			1.00	1.00
Frt		0.98			0.99		1.00	0.92			1.00	0.85
Flt Protected		0.99			0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)		3217			3265		1683	1548			1689	1488
Flt Permitted		0.62			0.79		0.75	1.00			1.00	1.00
Satd. Flow (perm)		2009			2610		1321	1548			1689	1488
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	89	218	47	227	900	72	105	254	257	0	18	9
RTOR Reduction (vph)	0	24	0	0	9	0	0	73	0	0	0	6
Lane Group Flow (vph)	0	330	0	0	1190	0	105	438	0	0	18	3
Confl. Peds. (#/hr)	8		10	10		8	1		22	22		1
Heavy Vehicles (%)	1%	1%	0%	1%	1%	0%	0%	0%	1%	0%	5%	0%
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		23.0			23.0		17.0	17.0			17.0	17.0
Effective Green, g (s)		24.0			24.0		18.0	18.0			18.0	18.0
Actuated g/C Ratio		0.48			0.48		0.36	0.36			0.36	0.36
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)		964			1253		476	557			608	536
v/s Ratio Prot								c0.28			0.01	
v/s Ratio Perm		0.16			c0.46		0.08					0.00
v/c Ratio		0.34			0.95		0.22	0.79			0.03	0.01
Uniform Delay, d1		8.1			12.4		11.1	14.3			10.4	10.3
Progression Factor		1.00			1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		0.2			14.8		1.1	10.7			0.1	0.0
Delay (s)		8.3			27.2		12.2	25.0			10.4	10.3
Level of Service		A			C		B	C			B	B
Approach Delay (s)		8.3			27.2			22.8			10.4	
Approach LOS		A			C			C			B	

Intersection Summary



















HCM Average Control Delay	22.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	82.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

BeltLine 2030 AM Peak Hour [with BeltLine Transit]

48: Memorial Drive & Chester Avenue





















10/6/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	249	11	31	1053	49	25	9	20	23	0	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.99			0.95			0.94	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)	1770	1851		1770	1850			1729			1708	
Flt Permitted	0.08	1.00		0.54	1.00			0.86			0.83	
Satd. Flow (perm)	143	1851		1001	1850			1528			1460	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	271	12	34	1145	53	27	10	22	25	0	18
RTOR Reduction (vph)	0	2	0	0	1	0	0	18	0	0	15	0
Lane Group Flow (vph)	9	281	0	34	1197	0	0	41	0	0	28	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	83.4	83.4		85.0	85.0			19.2			19.2	
Effective Green, g (s)	83.4	83.4		85.0	85.0			19.2			19.2	
Actuated g/C Ratio	0.70	0.70		0.71	0.71			0.16			0.16	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	110	1286		724	1310			244			234	
v/s Ratio Prot	0.00	c0.15		0.00	c0.65							
v/s Ratio Perm	0.06			0.03				c0.03			0.02	
v/c Ratio	0.08	0.22		0.05	0.91			0.17			0.12	
Uniform Delay, d1	37.4	6.6		5.4	14.5			43.5			43.2	
Progression Factor	0.37	0.46		0.83	0.68			1.00			1.00	
Incremental Delay, d2	0.3	0.1		0.0	7.2			1.5			1.0	
Delay (s)	14.1	3.1		4.5	17.0			45.0			44.2	
Level of Service	B	A		A	B			D			D	
Approach Delay (s)		3.4			16.7			45.0			44.2	
Approach LOS		A			B			D			D	
Intersection Summary												
HCM Average Control Delay			16.1			HCM Level of Service					B	
HCM Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			70.2%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

BeltLine 2030 AM Peak Hour [with BeltLine Transit]

61: Memorial Drive & Holtzclaw Street





















10/6/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	379	0	2	888	3	0	0	4	11	0	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00			0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863		1770	1862			1583		1770	1583	
Flt Permitted	0.19	1.00		0.49	1.00			1.00		0.76	1.00	
Satd. Flow (perm)	361	1863		918	1862			1583		1407	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	412	0	2	965	3	0	0	4	12	0	9
RTOR Reduction (vph)	0	0	0	0	0	0	0	3	0	0	7	0
Lane Group Flow (vph)	2	412	0	2	968	0	0	1	0	12	2	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases	4			8			2			6		
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	87.5	87.5		87.5	87.5			22.5		22.5	22.5	
Effective Green, g (s)	87.5	87.5		87.5	87.5			22.5		22.5	22.5	
Actuated g/C Ratio	0.73	0.73		0.73	0.73			0.19		0.19	0.19	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	263	1358		669	1358			297		264	297	
v/s Ratio Prot		0.22			c0.52			0.00			0.00	
v/s Ratio Perm	0.01			0.00						c0.01		
v/c Ratio	0.01	0.30		0.00	0.71			0.00		0.05	0.01	
Uniform Delay, d1	4.4	5.7		4.4	9.2			39.6		39.9	39.7	
Progression Factor	0.44	0.45		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.1		0.0	1.8			0.0		0.3	0.0	
Delay (s)	1.9	2.7		4.4	11.0			39.6		40.3	39.7	
Level of Service	A	A		A	B			D		D	D	
Approach Delay (s)		2.7			10.9			39.6			40.0	
Approach LOS		A			B			D			D	
Intersection Summary												
HCM Average Control Delay		9.0			HCM Level of Service			A				
HCM Volume to Capacity ratio		0.58										
Actuated Cycle Length (s)		120.0			Sum of lost time (s)			10.0				
Intersection Capacity Utilization		62.5%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												

BeltLine 2030 AM Peak Hour [with BeltLine Transit]

67: Memorial Drive & Gibson Street












10/6/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	394	0	2	888	3	0	0	4	10	0	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	428	0	2	965	3	0	0	4	11	0	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		315			379							
pX, platoon unblocked	0.47			0.92			0.51	0.51	0.92	0.51	0.51	0.47
vC, conflicting volume	968			428			1405	1403	428	1406	1402	967
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	369			336			966	962	336	967	959	366
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	99	91	100	98
cM capacity (veh/h)	559			1126			117	130	650	118	130	319
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	1	428	2	968	0	4	11	5				
Volume Left	1	0	2	0	0	0	11	0				
Volume Right	0	0	0	3	0	4	0	5				
cSH	559	1700	1126	1700	1700	650	118	319				
Volume to Capacity	0.00	0.25	0.00	0.57	0.00	0.01	0.09	0.02				
Queue Length 95th (ft)	0	0	0	0	0	1	7	1				
Control Delay (s)	11.5	0.0	8.2	0.0	0.0	10.6	38.6	16.5				
Lane LOS	B		A		A	B	E	C				
Approach Delay (s)	0.0		0.0		10.6		31.2					
Approach LOS					B		D					
Intersection Summary												
Average Delay			0.4									
Intersection Capacity Utilization			60.8%		ICU Level of Service			B				
Analysis Period (min)			15									

BeltLine 2030 AM Peak Hour [with BeltLine Transit]

101: Memorial Drive & New Street B























10/6/2010

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	262	4	2	1053	2	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	285	4	2	1145	2	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	313			274		
pX, platoon unblocked			0.96		0.33	0.96
vC, conflicting volume			289		1436	287
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			234		1004	232
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		98	100
cM capacity (veh/h)			1275		88	772
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	
Volume Total	289	2	1145	2	3	
Volume Left	0	2	0	2	0	
Volume Right	4	0	0	0	3	
cSH	1700	1275	1700	88	772	
Volume to Capacity	0.17	0.00	0.67	0.02	0.00	
Queue Length 95th (ft)	0	0	0	2	0	
Control Delay (s)	0.0	7.8	0.0	47.1	9.7	
Lane LOS		A		E	A	
Approach Delay (s)	0.0	0.0		24.7		
Approach LOS				C		
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			65.4%	ICU Level of Service		C
Analysis Period (min)			15			

BeltLine 2030 PM Peak Hour [with BeltLine Transit]

8: Memorial Drive & Boulevard

10/6/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	87	404	123	110	211	54	78	397	61	187	847	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	9	9	12	10	9	12	11	10	12
Total Lost time (s)	4.0	4.0		4.0	4.0	5.0	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	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1737		1624	1693	1599	1668	1632		1745	3063	
Flt Permitted	0.53	1.00		0.10	1.00	1.00	0.16	1.00		0.20	1.00	
Satd. Flow (perm)	1004	1737		176	1693	1599	282	1632		363	3063	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	95	439	134	120	229	59	85	432	66	203	921	87
RTOR Reduction (vph)	0	10	0	0	0	39	0	5	0	0	6	0
Lane Group Flow (vph)	95	563	0	120	229	20	85	493	0	203	1002	0
Confl. Peds. (#/hr)			4	4			3		1	1		3
Heavy Vehicles (%)	0%	2%	0%	0%	1%	1%	1%	2%	5%	0%	9%	1%
Turn Type	pm+pt			pm+pt		Perm	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	40.9	36.9		42.9	37.9	37.9	43.1	39.9		53.1	44.9	
Effective Green, g (s)	42.9	37.9		44.9	38.9	37.9	45.1	40.9		54.1	45.9	
Actuated g/C Ratio	0.39	0.34		0.41	0.35	0.34	0.41	0.37		0.49	0.42	
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
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)	428	598		151	599	551	169	607		294	1278	
v/s Ratio Prot	0.01	c0.32		c0.04	0.14		0.02	0.30		c0.06	c0.33	
v/s Ratio Perm	0.08			0.28		0.01	0.19			0.28		
v/c Ratio	0.22	0.94		0.79	0.38	0.04	0.50	0.81		0.69	0.78	
Uniform Delay, d1	21.7	35.0		25.8	26.6	23.9	21.9	31.1		20.2	27.8	
Progression Factor	0.87	0.83		0.91	0.96	1.48	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	19.9		23.6	0.4	0.0	2.3	11.3		6.8	4.9	
Delay (s)	19.1	49.1		47.2	25.9	35.4	24.3	42.4		27.0	32.6	
Level of Service	B	D		D	C	D	C	D		C	C	
Approach Delay (s)		44.8			33.5			39.8			31.7	
Approach LOS		D			C			D			C	
Intersection Summary												
HCM Average Control Delay			36.6			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			83.2%			ICU Level of Service			E			
Analysis Period (min)			15									

c Critical Lane Group

BeltLine 2030 PM Peak Hour [with BeltLine Transit]

13: Wylie Street & Krog Street

10/6/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Volume (vph)	86	13	5	10	23	139	1	44	5	318	204	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	11	11	11	11	11
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		1.00			0.98			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.99			0.89			0.99			0.98	
Flt Protected		0.96			1.00			1.00			0.98	
Satd. Flow (prot)		1809			1658			1808			1741	
Flt Permitted		0.60			0.98			0.99			0.81	
Satd. Flow (perm)		1129			1625			1799			1451	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	93	14	5	11	25	151	1	48	5	346	222	120
RTOR Reduction (vph)	0	3	0	0	124	0	0	2	0	0	10	0
Lane Group Flow (vph)	0	109	0	0	63	0	0	52	0	0	678	0
Confl. Peds. (#/hr)	1		4	4		1	2		1	1		2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		10.4			10.4			37.1			37.1	
Effective Green, g (s)		10.4			10.4			37.1			37.1	
Actuated g/C Ratio		0.18			0.18			0.65			0.65	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		204			294			1161			936	
v/s Ratio Prot												
v/s Ratio Perm		c0.10			0.04			0.03			c0.47	
v/c Ratio		0.53			0.22			0.04			0.72	
Uniform Delay, d1		21.3			20.1			3.7			6.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		2.7			0.4			0.1			4.9	
Delay (s)		24.0			20.4			3.8			11.6	
Level of Service		C			C			A			B	
Approach Delay (s)		24.0			20.4			3.8			11.6	
Approach LOS		C			C			A			B	

Intersection Summary




















HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	57.5	Sum of lost time (s)	10.0
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

BeltLine 2030 PM Peak Hour [with BeltLine Transit]

16: Memorial Drive & Grant Street



















10/6/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	75	596	3	5	283	53	2	6	6	183	26	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	9	11	12	9	11	12	12	15	12	12	15	12
Total Lost time (s)	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	
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.94			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.97	
Satd. Flow (prot)	1623	1817		1622	1772			1941			1949	
Flt Permitted	0.47	1.00		0.21	1.00			0.97			0.78	
Satd. Flow (perm)	802	1817		363	1772			1893			1579	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	648	3	5	308	58	2	7	7	199	28	60
RTOR Reduction (vph)	0	1	0	0	14	0	0	4	0	0	15	0
Lane Group Flow (vph)	82	650	0	5	352	0	0	12	0	0	272	0
Confl. Peds. (#/hr)	1		3	3		1	3					3
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	5%	0%	0%	0%	0%	1%
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases	4			8			2			6		
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	24.7	24.7		24.7	24.7			20.3			20.3	
Effective Green, g (s)	25.7	25.7		25.7	25.7			21.3			21.3	
Actuated g/C Ratio	0.47	0.47		0.47	0.47			0.39			0.39	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	375	849		170	828			733			612	
v/s Ratio Prot	c0.36			0.20								
v/s Ratio Perm	0.10			0.01				0.01			c0.17	
v/c Ratio	0.22	0.77		0.03	0.42			0.02			0.44	
Uniform Delay, d1	8.7	12.2		7.9	9.7			10.4			12.5	
Progression Factor	1.00	1.00		0.52	0.40			1.00			1.00	
Incremental Delay, d2	0.3	4.2		0.1	0.3			0.0			2.3	
Delay (s)	9.0	16.3		4.2	4.3			10.4			14.8	
Level of Service	A	B		A	A			B			B	
Approach Delay (s)	15.5			4.3			10.4			14.8		
Approach LOS	B			A			B			B		
Intersection Summary												
HCM Average Control Delay			12.3	HCM Level of Service			B					
HCM Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			55.0	Sum of lost time (s)			8.0					
Intersection Capacity Utilization			66.5%	ICU Level of Service			C					
Analysis Period (min)			15									
c Critical Lane Group												

BeltLine 2030 PM Peak Hour [with BeltLine Transit]

17: Memorial Drive & Pearl Street

10/6/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	19	760	12	10	338	40	10	15	10	52	15	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	12	12	10	10	10	10	10	10	10
Total Lost time (s)	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	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.98			0.96			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.97	
Satd. Flow (prot)	1491	1751		1357	1854			1563			1657	
Flt Permitted	0.42	1.00		0.20	1.00			0.93			0.82	
Satd. Flow (perm)	653	1751		289	1854			1480			1406	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	826	13	11	367	43	11	16	11	57	16	21
RTOR Reduction (vph)	0	1	0	0	4	0	0	8	0	0	9	0
Lane Group Flow (vph)	21	838	0	11	406	0	0	30	0	0	85	0
Confl. Peds. (#/hr)			2	2			1		1	1		1
Heavy Vehicles (%)	17%	1%	0%	33%	1%	0%	7%	11%	0%	0%	0%	0%
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	65.8	65.8		65.0	65.0			28.4			28.4	
Effective Green, g (s)	66.8	66.8		66.0	66.0			29.4			29.4	
Actuated g/C Ratio	0.61	0.61		0.60	0.60			0.27			0.27	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	416	1063		191	1112			396			376	
v/s Ratio Prot	0.00	c0.48		0.00	c0.22							
v/s Ratio Perm	0.03			0.03				0.02			c0.06	
v/c Ratio	0.05	0.79		0.06	0.36			0.08			0.23	
Uniform Delay, d1	9.4	16.3		23.5	11.3			30.1			31.4	
Progression Factor	0.58	0.65		0.14	0.09			1.00			1.00	
Incremental Delay, d2	0.0	2.8		0.1	0.2			0.4			1.4	
Delay (s)	5.5	13.5		3.5	1.3			30.5			32.8	
Level of Service	A	B		A	A			C			C	
Approach Delay (s)		13.3			1.3			30.5			32.8	
Approach LOS		B			A			C			C	
Intersection Summary												
HCM Average Control Delay			11.5			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			60.7%			ICU Level of Service			B			
Analysis Period (min)			15									

c Critical Lane Group

BeltLine 2030 PM Peak Hour [with BeltLine Transit]

21: Memorial Drive & Bill Kennedy Way

10/6/2010



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↩		↩	↩	↩	↩
Volume (vph)	610	361	192	370	122	122
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	11	12	12
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.95		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1645		1805	1818	1787	1566
Flt Permitted	1.00		0.17	1.00	0.95	1.00
Satd. Flow (perm)	1645		329	1818	1787	1566
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	663	392	209	402	133	133
RTOR Reduction (vph)	20	0	0	0	0	111
Lane Group Flow (vph)	1035	0	209	402	133	22
Confl. Peds. (#/hr)						3
Heavy Vehicles (%)	2%	3%	0%	1%	1%	0%
Turn Type			Perm			Perm
Protected Phases	4			8	2	
Permitted Phases			8			2
Actuated Green, G (s)	82.8		82.8	82.8	17.2	17.2
Effective Green, g (s)	83.8		83.8	83.8	18.2	18.2
Actuated g/C Ratio	0.76		0.76	0.76	0.17	0.17
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1253		251	1385	296	259
v/s Ratio Prot	0.63			0.22	c0.07	
v/s Ratio Perm			c0.64			0.01
v/c Ratio	0.83		0.83	0.29	0.45	0.08
Uniform Delay, d1	8.4		8.5	4.0	41.4	38.9
Progression Factor	0.29		2.08	0.13	1.00	1.00
Incremental Delay, d2	3.4		19.2	0.1	4.9	0.6
Delay (s)	5.9		37.0	0.6	46.2	39.5
Level of Service	A		D	A	D	D
Approach Delay (s)	5.9			13.1	42.9	
Approach LOS	A			B	D	

Intersection Summary

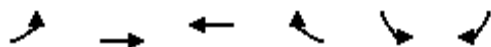
HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	88.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

BeltLine 2030 PM Peak Hour [with BeltLine Transit]

24: Glenwood Avenue & Bill Kennedy Way

10/6/2010























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	81	177	136	189	419	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	10	12
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		1.00	1.00		1.00	
Frpb, ped/bikes		1.00	0.98		0.99	
Flpb, ped/bikes		1.00	1.00		1.00	
Frt		1.00	0.92		0.98	
Flt Protected		0.98	1.00		0.96	
Satd. Flow (prot)		1734	1648		1593	
Flt Permitted		0.63	1.00		0.96	
Satd. Flow (perm)		1112	1648		1593	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	88	192	148	205	455	101
RTOR Reduction (vph)	0	0	105	0	15	0
Lane Group Flow (vph)	0	280	248	0	541	0
Confl. Peds. (#/hr)	6			6	6	5
Heavy Vehicles (%)	11%	1%	1%	1%	4%	3%
Turn Type	Perm					
Protected Phases		4	8		6	
Permitted Phases	4					
Actuated Green, G (s)		14.3	14.3		25.7	
Effective Green, g (s)		15.3	15.3		26.7	
Actuated g/C Ratio		0.31	0.31		0.53	
Clearance Time (s)		5.0	5.0		5.0	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		340	504		851	
v/s Ratio Prot			0.15		c0.34	
v/s Ratio Perm		c0.25				
v/c Ratio		0.82	0.49		0.64	
Uniform Delay, d1		16.1	14.2		8.2	
Progression Factor		0.46	1.00		0.57	
Incremental Delay, d2		14.3	0.8		3.3	
Delay (s)		21.7	14.9		7.9	
Level of Service		C	B		A	
Approach Delay (s)		21.7	14.9		7.9	
Approach LOS		C	B		A	
Intersection Summary						
HCM Average Control Delay			13.2		HCM Level of Service	B
HCM Volume to Capacity ratio			0.70			
Actuated Cycle Length (s)			50.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			71.9%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

BeltLine 2030 PM Peak Hour [with BeltLine Transit]

25: Memorial Drive & New Street A


















10/6/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	810	3	5	362	23	3	0	5	16	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1862		1770	1846		1770	1583		1770	1583	
Flt Permitted	0.42	1.00		0.18	1.00		0.75	1.00		0.75	1.00	
Satd. Flow (perm)	778	1862		342	1846		1403	1583		1405	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	880	3	5	393	25	3	0	5	17	0	7
RTOR Reduction (vph)	0	0	0	0	2	0	0	4	0	0	5	0
Lane Group Flow (vph)	9	883	0	5	416	0	3	1	0	17	2	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	67.4	67.4		67.4	67.4		26.8	26.8		26.8	26.8	
Effective Green, g (s)	67.4	67.4		67.4	67.4		26.8	26.8		26.8	26.8	
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.24	0.24		0.24	0.24	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	484	1141		220	1131		342	386		342	386	
v/s Ratio Prot	0.00	c0.47		0.00	c0.23			0.00			0.00	
v/s Ratio Perm	0.01			0.01			0.00			c0.01		
v/c Ratio	0.02	0.77		0.02	0.37		0.01	0.00		0.05	0.00	
Uniform Delay, d1	9.1	15.7		24.3	10.6		31.5	31.5		31.9	31.5	
Progression Factor	0.44	0.24		0.98	1.15		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	2.4		0.0	0.2		0.0	0.0		0.3	0.0	
Delay (s)	4.0	6.2		23.8	12.5		31.6	31.5		32.1	31.5	
Level of Service	A	A		C	B		C	C		C	C	
Approach Delay (s)		6.2			12.6			31.5			31.9	
Approach LOS		A			B			C			C	
Intersection Summary												
HCM Average Control Delay			8.8			HCM Level of Service				A		
HCM Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			58.7%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

BeltLine 2030 PM Peak Hour [with BeltLine Transit]

33: I-20 WB Ramp & Bill Kennedy Way

10/6/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	0	0	189	251	0	0	364	216
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	11	12	12	11	12
Total Lost time (s)							5.0	5.0			5.0	
Lane Util. Factor							1.00	1.00			1.00	
Frt							1.00	1.00			0.95	
Flt Protected							0.95	1.00			1.00	
Satd. Flow (prot)							1736	1818			1677	
Flt Permitted							0.43	1.00			1.00	
Satd. Flow (perm)							777	1818			1677	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	205	273	0	0	396	235
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	205	273	0	0	631	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	1%	2%	2%	4%	4%
Turn Type				Perm		Perm	Perm					
Protected Phases					8			2			6	
Permitted Phases				8		8	2					
Actuated Green, G (s)							50.0	50.0			50.0	
Effective Green, g (s)							50.0	50.0			50.0	
Actuated g/C Ratio							1.00	1.00			1.00	
Clearance Time (s)							5.0	5.0			5.0	
Vehicle Extension (s)							3.0	3.0			3.0	
Lane Grp Cap (vph)							777	1818			1677	
v/s Ratio Prot								0.15			c0.38	
v/s Ratio Perm							0.26					
v/c Ratio							0.26	0.15			0.38	
Uniform Delay, d1							0.0	0.0			0.0	
Progression Factor							1.00	1.00			1.00	
Incremental Delay, d2							0.8	0.2			0.6	
Delay (s)							0.8	0.2			0.6	
Level of Service							A	A			A	
Approach Delay (s)		0.0			0.0			0.4			0.6	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM Average Control Delay			0.6				HCM Level of Service				A	
HCM Volume to Capacity ratio			0.38									
Actuated Cycle Length (s)			50.0				Sum of lost time (s)			0.0		
Intersection Capacity Utilization			58.6%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

BeltLine 2030 PM Peak Hour [with BeltLine Transit]

35: I-20 EB Ramp & Bill Kennedy Way

10/6/2010



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	107	258	0	279	387	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	10	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1770	1463		1739	1881	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1770	1463		1739	1881	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	116	280	0	303	421	0
RTOR Reduction (vph)	0	224	0	0	0	0
Lane Group Flow (vph)	116	56	0	303	421	0
Heavy Vehicles (%)	2%	3%	2%	2%	1%	1%
Turn Type	Perm					
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	9.0	9.0		31.0	31.0	
Effective Green, g (s)	10.0	10.0		32.0	32.0	
Actuated g/C Ratio	0.20	0.20		0.64	0.64	
Clearance Time (s)	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	354	293		1113	1204	
v/s Ratio Prot	c0.07			0.17	c0.22	
v/s Ratio Perm		0.04				
v/c Ratio	0.33	0.19		0.27	0.35	
Uniform Delay, d1	17.1	16.6		3.9	4.2	
Progression Factor	1.00	1.00		0.44	1.00	
Incremental Delay, d2	0.5	0.3		0.6	0.8	
Delay (s)	17.7	17.0		2.3	4.9	
Level of Service	B	B		A	A	
Approach Delay (s)	17.2			2.3	4.9	
Approach LOS	B			A	A	



















Intersection Summary

HCM Average Control Delay	8.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

BeltLine 2030 PM Peak Hour [with BeltLine Transit]

39: Decatur Street & Hilliard Street



















10/6/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	748	47	267	373	17	29	37	248	0	26	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	10	12	12	10	12	10	9	12	12	10	10
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	4.0
Lane Util. Factor		0.95			0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes		1.00			1.00		1.00	0.97			1.00	0.99
Flpb, ped/bikes		1.00			1.00		1.00	1.00			1.00	1.00
Frt		0.99			1.00		1.00	0.87			1.00	0.85
Flt Protected		1.00			0.98		0.95	1.00			1.00	1.00
Satd. Flow (prot)		3297			3251		1683	1434			1689	1488
Flt Permitted		0.92			0.56		0.74	1.00			1.00	1.00
Satd. Flow (perm)		3054			1868		1309	1434			1689	1488
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	26	813	51	290	405	18	32	40	270	0	28	9
RTOR Reduction (vph)	0	10	0	0	4	0	0	77	0	0	0	6
Lane Group Flow (vph)	0	880	0	0	709	0	32	233	0	0	28	3
Confl. Peds. (#/hr)	8		10	10		8	1		22	22		1
Heavy Vehicles (%)	1%	1%	0%	1%	1%	0%	0%	0%	1%	0%	5%	0%
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		21.1			21.1		16.1	16.1			16.1	16.1
Effective Green, g (s)		22.1			22.1		17.1	17.1			17.1	17.1
Actuated g/C Ratio		0.47			0.47		0.36	0.36			0.36	0.36
Clearance Time (s)		5.0			5.0		5.0	5.0			5.0	5.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)		1430			875		474	520			612	539
v/s Ratio Prot								c0.16			0.02	
v/s Ratio Perm		0.29			c0.38		0.02					0.00
v/c Ratio		0.62			1.39dl		0.07	0.45			0.05	0.01
Uniform Delay, d1		9.4			10.8		9.8	11.5			9.8	9.6
Progression Factor		1.00			1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		0.8			5.7		0.3	2.8			0.1	0.0
Delay (s)		10.2			16.5		10.1	14.2			9.9	9.6
Level of Service		B			B		B	B			A	A
Approach Delay (s)		10.2			16.5			13.8			9.8	
Approach LOS		B			B			B			A	
Intersection Summary												
HCM Average Control Delay			13.1			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			47.2			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			70.6%			ICU Level of Service			C			
Analysis Period (min)			15									
dl Defacto Left Lane. Recode with 1 though lane as a left lane.												
c Critical Lane Group												

BeltLine 2030 PM Peak Hour [with BeltLine Transit]

48: Memorial Drive & Chester Avenue





















10/6/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	21	837	32	12	456	11	10	2	25	50	3	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	1.00			0.91			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.96	
Satd. Flow (prot)	1770	1852		1770	1856			1670			1751	
Flt Permitted	0.36	1.00		0.16	1.00			0.93			0.77	
Satd. Flow (perm)	676	1852		297	1856			1583			1404	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	23	910	35	13	496	12	11	2	27	54	3	12
RTOR Reduction (vph)	0	1	0	0	1	0	0	21	0	0	6	0
Lane Group Flow (vph)	23	944	0	13	507	0	0	19	0	0	63	0
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	69.1	69.1		69.1	69.1			24.3			24.3	
Effective Green, g (s)	69.1	69.1		69.1	69.1			24.3			24.3	
Actuated g/C Ratio	0.63	0.63		0.63	0.63			0.22			0.22	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	441	1163		208	1166			350			310	
v/s Ratio Prot	0.00	c0.51		0.00	c0.27							
v/s Ratio Perm	0.03			0.04				0.01			c0.04	
v/c Ratio	0.05	0.81		0.06	0.44			0.05			0.20	
Uniform Delay, d1	8.9	15.5		25.8	10.5			33.8			34.9	
Progression Factor	0.27	0.12		0.99	0.72			1.00			1.00	
Incremental Delay, d2	0.0	3.5		0.1	0.3			0.3			1.5	
Delay (s)	2.4	5.3		25.7	7.8			34.1			36.4	
Level of Service	A	A		C	A			C			D	
Approach Delay (s)		5.2			8.2			34.1			36.4	
Approach LOS		A			A			C			D	
Intersection Summary												
HCM Average Control Delay			8.3			HCM Level of Service					A	
HCM Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			63.1%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

BeltLine 2030 PM Peak Hour [with BeltLine Transit]

61: Memorial Drive & Holtzclaw Street





















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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	9	708	0	8	531	17	0	0	8	11	0	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00			0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863		1770	1854			1583		1770	1583	
Flt Permitted	0.33	1.00		0.21	1.00			1.00		0.75	1.00	
Satd. Flow (perm)	607	1863		396	1854			1583		1400	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	770	0	9	577	18	0	0	9	12	0	9
RTOR Reduction (vph)	0	0	0	0	2	0	0	6	0	0	6	0
Lane Group Flow (vph)	10	770	0	9	593	0	0	3	0	12	3	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases	4			8			2			6		
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	65.5	65.5		65.5	65.5			34.5		34.5	34.5	
Effective Green, g (s)	65.5	65.5		65.5	65.5			34.5		34.5	34.5	
Actuated g/C Ratio	0.60	0.60		0.60	0.60			0.31		0.31	0.31	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	361	1109		236	1104			496		439	496	
v/s Ratio Prot		c0.41			0.32			0.00			0.00	
v/s Ratio Perm	0.02			0.02						c0.01		
v/c Ratio	0.03	0.69		0.04	0.54			0.01		0.03	0.01	
Uniform Delay, d1	9.2	15.3		9.2	13.2			26.0		26.1	26.0	
Progression Factor	0.81	0.73		0.09	0.43			1.00		1.00	1.00	
Incremental Delay, d2	0.0	1.2		0.1	0.4			0.0		0.1	0.0	
Delay (s)	7.4	12.4		0.9	6.1			26.0		26.2	26.0	
Level of Service	A	B		A	A			C		C	C	
Approach Delay (s)		12.3			6.0			26.0			26.1	
Approach LOS		B			A			C			C	
Intersection Summary												
HCM Average Control Delay			9.9	HCM Level of Service			A					
HCM Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			110.0	Sum of lost time (s)			10.0					
Intersection Capacity Utilization			52.9%	ICU Level of Service			A					
Analysis Period (min)			15									
c Critical Lane Group												

BeltLine 2030 PM Peak Hour [with BeltLine Transit]

67: Memorial Drive & Gibson Street












10/6/2010

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	721	0	8	551	15	0	0	8	10	0	5
Sign Control	Free				Free		Stop				Stop	
Grade	0%				0%		0%				0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	784	0	9	599	16	0	0	9	11	0	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None				None							
Median storage (veh)												
Upstream signal (ft)	315				379							
pX, platoon unblocked	0.73			0.70			0.83	0.83	0.70	0.83	0.83	0.73
vC, conflicting volume	615			784			1418	1429	784	1430	1421	607
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	291			475			678	691	475	692	681	280
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	100	98	96	100	99
cM capacity (veh/h)	930			760			298	301	412	288	305	555
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total	7	784	9	615	0	9	11	5				
Volume Left	7	0	9	0	0	0	11	0				
Volume Right	0	0	0	16	0	9	0	5				
cSH	930	1700	760	1700	1700	412	288	555				
Volume to Capacity	0.01	0.46	0.01	0.36	0.00	0.02	0.04	0.01				
Queue Length 95th (ft)	1	0	1	0	0	2	3	1				
Control Delay (s)	8.9	0.0	9.8	0.0	0.0	13.9	18.0	11.5				
Lane LOS	A		A		A	B	C	B				
Approach Delay (s)	0.1		0.1		13.9		15.8					
Approach LOS					B		C					
Intersection Summary												
Average Delay			0.4									
Intersection Capacity Utilization			51.8%		ICU Level of Service				A			
Analysis Period (min)			15									

BeltLine 2030 PM Peak Hour [with BeltLine Transit]

101: Memorial Drive & New Street B

10/6/2010

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	828	17	5	387	3	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	900	18	5	421	3	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)	313			274		
pX, platoon unblocked			0.62		0.69	0.62
vC, conflicting volume			918		1341	909
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			565		845	551
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		99	98
cM capacity (veh/h)			626		227	332
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	
Volume Total	918	5	421	3	5	
Volume Left	0	5	0	3	0	
Volume Right	18	0	0	0	5	
cSH	1700	626	1700	227	332	
Volume to Capacity	0.54	0.01	0.25	0.01	0.02	
Queue Length 95th (ft)	0	1	0	1	1	
Control Delay (s)	0.0	10.8	0.0	21.1	16.0	
Lane LOS		B		C	C	
Approach Delay (s)	0.0	0.1		17.9		
Approach LOS				C		
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			54.6%	ICU Level of Service		A
Analysis Period (min)			15			

Appendix B

Alternative Analysis of 2030 Scenarios Based on Market Study

Alternative Analysis of 2030 Scenarios Based on Market Study

The standard methodology for the Transportation Analysis Report calculates trip generation from baseline and BeltLine land use plans for the year 2020 only, based on likely market absorption rates provided by the BeltLine market study developed by RCLCO. Traffic projections for year 2030 scenarios are calculated by applying an average growth rate derived from the ARC regional travel demand model to these 2020 volumes. However, in the case of Subarea 4, the rates overall traffic growth that the travel demand model projects are considerably less than what the likely 2030 market absorption rates from the market study would suggest.

For this reason, the Subarea 4 study team also considered traffic impacts that would occur if the market study were used as the basis for traffic forecasting. This approach used 2030 market study absorption rates as the basis for a separate trip generation analysis; it used the resulting traffic volumes instead of the 2030 growth rate-based estimates that are standard to BeltLine traffic analysis methodology.

Specifically, this led to two following scenarios were analyzed:

- 1. **2030 Baseline (Development without BeltLine Subarea 4).** This uses the 2030 market absorption estimate and distributes it based on ASAP future land uses.
- 2. **2030 Build (Development with BeltLine Subarea 4).** This uses the 2030 market absorption estimate and distributes it based on the Subarea 4 future land use plan. It assumes that BeltLine transit will have been constructed.

B.1 2030 Baseline Scenario

This scenario is similar to the 2020 Baseline but uses 2030 market absorption estimates to account for new development. Accordingly, all roadway assumptions for the 2020 Baseline scenario are incorporated into the 2030 Baseline scenario.

Planned Transportation Improvement Projects

The ARC Envision6 long-range transportation plan does not include any roadway improvement projects within Subarea 4 between 2020 and 2030.

Added Local Street Network and Traffic Control

The 2030 baseline scenarios used the same added street network as in the 2020 baseline scenarios. This included two new streets between Pearl Street and Chester Avenue and an extension of Holtzclaw Street south across Memorial Drive. This new addition also anticipated a need for signalization at the extended Holtzclaw and the westernmost new street between Pearl and Chester.

2030 Baseline Scenario: What would 2030 be like if we had today's traffic patterns and mode split and only the redevelopment allowed by the existing land use plan?	
FACTOR	HOW IT APPEARS IN THIS ANALYSIS
Year of Analysis	2030
Road Network	2030 RTP Network and New Development Streets
Traffic Volumes	Existing Counts with 0.5% annual growth rate applied and ASAP land use development added from 2030 trip generation
Mode Split	Varies based on TAZ and location, but calculated according to BeltLine methodology
Trip Assignment	2005 Existing Pattern

Table B.1.1: Baseline 2030 Trip Generation - Total

Land Use	ITE Code	Intensity		Daily Trip Ends	PM Peak-Hour Trip Ends					AM Peak-Hour Trip Ends				
					Total	In		Out		Total	In		Out	
						%	Trips	%	Trips		%	Trips	%	Trips
Multi-Family	220	744.0	DU	5,126	461	65%	300	35%	161	383	20%	77	80%	307
Townhouse/Condo	230	2,978.0	DU	17,302	1,549	67%	1,038	33%	511	1,310	17%	223	83%	1,088
Office	710	220.4	KSF	2,427	641	17%	109	83%	532	463	88%	408	12%	56
Retail	820	179.1	KSF	7,695	1,571	49%	770	51%	801	179	61%	109	39%	70
Total				32,562	4,222		2,216		2,006	2,336		816		1,520
Rates	Daily	PM Peak	AM Peak	0	0		0		0	0		0		0
Internal Capture				1,913	407		212		195	26		82		144
Pass-By	20.00%	20.00%	20.00%	6,512	844		443		401	467		163		304
Modal Split		21.00%		7,350	936		499		437	523		173		350
Net External				16,786	2,035		1,062		973	1,320		398		722

Table B.1.2: Baseline 2030 Trip Generation - Zone 1

Land Use	ITE Code	Intensity		Daily Trip Ends	PM Peak-Hour Trip Ends					AM Peak-Hour Trip Ends				
					Total	In		Out		Total	In		Out	
						%	Trips	%	Trips		%	Trips	%	Trips
Multi-Family	220	229.0	DU	1,511	142	65%	92	35%	50	116	20%	23	80%	93
Townhouse/Condo	230	917.0	DU	5,328	477	67%	319	33%	157	403	17%	69	83%	335
Office	710	28.2	KSF	310	110	17%	19	83%	92	68	88%	60	12%	8
Retail	820	20.6	KSF	885	221	49%	108	51%	113	21	61%	13	39%	8
Total				8,046	950		539		411	608		164	100%	444
Rates	Daily	PM Peak	AM Peak											
Internal Capture	4.06%	8.38%	0.97%	327	80		45		34	6		14		37
Pass-By	20.00%	20.00%	20.00%	1,609	190		108		82	122		33		89
Modal Split		25.00%		2,011	237		135		103	152		41		111
Net External				4,098	443		251		192	329		77		207

Table B.1.3: Baseline 2030 Trip Generation - Zone 2

Land Use	ITE Code	Intensity		Daily Trip Ends	PM Peak-Hour Trip Ends					AM Peak-Hour Trip Ends				
					Total	In		Out		Total	In		Out	
						%	Trips	%	Trips		%	Trips	%	Trips
Multi-Family	220	138.0	DU	960	86	65%	56	35%	30	71	20%	14	80%	57
Townhouse/Condo	230	551.0	DU	3,201	287	67%	192	33%	95	242	17%	41	83%	201
Office	710	24.7	KSF	272	106	17%	18	83%	88	61	88%	54	12%	7
Retail	820	43.6	KSF	1,872	365	49%	179	51%	186	44	61%	27	39%	17
Total				6,305	843		444		399	419		136	100%	283
Rates	Daily	PM Peak	AM Peak											
Internal Capture	4.15%	7.79%	1.40%	262	66		35		31	6		11		22
Pass-By	20.00%	20.00%	20.00%	1,261	169		89		80	84		27		57
Modal Split		25.00%		1,576	211		111		100	105		34		71
Net External				3,206	398		210		188	224		64		133

Table B.1.4: Baseline 2030 Trip Generation - Zone 3

Land Use	ITE Code	Intensity		Daily Trip Ends	PM Peak-Hour Trip Ends					AM Peak-Hour Trip Ends				
					Total	In		Out		Total	In		Out	
						%	Trips	%	Trips		%	Trips	%	Trips
Multi-Family	220	92.0	DU	681	57	65%	37	35%	20	49	20%	10	80%	39
Townhouse/Condo	230	367.0	DU	2,132	191	67%	128	33%	63	161	17%	27	83%	134
Office	710	120.0	KSF	1,321	213	17%	36	83%	177	217	88%	191	12%	26
Retail	820	31.2	KSF	1,340	292	49%	143	51%	149	31	61%	19	39%	12
Total				5,474	753		344		409	459		247	100%	211
Rates	Daily	PM Peak	AM Peak											
Internal Capture	8.91%	12.37%	1.16%	488	93		43		51	5		31		26
Pass-By	20.00%	20.00%	20.00%	1,095	151		69		82	92		49		42
Modal Split		15.00%		821	113		52		61	69		37		32
Net External				3,071	396		181		215	293		130		111

Table B.1.5: Baseline 2030 Trip Generation - Zone 4

Land Use	ITE Code	Intensity		Daily Trip Ends	PM Peak-Hour Trip Ends					AM Peak-Hour Trip Ends				
					Total	In		Out		Total	In		Out	
						%	Trips	%	Trips		%	Trips	%	Trips
Multi-Family	220	39.0	DU	360	24	65%	16	35%	8	23	20%	5	80%	18
Townhouse/Condo	230	157.0	DU	912	82	67%	55	33%	27	69	17%	12	83%	57
Office	710	13.3	KSF	146	94	17%	16	83%	78	37	88%	33	12%	4
Retail	820	23.5	KSF	1,009	241	49%	118	51%	123	24	61%	14	39%	9
Total				2,428	441		204		236	153		64	100%	89
Rates	Daily	PM Peak	AM Peak											
Internal Capture	5.15%	9.76%	0.58%	125	43		20		23	1		6		9
Pass-By	20.00%	20.00%	20.00%	486	88		41		47	31		13		18
Modal Split		15.00%		364	66		31		35	23		10		13
Net External				1,453	243		113		130	98		35		49

Table B.1.6: Baseline 2030 Trip Generation - Zone 5

Land Use	ITE Code	Intensity		Daily Trip Ends	PM Peak-Hour Trip Ends					AM Peak-Hour Trip Ends				
					Total	In		Out		Total	In		Out	
						%	Trips	%	Trips		%	Trips	%	Trips
Multi-Family	220	246.0	DU	1,614	153	65%	99	35%	53	124	20%	25	80%	99
Townhouse/Condo	230	986.0	DU	5,729	513	67%	344	33%	169	434	17%	74	83%	360
Office	710	34.2	KSF	377	117	17%	20	83%	97	80	88%	70	12%	10
Retail	820	60.3	KSF	2,589	453	49%	222	51%	231	60	61%	37	39%	24
Total				10,309	1,236		685		551	698		205	100%	493
Rates	Daily	PM Peak	AM Peak											
Internal Capture	6.91%	10.15%	1.08%	712	125		69		56	8		21		50
Pass-By	20.00%	20.00%	20.00%	2,062	247		137		110	140		41		99
Modal Split		25.00%		2,577	309		171		138	174		51		123
Net External				4,958	554		307		247	376		92		221

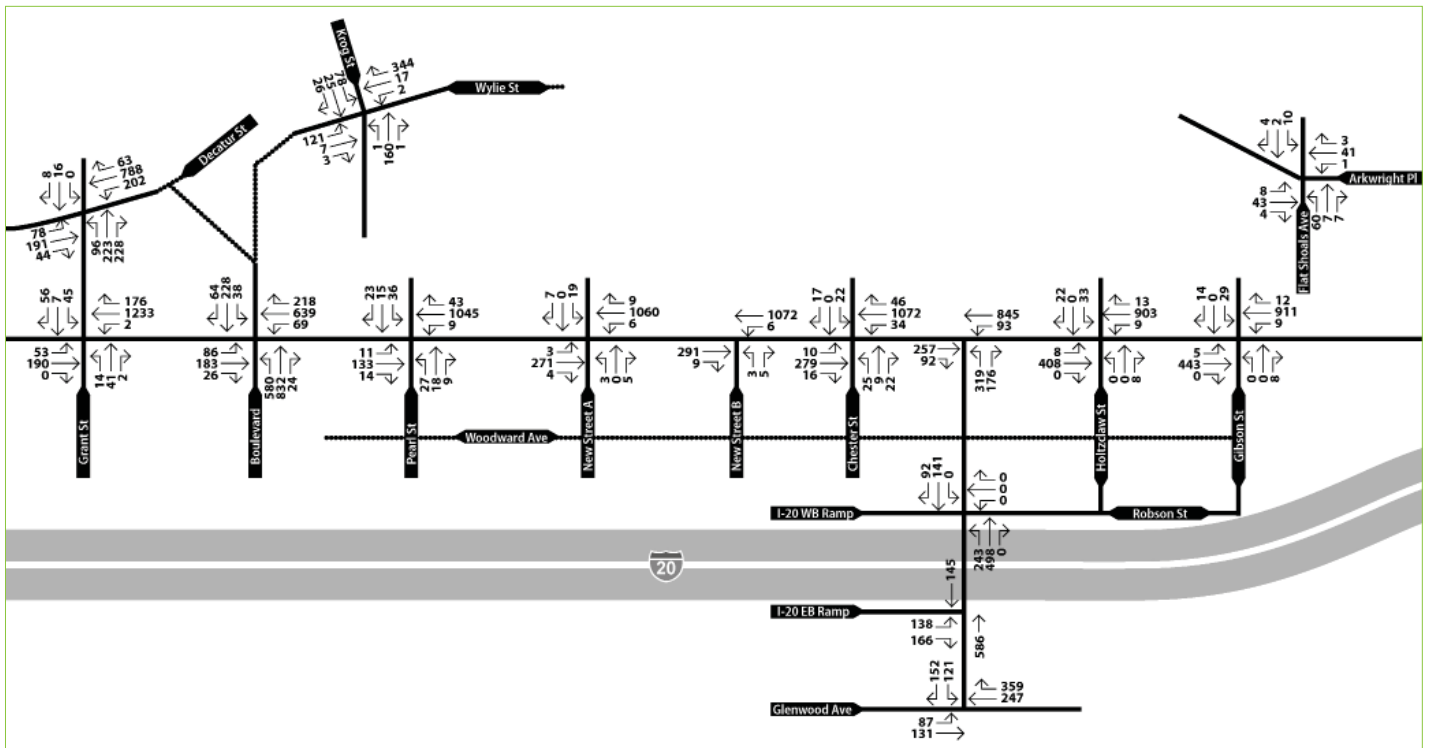


Figure B.1.1: BeltLine Subarea 4
Baseline Traffic Volumes
2030 AM Peak Hour

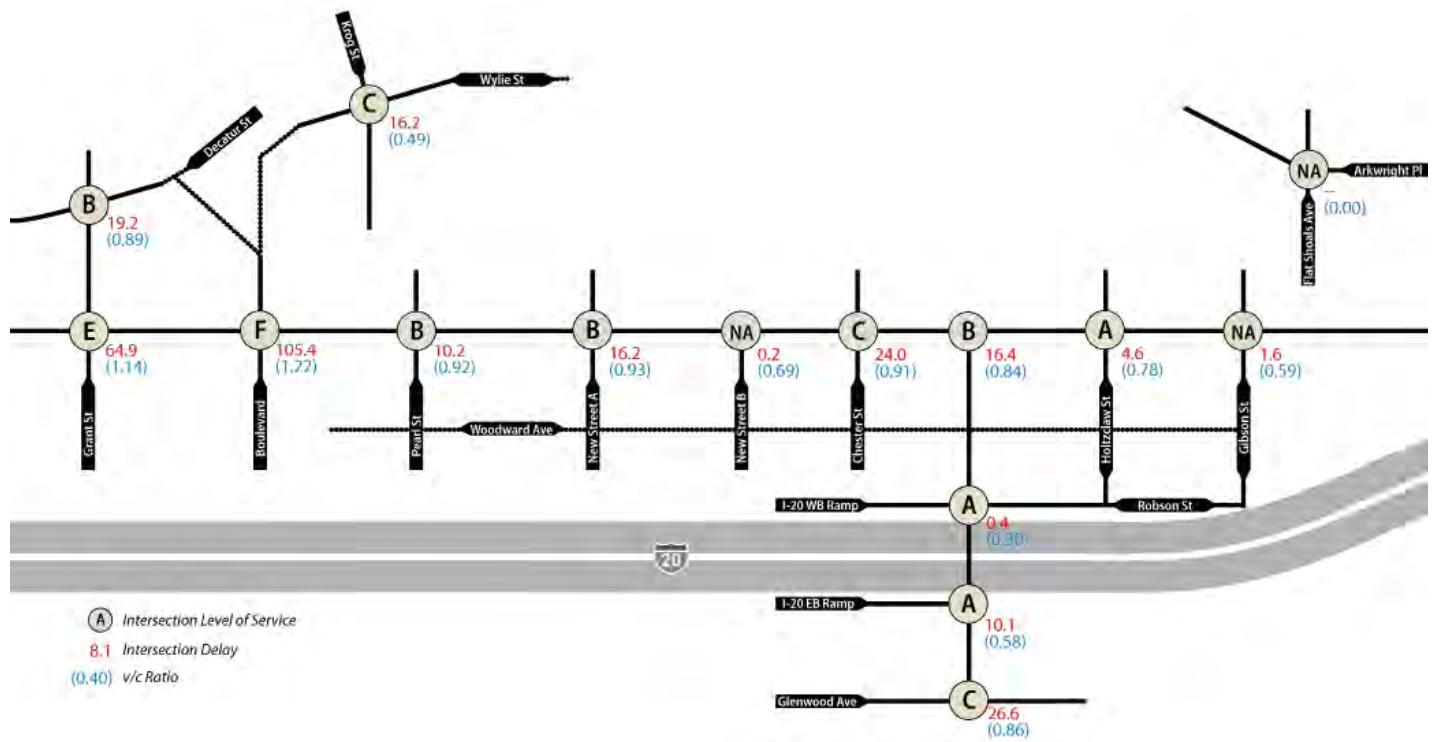
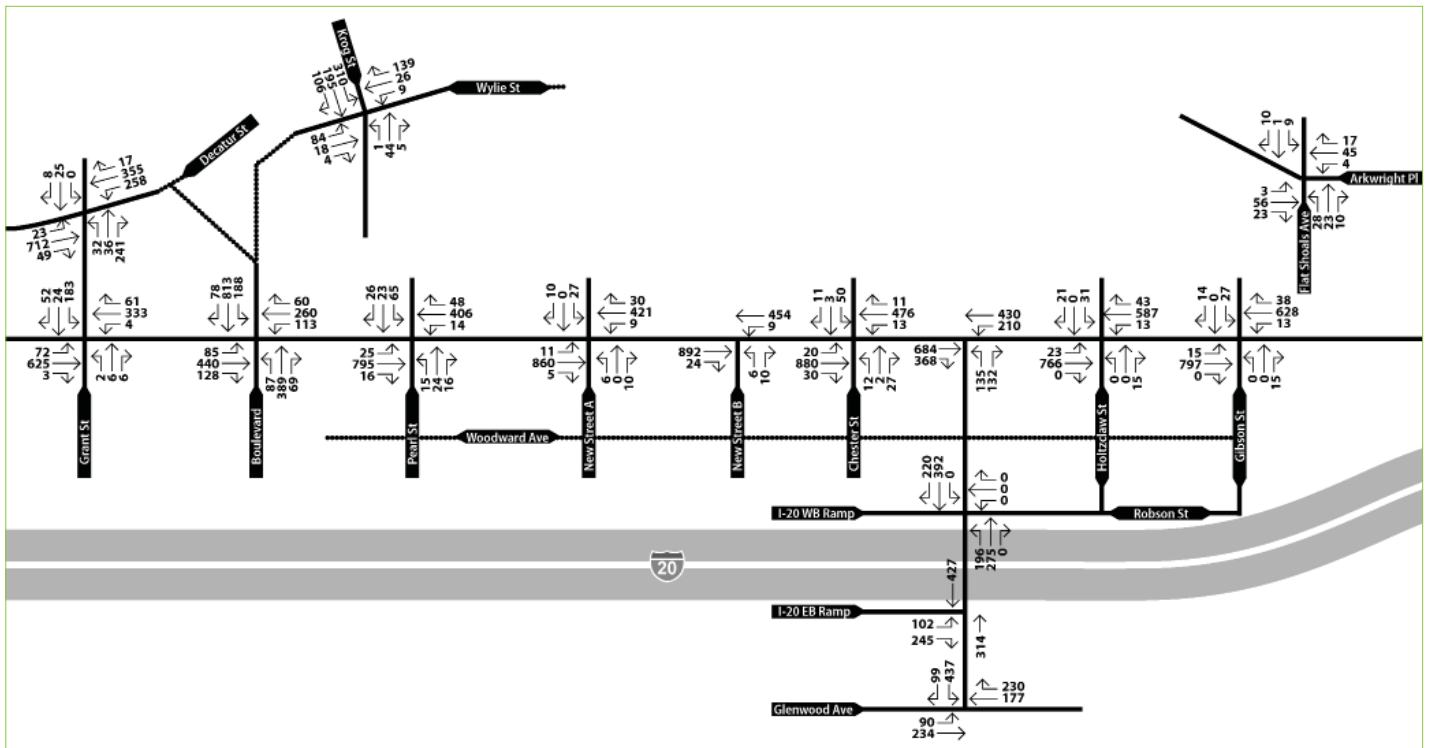
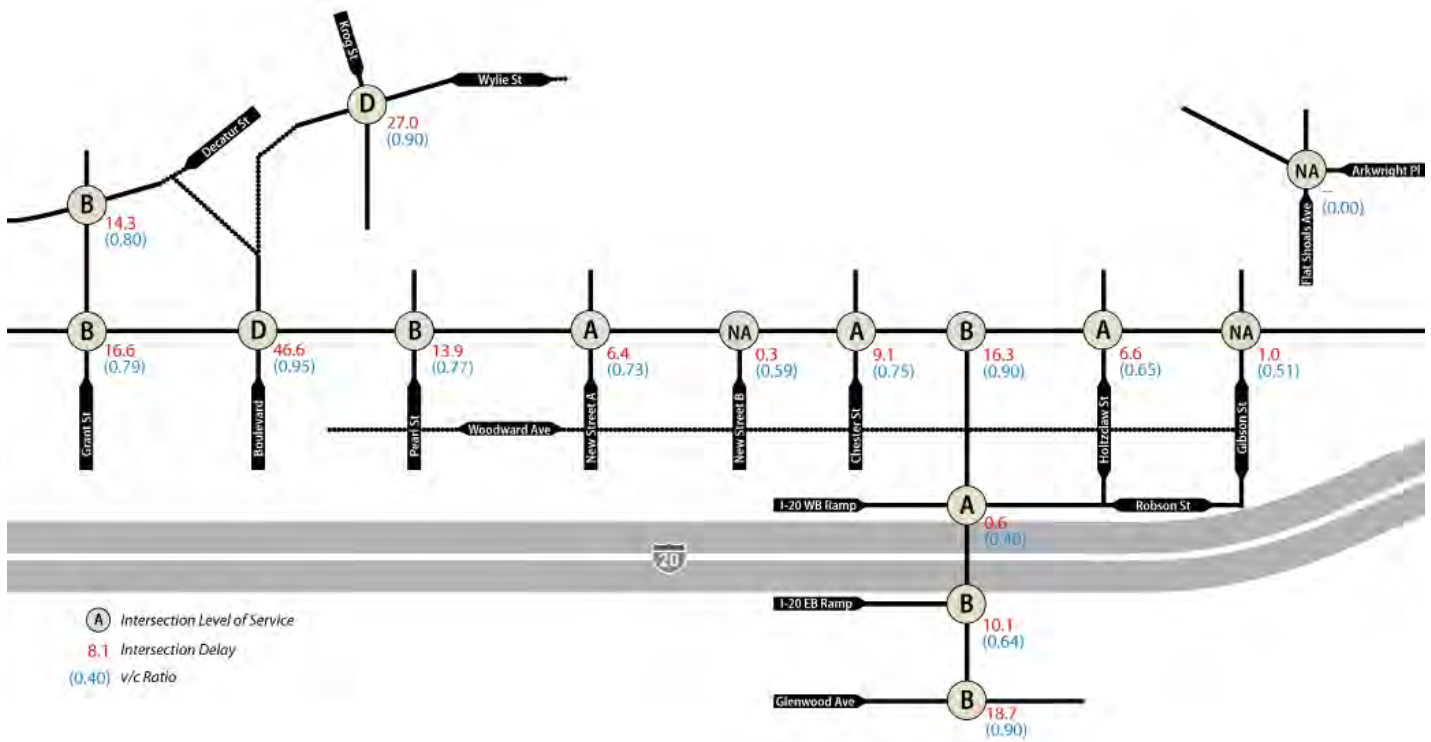


Figure B.1.2: BeltLine Subarea 4
Baseline Level of Service
2030 AM Peak Hour



**Figure B.1.3: BeltLine Subarea 4
Baseline Traffic Volumes
2030 PM Peak Hour**



**Figure B.1.4: BeltLine Subarea 4
Baseline Level of Service
2030 PM Peak Hour**

As Table B.1.7 shows, and as in the 2020 Baseline scenario, the subarea's roadway network experiences congestion primarily at the intersection of Memorial Drive and Boulevard in the AM peak hour. When particular turning movements at this intersection are analyzed, however, the most notable problem of each is not related to traffic volume on Memorial but instead to volume on Boulevard. Northbound left-turn volumes from Boulevard to Memorial exhaust the capacity of a single left turn lane according to HCM guidelines, and the time given to the signal phase to facilitate this movement requires that less time be given to westbound movements on Memorial Drive, thus compounding the overall delay that they face.

