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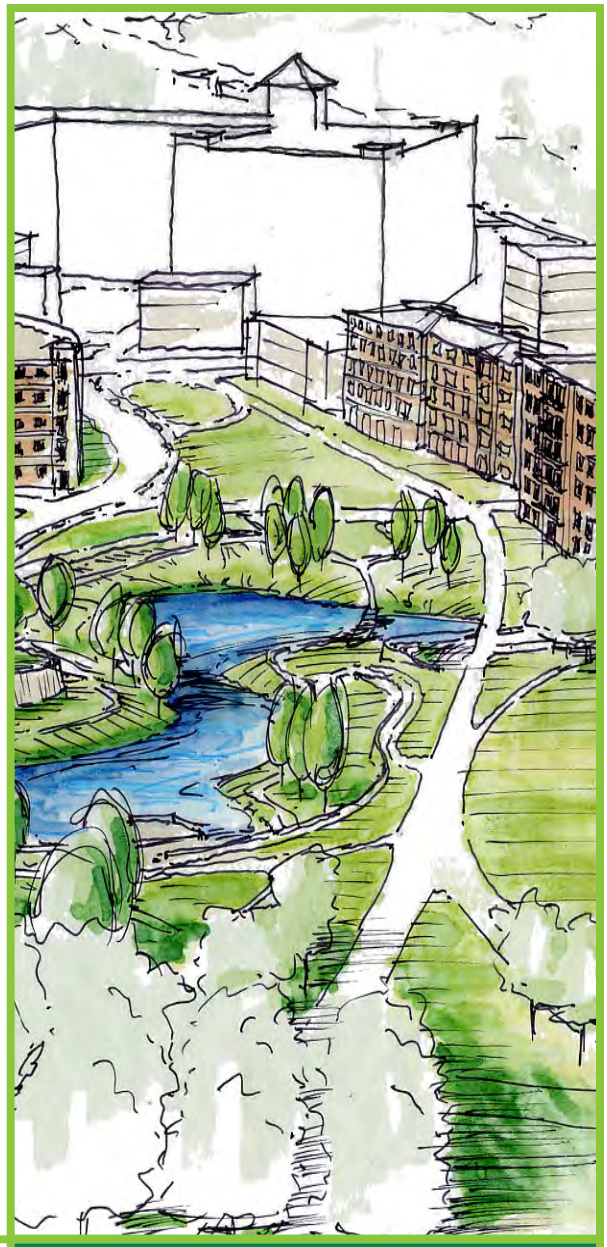
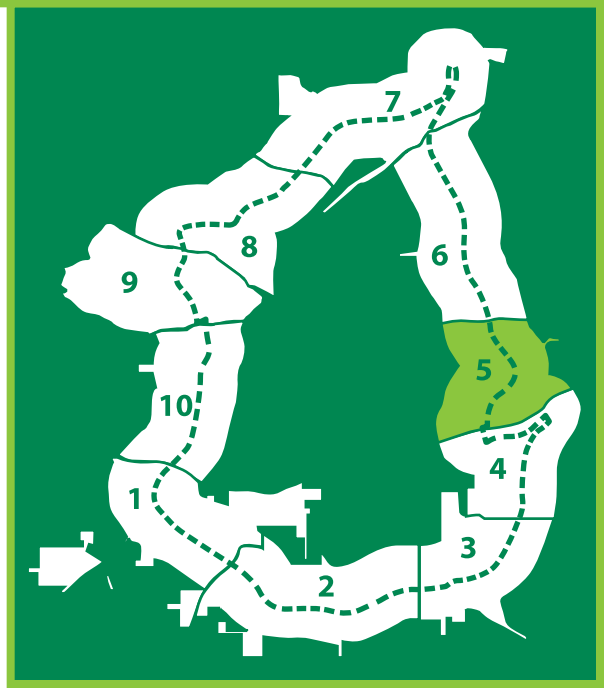


Atlanta BeltLine Master Plan

SUBAREA 5

FREEDOM PARKWAY

Appendix



Prepared for
Atlanta BeltLine, Inc.
by EDAW, Inc., Arcadis & APD

February 2009

BeltLine
Atlanta Connected

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Appendix

ASAP Amendments and Zoning Recommendations

The table presented in the *Future Land Use and Circulation* section presents the recommended amendments to the City's Future Land Use Map to allow the development of Subarea 5 as envisioned by the community and presented in this Master Plan. If a rezoning is also required to allow the recommended development, a potentially compatible zoning category is included in the table. This section explains the assumptions made to determine this compatibility. Zoning compatibility and recommended zoning changes were only made for parcels that are changes between the City's 15-Year Plan and the SubArea 5 Land Use Recommendations.

In general, land use recommendation compatibility with current zoning was determined using the Zoning Compatibility Table presented on the following page.

However, in the case where several parcels have been assembled and large developments are proposed, the compatibility table may suggest that the current zoning is incompatible with the proposed land use. Although land use recommendations are based on the land use proposals for those developments, the overall zoning for the assembled property may be more intense than the proposed use on a parcel within the assemblage. In these cases, it was determined that the zoning is compatible with the proposed land use given the context of the overall development proposal. This is especially relevant in the area around the proposed North Avenue Park where multiple redevelopment proposals have been approved and are under construction.

When a parcel is recommended for future park space, zoning is considered to be compatible since there is no specific zoning code for park space.

When the land use category Mixed-Use 1-4 Stories is proposed on a major corridor, the compatible zoning is increased from MRC-1 to MRC-2. This same increase in intensity is also proposed for Mixed-Use 5-9 Stories along major corridors, where the recommended zoning category is increased from MRC-2 to MRC-3.

When multiple zoning categories are shown to be compatible with the proposed land use category, the table field will contain the most intense zoning category from the Zoning Compatibility Table.

Due to the flexible nature of each zoning district and its various special-use permitted uses, some recent developments do not strictly adhere to the suggested zoning codes in the Zoning Compatibility Table, even if the built development meets the SubArea 5 recommended land use category. In these cases, current zoning is determined to be compatible. Sager Lofts is one example of this scenario.

The rationale for the recommended zoning district for each land use category is described below.

Residential 1-4 stories: Zoning Districts R-3 through R-5, RG-1 and RG-2, MR-1 and MR-2, and MR-4A were selected to be compatible. Districts R-1 through R-2B were eliminated because it is believed that the lot size requirements preclude them from being applicable in the SubArea 5 study area given property values and the desire of the City to promote transit supportive density. MR-1 is described as being single-family with a zero lot line on one side. MR-2 is included because even though it is multi-family, the building height is limited to 3 stories. MR-4B is included because it is often used for townhome developments.

Residential 5-9 Stories: Zoning Districts RG-3 through RG-5, MR-3, and MR-4A. The RG-3 district allows for Floor to Area Ratios that on smaller lots could potentially meet the recommended number of stories in the land use category. RG-4 and RG-5 allow for traditionally medium density multi-family intensities. MR-3 and MR-4A both have an 8 story height limit.

Residential 10+ Stories: Zoning Districts RG-6, MR-5A and B, and MR-6. RG-6 allows a 6.4 Floor to Area Ratio, that with the City's required open space would result in structures greater than 10 stories. MR-5A and B have 15 story maximums, and MR-6 has a 6.4 Floor Area ratio with a 22 story maximum.

Mixed-Use 1-4 Stories: The Mixed Use land use categories were the most difficult to determine compatibility because so many of the City's zoning districts allow mixed use by right. The zoning districts most closely following the scale of the least intense mixed use category are RL-C, LW, and MRC-1

Mixed-Use 5-9 Stories: MRC-2 is the compatible zoning code for this land use category. When this land use category is located on a major corridor, the recommended zoning category is bumped up to MRC-3

Mixed- Use 10+ Stories: MRC-3 is the compatible zoning code for this land use category. Meant to be used on developments with regional attraction, the areas recommended for this zoning district are located in close proximity to the proposed transit stations. In most cases, properties are already zoned to this category.

Low Density Commercial: NC and C-1 were determined to be the most compatible with this land use category. Although C-2 allows similar uses to C-1, its permitted building scale and intensity of these uses is determined to be too intense for this land use category, especially within the SUbArea 5 study area.

Within the SubArea 5 study Area, no recommendations for single-use office, industrial, high density commercial or community facilities are being made. Therefore, the Zoning Compatibility Table does not include recommended zoning categories. In addition, open space does not require a specific zoning code, so no recommendations are being made for Proposed Park Space.

Proposed Future Land Use Designation	Zoning Compatibility Table																																					
	R-1	R-2	R-2A	R-2B	R-3	R-3A	R-4	R-4A	R-4B	R-5	RG-1	RG-2	RG-3	RG-4	RG-5	RG-6	RL-C	MR-1	MR-2	MR-3	MR-4A	MR-4B	MR-5A	MR-5B	MR-6	LW	NC	C-1	C-2	C-3	C-4	C-5	MRC-1	MRC-2	MRC-3	PD-H	PD-MU
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																																						
Industrial																																						
Proposed Park Space																																						
Existing Park Space																																						
Community Facility																																						

Green boxes indicate compatible zoning within the land use category. These are generalizations. Height limitations suggested by land use should be adhered to.

ASAP POLICY RECOMMENDATIONS

Four overarching themes will guide the Subarea 5 Master Plans

- Redevelopment should be at a density sufficient to support public transit;
- Design should celebrate the distinct character of the area through the BeltLine Trail and public art opportunities;
- The layout of streets should promote cross-BeltLine connectivity; and
- Redevelopment should respect the existing historic context and promote the preservation of historic resources, wherever possible.

The Atlanta Strategic Action Plan (ASAP) supports these existing themes. The following analysis identifies areas of overlap between the draft ASAP, which is still being developed, and the Subarea 5 plan and identifies additional ASAP policies to promote specific elements of the Subarea 5 vision. The policies in italics are those that would be supported with the implementation of the Master Plan.

Housing

The land use plan envisioned for Subarea 5 supports ASAP housing policies, such as preserving existing neighborhoods, while providing mixed-income housing development. The City's fair share housing policy recommends that all parts of the City incorporate a fair share of affordable and special needs housing. The Subarea 5 plan accommodates the need for mixed-income housing development by specifying a wide range of housing types at a variety of densities. The ASAP housing policies also encourage the development of affordable housing in or near the City's major employment and activity centers, including along the BeltLine.

Below is a list of General Housing Policies from the ASAP, with policies that are particularly relevant to the Subarea 5 Land Use and Circulation Plan underlined:

General Housing Policies:

1. Promote opportunities for mixed-income housing developments throughout the City.
2. Maintain, rehabilitate and replace the existing housing stock where appropriate.
3. Increase opportunities for home ownership for low and moderate-income residents.
4. Promote housing affordability in order to minimize the number of households that must pay more than 30 percent of their income in rent or mortgage payments.
5. Promote the creation of new housing in appropriate locations.
6. Increase public, private funds to help construct, acquire and rehabilitate housing.
7. Promote full implementation of all fair housing laws.
8. Promote a wide range of housing types to meet different housing needs and income levels within the BeltLine Corridors and along major employment centers: Downtown, Midtown and Buckhead.

Community Facilities

The ASAP Community Facilities policies for parks and recreation are particularly relevant to Subarea 5, given the proposal for a major new park. The policies reflect the City's desire to expand its park lands, improve park accessibility, and strengthen protection for environmentally sensitive lands. The vision for the planned North Avenue Park is fully consistent with these goals.

The ASAP could further enhance policies by more fully addressing the appropriate interface between development and adjacent park land. Development along park frontage should encourage visibility and surveillance of the park, as well as provide convenient pedestrian access to and from the adjacent green space.

Below is a list of Community Facilities policies regarding parks from the ASAP, with policies that are particularly relevant to the Subarea 5 Land Use and Circulation Plan underlined:

Policies for Parks, Open Space, and Greenways:

1. Meet or surpass a goal of 10 acres of core parkland per 1,000 persons by the year 2020.
2. Unify the City by developing multi-use greenway trails.
3. Preserve, enhance, and expand the undeveloped flood plain as public open space.
4. Permanently protect 20% of the City's land area with an emphasis on sensitive lands such as flood plains, wet lands, and public open spaces.
5. Create a special events venue.
6. Acquire neighborhood park sites, meeting the City's adopted park design standards. Acquisitions will focus on sections of the City that are currently underserved.
7. Provide core park sites within a .5 mile travel distance for every child.
8. Provide incentives for the development of community open spaces within development projects.
9. Evaluate existing park sites against the park planning guidelines.
10. Protect Atlanta's tree canopy through appropriate policies and procedures.
11. Establish measurements and reporting for public open space within projects receiving city funding or incentives.