In the PM peak hour, the subarea does not experience significant congestion at individual intersections, although overall intersection delay along the Memorial and Bill Kennedy corridors are generally greater than in the existing conditions.

Table B.1.7: 2030 Baseline Level of Service

Intersection	AM Peak LOS	AM Peak V/C Ratio	AM Peak Overall Delay	PM Peak LOS	PM Peak V/C Ratio	PM Peak Overall Delay	Problematic Movements
Grant/Decatur	B	0.84	18 sec	B	0.62	13 sec	
Grant/Memorial	E	0.98	60 sec	B	0.62	15 sec	
Memorial/Boulevard	F	1.24	100 sec	D	0.83	40 sec	In AM, both WBT and NBT continue to experience highest delay (as in other scenarios); NBT volume is in excess of single turn lane capacity.
Memorial/Pearl	A	0.77	9 sec	B	0.63	13 sec	
Memorial/New Street A	B	0.75	13 sec	A	0.57	6 sec	
Memorial/Chester	B	0.76	15 sec	A	0.63	8 sec	
Memorial/Bill Kennedy	B	0.76	16 sec	B	0.87	17 sec	NBL in PM experiences greatest delay because of full signal control (NBR is helped by permitting RTOR)
Memorial/Holtzclaw	A	0.62	4 sec	A	0.51	6 sec	
Bill Kennedy/I-20 Westbound	A	0.30	1 sec	A	0.40	1 sec	
Bill Kennedy/I-20 Eastbound	B	0.49	14 sec	B	0.34	15 sec	
Bill Kennedy/Glenwood	C	0.61	28 sec	B	0.81	17 sec	
Krog/Wylie	B	N/A	11 sec	C	N/A	27 sec	SB approach experiences greatest delay in PM, but also by far the heaviest volumes due to tunnel crossing.

B.2 2030 Build Scenario

This scenario is similar to the 2020 Baseline but uses 2030 market absorption estimates to account for new development. Accordingly, all roadway assumptions for the 2020 Baseline scenario are incorporated into the 2030 Baseline scenario.

Planned Transportation Improvement Projects

The ARC Envision6 long-range transportation plan does not include any roadway improvement projects within Subarea 4 between 2020 and 2030.

Added Local Street Network and Traffic Control

The 2030 BeltLine scenario used the same added street network as in the 2020 baseline and BeltLine scenarios. This included two new signalized intersections, at Memorial and Holtzclaw and at Memorial and New Street A.

2030 Build Scenario: What would 2030 be like if we had significant BeltLine redevelopment and new roads, pedestrian connections and transit?

FACTOR	HOW IT APPEARS IN THIS ANALYSIS
Year of Analysis	2030
Road Network	2030 RTP Network and New Development Streets
Traffic Volumes	Existing Counts with 0.5% annual growth rate applied to 2030; BeltLine development is added to this with transit reduction based on full BeltLine transit
Mode Split	Varies based on TAZ and location, but calculated according to BeltLine methodology
Trip Assignment	Existing patterns modified with distribution of New Traffic based on new development

Table B.2.1: BeltLine 2030 (with BeltLine Transit) Trip Generation - Total

Land Use	ITE Code	Intensity		Daily Trip Ends	PM Peak-Hour Trip Ends					AM Peak-Hour Trip Ends				
					Total	In		Out		Total	In		Out	
						%	Trips	%	Trips		%	Trips	%	Trips
Multi-Family	220	744.0	DU	5,126	461	65%	300	35%	161	383	20%	77	80%	307
Townhouse/Condo	230	2,978.0	DU	17,302	1,549	67%	1,038	33%	511	1,310	17%	223	83%	1,088
Office	710	220.4	KSF	2,427	483	17%	82	83%	401	433	88%	381	12%	52
Retail	820	179.1	KSF	7,691	1,571	49%	770	51%	801	179	61%	109	39%	70
Total				32,546	4,064		2,189		1,875	2,305		789		1,516
Rates	Daily	PM Peak	AM Peak											
Internal Capture				1,930	396		210		186	25		81		144
Pass-By	20.00%	20.00%	20.00%	6,509	813		438		375	461		158		303
Modal Split		28.80%		9,457	1,179		636		543	670		229		441
Net External				14,650	1,676		905		771	1,150		322		628

Table B.2.2: BeltLine 2030 (with BeltLine Transit) Trip Generation - Zone 1

Land Use	ITE Code	Intensity		Daily Trip Ends	PM Peak-Hour Trip Ends					AM Peak-Hour Trip Ends				
					Total	In		Out		Total	In		Out	
						%	Trips	%	Trips		%	Trips	%	Trips
Multi-Family	220	145.0	DU	1,002	90	65%	58	35%	31	75	20%	15	80%	60
Townhouse/Condo	230	578.0	DU	3,358	301	67%	201	33%	99	254	17%	43	83%	211
Office	710	0.0	KSF	0	0	17%	0	83%	0	0	88%	0	12%	0
Retail	820	25.9	KSF	1,112	257	49%	126	51%	131	26	61%	16	39%	10
Total				5,473	648		386		262	355		74		281
Rates	Daily	PM Peak	AM Peak											
Internal Capture	4.06%	8.38%	0.97%	222	54		32		22	3		6		24
Pass-By	20.00%	20.00%	20.00%	1,095	130		77		52	71		15		56
Modal Split		28.00%		1,532	181		108		73	99		21		79
Net External				2,624	283		168		114	181		32		123

Table B.2.3: BeltLine 2030 (with Beltline Transit) Trip Generation - Zone 3

Land Use	ITE Code	Intensity		Daily Trip Ends	PM Peak-Hour Trip Ends					AM Peak-Hour Trip Ends				
					Total	In		Out		Total	In		Out	
						%	Trips	%	Trips		%	Trips	%	Trips
Multi-Family	220	214.0	DU	1,420	133	65%	86	35%	46	109	20%	22	80%	87
Townhouse/Condo	230	855.0	DU	4,968	445	67%	298	33%	147	376	17%	64	83%	312
Office	710	0.0	KSF	0	0	17%	0	83%	0	0	88%	0	12%	0
Retail	820	39.0	KSF	1,675	339	49%	166	51%	173	39	61%	24	39%	15
Total				8,063	916		550		366	524		109		414
Rates	Daily	PM Peak	AM Peak											
Internal Capture	4.15%	7.79%	1.40%	335	71		43		28	7		9		32
Pass-By	20.00%	20.00%	20.00%	1,613	183		110		73	105		22		83
Modal Split		30.00%		2,419	275		165		110	157		33		124
Net External				3,697	387		232		154	255		46		175

Table B.2.4: BeltLine 2030 (with BeltLine Transit) Trip Generation - Zone 3

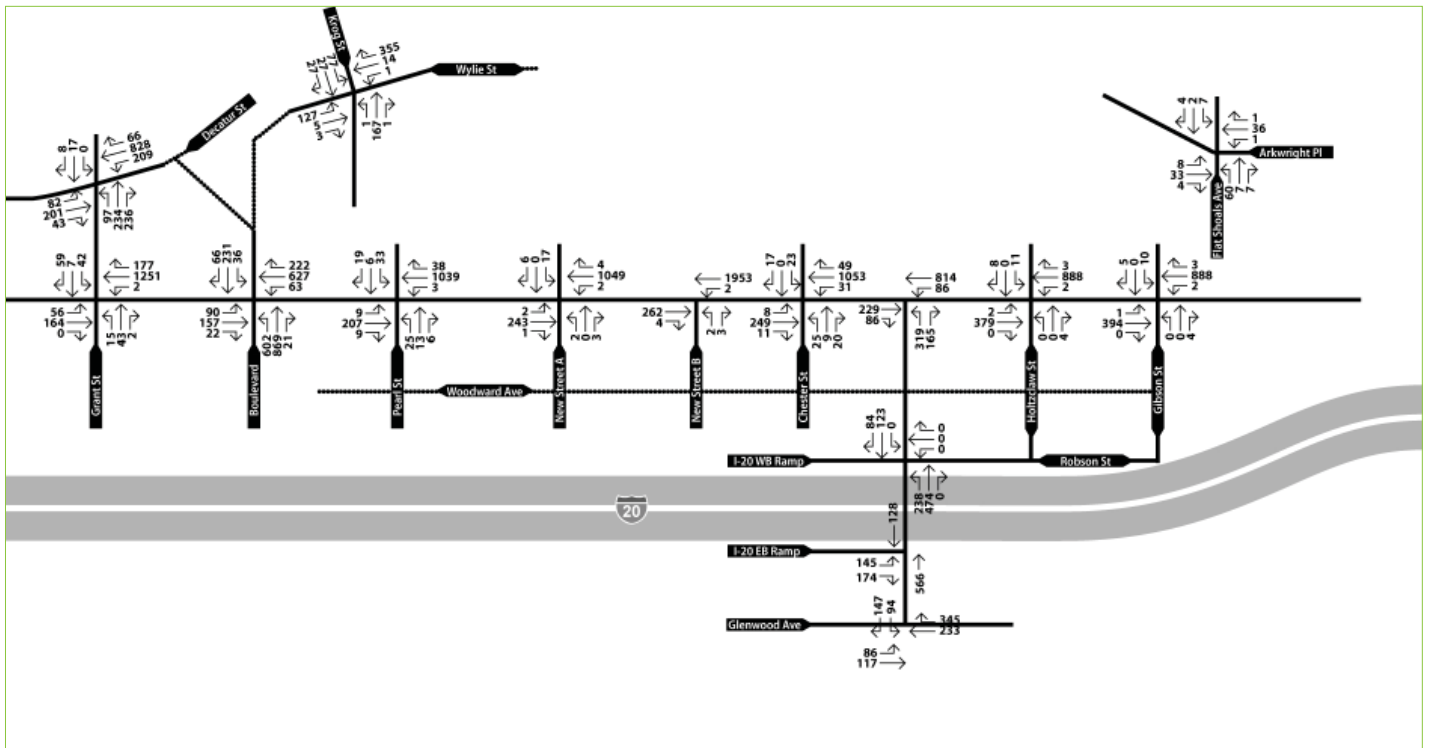
Land Use	ITE Code	Intensity		Daily Trip Ends	PM Peak-Hour Trip Ends					AM Peak-Hour Trip Ends				
					Total	In		Out		Total	In		Out	
						%	Trips	%	Trips		%	Trips	%	Trips
Multi-Family	220	107.0	DU	772	66	65%	43	35%	23	56	20%	11	80%	45
Townhouse/Condo	230	430.0	DU	2,498	224	67%	150	33%	74	189	17%	32	83%	157
Office	710	86.9	KSF	957	176	17%	30	83%	146	168	88%	148	12%	20
Retail	820	46.0	KSF	1,975	378	49%	185	51%	193	46	61%	28	39%	18
Total				6,202	844		408		436	459		219		240
Rates	Daily	PM Peak	AM Peak											
Internal Capture	8.91%	12.37%	1.16%	553	104		50		54	5		27		30
Pass-By	20.00%	20.00%	20.00%	1,240	169		82		87	92		44		48
Modal Split		28.00%		1,737	236		114		122	129		61		67
Net External				2,673	335		162		173	233		87		95

Table B.2.5: BeltLine 2030 (with BeltLine Transit) Trip Generation - Zone 4

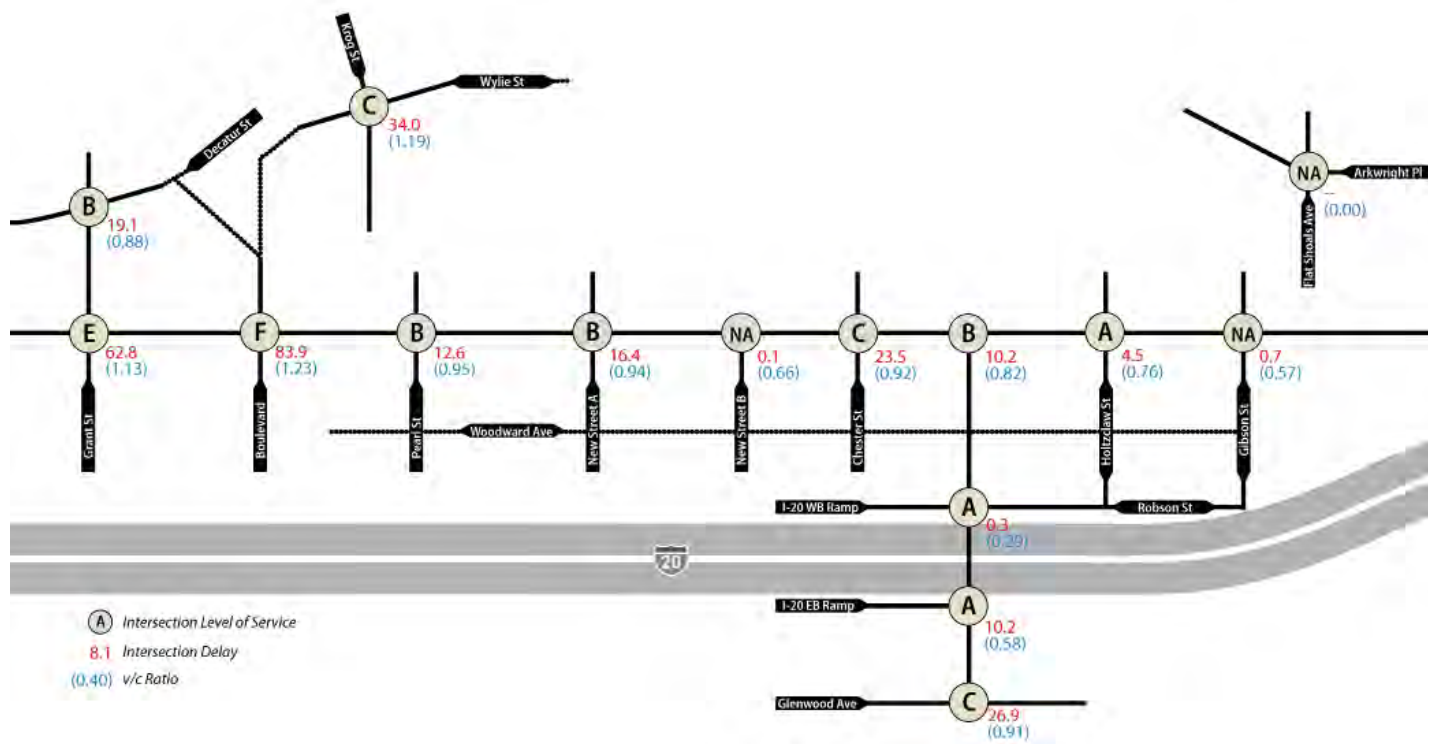
Land Use	ITE Code	Intensity		Daily Trip Ends	PM Peak-Hour Trip Ends					AM Peak-Hour Trip Ends				
					Total	In		Out		Total	In		Out	
						%	Trips	%	Trips		%	Trips	%	Trips
Multi-Family	220	86.0	DU	645	53	65%	35	35%	19	46	20%	9	80%	37
Townhouse/Condo	230	345.0	DU	2,004	179	67%	120	33%	59	152	17%	26	83%	126
Office	710	31.4	KSF	346	114	17%	19	83%	95	74	88%	65	12%	9
Retail	820	15.7	KSF	674	184	49%	90	51%	94	16	61%	10	39%	6
Total				3,669	531		264		266	288		110		178
Rates	Daily	PM Peak	AM Peak											
Internal Capture	5.15%	9.76%	0.58%	189	52		26		26	2		11		17
Pass-By	20.00%	20.00%	20.00%	734	106		53		53	58		22		36
Modal Split		28.00%		1,027	149		74		75	81		31		50
Net External				1,719	224		112		112	148		46		75

Table B.2.6: BeltLine 2030 (with BeltLine Transit) Trip Generation - Zone 5

Land Use	ITE Code	Intensity		Daily Trip Ends	PM Peak-Hour Trip Ends					AM Peak-Hour Trip Ends				
					Total	In		Out		Total	In		Out	
						%	Trips	%	Trips		%	Trips	%	Trips
Multi-Family	220	192.0	DU	1,287	119	65%	77	35%	42	98	20%	20	80%	78
Townhouse/Condo	230	770.0	DU	4,474	400	67%	268	33%	132	339	17%	58	83%	281
Office	710	102.1	KSF	1,124	193	17%	33	83%	160	191	88%	168	12%	23
Retail	820	52.5	KSF	2,254	413	49%	202	51%	211	53	61%	32	39%	20
Total				9,139	1,126		581		545	680		277		403
Rates	Daily	PM Peak	AM Peak											
Internal Capture	6.91%	10.15%	1.08%	632	114		59		55	7		28		41
Pass-By	20.00%	20.00%	20.00%	1,828	225		116		109	136		55		81
Modal Split		30.00%		2,742	338		174		163	204		83		121
Net External				3,938	449		231		217	333		110		161



**Figure B.2.1: BeltLine Subarea 4
Build in 2030 - Traffic Volumes
2030 AM Peak Hour**



**Figure B.2.2: BeltLine Subarea 4
Build in 2030 - Level of Service
2030 AM Peak Hour**

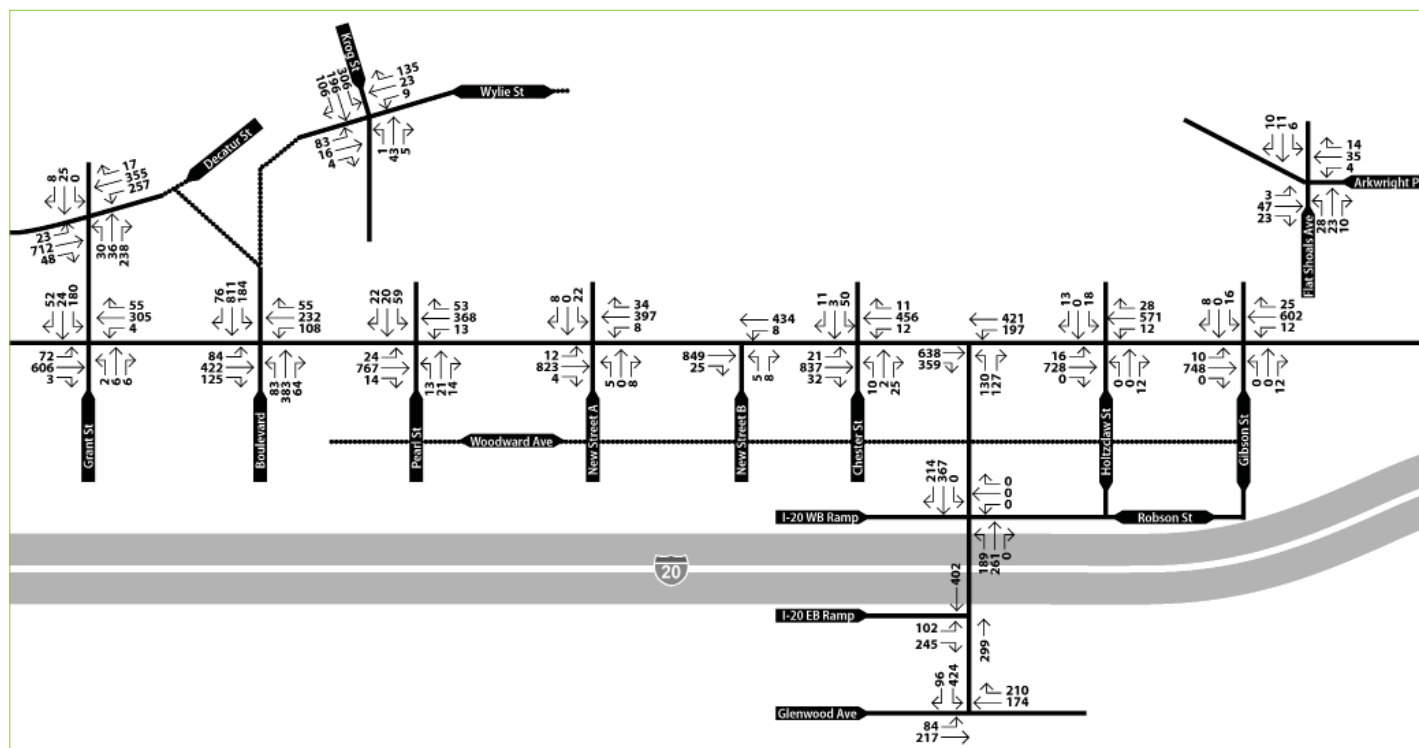
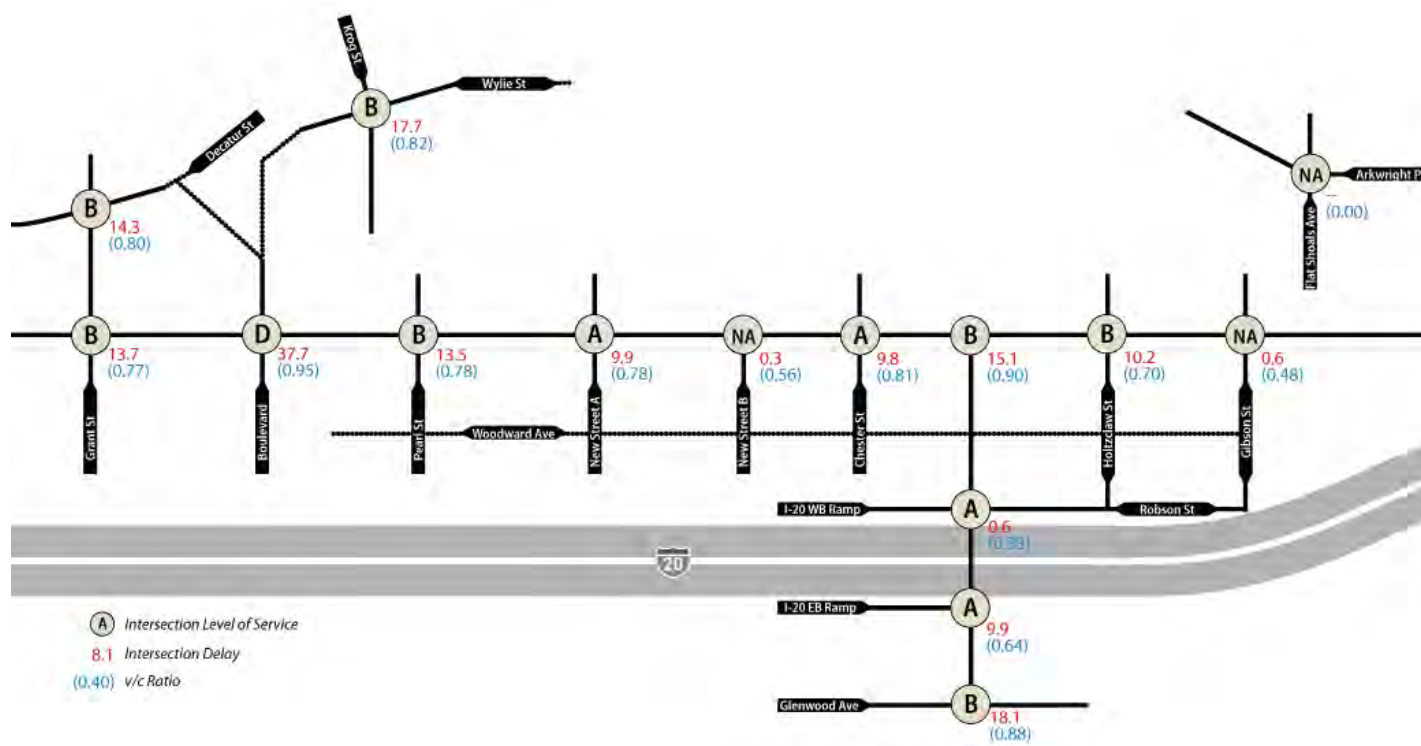


Figure B.2.3: BeltLine Subarea 4 Build in 2030 - Traffic Volumes 2030 PM Peak Hour



**Figure B.2.4: BeltLine Subarea 4
Build in 2030 - Level of Service
2030 PM Peak Hour**

As Table B.2.7 details intersection performance for the 2030 Build scenario. Overall performance patterns are consistent with those seen in other scenarios, with the greatest concentration of delay at the Memorial/Boulevard intersection. Increased delay at this intersection in the PM is accordingly due largely to southbound movements (which are heavier than eastbound movements) and their need for increased signal time.

In the PM peak hour, the subarea does not experience significant congestion at individual intersections (with the possible aforementioned exception of Memorial/Boulevard), although overall intersection delay along the Memorial and Bill Kennedy corridors are generally greater than in the existing conditions.

Table B.2.7: 2030 BeltLine Build Best Case Level of Service

Intersection	AM Peak LOS	AM Peak V/C Ratio	AM Peak Overall Delay	PM Peak LOS	PM Peak V/C Ratio	PM Peak Overall Delay	Problematic Movements
Grant/Decatur	B	0.84	18 sec	B	0.61	13 sec	
Grant/Memorial	E	0.97	58 sec	B	0.62	12 sec	
Memorial/Boulevard	F	1.23	95 sec	D	0.82	35 sec	Same degree of problems as in 2030 Baseline scenario; problems appear largely related to NBT movements in AM and insufficient NBL storage space
Memorial/Pearl	B	0.74	11 sec	B	0.62	13 sec	
Memorial/New Street A	B	0.70	12 sec	A	0.56	9 sec	
Memorial/Chester	B	0.74	14 sec	A	0.63	9 sec	
Memorial/Bill Kennedy	A	0.73	9 sec	B	0.82	15 sec	
Memorial/Holtzclaw	A	0.59	4 sec	A	0.48	10 sec	
Bill Kennedy/I-20 Westbound	A	0.29	1 sec	A	0.38	1 sec	
Bill Kennedy/I-20 Eastbound	B	0.48	13 sec	B	0.32	15 sec	
Bill Kennedy/Glenwood	C	0.62	28 sec	B	0.77	16 sec	
Krog/Wylie	B	N/A	11 sec	B	N/A	20 sec	

B.3 Overall Conclusions

Using trip generation to determine 2030 traffic yields similar volumes; the resulting intersection levels of service, when compared to those in the analysis using growth rates from 2020 to 2030, are also similar. This is due partly to the fact that the 2020 market study allows considerable levels of development of both the land use plans. An annual growth rate of 1 percent, as determined from the regional travel demand model, was applied to all intersection volumes (including all specific turning movements). Using a trip generation approach for 2030 based on the 2030 market study numbers, the BeltLine land use plan was used to generate additional trips from remaining development capacity in the Atlanta CDP. This trip generation was applied to intersections based on the Subarea 4 trip distribution model discussed in the main Transportation Analysis Report. For this reason, some intersections experienced little traffic growth overall where some experienced significant growth, especially in key turning movements. In the case of an even application of a 1 percent growth rate, however,

the absolute growth from one intersection to another was driven by the original volumes: those intersections with already-high volumes saw greater number increases than those with lower volumes.

Many of the same problems experienced in the 2030 scenarios, especially the continuing challenges of the Boulevard/Memorial intersection, were also present when trip generation was applied.

Table B.3.1: Comparison of Trip Generation to Application of Growth Rate for 2030 Baseline Traffic

Intersection	Trip Generation						Annual 1% Growth Rate					
	AM Peak LOS	AM Peak V/C Ratio	AM Peak Overall Delay	PM Peak LOS	PM Peak V/C Ratio	PM Peak Overall Delay	AM Peak LOS	AM Peak V/C Ratio	AM Peak Overall Delay	PM Peak LOS	PM Peak V/C Ratio	PM Peak Overall Delay
Grant/Decatur	B	0.84	18 sec	B	0.62	13 sec	B	0.84	18 sec	B	0.62	13 sec
Grant/Memorial	E	0.98	60 sec	B	0.62	15 sec	E	1.00	71 sec	B	0.62	15 sec
Memorial/Boulevard	F	1.24	100 sec	D	0.83	40 sec	F	1.27	109 sec	D	0.80	40 sec
Memorial/Pearl	A	0.77	9 sec	B	0.63	13 sec	B	0.72	11 sec	B	0.60	13 sec
Memorial/New Street A	B	0.75	13 sec	A	0.57	6 sec	B	0.75	13 sec	A	0.57	6 sec
Memorial/Chester	B	0.76	15 sec	A	0.63	8 sec	B	0.76	15 sec	A	0.63	8 sec
Memorial/Bill Kennedy	B	0.76	16 sec	B	0.87	17 sec	B	0.75	16 sec	B	0.79	14 sec
Memorial/Holtzclaw	A	0.62	4 sec	A	0.51	6 sec	A	0.61	4 sec	A	0.48	6 sec
Bill Kennedy/I-20 Westbound	A	0.30	1 sec	A	0.40	1 sec	A	0.29	1 sec	A	0.40	1 sec
Bill Kennedy/I-20 Eastbound	B	0.49	14 sec	B	0.34	15 sec	B	0.52	11 sec	B	0.32	16 sec
Bill Kennedy/Glenwood	C	0.61	28 sec	B	0.81	17 sec	C	0.61	28 sec	B	0.75	14 sec
Krog/Wylie	B	N/A	11 sec	C	N/A	27 sec	B	N/A	11 sec	D	N/A	30 sec

As with the baseline scenario, using a trip generation approach for 2030 based on the 2030 market study numbers, the BeltLine land use plan was used to generate additional trips from remaining development capacity in the Subarea 4 land use plan. This trip generation was applied to intersections based on the Subarea 4 trip distribution model discussed in the main Transportation Analysis Report. For this reason, some intersections experienced little traffic growth overall where some experienced significant growth, especially in key turning movements. As the Subarea 4 plan generally features more development concentrated near then BeltLine corridor than the Atlanta CDP (which features a greater distribution of higher-intensity development all along the Memorial corridor), the application of trip generation generally meant a greater incidence of turning movements close to the BeltLine and through movements toward the edges of the Subarea. In the case of an even

application of a 1 percent growth rate, however, the absolute growth from one intersection to another was driven by the original volumes: those intersections with already-high volumes saw greater number increases than those with lower volumes, regardless of any new patterns that might be introduced between 2020 and 2030.

Many of the same problems experienced in the 2030 scenarios, especially the continuing challenges of the Boulevard/Memorial intersection, were also present when trip generation was applied. It is worth noting that the trip generation analysis scenario features less delay at key intersections, especially at Grant/Memorial and Boulevard/Memorial. This is due largely to differences in signal timing schemes, both of which were determined by Synchro software with the intent of reducing overall corridor delay.

Table B.3.2: Comparison of Trip Generation to Application of Growth Rate for 2030 BeltLine Traffic

Intersection	Trip Generation						Annual 1% Growth Rate					
	AM Peak LOS	AM Peak V/C Ratio	AM Peak Overall Delay	PM Peak LOS	PM Peak V/C Ratio	PM Peak Overall Delay	AM Peak LOS	AM Peak V/C Ratio	AM Peak Overall Delay	PM Peak LOS	PM Peak V/C Ratio	PM Peak Overall Delay
Grant/Decatur	B	0.78	18 sec	B	0.57	13 sec	B	0.84	18 sec	B	0.61	13 sec
Grant/Memorial	C	0.89	20 sec	A	0.57	9 sec	D	0.98	51 sec	B	0.62	12 sec
Memorial/Boulevard	E	1.07	70 sec	C	0.79	32 sec	F	1.21	94 sec	D	0.83	37 sec
Memorial/Pearl	A	0.65	8 sec	B	0.54	13 sec	B	0.71	11 sec	B	0.60	12 sec
Memorial/New Street A	A	0.64	4 sec	A	0.51	8 sec	A	0.70	7 sec	A	0.55	9 sec
Memorial/Chester	B	0.66	11 sec	A	0.56	8 sec	B	0.74	16 sec	A	0.63	8 sec
Memorial/Bill Kennedy	C	0.66	22 sec	A	0.70	8 sec	B	0.73	19 sec	B	0.77	13 sec
Memorial/Holtzclaw	A	0.52	8 sec	B	0.44	14 sec	A	0.58	9 sec	A	0.46	10 sec
Bill Kennedy/I-20 Westbound	A	0.34	3 sec	A	0.43	4 sec	A	0.28	1 sec	A	0.38	1 sec
Bill Kennedy/I-20 Eastbound	B	0.44	14 sec	B	0.29	18 sec	A	0.53	8 sec	A	0.34	9 sec
Bill Kennedy/Glenwood	B	0.47	12 sec	C	0.58	20 sec	C	0.53	21 sec	B	0.70	13 sec
Krog/Wylie	B	N/A	10 sec	C	N/A	21 sec	B	N/A	11 sec	B	N/A	14 sec

Appendix D: Meeting Summaries

Memorial Drive/ Glenwood Ave
Subarea 4 Planning Committee Meeting
March 15, 2010



Subarea 4: Planning Committee Kick Off/ Evaluation Framework

Location: Trees Atlanta

Date: March 15, 2010

Agenda

- Welcome/ Introductions
- Overview of Planning Process/ Planning Committee Roles
- Presentation of Previous Studies
- Interactive Discussion to draft a list of Goals and Objectives
- Questions/ Next Steps

SUBAREA 4

Memorial Dr/ Glenwood

ATLANTA BELTLINE INC.

Atlanta BeltLine, Inc.

Planning Committee Kick-Off Evaluation Framework

Agenda

- Planning Process
- Previous Studies
- Goals and Objectives
- Questions/ Next Steps

March 15, 2010

Ecos Environmental Design, Inc.

1

SUBAREA 4

Memorial Dr/ Glenwood

ATLANTA BELTLINE INC.

Atlanta BeltLine, Inc.

Planning Committee Kick-Off Evaluation Framework

Agenda

Planning Process

- Previous Studies
- Goals and Objectives
- Questions/ Next Steps

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WHAT IS THE BELTLINE?

Key Elements

ATLANTA BELTLINE INC.

Parks and Arboretum

Trails

Transit & Transportation Infrastructure

Economic Development & Jobs

Affordable Workforce Housing

Historic Preservation

Streetscapes & Public Art

Environmental Clean-up

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LIGHT RAIL TRANSIT

ATLANTA BELTLINE INC.

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NATIONAL TRANSIT UPDATE

What are other cities doing on transit?

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WHAT IS THE BELTLINE?

Transit

ATLANTA BELTLINE INC.

Overview

Existing rail corridor: 22-mile loop of transit using historic railroad corridor

In-town circulator: 2-3 miles from downtown, connects 45 neighborhoods

Light rail transit: Neighborhood-friendly, can be crossed on foot

Part of integrated transit system: 4 connections with MARTA 2 connections with Peachtree Corridor.

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WHAT IS BELTLINE MASTER PLANNING?



Land Use

- Policy guide and plan for future development
- Location (parcels), type (industrial, mixed use, etc.), and intensity (how dense?)



Transportation

- Identification of new sidewalk, road, and intersection improvements
- Enhances how individuals get to, from, and around, and across the BeltLine
- Refines Street Framework Plan



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WHAT IS BELTLINE MASTER PLANNING?



Historic Preservation

- Inventory and prioritize important historic resources including buildings, structures, and objects



Public Art

- Classify locations for future art



Parks & Public Spaces

- Identification of additional park, greenway, trail, plaza, and other public space opportunities
- Identify public and private opportunities



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WHY MASTER PLAN?



- Manage growth
- Shape redevelopment early
- Improve access to the BeltLine
- Manage growth in traffic congestion
- Create new parks
- Protect the BeltLine corridor



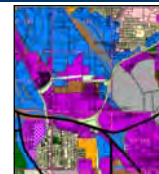
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IMPLEMENTATION TOOLS



- Refines City Policy
- Details a Common Vision
- Refines Street Framework Plan
- Prioritize projects
- Explores Funding Opportunities



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HOW DOES THIS RELATE TO OTHER PLANNING EFFORTS?



- BeltLine Redevelopment Plan
- Previous, relevant planning efforts
- Environmental Impact Statement
- Community Benefits & Economic Development Incentive Priorities
- BeltLine Affordable Housing Trust Fund
- 5 Year Work Plan



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HOW ARE PROJECTS AND PLANNING INFORMED?



How Projects and Planning Are Informed?

- ✓ Community Input
- ✓ Environmental Impacts
- ✓ Technical Feasibility including detailed traffic analysis
- ✓ Financial Resources



Final recommendations to City Council are made by ABI and weighed against these factors

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WHERE ARE WE MASTER PLANNING?



Subarea 4

- Berne Street to DeKalb Ave
- ½ Mile from BeltLine corridor + Tax Allocation District (TAD) Property



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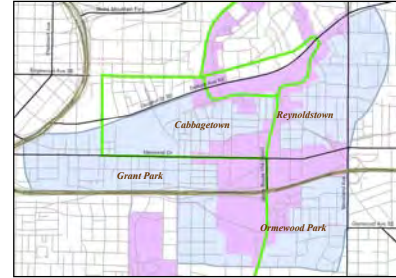
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WHERE ARE WE MASTER PLANNING?



Subarea 4

- TAD area is purple
- Land use Recommendations focus on the TAD
- TAD \$ can only be spent in these areas
- Most redevelopment opportunities are in the TAD

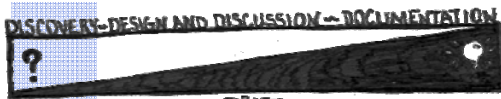


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MASTER PLANNING SUBAREA 4

Process & Key Dates



Feb: Study Group
March: Planning Committee

- Review previous studies
- Review vision statement and goals
- Analyze existing conditions

April: Study Group
May: Study Group

- Prepare concept plans
- Draft plan recommendations
- Refine master plan

June: Planning Committee (tentative)
July: Study Group (tentative)

August: Study Group (tentative)
Sept: Office Hours (tentative)

- Take Master Plans to NUPs and City Council for adoption

Oct - Dec: NUPs, then City Council (tentative)

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SUBAREA 4

Memorial Dr/ Glenwood



Atlanta BeltLine, Inc.

Planning Committee Kick-Off
Evaluation Framework

Agenda

- Planning Process

Previous Studies

- Goals and Objectives
- Questions / Next Steps



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PREVIOUS STUDIES

City-Wide Plans



- Atlanta Strategic Action Plan (ASAP)
- Atlanta Greenspace Plan
- Connect Atlanta Plan
- ARC's Envision 6 – Regional Transportation Plan
- MARTA Planning Activities
- Mayor's Economic Development Plan
- City of Atlanta Capital Improvement Projects



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PREVIOUS STUDIES

BeltLine Plans



- BeltLine Redevelopment Plan
- BeltLine Street Framework Plan
- BeltLine Environmental Impact Statement (EIS)
- BeltLine Brownfield Survey
- BeltLine Cultural Vision
- BeltLine Emerald Necklace
- Updated Market Forecasts for the Atlanta BeltLine Study Area



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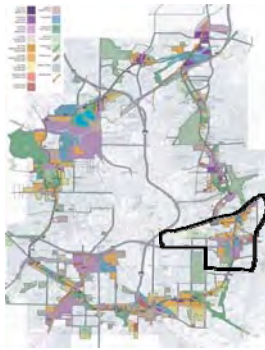
PREVIOUS STUDIES

BeltLine Plans



BeltLine Redevelopment Plan (2005)

- The BeltLine Redevelopment Plan is a key precedent document for planning how the BeltLine will develop over the next 25 years.
- It includes recommendations for land use guidelines that are consistent with the redevelopment vision, public input and technical assessments.
- BeltLine Subarea Master Planning efforts will refine the land use recommendations in a comprehensive manner to include transportation planning and park master planning.



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PREVIOUS STUDIES

BeltLine Plans



BeltLine Street Framework Plan (2006)

- Building off of the BeltLine Redevelopment Plan, the Street Framework Plan proposes new street connections within the TAD.
- The goal is to create a connected street network and provide a framework that accommodates the greatest variety of possible development.



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PREVIOUS STUDIES

BeltLine Plans



BeltLine Environmental Impact Statement (EIS)

- Currently being completed by MARTA and ABI
- Will establish right-of-way (ROW) needs and the alignment of the transit and multi-use trails corridor.
- Conceptual locations of stations, trails connections and other facilities will be determined.
- All EIS alternative alignments for the BeltLine transit and trail and conceptual locations of stations will be considered during the Subarea 4 Master Planning process.



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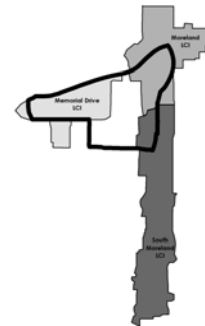
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PREVIOUS STUDIES

LCI Studies



- Memorial Dr – MLK Dr Area Revitalization Study (2003)
- Ponce/ Moreland Corridor Study (2005)
- South Moreland Ave Corridor LCI (2008)



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PREVIOUS STUDIES

LCI Studies



Memorial Dr – MLK Dr Area Revitalization Study (2003)

Project Overview:

- This study analyzed the underutilized properties along both corridors, encompassing 2.2 miles from I-75/85 to Boulevard corridor.
- Recommendations include proposed mixed-use development areas that satisfy the need for more retail, cultural and neighborhood services, while still preserving the scale and character of adjacent neighborhoods.
- The study was conducted concurrently with the Empowerment Zone neighborhood master plans. The plan, land use and zoning have all been adopted. SPI-22 zoning has been approved for the study area and the projects have been incorporated into the CDP.

Urban Design & Architectural Goals:

- Create a pedestrian oriented mixed-use environment
- Connect the study area to surrounding neighborhoods and cultural amenities
- Protect existing historic neighborhood fabrics & densities
- Facilitate neighborhood use of mass transit and other alternative forms of transportation
- Create an architecturally strong and creative urban environment
- Create facilities for historical and cultural interpretation of neighborhood landmarks



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PREVIOUS STUDIES

LCI Studies



Ponce/ Moreland Corridor Study (2005)

Study Overview:

- Originally a joint COA/ GDOT project that was submitted to ARC for consideration as a "grandfathered" LCI area with was granted in 2007

Moreland Avenue Recommendations:

- Transportation: Provide improvements that facilitate pedestrian and other mode circulation activities and support redevelopment efforts while not compromising vehicular operational efficiency and capacity.
- Transit: Improve current service in a conservative and cost effective manner, while laying the foundation for future upgrades.
- Pedestrian: Encourage walking along the corridor.
- Bicycle: Bicycle-friendliness is a long term goal
- Land Use: strengthen existing commercial nodes and create a greater density of residential between when the area is redeveloped
- Environment, Infrastructure, and Facilities: ensure adequate infrastructure to support future development, create a safe environment for residents and visitors, and increase green space
- Urban Design & Historic Resources: Goals include identifying and preserving historic resources and utilizing redevelopment to mend the urban fabric.



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PREVIOUS STUDIES

LCI Studies

South Moreland Ave Corridor LCI (2008)

I-20 to Glenwood Avenue:

- 1-20 Interchange Reconfiguration
- Bike Improvements on Moreland
- Bike Route on Faith Avenue
- Future Land Use Change to Low Density Residential
- Ormeow sidewalks
- Glenwood Avenue intersection realignment
- Pedestrian crossing island at Glenwood & Faith Ave

Moreland Avenue Streetscape:

- 10 foot sidewalks
- New street trees
- Pedestrian-scaled lighting
- Raise existing curbs for stormwater management
- Pedestrian crossing islands at key locations
- Stripe pedestrian crossings at all streets; major pedestrian crossings could include pedestrian activated HAWK (High-intensity Activated crosswalk) signals

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PREVIOUS STUDIES

Neighborhood Plans

- Imagine Downtown Master Plan
- Reynoldstown Neighborhood Master Plan
- Oakland Cemetery Master Plan
- East Atlanta Village Plan
- Cabbagetown Traffic Study
- East Side Parks Conceptual Vision: Edgewood, Kirkwood & East Lake Neighborhoods

Atlanta BeltLine Inc. BeltLine Atlanta Connected

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PREVIOUS STUDIES

Neighborhood Plans

Imagine Downtown Master Plan (2004 & 2009)

Study Overview:

- The Imagine Downtown plan strives to synthesize numerous previous planning efforts and planned projects with new and creative ideas in previously unplanned areas of Downtown, into a single comprehensive vision for the whole.
- The 2004 Imagine Downtown Plan includes a 5-year update completed in August 2009; known as the Imagine Downtown Encore 2.0 Plan

Key Recommendations for the Memorial/ MLK area:

- Build a greenway cap over I-75/85 to connect the State Capitol to Memorial – MLK Greenway to the east
- Improved pedestrian connections and streetscapes along Memorial Drive and Boulevard
- Promoting new transit-oriented development at the King Memorial MARTA Station

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PREVIOUS STUDIES

Neighborhood Plans

Reynoldstown Neighborhood Master Plan (2000)

Study Overview:

- The Atlanta Empowerment Zone Corporation, the Reynoldstown Revitalization Corporation and the City of Atlanta's Bureau of Planning sponsored the preparation of this Master Plan that provides planning strategies designed to ensure the best possible future for Reynoldstown with a 1 - 15 year planning horizon.

Master Plan Goals:

- Occupying/ utilizing all vacant lots with land uses that address the needs of the community
- Restoring a pedestrian friendly environment,
- Improving street conditions
- Renovate and expanding existing housing stock, community and commercial facilities
- Creating a safe and drug free community, and improving parks and open space.

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PREVIOUS STUDIES

Neighborhood Plans

Oakland Cemetery Master Plan (2008)

Study Overview:

- The Historic Oakland Foundation (HOF) is in partnership with the Department of Parks, Recreation, and Cultural Affairs to assist in the stewardship and preservation of Oakland Cemetery for current and future generations.
- The Oakland Cemetery Master Plan addresses the needs raised by redevelopment around the cemetery as well as additional challenges within its walls.

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PREVIOUS STUDIES

Neighborhood Plans

East Atlanta Village Plan (2000)

Study Overview:

- The East Atlanta Village Plan was a comprehensive commercial revitalization plan promoting neighborhood commercial development. The study identifies neighborhood gateways, transit connections and areas for neighborhood services that support the adjacent neighborhood and encourage walking. The plan recommendations include streetscape and transportation improvements.

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PREVIOUS STUDIES

Neighborhood Plans

Cabbagetown Traffic Study (2005)

Study Overview:

- The goal of the Cabbagetown Traffic Study is to provide recommendations on how to improve traffic (both vehicular and pedestrian) and parking in the neighborhood and the surrounding area.
- Recommendations are made in the following categories:
 - Parking
 - Pedestrian Improvements/Traffic Calming
 - Traffic Flow and Access

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PREVIOUS STUDIES

Neighborhood Plans

East Side Parks: Conceptual Vision: Edgewood, Kirkwood & East Lake Neighborhoods (2009)

Study Overview:

- A Park Pride planning effort
- The East Side Parks conceptual vision for the Edgewood, Kirkwood and East Lake neighborhoods approaches all parks in NPU-O as one planning process and includes connectivity between the three neighborhoods and their parks and the City's network of alternative transportation.

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PREVIOUS STUDIES

Recent Development Activity

Developments of Regional Impact (DRI)

- Glenwood Park (2000)
- Moreland Ave Retail Project (2003)
- Capitol Gateway/Grady Redevelopment/King Memorial TOD (2006)
- 777 Memorial Dr (2008)

Recently Permitted Projects

- 880 Glenwood Ave (2009)

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SUBAREA 4

Memorial Dr/ Glenwood

Atlanta BeltLine, Inc.

Planning Committee Kick-Off Evaluation Framework

Agenda

- Planning Process
- Previous Studies

Goals and Objectives

- Questions / Next Steps

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GOALS & OBJECTIVES

Planning Committee Exercise

Greenspace & Public and Cultural Arts

- Improve the accessibility and quality of parks, open spaces and recreational opportunities and expand community sustainable opportunities, such as recycling, composting, and gardening within the subarea.
- Ensure the livability of the subarea by expanding the open space network, enhancing streetscapes, preserving cultural and historic assets and integrating a public arts program.
- Provide open, cultural, and civic spaces to promote social interaction, enhance livability and retain community character.

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GOALS & OBJECTIVES

Planning Committee Exercise

Circulation & Mobility

- Incorporate innovative strategies into community-wide transportation solutions commensurate with future needs for all modes of travel.
- Provide compatibility, connectivity and continuity among various modes of transportation while protecting the character and integrity of the subarea neighborhoods.
- Provide a safe, efficient and continuous network of pedestrian and bicycle facilities as part of all planned streetscape and roadway improvements for better access and better health of the community.
- Maintain and improve traffic flow within the community while employing appropriate traffic calming measures and safety improvements and meeting the parking needs within the community.

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GOALS & OBJECTIVES

Planning Committee Exercise



Land Use & Urban Design

- Encourage integrated mixed-use development at appropriate locations within the subarea to support future transit, meet housing needs, serve the neighborhoods.
- Promote development that supports and serves the needs of the neighborhoods - such as day-to-day services, community facilities (post office, library, community centers), and institutions (schools, medical facilities) - at a scale and intensity commensurate with community values and future needs.
- Refine and expand the variety of residential opportunities, including mixed-income and workforce housing, to offer choices for all in the community.
- Retain the rich diversity, character and liveliness of the community through quality architecture, design cohesiveness of streetscapes, well-balanced uses and a variety of civic spaces.
- Strengthen the subarea's identity as a series of neighborhoods and marketplaces offering housing, employment and recreational opportunities.

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SUBAREA 4

Memorial Dr/ Glenwood



Atlanta BeltLine, Inc.

Planning Committee Kick-Off
Evaluation Framework

Agenda

- Planning Process
- Previous Studies
- Goals and Objectives

Questions/ Next Step



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To: Jonathan Lewis - Atlanta BeltLine, Inc/ COA Bureau of Planning

From: Alison Smith - Ecos Environmental Design

BeltLine Subarea 4: Planning Committee Kick Off/ Evaluation Framework

Location: Trees Atlanta

Date: March 15, 2010

Agenda

Welcome/ Introductions

Overview of Planning Process/ Planning Committee Roles

Presentation of Previous Studies

Interactive Discussion to draft a list of Goals and Objectives

Questions/ Next Steps

Handouts

Meeting Agenda

Goals and Objectives – Draft List

Consultant Team Attendees

Shannon Kettering, Ecos Environmental Design

Alison Smith, Ecos Environmental Design

Joel Mann, AECOM

Summary

The purpose of this first meeting with the Planning Committee was to kick off the planning process for Subarea 4. After introductions from the Planning Committee members, Consultant Team and ABI staff; an overview of the planning process and previous studies was presented and an interactive discussion was conducted with the Planning Committee to provide feedback on the draft goals for the Subarea 4 Master Plan.

Overview of Planning Process/ Planning Committee Roles:

Jonathan Lewis with Atlanta BeltLine, Inc/ COA Bureau of Planning presented an overview of key elements of the BeltLine; explaining the concept and components of the BeltLine. An overview of the Master Planning process for Subarea 4 was presented along with the project timeline.

Previous Studies:

The consultants from Ecos presented an overview of the previous studies that are being considered and will be built upon during this planning process. Each previous planning effort was briefly reviewed, starting from the larger, city-wide scale and narrowing the focus to smaller area studies. The previous studies included:

City-Wide Plans

- Atlanta Strategic Action Plan (ASAP)
- Atlanta Greenspace Plan
- Connect Atlanta Plan
- ARC's Envision 6 – Regional Transportation Plan
- MARTA Planning Activities
- Mayor's Economic Development Plan
- City of Atlanta Capital Improvement Projects

BeltLine Plans

- BeltLine Redevelopment Plan
- BeltLine Street Framework Plan
- BeltLine Environmental Impact Statement (EIS)
- BeltLine Brownfield Survey
- BeltLine Cultural Vision
- BeltLine Emerald Necklace
- Updated Market Forecasts for the Atlanta BeltLine Study Area

LCI Studies

- Memorial Dr – MLK Dr Area Revitalization Study (2003)
- Ponce/ Moreland Corridor Study (2005)
- South Moreland Ave Corridor LCI (2008)

Neighborhood Plans

- Imagine Downtown Master Plan
- Reynoldstown Neighborhood Master Plan
- Oakland Cemetery Master Plan
- East Atlanta Village Plan
- Cabbagetown Traffic Study
- East Side Parks Conceptual Vision: Edgewood, Kirkwood & East Lake Neighborhoods

Recent Development Activity

- Developments of Regional Impact (DRI)
 - Glenwood Park (2000)
 - Moreland Ave Retail Project (2003)
 - Capitol Gateway/ Grady Redevelopment/ King Memorial TOD (2006)
 - 777 Memorial Dr (2008)
- Recently Permitted Projects
 - 880 Glenwood Ave (2009)

General comments/questions regarding previous studies

- Was the Cabbagetown Study adopted by Atlanta City Council?
The Carroll Street one-way conversion was quite controversial.
- What is the status of 777 Memorial?
There has been some recent activity but the current economic market is a factor.

Interactive Discussion with Planning Committee:

Issues / Concerns – What should be addressed in this study?

Economic Development:

- More self-sustaining; local-serving retail that provides daily needs for the community
- Preservation of industrial properties
- Grow/ expand tourist economy
- Ensure that Jobs/ employers are compatible with the subarea master plan vision; ensuring business and neighborhood needs can coexist in the future; keeping existing business viable (also important for economic growth)
- Need for hotel

Mobility:

- Providing more connectivity via new streets; enhancing the grid, breaking up superblocks
- Better leverage/ community connection with regards to historic properties and characteristics (i.e. narrow streets retained, etc.)
- Balance growth with the reality of the narrow streets
- More landscaping/ improved streetscaping, especially along major thoroughfares (to improve the pedestrian desirability of these roadways)
- Subarea 4 as a destination, yet need to consider parking in the future
- Leverage direct access to the interstate
- Improve pedestrian, persons with disabilities, and bicycle safety - e.g. need sidewalks on Bill Kennedy Way

Historic Resources:

- Retaining historic character (historic properties, unique facades, architecture, detailing)
- Leverage historic resources for tourism; signage, etc
- Social history (narrow streets, churches, small lots, small homes)
- Neighborhood history, e.g. Reynoldstown as a railroad town, settlement for freed slaves, the historic round house, etc; evolved due to the railroad location; is the only neighborhood that the BeltLine actually passes through (instead of on the edge); Evolution of Cabbagetown due to the Mill, etc.
- Atlanta Stockade (760 Glenwood Avenue); A&P Depot

Other Concerns:

- Considering tourist amenities- hotel, parking, wayfinding, etc
- Addressing crime in the area
- Graffiti-specific area should be considered to control and re-direct this activity; give consideration for how best to address graffiti; discuss and engage artistic community
- “Meaningful Greenspaces”; eyes on the street; “active edges”; active programming in greenspaces are also means to improving safety
- Explore ways to engage the community in the success and management of the corridor - e.g. neighborhood watch, ‘Adopt a BeltLine segment’, adjacent property owners taking responsibility for a piece of the corridor, etc.
- Flexibility with future planning to be responsive to market conditions; incentives for developers

Goals & Objectives Exercise:

A draft list of goals was provided to the Planning Committee as a starting point for discussion. Included below is the draft list of goals and comments from the Planning Committee noted in *italics*.

Greenspace and Public and Cultural Arts

- Improve the accessibility and quality of parks, open spaces and recreational opportunities and expand community sustainable opportunities, such as recycling, composting, and gardening within the subarea.
 - *“expand community sustainable opportunities “ could be a separate goal*
 - *Add “health”*
- Ensure the livability of the subarea by expanding the open space network, enhancing streetscapes, preserving cultural and historic assets and integrating a public arts program.
- Provide open, cultural, and civic spaces to promote social interaction, enhance livability and retain community character.
- Additional comments on the goals for Greenspace and Public and Cultural Arts:
 - *Planning as a way to make healthy communities*
 - *Celebrating/ integrating the existing arts community in the area*
 - *Priority on sustainability*

Circulation and Mobility

- Incorporate innovative strategies into community-wide transportation solutions commensurate with future needs for all modes of travel.
- Provide compatibility, connectivity and continuity among various modes of transportation while protecting the character and integrity of the subarea neighborhoods.
- Provide a safe, efficient and continuous network of pedestrian and bicycle facilities as part of all planned streetscape and roadway improvements for better access and better health of the community.
- Maintain and improve traffic flow within the community while employing appropriate traffic calming measures and safety improvements and meeting the parking needs within the community.
- Additional comments on the goals for Circulation and Mobility:
 - *Addressing the business/ employer needs; need to mention business traffic*
 - *Leveraging major thoroughfares for accessibility; Memorial, Moreland, Boulevard, and DeKalb Avenue*
 - *Improving pedestrian safety, sidewalks, crosswalks, etc...*
 - *What are the possible improvements for pedestrians along state routes?*
 - *Are there any specific projects for Bill Kennedy Way (i.e. the overpass) noted in the Connect Atlanta Plan?*

Land Use and Urban Design

- Encourage integrated mixed-use development at appropriate locations within the subarea to support future transit, meet housing needs, serve the neighborhoods and support community health.
 - *Instead of “mixed-use” maybe use “a variety” or “diversity of uses”*
- Promote development that supports and serves the needs of the neighborhoods - such as day-to-day services, community facilities (post office, library, community centers), and institutions (schools, medical facilities) - at a scale and intensity commensurate with community values and future needs.
- Refine and expand the variety of residential opportunities, including mixed-income and workforce housing, to offer choices for all in the community.
 - *Add “residential & commercial opportunities”*
 - *Mention existing workforce*
- Retain the rich diversity, character and liveliness of the community through quality architecture, design cohesiveness of streetscapes, well-balanced uses and a variety of civic spaces.
- Strengthen the subarea’s identity as a series of neighborhoods and marketplaces offering housing, employment and recreational opportunities.
- Additional comments on the goals for Land Use and Urban Design:
 - *Add “historical properties” – integrating and encouraging reuse*
 - *Historical characteristics of brownfields, redevelopment opportunities of brownfields*
 - *Mixed use can’t always occur on each parcel due to market conditions/ feasibility; should be sensitive to market realities and demands on future development*
 - *Preservation of existing commercial and industrial businesses*
 - *Need flexibility for developers*

Questions/ Next Steps:

- Prior to the Study Group Meeting on April 19th, a revised list of goals will be sent out to the Planning Committee based on the feedback received.

These minutes constitute the author’s understanding of the items discussed and conclusions reached. If there are any errors or omissions, please notify this author in writing within four (4) working days of receipt.

END OF MINUTES

CC:

GOALS AND OBJECTIVES

Subarea 4 – Study Group Meeting – Existing Conditions – April 19, 2010



Greenspace and Public and Cultural Arts

- Ensure the livability of the subarea by improving the accessibility and quality of parks, open spaces and recreational opportunities, enhancing streetscapes, preserving cultural and historic assets and integrating a public arts program.
- Provide diverse open, cultural, and civic spaces to promote social interaction, celebrate local art, improve community health and retain the distinctive character.

Ideas & Discoveries from Break-Out Session

Potential Park Locations identified by community:

- Atlanta Stockade area:
 - There are currently remnants of a former park/ amphitheatre area on this property. Need to utilize greenspace.
 - Another community member expressed that he would like to see this area continue the development patterns of Glenwood Park
- Hulsey Yards
- Intersection of Bill Kennedy Way & Glenwood Ave; connect single family housing to the High School
- Park spaces along I-20 corridor
- Properties for the future linear park connecting Oakland Cemetery to the Capitol
- Holtzclaw property (owned by the department of Watershed Management and proposed to be a water tower)

Public Art Opportunities identified by community:

- Combine public art opportunities with historic properties/ subarea history
 - Associate public art with Stein Steel Rail Yard History
 - Pittsburgh Glass building; good opportunity to incorporate public art due to architectural characteristics
- CSX bridges could be utilized as a potential places for artwork

Streetscaping Needs identified by community:

- Memorial Drive; Flat Shoals/ Arkwright Place

Pedestrian Crossings/ Connection Needs identified by community:

- DeKalb Ave pedestrian crossings
 - Currently, Inman Park MARTA station is utilized as a bridge for crossing DeKalb Ave for many people traveling north-south
- east-west pedestrian connection along I-20
- pedestrian connection through identified "superblocks" within TAD
- pedestrian and bike connection along Faith Ave going east-west
- enhance and improve connections between areas of commerce/ industry to residential neighborhoods
- King Memorial MARTA station currently has access issues
- Lang-Carson Park to BeltLine
- Potential trail through Hulsey Yard to Inman Park and the Freedom Park PATH trails
- Too many connections from I-20 into Subarea on east side (Memorial Drive, Flat Shoals & Arkwright Place); reconfigure intersections/ exchanges so that they are more sensible

Gateways/ Landmarks identified by community:

- Intersection of Moreland Ave & Wylie St as a gateway
- Intersection of Flat Shoals Ave, Moreland, Arkwright Place and Memorial Dr.
- Intersection of Wylie St & Flat Shoals Ave is a very creative and eclectic

Circulation and Mobility

- Provide compatibility, connectivity and continuity in community-wide transportation solutions for all modes of travel through innovative strategies that also protect the character and integrity of the neighborhoods.
- Provide a safe, efficient and continuous network of pedestrian and bicycle facilities as part of all planned streetscape and roadway improvements for improved access to transit and better health of the community.
- Maintain and improve traffic flow along the major thoroughfares of Memorial Drive, Moreland Avenue, Boulevard and DeKalb Avenue, while employing appropriate safety measures, improving accessibility to local businesses, and meeting the parking needs of the community.

Ideas & Discoveries from Break-Out Session

Tourism Opportunities identified by community:

- Oakland & Zoo = Tourism

Areas for Pedestrian Connectivity identified by community:

- Memorial
- DeKalb Ave
- Boulevard
- Moreland
- I-20- tunnel under or over
- Oakland East Gate

Places for trail identified by community:

- I-485 right-of-way could be used for trail
- Wylie St.- trail on east side
- Review Memorial/ Glenwood truck route

Other areas for concern identified by community:

- Review Memorial/ Glenwood truck routes

Land Use and Urban Design

- Encourage a variety of uses at appropriate locations within the subarea to support future transit, promote reuse of historic properties, facilitate economic growth and improve community health.
- Promote development that supports and serves the needs of the neighborhoods - such as day-to-day services, housing and employment, community facilities (post office, library, community centers), and institutions (schools, medical facilities) - at a scale and intensity commensurate with community values and future needs.
- Retain the rich diversity and distinct character of the community through quality architecture, design cohesiveness of streetscapes and a variety of civic spaces.
- Strengthen the subarea's identity as a series of neighborhoods and marketplaces offering housing choices, employment diversity and recreational opportunities for all ages.

Ideas & Discoveries from Break-Out Session

Land Use comments

- Residential: More attached townhomes "2-3 story"; More condos/ loft apartments
- Commercial: Grocery opportunity (adjacent/ north of I-20) just west of Gibson Street (currently Industrial LU with vacant property)
- Mixed Use: There is a lot of planned mixed use (i.e. COA Future Land Use); is this realistic? Can there be more flexibility if economically correct?
- Industrial: Less industrial west of the Beltline that does not meet the "highest & best use," and is underutilized
- Industrial: Do not get rid of all industrial land- need to keep jobs here
- Density: High density "6+ stories" (especially at Memorial Dr. and Beltline intersection)
- Infrastructure: Be cognizant of existing historic structures

Parks/ Greenspace comments:

- "205" (Dept of Watershed Property)- community would like to utilize as open space due to great views
- Grant Park area lacking greenspace; addition of "open space/ public space" with all new development, especially 5+acre developments
- Incorporate potential retail with parks
- Potential green space- east of Kenyon (currently single family, solve other connection issues and improve safety)
- Possible connections with "new development" from Lang-Carson Park east to Flat Shoals Ave
- Possible connection between Cabbagetown Park and existing Industrial/ Vacant parcels (adjacent/south)

Transportation comments:

- ABI should purchase "The Depot" for possible node/ stop
- Opportunity to add a MARTA station at Krog (west), which could benefit both systems
- Potential trail- Wylie to Walthall to MARTA; Bridge to Freedom Park; Arkwright Place

Neighborhood Centers identified by community:

- Create/ identify/ enhance current and new neighborhood centers and marketplaces
- Potential neighborhood centers- train depot; "expand" retail from Glenwood to south
- Consider "connecting" the properties across Moreland between I-20 & Memorial; redundant streets
- Possible bridges across I-20 connecting north-south of Subarea (linking streets disconnected by Interstate)
- Redevelop as a Gateway- intersection of I-20/ Flat Shoals Ave/ Arkwright Place ("Node Potential")

SUBAREA 4
Memorial Dr/ Glenwood

Atlanta BeltLine, Inc.

Study Group Meeting: Existing Conditions

Agenda

- Study Overview
- Previous Planning Efforts
- Demographics
- Land Use
- Urban Design & Historic Resources
- Natural & Environmental Features
- Transportation
- Interactive Exercise
- Questions/ Next Steps

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SUBAREA 4
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WHAT IS THE BELTLINE?

Key Elements

Parks and Arboretum

Trails

Transit & Transportation Infrastructure

Jobs & Economic Development

Affordable Workforce Housing

Historic Preservation

Streetscapes & Public Art

Environmental Clean-up

-3-

LIGHT RAIL TRANSIT

Master Planning Subarea 4

Process & Key Dates

DISCOVERY-DESIGN AND DISCUSSION-DOCUMENTATION

Feb: Study Group
March: Planning Committee

April: Study Group
May: Study Group

June: Planning Committee (tentative)
July: Study Group (tentative)

August: Study Group (tentative)
Sept: Office Hours (tentative)

Oct - Dec: NPLs, then City Council (tentative)

- Review previous studies
- Review vision statement and goals
- Analyze existing conditions

- Prepare concept plans
- Draft plan recommendations
- Refine master plan

- Take Master Plans to NPLs and City Council for adoption

-3-

STUDY OVERVIEW

Subarea 4 - Memorial Dr/ Glenwood

Subarea 4 - Context

- Subarea 4 is 1,265 acres; 415 acres are within TAD
- Neighborhoods: Cabbagetown, Reynoldstown, Capitol Gateway, Grant Park, Ormewood Park, Edgewood
- NPU's: NPU-N, NPU-O, NPU-V, NPU-W
- BeltLine Study Group: Southeast Study Group
- Council Districts: District 1 & District 5
- Counties: Fulton & DeKalb

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SUBAREA 4

Memorial Dr/ Glenwood

Atlanta BeltLine, Inc.

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PREVIOUS PLANNING EFFORTS

Subarea 4 - Memorial Dr/ Glenwood

Previous Planning Efforts Summary for Land Use and Transportation

A summary of previous studies within the Subarea 4 boundary has been created to compare past recommendations. The purpose of the previous studies summary:

- Build upon previous planning efforts
- Note inconsistencies among previous plans
- Verify, validate, revise & refine throughout the master planning process to reconcile inconsistencies.

Two summary boards:

Land Use Recommendations

Transportation Recommendations

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PREVIOUS PLANNING EFFORTS

Subarea 4 - Memorial Dr/ Glenwood

Previous Planning Efforts Summary for Land Use and Transportation

The following plans have been included in the inventory and analysis of previous studies for Land Use & Transportation recommendations:

<ul style="list-style-type: none"> • Reynoldstown Neighborhood Master Plan (2000) • Memorial Dr – MLK Dr Area Revitalization Study (2003) • Cabbagetown Traffic Study (2005) • Ponce/ Moreland LCI (2005) • BeltLine Redevelopment Plan (2005) 	<ul style="list-style-type: none"> • BeltLine Street Framework Plan (2005) • South Moreland Ave Corridor LCI (2008) • Connect Atlanta Plan (2008) • Atlanta Greenspace (2009) • Imagine Downtown Master Plan (2009) • City of Atlanta Future Land Use (2010)
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PREVIOUS PLANNING EFFORTS

Subarea 4 - Memorial Dr/ Glenwood

LAND USE – CONCLUSIONS FROM PREVIOUS STUDIES RECOMMENDATIONS ANALYSIS

BeltLine Redevelopment Plan & Future Land Use Plan

- Majority of conflicts occur within the Residential, Commercial and Mixed Use categories. Conflicts include:
 - Each plan recommending different levels of density within a residential area
 - Recommendation of residential, other commercial
 - Recommendation of residential, other mixed use
 - Only one conflict with commercial vs. mixed use

Other Previous Studies within Subarea 4

- The majority of the inconsistencies are within the BeltLine Redevelopment Plan and the Reynoldstown Neighborhood Master Plan. Ranging from inconsistencies of recommendations for different levels of density within a residential area to recommending completely different uses for an area
- There are 15 areas where the BeltLine Redevelopment Plan, The City of Atlanta Future Land Use Plan and the Reynoldstown Master Plan are all recommending different land uses

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PREVIOUS PLANNING EFFORTS

Subarea 4 - Memorial Dr/ Glenwood

TRANSPORTATION – CONCLUSIONS FROM PREVIOUS STUDIES RECOMMENDATIONS ANALYSIS

Recommendations that will be built upon during this planning process:

- Numerous proposed bike routes throughout the subarea; connecting to that framework
- Proposed new streets and creating connections for existing streets within the TAD
- Multiple intersection improvements & realignments along Moreland Ave
- EIS alignments for transit and trail

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SUBAREA 4

Memorial Dr/ Glenwood

Atlanta BeltLine, Inc.

Study Group Meeting: Existing Conditions

Agenda

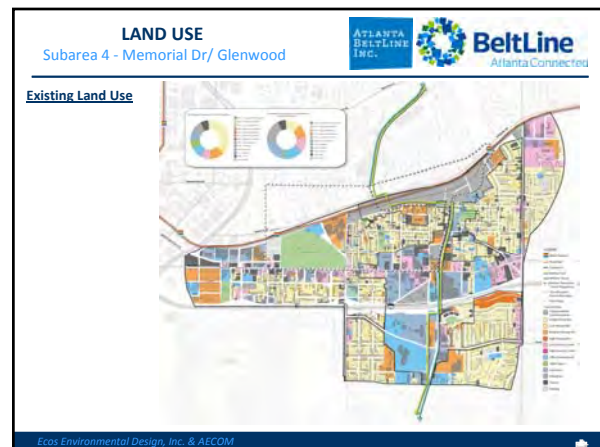
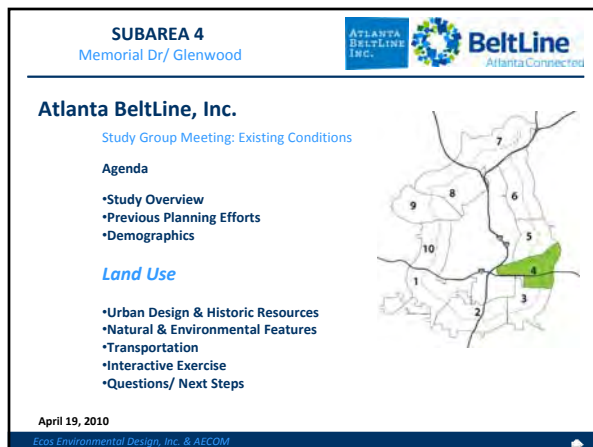
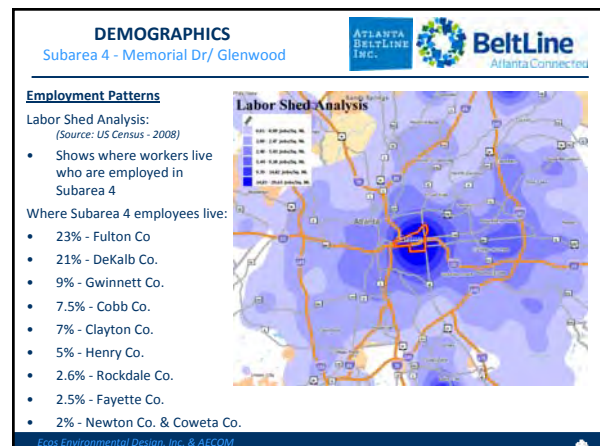
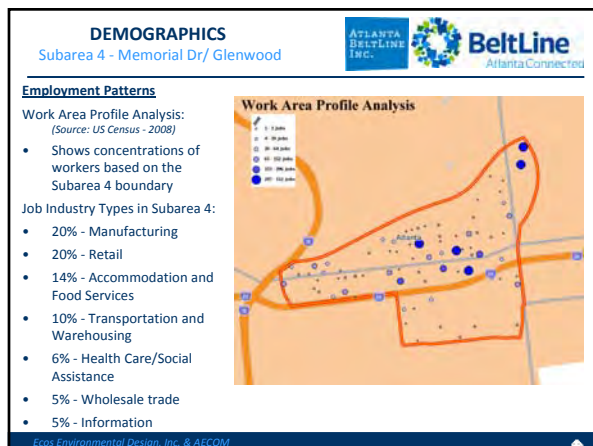
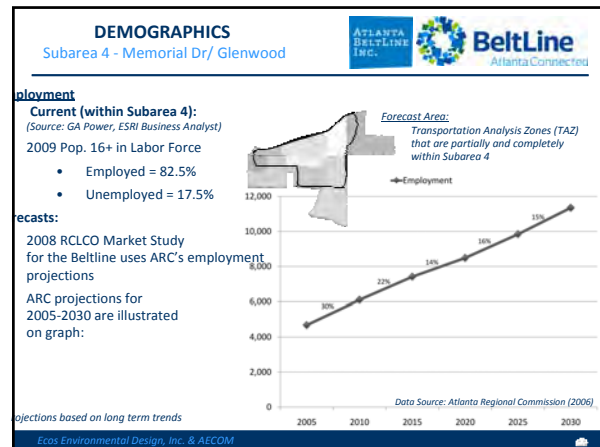
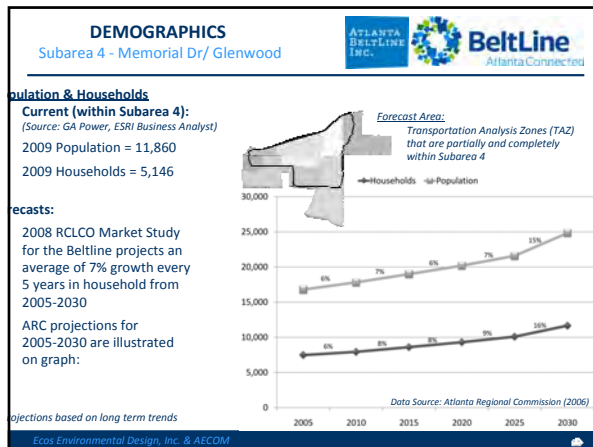
- Study Overview
- Previous Planning Efforts

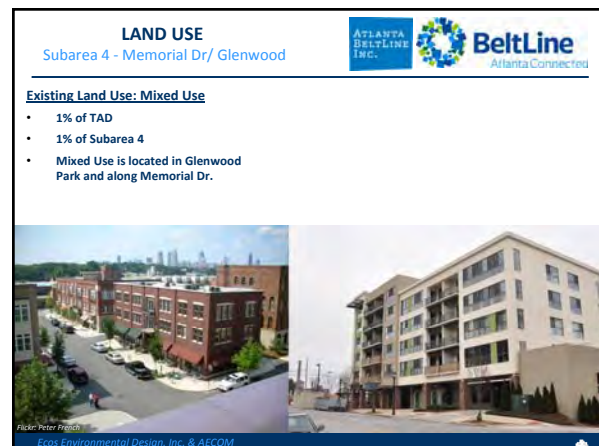
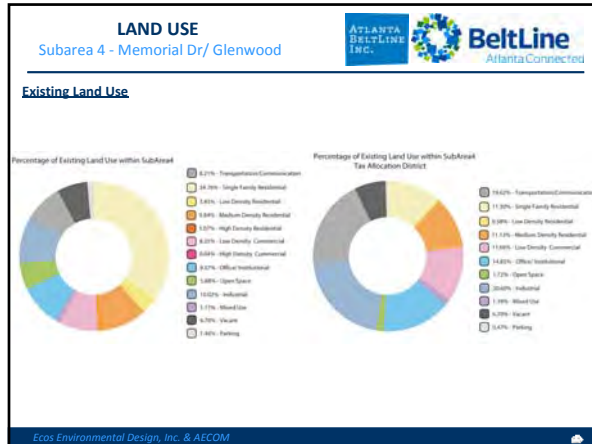
Demographics

- Land Use
- Urban Design & Historic Resources
- Natural & Environmental Features
- Transportation
- Interactive Exercise
- Questions/ Next Steps

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LAND USE

Subarea 4 - Memorial Dr/ Glenwood

ATLANTA BELTLINE INC.

BeltLine

Atlanta Connected

Existing Land Use: Industrial

- 21% of TAD
- 10% of Subarea 4
- Majority of Industrial is located within the TAD as well as along Memorial Dr. and near the I-20 corridor.

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LAND USE

Subarea 4 - Memorial Dr/ Glenwood

ATLANTA BELTLINE INC.

BeltLine

Atlanta Connected

Existing Land Use: TCU

- 20% of TAD (includes BeltLine Corridor)
- 8% of Subarea 4
- Majority of TCU is located within the TAD. Major areas include the BeltLine corridor, Hulsey Yard, City of Atlanta communications towers north of I-20 and AT&T.

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LAND USE

Subarea 4 - Memorial Dr/ Glenwood

ATLANTA BELTLINE INC.

BeltLine

Atlanta Connected

Existing Land Use: Vacant Land

- 7% of TAD
- 7% of Subarea 4
- Vacant Land includes lands that have no buildings as well as lands with building that are vacant/ abandoned. Vacant Land is dispersed throughout the subarea although there are clusters of vacant properties within the TAD and along Memorial Dr.

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LAND USE

Subarea 4 - Memorial Dr/ Glenwood

ATLANTA BELTLINE INC.

BeltLine

Atlanta Connected

Future Land Use

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LAND USE

Subarea 4 - Memorial Dr/ Glenwood

ATLANTA BELTLINE INC.

BeltLine

Atlanta Connected

Future Land Use

Percentage of Future Land Use within Subareap

Percentage of Future Land Use within Subareap Tax Allocation District

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LAND USE

Subarea 4 - Memorial Dr/ Glenwood

ATLANTA BELTLINE INC.

BeltLine

Atlanta Connected

Zoning

- BeltLine Overlay District
- Historic Overlay District: Grant Park
- Special Interest Districts: SPI-22

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SUBAREA 4

Memorial Dr/ Glenwood

ATLANTA BELTLINE INC.

Atlanta BeltLine, Inc.

Study Group Meeting: Existing Conditions

Agenda

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April 19, 2010

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URBAN DESIGN & HISTORIC RESOURCES

Subarea 4 - Memorial Dr/ Glenwood

ATLANTA BELTLINE INC.

1892 - Bird's eye view of Atlanta

21st C - Bird's eye view of Atlanta

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URBAN DESIGN & HISTORIC RESOURCES

Subarea 4 - Memorial Dr/ Glenwood

ATLANTA BELTLINE INC.

1911 – Sanborn Map

21st C - Figure Ground

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URBAN DESIGN & HISTORIC RESOURCES

Subarea 4 - Memorial Dr/ Glenwood

ATLANTA BELTLINE INC.

Historic & Cultural Resources

- 2 Buildings on the National Register: Atlanta Stockade & Great Atlanta & Pacific Tea Company
- Historic Districts
 - Grant Park
 - Grant Park North
 - Oakland Cemetery
 - Cabbagetown
 - Reynoldstown

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SUBAREA 4

Memorial Dr/ Glenwood

ATLANTA BELTLINE INC.

Atlanta BeltLine, Inc.

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April 19, 2010

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NATURAL & ENVIRONMENTAL

Subarea 4 - Memorial Dr/ Glenwood

ATLANTA BELTLINE INC.

Natural Features

- Total Elevation Change is 126 feet
- Subarea High points are located in Oakland Cemetery, and the neighborhoods of Reynoldstown and Ormewood park; Low point in Grant Park
- Intermittent streams located in the south and northeast of subarea
- Slopes over 15 % will also be considered when planning for development

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NATURAL & ENVIRONMENTAL

Subarea 4 - Memorial Dr/ Glenwood

Environmental Features

- 18 sites within subarea 4 have been identified as potential brownfields by the 2005 brownfields survey
- 9 sites are active (shown in brown)
- 9 sites are remediated and redeveloped (shown in yellow)

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SUBAREA 4

Memorial Dr/ Glenwood

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April 19, 2010
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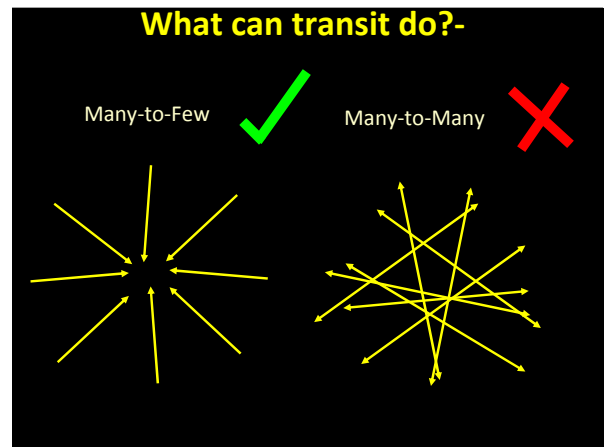
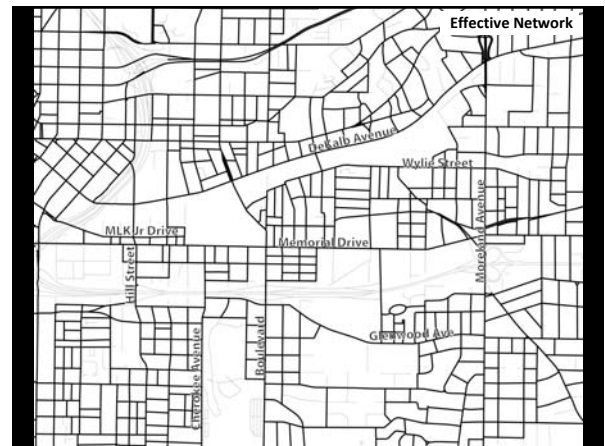
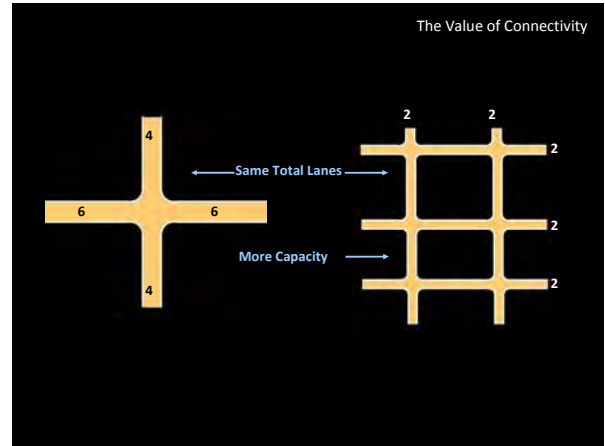
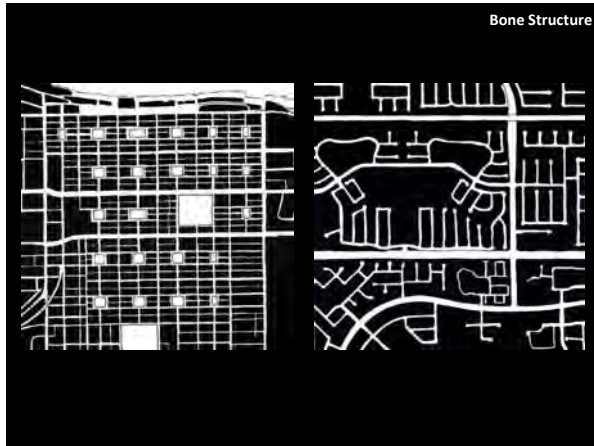
Transportation's Role

WHY DO CITIES EXIST?

Transportation investments are powerful and far-reaching.

Transportation accounts for **19 percent** of spending by the average household in America - as much as for food and health care combined.

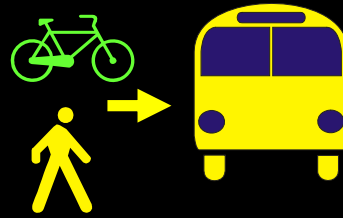
Bone Structure



What is a Transit Trip?



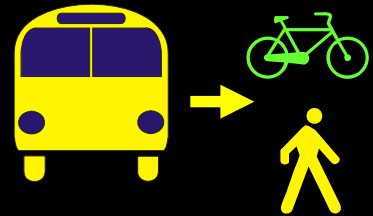
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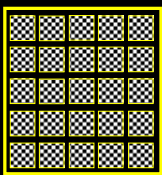
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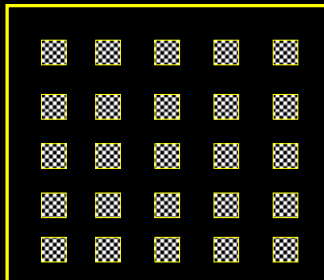
What is a Transit Trip?



Urban Form



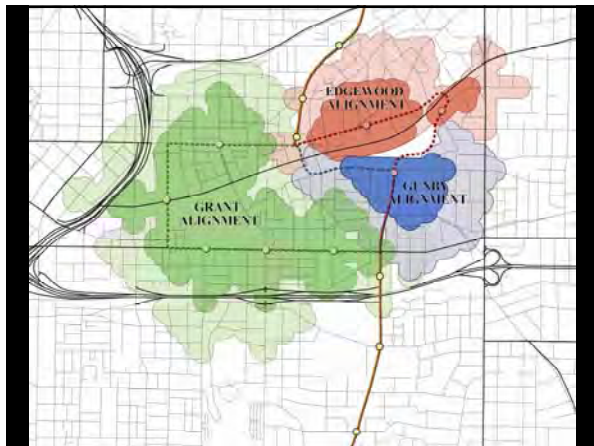
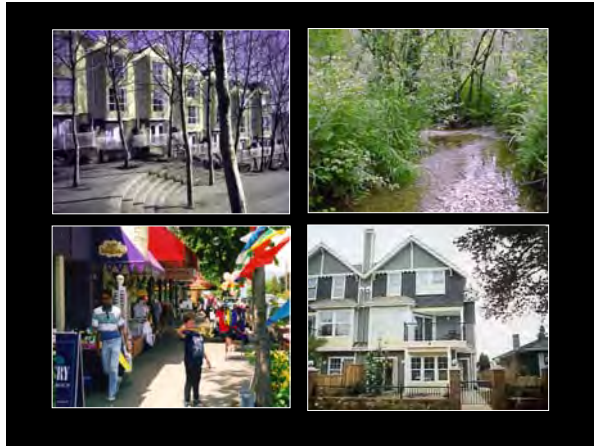
Walk Bike Transit



Automobile

Urban Form

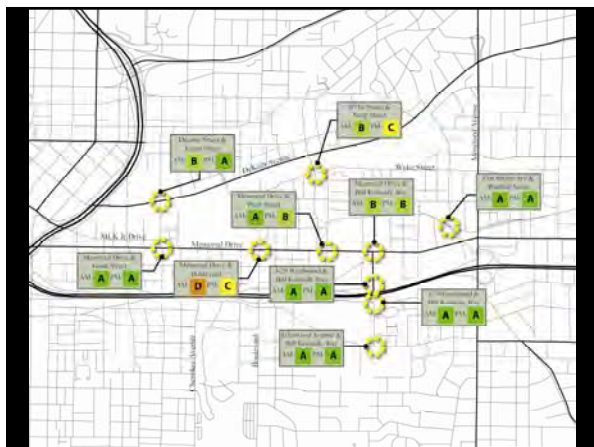




Transit Share – City Residents

	Transit Share
San Francisco	30.30%
Philadelphia	26.40%
Chicago	25.40%
Atlanta	14.80%
Portland	12.60%
Miami	12.20%
Denver	7.40%

Source: US Census 2006 American Community Survey



SUBAREA 4
Memorial Dr/ Glenwood

Atlanta BeltLine, Inc.

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Interactive Exercise

- Questions/ Next Steps

April 19, 2010

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INTERACTIVE EXERCISE

Subarea 4 - Memorial Dr/ Glenwood

GROUP A: LAND USE

GROUP B: MOBILITY

GROUP C: GREENSPACE/ PUBLIC ARTS

Please provide feedback on the following questions:

- What should this planning effort enhance?
- What should be improved through this planning effort?
- What innovative ideas do you have for the planning team?

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SUBAREA 4

Memorial Dr/ Glenwood

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Questions/ Next Steps

April 19, 2010

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NEXT STEPS

Subarea 4 - Memorial Dr/ Glenwood

NEXT STUDY GROUP MEETING: MAY 10TH AT 6:30pm.

- Review of 3 Alternative Conceptual Master Plans

Ecos Environmental Design, Inc. & AECOM

To: Jonathan Lewis - Atlanta BeltLine, Inc/ COA Bureau of Planning

From: Alison Smith - Ecos Environmental Design

BeltLine Subarea 4: Study Group Meeting – Existing Conditions

Location: Trees Atlanta

Date: April 19, 2010

Agenda

Welcome/ Introductions

Beltline Update

Subarea 4 Master Planning Process Overview & Recap

Presentation of Subarea 4 Existing Conditions

Interactive Exercise

Wrap-Up & Next Steps

Handouts

Meeting Agenda

Goals and Objectives by Category (i.e. Transportation, Greenspace/Public Art, Land Use)

Consultant Team Attendees

Shannon Kettering, Ecos Environmental Design

Alison Smith, Ecos Environmental Design

Sarah Linden, Ecos Environmental Design

Paul Moore, AECOM

Summary

The purpose of this first study group meeting was to introduce the Subarea Master Planning process for the Beltline to the community; as well as present findings regarding existing conditions and previous studies that were analyzed for Subarea 4. The meeting also included an interactive exercise with three breakout groups, focusing on Land Use, Mobility and Greenspace/Public Art, allowing for feedback/ questions/ comments and/or suggestions from those in attendance.

Welcome:

Rukiya Eaddy, Community Engagement Advocate for Atlanta Beltline Inc., welcomed everyone in attendance, and gave a brief overview of what the meeting would entail, mainly concerned with existing conditions analyzed by Ecos and AECOM. The project team was introduced, and information about meetings regarding other Subareas also currently going through the same planning process was announced, including where those meetings are/ were being held.

Introduction:

Jonathan Lewis, Project Manager for Subarea 4 with Atlanta Beltline Inc., began the meeting by first reviewing the Beltline Project as a whole. He also briefly explained how the Subarea 4 Master Plan is being coordinated. He addressed the issue of the Planning Committee; introducing the members and stating how they were selected. He also explained the purpose of this first Southeast Study Group Team Meeting.

Meeting Overview

- Review existing conditions within Subarea 4 (Ecos & AECOM)
- Introduce and explain details for interactive exercise
- We want to hear your comments/ questions/ concerns

What is the Beltline?

- Largest urban planning project in the country
- Brief summary of all aspects being reviewed in Beltline project
- Brief summary of master planning process
- Have completed 6 Subarea master plans; now working on last 4
- Transit being studied through federal planning process
- Next month (based on feedback from tonight/ further analysis) will be back with alternatives for review and discussion
- Review plan for timeline, including the goal to have master plan for Subarea 4 adopted by end of 2010

Review Existing Conditions:

Shannon Kettering, Project Manager & Vice President of Ecos, presented the existing conditions for Subarea 4. Afterwards, the attendees will provide feedback/ comments on three major topics relevant to future BeltLine Planning Efforts for Subarea 4: Land Use, Greenspace/ Public Art & Transportation.

Presentation Overview:

- Everything reviewed today will help inform the master planning process
- We are still in the “discovery phase,” and will shortly be moving into more of a “discussion phase” (break-out session)
- Overview of plans taken into consideration including all previous studies
- Explanation for data acquired and analyzed for discussion of existing conditions within Subarea 4
- Would like as much correct data as possible to inform the process and the consultant team. Any information attendees can provide is greatly appreciated
- Presentation included:

Previous Studies

- This process builds upon many previous planning efforts (plans from 2000-2010);
- This initiative will refine the Beltline Redevelopment Plan completed in 2005 and an update to the City of Atlanta Future Land Use

Demographics

- There is both population and household growth projected for Subarea 4 for over the next 30 years
- Employment over the next 20-30 years is predicted to increase
- Retail/ Office is also growing within the Subarea
- Beltline is projected to especially help/ increase these growth rates

Employment Patterns:

- Informs the planning process;
- The majority of employees within Subarea 4 live in Fulton and DeKalb Counties, but there are some that also come from other areas

Existing Land Use:

- Asked for feedback regarding inconsistencies, especially within the TAD (as that is the main area of focus for this master planning effort);
- Explanation of graphs (percentages of land use types within the entire Subarea vs. percentages of that land use type within the TAD);
- Gave example of Glenwood Park as a recent residential redevelopment that is within the TAD.

Future Land Use/ Zoning:

- Overlay Districts to Consider: BeltLine Overlay District, Historic Overlay Districts;
- SPI-22- most recent zoning efforts that have occurred- includes a few parcels at the western boundary of the TAD, along Memorial Drive;
- Will be taking suggestions for entire Subarea, yet, the major redevelopment focus for this master planning effort are TAD properties.

Urban Design & Historic Resources:

- Reviewed the evolution of the subarea historically: parcels, streets, open spaces, drainage ways;
- Provided a Historic/ cultural resource map- two buildings in Subarea are listed on the National Historic Register

Natural/ Environmental Conditions:

- Explanation of high/ low points
- Brownfields- properties exist along the corridor, and many have already been redeveloped; these properties can be assets to the community, yet offer complexity with regards to redevelopment

Transportation:

Paul Moore, Transportation Engineer and Consultant for AECOM, presented the existing conditions regarding transportation for Subarea 4.

Transportation Overview:

- Provided an overview of Transportation; regarding the balance between access and mobility
- What Transit can do very well, and how it is a complement to a vehicular and pedestrian system; should be integrated

Subarea 4 Background:

- This Subarea has a lot of street network that is efficient;
- Yet, have a number of network interruptions, such as a few superblocks (not preferred as they create distances) and the obvious boundaries/ obstacles of the railroad (north) and the interstate I 20 (bisects the subarea).

EIS Alignments

- We are not solving this issue within the Subarea Master Planning Process; we are coordinating with the ongoing EIS study currently; that study must follow a federal process;
- This effort will inform that process through many factors, such as analysis of walksheds, quantity of people who can access these alignments, etc.

How does Atlanta compare to other cities?

- Even in cities with higher transit ridership, driving still plays a major role (30% utilize public transit, but that leaves 70% to drive)
- Therefore, we must look at street/ road/ car mobility as a network, and specifically address intersection issues/ areas of concern/ safety.

Transportation Q&A:

1. Where will the trail go? Will it follow transit?
A: The trail will follow the TCU Corridor
2. How will the transit/ EIS Alignment affect access vs. mobility in/out of Subarea?

A: That issue is being addressed in the EIS Study.

3. What is the status of CSX? Is it moving? Are there plans to purchase the property?

A: No purchase discussions currently; this planning effort will assume it is to remain

4. How will the transit portion be funded in the future?

A: Through a combination of federal, state and local funding initiatives

5. Will you review ARC's current Regional Freight Plan?

A: Yes, it will be considered. Understand that the Freight Plan was done at a very large/ regional scale and we will be able to provide recommendations through this level of study.

6. What is the estimated travel time on the Beltline?

A: Paul gave explanation for time/ cost determinations and how this is done through computer modeling; is still to be determined, and is being considered in the EIS Study.

Presentation Conclusion/ Intro for Break-Out Session

Shannon Kettering concluded the presentation, and explained how the interactive break-out session would be handled.

- After this review of existing conditions and previous planning efforts, we will begin the master planning phase of the process; looking at alternative concepts.
- Please provide input to the consultant team and ABI on potential opportunities that the BeltLine planning process can facilitate a sustainable community for Subarea 4 in the areas of: land use, mobility and greenspace/ public art.
- Next meeting for presentation of conceptual plans will be May 10, 2010

Break-Out Session (Refer to Goals/ Objectives)


These minutes constitute the author's understanding of the items discussed and conclusions reached. If there are any errors or omissions, please notify this author in writing within four (4) working days of receipt.

END OF MINUTES

CC:

Memorial Drive/ Glenwood Ave Subarea 4 Study Group Meeting Two May 10, 2010

SUBAREA 4
Memorial Dr/ Glenwood




Atlanta BeltLine, Inc.

Study Group Meeting: Review Conceptual Plans

Agenda

- Introduction
- Review feedback from Existing Conditions Study Group Meeting
- Establishing Placemaking
- Subarea 4 Alternative Concepts
- Scale & Design Interactive Exercise
- Questions/ Next Steps



May 10, 2010

Ecos Environmental Design, Inc. & AECOM

SUBAREA 4
Memorial Dr/ Glenwood



Atlanta BeltLine, Inc.

Study Group Meeting: Review Conceptual Plans

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Introduction

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May 10, 2010

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What is the BeltLine?
Key Elements








Parks and Arboretum Trails Transit & Transportation Infrastructure Jobs & Economic Development






Affordable Workforce Housing Historic Preservation Streetscapes & Public Art Environmental Clean-up

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Light Rail Transit



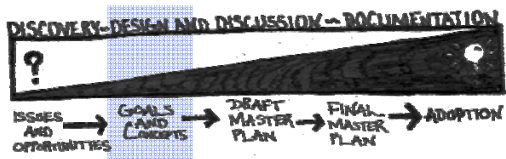


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Master Planning Subarea 4
Key Process and Dates



DISCOVERY-DESIGN AND DISCUSSION-DOCUMENTATION



ISSUES AND OPPORTUNITIES	GOALS AND LANDSCAPES	DRAFT MASTER PLAN	FINAL MASTER PLAN	ADOPTION
Feb: Study Group March: Planning Committee	April: Study Group May: Study Group	June: Planning Committee (tentative) July: Study Group (tentative)	August: Study Group (tentative) Sept: Office Hours (tentative)	Oct - Dec: NPIs, then City Council (tentative)

- Review previous studies
- Review vision statement and goals
- Analyze existing conditions

- Prepare concept plans
- Draft plan recommendations
- Refine master plan

- Take Master Plans to NPIs and City Council for adoption

Ecos Environmental Design, Inc. & AECOM

SUBAREA 4
Memorial Dr/ Glenwood



Atlanta BeltLine, Inc.

Study Group Meeting: Review Conceptual Plans

Agenda

- Introduction
- Review feedback from Existing Conditions Study Group Meeting
- Establishing Placemaking
- Subarea 4 Alternative Concepts
- Scale & Design Interactive Exercise
- Questions/ Next Steps



May 10, 2010

Ecos Environmental Design, Inc. & AECOM

STUDY GROUP FEEDBACK

Subarea 4 - Memorial Dr/ Glenwood

Land Use & Urban Design:

- Higher density uses appropriate along Memorial (esp. at intersection with BeltLine)
- Proposed uses should provide flexibility and be fiscally realistic
- Retain/ redevelop historic structures to enhance the character of the Subarea
- Identify/ enhance current and new neighborhood centers, corridors & gateways

Circulation & Mobility:

- Need for North-South connections throughout the Subarea – linking neighborhoods disconnected by I-20 and Husley Yards/ DeKalb Ave
- Safe, easily identifiable pedestrian routes/ connections
- Provide connections between parks, neighborhoods and the BeltLine

Greenspace & Public Art:

- Incorporate open space within new developments
- Create new parks/ open spaces (esp. in neighborhoods lacking open spaces)
- Consider complimentary public art/ community facility/ historic properties opportunities within Subarea

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SUBAREA 4

Memorial Dr/ Glenwood

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May 10, 2010

Ecot Environmental Design, Inc. & AECOM

ESTABLISHING PLACEMAKING

Subarea 4 - Memorial Dr/ Glenwood

Placemaking:

- Well Balanced Elements
 - Land Use & Urban Design
 - Circulation & Mobility
 - Greenspace & Public Art
- Appropriate Scale
 - City Scale
 - Center Scale
 - Neighborhood Scale
- Quality Design
 - Meets Transit Element Requirements
 - Meets Goals & Objectives for Subarea 4

Ecot Environmental Design, Inc. & AECOM

CONCEPTUAL PLANS

Subarea 4 - Memorial Dr/ Glenwood

ELEMENTS (map legend):

Land Use & Urban Design

- Residential
- Commercial
- Mixed Use
- Office
- Industrial
- TCU
- Community Facility

Greenspace & Public Art

- BeltLine Corridor
- Park/ Open Space

Circulation & Mobility

- New Streets

Ecot Environmental Design, Inc. & AECOM

CONCEPTUAL PLANS

Subarea 4 - Memorial Dr/ Glenwood

ELEMENTS (map legend):

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- Residential
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Ecot Environmental Design, Inc. & AECOM

CONCEPTUAL PLANS

Subarea 4 - Memorial Dr/ Glenwood

ELEMENTS (map legend):

Land Use & Urban Design

- Residential
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- Community Facility

Ecot Environmental Design, Inc. & AECOM

CONCEPTUAL PLANS
Subarea 4 - Memorial Dr/ Glenwood

ELEMENTS (map legend):
Land Use & Urban Design

- Residential ☐
- Commercial ☐
- Mixed Use ☒
- Office ☐
- Industrial ☐
- TCU ☐
- Community Facility ☐



Ecoss Environmental Design, Inc. & AECOM

CONCEPTUAL PLANS
Subarea 4 - Memorial Dr/ Glenwood

ELEMENTS (map legend):
Land Use & Urban Design

- Residential ☐
- Commercial ☐
- Mixed Use ☐
- Office ☒
- Industrial ☐
- TCU ☐
- Community Facility ☐



Ecoss Environmental Design, Inc. & AECOM

CONCEPTUAL PLANS
Subarea 4 - Memorial Dr/ Glenwood

ELEMENTS (map legend):
Land Use & Urban Design

- Residential ☐
- Commercial ☐
- Mixed Use ☐
- Office ☐
- Industrial ☐
- TCU ☐
- Community Facility ☐



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CONCEPTUAL PLANS
Subarea 4 - Memorial Dr/ Glenwood

ELEMENTS (map legend):
Land Use & Urban Design


- Residential ☐
- Commercial ☐
- Mixed Use ☐
- Office ☐
- Industrial ☐
- TCU ☐
- Community Facility ☒

Greenspace & Public Art

- BeltLine Corridor ☒
- Park/ Open Space ☒

Circulation & Mobility

- New Streets ☒



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SUBAREA 4
Memorial Dr/ Glenwood

Atlanta BeltLine, Inc.


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Subarea 4 Alternative Concepts

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- Questions/ Next Steps



May 10, 2010

Ecoss Environmental Design, Inc. & AECOM

To: Jonathan Lewis - Atlanta BeltLine, Inc/ COA Bureau of Planning

From: Alison Smith - Ecos Environmental Design

BeltLine Subarea 4: Study Group Meeting – Review Conceptual Plans

Location: Trees Atlanta

Date: May 10, 2010

Agenda

Welcome/ Introductions

Beltline Update

Subarea 4 Master Planning Process Overview & Recap

Presentation of Subarea 4 Concept Plans

Interactive Exercise

Wrap-Up & Next Steps

Handouts

Meeting Agenda

BeltLine Land Use Categories for Concept Plans

Concept Plan A & Concept Plan B

Review Conceptual Plans – Study Group Feedback Worksheet

Consultant Team Attendees

Shannon Kettering, Ecos Environmental Design

Alison Smith, Ecos Environmental Design

Joel Mann, AECOM

Summary

The purpose of this second Study Group Meeting was to review the Conceptual Plans for Subarea 4 and receive feedback from the community on appropriate land uses and circulation alternates for each focus area. In addition to this feedback, the community was specifically asked to provide recommendations on the appropriate scale/ density of the focus areas as well as design elements. This feedback will assist the planning team in the creation of the Draft Plan for Subarea 4.

Welcome

Rukiya Eaddy, Community Engagement Advocate for Atlanta Beltline Inc., welcomed everyone in attendance, allowed the community members to introduce themselves to the group, provided a brief overview of tonight's meeting and discussed information about meetings for the 3 other Subareas also currently going through the same planning process.

Introduction

Jonathan Lewis, Project Manager for Subarea 4 with Atlanta Beltline Inc., began the meeting by reviewing the components of the Beltline Project and provided an overview of the Subarea Master Planning Process.

Review Conceptual Plans

Shannon Kettering, Project Manager & Vice President of Ecos, began the presentation of the conceptual plans by reviewing feedback received from the community at the first Study Group Meeting in relation to Land Use & Urban Design, Circulation & Mobility and Greenspace & Public Art.

An explanation of the method/ approach for the Subarea 4 Conceptual Plans was introduced to the community:

Establishing Placemaking

- The components used to establish placemaking include
 - Well balanced elements
 - Appropriate Scale
 - Quality Design
- The Conceptual Plans for Subarea 4 are presented with an overall Land Use palette – One that does not separate the same use based on scale. Example – there is only one category for Residential; not Low Density Residential, Medium Density Residential and High Density Residential.
- This approach allows the community to provide feedback not only on the Alternative Concept plans in terms of what land use they feel is appropriate for a certain area; but feedback on the scale and design of the land use that they do feel is appropriate.
- Representative photos of each land use category were reviewed. It is reiterated to the community that the feedback received at this meeting will influence the more detailed (density related) land use categories to be presented in the Draft Plan at the next Study Group Meeting on July 12th.

Subarea 4 Concept Plans

- 4 Focus areas:
 - Reynoldstown Focus Area
 - Memorial Dr. Focus Area
 - Moreland/ Memorial Focus Area
 - Glenwood Focus Area
- 2 Concepts
 - Concept A
 - Concept B
- Questions/ Comments from community during review of Concept A & B
 - Suggested the creation of a node at Berne St
 - Need to consider SPI-22 zoning district for portions of Memorial.
 - It is explained to the community that this process in the conceptual phase to establish appropriate land uses.
 - Planning process should coordinate with areas outside of the subarea boundary; especially at Moreland Ave. and Memorial Dr.

Interactive Exercise

3 Breakout Groups

- GROUP A: Reynoldstown Focus Area 1
- GROUP B: Memorial Drive Focus Area 2 & Moreland/Memorial Focus Area 3
- GROUP C: Glenwood Focus Area 4

Feedback Received from Community

The community was asked to visit each of the 3 breakout groups and provide feedback to the consultant team on the alternative concepts. They were also provided a feedback worksheet to provide more specific comments. Below is a summary of the feedback received during the interactive exercise:

GROUP A: Reynoldstown Focus Area 1

- Suggested reconnection of Walthall St. at the MARTA station
- Support for Mixed Use land use at MARTA Inman Park/ Reynoldstown Property
- Support for connection of Lang-Carson Park to the BeltLine via a green corridor
- Concern that neither of the Conceptual Plans proposes an industrial land use within the area of the current Stein Steel operation. It is expressed that Stein Steel plans to stay in this area for an indefinite amount of time.
- Support for commercial uses in the neighborhood around the transit stop; yet not supported for areas within the neighborhood fabric
- Suggested a small commercial area along established neighborhood corridors with individual storefronts to accommodate local businesses. Example: N. Highland Ave area at Highland Bakery and Elizabeth St
- Suggested some areas (ex. Kenyon St.) as Low Density Residential and feel that detached single family houses are appropriate and fit into the existing neighborhood fabric.
- Suggested a central plaza, park or gathering space for the Reynoldstown neighborhood.
- Can Flat Shoals Ave. be realigned (almost as a north extension of Gibson St.) to run just west of the Lang-Carson Recreation Center and intersect at Wiley approx. 300ft to the east on the existing intersection? This would provide more room for the BeltLine and Stein Steel.
- Support/ need for pedestrian connections at MARTA recommended in the Moreland LCI.
- Suggestion for Wiley St: needs traffic calming, more on street parking, etc...
- Suggested removing slip lane on Flat Shoals Ave from Stovall St/ Mauldin St to Walthall St/ Arkwright Pl
- Suggested providing pedestrian access over DeKalb Ave. at intersection of Flat Shoals Ave. and Wiley St

GROUP B: Memorial Drive Focus Area 2 & Moreland/Memorial Focus Area 3

- Suggested extending two-way left turn lane on Moreland at I-20 to Edgewood Retail.
- Support for removing signal at the intersection of Arkwright and Moreland
- Suggested a dedicated eastbound lane or a turn arrow only on Memorial at Moreland
- Suggested additional pedestrian crossing opportunities between Krog tunnel and MARTA.
- Suggested Pedestrian bridge opportunity over I-20 at Stovall St.
- Suggested extending Narrow St and McDonald St. east, past Chastain St
- Suggested adding "green" street connections: Stovall St., Gibson St., etc...
- Boulevard/ Glenwood Intersection Comments:

- Suggested pedestrian improvements occur concurrently with southside of Glenwood sidewalk.
 - Can the median on the south approach include landscaping?
- Suggested a greenspace at the northern connection of the proposed pedestrian bridge over I-20 connecting to Pearl St.
- Additional trail segments suggested:
 - Stovall St: From Fulton Terrace south to I-20, create pedestrian bridge over I-20, continue along Stovall St. to Glenwood Ave.
 - Sherwood St: From Moreland to BeltLine
- Comments for Boulevard: From Woodward Ave. north to Carroll St.(small segment only), turning right at Gaskill St and continuing east to Cabbagetown Park

GROUP C: Glenwood Focus Area 4

- Clarify why Industrial properties (2) are illustrated to remain
 - Suggested the industrial property at Glenwood focus area be removed/ redeveloped (during this planning process)
- Suggested providing flexibility on exterior color the pedestrian bridge in Concept A; is supportive of the proposed bridge.
- Suggested “Plaza Bridge” along Bill Kennedy Way
- Suggested separating pedestrians and vehicular uses whenever possible
- Consultant to verify/ review ownership information of the tennis courts near the running track at Maynard Jackson High School – possible City of Atlanta Parkland.
- Support for revised transit stop shown in Concept B
- Transit stops seem to work well with each concept plan
- Suggested transit stop south of Glenwood Ave (to separate pedestrian/ vehicular traffic/ access); closer to High School.
- Suggested left hand turn lane at Memorial to travel north on Moreland
- Support medium height at Glenwood Focus Area (residential). Suggested under 5 stories when next to single family homes.
- Suggested improving pedestrian access at Bill Kennedy. Suggested “plaza bridge/ greenspace/ pedestrian focused” bridge (similar to 5th St. Bridge at I-85)
- Suggested 2 transit stops in the Glenwood Focus Area (ie. A possible stop at the southern edge of subarea/ TAD properties)
- Is Triumph Lofts a Historic Structure?- consultant to review/ verify
- Suggested a pedestrian bridge on Stovall St over I-20 and then a greenway trail through the north of Glenwood Park boundary to the BeltLine, Bill Kennedy Way and to the Atlanta Stockade
- Suggested Atlanta Stockade greenspace be named “Maynard Jackson Park”
- Suggested a trail network of “green linkages”; linking all of the greenspaces
- Suggested a transit stop location at Bill Kennedy and Faith Ave.
- Could the city consider a “land swap” with the Industrial property south of Glenwood Ave?
- Support enhancements to improve pedestrian connectivity/ friendliness to better join the neighborhoods along Boulevard; provide context sensitive design.
- Consultant to verify/ review locations of mixed use property at Glenwood Park

These minutes constitute the author’s understanding of the items discussed and conclusions reached. If there are any errors or omissions, please notify this author in writing within four (4) working days of receipt.

END OF MINUTES

Memorial Drive/ Glenwood Ave Subarea 4 Planning Committee Meeting Two June 21, 2010

SUBAREA 4

Memorial Dr/ Glenwood

Atlanta BeltLine, Inc.

Planning Committee Meeting: Draft Plan Review

Agenda

- Introduction
- Review feedback from Study Group Meeting
- Principles of Placemaking
- Review Draft Plan & Transportation Concepts
- Planning Committee Facilitated Discussion
- Questions/ Next Steps

Ecos Environmental Design, Inc. & AECOM

June 21, 2010

WHAT IS THE BELTLINE?