Policies for Maintenance and Management of Parks:

1. Maximize efficiency of staff and management by providing needed job training.
2. Ensure the efficient maintenance of existing park land and facilities by providing an adequate dedicated revenue stream.
3. Increase staff and equipment as new park land and facilities are acquired to ensure efficient maintenance.
4. Maximize efficient utility of park components by adopting uniform standards for play equipment and park furniture.
5. Utilize Park Planning Guidelines in the design of all parks and public open spaces.
6. Clearly post park rules and regulations in all parks.
7. Produce park management plans that include staffing, maintenance schedules, equipment, training, quality control, and annual cost.
8. Locate new block, neighborhood, and community parks only in areas that are highly visible from surrounding residential streets.
9. Include park rules and regulations as part of the City's law enforcement code, so that police may enforce observance of these regulations.
10. Utilize greenway trails to increase activity and visibility in parks and neighborhoods.
11. As part of police training, educate all police on park regulations, as specified in the City Code, so that they will know to enforce such regulations.
12. Include cleanup costs in the fees charged for special events.
13. Close parks with security problems after dark. When parks are open at night, provide adequate lighting and park personnel. House caretakers on site where appropriate.

Policies for Funding Park Acquisition:

1. Finance parkland acquisition by acquiring large tracts of open space and sell appropriate residential home sites to overlook a centralized park. Use the resulting revenues to pay for the open space acquisition.
2. Utilize conservation easements for greenway acquisition.
3. Use special taxes and districts such as community improvement districts (CIDs), special tax districts (STDs), and tax allocation districts (TADs) to increase the quantity and improve the maintenance of parks and public open space.
4. Utilize the existing Planned Development (PD) zoning regulations as a means to maximize public open space potential.
5. Pursue city objectives to acquire and manage land adjacent to streams for both water quality and out door recreation.

Cultural Resources

The ASAP document extensively addresses the importance of preserving the City's cultural and historic resources. The existing resources policy is to preserve buildings associated with the cultural, social, economic, and architectural history of the City. The plan emphasizes the City's desire to see existing transportation corridors transformed into greenways that reflect the industrial and rail heritage of the City. Clearly, this goal aligns fully with the vision of the BeltLine to protect and interpret these historic resources.

Below is a list of Cultural Resources policies from the ASAP, with policies that are particularly relevant to the Subarea 5 Land Use and Circulation Plan underlined:

Policies from the City's Historic Preservation Ordinance:

1. Effect and accomplish the protection, enhancement and perpetuation of such buildings, sites and districts, which represent or reflect special elements of the City's cultural, social, economic and architectural history.
2. Safeguard the City's historic aesthetic and cultural heritage, as embodied and reflected in such buildings, sites and districts.
3. Stabilize and improve property values of such buildings, sites and districts.
4. Foster civic pride in the beauty and noble accomplishments of the past.
5. Protect and enhance the City's attractions to tourists and visitors and thereby support and stimulate business and industry.
6. Strengthen the economy of the City.
7. Promote the use of such buildings, sites and districts for the education, pleasure and general welfare of the people of the City.
8. Promote attention to sound design principles in areas of new development and redevelopment.
9. Raise the level of community understanding and expectation for quality in the built environment
10. Implement the City's comprehensive development plan.

Policies from the Atlanta Parks, Open Space and Greenways Plan:

1. Protect archeological sites, such as Civil War trenches, from artifact hunters.
2. Promote the recognition of the Civil War battlefield on Copenhill, in Freedom Park, as a national battlefield site.
3. Promote the portion of Freedom Park that lays west of Moreland Avenue as a national park that links the Carter Presidential Center with the Copenhill Civil War battlefield and the Martin Luther King Jr. National Historic Site.
4. Support the expansion and improvement of the M. L. King Jr. National Historic Site.
5. Promote the redevelopment of the linear parks in the Druid Hills Neighborhood consistent with the Olmsted Park Master Plan.
6. Develop historic rail corridors, such as the CSX line from Washington Park to I-75/85, as historic greenway trails. Remnants of abandoned rail corridors should be preserved and their former transportation function memorialized by developing them into multi-use trails.
7. Encourage festivals that use significant sites to highlight the history of the neighborhood.

City Preservation Policies for Historic Resources:

1. Utilize economic incentives to encourage historic preservation.
2. Utilize the Zoning Code to support preservation policies.
3. Incorporate historic resource opportunities into the open space framework plan.
4. Develop mechanisms for supporting historic resource-sensitive development along the BeltLine corridor.
5. Promote historic sites and corridors in order to enhance their economic benefits.
6. Generate additional support for historic resources through educational programs.
7. Promote the development of Master Plans for all historic parks that will protect the resources and guide the enhancement of their appearance and recreational potential.

8. Adopt suitable legislation to prevent the further destruction of any parks containing Civil War trenches or archaeological sites.
9. Develop historic transportation corridors, abandoned railroad and trolley lines similar to the BeltLine for use as heritage corridor greenways and promote use of these corridors during cultural festivals.
10. Change the current historic preservation regulations regarding non-contributing buildings in Landmark Districts to eliminate the need for the review of their demolition.
11. Regularly update the City's official inventory of historic resources.
12. Improve the nomination and regulation processes provided for by the Historic Preservation Ordinance.
13. Expand working relations with other groups and agencies responsible for Atlanta's historic resources, including the Atlanta Preservation Center, the Georgia Trust for Historic Preservation, the Atlanta History Center, the State of Georgia Division of Historic Preservation, the National Park Service, and citizen-based advocacy groups.

Transportation

ASAP Transportation policies include a wide range of strategies necessary to support the BeltLine, such as a multimodal approach to transportation; linking transportation investments to land use, employment, and recreation; increasing and improving bicycle facilities; increasing and improving pedestrian facilities and pedestrian safety; promoting pedestrian connections to MARTA; promoting transit-oriented developments and mixed use around transit stations; promoting on-street parking; encouraging greater street connectivity; promoting shared parking; activating the first floor of parking decks; and limiting the amount of surface parking provided in transit areas.

The ASAP could further enhance support for BeltLine related development by encouraging an increase in connections between the on-street and off-street bicycle networks, thus integrating recreational and commuting access.

Although the ASAP includes several policies regarding transit-oriented development, the document could further reinforce the link between adequate residential densities in proximity to transit stations and strong ridership.

Below is a partial list of Transportation policies regarding overall goals, pedestrian facilities, bicycle facilities, transit facilities, parking, and streets from the ASAP, with policies that are particularly relevant to the Subarea 5 Land Use and Circulation Plan underlined:

Overarching principles that guide City transportation planning:

1. Enhance accessibility and mobility within City
2. Support regional access and connectivity
3. Create an affordable and walkable city
4. Link development to transportation infrastructure
5. Exceed standards for air, water, and environmental quality
6. Maintain and optimize existing transportation infrastructure
7. Ensure a balanced multi-modal transportation approach
8. Link transportation strategies to jobs, land use, recreational, and environmental systems
9. Identify funding, and other resources, to realize priorities

Policies for Bicycle Facilities:

1. Increase bicycle ridership as a viable mode of transportation by providing a network of on-street bikeways that is accessible to all neighborhoods and serves residents, commuters and visitors.
2. Include on-street bicycle facilities with resurfacing, reconstruction, and capacity-adding roadway projects on all arterials and collectors.
3. Promote bicycle safety, education and awareness, and sponsor and engage in community bicycle programs for children and adults.
4. Provide efficient and effective maintenance

of all on-street bike facilities, thereby providing optimal commuting and recreational opportunities.
5. Promote the provision of pedestrian and bicycle transportation facilities in redevelopments and new mixed use, commercial and residential developments.
6. Develop a system of multi-use recreational trails within the open space and greenways system, for use by all ages.

Policies for Pedestrian Facilities:

1. Require sidewalks for all new development and sidewalk repair for new construction.
2. Incorporate sidewalks into design plans for all transportation improvements when feasible and provide pedestrian crossing signals.
3. Reduce vehicular travel speeds city-wide and re-time traffic signals to slow traffic in support of pedestrian crossing needs and safety.
4. Rebuild intersections in high pedestrian traffic areas to reduce crossing distances and improve visual quality; install ADA accessible refuge islands where feasible.
5. Discourage pedestrian bridges and tunnels, except over limited access/grade separated highways, railway corridors and other public rights-of-way where pedestrians are prohibited, to emphasize pedestrian safety and encourage pedestrian activity at the street level.
6. Minimize the number of curb cuts and encourage the use of private alleys or drives to access parking and loading areas
7. Encourage curb cut consolidation to minimize pedestrian and automobile conflicts

Policies for Mass Transit:

1. Encourage and support further expansion of MARTA rail and bus systems.
2. Support the accessibility of transit to city residents at a reasonable cost.
3. Develop a grid of frequent surface transit including streetcars, arterial BRT, and enhanced bus services.
4. Increase the exposure and accessibility of MARTA rail stations through improved signage, additional entrances, and connecting non-motorized facilities.
5. Establish mixed-use zoning around all transit stations addressing minimum development density, maximum parking, bicycle and pedestrian facilities requirements, and urban design guidelines.
6. Promote transit investments oriented to development of walkable communities around station nodes over transit in highway corridors that require a vehicle to access.

Policies for Surface Streets:

1. Support the efficient movement of traffic with sensitivity to all modes of transportation and neighborhood integrity.
2. Support pedestrian activity as a preferred mode of transportation in densely developed areas with accommodation for the handicapped.
3. Support on-street metered parking where feasible.
4. Use traffic signalization improvements and intersection improvements to slow traffic and improve the safety and quality of the pedestrian environment.
5. Assure compatibility of freight operations with existing neighborhoods and streets.
6. Promote the paving of all city streets to control dust pollution and reduce city maintenance costs.
7. Promote and plan for greater street connectivity in major travel corridors.
8. Promote street repaving and expand street cleaning program to improve traffic operations and safety, and enhance the visual environment.

Policies for Parking Facilities:

1. Encourage additional on-street parking throughout Downtown, Midtown and other centers as appropriate.
2. Encourage the redevelopment of surface parking lots into higher-density, mixed-use developments.
3. Encourage mixed-use developments with

shared parking amongst the different uses.
4. Encourage the construction of parking decks with retail/commercial, office, or residential uses at the ground level.
5. Encourage participation in Transportation Management Associations to encourage alternative modes of travel, promote shared parking, and reduce traffic congestion and the demand for parking.
6. Limit off-street parking ratios for certain uses within transit station areas.
7. Consider requiring the cost of parking to be unbundled from rent and charged separately in activity centers.
8. Reduce parking requirements for developments providing car sharing.

Urban Design

The Urban Design policies of the ASAP provide extensive guidance on the BeltLine and associated developments interaction with the design goals of the City. The Urban Design policies seek to reinforce the distinct identity of the City, to create or enhance a network of public gathering places, enhance the aesthetics and appearance of the City and its neighborhoods, and promote public art and cultural facilities into the public realm.

Below is the list of overall Urban Design goals, with goals that are particularly relevant to the Subarea 5 Land Use and Circulation Plan underlined:

1. Preservation of neighborhoods.
2. Preservation of cultural, historic and natural resources.
3. Strengthening of Downtown Atlanta as a regional center.
4. Expansion of Atlanta's role as an international city.
5. Encouraging pedestrian, bicycle, and mass transportation.
6. Providing opportunities for human association.
7. Enhancing the visual quality of Atlanta.
8. Implementing the BeltLine

Below is the list of Urban Design policies regarding the implementation of the BeltLine. All of these policies are particularly relevant to Subarea 5:

1. Preserve a continuous corridor along the BeltLine route of sufficient dimension for the implementation of transit, multi-use trails and greenspace;
2. Preserve opportunities for connecting trails that reach out beyond the BeltLine to create a broad network of trails throughout the City;
3. 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;
4. Preserve the historic physical character of the industrial districts that follow 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;
5. Promote opportunities for parks, open space, and cultural and institutional buildings in the BeltLine district;
6. Encourage opportunities for public art and promote the concept of a cultural ring to unify the city's cultural institutions.
7. Ensure that new construction is compatible with the scale and character of adjacent single family neighborhoods;
8. Create new mixed use and commercial nodes at BeltLine station areas that are pedestrian and transit-oriented;
9. Maximize air and water quality, including that which supports the planting of trees, greenspace and watershed protection, and bicycle parking.