Key Elements

Ecos Environmental Design, Inc. & AECOM

LIGHT RAIL TRANSIT

Ecos Environmental Design, Inc. & AECOM

MASTER PLANNING SUBAREA 4

Process & Key Dates

- Review previous studies
- Review vision statement and goals
- Analyze existing conditions
- Prepare concept plans
- Draft plan recommendations
- Refine master plan
- Take Master Plans to NPU's and City Council for adoption

Ecos Environmental Design, Inc. & AECOM

SUBAREA 4

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Ecos Environmental Design, Inc. & AECOM

June 21, 2010

STUDY GROUP FEEDBACK

Subarea 4 - Memorial Dr/ Glenwood

Reynoldstown Focus Area:

Support:

- Reconnection of Walthall St. at the MARTA station
- Mixed Use land use at Inman Park MARTA station
- Connection of Lang-Carson Park to BeltLine via a green corridor
- Commercial uses in neighborhood around transit stop

Concerns:

- Transition between commercial uses and residential uses in neighborhood fabric
- Need for additional pedestrian connections at MARTA station

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STUDY GROUP FEEDBACK

Subarea 4 - Memorial Dr/ Glenwood

Memorial Drive Focus Area:

Support:

- Use of Historic Depot as BeltLine stop/ visitor center
- Mixed Use, new street networks and smaller blocks along Memorial
- Pedestrian bridge at Pearl St. crossing I-20

Concerns:

- Current issues with turn lanes on Memorial
- Access/ use of Watershed Management property
- Appropriate transition between new development along Memorial and established residences to the north and south

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STUDY GROUP FEEDBACK

Subarea 4 - Memorial Dr/ Glenwood

Moreland/ Memorial Drive Focus Area:

Support:

- Mixed Use and Commercial uses
- Extension of Flat Shoals Ave
- Signal removal at intersection of Arkwright and Moreland

Concerns:

- Current issues with turn lanes on Memorial
- Pedestrian access and safety issues
- Current lack of streetscaping

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STUDY GROUP FEEDBACK

Subarea 4 - Memorial Dr/ Glenwood

Glenwood Focus Area:

Support:

- Pedestrian bridge at Pearl St. crossing I-20
- Proposed greenspace/ community facility at Atlanta Stockade
- BeltLine Transit Stop located south on Glenwood Ave

Concerns:

- Suitability of Industrial properties to remain
- Transition of heights for new development when located adjacent to existing residences
- Pedestrian safety/ mobility along Bill K

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SUBAREA 4

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Ecot Environmental Design, Inc. & AECOM

June 21, 2010

ESTABLISHING PLACEMAKING

Subarea 4 - Memorial Dr/ Glenwood

Placemaking:

- Well Balanced Elements
 - Land Use & Urban Design
 - Circulation & Mobility
 - Greenspace & Public Art
- Appropriate Scale
 - City Scale
 - Center Scale
 - Neighborhood Scale
- Quality Design
 - Advances BeltLine Transit needs
 - Meets Goals for Subarea 4

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ESTABLISHING PLACEMAKING

Conceptual Plans

ELEMENTS:

Land Use & Urban Design

- Residential
- Commercial
- Mixed Use
- Office
- Industrial
- TCU
- Community Facility

Greenspace & Public Art

- BeltLine Corridor
- Park/ Open Space

Circulation & Mobility

- New Streets

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ESTABLISHING PLACEMAKING

Draft Plan

SCALE:

Land Use & Greenspace

Future Land Uses

- Mixed Use 10+ Stories
- Mixed Use 5-9 Stories
- Mixed Use 1-4 Stories
- Residential 10+ Stories
- Residential 5-9 Stories
- Residential 1-4 Stories
- High Density Commercial
- Low Density Commercial
- Office/Institutional
- Community Facility
- Industrial
- TCL
- Existing Park Space
- Proposed Park Space
- BeltLine Corridor

Circulation & Mobility

Vehicular Circulation

- MARTA Rail & Station
- Existing Streets
- Proposed Streets
- Proposed Streets
- BeltLine Transit Map
- BeltLine Transit
- BeltLine Alternative Transit Alignments

Pedestrian Circulation

- BeltLine Trail
- Existing Core Connections
- Proposed Multi-Use Trail
- Proposed Core Connection
- Proposed Secondary Connection
- Proposed Ped Bridge

Urban Design

- Proposed Store Frontage
- Historic Structures

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ESTABLISHING PLACEMAKING

Draft Plan

DESIGN:

Meets Goals for Subarea 4:

- Land Use and Urban Design
- Circulation and Mobility
- Greenspace and Public and Cultural Arts



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SUBAREA 4

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Review Draft Plan

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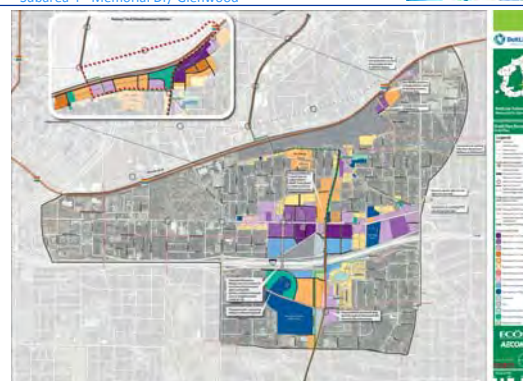


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June 21, 2010

REVIEW DRAFT PLAN

Subarea 4 - Memorial Dr/ Glenwood



Ecos Environmental Design, Inc. & AECOM

REVIEW DRAFT PLAN

Subarea 4 - Memorial Dr/ Glenwood

Reynoldstown Focus Area:

Enhance wayfinding and pedestrian access along Seaboard Ave to MARTA Station

New MARTA entrance at Seaboard Ave, east of existing entrance, Staircase Only

Provide reconstruction of Walhalla St.



Ecos Environmental Design, Inc. & AECOM

REVIEW DRAFT PLAN

Subarea 4 - Memorial Dr/ Glenwood

Memorial Drive Focus Area:

Proposed BeltLine Transit Stop to utilize Historic A&WP Train Depot as BeltLine Visitor Information Center



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REVIEW DRAFT PLAN
Subarea 4 - Memorial Dr/ Glenwood

Moreland/ Memorial Drive Focus Area:

Remove signal; right turn in/ right turn out only

Connection to existing PATH trail along Arkwright

Tech High School

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REVIEW DRAFT PLAN
Subarea 4 - Memorial Dr/ Glenwood

Glenwood Focus Area:

Proposed Pathway Bridge over I-20 at Pearl St. to connect the proposed park/community facility at Atlanta Stockade area to neighborhoods north of I-20

Proposed park/community facility at Atlanta Stockade

Proposed BeltLine Transit Stop directly south of Glenwood 800 Kennedy Way Intersection

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REVIEW DRAFT PLAN
Subarea 4 - Memorial Dr/ Glenwood

Hulsey Yards Development Option:

Proposed Park Space to incorporate design elements reminiscent of the Railroad Roundhouse

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SUBAREA 4
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Review Transportation Concepts

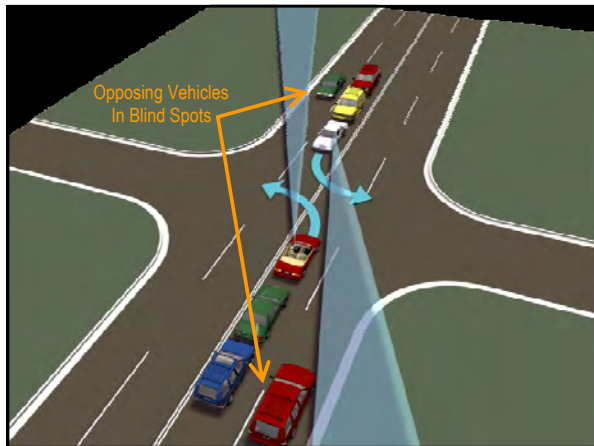
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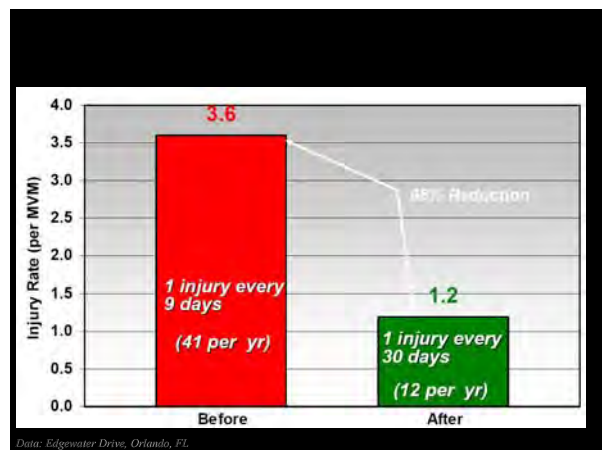
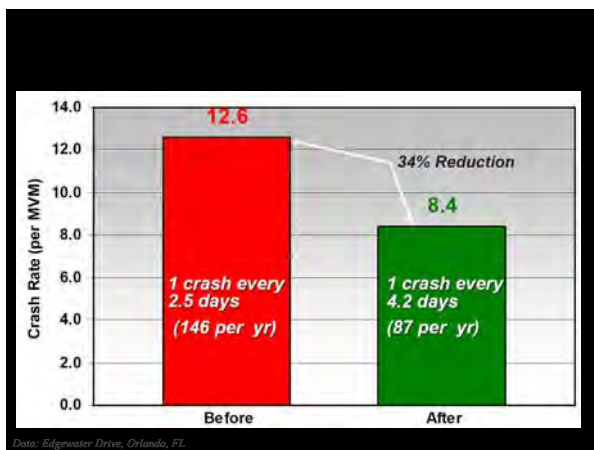
June 21, 2010

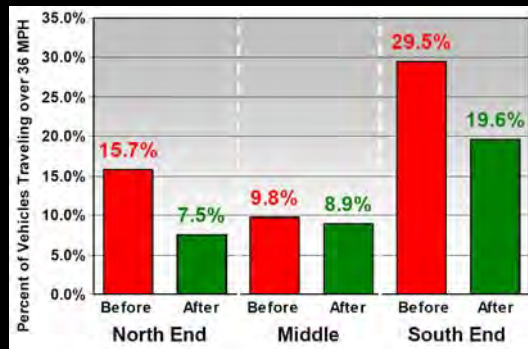
Intersections and Corridors

Road Diets

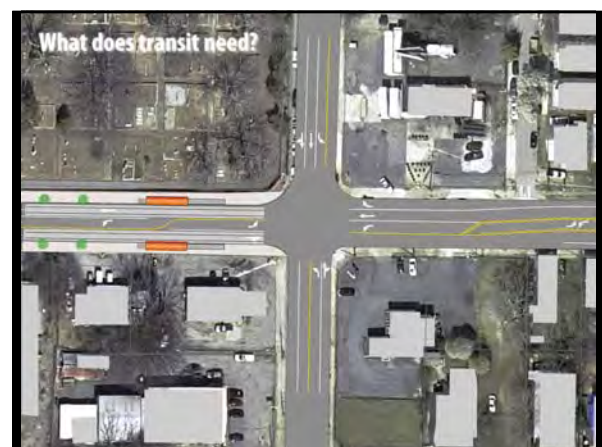
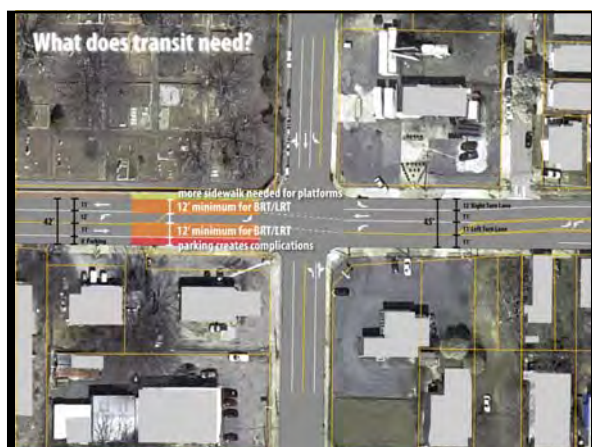
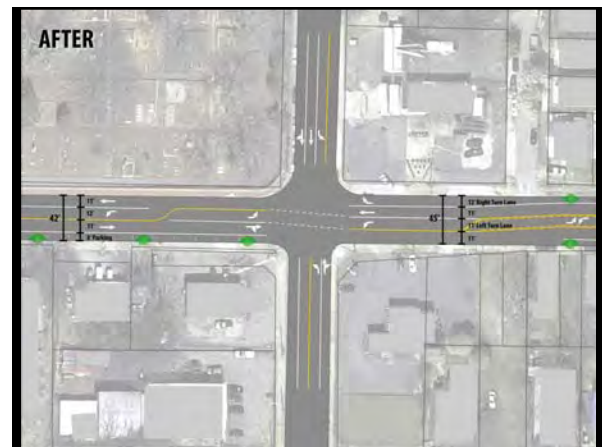
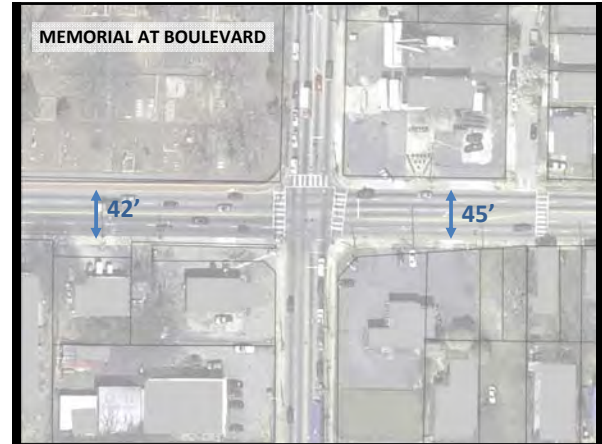


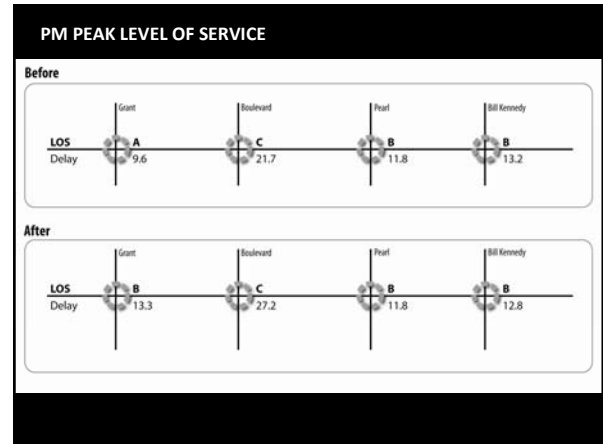
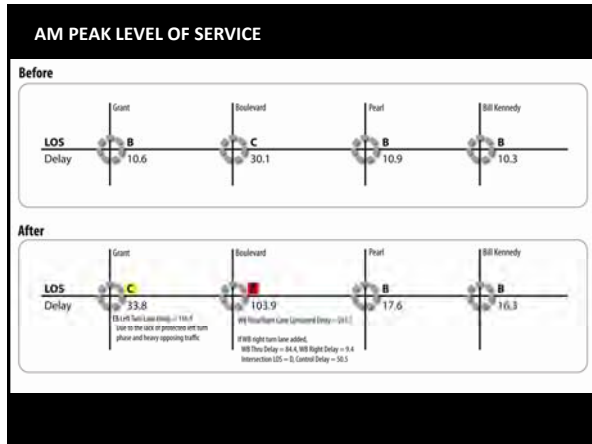
Location	Street	ADT Before	ADT After
San Leandro, CA	East 14th Street	17,700	16,700
Duluth, MN	21st Avenue East	17,000	17,000
Ramsey County, MN	Rice Street	18,700	16,400
Toronto, ON	St. George Street	15,000	15,000
Kirkland, WA	Lake Washington Boulevard	23,000	25,900
Seattle, WA	North 45th Street	19,400	20,300
Covington, WA	State Road 516	29,900	32,800
Bellevue, WA	Montana Street	18,500	18,500
East Lansing, MI	Grand River Boulevard	23,000	23,000
Santa Monica, CA	Main Street	20,000	18,000
Helena, MT	U.S. 12	18,000	18,000
San Francisco, CA	Valencia Street	22,200	20,000
Oakland, CA	High Street	22,000	24,000
Orlando, FL	Edgewater Drive	20,500	21,000
Seattle, WA	Madison Street	17,000	18,000
Reno, NV	South Wells Avenue	18,000	17,500
University Place, WA	67th Avenue	17,000	15,000
University Place, WA	Cirque Avenue	16,900	14,400
East Lansing, MI	West Grand River Avenue	18,000	18,000
East Lansing, MI	Abbott Road	15,000	21,000
Charlotte, NC	East Boulevard	21,400	18,400





Data: Edgewater Drive, Orlando, FL





SUBAREA 4

Memorial Dr/ Glenwood

Atlanta BeltLine, Inc.

Planning Committee Meeting: Draft Plan Review

Agenda

- Introduction
- Review feedback from Study Group Meeting
- Principles of Placemaking
- Review Draft Plan & Transportation Concepts

Planning Committee Facilitated Discussion

- Questions/ Next Steps

Ecos Environmental Design, Inc. & AECOM June 21, 2010

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Ecos Environmental Design, Inc. & AECOM June 21, 2010

NEXT STEPS

Subarea 4 - Memorial Dr/ Glenwood

NEXT STUDY GROUP MEETING: JULY 12TH AT 6:30pm.

- Review of Draft Master Plan

Ecos Environmental Design, Inc. & AECOM



Meeting Summary

To: Jonathan Lewis - Atlanta BeltLine, Inc/ COA Bureau of Planning

From: Alison Smith - Ecos Environmental Design

BeltLine Subarea 4: Planning Committee Meeting – Review Draft Plan

Location: Trees Atlanta

Date: June 21, 2010

Agenda

Welcome/ Introductions

Review feedback from Study Group Meeting

Principles of Placemaking

Review Draft Plan & Transportation Concepts

Planning Committee Facilitated Discussion

Questions/ Next Steps

Handouts

Meeting Agenda

Goals and Objectives Handout

Corridors, Intersections and Road Diet Concept Handout

Consultant Team Attendees

Shannon Kettering, Ecos Environmental Design

Alison Smith, Ecos Environmental Design

Joel Mann, AECOM

Summary

The purpose of this Planning Committee Meeting is to review the Draft Plan and receive feedback prior to presenting to the Study Group. The consultant team reviewed feedback from the previous Study Group Meeting and principles of placemaking, then reviewed the proposed land use and street networks for each focus area including representative imagery. Transportation concepts were also discussed for key corridors and intersections in the subarea; specifically, the concept of a Road Diet along Memorial.

Review & Comment: Draft Plan and Transportation Concepts

Land Use comments:

- Would like to see more greenspace opportunities in subarea (especially north of I-20) if possible, although discussed that such opportunities are sparse
- Suggestion to provide a larger greenspace opportunity linking Lang Carson Park to the BeltLine corridor (Currently proposing mixed use)

- Currently, Lang Carson is “land locked” with few street access points, whereby many residents have indicated that they feel unsafe. Need more “eyes on the park”
- This is the best opportunity to really expand the only true ‘park space’ in Reynoldstown
- Suggested considering the proposed residential properties (located west of the BeltLine corridor on Kenyon St) as potential greenspace.
- Discussed that retail on both sides of Flat Shoals Ave. in Reynoldstown would increase the commercial viability
- Verify if the Triumph lofts building is historic
- Recommend realigning the multi-use trail (shown in mixed use area south on Memorial) to follow along the proposed road.

Transportation comments:

- Current congestion on Bill Kennedy (left turn at Memorial) at peak times
- Comment concerning removing reversible lane on Memorial Dr. due to concerns of vehicular safety
- Suggested consultant team to review a current Georgia Tech student project: Howell and Flat Shoals as a one way pair with a roundabout at Walthall.
- Clarify note on map referring to new MARTA entrance at Inman Park/ Reynoldstown Station.
- Road Diet discussion along Memorial
 - In terms of placemaking, road diets gain space along the corridor that can be used for specific circulation needs for a community, such as on street parking, bike lanes, wider sidewalks, streetscaping, etc...
 - A case study of a road diet along Edgewater Dr. in Orlando, FL was presented to the Planning Committee. A summary of this study found that after the road diet was in place, Edgewater Dr. saw a 34% reduction in crash rate, a 68% reduction in injury rate and an overall reduction in the rate of speed travelled along the corridor
 - The Planning Committee was presented with two road diet concepts for Memorial Dr.: BeltLine transit concept and non-transit concept.

These minutes constitute the author’s understanding of the items discussed and conclusions reached. If there are any errors or omissions, please notify this author in writing.

END OF MINUTES

CC:

Memorial Drive/ Glenwood Ave Subarea 4 Study Group Meeting Three July 12, 2010

SUBAREA 4

Memorial Dr/ Glenwood

Atlanta BeltLine, Inc.

Study Group Meeting: Draft Plan Review

Agenda

- Introduction
- Principles of Placemaking
- Review Draft Plan, Transportation Concepts & Art Opportunities
- Study Group Interactive Exercise
- Questions/ Next Steps

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July 12, 2010

WHAT IS THE BELTLINE?

Key Elements

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LIGHT RAIL TRANSIT

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MASTER PLANNING SUBAREA 4

Process & Key Dates

DISCOVERY-DESIGN AND DISCUSSION-DOCUMENTATION

ISSUES AND OPPORTUNITIES → GOALS AND CONCEPTS → DRAFT MASTER PLAN → FINAL MASTER PLAN → ADOPTION

Feb: Study Group	April: Study Group	June: Planning Committee	August: Study Group	Oct - Dec: NPU's then City Council (tentative)
March: Planning Committee	May: Study Group	July: Study Group	Sept: Office Hours	

- Review previous studies
- Review vision statement and goals
- Analyze existing conditions

- Prepare concept plans
- Draft plan recommendations
- Refine master plan

- Take Master Plans to NPU's and City Council for adoption

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SUBAREA 4

Memorial Dr/ Glenwood

Atlanta BeltLine, Inc.

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July 12, 2010

ESTABLISHING PLACEMAKING

Subarea 4 - Memorial Dr/ Glenwood

Placemaking:

- Well Balanced Elements
 - Land Use & Urban Design
 - Circulation & Mobility
 - Greenspace & Public Art
- Appropriate Scale
 - City Scale
 - Center Scale
 - Neighborhood Scale
- Quality Design
 - Meets Goals for Subarea 4

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ESTABLISHING PLACEMAKING

Conceptual Plans

ELEMENTS:

Land Use & Urban Design


- Residential
- Commercial
- Mixed Use
- Office
- Industrial
- TCU
- Community Facility

Greenspace & Public Art

- BeltLine Corridor
- Park/ Open Space

Circulation & Mobility

- New Streets



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ESTABLISHING PLACEMAKING

Draft Plan

SCALE:

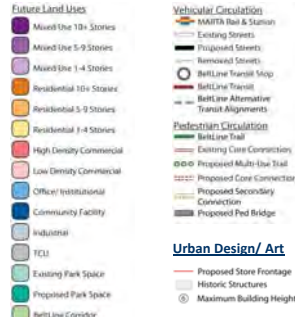
Land Use & Greenspace

Circulation & Mobility

DESIGN:

Meets Goals for Subarea 4:

- Land Use and Urban Design
- Circulation and Mobility
- Greenspace and Public and Cultural Arts



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SUBAREA 4

Memorial Dr/ Glenwood

Atlanta BeltLine, Inc.

Study Group Meeting: Draft Plan Review

Agenda

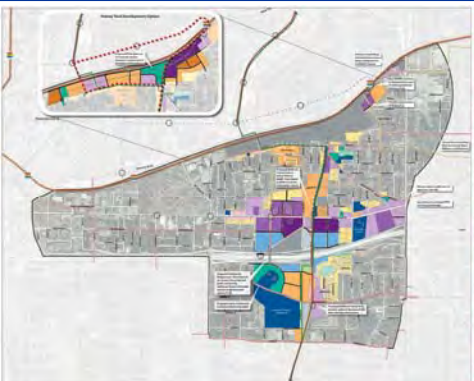
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REVIEW DRAFT PLAN : Land Use

Subarea 4 - Memorial Dr/ Glenwood



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STUDY GROUP FEEDBACK

Subarea 4 - Memorial Dr/ Glenwood


Reynoldstown Focus Area:

Support:

- Reconnection of Waltham St. at the MARTA station
- Mixed Use land use at Inman Park MARTA station
- Connection of Lang-Carson Park to BeltLine via a green corridor
- Commercial uses in neighborhood around transit stop

Concerns:

- Transition between commercial uses and residential uses in neighborhood fabric
- Need for additional pedestrian connections at MARTA station



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REVIEW DRAFT PLAN : Land Use

Subarea 4 - Memorial Dr/ Glenwood

Reynoldstown Focus Area:

Enhance wayfinding and pedestrian access along Seaboard Ave. to MARTA Station

New MARTA entrance at Seaboard Ave. east of existing entrance, Staircase Only

Provide reconnection of Waltham St.






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REVIEW DRAFT PLAN : Land Use
Subarea 4 - Memorial Dr/ Glenwood

Reynoldstown Focus Area:

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STUDY GROUP FEEDBACK
Subarea 4 - Memorial Dr/ Glenwood

Memorial Drive Focus Area:

Support:

- Use of Historic Depot as BeltLine stop/ visitor center
- Mixed Use, new street networks and smaller blocks along Memorial
- Pedestrian bridge at Pearl St. crossing I-20

Concerns:

- Current issues with turn lanes on Memorial
- Access/ use of Watershed Management property
- Appropriate transition between new development along Memorial and established residences to the north and south

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REVIEW DRAFT PLAN : Land Use
Subarea 4 - Memorial Dr/ Glenwood

Memorial Drive Focus Area:

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REVIEW DRAFT PLAN : Land Use
Subarea 4 - Memorial Dr/ Glenwood

Memorial Drive Focus Area:

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STUDY GROUP FEEDBACK
Subarea 4 - Memorial Dr/ Glenwood

Moreland/ Memorial Drive Focus Area:

Support:

- Mixed Use and Commercial uses
- Extension of Flat Shoals Ave
- Signal removal at intersection of Arkwright and Moreland

Concerns:

- Current issues with turn lanes on Memorial
- Pedestrian access and safety issues
- Current lack of streetscaping

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REVIEW DRAFT PLAN : Land Use
Subarea 4 - Memorial Dr/ Glenwood

Moreland/ Memorial Drive Focus Area:

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STUDY GROUP FEEDBACK
Subarea 4 - Memorial Dr/ Glenwood


Glenwood Focus Area:

Support:

- Pedestrian bridge at Pearl St. crossing I-20
- Proposed greenspace/ community facility at Atlanta Stockade
- BeltLine Transit Stop located south on Glenwood Ave

Concerns:

- Suitability of Industrial properties to remain
- Transition of heights for new development when located adjacent to existing residences
- Pedestrian safety/ mobility along Bill Kennedy



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REVIEW DRAFT PLAN : Land Use
Subarea 4 - Memorial Dr/ Glenwood


Glenwood Focus Area:



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REVIEW DRAFT PLAN : Land Use
Subarea 4 - Memorial Dr/ Glenwood

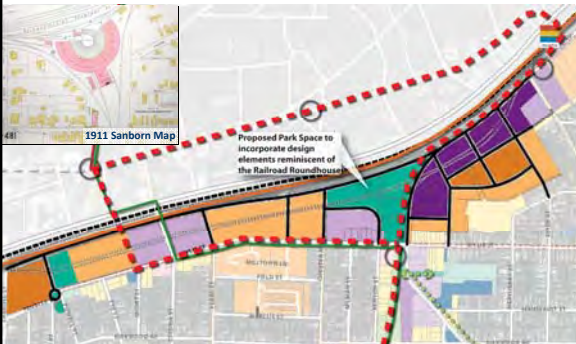
Glenwood Focus Area:



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REVIEW DRAFT PLAN : Land Use
Subarea 4 - Memorial Dr/ Glenwood

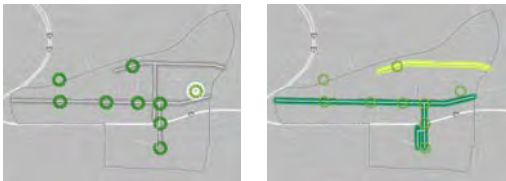
Hulsey Yards Development Option:



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REVIEW DRAFT PLAN: Transportation
Subarea 4 - Memorial Dr/ Glenwood


Transportation Concepts



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REVIEW DRAFT PLAN: Transportation
Subarea 4 - Memorial Dr/ Glenwood

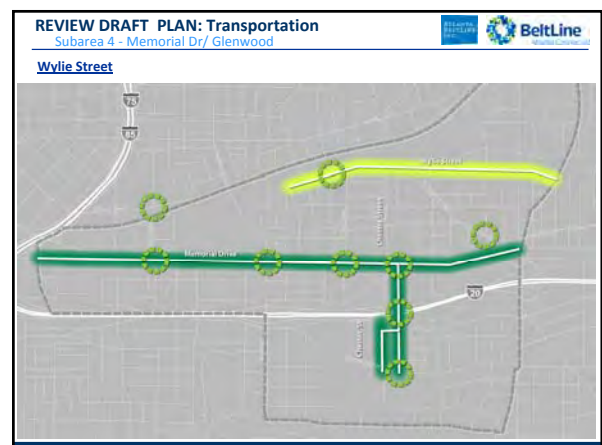
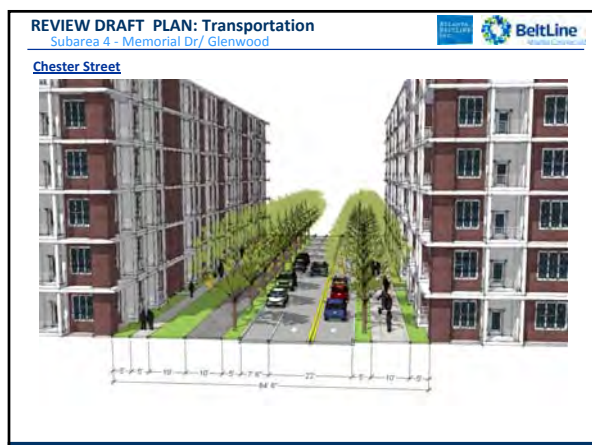
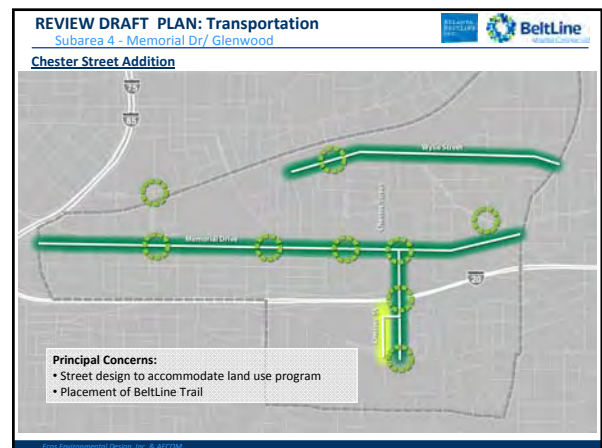
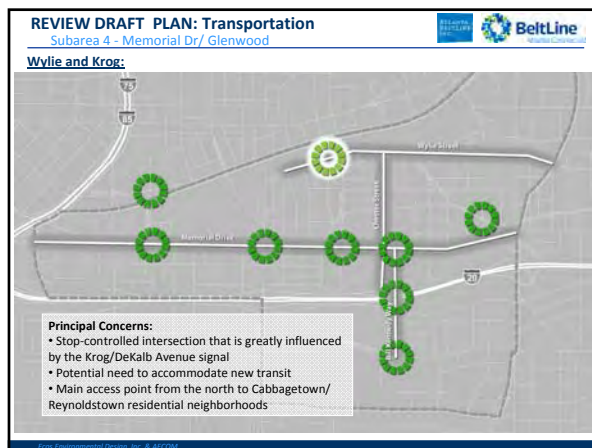
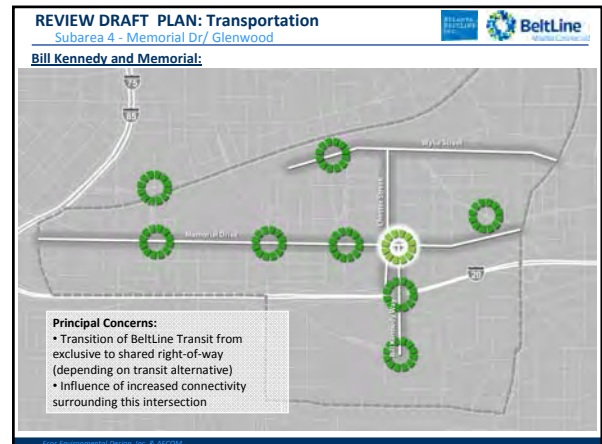
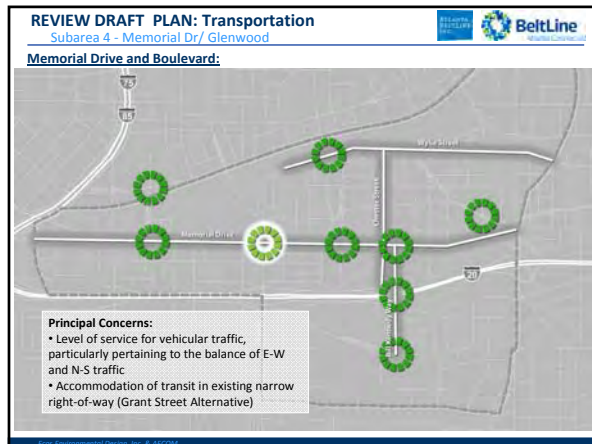
Grant/Decatur Streets:

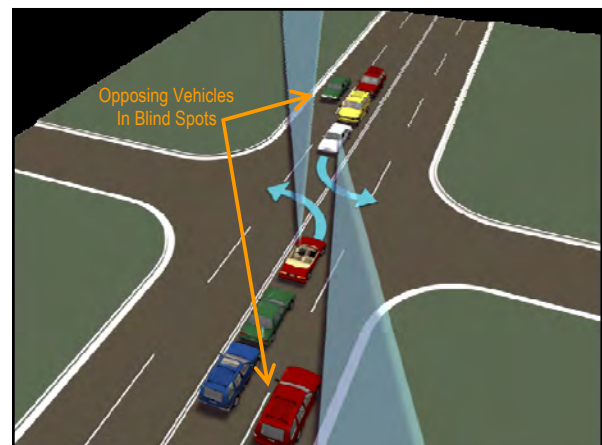
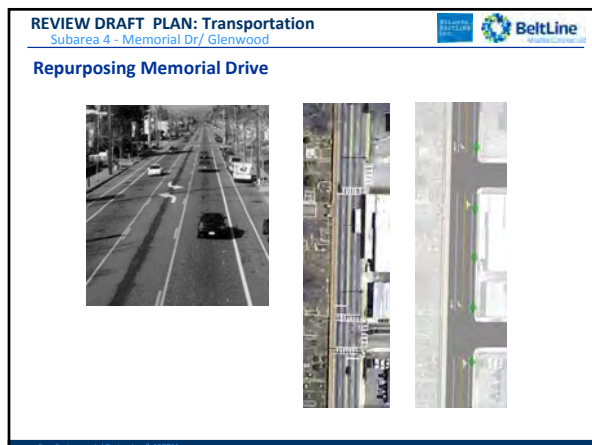
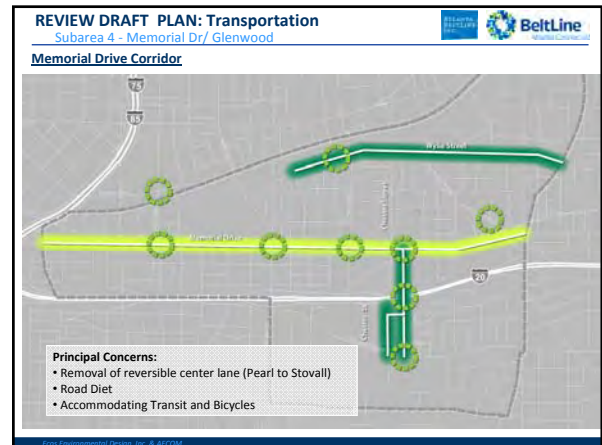
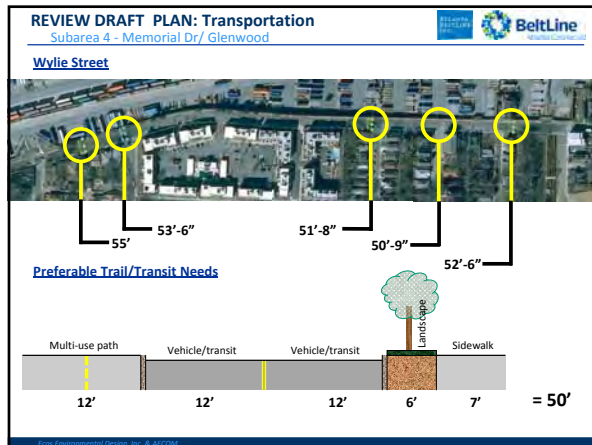
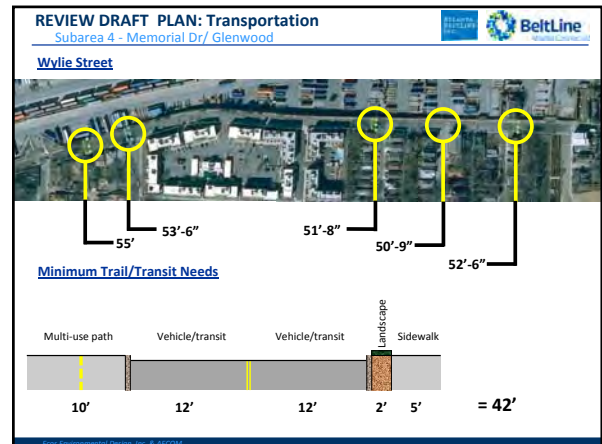
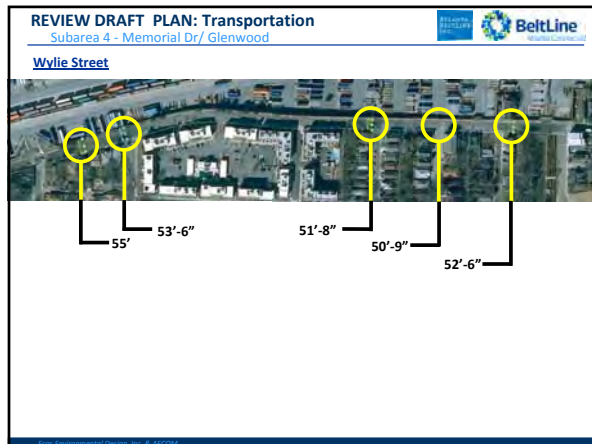


Principal Concerns:

- Potential to accommodate transit
- Heavy directional peak flow along Decatur Street

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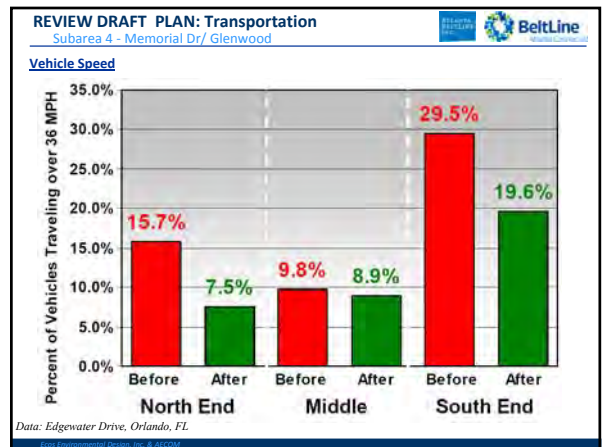
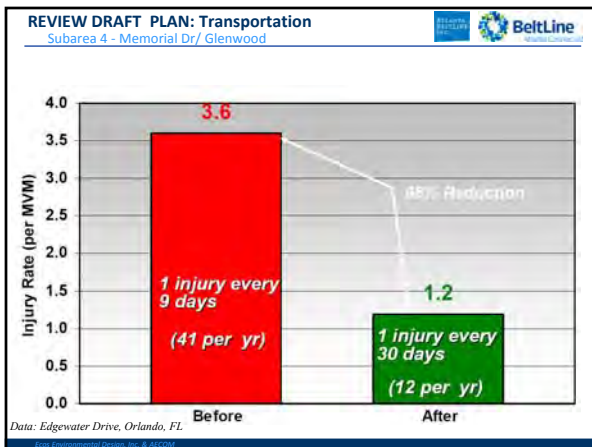
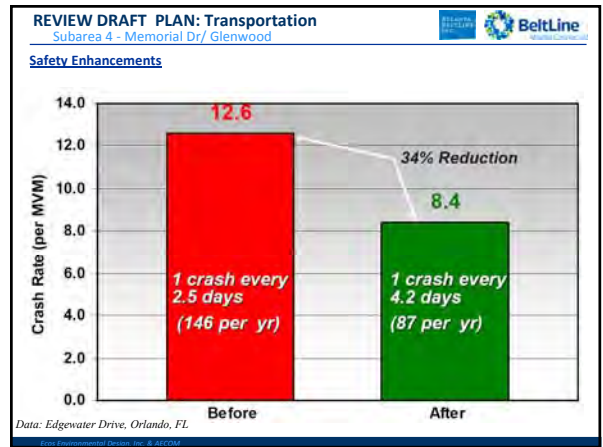


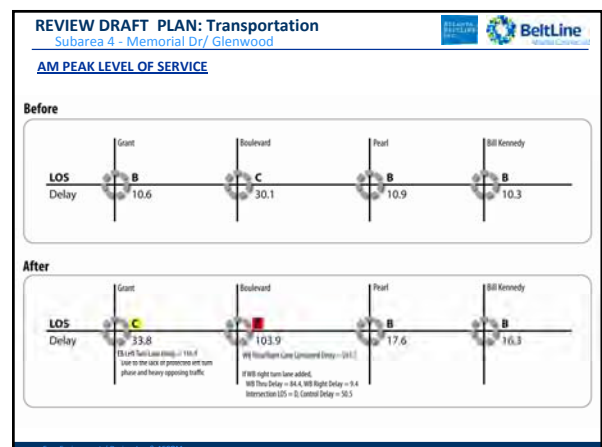
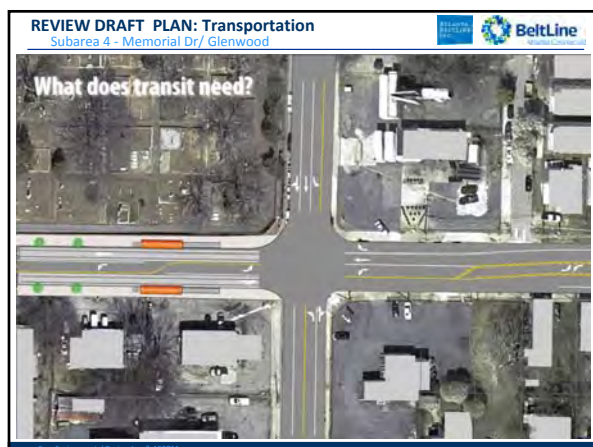
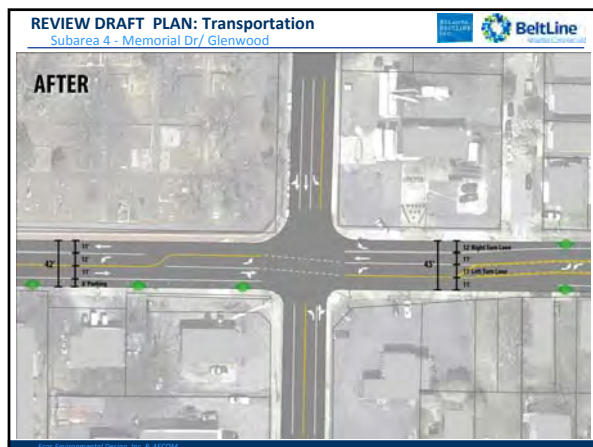
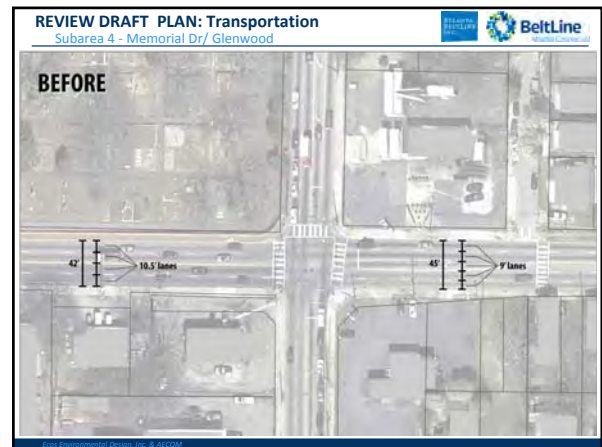
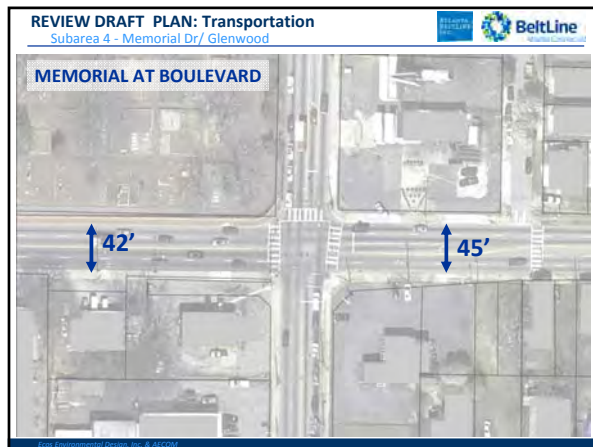
REVIEW DRAFT PLAN: Transportation
Subarea 4 - Memorial Dr/ Glenwood

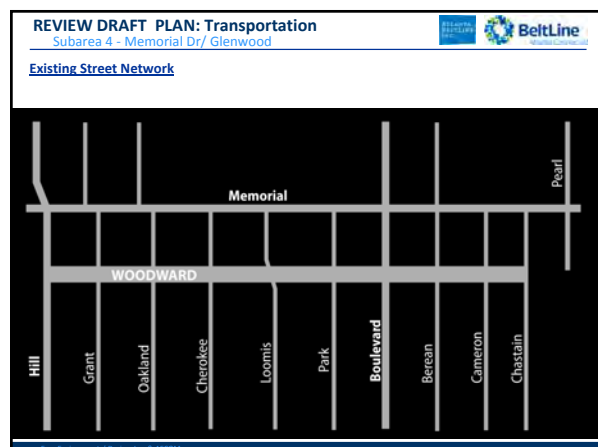
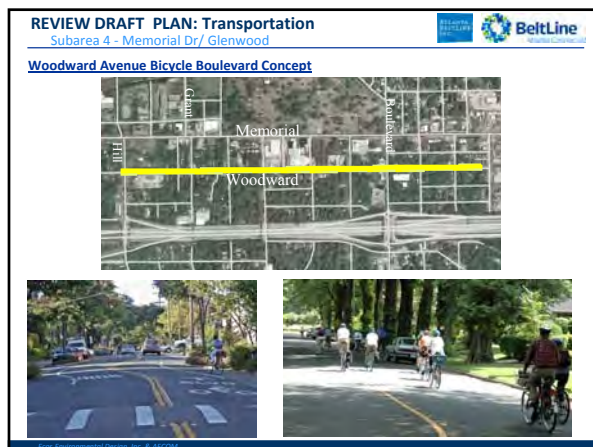
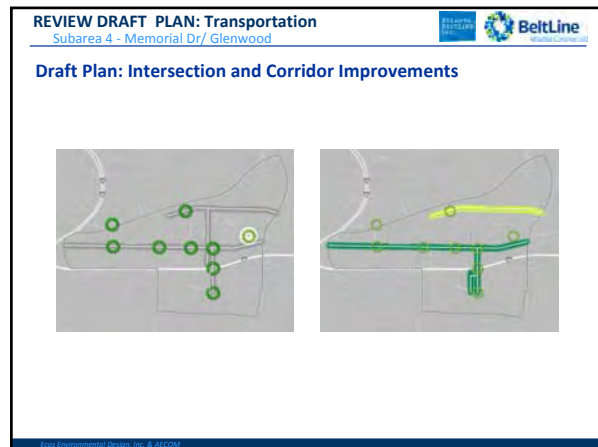
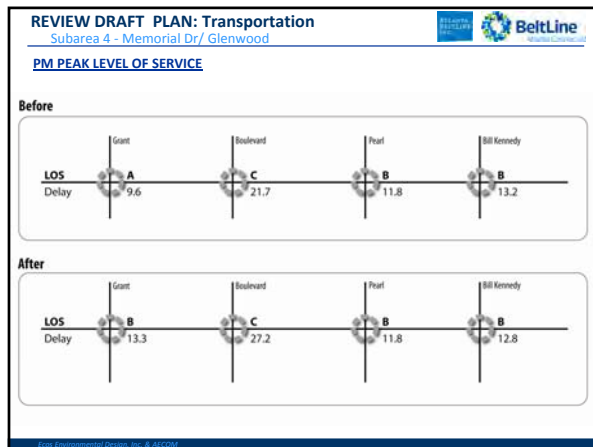
Successful Road Diets

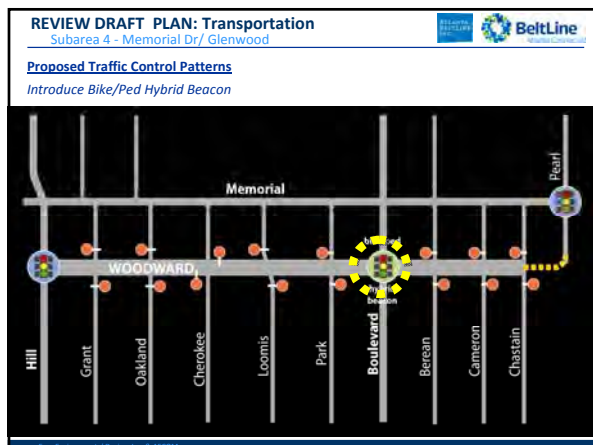
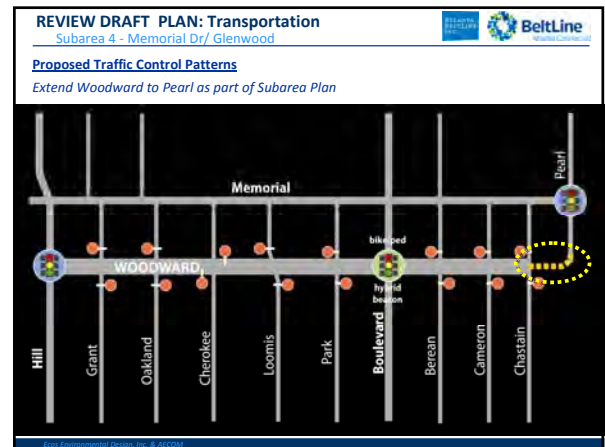
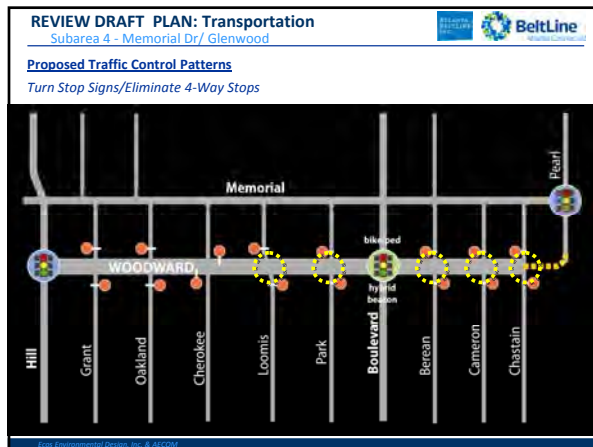
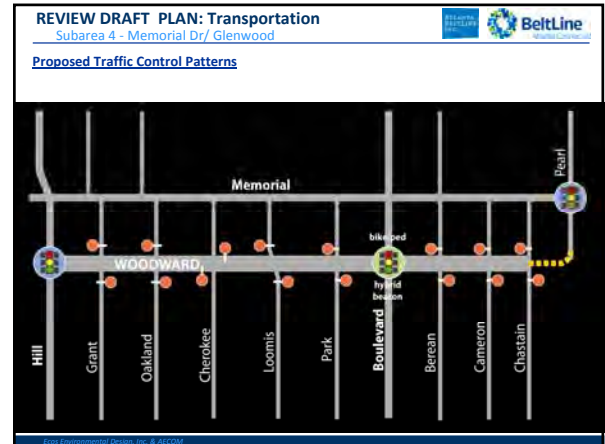
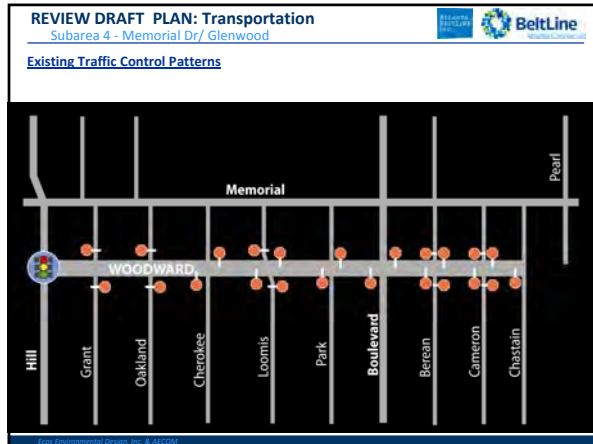
Location	Street	ADT Before	ADT After
San Leandro, CA	East 14th Street	17,700	16,700
Duluth, MN	21st Avenue East	17,000	17,000
Ramsey County, MN	Rice Street	18,700	18,400
Toronto, ON	St. George Street	15,000	15,000
Kirkland, WA	Lake Washington Boulevard	23,000	25,900
Seattle, WA	North 45th Street	19,400	20,300
Covington, WA	State Road 516	29,900	32,800
Bellvue, WA	Montana Street	18,500	18,500
East Lansing, MI	Grand River Boulevard	23,000	23,000
Santa Monica, CA	Main Street	20,000	18,000
Helena, MT	U.S. 12	18,000	18,000
San Francisco, CA	Valencia Street	22,200	20,000
Oakland, CA	High Street	22,000	24,000
Orlando, FL	Edgewater Drive	20,500	21,000
Seattle, WA	Madison Street	17,000	18,000
Reno, NV	South Wells Avenue	18,000	17,500
University Place, WA	67th Avenue	17,000	15,000
University Place, WA	Cirque Avenue	16,900	14,400
East Lansing, MI	West Grand River Avenue	18,000	18,000
East Lansing, MI	Abbott Road	15,000	21,000
Charlotte, NC	East Boulevard	21,400	18,400

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REVIEW DRAFT PLAN: Transportation
Subarea 4 - Memorial Dr/ Glenwood

Pedestrian Hybrid Beacon: How It Works
2: Beacon Activates, Controls Cross-Street Traffic

1

2

Bikeportland.org

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REVIEW DRAFT PLAN: Transportation
Subarea 4 - Memorial Dr/ Glenwood

Pedestrian Hybrid Beacon: How It Works
3: Peds/Cyclists Cross

Bikeportland.org

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REVIEW DRAFT PLAN: Transportation
Subarea 4 - Memorial Dr/ Glenwood

Pedestrian Hybrid Beacon: How It Works
4: Beacon allows vehicle traffic to continue

Bikeportland.org

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REVIEW DRAFT PLAN: Transportation
Subarea 4 - Memorial Dr/ Glenwood

Future Eastward Extension of Route
Connects to BeltLine and Gibson

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REVIEW DRAFT PLAN: Transportation
Subarea 4 - Memorial Dr/ Glenwood

The Bike Boulevard Long-Term

2nd Phase: Pearl-Fulton
Requires completion of Woodward from Chastain to Pearl

1st Phase: Hill to Chastain
Can be built today

3rd Phase: Pearl to Gibson
Requires completion of network streets south of Memorial

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REVIEW DRAFT PLAN : Public Art
Subarea 4 - Memorial Dr/ Glenwood

Example Applications from BeltLine Cultural Planning Vision 2006:

- Gateways and Entrances
- Historical Reclamation with cultural programming
- Streetscape Design
- Sidewalk Pattern and Patina Designs
- Murals and Retaining Walls
- Transit Stations
- Environmental Arts
- Natural Amphitheater
- Gardens
- Infrastructure Installation
- Water Works
- Fountains
- Memorials and Monuments
- Site Furnishings
- Sewer- Manhole Cover Designs
- Pedestrian Bridges

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REVIEW DRAFT PLAN : Public Art

Subarea 4 - Memorial Dr/ Glenwood

Potential Public and Cultural Art locations:

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SUBAREA 4

Memorial Dr/ Glenwood

Atlanta BeltLine, Inc.

Study Group Meeting: Draft Plan Review

Agenda

- Introduction
- Principles of Placemaking
- Review Draft Plan, Transportation Concepts & Art Opportunities

Study Group Interactive Exercise

- Questions/ Next Steps

Ecob Environmental Design, Inc. & AECOM
July 12, 2010

STUDY GROUP INTERACTIVE EXERCISE

Subarea 4 - Memorial Dr/ Glenwood

Study Group Interactive Exercise:

GROUP A: Land Use and Greenspace
GROUP B: Circulation & Mobility
GROUP C: Public & Cultural Arts

Please provide feedback on the following Placemaking Components:

- Well Balanced Elements
 - Land Use & Urban Design
 - Circulation & Mobility
 - Greenspace & Public Art
- Appropriate Scale
 - City Scale
 - Center Scale
 - Neighborhood Scale
- Quality Design
 - Meets Goals & Objectives for Subarea 4

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SUBAREA 4

Memorial Dr/ Glenwood

Atlanta BeltLine, Inc.

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Ecob Environmental Design, Inc. & AECOM
July 12, 2010

MASTER PLANNING SUBAREA 4

Process & Key Dates

DISCOVERY-DESIGN AND DISCUSSION-DOCUMENTATION

ISSUES AND OPPORTUNITIES	GOALS AND CONCEPTS	DRAFT MASTER PLAN	FINAL MASTER PLAN	ADOPTION
Feb: Study Group	April: Study Group	June: Planning Committee	August 1st: Study Group	Oct - Dec: NPU's, then City Council (tentative)
March: Planning Committee	May: Study Group	July: Study Group	Sept: Office Hours	
<ul style="list-style-type: none"> • Review previous studies • Review vision statement and goals • Analyze existing conditions 	<ul style="list-style-type: none"> • Prepare concept plans • Draft plan recommendations • Refine master plan 	<ul style="list-style-type: none"> • Take Master Plans to NPU's and City Council for adoption 		

Ecob Environmental Design, Inc. & AECOM



Meeting Summary

To: Jonathan Lewis - Atlanta BeltLine, Inc/ COA Bureau of Planning

From: Alison Smith - Ecos Environmental Design

BeltLine Subarea 4: Study Group Meeting – Review of Draft Plan

Location: Trees Atlanta

Date: July 12, 2010

Agenda

Open House (15 minutes)

Welcome/ Introductions

Principles of Placemaking

Review Draft Plan, Transportation Concepts and Public Art

Interactive Exercise

Next Steps

Handouts

Meeting Agenda

BeltLine Land Use Categories for Draft Plan

BeltLine Newsletter & Update

Art on the BeltLine Brochure

Review Draft Plan – Study Group Feedback Worksheet

Consultant Team Attendees

Shannon Kettering, Ecos Environmental Design

Alison Smith, Ecos Environmental Design

Sarah Linden, Ecos Environmental Design

Joel Mann, AECOM

Summary

The purpose of this third Study Group Meeting was to review comments received on the Alternative Concept Plans, present the Draft Plan for Subarea 4, review transportation concepts and public art opportunities. The community was asked to provide feedback through 3 break out groups focused on Land Use, Transportation and Public and Cultural Arts.

Welcome

Rukiya Eaddy, Community Engagement Advocate for Atlanta Beltline Inc., welcomed everyone in attendance, provided a brief overview of tonight's meeting and reviewed the schedule of other upcoming meeting focused on BeltLine Subarea Master Planning.

Introduction

Jonathan Lewis, Project Manager for Subarea 4 with Atlanta Beltline Inc., began the meeting by reviewing the components of the Beltline Project and provided an overview of the Subarea Master Planning Process.

Review Draft Plan

Shannon Kettering, Project Manager & Vice President of Ecos, began the presentation by reviewing the method/ approach for the Subarea 4 Draft Plan

- Principles of Placemaking
 - Well balanced elements
 - Appropriate Scale
 - Quality Design
- The Draft Plan for Subarea 4 was presented to the community by focus area, reviewing the feedback received from the community on the Alternative Concept Plans and how that influenced the proposed land uses shown in the Draft Plan

Joel Mann with AECOM reviewed a variety of transportation concepts that are being considered during this planning process:

- Repurposing Memorial (Road Diet)
- Intersection and Corridor specific concepts (cross-sections, etc...)
- Bicycle Boulevard Concept

Interactive Exercise

3 Breakout Groups

- GROUP A: Land Use & Urban Design
- GROUP B: Transportation
- GROUP C: Public Art & Historic Preservation

The community was asked to visit each of the 3 breakout groups and provide feedback to the consultant team on the specific categories identified above within the Draft Plan. Below is a summary of the feedback received during the interactive exercise:

GROUP A: Land Use & Urban Design

- Suggested preservation of the skyline, especially towards downtown to be certain that all existing viewsheds are retained.
- Support for transition between high and low density along Memorial Drive as one travels west towards Downtown Atlanta
- Suggested better wayfinding from Edgewood Retail District to Inman Park MARTA Station
- Concern with the existing Industrial and TCU Land Uses to remain in Subarea 4 (namely the sand plant and TCU cell tower site). Consider alternate locations within city.
- Suggested that Glenwood focus area could support additional retail with new proposed residential
- Suggested that all development within SA 4 encourage LEED Standards
- Support for mixed use 10+ in locations shown
- Concern for shade impacts of Hulsey Yard redevelopment
- Suggested coordination with ARC Freight Plan with land use concept
- Support for pedestrian bridge at proposed location across I-20
- Suggested the use of permeable sidewalks in order to reduce stormwater runoff
- Concerned with building height over 10 stories proposed for Memorial Drive in relation to transportation and circulation. Support building heights of 5-9 stories.
- Suggested incorporation of a greenspace at north entrance of the proposed pedestrian bridge within proposed office parcels.
- Concern of removal of on-street parking along Wylie Street and would like to see it relocated instead of removed.

GROUP B: Transportation

- Concerned that future traffic will be too much for the Subarea to handle
- Suggested closing Bill Kennedy to all vehicle traffic
- Suggested reviewing AstroMap data which displays all ARC truck routes
- Suggested proposing dedicated funding for bicycle route maintenance
- Questioned whether or not overhead power for BeltLine transit is obsolete.
- Suggested addressing solar energy components for transportation
- Concerned that proposed BeltLine alignment along Wylie will completely eliminate parking
- Suggest maximization of on-street parking where possible
- Suggested Estoria be converted to one-way street due to 'S-curve' in road
- Concerned about conditions for pedestrians traveling under MARTA, and would like to see specific enhancements proposed.
- Suggested expansion of Moreland's median
- Suggested a full signal at intersection of Woodward and Boulevard
- Suggested coordination between circulation within Subarea 4 and MARTA I-20 BRT Study

GROUP C: Public Art & Historic Preservation

- Suggested a flexible use space for a church and music venue at intersection of Wylie & Selman
- Noted that Stein Steel recently volunteered use of their parking lot for community events
- Suggested a bus art tour through neighborhoods
- Suggested incorporation of paving patterns within the BeltLine Trail. Would make it unique and stand out from the traditional PATH trail
- Suggested creation of more murals and less graffiti
- Suggested opportunity for cultural arts at the BeltLine & Kirkwood near South Park Lofts, which was recently the location of a very successful community event,
- Suggested identifying spaces for temporary/rotating exhibits
- Suggested earthwork, land art and sculptural exhibits along the BeltLine
- Suggested providing incentives for developers to incorporate art into their plans
- Suggestions identified on map for Gateway/ Public Art Opportunities:
 - Parks within Subarea 4 (Esther-Peachey Lefever park, Cabbagetown Park, etc...)
 - King Memorial MARTA Station and Tunnel
 - Greenspace area near Oakland Cemetery
 - Triangular grass area at intersection of Estoria and Gaskill
 - Park Grounds
 - All crossings of street network and BeltLine
 - Abandoned structures (along Memorial)
 - Performance area suggested south of Berne St. along BeltLine
- Issues/ Concerns identified on Map:
 - Tunnel at King Memorial (currently dark and somewhat dangerous)
 - DeKalb Ave as a barrier.
 - Currently, there is little public use of the gateway area for Reynoldstown at Moreland and Seaboard Ave.
 - Community issues/ differing opinions with existing graffiti/ murals on Hulsey Yards wall along Wylie.

These minutes constitute the author's understanding of the items discussed and conclusions reached. If there are any errors or omissions, please notify the author in writing.

END OF MINUTES

Memorial Drive/ Glenwood Ave Subarea 4 Study Group Meeting Four August 9, 2010

SUBAREA 4

Memorial Dr/ Glenwood

Atlanta BeltLine, Inc.

Study Group Meeting: Final Draft Plan

Agenda

- Introduction
- Principles of Placemaking
- Review Final Draft Plan & Transportation Concepts
- Questions/ Next Steps
- Open House

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August 9, 2010

WHAT IS THE BELTLINE?

Key Elements

Parks and Arboretum

Trails

Transit & Transportation Infrastructure

Economic Development & Jobs

Affordable Workforce Housing

Historic Preservation

Streetscapes & Public Art

Environmental Clean-up

Ecos Environmental Design, Inc. & AECOM

LIGHT RAIL TRANSIT

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LIGHT RAIL TRANSIT

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LIGHT RAIL TRANSIT

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MASTER PLANNING SUBAREA 4

Process & Key Dates

DISCOVERY-DESIGN AND DISCUSSION-DOCUMENTATION

ISSUES AND OPPORTUNITIES → GOALS AND CONCEPTS → DRAFT MASTER PLAN → FINAL MASTER PLAN → ADOPTION

Feb: Study Group	April: Study Group	June: Planning Committee	August: Study Group	Oct - Dec: NPU's, then City Council (tentative)
March: Planning Committee	May: Study Group	July: Study Group	Sept: Office Hours	

- Review previous studies
- Review vision statement and goals
- Analyze existing conditions

- Prepare concept plans
- Draft plan recommendations
- Refine master plan

- Take Master Plans to NPU's and City Council for adoption

Ecos Environmental Design, Inc. & AECOM

SUBAREA 4
Memorial Dr/ Glenwood

Atlanta BeltLine, Inc.

Study Group Meeting: Final Draft Plan

Agenda

- Introduction
- *Principles of Placemaking*
- Review Final Draft Plan & Transportation Concepts
- Questions/ Next Steps
- Open House

Ecos Environmental Design, Inc. & AECOM

August 9, 2010

ESTABLISHING PLACEMAKING
Subarea 4 - Memorial Dr/ Glenwood

Placemaking:

1. Well Balanced Elements
 - Land Use & Urban Design
 - Circulation & Mobility
 - Greenspace & Public Art
2. Appropriate Scale
 - City Scale
 - Center Scale
 - Neighborhood Scale
3. Quality Design
 - Meets Goals for Subarea 4

Ecos Environmental Design, Inc. & AECOM

SUBAREA 4
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Ecos Environmental Design, Inc. & AECOM

August 9, 2010

FINAL DRAFT PLAN : Land Use
Subarea 4 - Memorial Dr/ Glenwood

Ecos Environmental Design, Inc. & AECOM

FINAL DRAFT PLAN : Land Use
Subarea 4 - Memorial Dr/ Glenwood

Reynoldstown Focus Area:

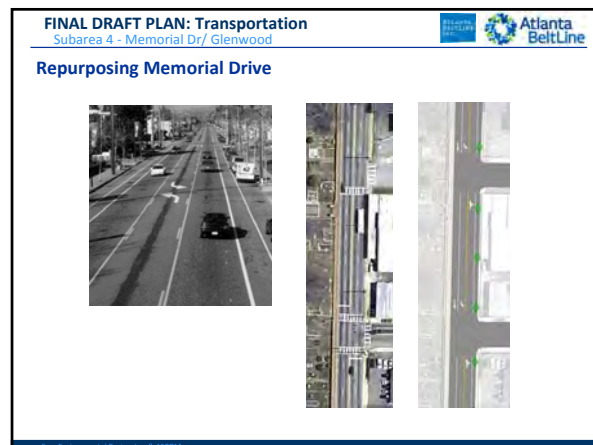
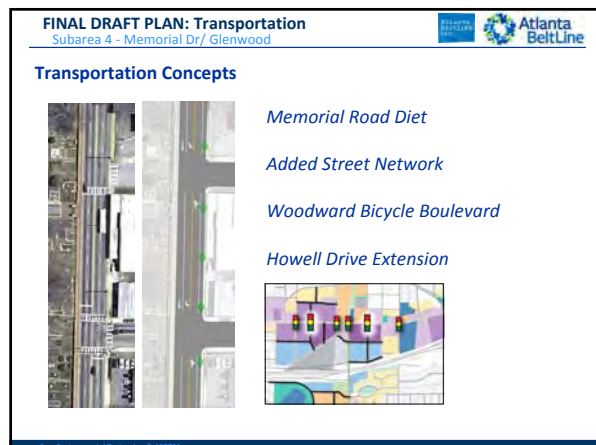
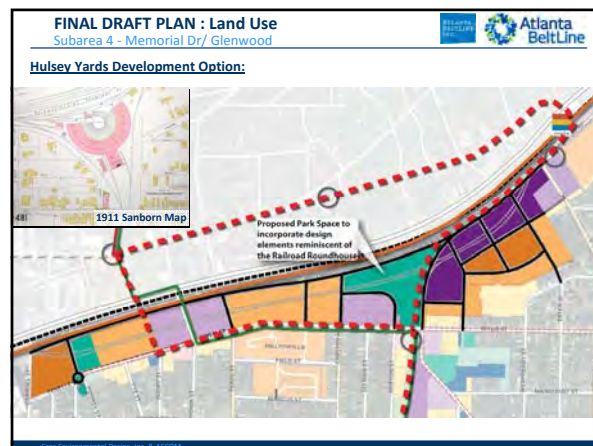
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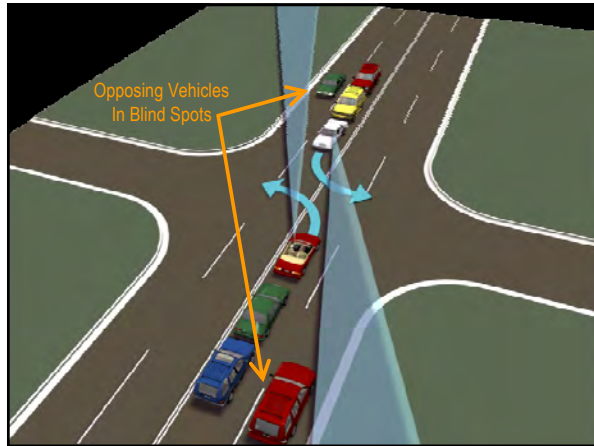
FINAL DRAFT PLAN : Land Use
Subarea 4 - Memorial Dr/ Glenwood

Reynoldstown Focus Area:

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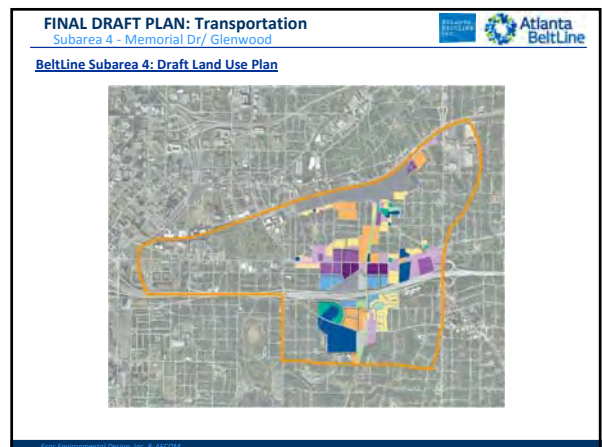
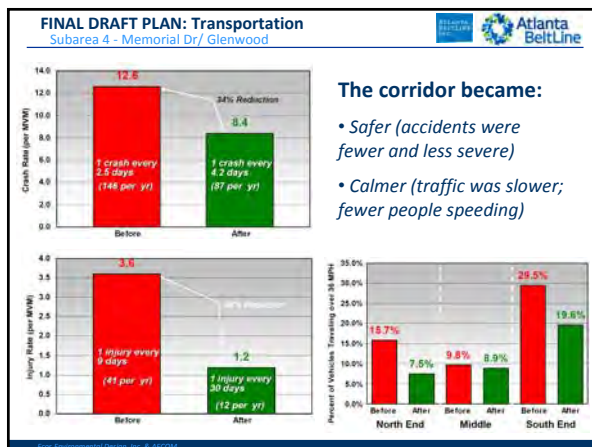


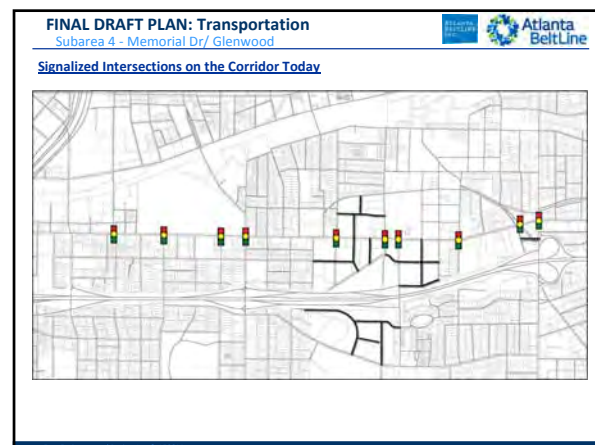
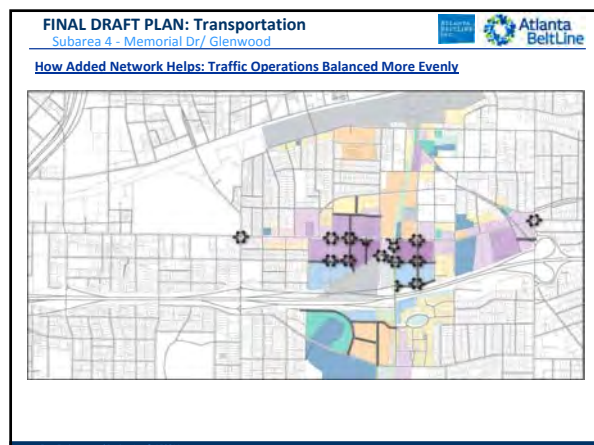
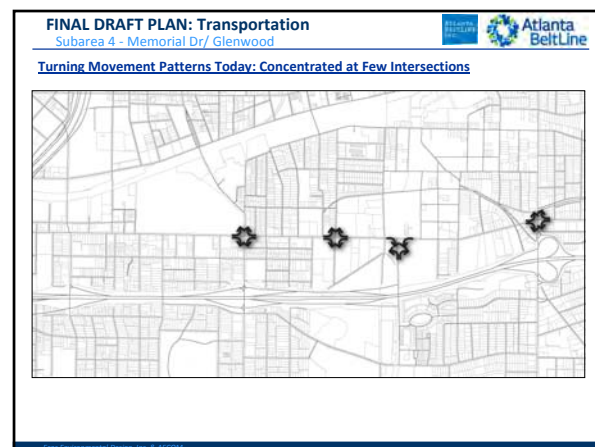
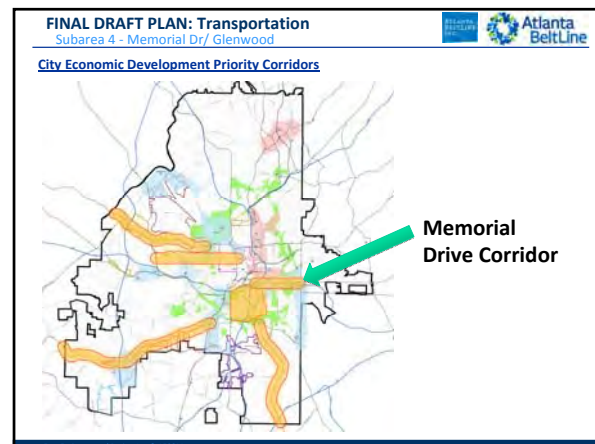
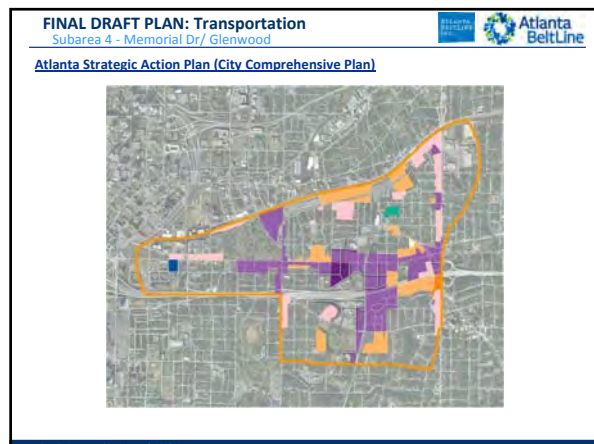
FINAL DRAFT PLAN: Transportation
Subarea 4 - Memorial Dr/ Glenwood

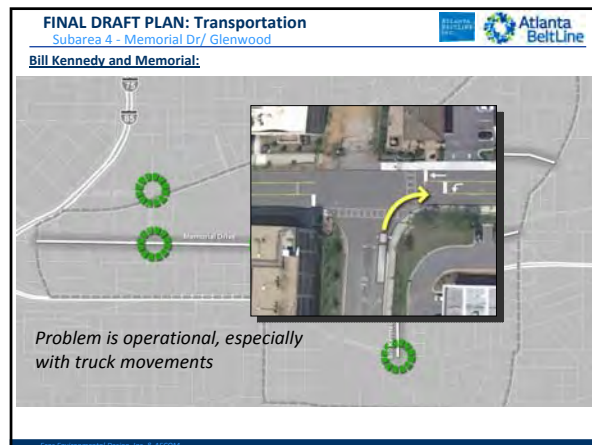
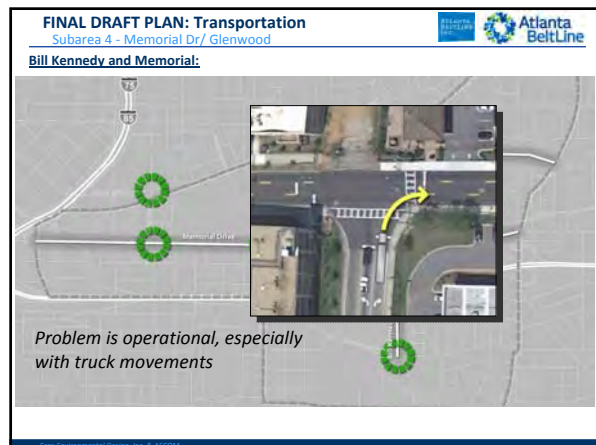
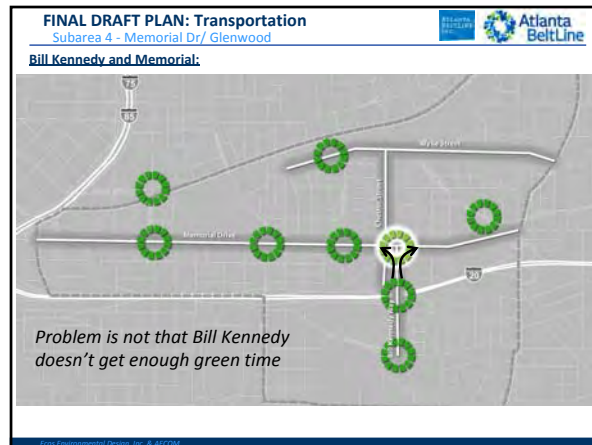
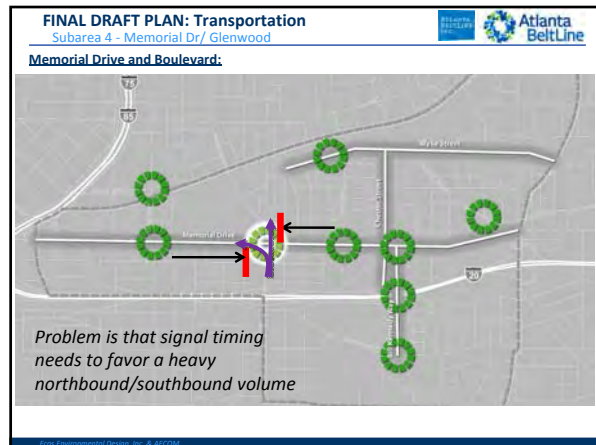
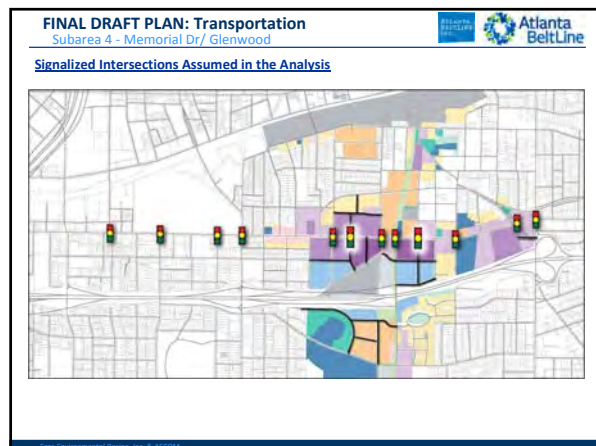
Successful Road Diets

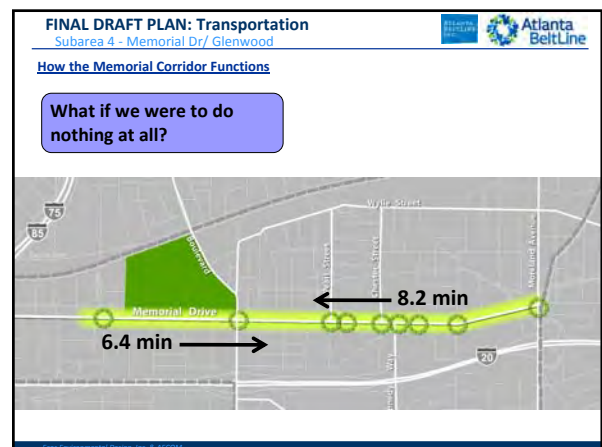
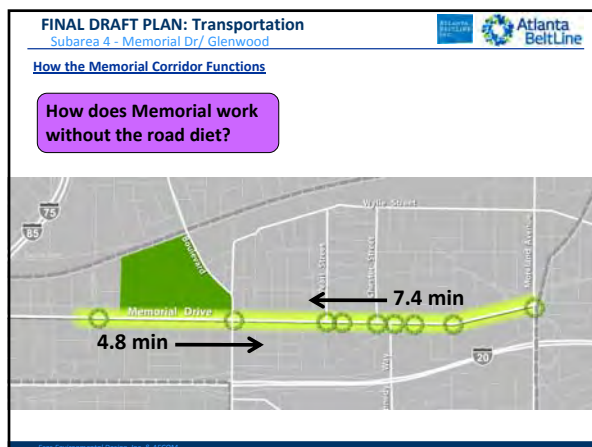
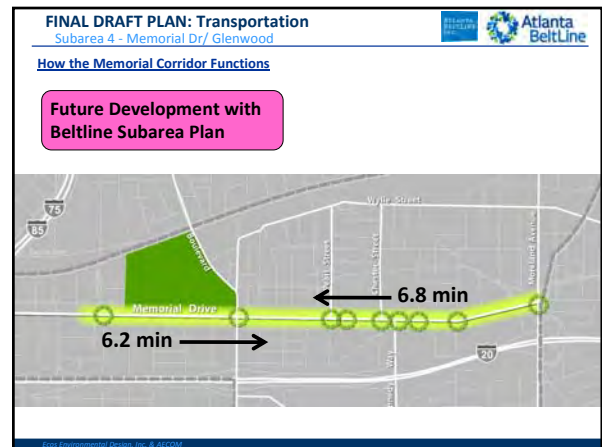
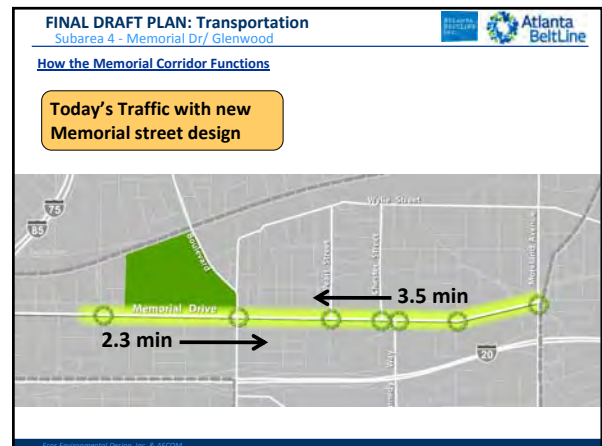
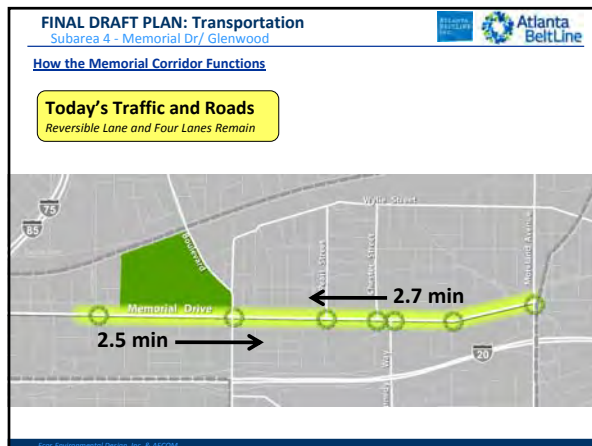
Location	Street	ADT Before	ADT After
San Leandro, CA	East 14th Street	17,700	16,700
Duluth, MN	21st Avenue East	17,000	17,000
Ramsey County, MN	Rice Street	18,700	16,400
Toronto, ON	St. George Street	15,000	15,000
Kirkland, WA	Lake Washington Boulevard	23,000	25,900
Seattle, WA	North 45th Street	19,400	20,300
Covington, WA	State Road 516	29,900	32,800
Bellevue, WA	Montana Street	18,500	18,500
East Lansing, MI	Grand River Boulevard	23,000	23,000
Santa Monica, CA	Main Street	20,000	18,000
Helena, MT	U.S. 12	18,000	18,000
San Francisco, CA	Valencia Street	22,200	20,000
Oakland, CA	High Street	22,000	24,000
Orlando, FL	Edgewater Drive	20,500	21,000
Seattle, WA	Madison Street	17,000	18,000
Reno, NV	South Wells Avenue	18,000	17,500
University Place, WA	67th Avenue	17,000	15,000
University Place, WA	Cirque Avenue	16,900	14,400
East Lansing, MI	West Grand River Avenue	19,000	18,000
East Lansing, MI	Abbott Road	15,000	21,000
Charlotte, NC	East Boulevard	21,400	18,400

Ecot Environmental Design, Inc. & ACCDM

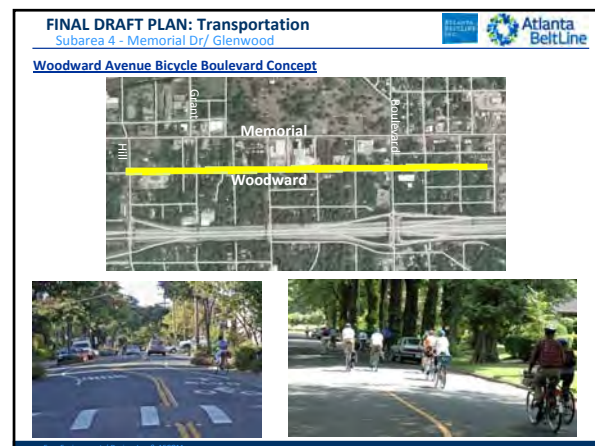








FINAL DRAFT PLAN: Transportation Subarea 4 - Memorial Dr/ Glenwood		
How the Memorial Corridor Functions		
	AM Travel Time/Speed	PM Travel Time/Speed
Today's Roads, Today's Traffic	2.7 min / 29 mph	2.5 min / 31 mph
Changes to Memorial Today	3.5 min / 22 mph	2.3 min / 34 mph
Corridor Develops Without BeltLine	8.7 min / 10 mph	8.7 min / 10 mph
BeltLine Provides Additional Choices	6.8 min / 13 mph	6.2 min / 15 mph
BeltLine Happens Without Road Diet	7.4 min / 12 mph	4.8 min / 19 mph
Let Development Continue As Is	8.2 min / 11 mph	6.4 min / 14 mph



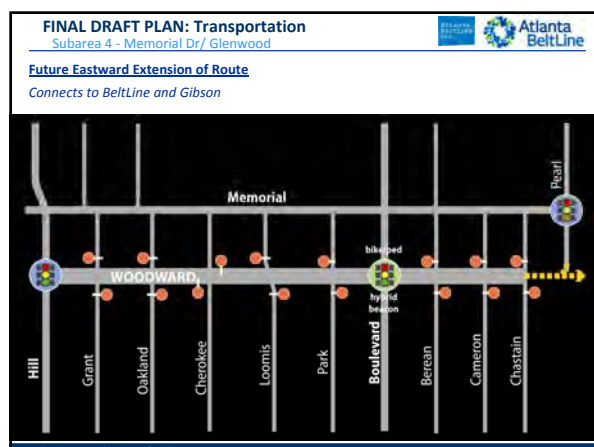
FINAL DRAFT PLAN: Transportation
Subarea 4 - Memorial Dr/ Glenwood

What is a bicycle boulevard?

A low-traffic, local street that has been configured to emphasize bicycle movement.

Key features:

- Low traffic volumes
- Discouragement of non-local motor vehicle traffic (this can be through conventional traffic calming)
- Free-flow travel for bikes by giving the right-of-way to the bicycle boulevard at intersections wherever possible
- Traffic control to help bicycles cross major arterial roads



FINAL DRAFT PLAN: Transportation
Subarea 4 - Memorial Dr/ Glenwood

The Bike Boulevard Long-Term

1st Phase: Hill to Chastain
Can be built today

2nd Phase: Pearl-Fulton
Requires completion of Woodward from Chastain to Pearl

3rd Phase: Pearl to Gibson
Requires completion of network streets south of Memorial



SUBAREA 4
Memorial Dr/ Glenwood

Atlanta BeltLine, Inc.
Study Group Meeting: Final Draft Plan

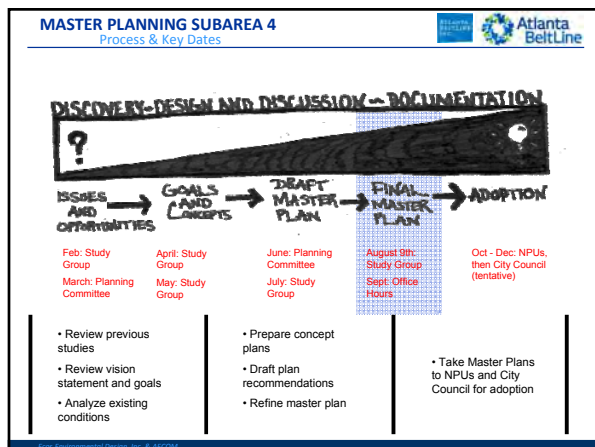
Agenda

- Introduction
- Principles of Placemaking
- Review Final Draft Plan & Transportation Concepts

Questions/ Next Steps

- Open House

Ecot Environmental Design, Inc. & AECOM August 9, 2010



SUBAREA 4
Memorial Dr/ Glenwood

Atlanta BeltLine, Inc.
Study Group Meeting: Final Draft Plan

Agenda

- Introduction
- Principles of Placemaking
- Review Final Draft Plan & Transportation Concepts
- Questions/ Next Steps

Open House

Ecot Environmental Design, Inc. & AECOM August 9, 2010



Meeting Summary

To: Jonathan Lewis - Atlanta BeltLine, Inc/ COA Bureau of Planning

From: Alison Smith - Ecos Environmental Design

BeltLine Subarea 4: Study Group Meeting – Review Final Draft Plan

Location: Trees Atlanta

Date: August 9, 2010

Agenda

Open House (30 minutes)

Welcome/ Introductions

Principles of Placemaking

Review Final Draft Plan and Transportation Concepts

Questions/Next Steps

Open House (30 minutes)

Handouts

Meeting Agenda

Subarea 4 – Final Draft Plan (11x17)

Review Final Draft Plan – Study Group Feedback Worksheet

Consultant Team Attendees

Shannon Kettering, Ecos Environmental Design

Alison Smith, Ecos Environmental Design

Joel Mann, AECOM

Summary

The purpose of the final Study Group Meeting for the Subarea 4 Master Plan was to review the entire planning process with the community and present the Final Draft Plan for Subarea 4 highlighting proposed land uses, openspaces, public art opportunities and transportation concepts. The community had the opportunity to ask questions and provide feedback both before and after the presentation during the open house.

Welcome

Rukiya Eaddy, Community Engagement Advocate for Atlanta BeltLine Inc., welcomed everyone in attendance, provided a brief overview of tonight's meeting and reviewed the schedule of other upcoming meeting focused on BeltLine Subarea Master Planning.

Introduction

Jonathan Lewis, Project Manager for Subarea 4 with Atlanta BeltLine Inc., began the meeting by reviewing the components of the Beltline Project and provided an overview of the Subarea Master Planning Process along with a summary of how community participation is incorporated into that process.

Review Final Draft Plan

Shannon Kettering, Project Manager & Vice President of Ecos, began the presentation by reviewing the method/ approach for the Subarea 4 Master Plan

- Principles of Placemaking
 - Well balanced elements
 - Appropriate Scale
 - Quality Design
- The Final Draft Plan for Subarea 4 was presented to the community by focus area, providing a detailed description of each area in terms of proposed elements, scale and design, as well as reviewing how the feedback received from the community throughout the planning process has shaped this plan.

Joel Mann with AECOM reviewed a variety of transportation concepts that are being considered during this planning process:

- Repurposing Memorial Drive (Road Diet)
- Added street network
- Woodward Avenue Bicycle Boulevard
- Howell Drive extension

Questions/ Next Steps

The community was given the opportunity to ask the consultants and ABI staff questions concerning the Subarea 4 Final Draft Plan. The community questions/ concerns included discussion on the implementation of the Woodward Bicycle Boulevard, and height maximums and land uses of certain parcels in the Glenwood Focus Area.

Next step for the Subarea 4 Master Plan include office hours at ABI the last two weeks in September followed by presentations to the NPU's and City Council.

These minutes constitute the author's understanding of the items discussed and conclusions reached. If there are any errors or omissions, please notify the author in writing.

END OF MINUTES

Atlanta BeltLine Master Plan

SUBAREA 4

MEMORIAL DRIVE/ GLENWOOD AVE

Inventory & Assessment Report

Prepared for
Atlanta BeltLine, Inc.
By Ecos Environmental Design
AECOM, Smith Dalia Architects
and Dovetail Consulting

Adopted by the Atlanta City Council on July 18, 2011
Legislation #: 10-O-1919/1991; CDP-10-12



BeltLine
Atlanta Connected





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Acknowledgements

The Honorable Mayor **Kasim Reed**

ATLANTA CITY COUNCIL

Ceasar C. Mitchell, President

Carla Smith, District 1

Kwanza Hall, District 2

Ivory Lee Young, District 3

Cleta Winslow, District 4

Natalyn Archibong, District 5

Alex Wan, District 6

Howard Shook, District 7

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Felicia Moore, District 9

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Keisha Bottoms, District 11

Joyce M. Sheperd, District 12

Michael Julian Bond, Post 1 At Large

Aaron Watson, Post 2 At Large

H. Lamar Willis, Post 3 At Large

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Chair of the Board, Atlanta BeltLine, Inc.; ADA Appointee

Clara Axaam

Vice Chair of the Board, Director of Atlanta Office, Enterprise Community Partners, Inc.; Board of Directors, MARTA; BeltLine Partnership Appointee

Joseph A. Brown

Director of Equity/Structured Finance, Centerline Capital Group; Board of Directors, ADA; ADA Appointee

LaChandra Butler

Atlanta Board of Education District 5; APS Appointee

The Honorable Emma Darnell

Fulton County Board of Commissioners District 5; Fulton County Appointee

The Honorable Kasim Reed

Mayor, City of Atlanta

The Honorable Joyce M. Sheperd

Atlanta City Councilmember, District 12

John Somerhalder

President and CEO, AGL Resources, Chair of the Board, BeltLine Partnership; BeltLine Partnership Appointee

Acknowledgements



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Georgia Burrell, RT Civic Improvement League

Erica Champion, Grant Park Neighborhood Association

Steve Chiaviello, NPU N

Edward Gilgor, NPU W

Patrick Gilroy, Glenwood Park Association

Young Hughley, RT Revitalization Corp

Hank Jeanneret, Masterack

Christopher Leerssen, NPU N

Danny Leonhardt, SAND

Edward Lindahl, NPU N

Pam Mayo, RT Civic Improvement League

Michael McPherson, Cabbagetown Initiative

Brandy Morrison, Grant Park Neighborhood Association (NPU W)

Portia Osby

Bert Stein, Stein Steel

Richard Tyler, LaFarge

Chip Watson, Parmalat Property

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Jonathan S. Lewis, Senior Planner

E. Fred Yalouris, Director of Design

CITY OF ATLANTA STAFF

Jonathan S. Lewis, Senior Project Manager

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Alison Smith, ASLA, AICP, Project Manager

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Dovetail Consulting

Mignon Allen, Project Supervisor

Dionna McClendon, Project Manager

Overview

Subarea 4 - Memorial-Glenwood, is located in the southeast portion of Atlanta, east of I-75/I-85 and bisected by I-20. It is bounded by DeKalb Avenue to the north, Moreland Avenue to the east, and Berne Street to the south. The subarea is within the Southeast Study Group for the BeltLine and is approximately 1,256 acres. The Tax Allocation District within the subarea includes 415 acres of land proposed for redevelopment and rehabilitation, including all properties within the proposed BeltLine right-of-way. The subarea and TAD also includes Hulsey Yard.

There are six neighborhoods, four Neighborhood Planning Units, and two council districts within Subarea 4 (Figure A.1). The Grant Park and Ormewood Park neighborhoods are in both council districts one and five, while the Capitol Gateway, Cabbagetown, Reynoldstown and Edgewood neighborhoods are only in district five. The Neighborhood Planning Units within the subarea include NPU-N, NPU-O, NPU-V and NPU-W. Both the Cabbagetown and Reynoldstown neighborhoods are within NPU-N; the Edgewood neighborhood within NPU-O; the Capitol Gateway neighborhood within NPU-V; and the Grant Park and Ormewood Park neighborhoods within NPU-W.

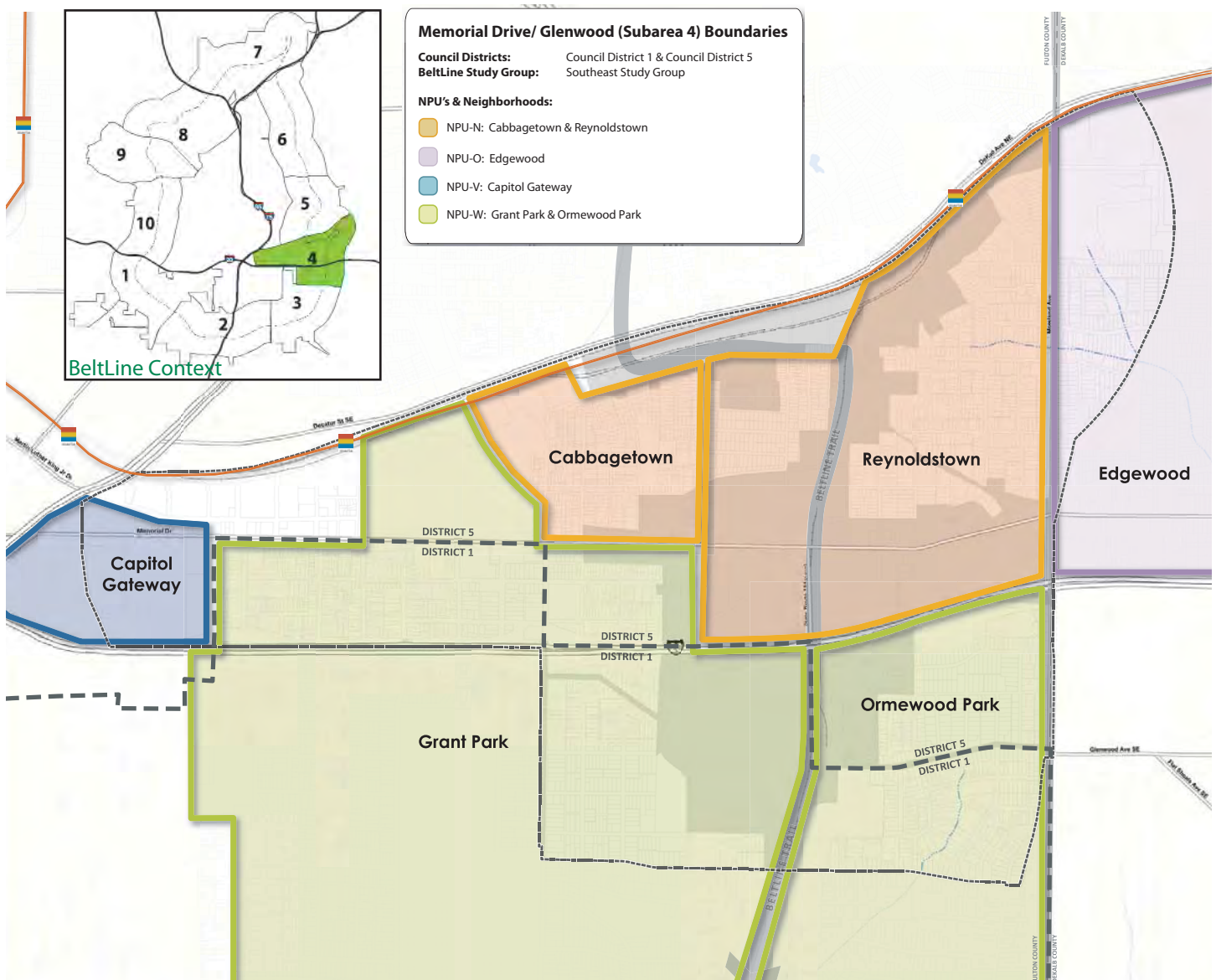


Figure 01 - Subarea Context Map

History & Cultural Resources

The history of the neighborhoods within Subarea 4 speaks today through the architecture, industry types in the area, the railroad corridor, the street networks and narrow right-of-ways. The timeline below was based on information presented in *A History of the Atlanta BeltLine and its Associated Historic Resources* -Prepared By Georgia State University - Heritage Preservation - History 8700 - Spring 2006, This timeline summarizes the development within Subarea 4 from the 1800's to present day.

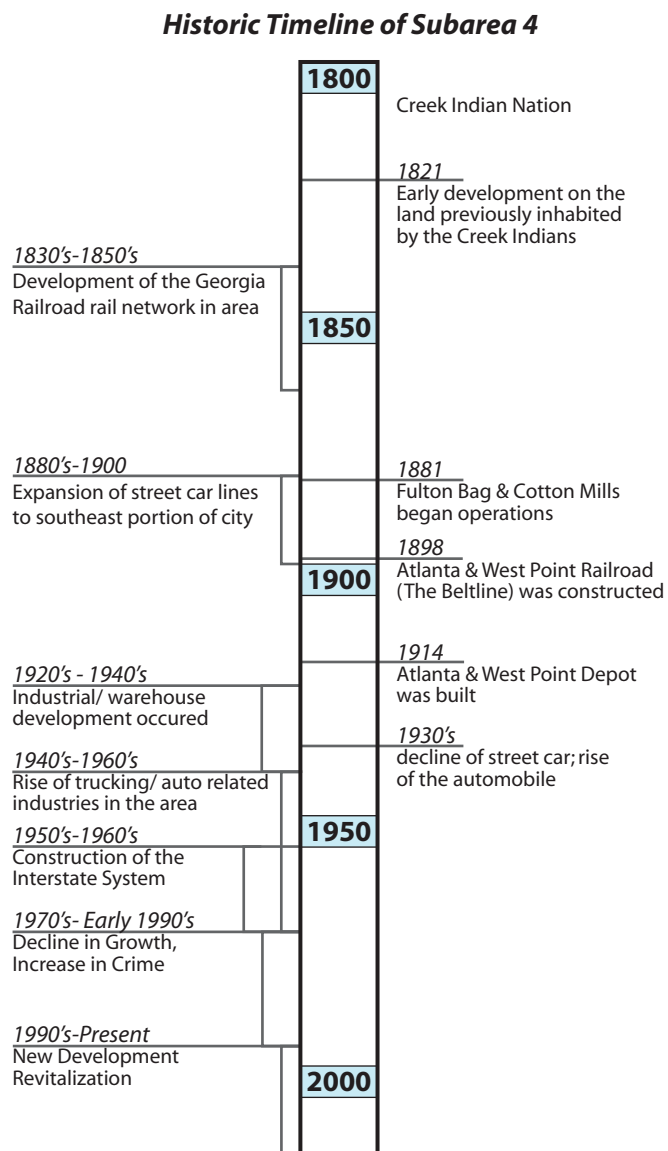


Figure 02 - Subarea Timeline

As stated in *A History of the Atlanta BeltLine and its Associated Historic Resources* "The southeast portion of the Beltline was historically used by trains (mainly those of the A&WP) as a way to circumvent the central business district of Atlanta. The southeastern part of the city has historically been, and continues to be, industrial in character. Today, many businesses revolving around the trucking industry are present within the quadrant and especially around each of the three nodes. Hulsey Yard, near the Memorial/Bill Kennedy node, is still functioning as a CSX Intermodal terminal, which utilizes both trains and trucks to transfer goods coming into the city. Hulsey Yard ranks 7th in freight volume for CSX, and is the largest intermodal carrier in the United States."

The location of railway lines directly affected the development patterns within the neighborhoods of Subarea 4. The first residents within the Reynoldstown neighborhood were freed slaves working for the Georgia Railroad. They lived in Reynoldstown because of its proximity to the railroad. The neighborhood of Cabbagetown developed in the 1880's as mill worker housing for the Fulton Bag and Cotton Mills. The combination of the mill and worker housing, the railroad and its associates industries characterized this area as a working-class neighborhood.

The construction of the Atlanta and West Point Railroad in 1898 (the Beltline) divided the Reynoldstown neighborhood both physically and socially. The African American population became concentrated in the north-west portion and the remaining areas were populated by the white working-class.

Further transportation and infrastructure developments throughout the 20th century, such as the street car system and the interstate highways, have tremendously influenced the land use and development patterns of the neighborhoods that are present today in Subarea 4.

Historic and cultural resources are key components to connectivity and preservation of character along the BeltLine Corridor. They also

provide educational opportunities on the history of Atlanta, and more specifically within Subarea 4.

There are a number of historic and cultural resources within Subarea 4, including historic neighborhoods, schools, churches and various historic structures such as the Atlanta Stockade and the Great Atlantic & Pacific Tea Company Building. The lists below show the nationally and locally designated historic features within Subarea 4.

National Register of Historic Places:

Buildings:

- Atlanta Stockade
 - Built in 1896, the Atlanta Stockade was once the largest city-built penal complex in the State. The compound consists of a prison, blacksmith shop and stables.
 - The large Neoclassical and Gothic Structure is also significant in its early use of poured and cast concrete block.
- Great Atlantic & Pacific Tea Company
 - Also known as A&P, the Great Atlantic & Pacific Tea Company became the first national supermarket in the United States. During the 1930's through 1960's, the company became an industry leader in sales with few competitors.
 - The structure along Memorial Drive was built in 1948; comprised of concrete, brick and glass.

Districts:

- Grant Park Historic District
- Grant Park North Historic District
- Cabbagetown Historic District
- Reynoldstown Historic District
- Oakland Cemetery Historic District

Individual Buildings and Districts Currently Registered by City of Atlanta

Buildings:

- Atlanta Stockade (Historic)
- Roosevelt High School (Landmark)
- Great Atlantic and Pacific Tea Company Building (Landmark)

Districts:

- Grant Park Historic District
- Cabbagetown Landmark District
- Oakland Cemetery Landmark District

Preliminary Findings by AUDC Staff of Significant Historic Resources within the BeltLine TAD

The Atlanta Urban Design Commission(AUDC) in conjunction with the City of Atlanta Department of Planning & Community Development conducted a survey of the entire BeltLine Corridor titled Historic Preservation & the BeltLine. The mission of the AUDC survey is "to integrate historic preservation into the (BeltLine) planning process" and to identify "historic resources (as) a key component of the BeltLine's future."

Preliminary Findings within the BeltLine TAD for Subarea 4 include:

Buildings:

- Atlanta Stockade
- Great Atlantic and Pacific Tea Company Building
- Martha Brown United Methodist Church
- Masonic Grand Lodge
- Tech High
- Atlanta & West Point Depot
- Pittsburg Plate Glass Company
- Nextran Truck Center
- Parmalat (Façade)

Districts:

- Grant Park
- Grant Park – Northeast Expansion
- Cabbagetown
- Oakland Cemetery

The Historic & Cultural Resources Map (see Fig B.2) displays the information described above, as well as the nationally and locally listed features. Other resources noted on the map include community facilities such as churches and schools within the area.

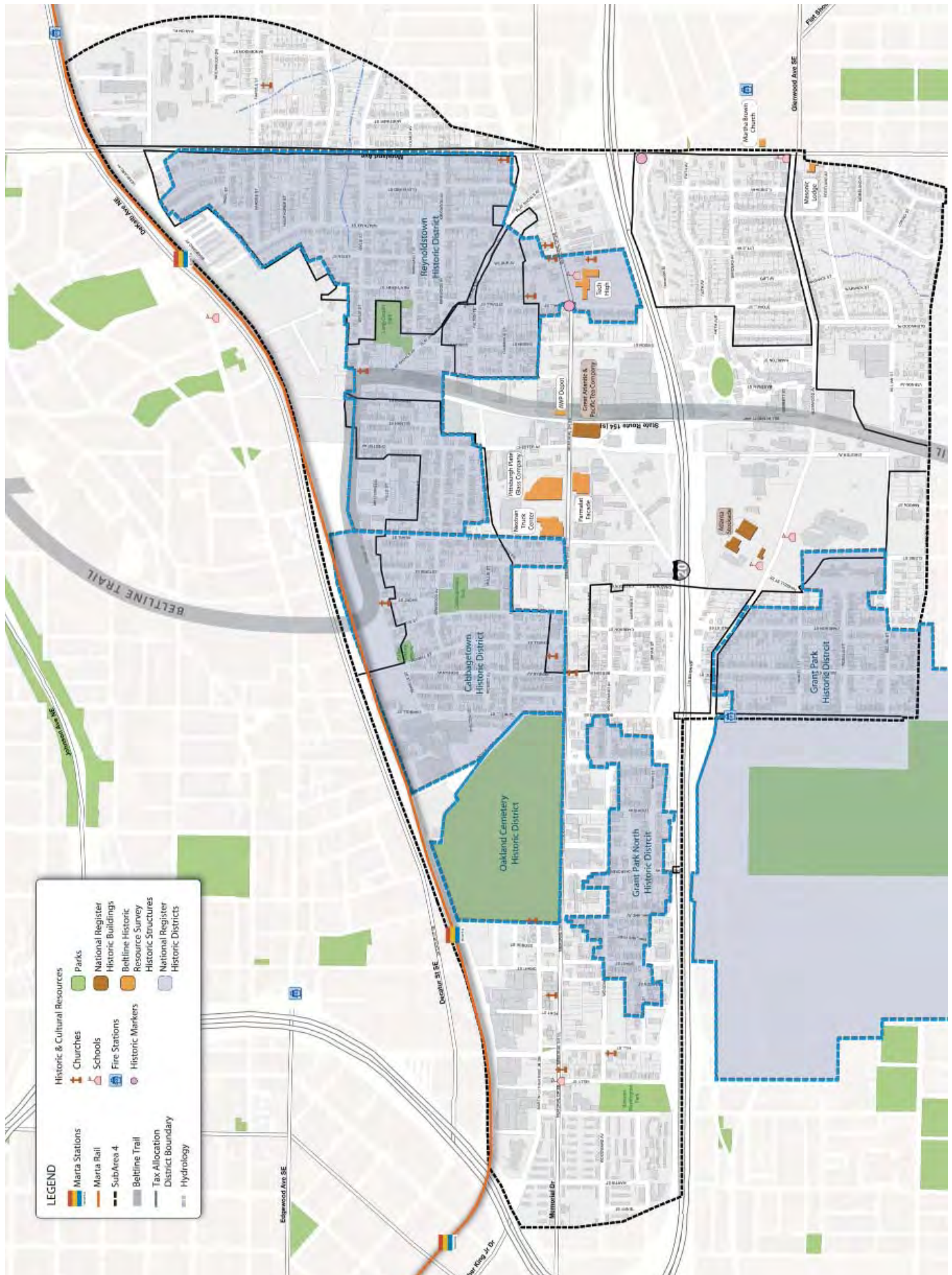


Figure 03 - Historic & Cultural Resources Map

Community Patterns & Urban Design

Patterns of development are understood by examining the individual components that are weaved together to create a place. These components include lot size, block size, buildings and streets. The scale and frequency of each component defines the development pattern for an area.

Subarea 4 has seen an enormous amount of development in the past century. The comparison of the 1892 Bird's eye view with present day aerial

imagery captures many of the development patterns that have occurred over time (figure x.x). The primary influence on development in Subarea 4 has been transportation. As previously mentioned, the location of railway lines directly affected the development patterns within the neighborhoods of Subarea 4. This is also true with further transportation and infrastructure developments throughout the 20th century. There are a variety of different development patterns seen within the subarea that directly influence the character of the area.



Figure 04 - Bird's eye view of Atlanta, Saunders and Kline, c1892



Figure 05 - Present day Bird's eye view, Google Earth

The residential neighborhoods within Subarea 4 are divided by the rail line running north-south and Memorial Drive and I-20 running east-west. The residential neighborhoods north of I-20 primarily consist of single family homes on small lots with small blocks and narrow right-of-ways. The Cabbagetown neighborhood exists due to the presence of the Cotton Mill. Historically, this neighborhood was a 'mill village' so the lots were small to accommodate the mill workers. The Reynoldstown neighborhood was a community focused on the railroad, due to its access and jobs. The lots/ homes accommodated the residents and allowed close proximity to the railyard. The neighborhoods south of I-20 have slightly larger lots than the neighborhoods north of I-20 (with the exception of the new Glenwood Park development), making the neighborhood less dense.