Land Use

The ASAP Land Use section includes several layers of policies, including the ARC's Regional Development Plan, ten major land use policies, and neighborhood planning unit or NPU policies.

ARC's Regional Development Plan Land Use Policies
The ASAP includes a number of land use policies adopted from the Atlanta Regional Commission's Regional Development Plan that are relevant to the BeltLine and Subarea 5, including: guiding development towards areas with existing infrastructure; promoting transit-oriented

development, mixed use, and infill development; promoting a variety of housing types and choices; integrating greenspace and parks into new developments; and connecting and expanding greenspaces throughout the region.

Citywide Land Use Policies

The City has ten major land use policies that build upon the ARC's Regional Development Plan. Some of these policies reinforce the ARC's Regional Development Plan by emphasizing issues such as preserving established neighborhoods and encouraging development in areas with adequate infrastructure. In addition, City policies promote nodal development patterns and discourage strip development patterns. The ASAP explicitly calls for transit-oriented development patterns and increased residential densities near transit stations and along major arterials. These policies support the overall theme of transit-supportive residential densities near BeltLine transit stations.

Below is a list of major Land Use goals, with goals that are particularly relevant to the Subarea 5 Land Use and Circulation Plan underlined:

1. Promote Neighborhood Conservation
2. Encourage Nodal Development
3. Discourage Strip Commercial Development
4. Promote Residential Density Near Available Infrastructure
5. Promote Appropriate for Urban Areas and Minimize Urban Sprawl
6. Develop Transit Station Areas
7. Retain Industrial Land Uses
8. Enhance the Pedestrian System
9. Promote Interjurisdictional Land Use Compatibility
10. Plan Land Use Transition Areas

Below is the list of ASAP Land Use policies regarding residential density:

1. Encourage the development of very high-density uses in nodal development areas around certain transit stations, as is specified in the Urban Framework Plan.
2. Encourage the development of high-density housing along major arterial routes that have transit service available to MARTA stations. Assure that adjacent neighborhoods are not adversely impacted and that development guidelines for the area are followed.
3. Encourage the development of low- and medium-density multifamily residential uses on vacant or under-utilized tracts wherever they are compatible with surrounding uses

NPU Policies

NPU policies usually suggest appropriate actions for specifically delineated areas within each NPU, including appropriate land uses, scale, and character of development. NPU policies relevant for BeltLine Subarea 5 mostly call for the preservation of single family neighborhoods and mixed-use redevelopment in areas adjacent to the BeltLine. Overall, these NPU policies are supportive of the proposed plan for Subarea 5.

Below are some of the NPU policies for specific areas within Subarea 5:

NPU-M:

- M-9 Encourage the reuse or redevelopment of vacant, under-utilized, obsolescent, and/or structurally deteriorated industrial and commercial properties that are associated with the historic railroad corridors bordering the Butler Street/Auburn Avenue and Old Fourth Ward neighborhoods. Promote mixed-use developments that would increase compatibility with the surrounding residential land uses while generating modern industries, businesses, and employment opportunities for center-city residents.

NPU-N:

- N-3 Prohibit the expansion of industrial and commercial uses along DeKalb Avenue through Inman Park and prohibit the expansion of commercial uses at Hurt & Edgewood, at Austin & Elizabeth, at N. Highland & Bernina, at Highland & Colquitt and at Waddell & Edgewood into the existing surrounding residentially zoned areas.

- N-4 Encourage non-invasive, community sensitive mixed use, development and/or re-development of formerly industrial and commercial property along the DeKalb Avenue corridor through Inman Park, enhancing and encouraging compatibility with the "small-town/downtown" character of the neighborhood.
- N-5 Promote the re-zoning of commercial properties along DeKalb Avenue (from Clifton Road east to Ridgecrest) to Neighborhood Commercial in order to encourage destination-oriented and pedestrian-friendly activity through mixed-use development.
- N-11 Discourage the development of new surface parking lots within the Poncey-Highland neighborhood district.
- N-12 Encourage the use of existing neighborhood alleys for parking access to private homes, trash pickup and utility lines. Where and when appropriate, encourage and support such expanded use.

Critique of BeltLine Overlay District

The planning team reviewed the existing BeltLine Overlay District Regulations to assess their suitability for the unique conditions and resources of Subarea 5. The overall finding of this review is that the overlay regulations are appropriate for Subarea 5 and will contribute significantly to an improved public realm as the area redevelops.

One general area of concern, however, is that many of the provisions in the Overlay District Regulations assume that development adjacent to the BeltLine will be at grade. Subarea 5 has significant areas with large grade differences immediately adjacent to the corridor, a challenging design and planning condition that requires more thorough treatment. The regulations should more explicitly address how the public realm engages development when unavoidable vertical separation occurs. The remaining analysis identifies this particular challenge along with other specific overlay provisions that may be enhanced.

Sec. 16-36.008. Permitted and prohibited uses and structures.
Provisions from these sections of the BeltLine Overlay District Regulations are all standard elements that are applicable to the entire BeltLine and are appropriate and suitable for Subarea 5.

Sec. 16-36.005. Provisions for administrative variations from regulations.
These sections outline the requirements for a Special Administrative Permit (SAP) within the BeltLine Overlay District and provide for exemptions and administrative variations from the permitting process. Specifically, existing lots of record that are zoned R-1 through R-5 are not required to obtain a Special Area Permit.

It is recommended that the City of Atlanta consider extending this provision to other small-scale buildings, as well as single-family residential. In order to encourage redevelopment at a variety of scales and sizes, and to promote the adaptive reuse of historic structures, small projects making use of existing buildings should face fewer substantial constraints related to new open space, landscaping, and public rights-of-way. Subarea 5 contains a variety of underutilized smaller structures, including many former residential and industrial structures that have been adapted to new uses. The area also features many small and irregularly shaped lots that cannot fully conform to the Overlay District provisions without costly reconfiguration. Broadening the exemption process beyond residential development to include other small scale development would facilitate desired redevelopment activity in the BeltLine District, while maximizing the preservation of existing structures in the district.

Sec. 16-36.009. Transitional uses and yards.
Transition uses and yards are a critical provision for the Overlay District as they support suitable land use transitions between newer, more intensive development and existing single family areas.

In some cases, however, the development permitted in the Overlay District is of no higher density or intensity that the development permitted in adjacent areas outside the Overlay District. In such cases, it should be possible to waive such transitional yard provisions and allow existing zoning setbacks and side yards to serve in their stead.

Sec. 16-36.010. Open space requirements and incentives.
The various incentives and requirements for open space are especially vital to Subarea 5. In particular, the area requires new streets new streets to re-establish access across the divisions created by the BeltLine corridor. The Street Framework Plan envisions a series of new connecting roadways criss-crossing the corridor, and much of the right-of-way for these roadways currently resides upon private lands. The open space requirements and incentives in the Overlay District will provide private land owners with the necessary incentive to dedicate the land for new streets that will reconnect the various neighborhoods of Subarea 5. Supplemental zones will also play a key role in transitioning between private properties and public space and in providing adequate surveillance for the BeltLine corridor and the proposed North Avenue Park. Plazas, walkways, terraces, and other semi-private transitional spaces will be essential in weaving together the network of public and private elements in this Subarea of the BeltLine.

Sec. 16-36.011. Site limitations.
Likewise, the site limitations section also addresses the interface between the public and private realms along the BeltLine. Subarea 5 has a critical need for "eyes on the park" as the area is currently in transition with a mix of new development and still abandoned and underutilized parcels.

While all of the elements in this section are positive, additional provision and incentives to encourage balconies, doors, and windows facing along planned parks could further enhance security and visibility. Currently, the overlay only requires a visible entrance facing planned parks. Buildings along park frontages should be required to engage the resulting public realm as fully as those buildings facing public streets.

One additional issue of concern is whether a public street that is required by the BeltLine Street Framework Plan must also have an adjacent 20-foot landscaped buffer. Land dedication requirements for both a public street and a 20-foot landscaped buffer could be onerous for smaller-scale properties. The overlay regulations should clarify the relationship between these requirements for parcels adjacent to the BeltLine right-of-way.

Sec. 16-36.012. Sidewalks.
Sidewalks are a key element of the public right-of-way throughout the BeltLine area. Regular street trees, street lights, and related street furniture are essential in realizing a quality, uniform public realm as envisioned for Subarea 5.

Sec. 16-36.013. Supplemental zone.
The BeltLine Overlay District provisions for supplemental zones are well developed and largely appropriate for the Subarea 5 context. These provisions address the need for continuous pedestrian connections through the supplemental zones and connecting to public rights-of-way. These links are essential for weaving the fabric of private developments with the public realm in the BeltLine area, including the corridor, public streets, and public parks. Regulations limiting the use of fences and walls also promote greater visibility and surveillance between private and public spaces.

One area where the provisions covering supplemental zones might be enhanced is with regard to areas with substantial changes in grade. Subarea 5 contains many substantial changes in grade with the BeltLine right-of-way often much higher and/or lower than adjacent parcels. The BeltLine Overlay District regulations should give further guidance to desirable visual or pedestrian connections when the supplemental zone is significantly below or above the BeltLine. It is critical for example to maintain permeability between the BeltLine and its surroundings, creating a visual link in

the absence of direct physical adjacency. Clearly demarcated and regularly spaced gateways at major street intersections can also create a more seamless user experience when the neighborhoods are vertically separated from the actual corridor.

Sec. 16-36.014. Relationship of building to street.
The various provisions of the BeltLine Overlay District governing the relationship of the building to the street should be effective for the conditions in Subarea 5. It is important for buildings throughout Subarea 5 to face public streets and the BeltLine to activate these pubic spaces. Encouraging developments to have adequate access to the BeltLine right-of-way is particularly valuable in Subarea 5 because often the BeltLine will provide the most direct access between residential and commercial areas. Subarea 5 is home to several major concentrations of commercial development, and providing adequate access to the BeltLine right-of-way will encourage the use of transit, pedestrian, and bicycle trips to these nearby destinations.

Other provisions regarding the relationship of buildings to the street are also valuable and pertinent to the Subarea. Regulations ensure that fencing plays a proper role in property demarcation, but does not establish a "bunker mentality" of isolated, inaccessible, and visually impermeable pockets. Fenestration requirements also promote a more secure and animated public realm by putting eyes on the street.

Sec. 16.36.016. Loading areas, loading dock entrances and building mechanical and accessory features.
These provisions are appropriate for the Subarea 5 district and will enhance the quality of urban design.

Sec. 16-36.017. Driveway curb cuts, driveways and parking structures.
Provisions relating to driveways and parking structures contribute to an improved level of urban design in Subarea 5. Restrictions on curb cuts and driveways will serve to protect the pedestrian-oriented atmosphere and appropriately balance the needs of vehicular and pedestrian access for parcels within the Subarea. Parking deck architectural delineation is required, minimizing the risk of blank walls that create large "dead" zones.

Sec. 16-36.018. Lighting, security, and maintenance requirements.
The plan for Subarea 5 has a variety of land uses in close proximity, requiring sensitivity to the potential impacts of compact mixed use development. Provisions in this section to promote cut-off fixtures that minimize the spill of lighting onto single family areas are necessary preserve the quality of life in single family areas in or near the BeltLine Overlay Districts.

Sec. 16-36.019. Minimum landscaping requirements for surface parking lots.
While landscaping requirements can amenitize what would otherwise be large and unattractive parking areas, the historical industrial developments typical in the BeltLine area tend to have minimal and simple landscaping. For Subarea 5's many small and irregularly shaped parcels less flexible landscaping requirements may act as an obstacle that discourages redevelopment and reuse.

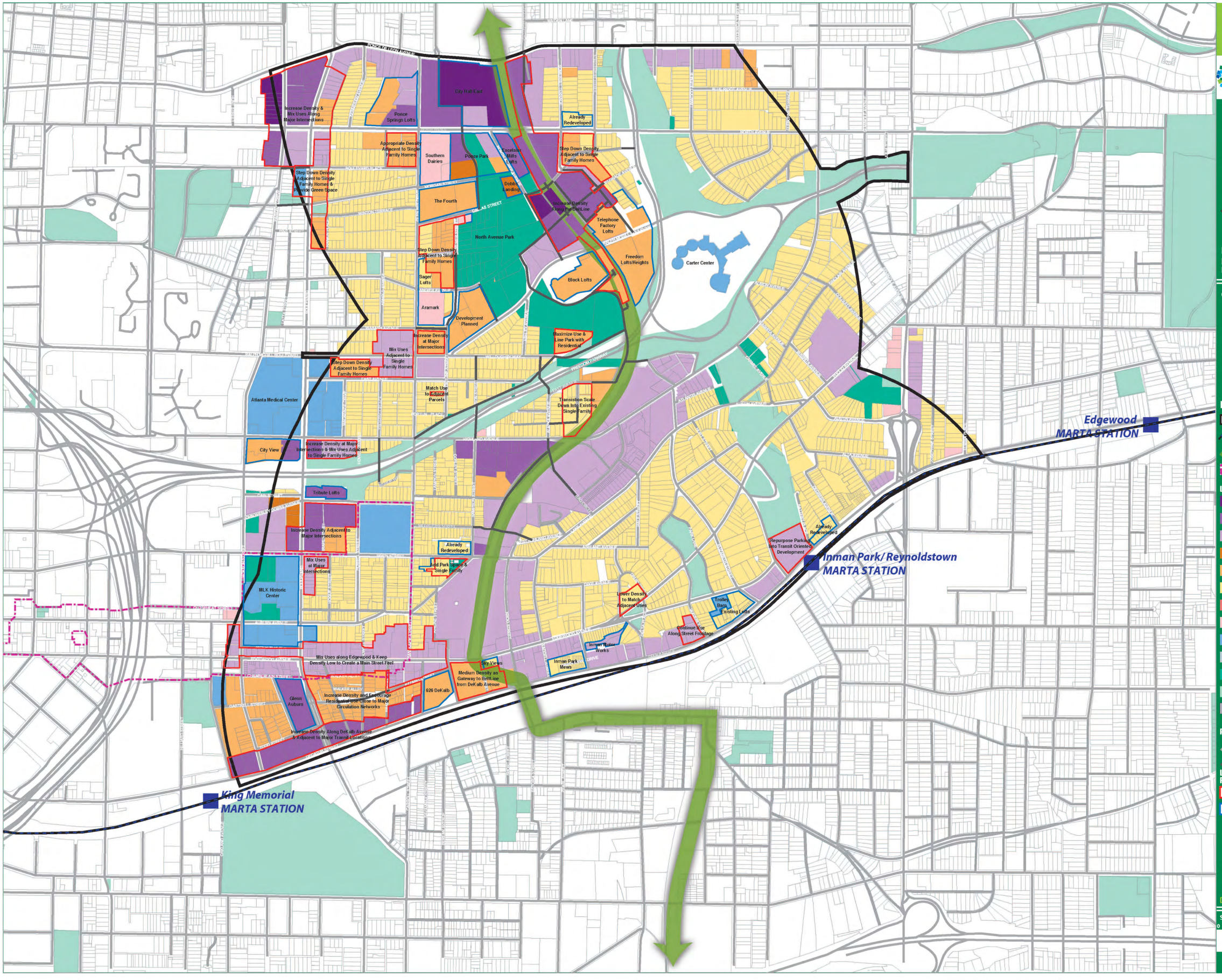
Sec. 16-36.020. Off-street parking and loading requirements.
In order to encourage alternative modes of transportation, plans should minimize surplus off-street parking throughout Subarea 5. The BeltLine Overlay District includes reasonable provisions for off-street parking and loading, including parking maximums to effectively cap the off-street supply.

The regulations, however, could revisit the provision that requires all parking lots to be an accessory use. For-hire parking lots can separate the demand for parking from a specific site, freeing up small and awkward sites for development. Small, well-located, and/or well landscaped parking lots can provide a valuable amenity to emerging neighborhood commercial nodes. Rather than requiring all parking lots to

be accessory uses, the Overlay could limit the size, location, and visibility for for-hire parking lots.

Sec. 16-36.021. Off-street bicycle parking.
In order to promote bicycle travel along the BeltLine, adequate and conveniently sited bicycle parking is a must. While the supplemental zone can accommodate some bicycle parking, it may also be appropriate for larger developments to permit bicycle parking within an accessory parking lot and or deck.

Sec. 16-36.022. Pedestrian bridges and tunnels.
This provision of the BeltLine Overlay District encourages pedestrian and vehicular crossings of the BeltLine to occur at grade where possible. Though certain topographic challenges in Subarea 5 may require a variance from this requirement, maintaining at-grade crossings supports activation of a continuous public realm and encourages public safety through enhanced visibility.



BeltLine
Atlanta Connected

BeltLine Subarea 5:
NORTHEAST/ North Avenue

Concept Master Plan

LEGEND
- Subarea 5 Study Boundary
- MARTA Rail Line
- BeltLine Trail
- MLK Jr. Land Mark District

LAND USE CATEGORIES
- Mixed Use (High Rise) 10+ Stories
- Mixed Use (Mid - Rise) 5 - 9 Stories
- Mixed Use (Low - Rise) 1 - 4 Stories
- High Density Residential 10+ Stories
- Medium Density Residential 5 - 9 Stories
- Low Density Residential 1 - 4 Stories
- High Density Commercial
- Low Density Commercial
- Office / Institutional
- Industrial
- Proposed Park Space
- Existing Park Space
- Parking

PROPOSED CIRCULATION
- Existing Roadways
- Proposed Roadways

LAND USE CHANGES FROM PREVIOUS PLANS
- Areas of Potential Change
- Areas Under Construction or Already Redeveloped

EDAW | AECOM

ARCADIS

N

DECEMBER 06, 2007

SCALE IN FEET

0 200 400 600 800 1200

Public Involvement Summary

Process Description

Community input played an integral role in the development of the Subarea 5 and North Avenue Park Master Plans. The Freedom Parkway Study Area and North Avenue Park Master Plans were developed with input from the Northeast BeltLine Study Group, as well as a Planning Committee established exclusively to review and guide Subarea 5 planning activities. Additionally, information regarding the planning effort was periodically presented at citywide forums such as the BeltLine Quarterly Briefing, an Open House event devoted to the BeltLine Parks, and the BeltLine website.

The BeltLine is divided into five Study Groups for public involvement activities: Northeast, Northside, Southeast, Southwest and Westside. These groups provide input on the planning and implementation of the project within a specific geographic area. Study Group boundaries are based on recognized neighborhood boundaries and major physical dividers such as interstate highways, and include neighborhoods and business districts. The BeltLine Study Groups are open to all members of the community. To ensure Neighborhood Planning Unit (NPU) participation in the activities of the BeltLine Study Groups, each NPU was asked to designate a liaison and an alternate liaison to the BeltLine Study Group(s) in its area.

To augment the Study Groups, a Planning Committee was created. Planning Committee representatives provided more detailed involvement and continual input throughout the subarea planning process. Membership included participants from the BeltLine Study Groups, but was augmented to draw from multiple stakeholder groups required to inform the planning and design process fully. The Subarea 5 Planning Committee included neighborhood residents, arts community representatives, development community interests and other key stakeholders.

Consultants supported the overall Citizen Participation Framework outlined in the 5-year Work Plan and approved by Atlanta City Council on July 2006. Specifically, consultant team members, under the direction of project managers from Atlanta BeltLine Inc., attended both Study Group and Planning Committee meetings and led discussions of land use and circulation, mobility and park master planning. There were five Planning Committee meetings and four Study Group meetings held over the course of the Freedom Parkway Subarea and North Avenue Park Master Planning Process. The agendas and meeting notes for each of these meetings are included within the Appendix. The following list includes the meeting date and topic of all Northeast Study Group and Planning Committee meetings held during the planning process.

a.) July 18, 2007: Planning Committee Meeting, Kickoff Meeting
b.) August 22, 2007: Study Group Meeting, North Avenue Park Existing Conditions
c.) September 10, 2007: Planning Committee Meeting, Development of Goals and Objectives
d.) September 26, 2007: Planning Committee Meeting, Study Area Existing Conditions, Refine Goals and Objectives
e.) October 23, 2007: Planning Committee Meeting, Study Area Master Plan Concepts
f.) October 29, 2007: Study Group, Study Area Master Plan Draft
g.) December 20, 2007: Study Group Meeting, North Avenue Park Master Plan Final Draft
h.) April 21, 2008: Planning Committee Meeting, Study Area Master Plan Final Draft
i.) May 8, 2008: Study Group Meeting, Study Area Master Plan Final Draft

Major Themes and Issues

The planning process for the Freedom Parkway Subarea Master Plan and the North Avenue Park Master Plan progressed with few major issues. The community has been actively involved throughout the process and agreeable to most of the recommendations produced by staff and the consultant team. This success may be attributed

to the strong leadership provided by the Planning Committee members.

Input into the design of the North Avenue Park was instrumental in shaping the park design, programming, and, especially, the stormwater feature. Community input regarding the stormwater feature advocated for soft landscaped edges to the pond, with as few railings as possible, a walkway all the way around the pond, no streets bisecting the pond, and most participants preferred a single, larger pond over two, smaller ponds. All of those comments were incorporated into the design.

In terms of programming, the following features were recommended for inclusion in the North Avenue Park, which ended up being included in the master plan:

- Dog park
- Night time activities such as concerts (the park includes an amphitheater)
- Festival space
- ADA accessible
- Walkway around the water feature
- Picnic area
- Amphitheater
- Skate park
- Play area
- Interactive water feature
- Large passive areas
- A walking circuit around the entire park
- Strong pedestrian connections to the BeltLine
- Park will have clearly defined edges
- Incorporates public art

While recommended, tennis courts and a recreation center were not included in the master plan. The City's greenspace plan identified tennis courts as the only facility of which the City has an adequate supply. As well, there are several tennis court complexes in the area including Central Park, Piedmont Park, and Candler Park. A recreation center/community meeting space was not included because the City has a policy of no new recreation or community centers. Additionally, the Old Fourth Ward neighborhood already has a recently renovated recreation center with community meeting space.

Recognizing that the area around the park is developing as condo and rental attached units, several aspects of the park program were recommended specifically help meet their needs directly. This included:

- Passive open lawn areas
- Dog parks
- Community gardens
- Playground(s)

The recommended future land use plan, open space plan, public art strategy, and historic resources inventory received the consensus support of the Planning Committee and broad public support. Their development was the result of extensive comment and "tweaking," but without any significant issues or challenges.

The Planning Committee and the Study Group discussed many of the conceptual and proposed street connections. Most participants supported closing all streets that would run through the North Avenue Park, which the plan supports, including Dallas Street, Morgan St, Rankin St, and Angier St. Several streets brought up at the conceptual planning stage were removed from consideration, per public comment, including:

- A new north-south street within the BeltLine right-of-way between Elizabeth St and Ponce de Leon
- A street along Freedom Parkway between Highland and East Ave
- An extension of Sampson St one block to the North between East Ave and Willoughby Way

One street that received mixed public input is a new north-south street through the Kroger Redevelopment extending Ponce Place to North Ave. The Planning Committee, backed enthusiastically by the Poncey-Highlands Neighborhood Association, supported the connection and it has remained in the plan.

Ongoing Engagement Activities

Several proposed projects should include ongoing

engagement activities as each progress from the planning stage to implementation. These projects include the following:

a. North Avenue Park
b. Improvements and "Road Diet" on North Avenue
c. BeltLine Transit Planning
d. New north-south street through the Kroger property
e. DeKalb Avenue Transportation and Streetscape Enhancements

Each of these proposed projects has generated considerable interest from Study Group participants and/or Planning Committee members. All projects were recommended for inclusion in the final plan by the Study Group and Planning Committee members, but will require additional public input as plans are mor

Support Documents

Supporting documents include meeting agendas, meeting summaries, key handout material and other public engagement materials. Each of these are grouped together by meeting date.

July 18, 2007

Agenda
BeltLine Master Plan
Freedom Parkway Study Area Steering Committee
July 18, 2007; 6:00 – 7:30 pm
Morningside Recreation Center

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1. Welcome – Nate Conable
2. Master Planning Process – Jonathan Lewis
3. BeltLine Redevelopment Plan Review – Nate Conable
4. Steering Committee Issues Discussion/Identification – Adelee LeGrand

Sub-Area Five Master Plan Steering Committee Kickoff Meeting
July 18, 2007
Morningside Recreation Center

Proceedings

- Meeting started at 6:05 p.m.