The development patterns along Memorial Dr. differ drastically from the neighborhoods to the north and south. The corridor is characterized by large lots, large blocks, large building footprints, wide right-of-way but less street connectivity. The area is dominated by industrial and auto related uses and lacks pedestrian accessibility and streetscaping. Several historic buildings exist along the Memorial Drive corridor. Although some need repair, retaining these structures/facades will strengthen the character of the area with redevelopment.

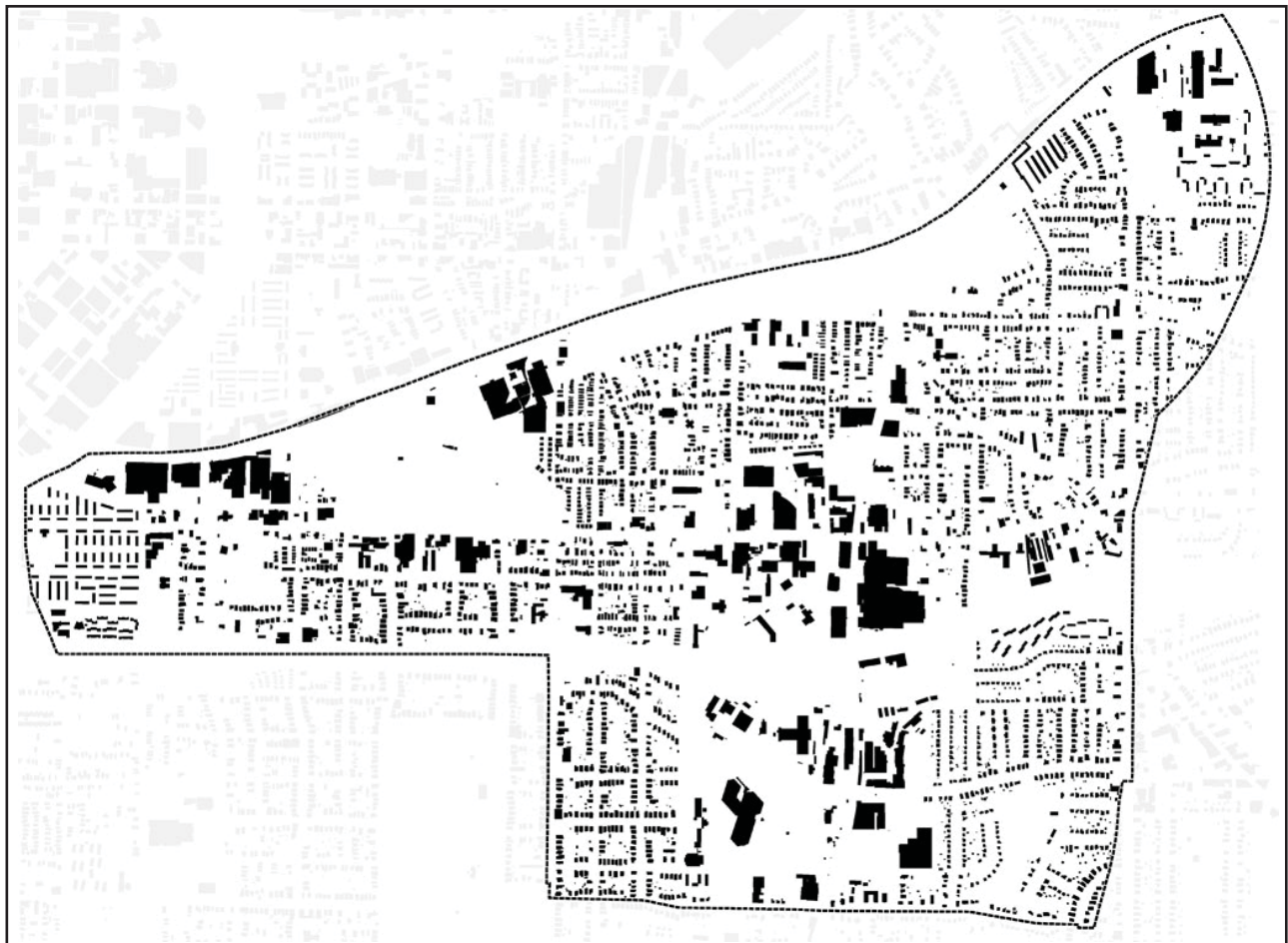


Figure 06 - Subarea 4 Figure-Ground Study Map

Population/ Employment

This section provides a summary of population, household and employment projections for Subarea 4. These projections are based on long term trends and may not reflect true current conditions.

Population & Households

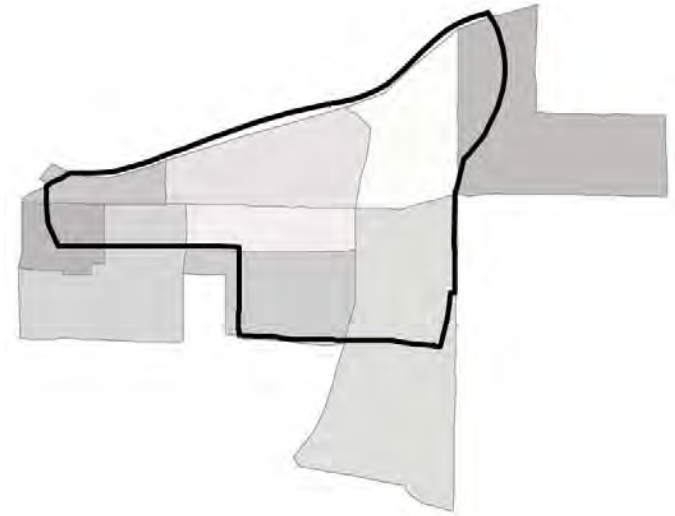
Current data:

(Source: GA Power, ESRI Business Analyst)

- 2009 Population = 11,860
- 2009 Households = 5,146

Forecast 2005-2030:

- 2008 RCLCO Market Study for the Beltline projects an average of 7% growth every 5 years in household from 2005-2030
- ARC Population and Housing projections for 2005-2030 are illustrated on graph (Figure D.1). (Source: Atlanta Regional Commission, 2006))



Note: the forecast areas used are Transportation Analysis Zones (TAZ) that are partially and completely within Subarea 4

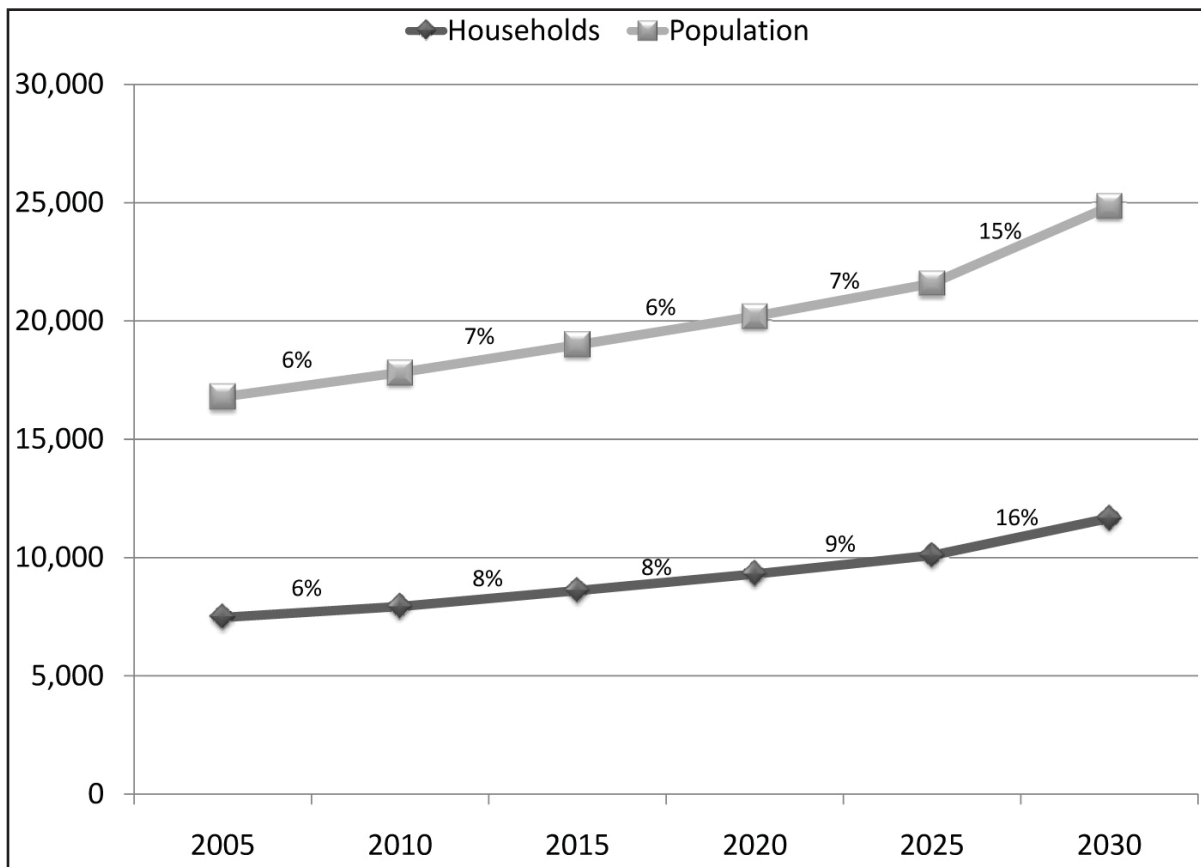


Figure 07 - Household & Population Forecast

Employment

Current data:

(Source: GA Power, ESRI Business Analyst)

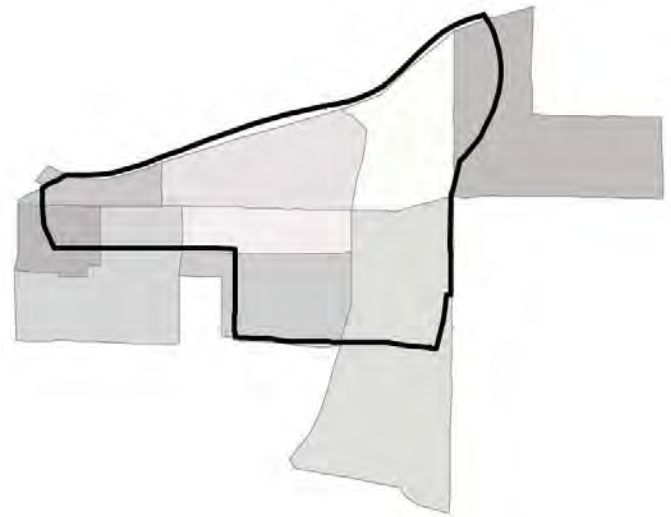
2009 Pop. 16+ in Labor Force

- Employed = 82.5%
- Unemployed = 17.5%

Forecast 2005-2030:

- ARC Employment projections for 2005-2030 are illustrated on graph (Figure D.2).

(Source: Atlanta Regional Commission, 2006)



Note: the forecast areas used are Transportation Analysis Zones (TAZ) that are partially and completely within Subarea 4

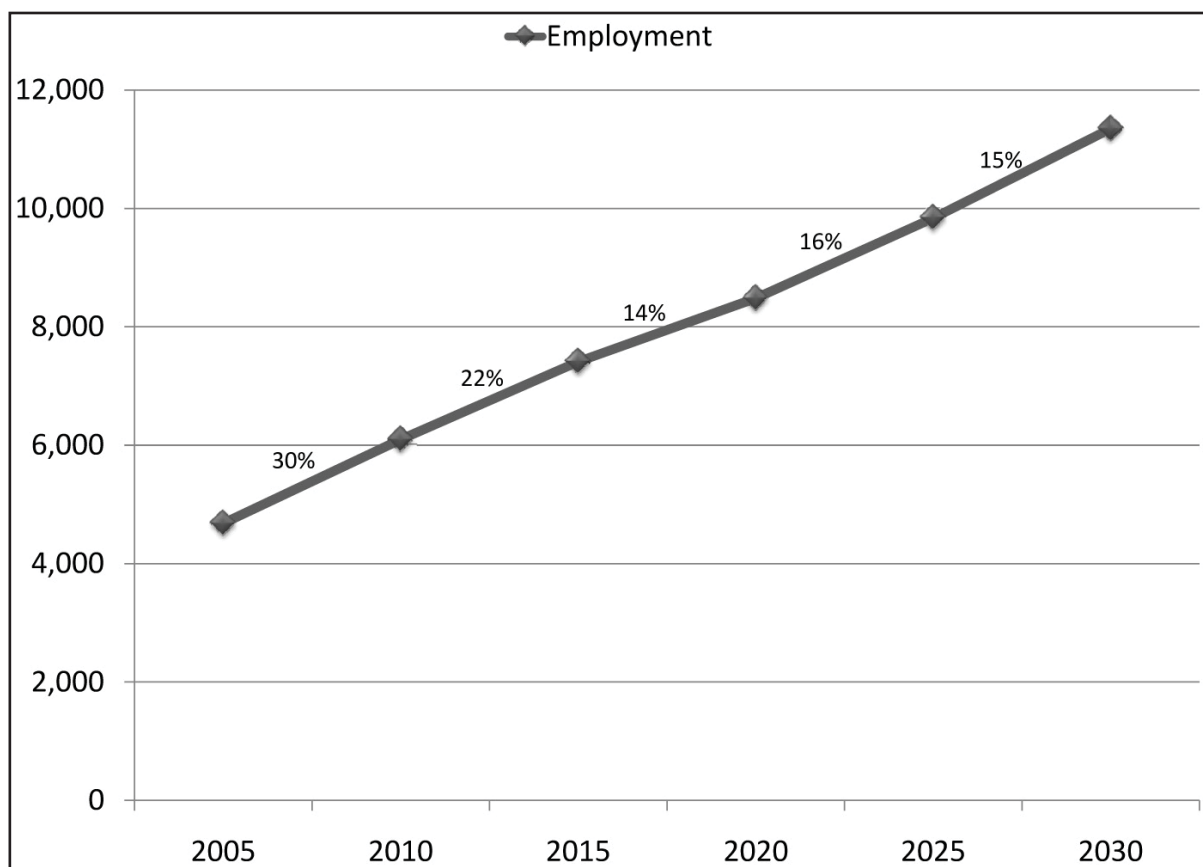


Figure 8 - Employment Forecast

Employment Patterns

Subarea 4 employment patterns for Work Area Profile and Labor Shed were generated through the US Census Bureau's Local Employment Dynamics website with an interactive tool called "OnTheMap".

Work Area Profile Analysis:

- The Work Area Profile Analysis map shows concentrations of workers based on the Subarea 4 boundary (Figure D.3).

- Job Industry Types in Subarea 4 are included in the accompanying report and are summarized below:
 - 20% - Manufacturing
 - 20% - Retail
 - 14% - Accommodation and Food Services
 - 10% - Transportation and Warehousing
 - 6% - Health Care/Social Assistance
 - 5% - Wholesale trade
 - 5% - Information

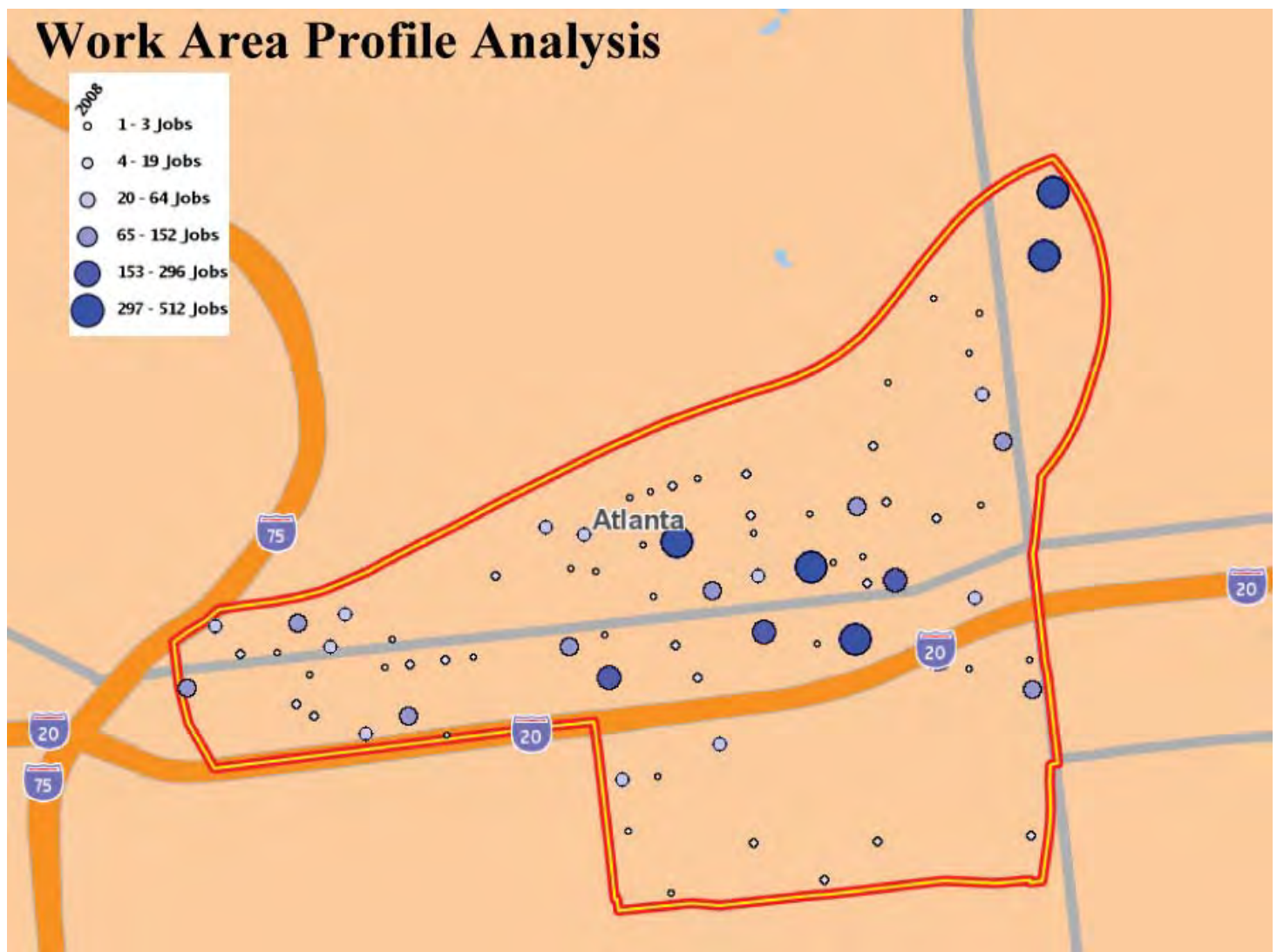


Figure 09 - Work Area Profile Analysis Map
Source: United States Census Bureau

Labor Shed Analysis:

- The Labor Shed Analysis map shows where workers live who are employed in Subarea 4 (Figure D.4).
- Percentages by county are included in the accompanying report and are summarized below:
 - 23% - Fulton Co
 - 21% - DeKalb Co.
 - 9% - Gwinnett Co.
 - 7.5% - Cobb Co.
 - 7% - Clayton Co.
 - 5% - Henry Co.
 - 2.6% - Rockdale Co.
 - 2.5% - Fayette Co.
 - 2% - Newton Co.
 - 2% - Coweta Co.

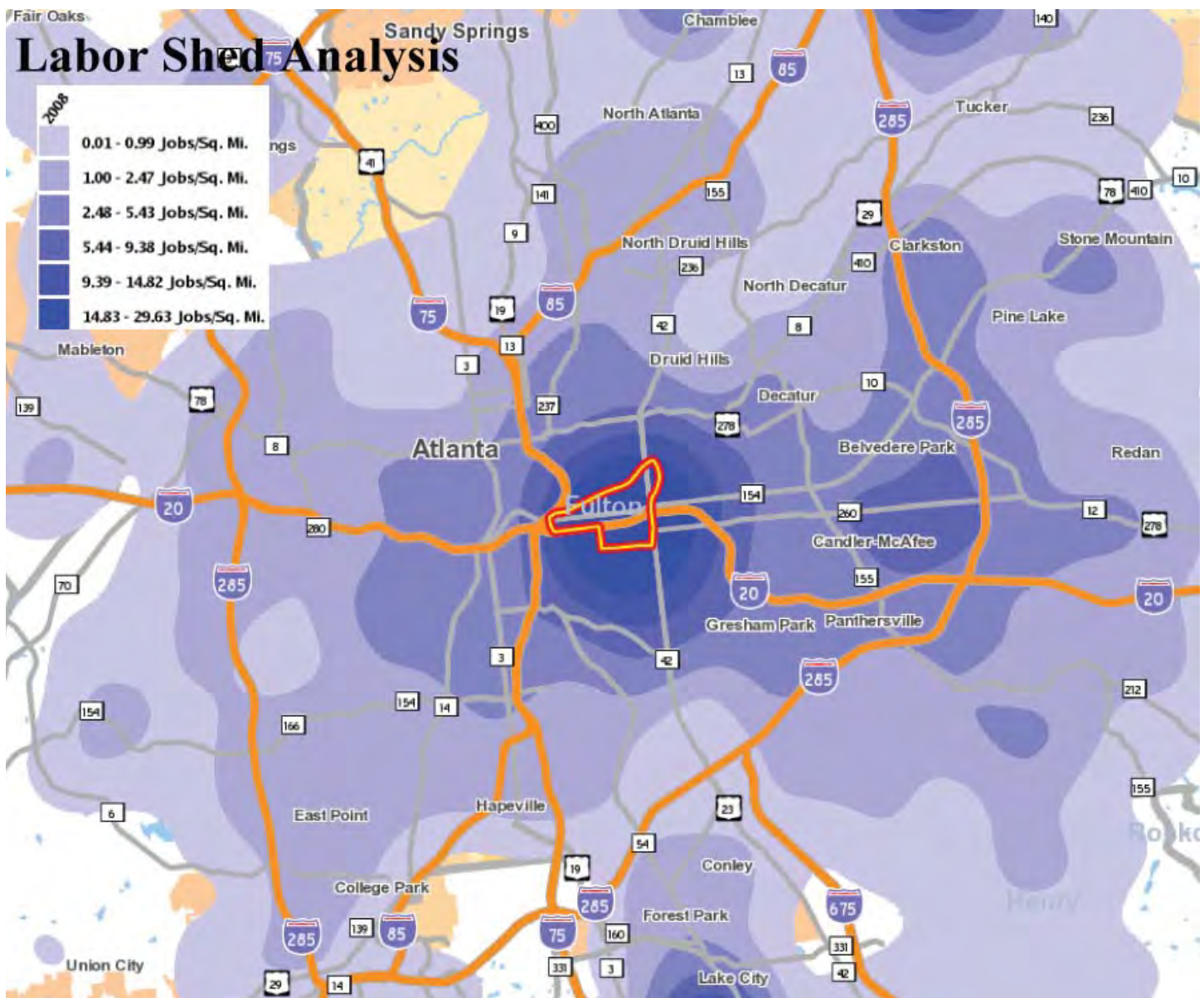


Figure 10 - Labor Shed Analysis Map
Source: United States Census Bureau

Previous Studies/ Planning Efforts

A significant part of the initial planning effort for Subarea 4 involved the development and analysis of a comprehensive inventory of existing plans, projects, studies, conditions and agreements that may influence or impact the planning process.

The purpose of the inventory and analysis was to review the goals, objectives and recommendations for land use, transportation, parks, infrastructure, urban design and other key planning elements to determine the points of consensus and identify inconsistencies among the plans. In addition, the analysis ensured that the recommendations developed for Subarea 4 would continue to build upon and refine the community values, principles and recommendations expressed in previous planning initiatives.

The previous planning efforts inventory and analysis includes:

- City-Wide Plans:
 - Atlanta Strategic Action Plan (ASAP)
 - Atlanta Greenspace Plan
 - Connect Atlanta Plan
 - ARC's Envision 6 – Regional Transportation Plan
 - MARTA Planning Activities
 - Mayor's Economic Development Plan
 - City of Atlanta Capital Improvement Projects
- BeltLine Plans:
 - Atlanta BeltLine Redevelopment Plan (2005)
 - Atlanta BeltLine Street Framework Plan (2006)
 - BeltLine Environmental Impact Statement (EIS) (in progress)
 - BeltLine Brownfield Survey
 - BeltLine Cultural Vision
 - BeltLine Emerald Necklace
 - Updated Market Forecasts for the Atlanta BeltLine Study Area

- LCI Studies:
 - Memorial Dr – MLK Dr Area Revitalization Study (2003)
 - Ponce/ Moreland Corridor Study (2005)
 - South Moreland Ave Corridor LCI (2008)
- Neighborhood Plans:
 - Imagine Downtown Master Plan (2009)
 - Reynoldstown Neighborhood Master Plan (2000)
 - Oakland Cemetery Master Plan (2008)
 - East Atlanta Village Plan (2000)
 - Cabbagetown Traffic Study (2005)
 - East Side Parks Conceptual Vision: Edgewood, Kirkwood & East Lake Neighborhoods (2009)
- Recent Development Activity:
 - Developments of Regional Impact (DRI's)
 - Recently Permitted Projects

The key recommendations from the above plans have been grouped into two categories and are displayed on the Previous Studies Maps for Land Use and Transportation (Figures xx and xx).

Previous Studies for Land Use

The following plans have been included in the inventory and analysis of previous studies for Land Use recommendations map:

- BeltLine Redevelopment Plan (2005)
- City of Atlanta Future Land Use (2010)
- Memorial Dr – MLK Dr Area Revitalization Study (2003)
- South Moreland Ave Corridor LCI (2008)
- Imagine Downtown Master Plan (2009)
- Reynoldstown Neighborhood Master Plan (2000)
- Ponce/ Moreland LCI (2005)

The summary of previous studies for Land Use utilizes the BeltLine Redevelopment Plan as a base to compare and note consensus and inconsistencies with other planning study recommendations. The first comparison is between the BeltLine Redevelopment Plan and the City of Atlanta Future Land Use Plan.

Once inconsistencies are noted between the BeltLine Redevelopment Plan and the City of Atlanta Future Land Use, key recommendations from other previous planning efforts within Subarea 4 are compared to the BeltLine Redevelopment Plan and/or the City of Atlanta Future Land Use Plan and further inconsistencies (if any) are noted.

Two of the previous studies analyzed have been incorporated into either the BeltLine Redevelopment Plan, The City of Atlanta Future Land Use Plan or into more recent planning efforts inventoried during this Previous Studies Summary:

- Memorial Dr – MLK Dr Area Revitalization Study (2001/2003)
This plan and its recommendations for Land Use have been incorporated into the Imagine Downtown Plan and the City of Atlanta Future Land Use.
- South Moreland Ave Corridor LCI (2008)
This plan and its recommendations for Land Use have been incorporated into the the City of Atlanta Future Land Use.

The remaining previous studies analyzed contain inconsistencies with either the BeltLine Redevelopment Plan, The City of Atlanta Future Land Use Plan or both plans.

- Imagine Downtown Master Plan (2009)
- Reynoldstown Neighborhood Master Plan (2000)
- Ponce/ Moreland LCI (2005)

Previous Studies for Transportation

The following plans have been included in the inventory and analysis of previous studies for Transportation recommendations map:

- BeltLine Street Framework Plan (2005)
- Cabbagetown Traffic Study (2005)
- Ponce/ Moreland LCI (2005)
- South Moreland Ave Corridor LCI (2008)
- Connect Atlanta Plan (2008)
- Atlanta Greenspace (2009)

The Transportation recommendations that will be built upon during this planning process include:

- Numerous proposed bike routes throughout the subarea; connecting to that framework
- Proposed new streets and creating connections for existing streets within the TAD
- Multiple intersection improvements & realignments along Moreland Ave
- EIS alignments for transit and trail

A more detailed explanation of the key previous transportation recommendations can be found in the Transportation Facilities section of this report.

Summary of Previous Studies | Land Use

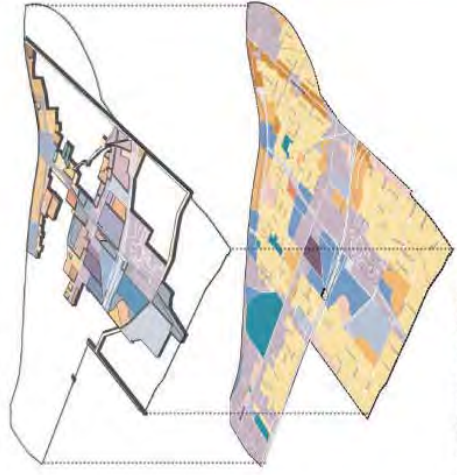
Numerous previous planning efforts have been completed for areas within Subarea 4 of the BeltLine. To ensure that all previous efforts that may influence or impact the planning process are taken into consideration, a comprehensive inventory and analysis has been created to determine points of consensus and identify inconsistencies. The following plans have been included in the inventory and analysis of previous studies on Land Use recommendations:

- BeltLine Redevelopment Plan (2005)
- City of Atlanta Future Land Use (2010)
- Memorial Dr - MLK Dr Area Revitalization Study (2003)
- South Moreland Ave Corridor LCI (2008)
- Imagine Downtown Master Plan (2009)
- Reynoldstown Neighborhood Master Plan (2000)
- Ponce/ Moreland LCI (2005)

Step One

The summary of previous studies for Land Use utilizes the BeltLine Redevelopment Plan as a base to compare and note consensus and inconsistencies with other planning study recommendations. The first comparison is between the BeltLine Redevelopment Plan and the City of Atlanta Future Land Use Plan.

BeltLine Redevelopment Plan



Step Two

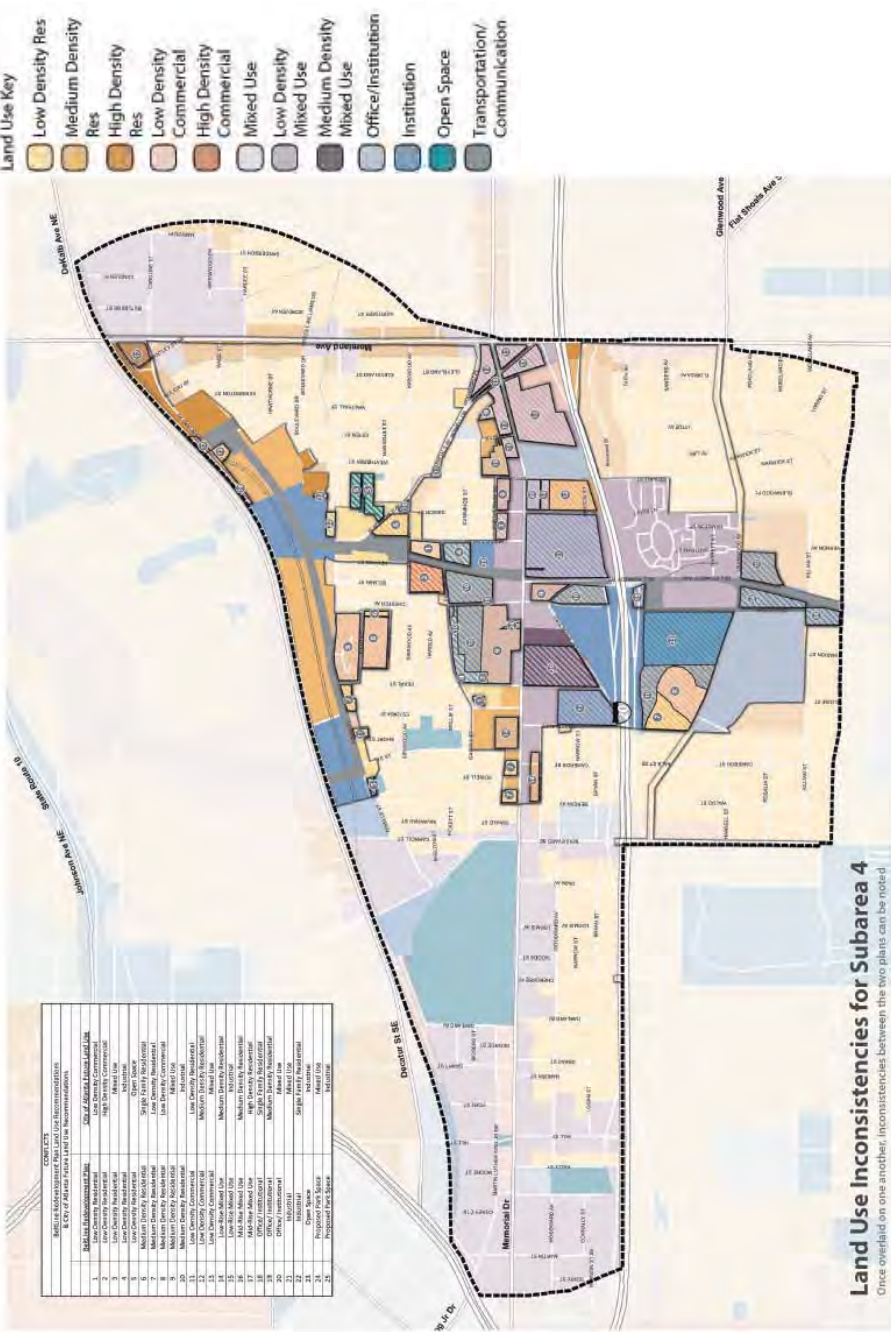
Once inconsistencies are noted between the BeltLine Redevelopment Plan and the City of Atlanta Future Land Use, key recommendations from other previous planning efforts within Subarea 4 are compared to the BeltLine Redevelopment Plan and/or the City of Atlanta Future Land Use Plan and further inconsistencies (if any) are noted.

Two of the previous studies analyzed have been incorporated into either the BeltLine Redevelopment Plan, The City of Atlanta Future Land Use Plan or into more recent planning efforts inventoried during this Previous Studies Summary:

- Memorial Dr - MLK Dr Area Revitalization Study (2003)
The plan for the revitalization of the area around the Memorial Dr and MLK Dr intersection has been incorporated into the Imagine Downtown Plan and the City of Atlanta Future Land Use.
- South Moreland Ave Corridor LCI (2008)
This plan and its recommendations for Land Use have been incorporated into the City of Atlanta Future Land Use.

The remaining previous studies analyzed contain inconsistencies with either the BeltLine Redevelopment Plan, The City of Atlanta Future Land Use Plan or both plans.

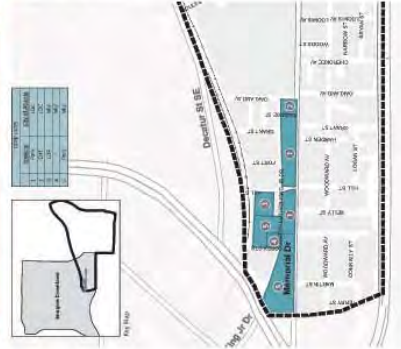
- a. Imagine Downtown Master Plan (2009)
- b. Reynoldstown Neighborhood Master Plan (2000)
- c. Ponce/ Moreland LCI (2005)



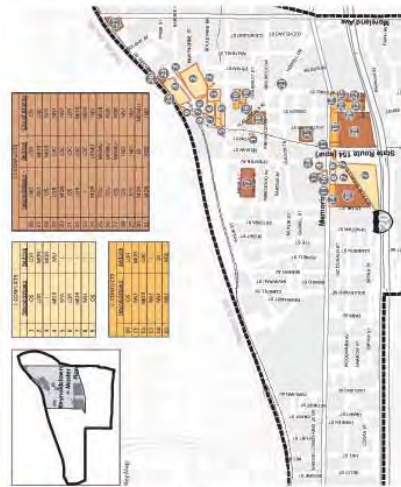
Land Use Inconsistencies for Subarea 4

Once overlaid on one another, inconsistencies between the two plans can be noted.

a. Imagine Downtown Conflict Study



b. Reynoldstown Neighborhood Conflict Study



c. Ponce/ Moreland LCI Conflict Study



Figure 11 - Previous Studies - Land Use

Transportation Facilities

Existing Network & Connectivity

Summary

- Based on simple connectivity ratios (number of road links divided by intersections) the study area performs below urban areas in Atlanta, such as Midtown.
- As seen in the table below, selected areas such as the Memorial Drive / Boulevard area perform somewhat similar to Midtown, particularly when comparing the ratio of intersections to dead-ends.
- While the overall study area performed well based on these analyses, the figure ground diagrams to the right for midtown (above) and Memorial Drive (below) visually show the difference in block size and density of street connections.

Area	Analysis 1*	Analysis 2**
BeltLine Study Area 4	1.3	0.90
Midtown	1.6	1
Memorial Drive & Boulevard	1.4	0.96

Table 01 - Connectivity Analysis

*"The number of roadway links divided by the number of roadway nodes (Ewing, 1996).... a score of 1.4 is the minimum required for a walkable community." (VTPI, 2007)

**"The ratio of intersections divided by intersections and dead-ends (USEPA, 2002). An index over .75 is desirable." (VTPI, 2007)

Source:

Reid, **Ewing** (1996), *Best Development Practices; Doing the Right Thing and Making Money at the Same Time*, Planners Press (www.planning.org), 1996.

USEPA (2002), *Smart Growth Index (SGI) Model*, U.S. Environmental Protection Agency

(www.epa.gov/smartgrowth/topics/sgipilot.htm), 2002.

Victoria Transport Policy Institute (2007), *Roadway Connectivity; Creating More Connected Roadway and Pathway Networks*, (www.vtpi.org/tm.com)

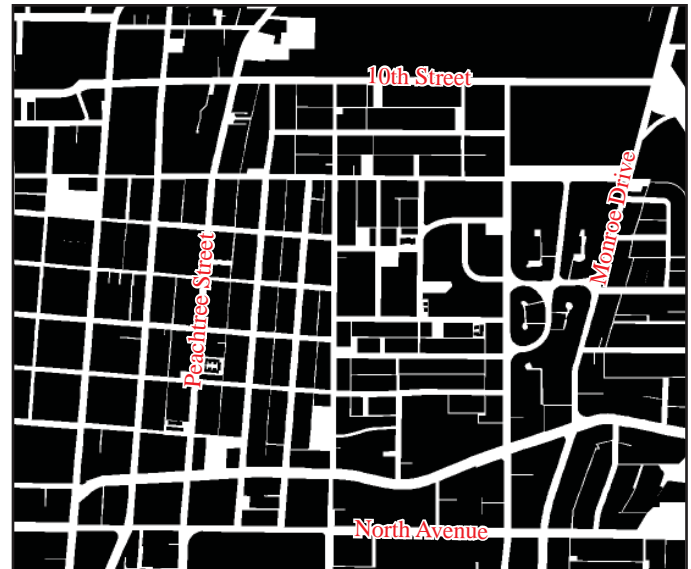


Figure 13 - Midtown Connectivity

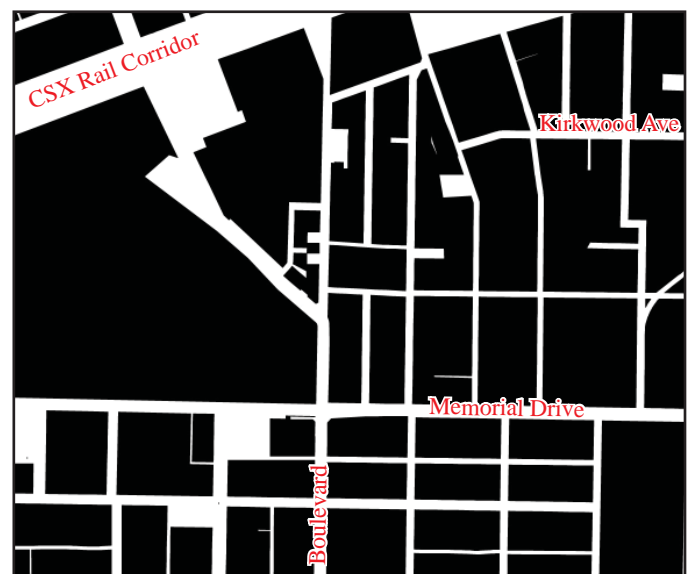
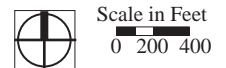


Figure 14 - Memorial Drive & Boulevard Connectivity



Effective Network

Summary

- There are 42 miles of road network within the Study Area boundary.
- Of those 42 miles, 31 miles, or 74%, connect to more than one street to form a connected network.
- These “effective network” streets are the streets that provide real connectivity in the area, providing the multiple travel routes that move residents and regional trips.
- The areas where lack of effective network becomes most apparent are the areas around the CSX right-of-way and Interstate 20, where connections across these impedences are spaced far apart.
- The effective-network diagram shows emerging “superblocks” in the study area, or large areas that lack vehicular connectivity and inhibit through-traffic.

East-West & North-South Connections

Summary

- Connectivity in the study area relies heavily on the north-south connections of Boulevard and Moreland Avenue, with some reliance on Hill Street for connectivity to downtown.
- There are two major east-west connections within the study area: Memorial Drive and Glenwood Avenue. DeKalb Avenue, just north of the study area, also provides east-west connectivity.
- The existing rail lines and accompanying right-of-way serve as a significant barrier to increased north-south connections. The primary north-south access over the rail lines for motorists and pedestrians is the Krog Street Tunnel. The pedestrian bridge at the Inman Park MARTA station also serves as a pedestrian connection over the rail lines.
- The constraints of Interstate 20 and the CSX right of way have put pressure on Boulevard and Moreland Avenue, which are the only two streets that connect across both constraints.

Scale in Feet
0 2,000



- North-South Connections
- East-West Connections
- Railroads



Figure 15 - Existing Street Network



Figure 16 - Effective Street Network

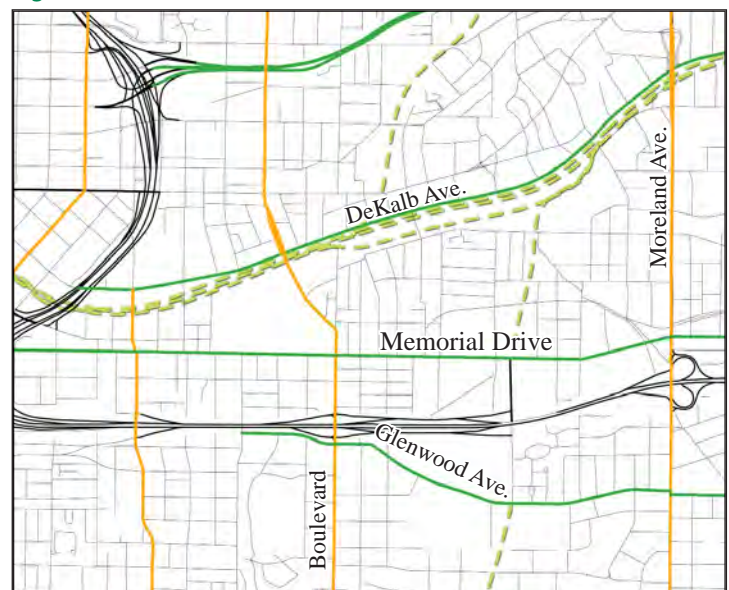


Figure 17 - North-South & East-West Street Network

Superblock Analysis

Superblocks can be defined as blocks with edge length greater than 1,000 feet or area greater than 20 acres. Larger block sizes favor larger building footprints on contiguous portions of land; however, this is done at the expense of disrupted vehicular traffic flow and more cumbersome pedestrian and bicycle activity. Recognizing these blocks in the study area identifies where areas of little connectivity and interrupted traffic flow exist. The table below summarizes simple measures that show the connectivity potential, while the map displays locations of identified superblocks.

Summary

As seen in the table below, the study area performs relatively well with respect to the number of blocks per square mile, relative to other areas in Atlanta.

Block #1: 17.7 Acres

- This block is bordered by Fulton Terrace, Chester Avenue, Memorial Drive, and Pearl Street. The Grant Street Transit Connectivity Alternative borders this block to the south.

Block #2: 15.3 Acres

- Fulton Terrace, Holtzclaw Street, Memorial Drive, and Chester Avenue make up the boundaries of this superblock. It shares Chester Avenue as an edge with Block #1. This block borders all three potential connectivity alternatives.

Block #3: 15.8 Acres

- This block falls between Memorial Drive and Interstate 20, with Stovall Street and Howell Drive forming the other two boundaries. It is located approximately 1,200 feet east from where the three connectivity alternatives converge.

Block #4: 37.3 Acres

- This block borders both Block #1 and Block #2 to the south. It falls within the boundaries of Memorial Drive, Bill Kennedy Way, Interstate 20, and Chastain Street, and also contains portions of Chester Avenue and Pearl Street and all of Old Flat Shoals Road. The frontage on Memorial Drive totals over 1,600 feet (or just under 1,000 feet between Pearl and Chester). This block is adjacent to the convergence of the three connectivity alternatives.

Block #5: 34.3 Acres

- This block is bordered by Interstate 20, Bill Kennedy Way, Glenwood Avenue, and Kalb Street. It is just to the west of Glenwood Park and to the north of Maynard Jackson High School. The main transit alignment passes along the eastern border of this superblock.

Block #6: 26.6 Acres

- A tributary to Intramural Creek runs through the middle of this block. Bordering roads include Glenwood Avenue, Hemlock Circle, Berne Street, Glenwood Place, Warwick Street, and Portland Avenue. This block is located approximately 1,000 feet to the east of the main transit alignment.

Measures			
	Street Miles (per sq. mile)	Intersections (per sq. mile)	Blocks (per sq. mile)
Downtown	26.7	234	151.5
Decatur	15.9	96.9	39.4
Ansley Park	15.5	93.9	40.1
Va. Highland	14.4	82.3	34.5
Dunwoody	14	67.1	20.6
Study Area	20.6	199.3	84.0

Table 02 - Measures of Streets, Intersections and Blocks per Square Mile

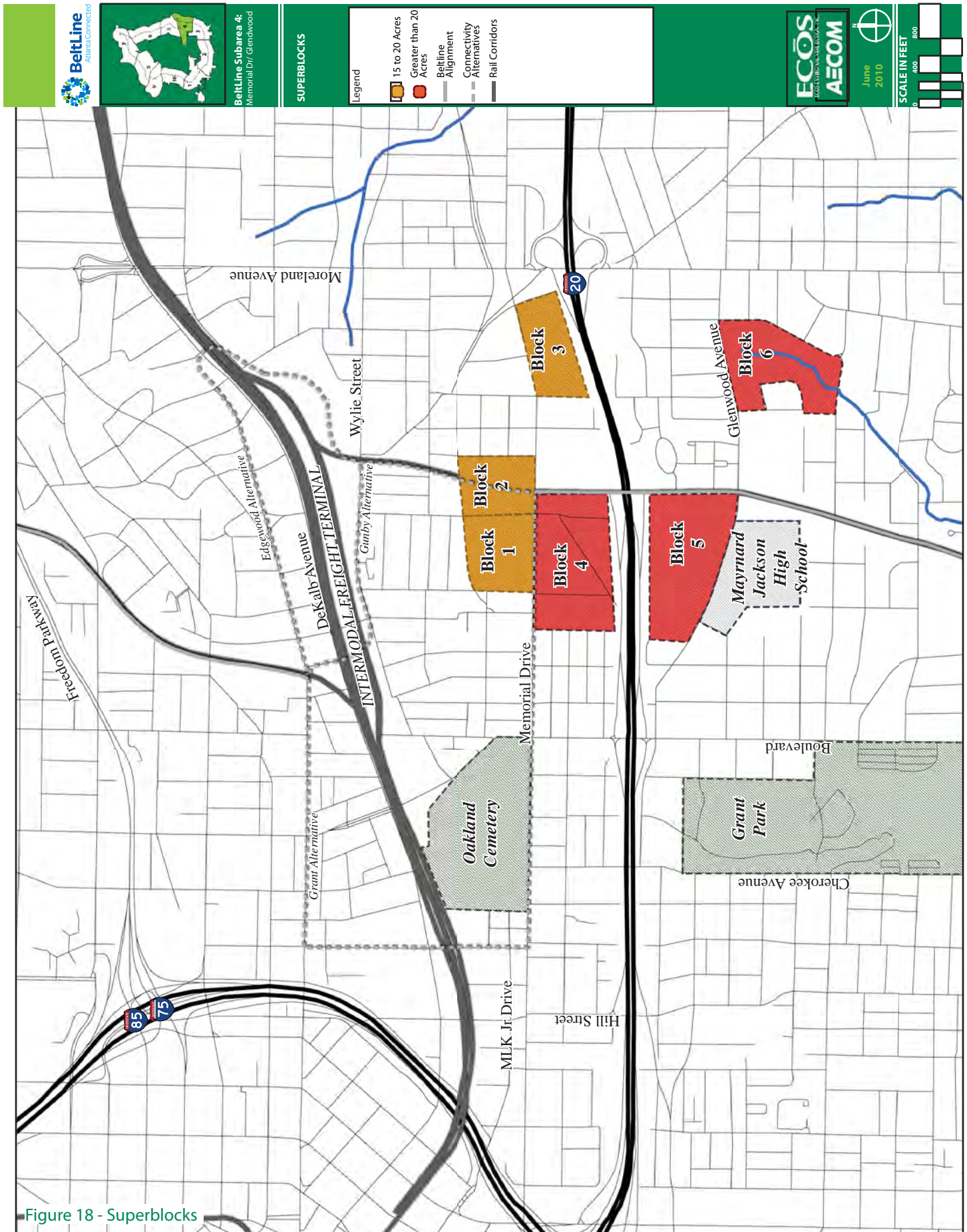


Figure 18 - Superblocks

Historic & Projected Traffic Counts

Current traffic counts were analyzed within the study area. The major corridors of Memorial Drive, Moreland Avenue, and Boulevard were further studied for historic and projected traffic counts between the years 2003 and 2030.

Summary

- Memorial Drive east of Boulevard saw a drastic increase in traffic between 2005 and 2007, showing more continuity with the traffic west of Boulevard.
- Moreland Avenue north of Interstate 20 experienced a 20% increase in traffic between 2003 and 2006, only to drop by 14% from 2006 to 2008.
- Traffic on Boulevard has been decreasing since 2005 at an overall rate of 29%.
- Future projections show relatively constant traffic volumes for Boulevard, while traffic volumes on Memorial Drive and Moreland Avenue are projected to grow substantially.
- Memorial Drive east of Boulevard is projected to have the highest growth in traffic with an increase of 138% by 2030.

Memorial Drive (W)		Memorial Drive (E)		Boulevard		Moreland Ave (N)		Moreland Ave (S)	
Year	Volume	Year	Volume	Year	Volume	Year	Volume	Year	Volume
2003	10,201	2003	2,470	2003	25,813	2003	27,628	2003	26,543
2004	10,383	2004	2,514	2004	26,274	2004	28,127	2004	27,017
2005	10,480	2005	2,530	2005	26,530	2005	29,840	2005	27,290
2006	12,420	2006	9,520	2006	24,510	2006	33,400	2006	27,010
2007	12,420	2007	11,700	2007	22,520	2007	30,600	2007	27,040
2008	11,700	2008	11,010	2008	18,910	2008	28,800	2008	25,440
2020	22,103	2020	23,462	2020	19,514	2020	52,042	2020	41,556
2030	26,824	2030	26,210	2030	22,098	2030	56,610	2030	46,478

Table 03 - Projected Volume from ARC TDM

Source: Georgia Department of Transportation, The Atlanta Regional Commission's TDM

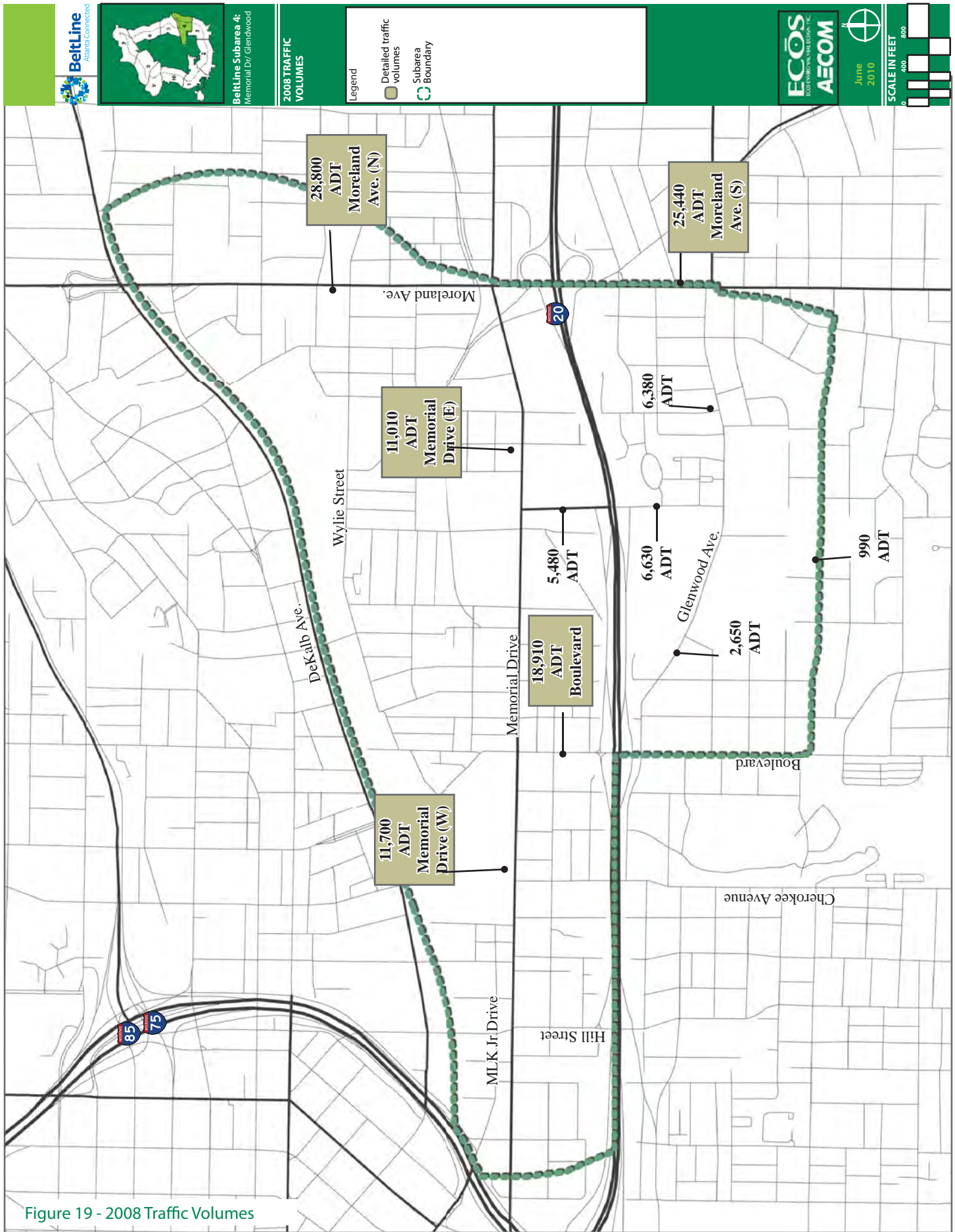


Figure 19 - 2008 Traffic Volumes

Intersection Level of Service

Current turning movement counts were collected at ten intersections within the study area. These counts were used to construct a model of the existing traffic conditions at these intersections. Intersection level of service was calculated using a network optimization. A summary of significant findings is below, highlighting intersections that have relatively low levels of service.

Summary

Intersection approach levels of service are color-coded according to the color scale below.

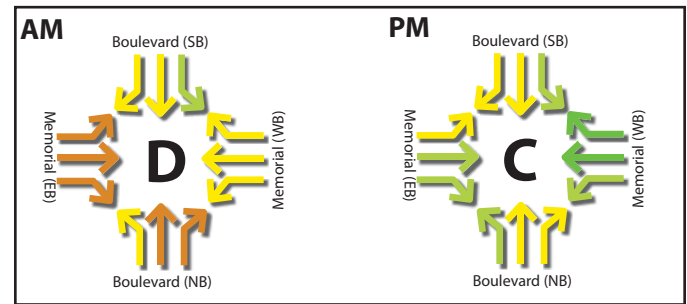


The level of service score is calculated based on the average total delay experienced by motorists at the intersection. As vehicles approach an intersection, they will experience some amount of delay due to the presence of a traffic signal. The average total delay is based on the total delay experienced by vehicles on a given approach weighted by the total volume of that approach. The table below explains how each level of service "grade" corresponds to a delay value, as expressed in seconds.