Introduction of Master Planning Efforts

- N. Conable introduced the steering committee to the current master planning efforts, which include transportation, land use and park plans.
- The steering committee accepted the meeting dates presented by ABI, and the group requested that ABI try to avoid the third Wednesday of each month.
- The development of a storm water retention system in the proposed Ponce Park was presented, and the committee agreed it should be an amenity as well as functional.
- J. Lewis established that community input would heavily influence the current master planning effort.
- J. Lewis familiarized the group with the current city planning efforts (ASAP, CTP) as they pertained to the Beltline. Lewis stated that the development of the ASAP would be updated to include Beltline Supportive Land Uses. It was also acknowledged that the study would prioritize cycling and pedestrian uses, as well as look at the need for new streets.

Proposed Future Meeting Spaces

- City Hall East
- Inman Park Trolley Barn
- Auburn Ave. Library
- Inman Middle School
- Druid Hills Presbyterian Church

EDAW Presentation

What do you think is the value of the Beltline? Why are you here?

1.) To speak up about how much value can be added using public art to aid in the creation of public spaces.
2.) To make sure that the development around the area is context sensitive to surrounding areas.
3.) To ensure that the beltline development does not act as any type of barrier, it should be fairly easy to traverse. We are supposedly working to improve connectivity throughout the area.
4.) To find out what measures would be taken to mitigate traffic issues due to the population coming before the public transportation, specifically mentioned traffic calming and connectivity.
5.) To look into the opportunity to enhance Freedom Park using connectivity to the proposed new North Ave. Park.

6.) Looking at previous studies should be an important step in developing the master plan, so we would like to see integration between the Ponce and Moreland Task Forces.
7.) The Storm water issue is the result of existing infrastructure problems, which need to be cured. It is very important to make sure that the storm water feature is not just an "engineering solution" but an amenity as well. One idea called for public art to be included from the start, not added on at the end.
8.) -NPU M feels overwhelmingly underserved by the city as it pertains to planning issues. The present party proceeded to raise concerns about being underserved in regards to integration, and housing affordability.
9.) Little 5 Points is primarily concerned about integration and connectivity issues from the core to the fringe of the study area.
10.) The representative from Ponce Park stated that his project would be as flexible as possible where it made sense in an effort to optimize the integration of the development into the Beltline.
11.) One of the running themes of the committee's commentary was the preservation of historical values and character within the neighborhoods.
12.) Members felt that development should be context sensitive and that area history should be a core element in the development of area plans. They felt each transit station should have character sensitive to the neighborhood in which it is located.
13.) Sustainability should be a core theme to the project, and we should look to incorporate it throughout the process.

How do you use this process to reconnect?

1. The committee hoped to identify existing problematic areas in the near future, in an effort prioritize planning concentrations in the future. The two main areas of concern were the storm water facility and street connectivity.
2. The committee would like to set up some sort of informational exchange network with other groups and committees (NPUs, Land Use Committees, etc.)
3. Work to identify how the different groups will be impacted by this project and disseminate the findings to the different committees.
4. Many of the committee members felt that the beltline was the most important planning effort of their lifetime, and the project should be developed in a way that we maximize the benefits to all populations.
5. Reconnect the entire area not just individual neighborhoods using a branding measure. We need to come up with something that can really capture what the beltline is about, some sort of identity and character.
6. Make sure to emphasize or overemphasize pedestrian connectivity and links. This is of the utmost importance.
7. Develop an informational network for those without web access, so they are not alienated from the process.
8. We would ideally develop libraries, and public spaces, where we could get together and hang out.

Questions and Concerns

1. The issue of boundary lines was brought up due to concerns over not involving both sides of the boundary streets in Sub-Area Five (Dekalb/ Decatur St., Ponce De Leon).
2. NPU M is concerned about the project as it relates to the redevelopment of Boulevard. The concerns were specifically focused on the development of multi-family housing in the area and the traffic effects it will have in the future.
3. One of the prevalent concerns was a flexible and adaptive redevelopment of City Hall East.
4. One of the main concerns was the lack of centralization due to all of the interested parties. Many of the requested ABI make an effort to make the process as transparent as possible, due to the large amounts of information available. Members felt that this effort should start with City Council members Kwanza Hall and Anne Fauver.

How can we integrate the Study Areas?

1. Steering Committee can communicate with each other outside of committee meetings.
2. Work with other groups that are not at the steering committee meetings.
3. Remember that it is not a stand-alone study. Other studies and plans have been done and these efforts will continue, so there should be some integration between the beltline and these studies.

ATLANTA BELTLINE, INC.

ATLANTA BELTLINE PROJECT

Steering Committee Kick-off Meeting

Master Planning Overview

July 18, 2007

Master Planning: Overview

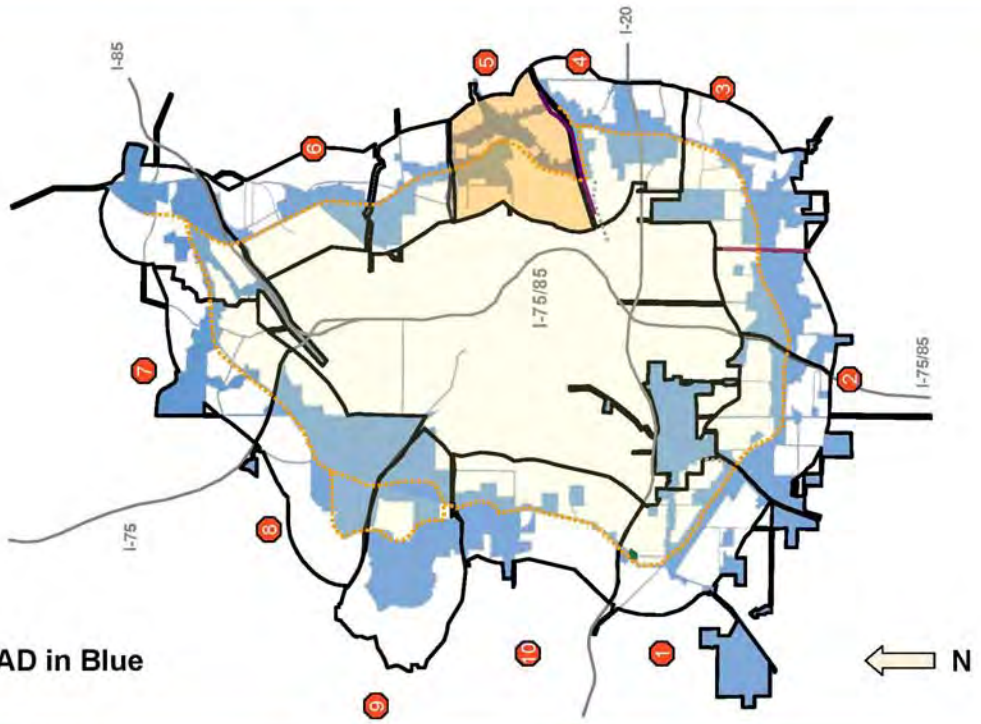
ATLANTA BELTLINE, INC.

Master Planning will provide detailed land use, transportation and open space plans for BeltLine

- BeltLine project area sub-divided into 10 study Areas for Master Planning
- Provide an opportunity for comprehensive community engagement
- Complete detailed technical analysis for transportation, land use and parks
- Deliver additional implementation tools

Master Planning:
Study Areas

ATLANTA BELTLINE, INC.



25 Minute Overview 09.06.06 - 3 -

Master Planning:
Community Involvement

ATLANTA BELTLINE, INC.

Provides an opportunity for comprehensive community engagement

- **Steering Committee will meet 10 times**
  - **4 meetings will be public (Study Group) meetings**
- **Stakeholder meetings and interviews as needed**

25 Minute Overview 09.06.06 - 4 -

Master Planning:
Technical Analysis 1

ATLANTA BELTLINE, INC.

Detailed technical analysis of transportation, land use and parks

- Transportation connectivity and infrastructure needs including
  - Circulation planning
  - Streetscapes
  - Detailed traffic analysis
  - New roads, pedestrian and bicycle facilities
- Confirmation of land use – based on BeltLine Redevelopment Plan and small area plans - including
  - Parks opportunities
  - Land Use Plan Updates
  - Survey of existing buildings
  - Potential historical and cultural features
  - Public and cultural arts opportunities
  - Zoning recommendations

Master Planning:
Technical Analysis 2

ATLANTA BELTLINE, INC.

Detailed technical analysis of transportation, land use and parks

- Parks master planning for the North Ave park
  - Site inventory and analysis
  - Program development
  - Preparation of concept plan
  - Regional stormwater facility siting
  - Preparation of park master plan document

Master Planning:
Implementation Tools

ATLANTA BELTLINE, INC.

Delivers additional implementation tools

- Atlanta Strategic Action Plan (formerly Comprehensive Development Plan) will be updated to Include BeltLine Supportive Land Uses
- Establish an ideal street grid to support the BeltLine, so that it can be constructed by both the public and private sectors
- Detail and prioritize the pedestrian, roadway and bicycle projects needed to provide access to the BeltLine and maintain mobility ($21 M in TAD funding available next 5 yrs)

Master Planning:
Resources

ATLANTA BELTLINE, INC.

Resources from Previous BeltLine Studies:

North Avenue/Freedom Parkway Area

BeltLine

Agenda
NE Study Group Meeting
September 26, 2007

Welcome

BeltLine Status Update

Existing Conditions Land Use Findings

Existing Conditions Transportation Findings

Subarea Goals and Objectives

Next Steps

Goals and Objectives

Freedom Park Sub Area

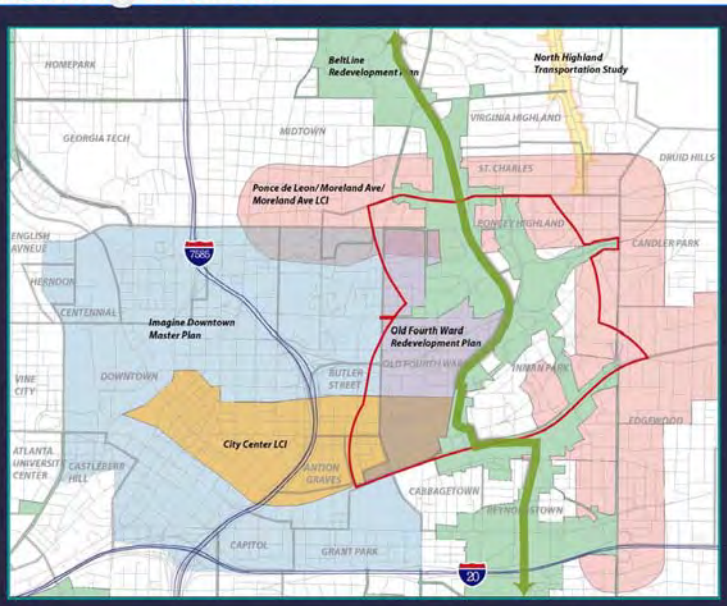
BeltLine
Atlanta Connected

Agenda

- Introductions
- BeltLine Status Update
- Land Use Findings
- Transportation Findings
- Goals and Objectives
- Questions and Answers

BeltLine
Atlanta Connected

Existing Plans



BeltLine Atlanta Connected

Historic & Cultural Resources

- 12 churches
- 1 elementary school
- 5 community facilities
- 1 medical facility
- 7 parks
- 2 municipal
- 2 MARTA stations
- MARTA rail
- 1 broadcast tower
- MLK National Hist. Site
- The Carter Center
- 8 historical school buildings
- No natural hydrological resources
- No steep slopes

BeltLine Atlanta Connected

Source: Atlanta Urban Design Commission 2007

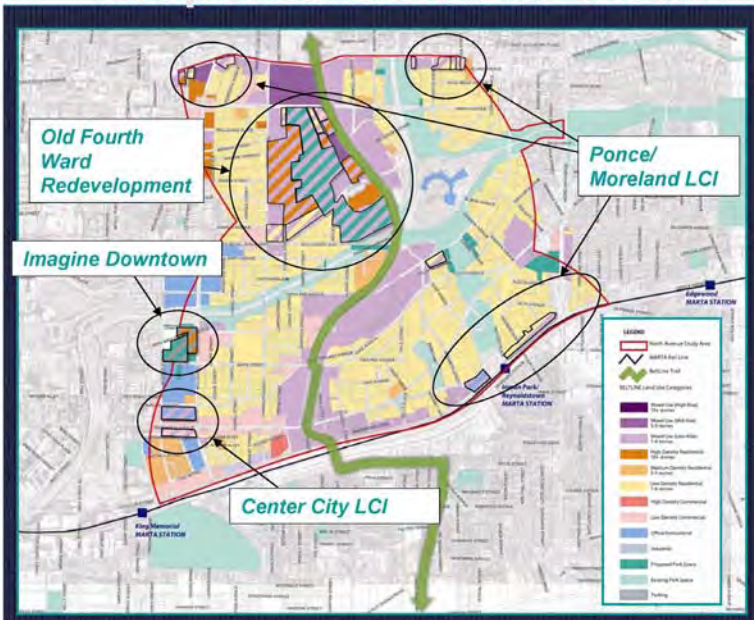
Environment & Natural Features

- Potential Brownfield sites in various states of activity
  - 20 sites; 55 acres
- Prevalent Tree canopy in residential neighborhoods
- Tree canopy breaks along industrial areas and along the BeltLine
- Existing Parks include:
- Bass Recreation Center
- Delta Park
- Freedom Park
- Inman Park
- Inman Park Trolley Barn
- J.D. Sims Recreation Center
- M.L.K. Natatorium
- Morgan-Boulevard Park
- Springvale Park

BeltLine Atlanta Connected

Source: Emerald Necklace Report - Atlanta Development Authority, City of Atlanta Brownfield Study

Proposed Land Use Plans

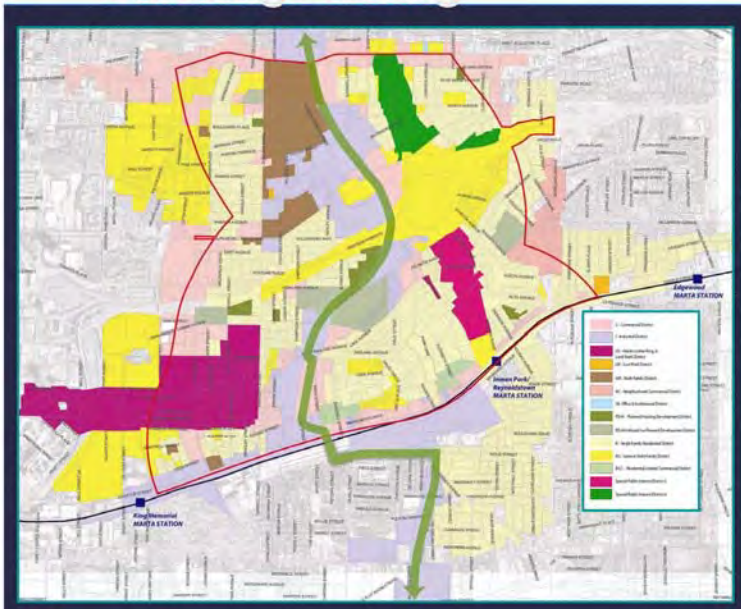


- Single-family and low density residential is located in the Inman Park, Poncey-Highland and Old Fourth Ward neighborhoods
- Commercial uses are located either along major corridors or concentrated in commercial districts
- Concentration of industrial uses south of DeKalb Avenue
- Mixed-use adaptive reuse projects and new construction concentrated along the BeltLine, Ponce and DeKalb Ave

BeltLine Atlanta Connected

Source: City of Atlanta Bureau of Planning, 15 year Future Land Use Plan & Atlanta Development Authority, BeltLine Redevelopment Plan (2005)

Existing Zoning



- Landmark District Zoning Designation:

  Martin Luther King, Jr. Land Mark District
- Special Public Interest Districts:

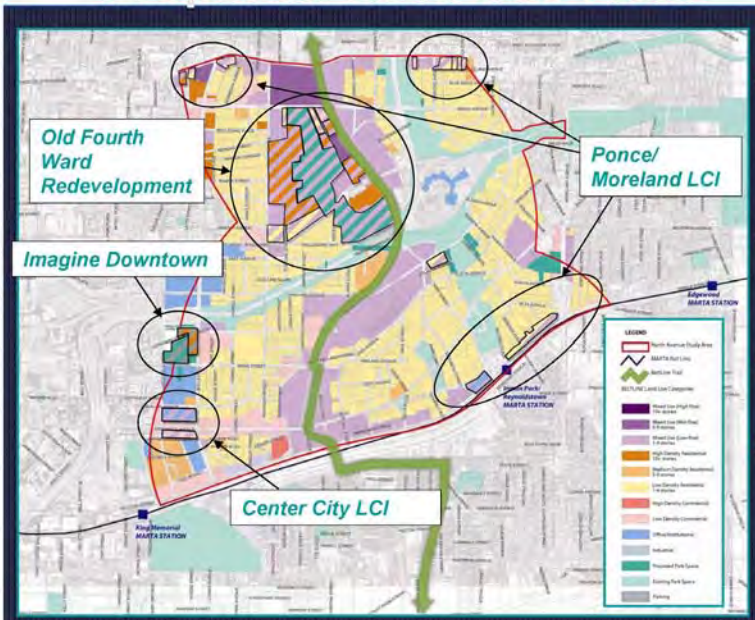
  SPI-5 (Poncey Highland Neighborhood)

  SPI-6 (Inman Park Neighborhood)
- Primarily Conventional and Quality of Life Zoning Designations utilized in this sub-area

BeltLine Atlanta Connected

Source: City of Atlanta Bureau of Planning 2007

Proposed Land Use Plans



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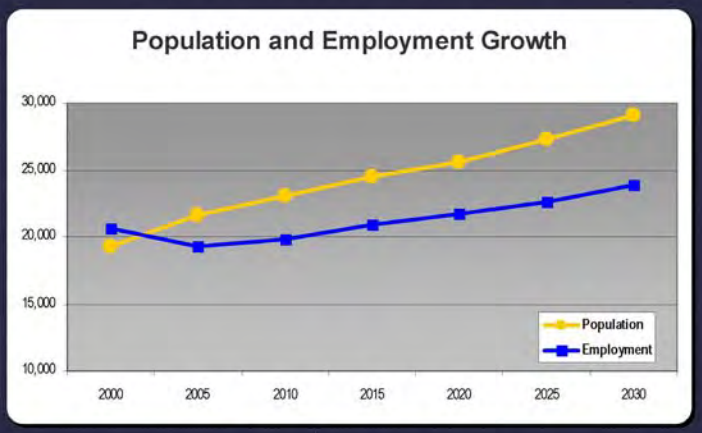
Population and Employment



- 1.6% Annual Population Growth Rate
- 0.82% Annual Employment Growth Rate

Source: ARC Envision 6 Forecasts- broader census track area

BeltLine Atlanta Connected

Population and Employment

Broader Subarea Population and Employment Summary

Analysis Year	Population	Employment	Employment/Population Balance
2000	19,292	20,623	1.07
2005	21,609	19,268	0.89
2010	23,078	19,775	0.86
2015	24,514	20,918	0.85
2020	25,596	21,713	0.85
2025	27,269	22,582	0.83
2030	29,108	23,901	0.82
Annual Increase:	1.4%	0.49%	Average: 0.88

Source: Using ARC Envision6 estimates and forecast organizes data by Census tracts (8 tracts for Subarea 5), which extend beyond study area boundary

BeltLine Atlanta Connected

Existing Employment Type

	Number of Businesses	Percent of Total	Total Jobs	Percent of Total	Jobs per Business
Health Services	80	10.4%	2,517	33.2%	31.46
Other Services	219	28.5%	902	11.9%	4.12
Motion Pictures & Amusements	47	6.1%	277	3.7%	5.89
Education Institutions & Libraries	8	1.0%	131	1.7%	16.38
Automotive Services	12	1.6%	80	1.1%	6.67
Legal Services	16	2.1%	45	0.6%	2.81
Hotels & Lodging	4	0.5%	28	0.4%	7.0
Summary	386	50.2%	3,980	52.5%	10.31

Total All Industries	7,576	%
Services	3,980	52.5%
Government	1,407	18.6%
Retail Trade	1,007	13.3%
Finance & Real Estate	320	4.2%
Miscellaneous	274	3.6%
Construction	261	3.4%
Wholesale Trade	133	1.8%
Transportation & Utilities	140	1.8%

BeltLine Atlanta Connected

Source: Georgia Power Market Analysis (2006) Census (2000)

Household & Income 2007-2012

Income Implications

18.5% of 2007 sub-area households will earn < $15,000 per year

16.1% of 2012 sub-area households will earn < $15,000 per year

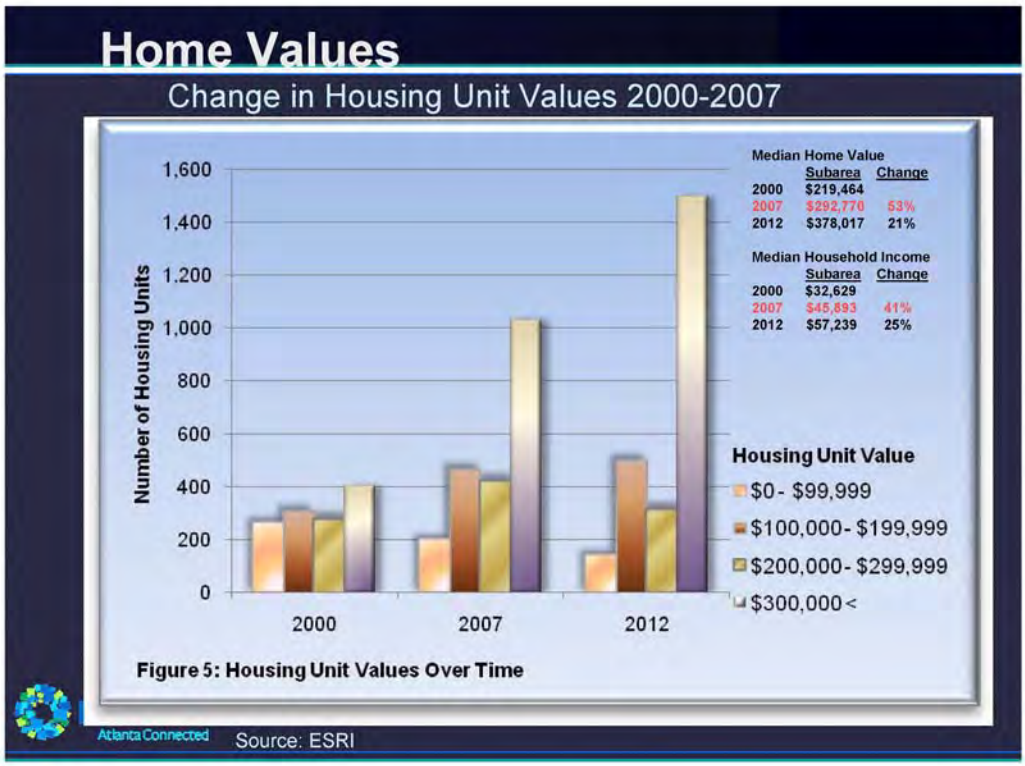
46.9% of 2007 sub-area households will earn < $50,000 per year

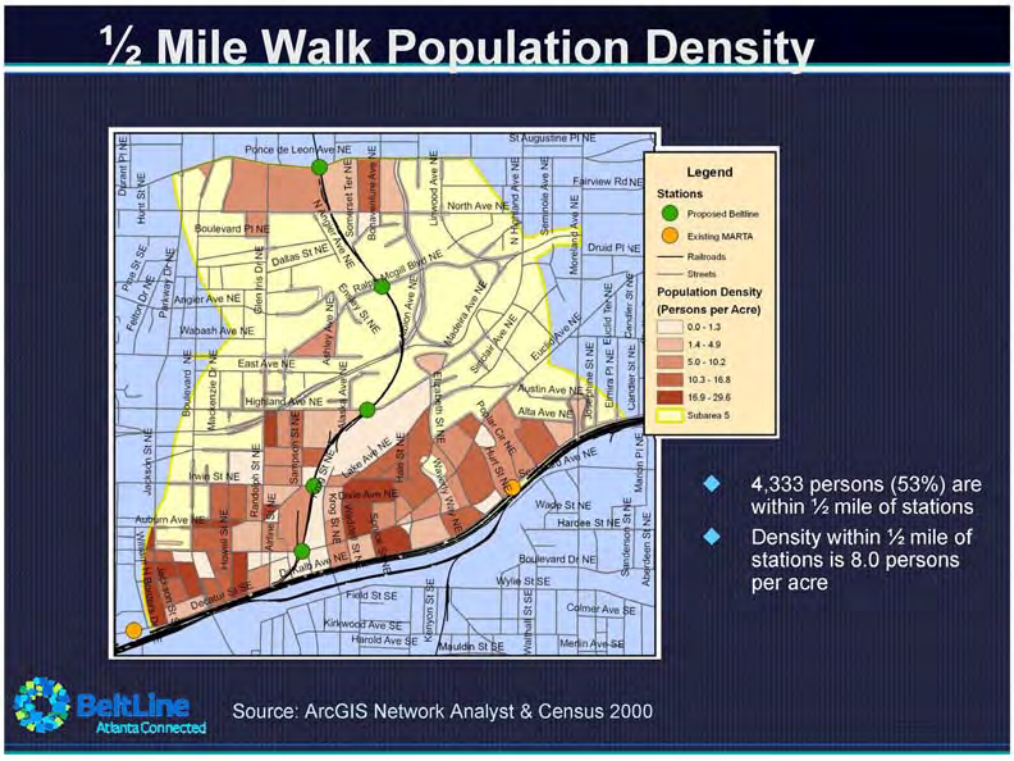
55.0% of 2012 sub-area households will earn < $50,000 per year