Level of Service	Average Delay (in seconds)
A	10 or less
B	10.1 to 20
C	20.1 to 35
D	35.1 to 55
E	55.1 to 80
F	greater than 80

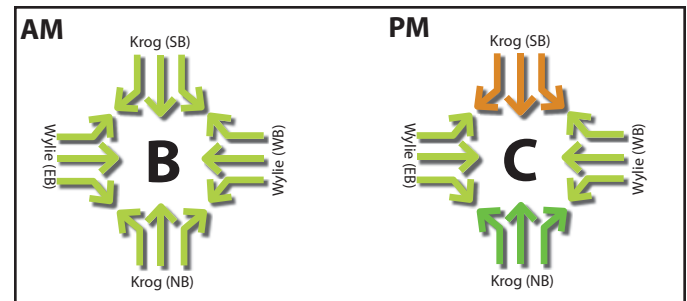
Table 04 - Level of Service and Average Delay

Figure 20 - Memorial Drive & Boulevard Diagram



Traffic at this intersection in the morning is affected most by the northbound approach, which experiences more traffic than the other three approaches combined. The evening traffic is a little more balanced, but the north/south approaches still contain a majority of the traffic flow.

Figure 21 - Krog Street & Wylie Street Diagram



Krog Street southbound shows significant traffic during the afternoon peak time period relative to the other approaches. This is likely a result of Krog Street being one of only a few connection points across the CSX and MARTA rail Lines.

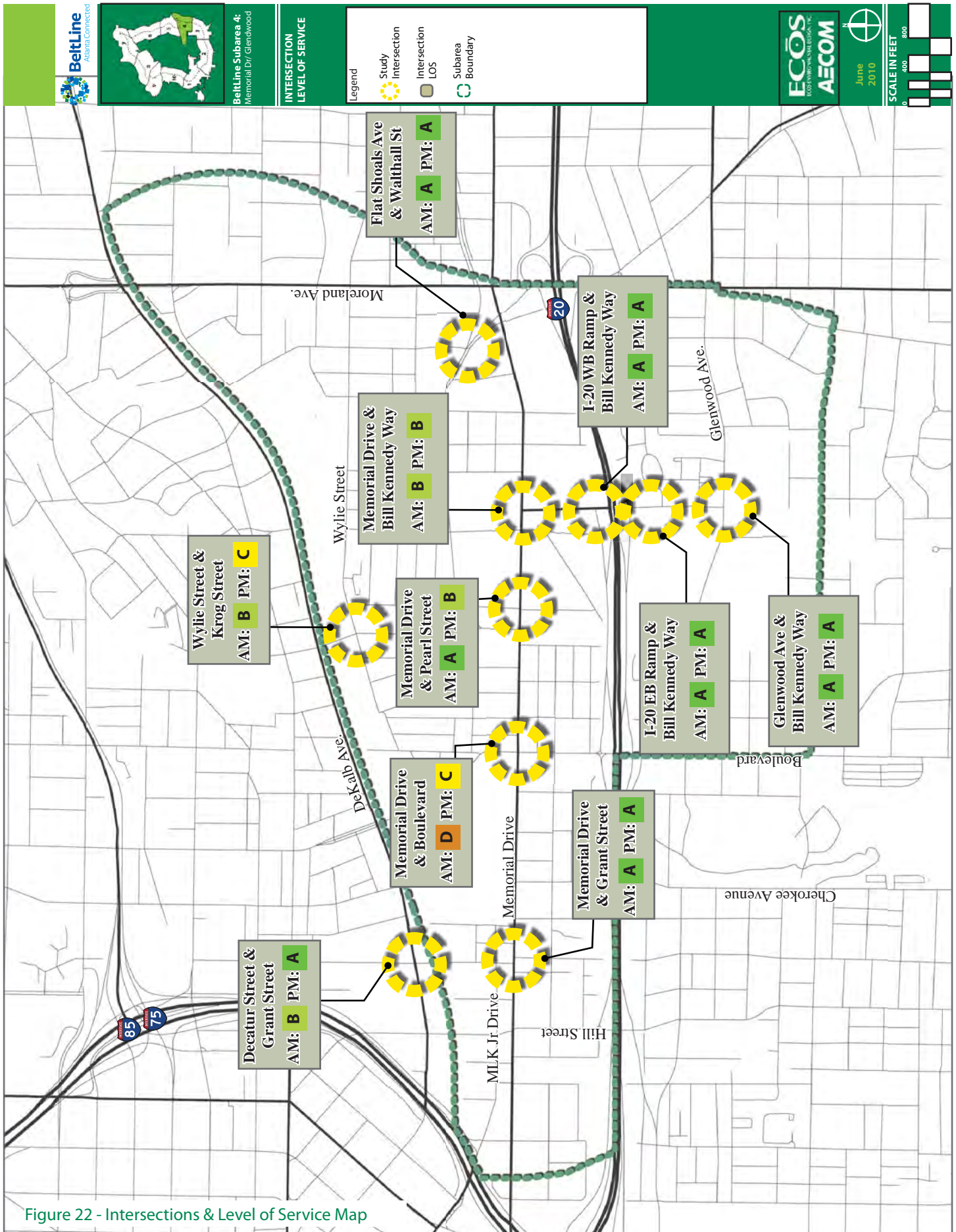


Figure 22 - Intersections & Level of Service Map

Interstate Access & Street Hierarchy

The area's connectivity is also influenced by access to Interstates 75/85 and 20. Key observations of the study area include:

Summary

- I-20 is a major barrier to north-south connectivity, and interstate access is largely affected by the proximity to the I-20 & I-75/85 interchange on the west side of the study area.
- There are five north-south connections that cross I-20: Hill Street, Cherokee Avenue, Boulevard, Bill Kennedy Way, and Moreland Avenue. Of these, Cherokee Avenue and Bill Kennedy Way do not continue beyond Memorial Drive to the north.
- Boulevard and Moreland Avenue have full access to Interstate 20.
- Bill Kennedy Way lacks access to eastbound Interstate 20.
- Hill Street does not provide access to westbound Interstate 20 and lacks an eastbound off-ramp.
- Martin Luther King Jr Drive provides the only direct access from the study area to I-75/85.

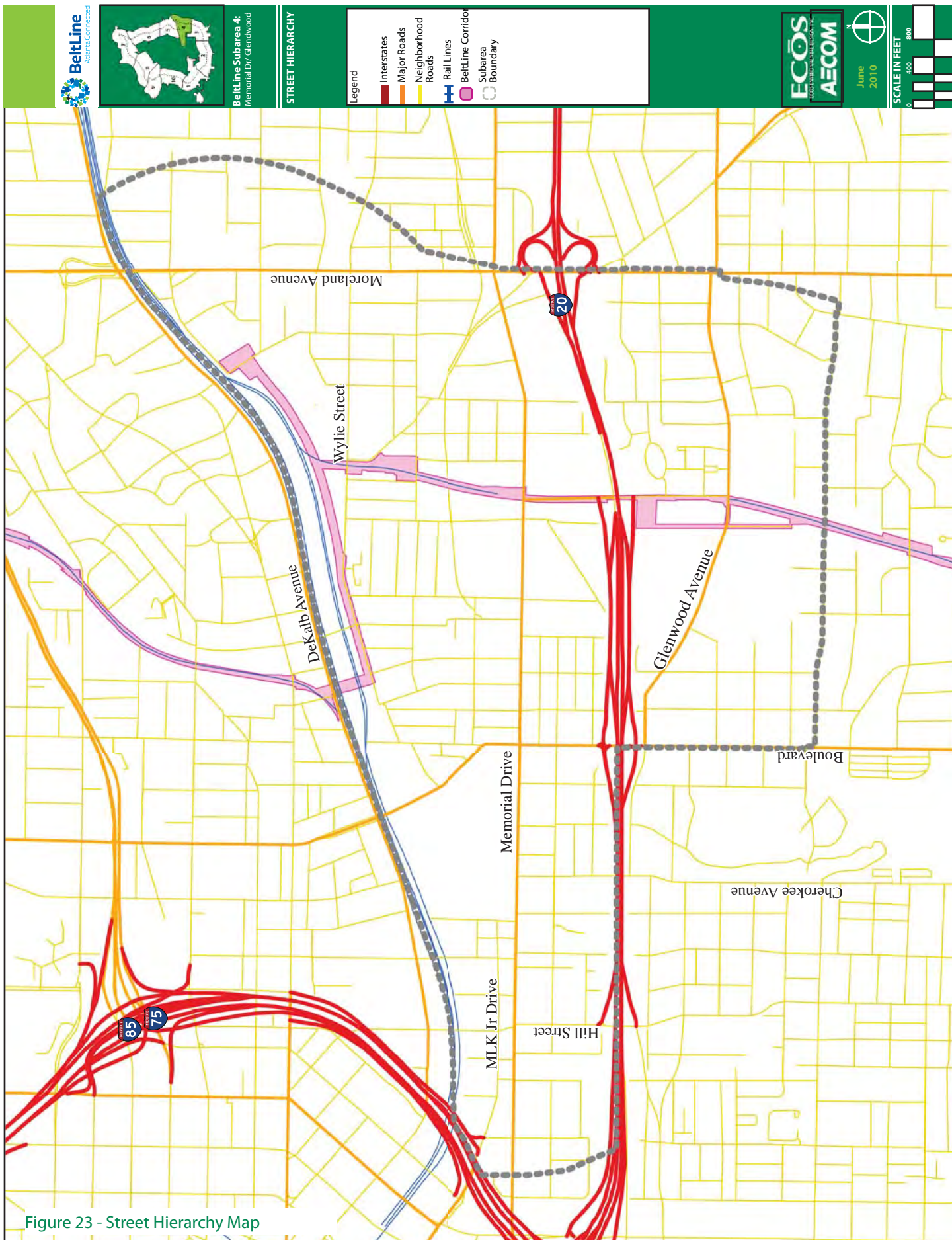


Figure 23 - Street Hierarchy Map

Existing Crash Data

As of November 2010, still working to acquire crash data. Table 05 and Figures 24-28 have been reserved for this information.

Sidewalk Network

Summary

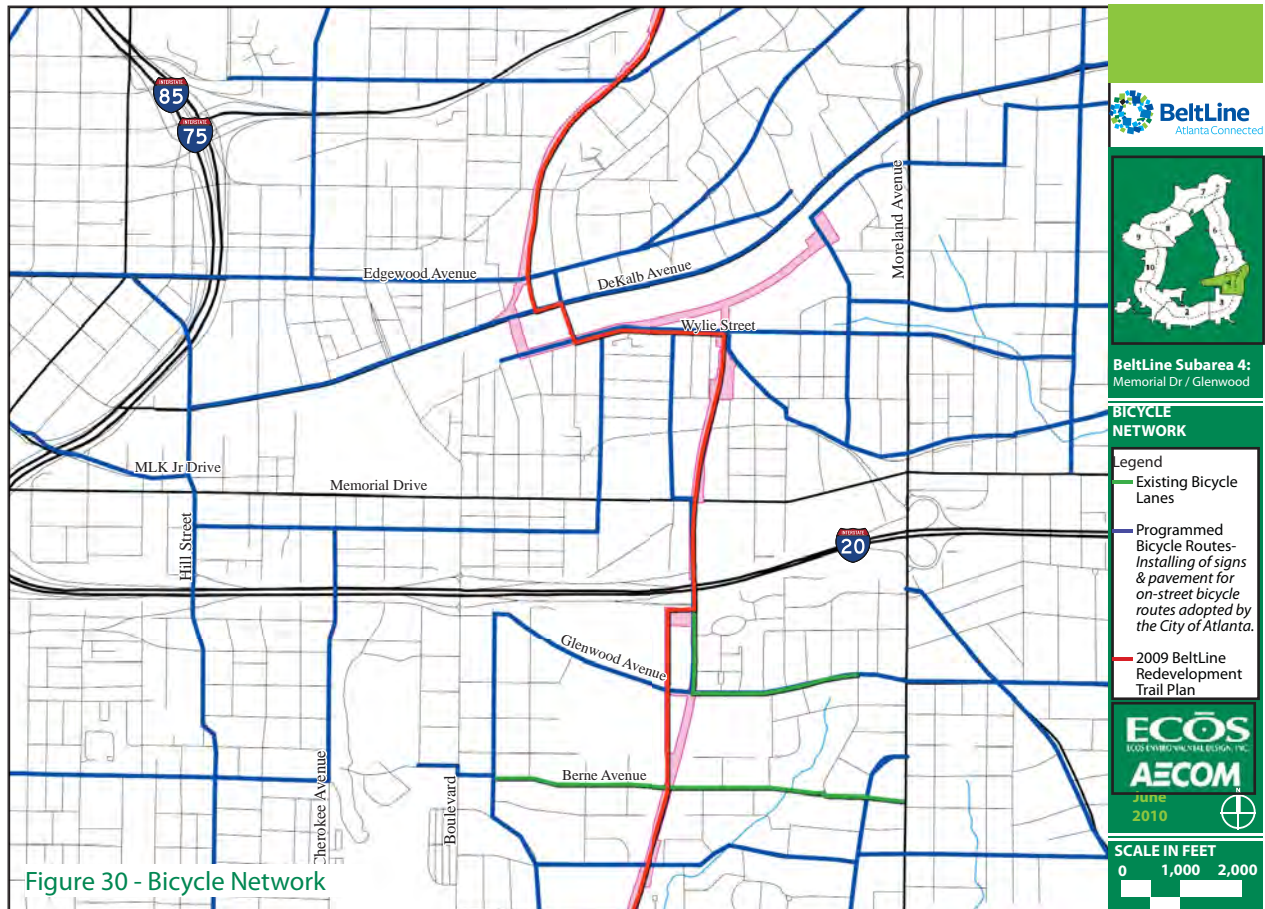
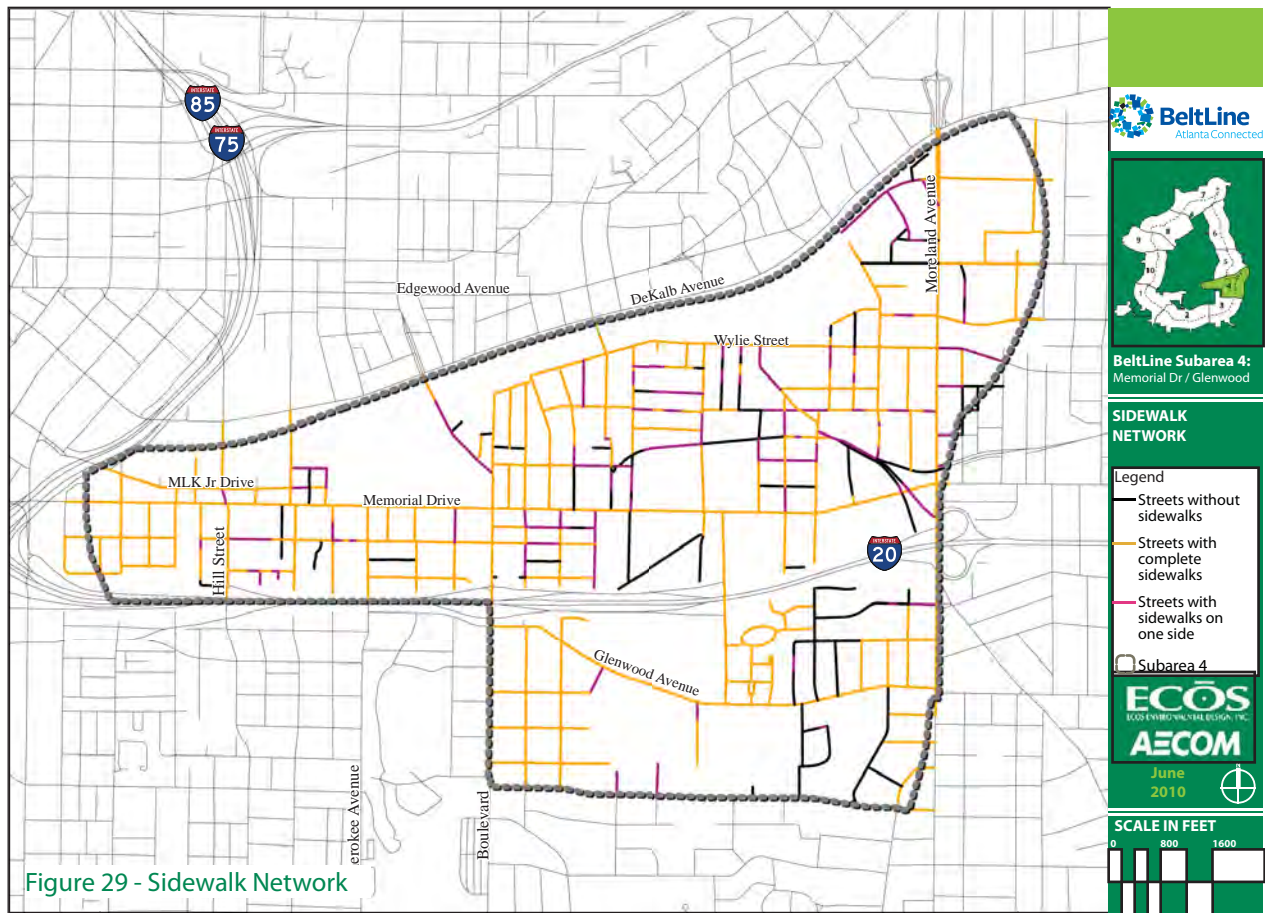
The quality of sidewalks varies greatly and is mostly dependent on the age of the neighborhood and recent redevelopment. The Glenwood Park and Capitol Homes have sidewalks in great condition due to recent redevelopment. A majority of the sidewalks in the study area are narrow and/or consist of broken tiling or concrete, making them less than ideal for accessibility. Most sidewalks in the Reynoldstown neighborhood are narrow with many broken slabs, with the exception of select sidewalks on a parcel-by-parcel basis.

- Currently, the only pedestrian access points across the freight and MARTA rail lines exist at the Krog Street Tunnel and the Inman Park MARTA Station pedestrian bridge.
- The current configuration of the I-20 / Boulevard interchange creates an unfriendly pedestrian environment. The sidewalk on the west side of this bridge is narrow, and the median between northbound Boulevard traffic and the exiting I-20 traffic on the eastern part of the bridge does not serve as a safe or efficient pedestrian area.
- Similarly, the pedestrian crossings over I-20 at Bill Kennedy Way and Moreland Avenue do not provide sufficiently wide sidewalks. Pedestrians perceive the I-20 crossing as generally unsafe and dangerous due to the proximity to vehicles.
- The Cabbagetown neighborhood has relatively complete sidewalks in the residential areas, with a few streets connecting to Memorial Drive missing sidewalks on one or both sides.
- The streets in the Reynoldstown neighborhood have incomplete sidewalks throughout. Flat Shoals Avenue and Howell Drive have either no sidewalks or only one side leading into central Reynoldstown.
- The area of Grant Park falling in the study area has relatively complete sidewalks. The only streets missing sidewalks in this area are narrow alleyways and dead-end streets.
- Ormewood Park contains the least sidewalks, with 40% of the streets having no sidewalks.

Bicycle Network

Summary

- Bicycle Lanes currently exist near the Glenwood Park development on Bill Kennedy Way from just south of the I-20 interchange to Glenwood Avenue, and on Glenwood Avenue from Bill Kennedy Way to Hemlock Circle.
- The bicycle plan adopted by the City of Atlanta would provide many network connections on secondary streets for bicyclists.
- The 2009 Beltline Trail Plan follows the City's proposed route along Wylie Street and intersects the City's routes at Glenwood Avenue and Berne Street.



Existing Rail & Transit Corridors

The study area includes active freight and transit rail corridors and an intermodal freight terminal.

Summary

- The proposed BeltLine transit alignment utilizes the existing Norfolk Southern Rail Line that runs north-south through the corridor, which crosses active MARTA rail lines, CSX Rail Lines, and the intermodal freight terminal.
- Three potential BeltLine transit connectivity alternatives (Grant, Gunby, and Edgewood) utilize varying routes to traverse the CSX rail lines and connect to a MARTA rail stations.
- The Grant transit connectivity alternative crosses MARTA Rail near the King Memorial Station, while the Edgewood transit connectivity alternative crosses at the Inman Park - Reynoldstown station. The Gunby transit connectivity alternative ties into the Inman Park / Reynoldstown Station, then crosses the CSX yard near the Krog Street Tunnel.
- Currently, vehicular access across the CSX and MARTA Rail Lines is limited to Hill Street, Grant Street, Boulevard, Krog Street, and Moreland Avenue.

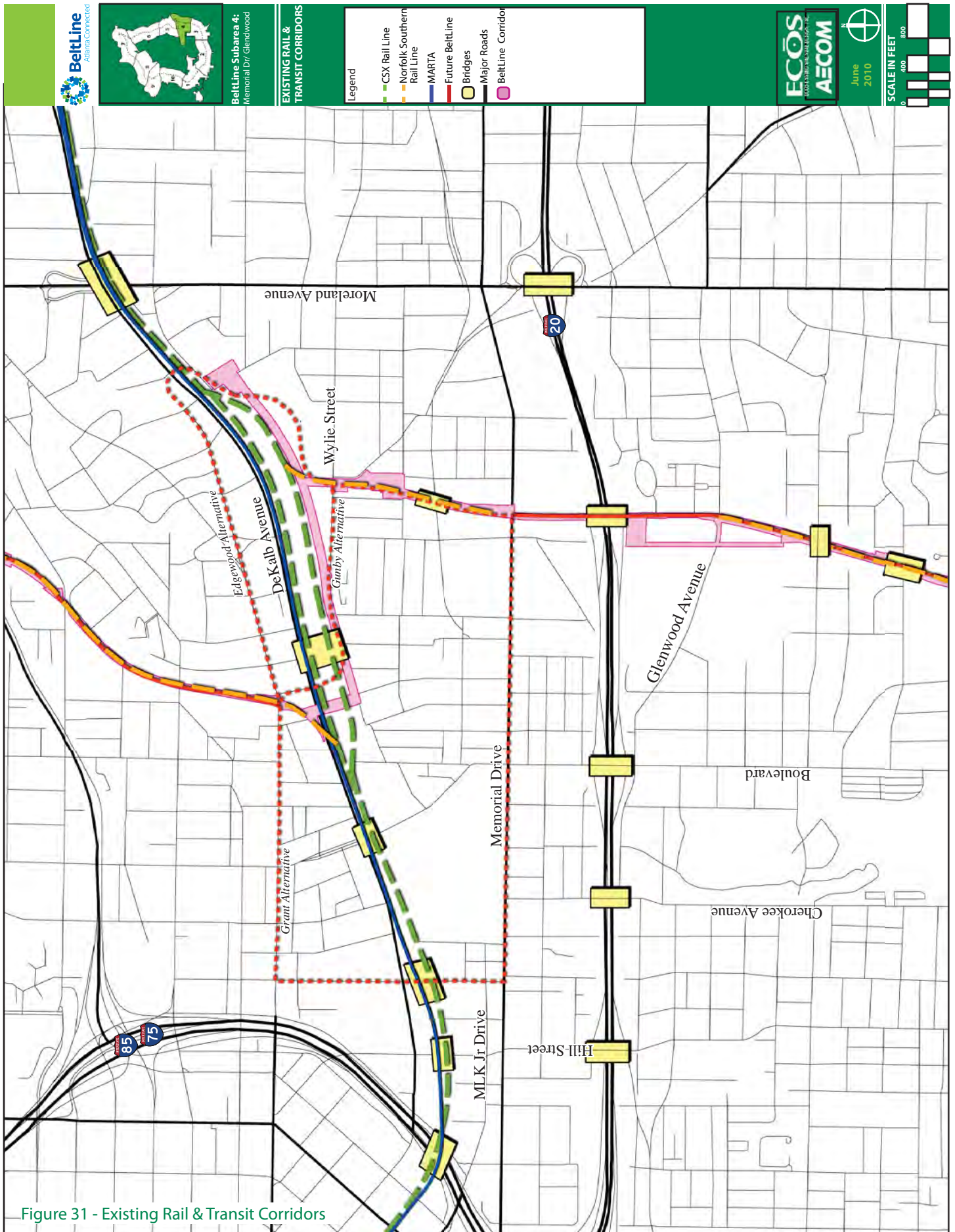


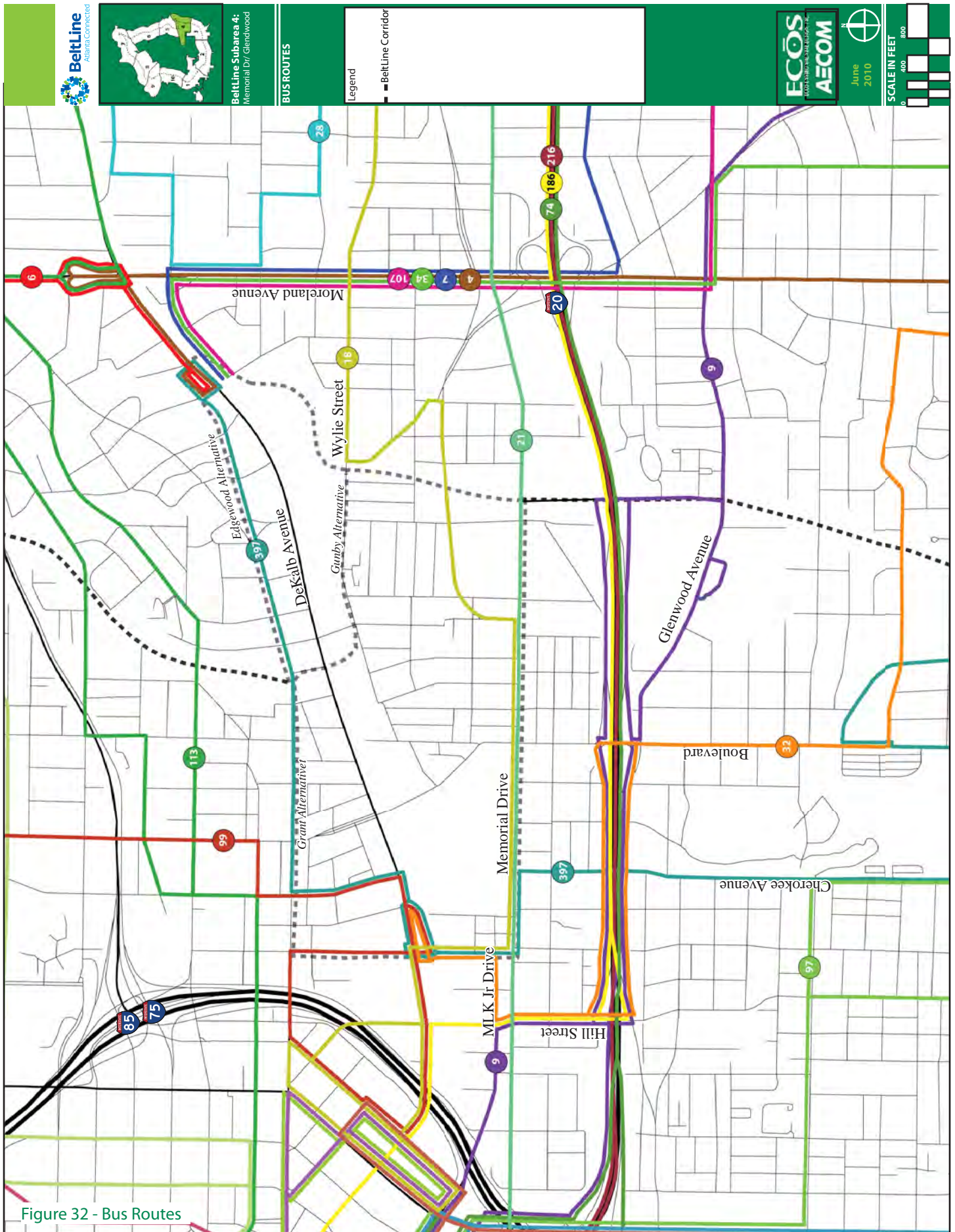
Figure 31 - Existing Rail & Transit Corridors

Bus Routes

Summary

Several routes serve the study area, including:

- **Route 18 South Decatur** - This line links Downtown Atlanta to Decatur with service to King Memorial Station, Edgewood/Candler Park Station, Agnes Scott College, and the DeKalb County Courthouse.
- **Route 21 Memorial Drive** - This bus line provides service along Memorial Drive from Downtown to the Kensington Station, with service to destinations all along Memorial Drive.
- **Route 9 Toney Valley** - This bus line serves the Maynard Jackson High School area with stops along Glenwood Avenue and Bill Kennedy Way.
- **Routes 7, 34, 107** - These routes provide service from the Inman Park / Reynoldstown Station along Moreland Avenue to points south and east of the study area.



Physical Constraints

The study area includes a number of physical constraints that challenge the creation of network connections but also add to the overall open space.

Summary

- The existing interstates, I-75/85 and I-20, limit vehicular and pedestrian connections to the south.
- Tributaries to Intramural Creek affect street connectivity in the southeast portion of the study area. The floodplain for this creek, however, does not extend into the study area.
- The CSX intermodal freight terminal constrains the connection of the Beltline Transit and Trail alignment.
- There is a disconnect in the BeltLine Corridor between Dekalb Avenue and Wylie Street, and there is not a direct connection to a MARTA heavy rail station.

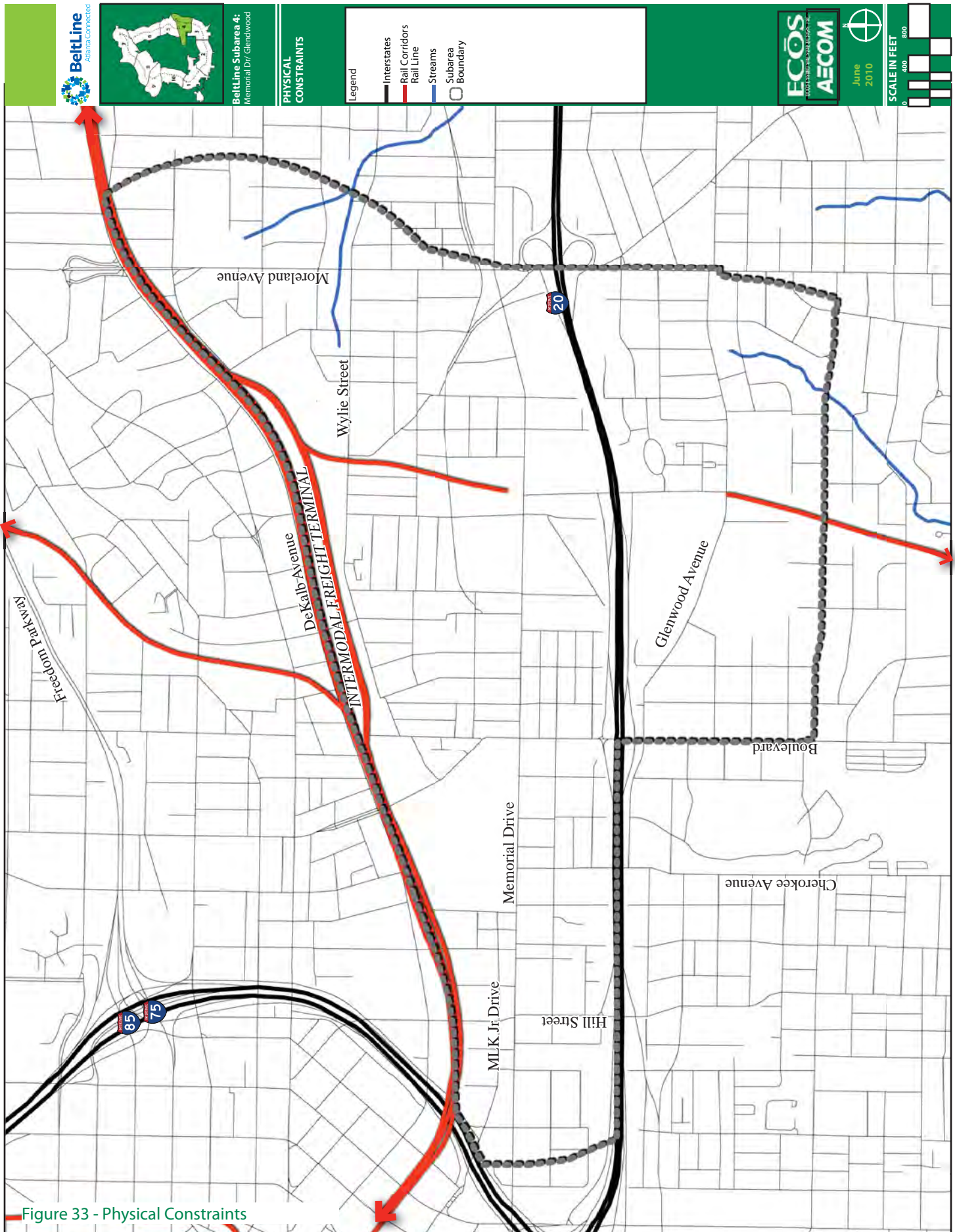


Figure 33 - Physical Constraints

Transit Accessibility

Pedestrian accessibility to future BeltLine Transit Stations will be important for the success of transit in the area. This diagram illustrates the actual 5 and 10-minute walking distances around the proposed stations.

Summary

Grant Street Connectivity Alternative Accessibility:

- This alternative provides the most pedestrian accessibility, with five additional stations and up to 44 additional miles of street network within 10 walking minutes to a station. This alternative is also the longest option at 2.21 additional track miles.

Gunby Connectivity Alternative Accessibility:

- This alternative's proximity to the intermodal freight terminal and the existing rail corridors limits the walkable reach of the station. The primary neighborhood served by this alternative is Reynoldstown, which would need pedestrian enhancements to support the station access.

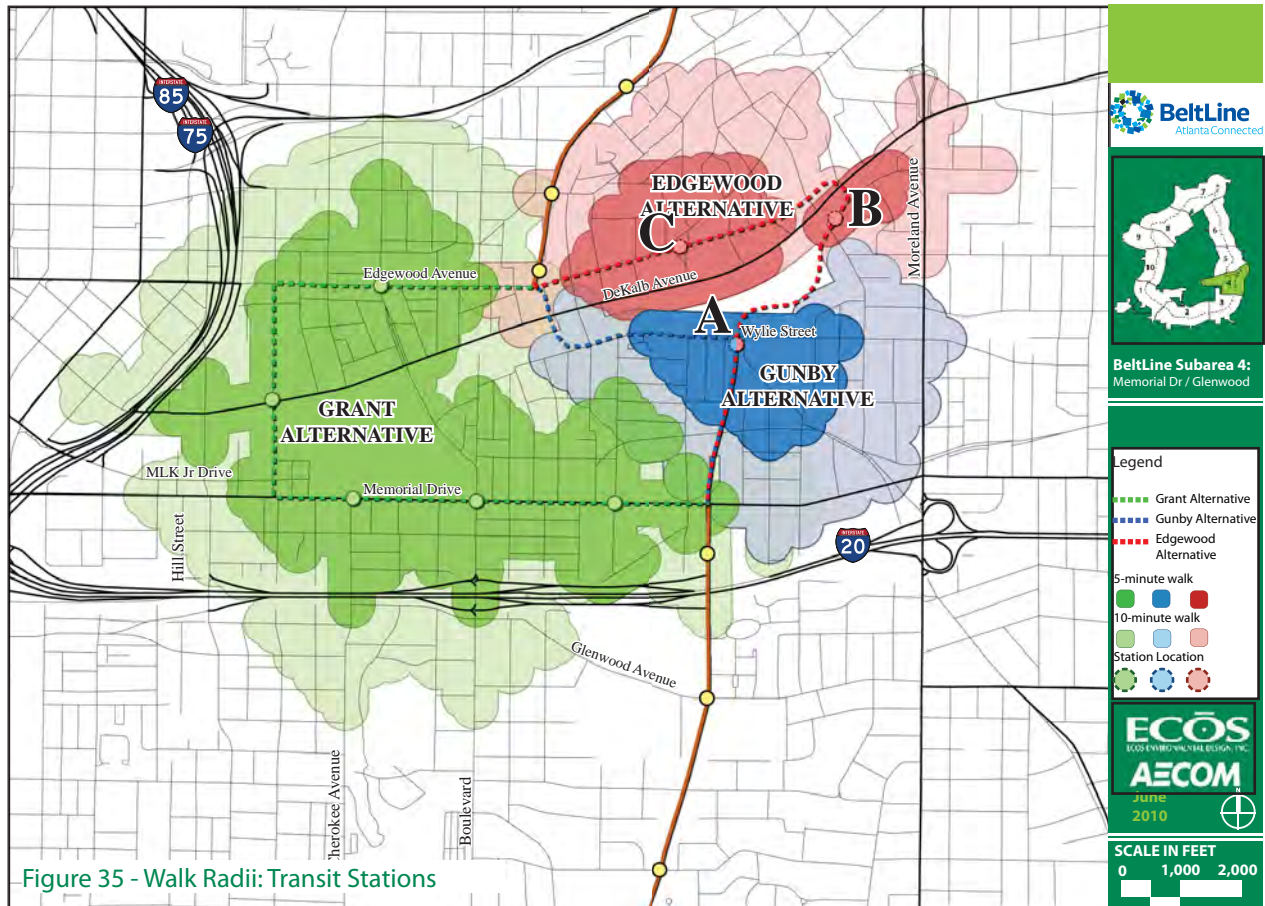
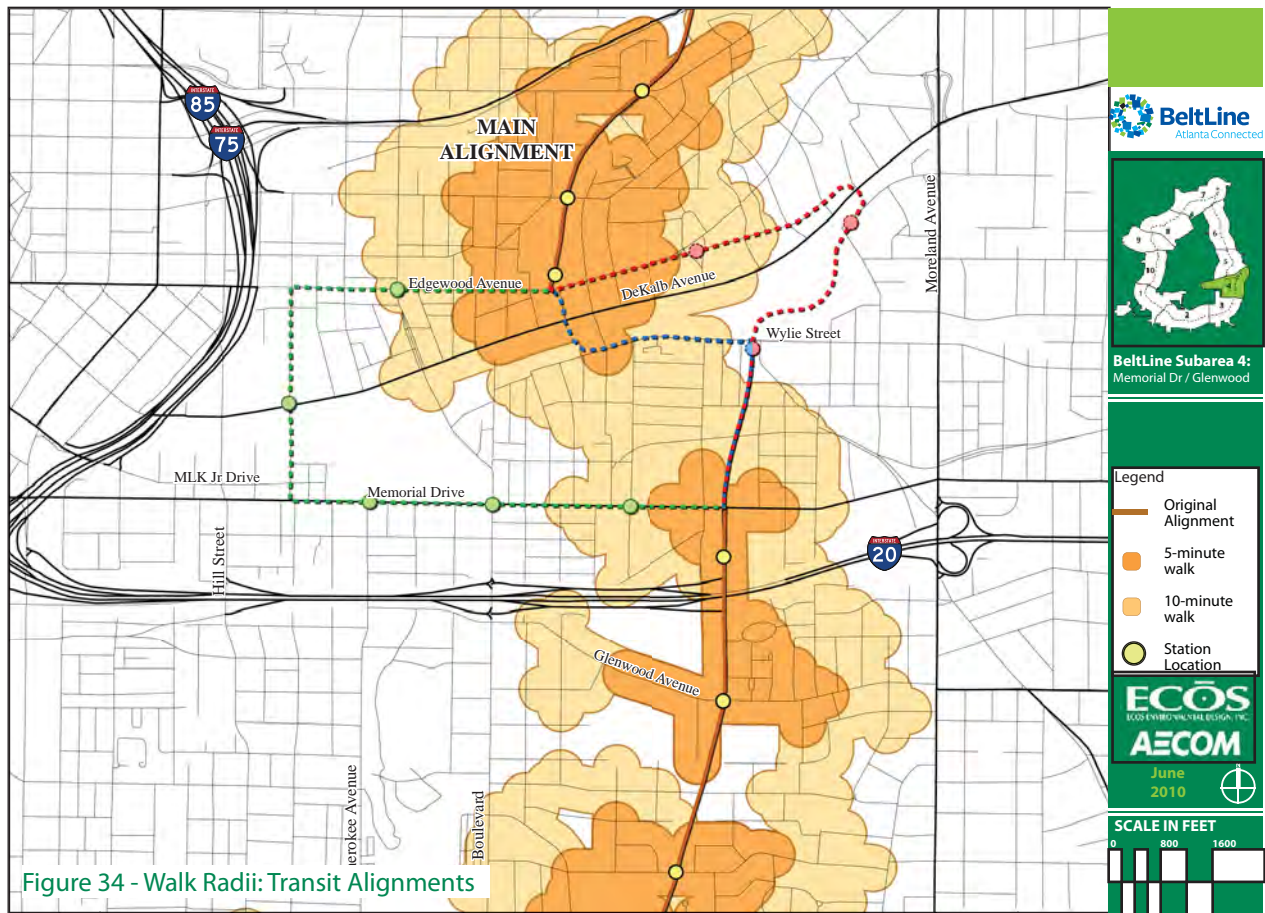
Edgewood Connectivity Alternative Accessibility:

- The Edgewood connectivity alternative increases pedestrian accessibility north of Subarea 4, in addition to the access provided by the Gunby connectivity alternative and the existing Inman Park-Reynoldstown MARTA station.

Beltline Connectivity Alternatives Service Areas Near Subarea 4				
Alternative	Stations	Track Mileage (Miles)	5-minute Walking Service Area (Miles)*	10-minute Walking Service Area (Miles)*
Grant Street	5	2.21	21.1	83.7
Gunby	2 (A,B)	1.9	10.4	47.4
Edgewood	3 (A,B,C)	1.75	13.3	56.8

**Assumes adequate sidewalks or safe pedestrian conditions*

Table 06 - BeltLine Connectivity Alternative Service Areas



Programmed Projects

The planned projects listed below for this study area were taken from the City of Atlanta's Capital Improvements Program (2010-2014) and The Atlanta Regional Commission's 2008-2013 Transportation Improvement Program (TIP) and the Regional Transportation Plan (RTP).

	Project Name	Description	Status	Source	TIP Number	Cost	Funding Source
1	Tye Street Paving	Paving Tye Street from Memorial Drive to Gaskill St	Construction	CIP	DPW-05-0536	\$287,449	Local
2	Moreland Avenue North Streetscapes	From North Avenue to I-20	n/a	CIP	DPW-05-0538	\$43,302	Local
3	Moreland Avenue South Streetscapes	From I-20 to I-285	Concept	CIP	DPW-05-0539	\$35,000	Local
4	East Atlanta Village Pedestrian Improvements	Pedestrian Facility	Programmed	TIP	AT-220	\$1,275,000	Federal, Local
5	Memorial Drive Pedestrian Connectivity	Pedestrian Facility	Programmed	TIP	AT-AR-248	\$2,237,500	Federal, Local
6	I-20 East Bus Rapid Transit (BRT) Phase I	From Downtown Atlanta to Candler Road	Long-Range	TIP	AR-904A	\$22,500,000	Federal, Local
7	Memorial Drive Bus Rapid Transit (BRT)	From Avondale Mall in DeKalb County to MARTA Garnett Station in City of Atlanta	Long-Range	TIP	AR-923	\$324,000,000	Federal, Local
8	BeltLine Transit Service in SE Quadrant	BeltLine Transit	Long-range	TIP	AR-451B	\$118,000,000	Local
9	BeltLine Transportation Corridor	Bicycle/Pedestrian Facility	Programmed	TIP	AR-450D	\$4,842,375	Federal, Local
10	BeltLine Multiuse Trail and Streetscapes	Environmental Design of Trail and Streetscapes	Programmed	TIP	AR-452A	\$750,000	Federal, Local
11	BeltLine Multiuse Trail and Streetscapes	Preliminary Engineering of Trail and Streetscapes	Programmed	TIP	AR-452B	\$1,962,413	Federal, Local

Table 07 - Programmed Projects

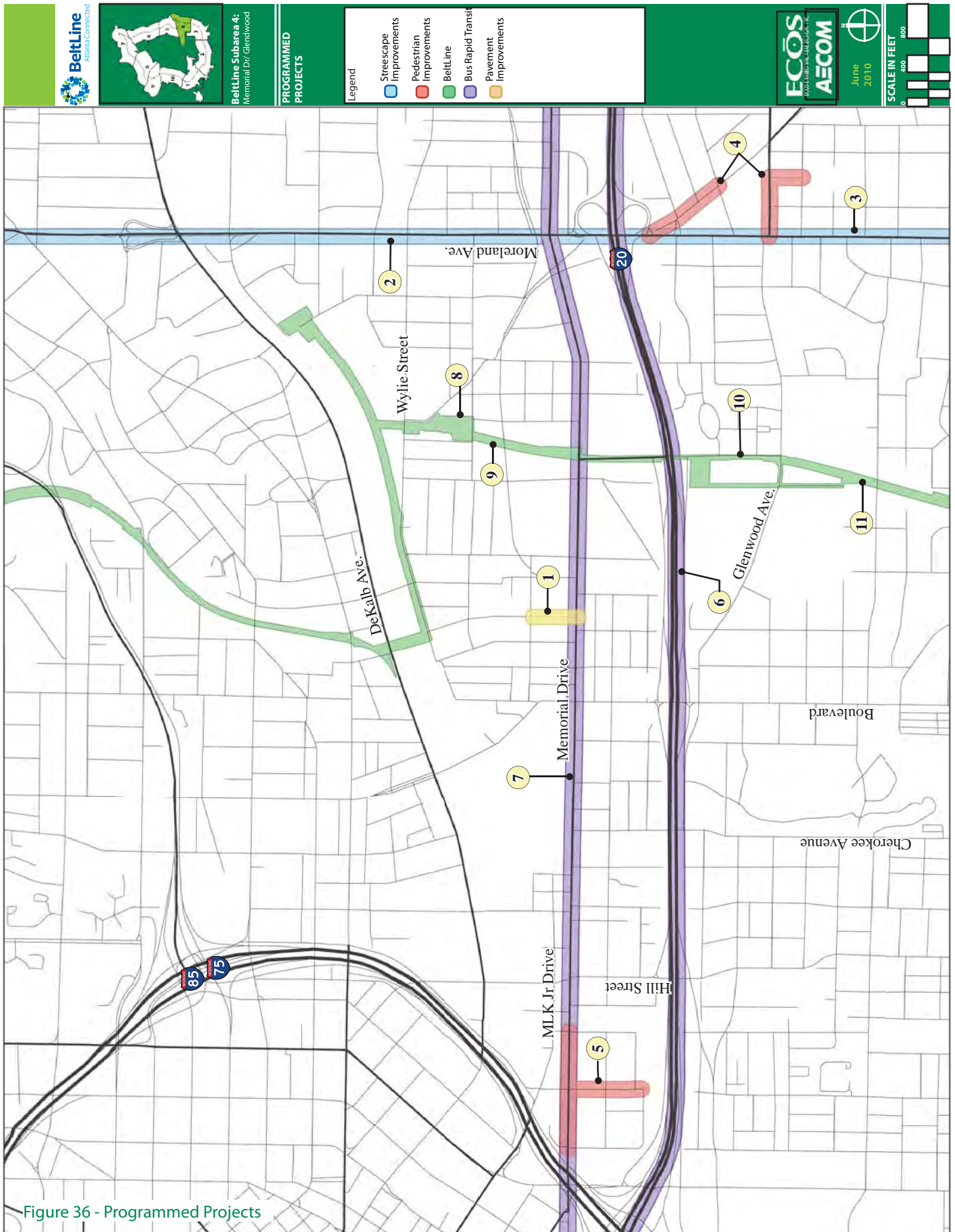


Figure 36 - Programmed Projects

Existing Land Use & Zoning

The existing land use for a parcel of land can be determined by the current use of the existing structures on the parcel (or lack thereof) or by the current devoted use/ function of the parcel. Various land use types (or “allowable uses”) can be permitted within a designated zoning district for a specific parcel. In some instances, the land use and zoning may not be consistent.

The existing land use for Subarea 4 TAD was initially created by joining the LUC (Land Use Code) field of the ABI_2009parcels GIS shapefile with the Land Use Code excel table for City of Atlanta. Then the existing land use was verified and revised via a windshield survey. The following provided by ABI and Urban Collage, are land use categories with corresponding definitions utilized during the windshield survey and displayed on the Existing Land Use Map (Figure 37):

For complete definitions of the existing land use categories used during the windshield survey, see appendix xx.

Open Space:

- This category pertains to any piece of property that is *intentionally* being used for any open space uses (i.e., rather than a vacant lot or natural undeveloped property).

Samples: Parks (active or passive), plazas, recreation fields, trails, golf courses, nature preserves, school yards, courtyards, gardens, etc.

Subarea 4 example: Community garden at WonderRoot

Single-Family Residential:

- This category pertains to any piece of property that is occupied by one, single-family housing unit (typically a house).

Samples: Detached house, townhouse on a fee-simple lot (i.e., there is one unit per lot), mobile home (if the mobile home is on a lot by itself), etc.

Subarea 4 example: Single Family houses within Cabbagetown and Reynoldstown neighborhoods

Low-Density Residential:

- This category pertains to situations in which multiple housing units are contained within a single lot, but at a low density (i.e., approximately less than 12 units per acre).

Samples: Several homes on a single lot, duplexes, triplexes, townhomes with ample spacing between buildings, 1 story assisted living facilities, etc.

Subarea 4 example: Duplexes within Cabbagetown and Reynoldstown neighborhoods

Medium-Density Residential:

- This category pertains to situations in which multiple housing units are contained within a single lot, but at a medium density (i.e., approximately 12-36 units per acre).

Samples: 2-4 story apartment complexes, tightly-packed urban townhomes, 2-4 story assisted living facilities, etc.

Subarea 4 example: Recently developed Mill Town Lofts in the Cabbagetown neighborhood

High-Density Residential:

- This category pertains to situations in which multiple housing units are contained within a single lot, but at a high density (i.e., approximately 36-72 units per acre). Once again, it does not matter whether the housing units are owner-occupied (such as in a condominium arrangement) or rental as long as there are multiple units per lot at a high density. In practice, most mid-rise apartment complexes fall in this category.

Samples: 5-12 story apartment/condo/senior/assisted living residential towers, etc.

Subarea 4 example: 5-story apartment complex on Sherwood Ave, south of I-20 and east of Glenwood Park

Very High-Density Residential:

- This category pertains to situations in which multiple housing units are contained within a single lot, but at a high density (i.e., approximately 36-72 units per acre).
Samples: 5-12 story apartment/condo/senior/assisted living residential towers, etc.
Subarea 4 example: No examples within Subarea 4

Low-Density Commercial:

- This category pertains to parcels that contain a commercial business – typically a business that sells goods and/or services (that is not manufacturing or industrial) at a low density (i.e., approximately 3 stories or less).
Samples: Retail establishments, restaurants/eating establishments, laundry, drug stores, offices, grocery stores, gas stations, automobile repair shops, florists, bakeries, coffee houses, repair shops, funeral homes, hotels, motels, spas, salons, bars, banks, lodges/clubs, commercial recreation facilities (eg., go-carts, miniature golf, driving range, workout club, batting cages, etc.), printing shops, leasing centers, strip centers, car washes, self-storage, movie theatres, etc.
Subarea 4 example: Retail establishments on Carroll St. in Cabbagetown neighborhood

High-Density Commercial:

- This category pertains to parcels that contain a commercial business - typically a business that sells goods and/or services (that is not manufacturing or industrial) at a high density (i.e., approximately 4 stories or more). In practice, this type of commercial intensity is only found in downtown urban locations.
Samples: Malls, mid to high-rise office buildings (over 4 stories), mid to high-rise shopping centers (over 4 stories), etc.
Subarea 4 example: No examples within Subarea 4

Industrial:

- This category pertains to parcels that contain a manufacturing, production or processing use.
Samples: Trucking facilities, factories, power plants, recycling centers, junk yards, refuse processing centers, dumps, communication towers, power sub-stations, water treatment facilities, manufacturing facilities, distribution centers, etc.
Subarea 4 examples: LaFarge properties at Glenwood, Stein Steel, communications tower at I-20, AT&T communications center, etc...

Office/Institutional:

- This category pertains to parcels that are used exclusively for civic use, or service-provider institutional uses (including offices for such uses). Institutional uses generally include any civic or service-related facility even if not publicly owned or operated.
Samples: Healthcare providers, hospitals, schools (public or private), community centers, worship facilities, social service providers, police/fire stations, homeless shelters(non-residential), job training facilities, government offices, post offices, libraries, museums, correctional facilities, etc.
Subarea 4 example: Trees Atlanta office, Maynard Jackson High School, Greater Community Baptist Church, etc...

Mixed-Use (20% residential):

- This category pertains to parcels that contain a mix of residential and non-residential uses, as long as the residential uses are approximately 20% or more of the development. In some instances this will include a mix of uses within a single building. In other cases, it will simply include separate buildings with separate uses but contained within a single property.
Samples: Apartment building with a drugstore on the bottom floor, an apartment complex on the same parcel as a strip center, etc.
Subarea 4 example: Glenwood Park

Parking:

- This category is confined to parcels that are solely used for parking, even if they are associated with an adjacent use on another parcel.

Samples: *Paved parking lot, parking deck, etc.*

Subarea 4 example: *Parking lots west of Oakland Cemetery*

Vacant Land:

- This category pertains to parcels that do not contain a primary structure. **Samples:** *Undeveloped lot, a lot that once contained a structure, a lot cleared for construction but with nothing on it, a gravel lot used for parking, etc*
- Subarea 4 example:** *Property located on Memorial Dr, between Estoria St. and Pearl St.*

The existing land use for Subarea 4 (including the TAD) is predominately single family (27%), but also contains significant percentages of medium density residential (10%), commercial (8%), office/ institutional (9%), industrial (8%) and transportation/ communication/ utility or TCU (6%).

There have been several recently redeveloped and permitted projects within the Tax Allocation District that are reflected within the existing land use. Approximately 12% of the 415 acres within the TAD have been recently redeveloped or are in the process of being redeveloped. The list below summarizes the recent redevelopment activity within Subarea 4:

- Redeveloped Properties
 - Glenwood Park - 28 acres, Mixed Use (2000)
 - A&P Lofts - 1.5 acres, 60 units (2001)
 - Mill Town Lofts - 4.5 acres, Multifamily - 100+ units (2003)
 - Triumphs Lofts - 1.8 acres, Condominium - 80 units (2007)
 - Reynoldstown Square - 3.7 acres, Multifamily - 46 units (2005)
 - South Park Lofts - 3 acres, 55 units
 - 920 Memorial Dr – 2 acres, 46 units
 - Trees Atlanta Office - 1 acre

- Properties currently being redeveloped (under construction)
 - 880 Glenwood Ave – 4.7 acres, Multifamily - 325 units (completion date estimated 2010)
- Recently Permitted Projects
 - 810 Marcus St. – 1.2 acres, Senior Apartments – 78 units

The remaining TAD properties providing for redevelopment and rehabilitation opportunities consist mostly of industrial uses, TCU uses, and vacant land. The majority of industrial properties are focused along the BeltLine corridor, Memorial Dr. and south of I-20. A large portion of the existing TCU uses are within Hulsey Yards and MARTA, located in the northern portion of the subarea; as well as within the City of Atlanta communication tower area just north of I-20, east of Bill Kennedy Way. Several large parcels of vacant land exist along the Memorial Dr. corridor with smaller vacant properties throughout the TAD.

Zoning:

The City of Atlanta zoning districts regulate and guide development throughout the city. Zoning districts provide specific regulatory information on many facets of development, some of which include permitted uses, development controls such as location and size of proposed structures and parking areas, building heights, floor area ratios, ingress/egress requirements, and site limitations.

As expressed in the Comprehensive Development Plan (CDP), the City's zoning districts include seventeen types of residential zoning districts, eleven quality of life zoning districts (eight mixed residential districts and three mixed commercial districts), a live work zoning district, an office and institutional zoning district, six commercial zoning districts, six neighborhood commercial zoning districts, two industrial zoning districts, eighteen special public interest districts (SPIs), three types of planned development zoning districts, nine landmark districts, and eight historic districts.

The zoning districts found in Subarea 4 and within the Tax Allocation District are identified (including their percentages within the subarea and TAD) in the following two charts (Table 08 & Table 09):

Two City of Atlanta overlay districts lie within portions of Subarea 4.