- Elderly households are at highest risk of being in poverty and as such, unable to afford sub-area housing
- Young adults (< 25 years) and mature seniors (65 +) income may be more stressed by housing costs

Source : Statistics from ESRI , nearly two-thirds of the population of the Census tract data

BeltLine Atlanta Connected


Home Values
Change in Housing Unit Values 2000-2007
Number of Housing Units
1,600
1,400
1,200
1,000
800
600
400
200
0
2000
2007
2012
Median Home Value
Subarea Change
2000 $219,464
2007 $292,770 53%
2012 $378,017 21%
Median Household Income
Subarea Change
2000 $32,629
2007 $45,893 41%
2012 $57,239 25%
Housing Unit Value
$0 - $99,999
$100,000 - $199,999
$200,000 - $299,999
$300,000 <
Figure 5: Housing Unit Values Over Time
Atlanta Connected
Source: ESRI

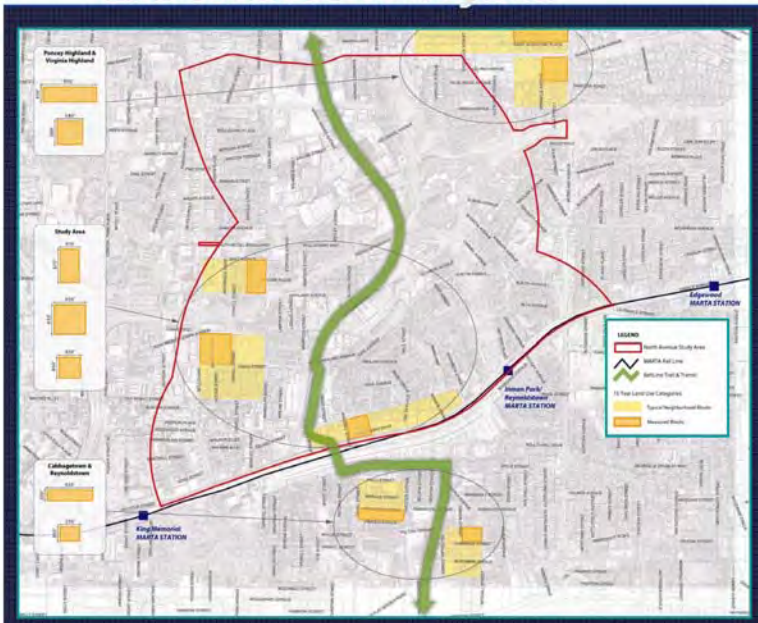

½ Mile Walk Population Density
Legend
Stations
Proposed Beltline
Existing MARTA
Railroads
Streets
Population Density
(Persons per Acre)
0.0 - 1.3
1.4 - 4.9
5.0 - 10.2
10.3 - 16.8
16.9 - 29.6
Subarea 5
4,333 persons (53%) are within ½ mile of stations
Density within ½ mile of stations is 8.0 persons per acre
BeltLine
Atlanta Connected
Source: ArcGIS Network Analyst & Census 2000

½ Mile Walk Employment Density

- 2,741 jobs (37%) are within ½ mile of stations
- Density within ½ mile of stations is 5.1 employees per acre

Source: ArcGIS Network Analyst & Census 2000

Block size analysis



- A network comprised mostly of curvilinear streets
- Pockets of grid network (orange examples)
- Variety of block sizes in grid areas

Source: Georgia Power Market Analysis (2006) Census (2000)

Block size analysis

	Fairlie-Poplar	Midtown	Beltline Subarea 5
Min. Perimeter	669 ft.	1371 ft.	234 ft.
Max. Perimeter	1,151 ft.	2,281 ft.	7,467 ft.
Mean Perimeter	994 ft.	1,731 ft.	2,235 ft.
Min. Area	0.5 acres	0.11 acres	0.05 acres
Max. Area	1.9 acres	7.5 acres	38.2 acres
Mean Area	1.4 acres	4.3 acres	5.95 acres

- Wider range of block sizes than other neighborhoods (Fairlie-Poplar, Midtown)
- Larger mean block size

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Block Size Analysis

- Superblocks
- Mean block perimeter in study area: 2,118 feet
- Superblock has perimeter of 3,206 feet or greater (at least one std. dev. above mean)
- 16 Superblocks (brown)
- Most boundaries curvilinear
- 8 are adjacent to rail right of way
- 5 contain sections of Freedom Park
- 2 are entirely residential

BeltLine Atlanta Connected

Source: ArcGIS Analysis

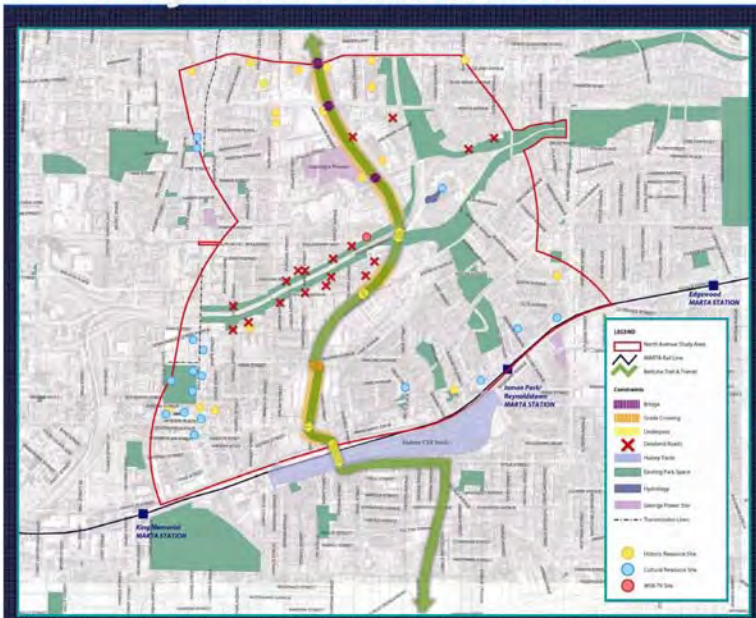
Transportation Improvements

- Transportation Improvements include:
- Roadway Enhancements
- Park and Facility Improvement
- Connections to MARTA
- Additional Roadways

BeltLine Atlanta Connected

Source: City of Atlanta

Physical Constraints



- Pedestrian movements and BeltLine Trail/Transit access is compromised by several physical constraints:
- Bridges
- At Grade Crossings
- Underpasses
- Deadend Roadways
- Infrastructure and Utilities
- Park Space
- Historic & Cultural Resources

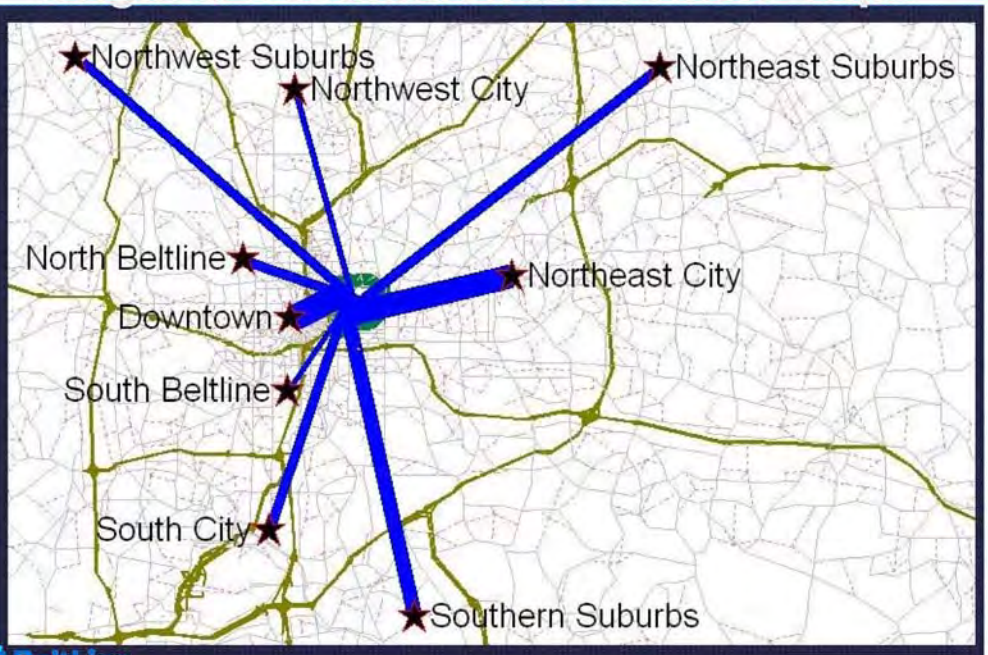
BeltLine Atlanta Connected

Traffic Volumes

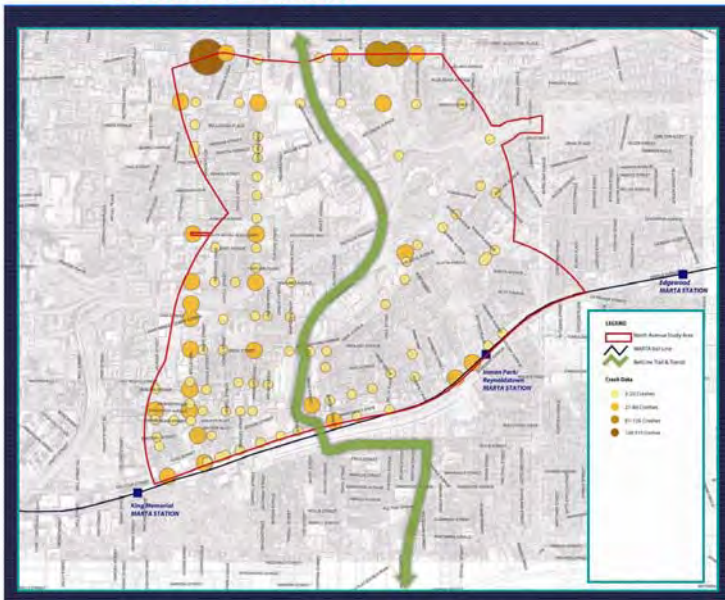
- Ponce De Leon carries >34,000 VPD
- Freedom Parkway serves >25,500 VPD
- Krog volume is >20,300 VPD
- Boulevard >16,500 VPD

Source: GDOT 2006

Origin & Destination for Vehicle Trips



Crash Data



- Higher concentration along Ponce de Leon Avenue, Boulevard, North Avenue & Dekalb Avenue
- Other routes such as Glenn Iris also have reported incidents of some significance

BeltLine Atlanta Connected

Source: GDOT

Transportation

Crash Rates

Description	2002 - 2007 Accident Rate Per 100 Million VMT		
	All Accidents	Fatal Accidents	Injury Accidents
Ponce De Leon from just west of Parkway Drive to Frederica Street	1,959.7	1.45	586.3
North Avenue from Parkway Drive to Clebume Terrace	657.0	0.00	255.9
Freedom Parkway from Boulevard to SR 42 Connector	118.9	0.00	39.6
SR 42 Connector from Freedom Parkway to Moreland Avenue	495.3	0.00	122.3
Edgewood Avenue from just west of Jackson Street to Hurt Street	978.6	0.00	223.5
Decatur St./DeKalb Ave from Wm. H. Borders Street to Moreland Avenue	657.6	2.13	208.6
Boulevard from Ponce De Leon to Decatur Street	2,097.4	0.00	642.5
Glen Iris Drive/Randolph Street from Ponce De Leon to Edgewood Avenue	1,746.7	0.00	636.5
Total/Average	1,194.3	0.44	54.2