- BeltLine Overlay District
- Grant Park Historic District

The study area includes several additional historic and quality of life zoning districts which are listed below:

- Cabbagetown Landmark District
- Oakland Cemetery Landmark District
- SPI-22
- MRC-3

Zoning Calculations		
Subarea 4 Zoning Percentages		
Zoning Type	Sum Acres	Zoning Percentage
Commercial	99.0	7.8%
Industrial	177.8	14.1%
Landmark District	155.7	12.3%
QOL Multi-Family	22.1	1.7%
QOL Mixed-Use	62.7	5.0%
Neighborhood Commercial	9.3	0.7%
Office/Institutional	16.7	1.3%
Planned Development	38.4	3.0%
Residential-Single Family	150.1	11.9%
Residential-Duplex	339.8	26.9%
Residential-Multi-Family	51.2	4.0%
Special Public Interest	142.5	11.3%

Table 08 - Subarea 4 Zoning Calculations

Zoning Calculations		
Tax Allocation District for Subarea 4 Zoning Percentages		
Zoning Type	Sum Acres	Zoning Percentage
Commercial	46.2	11.1%
Industrial	206.9	49.9%
Landmark District	27.0	6.5%
QOL-Multi-Family	5.3	1.3%
QOL-Mixed-Use	2.3	0.5%
Neighborhood Commercial	1.7	0.4%
Office/Institutional	0.7	0.2%
Planned Development	32.9	7.9%
Residential-Single Family	4.7	1.1%
Residential-Duplex	67.2	16.2%
Residential-Multi-Family	12.7	3.0%
Special Public Interest	7.6	1.8%

Table 09 - Subarea 4 TAD Zoning Calculations

The Grant Park Historic District and Oakland Cemetery Landmark District are within portions of Subarea 4 but are not within the TAD. The remaining three overlay districts affect properties within the TAD and therefore, the intent and development controls of these districts need to be examined during this planning process. The following is a brief summary of the intent of the three overlay districts per the City of Atlanta Zoning ordinance.

Intent of the BeltLine Overlay District Regulations:

- **Implement certain recommendations** contained in the comprehensive study known as the **BeltLine Redevelopment Plan** as adopted by the City of Atlanta;
- **Preserve a continuous corridor** along the BeltLine route of sufficient dimension for the implementation of transit, multi-use trails and green space;
- **Promote and maximize opportunities for safe and accessible green spaces, plazas, public art, and cultural and institutional buildings;**
- **Preserve opportunities for connecting trails** reaching beyond the BeltLine to create a broad network of trails throughout the city;
- **Encourage a grid of smaller blocks and connected streets** to improve access to the BeltLine, reduce congestion, and further the urban character of the area;
- **Preserve the historic physical character of the industrial districts** along the BeltLine by promoting adaptive re-use of historic structures and encouraging new construction to be consistent with the size, scale and/or character of those buildings;
- **Ensure that new construction is compatible with the character of existing** established adjacent single-family neighborhoods;
- **Create new mixed-use and commercial nodes** at BeltLine station areas that are pedestrian and transit-oriented;
- **Create a diversified urban environment** where people can live, work, shop, meet and play;
- **Promote public health and safety** by providing a pedestrian-oriented environment that includes active street-level uses, sufficient sidewalk widths, and primary pedestrian access from sidewalks to adjacent building entrances;
- **Promote development of a wide range of housing types** appropriate to meet various housing needs and income levels;
- **Facilitate safe, pleasant and convenient pedestrian and bicycle circulation** and minimize conflict between pedestrians and alternative transit modes;
- **Provide accessible and sufficient parking** in

an unobtrusive manner by encouraging shared parking solutions and minimizing commercial parking in residential neighborhoods;

- **Maximize air and water quality**, including that which supports tree planting, greenspace and watershed protection, and bicycle parking;
- **Improve the aesthetics of street and built environments.**

Intent of the Cabbagetown Landmark District Regulations:

- **To preserve the environmental and physical appearance** of the area, including industrial, commercial and residential structures, created from the late 19th century to the mid 20th century, and existing spatial relationships between buildings and streets; and to ensure that any **new development is compatible with existing historic architectural and spatial characteristics** that prevail.
- **To preserve the unique historical relationship between commercial and residential uses**, that evolved in the late 19th century and early 20th century, and to ensure that ensuing development reflects and maintains this unique relationship.
- To ensure that additions, alterations, renovations, and new construction observe the characteristics of each subarea of the district and **maintain a continuing harmony with the historic character** of the entire district.
- **To continue and encourage residential uses** in the district.
- **To preserve the existing landscape and topographical features** which exhibit or will assist in maintaining significant historic elements of the village.
- **To enhance changes to principal facades and protect the historic appearance** of the Cabbagetown mill village development.
- **To encourage compatible economic development** and neighborhood revitalization.
- **To prevent the displacement of residents** and to encourage affordable housing.
- **To preserve and enhance the important aesthetic appearance** of the district.

- To substantially **promote the public health, safety, and welfare.**
- **To promote, encourage, and enhance the interaction of residents in the district with applicants seeking review and approval** as directed by these regulations.

Intent of the SPI-22: Memorial Drive/ Oakland Cemetery District Regulations:

- Implement provisions of the Comprehensive Development Plan **incorporating certain recommendations contained in studies of this area**, including the comprehensive study known as the Memorial Drive/MLK Jr. Drive Area Revitalization Study as adopted by the City of Atlanta;
- **Encourage a compatible mixture of residential, commercial, entertainment, cultural and recreational uses;**
- **Encourage the development of mixed-use pedestrian oriented building forms and uses within the area;**
- **Promote the revitalization of pedestrian-oriented shopping and entertainment streets** through sidewalk-level oriented buildings and uses;
- **Encourage the development of medium and high intensity housing** that provides a range of housing opportunities for citizens within the district;
- **Create a diversified 24-hour urban environment** where people can live, work, shop, meet and play;
- **Preserve existing historic single-family neighborhoods** from uses and building forms which are incompatible with their scale, character and needs by providing a location for needed neighborhood commercial and retail uses;
- **Preserve historic buildings and sites** within the district by facilitating adaptive re-use and rehabilitation;
- **Enhance and protect Oakland Cemetery** as a historic and cultural resource;
- **Encourage infill development** within traditional commercial areas that include proportionately significant residential uses;

- **Promote public safety through** the provision of pedestrian-oriented street-level uses, sufficient sidewalk widths, adequate visibility and primary pedestrian access from buildings to sidewalks to create a sense of activity and liveliness along their facades;
- **Facilitate safe, pleasant, and convenient sidewalk level pedestrian circulation and bike usage** that minimizes conflict with vehicles;
- **Maximize opportunities for sufficient, safe and accessible pedestrian amenities** including parks, plazas, greenways and public art for active and passive enjoyment;
- **Improve the aesthetics of street and built environments;**
- **Enhance the efficient utilization of parking facilities** by encouraging shared parking and alternative modes of transportation;
- **Provide accessible and sufficient parking** in an unobtrusive manner;
- **Encourage the use of MARTA** and other public transit facilities;
- **Encourage opportunities for economic development**, both residential and commercial, where there is a planned relationship between the transportation system and development;
- **Provide connections between the Capitol Gateway, Grant Park, Cabbagetown and Reynoldstown communities** and between those communities and adjacent areas including, Downtown and the State Capitol area, DeKalb Avenue, the Old 4th Ward neighborhood, and Zoo Atlanta areas.

In addition to the overlay districts within Subarea 4, the Memorial Drive Corridor Rezoning – Reynoldstown Neighborhood (2006), which affects properties located on Memorial Drive between Pearl St. and Moreland Ave, will be examined during this planning process. The majority of the parcels in this area have been rezoned to MRC3C, C2C and MR3.

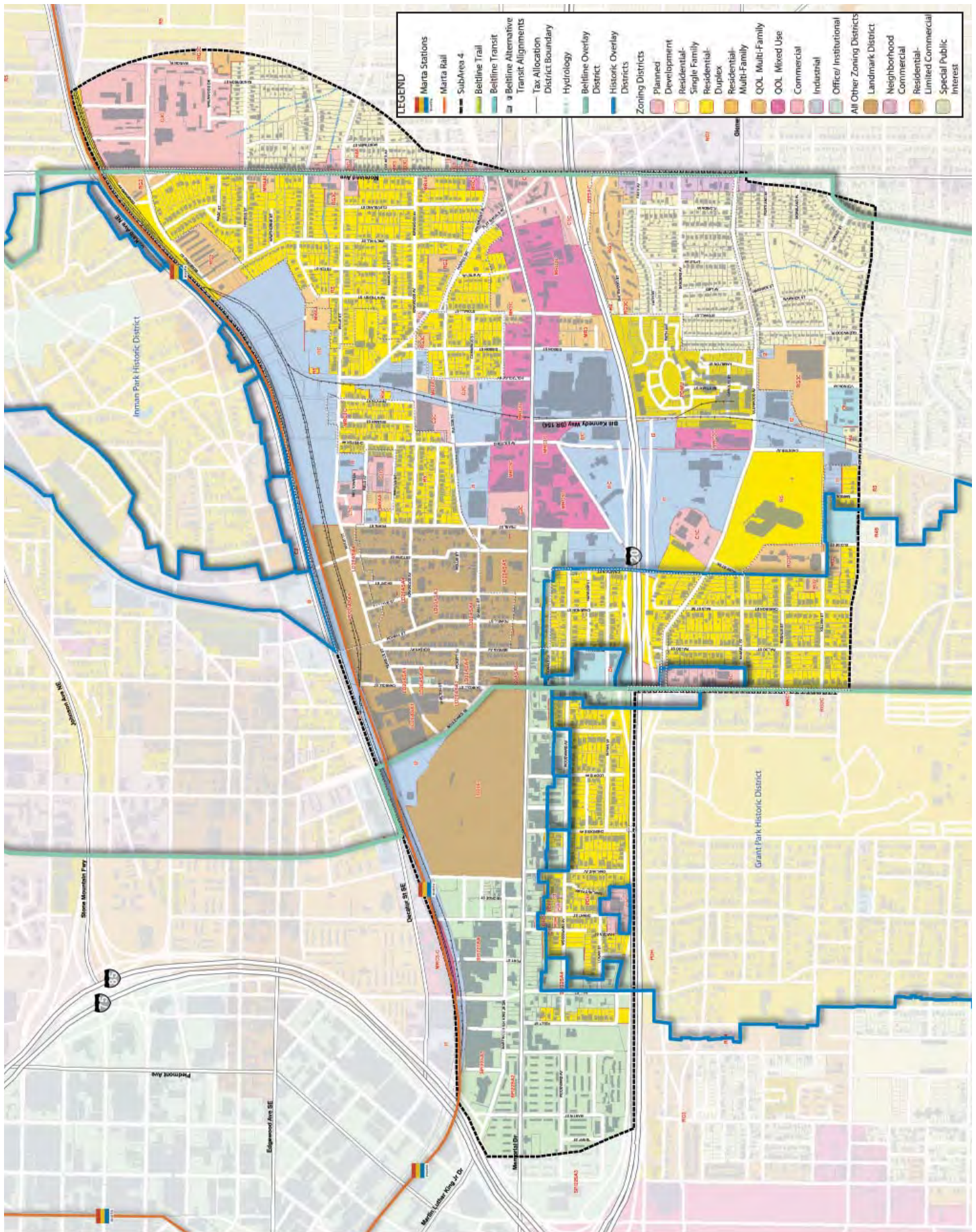


Figure 38- Zoning Map

Natural Features & Environmental Conditions

Existing natural features are an important component in understanding the land and its potential for development. The findings from mapping the natural features which includes waterways, drainage ways, floodplain, and topography of the subarea, are listed below (see Figure H.3).

Topography / Elevation

- The most severe elevation changes occur primarily within the southern portion of Subarea 4, south of I-20. For the most part however, the subarea is relatively flat allowing for many opportunities to improve and redefine the existing street network and connections.
- Major grade changes occur in the following locations within Subarea 4:
 - Maynard Jackson High School property.
 - Area around Intrenchment Creek and Sugar Creek which both originate in Subarea 4.
 - The City of Atlanta Watershed Management Property along the BeltLine Corridor.
 - All other major grade changes occur mostly around the I-20 Corridor.
- Total elevation change within the subarea is 126 feet with the highest points occurring in the Ormewood Park Neighborhood along Sanders Avenue; the Reynoldstown Neighborhood along Stovall Street; and Oakland Cemetery. In contrast, the lowest points within the subarea occur at Intrenchment and Sugar Creeks located in the north and southeast portions of the subarea.

Hydrology / Drainage ways

- Intrenchment Creek is located in the southeast portion of the subarea with drainage ways and tributaries extending from the Ormewood Park neighborhood.
- Sugar Creek is a perennial stream which begins in the northeast portion of the subarea and flows 8.5 miles to the South River.

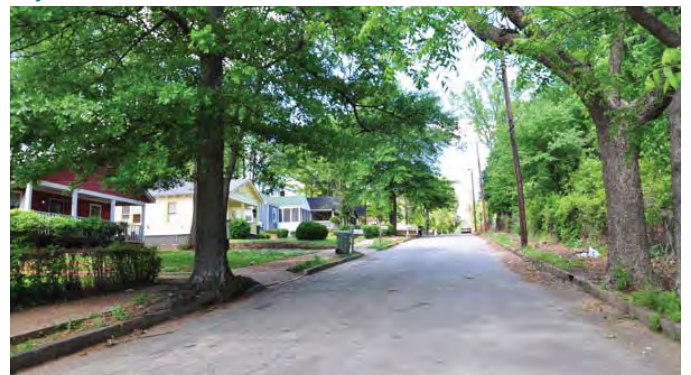
Tree Canopy

- As indicated by the 2008 World Aerial Imagery of Subarea 4 (courtesy of ESRI Resource Center), there are a few pockets of extensive tree canopy within the subarea. But, overall the tree canopy is somewhat sparse.
- Most residential neighborhoods have moderate to mature tree canopy
- Only a handful of the undeveloped parcels within Subarea 4, which are not already designated as open space, are moderately to heavily forested.

Heavily treed areas should be preserved to maintain the benefits of the urban canopy. Benefits include reduced air and surface temperatures, improved air and water quality and promotion of smart growth practices.



Topographic Challenges at City of Atlanta Watershed Property adjacent to Trail Corridor



Typical Existing Tree Canopy within Subarea



Figure 39 - Natural Features Map

Environmental Conditions:

When examining the environmental condition of an urban area, brownfield sites have to be addressed. According to the EPA, the term 'brownfield site' is a property on which expansion, redevelopment, or reuse may be complicated by the presence, or perceived presence, of contamination. As stated in the EPA's *Anatomy of a Brownfields Redevelopment*, as part of the Brownfields Solution Series, cleaning up a brownfield requires:

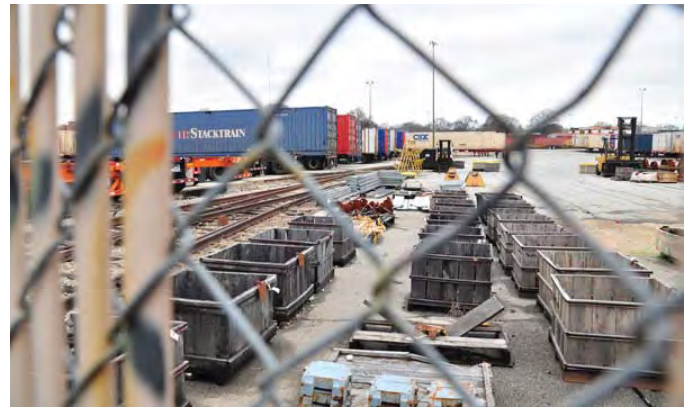
- Conducting property and environmental assessments
- A Phase I environmental assessment should be performed to identify the presence, type, and extent of contamination that may exist onsite. If required, a Phase II assessment may be conducted to sample or test for specific hazards that may have been identified in Phase I and to help develop a remedial action plan.
- A cleanup may be considered complete when local, state, or federal regulatory closure (e.g., a No Further Action Letter) is issued.

Current and past uses of a site provide clues to the environmental conditions. Due to the historically industrial oriented uses of the BeltLine TAD, several parcels are suspect to be brownfields. The January 2005 study by MACTEC classifies eighteen sites within Subarea 4 as potential brownfields (see Figure H.8).

Out of the eighteen sites identified in the subarea, nine of these sites have already been remediated and redeveloped. One noteworthy redevelopment of a former brownfield in Subarea 4 is Glenwood Park. Glenwood Park is a great example of how remediation of brownfields can enhance protection of human health and the environment, revitalize neighborhoods, and improve quality of life.



Transportation & Communication Property within Subarea



Hulsey Yard



Glenwood Park Brownfield Redevelopment



South Park Brownfield Redevelopment

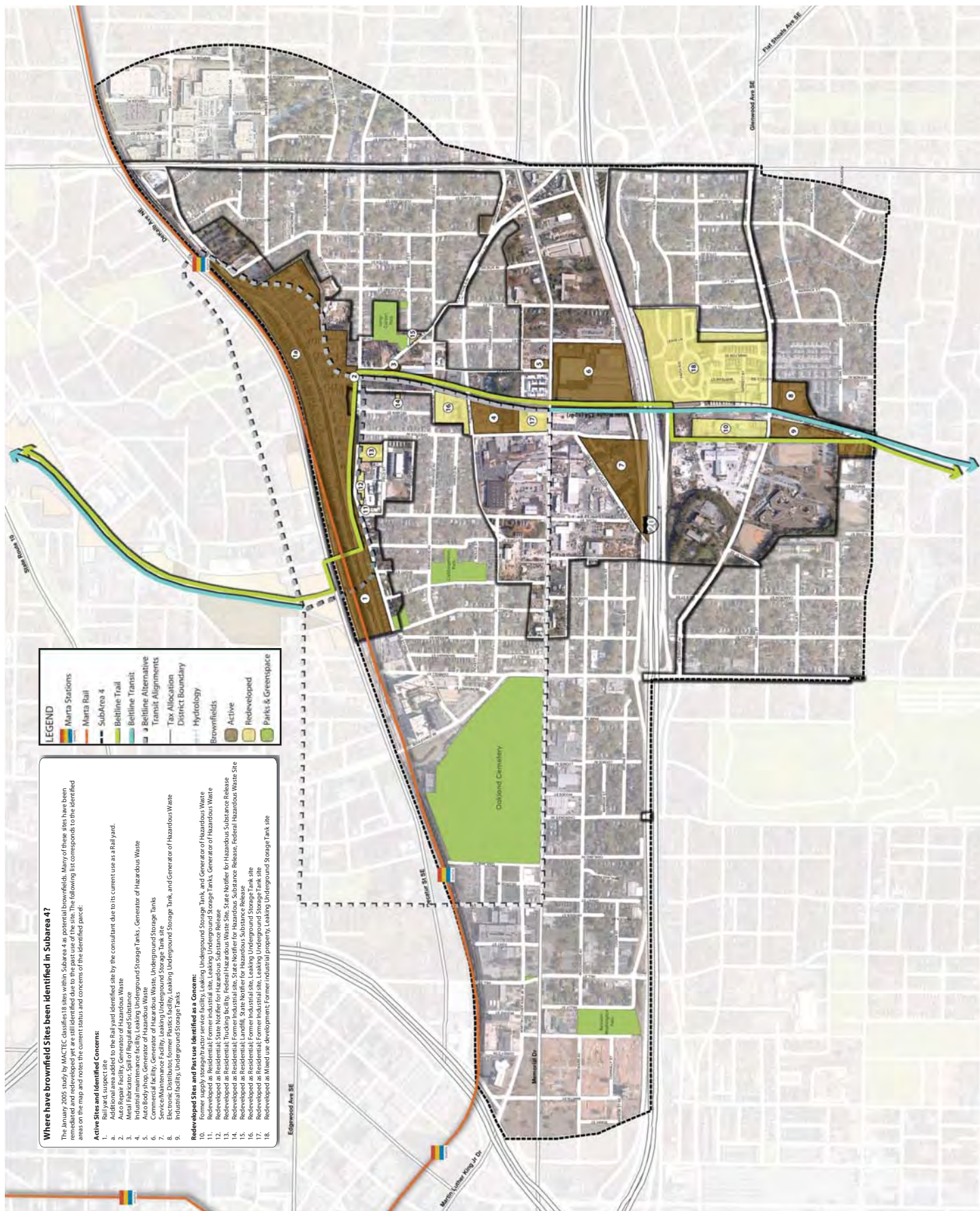


Figure 40 - Environmental Conditions Map

Planning Goals & Objectives

Goals and objectives for Subarea 4 are key elements in the planning process, as they guide the consultant team and the community in the land use, mobility and greenspace planning for the next 25 years. Determination of the community goals and objectives for Subarea 4 began with the very first Planning Committee meeting through a series of questions that asked them to define what they wanted to retain in the subarea, their key concerns, and what would benefit the entire study area in the future. Utilizing the Planning Committee feedback, as well as feedback from previous BeltLine Southeast Study Group meetings and public engagement recorded in previous studies, the consultant team refined the draft goals and objectives, which were then presented at the initial Study Group meeting during the Existing Conditions Interactive Exercise. The Interactive Exercise included three breakout groups (Group A: Land Use, Group B: Mobility, Group C: Greenspace/ Public Arts), which allowed for the community to provide focused feedback in relation to how best to achieve the community goals and objectives in the Subarea in the future. The following are the Goals and Objectives for the Subarea 4 Master Plan.

Land Use & Urban Design

- Encourage a variety of uses at appropriate locations within the subarea to support future transit, promote reuse of historic properties, facilitate economic growth and improve community health.
- Promote development that supports and serves the needs of the neighborhoods - such as day-to-day services, housing and employment, community facilities (post office, library, community centers), and institutions (schools, medical facilities) - at a scale and intensity commensurate with community values and future needs.

- Retain the rich diversity and distinct character of the community through quality architecture, design cohesiveness of streetscapes and a variety of civic spaces.
- Strengthen the subarea's identity as a series of neighborhoods and marketplaces offering housing choices, employment diversity and recreational opportunities for all ages.

Circulation & Mobility

- Provide compatibility, connectivity and continuity in community-wide transportation solutions for all modes of travel through innovative strategies that also protect the character and integrity of the neighborhoods.
- Provide a safe, efficient and continuous network of pedestrian and bicycle facilities as part of all planned streetscape and roadway improvements for improved access to transit and better health of the community.
- Maintain and improve traffic flow along the major thoroughfares of Memorial Drive, Moreland Avenue, Boulevard and DeKalb Avenue, while employing appropriate safety measures, improving accessibility to local businesses, and meeting the parking needs of the community.

Greenspace & Public and Cultural Arts

- Ensure the livability of the subarea by improving the accessibility and quality of parks, open spaces and recreational opportunities, enhancing streetscapes, preserving cultural and historic assets and integrating a public arts program.
- Provide diverse open, cultural, and civic spaces to promote social interaction, celebrate local art, improve community health and retain the distinctive character.

Existing Conditions Synthesis

Based upon the detailed existing conditions inventory and analysis covered in the previous sections of this report; a series of synthesis maps have been created to summarize the findings from this analysis in relation to opportunities and challenges that exist within the subarea. These synthesis maps have been divided into four categories: Development/ Land Use, Mobility, Public/ Open Space and Urban Design. The following summary provides an overview of the opportunities and challenges that are graphically presented on the four synthesis maps:

Development/ Land Use

- Opportunities:
 - Potential for mixed use/ neighborhood commercial node at Wylie/ Flat Shoals intersection due to proximity to BeltLine as well as potential future redevelopment of Hulsey Yards
 - Mixed use potential at Inman Park/ Reynoldstown MARTA station
 - Potential for reuse of historic depot structure as a BeltLine Landmark and transit stop
 - Redevelopment / rehabilitation of industrial & vacant land
 - Expansion of historic neighborhoods and commercial uses along/ behind Memorial Dr., west of Pearl St.
 - Maximize/ expand mixed use near Glenwood Park
 - Potential for mixed use, commercial node at Moreland & Memorial due to proximity to I-20
 - Potential for additional housing opportunities along Memorial Drive
- Challenges:
 - Existing industrial properties slated to remain industrial (especially properties adjacent to BeltLine)
 - Proposing future land uses within subarea that are in accordance with City of Atlanta zoning designation and land use categories that also reflect the neighborhood character and are

appropriate with adjacent existing uses.

- Appropriate transitions of higher density land uses adjacent to existing neighborhoods.

Mobility/ Circulation

- Opportunities:
 - Potential to divide superblocks, which will enhance connectivity and pedestrian safety
 - Potential to provide new and enhance existing pedestrian connections across I-20
 - Improve pedestrian and vehicular safety, while improving aesthetics along Memorial Dr
 - Existing MARTA bus routes / stops occur at 3 proposed BeltLine (at-grade crossings) transit stations within subarea 4. (Glenwood Ave, Memorial Dr. and Wiley and Flat Shoals Ave)
 - Enhance pedestrian access/ wayfinding along Seaboard Ave at MARTA station
 - Reconnection of street grid at Inman Park/ Reynoldstown MARTA
 - Enhancement of and addition to existing on road bicycle network
- Challenges:
 - Three connectivity alternatives for the BeltLine transit (EIS study is in progress) through the study area.
 - Existing Railroad and MARTA Transit lines disrupt street grid, providing limited north-south pedestrian and vehicular connectivity & accessibility by adjacent residential neighborhoods
 - I-20 disrupts street grid, providing limited north-south pedestrian and vehicular connectivity & accessibility by adjacent residential neighborhoods
 - Hulsey Yard, MARTA rail line, I-20 and DeKalb Ave limit north-south connectivity
 - Narrow right-of-way within existing neighborhood streets, especially in Cabbagetown and Renoldstown

- Topographic challenges for creation of street network exist within some superblocks
- Pedestrian connectivity issues to and from MARTA stations (King Memorial and Inman Park)
- Safety concerns of multiple at-grade crossings of BeltLine transit within existing neighborhoods
- Existing street network at Moreland, Memorial, Arkwright, Howell and Flat Shoals intersections
- Width of Right of way along Bill Kennedy Way

Greenspace & Public and Cultural Arts

- Opportunities:
 - Open space/ cultural arts opportunity at Atlanta Stockade
 - Opportunity for greenspace connectivity from Lang Carson Park to BeltLine greenspaces
 - Potential connections to surrounding greenspaces (Cabbagetown Park, Grant Park, Oakland Cemetery)
 - Potential to enhance existing community garden at WonderRoot (adjacent to vacant land)
 - Public Art opportunities on underutilized portions of existing community facilities due to oddly shaped parcel boundaries (eg. existing church on triangular shaped parcel at the intersection of Flat Shoals, Gibson and Mauldin)
 - Potential to utilize historic structures for public/ cultural arts
 - Potential mural/ evolving art installations potential throughout the subarea
 - Existing public art/ Reynoldstown gateway at Moreland Ave/ Seaboard Ave.
 - Public art opportunities at historic depot
 - Potential for privately owned greenspace in some of the larger redevelopment sites
- Challenges:

- Limited access potential for watershed management property at Holtzclaw.
- Lack of viable, large land parcels for park space within existing neighborhoods.

Urban Design

- Opportunities:
 - Store frontage opportunities along Flat Shoals Ave, Memorial Dr. and Glenwood Ave/ Bill Kennedy Way
 - Streetscaping along Memorial Dr/ creating a connection to the future Memorial-MLK Mall; which is to become a linear park connection from Oakland Cemetery to the Capitol
 - Potential for reuse of historic depot structure as a BeltLine Landmark and transit stop
 - Reuse of historic facades to retain neighborhood history and character
 - Strengthen neighborhood character and history through future development (design/ architectural guidelines, etc)
- Challenges:
 - Lack of clear, direct routes into the neighborhoods
 - Roadway widths are narrow, thus limiting the streetscaping opportunities

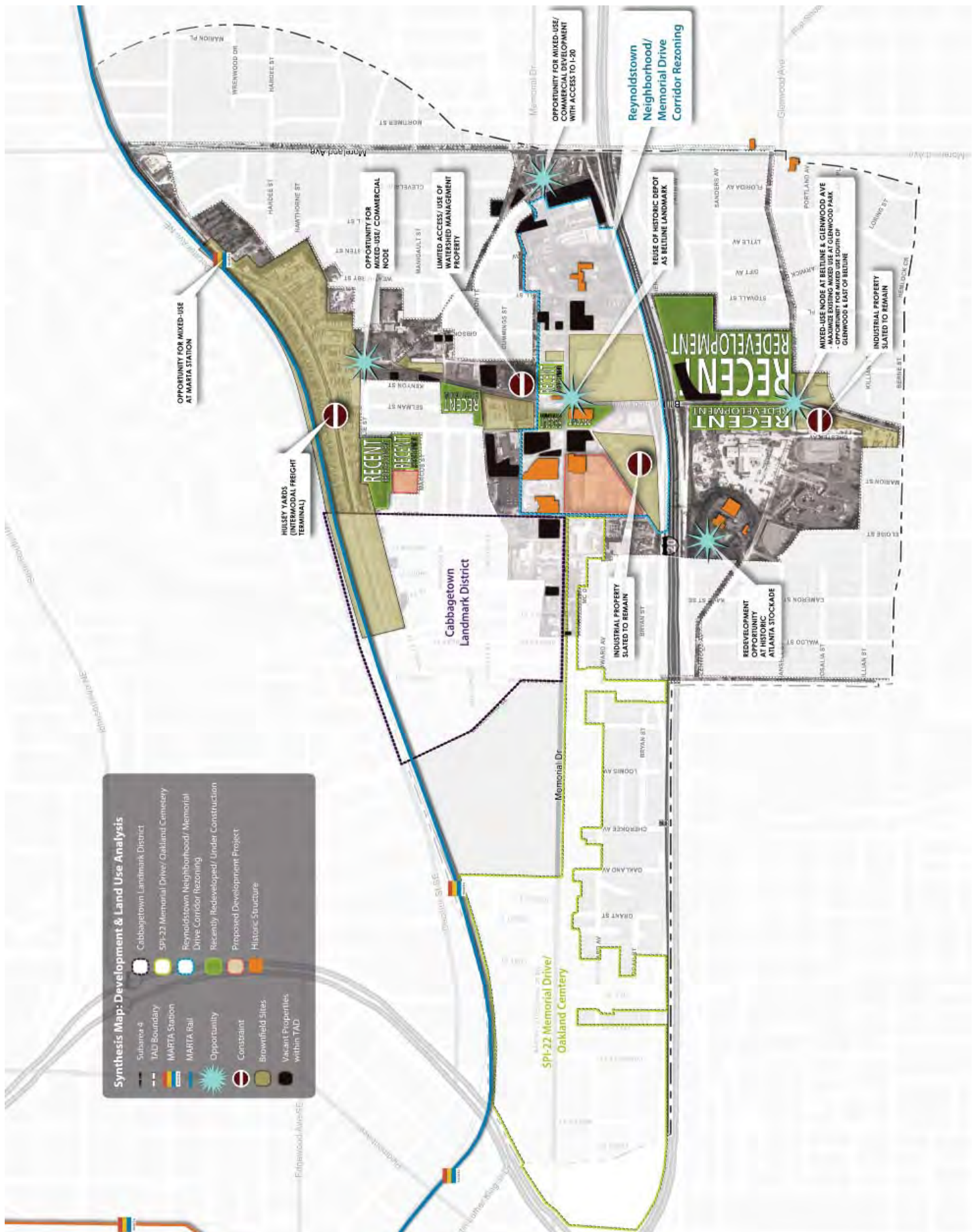


Figure 41 - Synthesis Map: Development & Land Use



Figure 42 - Synthesis Map: Mobility Analysis

Figure 43 - Synthesis Map: Public Space Analysis



Appendix A: Windshield Survey Training Manual

Training Manual For:

Existing Conditions Windshield Surveying

The purpose of this Training Manual is to provide a consistent and clear methodology for conducting physical windshield surveys on a parcel-by-parcel basis. The methodology outlined herein pertains to physical conditions of real property and is intended to be supplemented with companion surveys of open space (see separate Training Manual).

Overall Methodology

It is important to note that conducting property surveys with the intent to use the data to “qualify” an area for “urban redevelopment” (as enabled by State of Georgia Legislation) requires the utmost care and consistency. In addition to being professionally desirable, it is particularly important given the potential for the information to be challenged in a court of law. In order to ensure the highest quality of surveyed data, windshield surveys should be conducted under the following overall parameters:

- **SURVEYING TEAMS:** Due to safety and consistency reasons, window surveying should always be done in teams of 2 individuals (minimum). This allows for efficient use of a “driver” and a “transcriber.” In addition, it provides for an extra pair of eyes to validate survey conditions. In practice, both/all surveyors should agree on the condition.
- **TRIP DURATION:** Due to the monotonous and tiring nature of windshield surveying, surveying trips should be limited to no more than 4 hours in duration.
- **TRIPS PER DAY:** Similarly, only one trip per surveying team per day is recommended.
- **DATA ENTRY:** To the greatest extent possible, surveyed information should be entered as close to the survey date as possible. In this regard, any questions raised by the individual conducting data entry can be validated by surveyors while the information is fresh in their memory.
- **DATA SHEETS:** All surveyed data should be entered in a clear and consistent format in the field (all teams should use the same notations on the data sheets at all times). Each individual survey sheet/map should be dated and include the names of the individuals conducting the surveying. Each individual survey sheet/map should be saved and filed accordingly for future reference. “Transcribers” should feel free to make liberal use of margin notes to clarify unique conditions.
- **RESURVEYING:** In instances where the individual entering data is not entirely sure of the recorded survey information, the survey team “transcriber” should be consulted to verify the information. If still in doubt, the information should be resurveyed to ensure accuracy.

Beltline Surveying Attributes

In the case of the *Beltline Feasibility Study, Fall 2004*, four discrete pieces of parcel-based information will be surveyed in the field including:

- 1) Existing Land Use
- 2) Existing Building Condition
- 3) Existing Building Occupancy
- 4) Existing Parcel Underutilization

Existing Land Use

For this effort, the Land Use present on each parcel will be surveyed generally using the categories contained within the City of Atlanta's 15-Year Comprehensive Development Plan (with one category added for "parking" and one category added for "vacant land"). For the purposes of surveying, these categories can be described as follows:

1) Open Space:

This category pertains to any piece of property that is *intentionally* being used for any open space uses (i.e., rather than a vacant lot or natural undeveloped property). It is important to remember that you are surveying the parcel, not portions of the parcel. Therefore, a parcel that contains an apartment complex that happens to have a small courtyard would not be considered "open space." However, if the courtyard was a part of the apartment complex but on a parcel unto itself, that parcel would be considered open space. An open space does not have to be publicly-owned to be considered "open space."

Helpful Hint:
If a parcel is under construction, enter it as the intended use at the completion of construction.

Samples: *Parks (active or passive), plazas, recreation fields, trails, golf courses, nature preserves, school yards, courtyards, gardens, etc.*

2) Single-Family Residential:

This category pertains to any piece of property that is occupied by one, single-family housing unit (typically a house). This does not include "houses" that are subdivided into multiple units. This does not include a single parcel that contains more than one "house." It does not matter whether the house is owner-occupied or a rental property as long as there is one dwelling unit per lot.

Samples: *Detached house, townhouse on a fee-simple lot (i.e., there is one unit per lot), mobile home (if the mobile home is on a lot by itself), etc.*

3) Low-Density Residential:

This category pertains to situations in which multiple housing units are contained within a single lot, but at a low density (i.e., approximately less than 12 units per acre). Once again, it does not matter whether the housing units are owner-occupied (such as in a condominium arrangement) or rental as long as there are multiple units per lot at a low density.

Samples: *Several homes on a single lot, duplexes, triplexes, townhomes with ample spacing between buildings, 1 story assisted living facilities, etc.*

4) Medium-Density Residential:

This category pertains to situations in which multiple housing units are contained within a single lot, but at a medium density (i.e., approximately 12-36 units per acre). Once again, it does not matter whether the housing units are owner-occupied (such as in a condominium arrangement) or rental as long as there are multiple units per lot at a medium density. In practice, most apartment complexes fall in this category unless the buildings are one story and spaced far apart.

Samples: *2-4 story apartment complexes, tightly-packed urban townhomes, 2-4 story assisted living facilities, etc.*

5) High-Density Residential:

This category pertains to situations in which multiple housing units are contained within a single lot, but at a high density (i.e., approximately 36-72 units per acre). Once again, it does not matter whether the housing units are owner-occupied (such as in a condominium arrangement) or rental as long as there are multiple units per lot at a high density. In practice, most mid-rise apartment complexes fall in this category.

Helpful Hint:
Every parcel must have a land use designation...if unsure, consult with the quality control manager.

Samples: 5-12 story apartment/condo/senior/assisted living residential towers, etc.

6) Very High-Density Residential:

This category pertains to situations in which multiple housing units are contained within a single lot, but at a very high density (i.e., above approximately 72 units per acre). Once again, it does not matter whether the housing units are owner-occupied (such as in a condominium arrangement) or rental as long as there are multiple units per lot at a very high density. In practice, most high-rise apartment/condo complexes fall in this category.

Samples: 13+ story apartment/condo/senior/assisted living residential towers, etc.

7) Low-Density Commercial:

This category pertains to parcels that contain a commercial business – typically a business that sells goods and/or services (that is not manufacturing or industrial) at a low density (i.e., approximately 3 stories or less). For the purposes of this survey, this also includes general office uses (unless specifically related to a civic or service-provider “institution”).

Samples: Retail establishments, restaurants/eating establishments, laundry, drug stores, offices, grocery stores, gas stations, automobile repair shops, florists, bakeries, coffee houses, repair shops, funeral homes, hotels, motels, spas, salons, bars, banks, lodges/clubs, commercial recreation facilities (eg., go-carts, miniature golf, driving range, workout club, batting cages, etc.), printing shops, leasing centers, strip centers, car washes, self-storage, movie theatres, etc.

8) High-Density Commercial:

This category pertains to parcels that contain a commercial business - typically a business that sells goods and/or services (that is not manufacturing or industrial) at a high density (i.e., approximately 4 stories or more). In practice, this type of commercial intensity is only found in downtown urban locations. For the purposes of this survey, this also includes general office uses (unless specifically related to a civic or service-provider “institution”).

Samples: Malls, mid to high-rise office buildings (over 4 stories), mid to high-rise shopping centers (over 4 stories), etc.

9) Industrial:

This category pertains to parcels that contain a manufacturing, production or processing use. In general, this would include anything that requires the use of heavy machinery and typically involves loading and unloading of heavy trucks. This category should also be used for areas that are designated for heavy storage of materials. For use in this survey, this should also include any utilities or communication-related uses.

***Samples:** Trucking facilities, factories, power plants, recycling centers, junk yards, refuse processing centers, dumps, communication towers, power sub-stations, water treatment facilities, manufacturing facilities, distribution centers, etc.*

10) Office/Institutional:

This category pertains to parcels that are used exclusively for civic use, or service-provider institutional uses (including offices for such uses). Institutional uses generally include any civic or service-related facility even if not publicly owned or operated.

***Samples:** Healthcare providers, hospitals, schools (public or private), community centers, worship facilities, social service providers, police/fire stations, homeless shelters(non-residential), job training facilities, government offices, post offices, libraries, museums, correctional facilities, etc.*

11) Office/Institutional/Residential:

This category pertains to parcels that contain a mix of the Office/Institutional uses described above and residential uses. Typically, this occurs where a specific service provider is also providing housing to its users. In practice, this condition will be rare.

***Samples:** Residential homeless shelters, permanent care facilities, etc.*

12) Mixed-Use (20% residential):

This category pertains to parcels that contain a mix of residential and non-residential uses, as long as the residential uses are approximately 20% or more of the development. In some instances this will include a mix of uses within a single building. In other cases, it will simply include separate buildings with separate uses but contained within a single property.

***Samples:** Apartment building with a drugstore on the bottom floor, an apartment complex on the same parcel as a strip center, etc.*

13) Parking:

This category is confined to parcels that are solely used for parking, even if they are associated with an adjacent use on another parcel. If a lot is used for parking but is not paved, then it should be categorized as "vacant land" (see the next category).

***Samples:** Paved parking lot, parking deck, etc.*

14) Vacant Land:

This category pertains to parcels that do not contain a primary structure. In some instances, a lot will contain the ruins of a dilapidated structure; if the ruins are simply the remaining foundation walls, then the lot should be considered "vacant." If part or all of a dilapidated structure remains, then the lot should be categorized as the use that was last present in the structure (to the extent that it can be determined). If a lot contains a very small appurtenance, such as a shed or out-building, it may be considered vacant land.

***Samples:** Undeveloped lot, a lot that once contained a structure, a lot cleared for construction but with nothing on it, a gravel lot used for parking, etc.*

Existing Building Conditions

The assessment of existing building conditions can be somewhat subjective and can be difficult to ascertain using only “windshield” methodology (as proposed for this study). Therefore, it is critically important to be consistent in determining building conditions. For the purposes of this study, physical building conditions will be based on external observations only (i.e., only what can be observed from a car window, from the street). In making a determination, take a few moments to look at the following building elements: roof, exterior walls, windows/doors, foundations, porch/balcony, and overall exterior upkeep (including the yard and fencing). This study will rank building conditions based on 4 categories as follows:

Helpful Hint:
Every parcel that is not “vacant land” must have a building condition assigned.

- 1) **Standard:** The structure is in relatively sound condition or requires only very minor repairs such as: painting, replacement of a few pieces of trim, and improved landscaping. The structure is “Standard” if: there is no visible sign of roof/eave damage; the structure contains all of its visible windows and doors; there are no noticeable defects in the siding; the foundation/porch is not sagging.



Helpful Hint:
If a parcel is partially under construction, designate the parcel as “Standard.”

- 2) **Substandard:** The structure requires some level of basic repair as follows: minor repairs to the eaves/facias; new shingles/roofing (but sound structural underlayment); replacement of several windows and/or doors; partial replacement to areas of the siding; minor shoring up of the foundation; structural repairs to the porch/canopies, etc. In most cases, a “Substandard” structure requires “minor” rehabilitation and in many cases, only requires a modest monetary investment.



- 3) **Deteriorated:** The structure is “Deteriorated” if it requires any major repairs as follows: new roof (including structural repairs – visible sagging or visible rafter lines); full replacement of all the trim and eaves/facias; the structure is partially open to the elements (such as missing windows/doors/holes in the wall); significant replacement of siding materials; major shoring up or replacement of the foundation; full replacement of the porch or canopies, etc. In most cases, a “Deteriorated” structure requires “major” rehabilitation that will require significant monetary investment.



Helpful Hint:
If there is more than one structure per parcel, asses the parcel as a whole, on average (do not include multiple rankings per parcel).

- 4) **Dilapidated:** A structure that is “Dilapidated” is a structure that represents an obvious health and safety hazard. In most instances, the structure is clearly beyond repair and is most likely open to the elements to a large degree. This includes structures with no/little roof cover; caving in walls/roofs; completely overgrown with Kudzu or ivy; partially burnt-out interiors/exterior; missing foundations, etc. In most instances, the cost of repairing the structure is equal to or greater than replacing it. Unless there is significant historic value, most of these structures should probably be demolished.



Existing Occupancy

Similar to Building Conditions, the assessment of “Occupancy” can be somewhat subjective and difficult to ascertain. For the purposes of this study, building occupancy will be based on external observations only (i.e., only what can be observed from a car window, from the street). In making a determination, take a few moments to look at the several tell tale signs including: presence of furniture/curtains in the window, full trash cans, mail sticking out of mail-box, cars in the driveway, furniture on the porch, toys/bikes in the yard, patio furniture, boarded-up windows/doors, “Open” signs, lights on in the interior, etc. This study will documenting occupancy, use the following categories:

Helpful Hint:
All parcels that have a building condition must have an occupancy ranking as well.

1) **Occupied:** This designation is based on clear evidence of habitation by legitimate occupants, such as a well-maintained yard, cars parked the driveway, curtains in the windows, the presence of children’s play equipment, “Open” signs (for businesses), cars in the parking lot during business hours, the presence of deliveries such as mail, newspapers, etc.

2) **Unoccupied:** This designation is based on clear evidence of the lack of legitimate occupants. The evidence includes an obviously unoccupied for-sale or for-rent dwelling or structure, missing or broken doors or windows, clear abandonment, boarded up windows/doors, etc.



3) **Partially Occupied:** This designation is applicable to buildings designed to house two or more tenants such as apartments and commercial strip centers. As above, it is based on evidence of habitation by legitimate occupants and uses the same criteria on a tenant by tenant basis. For instance, an apartment complex that has people living in some units but has several other boarded up units would be considered “Partially Occupied.” This designation would also apply to parcels that contain more than one structure – some of which are occupied and some of which are not occupied.

Helpful Hint:
If there is more than one structure on a parcel, asses the parcel as a whole with one ranking (do not include multiple rankings per parcel).

Property Underutilization

Due to its subjectivity, the extent to which existing properties are “underutilized” will probably not be factored into the official determination of “slum and blight.” However, it will be a major determinant in trying to estimate the quantity of new development generated around the Beltline, and thus an important factor in assessing potential tax revenue within a Tax Allocation District (TAD). Individual survey teams will not initially be asked to survey this category. Rather, in order to ensure consistency, existing surveys (by Ryan Gravel/TPL/CHRC) will be used and validated by a “Utilization survey team” that takes into account a wide variety of factors including: existing land coverage/density, likely market for redevelopment, viability/sustainability of existing uses, location relative to future transit stops, access, suitability of existing structures for alternative uses, etc. Based on the windshield survey’s mentioned above, all properties that are either Vacant Land or are in Dilapidated Condition will automatically be considered “underutilized.” In addition, many “unoccupied” structures will be likely candidates.

Survey Standards

For each of the categories being surveyed, it is extremely important that each survey team use consistent survey codes to assist in the ease of data entry and for documentation. The survey codes are as follows:

LAND USE CATEGORY	SURVEY CODE		DATA ENTRY CODE
Open Space	OS		<i>OS</i>
Single-Family Residential	SF		<i>SF</i>
Low Density Residential	LR		<i>LR</i>
Medium Density Residential	MR		<i>MR</i>
High Density Residential	HR		<i>HR</i>
Very High Density Residential	VR		<i>VR</i>
Low Density Commercial	LC		<i>LC</i>
High Density Commercial	HC		<i>HC</i>
Industrial	I		<i>I</i>
Office/ Institutional	OI		<i>OI</i>
Office/Institutional/ Residential	OIR		<i>OIR</i>
Mixed-Use (20% Residential)	MU		<i>MU</i>
Parking	PK		<i>PK</i>
Vacant	V		<i>V</i>

BUILDING CONDITIONS CATEGORY	SURVEY CODE		DATE ENTRY CODE
Standard	1		<i>1</i>
Substandard	2		<i>2</i>
Deteriorated	3		<i>3</i>
Dilapidated	4		<i>4</i>

BUILDING OCCUPANCY CATEGORY	SURVEY CODE		DATA ENTRY CODE
Unoccupied	•		<i>0</i>
Partially Occupied	√		<i>1</i>
Occupied	(leave blank as default)		<i>2</i>

Appendix F: Support Documents

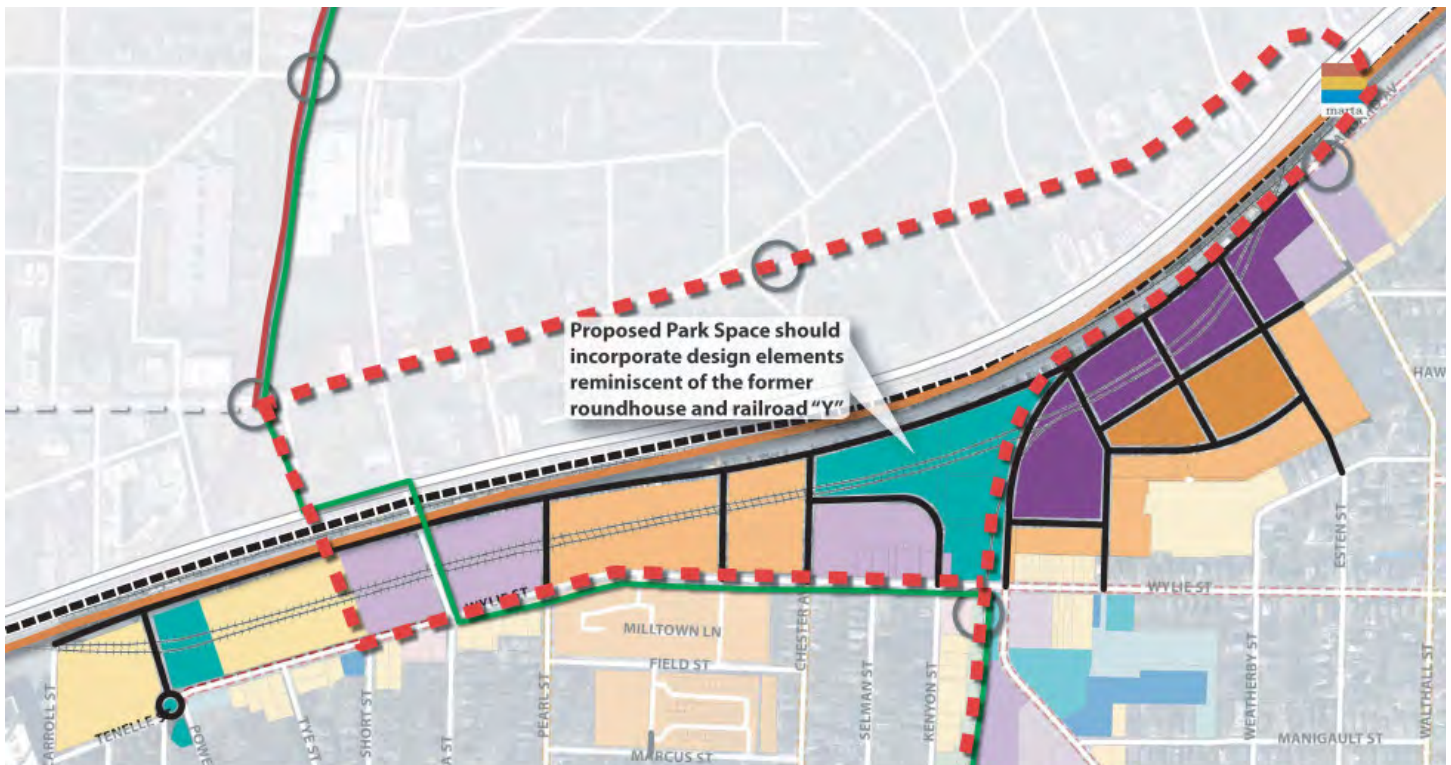
Throughout the Subarea 4 Master Planning Process many different opportunities and redevelopment alternatives were explored. These concepts were discussed with community members and stakeholders at key points during this process. Two specific redevelopment options received support from the community but were not included in the overall master plan recommendations due to the feasibility of these projects to occur within the life span of this plan. These two development options have been summarized below:

Hulsey Yard Development Option

As a fully functioning intermodal freight terminal, Hulsey Yard is unlikely to redevelop within the lifespan of this master plan. Therefore, the 57 acres within the Tax Allocation District are shown as Transportation/Communication/Utilities on the recommended land use plan. A Hulsey Yard Development Option is also provided, as an inset to the Subarea land use plan, to ensure that this area is integrated into the BeltLine Subarea 4 Master Plan Concept and Goals when and if redevelopment occurs. Recommended land use and circulation recommendations for the Hulsey Yard Development Option have been categorized below from west to east, with north-south street names used as general boundaries.

Carroll Street to Short Street

- Medium to high density residential uses integrate appropriately into the existing residential fabric while providing density.
- Proposed expansion of Esther-Peachy Lefevre Park, to be bounded on the west by a proposed traffic circle and proposed extension of Powell Street
- The proposed Powell Street extension connects to the proposed east-west extension of Seaboard Avenue (at the Inman Park MARTA Station), runs parallel to DeKalb Avenue and reconnects with the existing street grid at Carroll Street
- Recommend a tunnel at Short Street for the BeltLine Transit



Hulsey Yard Development Option

Short Street to Chester Avenue

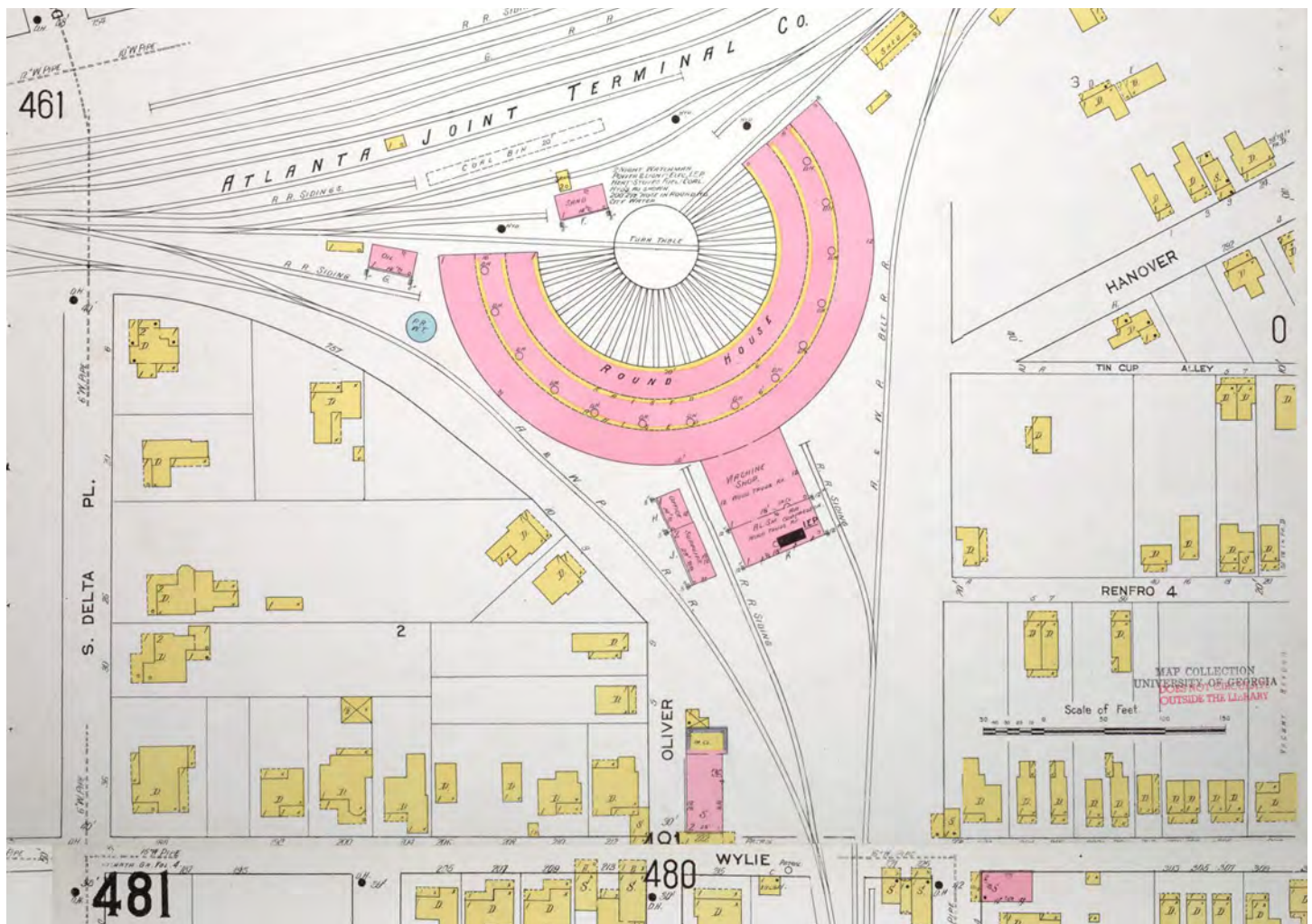
- Recommend Low density mixed-use along both sides of the Krog Tunnel entrance to enhance this intersection as a neighborhood-oriented mixed-use/commercial node.
- Medium density residential uses recommended to complement and integrate with the existing neighborhood and the recent redevelopment directly south, Milltown Lofts
- Propose three north-south extensions of the existing street grid, including Pearl Street and Chester Avenue, to connect to the proposed east-west street connecting Carroll Street to Seaboard Avenue

Chester Avenue to Flat Shoals Avenue

- Propose a large, central park space at the center of the Hulsey Yard Development Option. The 1911 Sanborn Map shows this area as the location of the Atlanta Joint Terminal Company Railroad Round House. The proposed park space shall incorporate design elements reminiscent of the railroad round house.

Flat Shoals Avenue to Seaboard Avenue

- Several new roads and extensions of existing roads are proposed for this area to provide smaller, more walkable blocks that integrate into the existing fabric.
- Medium density residential uses are proposed along the southern boundaries of the Hulsey Yard property to provide the appropriate height and intensity transition to the existing neighborhoods. High density mixed-use is proposed along the BeltLine corridor extending to the Inman Park MARTA Station.



1911 Sanborn Map

Pedestrian Bridge

As part of the proposed park/ community facility at Atlanta Stockade, which is recommended within Section IV – Parks and Open Space, a pedestrian bridge at Pearl Street was explored to traverse above I-20 and connect the neighborhoods to the north and south as well as provide pedestrian access to this proposed park. The proposed pedestrian bridge was explored only as a long-term recommendation that would occur once the proposed developments to the north and south are established. Due to the long-term nature of this recommendation, the existing bridges over I-20 at Boulevard, Bill Kennedy Way and Moreland Avenue are of a higher priority for pedestrian improvements.



Proposed Pedestrian Bridge