- Boulevard has the highest crash rate for all accidents, almost double the average
- Boulevard also has the highest rate of injury accidents at 12 times the average
- Decatur Street/DeKalb Avenue has the highest rate of fatal accidents at almost five times the average

BeltLine Atlanta Connected

Source: GDOT

Transportation

Crash Rates

Description	2002 - 2007 Accident Rate Per 100 Million VMT		
	All Accidents	Fatal Accidents	Injury Accidents
Ponce De Leon from just west of Parkway Drive to Frederica Street	Yes	Yes	Yes
North Avenue from Parkway Drive to Cleburne Terrace	Yes	No	Yes
Freedom Parkway from Boulevard to SR 42 Connector	No	No	No
SR 42 Connector from Freedom Parkway to Moreland Avenue	No	No	No
Edgewood Avenue from just west of Jackson Street to Hurt Street	Yes	No	Yes
Decatur St./DeKalb Ave from Wm. H. Borders Street to Moreland Avenue	n/a	n/a	n/a
Boulevard from Ponce De Leon to Decatur Street	Yes	No	Yes
Glen Iris Drive/Randolph Street from Ponce De Leon to Edgewood Avenue	Yes	No	Yes
Total/Average	Yes	No	No

- Ponce De Leon is over the statewide rate for all, fatal, and injury accidents
- Freedom Parkway and the SR 42 Connector are the only two facilities that are lower than the statewide rate for all, fatal, and injury accidents
- Decatur Street/DeKalb Avenue is classified as a local street, therefore no statewide comparison data is available

BeltLine Atlanta Connected

Source: GDOT

Sidewalk Inventory

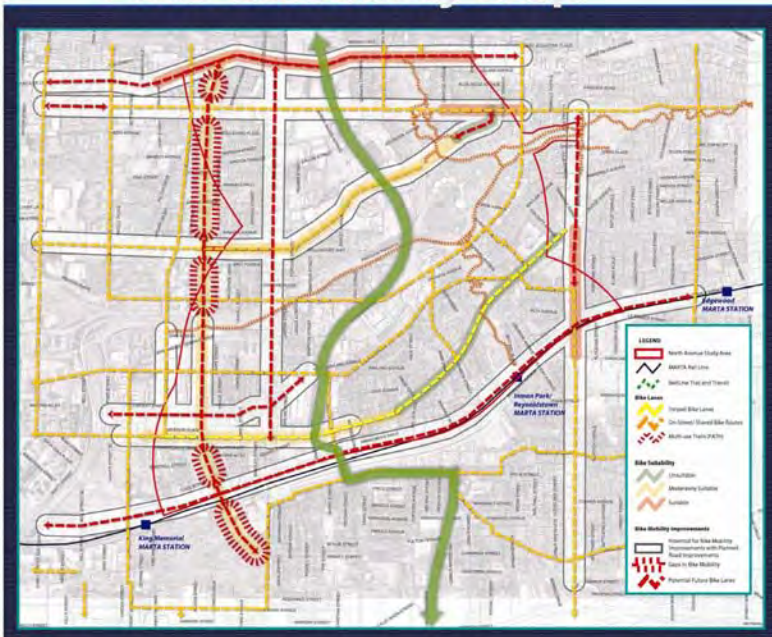
Early Observations

- Preliminary sidewalk assessment
- Subarea broken into four (4) quadrants for purposes of analysis
- Early observations collected on streets shown in purple (210 sidewalk segments):
  - 11% no sidewalk
  - 15% width < 5 ft.
  - 22% non-continuous
- Condition:
  - 14% Optimal
  - 35% Good
  - 28% Acceptable
  - 23% Poor
  - 10% of segments have obstacles

BeltLine Atlanta Connected

Source: Field Analysis

Bike Suitability Map

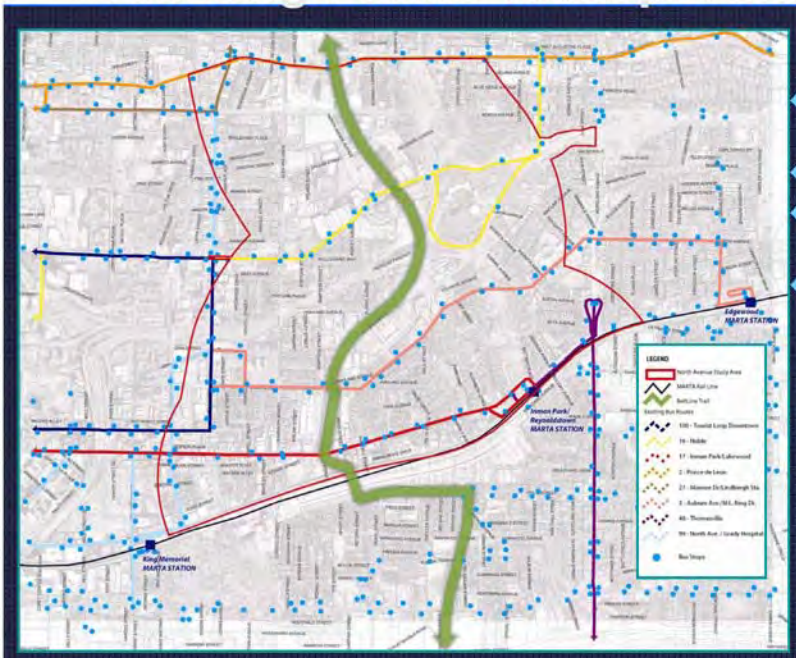


- 2 of 5 proposed beltline stations intersect roads with “medium” bicycle conditions
- 1 proposed station intersects a road with “difficult” conditions

BeltLine Atlanta Connected

Source: ARC Bicycle and Pedestrian Plan 2007

Existing Public Transportation



- MARTA Stations serving the subarea:
- King Memorial
- Inman Park/ Reynolds Town
- (8) Active bus routes with connections to MARTA stations and access to downtown and midtown cultural, educational and business district points of interest

BeltLine Atlanta Connected

Source: MARTA

Goals
What we've heard so far
Parks and Greenspace
Land Use and Design
Mobility and Transit
Circulation/Connectivity
BeltLine
Atlanta Connected

Parks & Greenspace
Create linear park system
Maximize greenspace opportunities
Include active and passive activities for people of all ages at all times
Ensure parks are safe
Create tree-filled parks and greenspaces
Expand connections to parks and schools
Storm water pond a feature not just an engineering solution
BeltLine
Atlanta Connected

Land Use & Design

- Put highest density development close to transit stops
- Protect existing single family neighborhoods
- Protect historic structures and artifacts
- Promote public art
- Emphasize quality design
- Improve environmental quality

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Mobility & Transit

- Foster transit-supportive economic development along the BeltLine
- Maximize accessibility to BeltLine transit
- Minimize impacts of the BeltLine transit
- Mitigate traffic impacts of BeltLine redevelopment

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Circulation/Connectivity

- Create a network of sidewalks and trails
- Enhance street grid and improve street connectivity
- Provide disabled accessibility
- Minimize trail intrusion on existing neighborhoods
- Provide connectivity to all neighborhoods
- Emphasize pedestrian connectivity

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Goals

Study area goal example:

- Develop a context sensitive master plan that maximizes green space, identifies appropriate land uses, and provides multimodal transportation solutions to support the study areas' projected increase in density and growth.

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Objectives

- Parks and Greenspace
  - Create linear park system
  - Create tree-filled parks and greenspaces
  - Expand connections to parks and schools

BeltLine
Atlanta Connected

Objectives

- Land Use and Design
  - Protect existing single family neighborhoods
  - Protect historic structures and artifacts
  - Improve environmental quality

BeltLine
Atlanta Connected

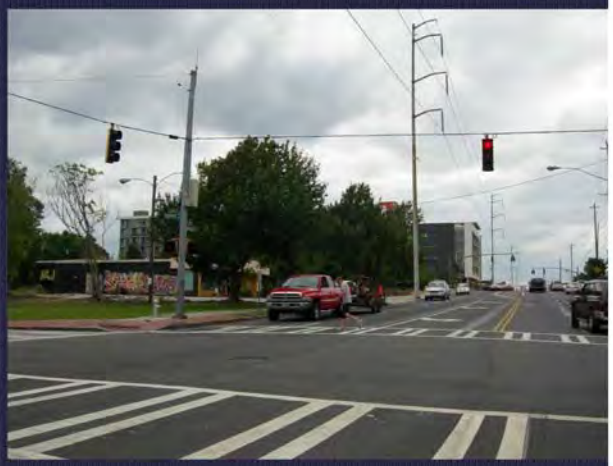
Objectives

- Mobility and Transit
  - Mitigate traffic impacts of BeltLine redevelopment
  - Foster transit-supportive economic development
  - Maximize accessibility to BeltLine transit

BeltLine
Atlanta Connected

Objectives

- Circulation/Connectivity
  - Create network of sidewalks and trails
  - Enhance street grid and improve street connectivity
  - Emphasize pedestrian connectivity



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Goals and
Objectives
Break-out Session
BeltLine
Atlanta Connected

BeltLine

Agenda
Freedom Parkway Subarea Steering Committee Meeting
October 23, 2007

Welcome

Overview of Three Park Master Plan Concepts

Small Group Breakout to Discuss Park Concepts

BeltLine Subarea Five Study Group Meeting
Northeast Study Group
October 23, 2007

1. Welcome

2. Overview of Three Park Master Plan Concepts

3. Small Group Breakout to Discuss Park Concepts

Lewis began the meeting with a few opening remarks and allowed time for introductions. Lewis also reviewed the agenda before turning it over to Eric Bishop from EDAW. Bishop greeted the group and stated that EDAW would present the concept master plans for the new park. He described the purpose of the group exercise that was to come after the presentation of the handouts.

Bishop walked the community through the plans that were given as handouts upon arrival. The park's appearance differed drastically on each plan in terms of layout, and features. Bishop then discussed different elements that the community previously requested to be present in the park. Some of the elements included soft edges to the pond, large lawn space, handicapped accessibility and native plant species.

After the brief presentation, the group was then broken up into two breakout groups. Bishop led one of the teams and Samantha Castro,

who also works for EDAW, led the other. The groups then spent the remainder of the meeting discussing what they liked about the park and what they did not like. EDAW's team stated that the comments and recommendations would be taken back and evaluated as they continue to develop the master plan.

The meeting was adjourned at 8pm.

Park Elements Requested by the Community

Landscape Elements:
- Soft edge to pond (prevent people from directly accessing water)
- Interesting water features (both visual and interactive)
- Large lawn space
- Safety
- Prevent homeless from taking over
- Allow for handicapped accessibility
- Fencing (as a controlled access, rather than a deterrent)
- Elements that relate to the culture and character of the surrounding neighborhoods
- Neighborhoods involved in planting
- Selection of native/Southern plant species

Program Elements:
- Dog park (in a clearly delineated space, that is less desirable for other activities)
- Multi-use Trails (ie. pedestrian, bicycle, in-line skating, etc.)
- Community facility (ie. meeting rooms, event spaces, library, etc.)
- Restaurants
- Retail space
- Concession kiosks (is. ice cream, balloons, etc.)
- Public restrooms
- Amphitheater (with both permanent and additional flexible seating options)
- Outdoor events space
- Market space (area for temporary tents/booths)
- Picnic areas
- Pavilions
- Children's playground
- Multi-purpose fields
- Tennis Courts
- Beach Volleyball
- Skate Park
- Associated parking
- Interpretive signage
- Brick donation trail (to raise additional funds for the park)
- Wireless access throughout

Underserved Park Elements Identified by the City of Atlanta Department of Planning

Over 1,200 people were surveyed within the Metro-Atlanta area, and the information was then divided into study areas. For the purpose of this exercise we will discuss only the results associated with the Northeast planning area. The following are elements that the Northeast community felt they would like to see more of:

Landscape Elements:
- Public art (within parks, streetscapes, public plazas, and community gateways)
- Inclusion of historic and cultural facilities where applicable
- Small neighborhood/pocket parks
- Large community parks
- Multi-use trails (ie. pedestrian, bicycle, nature, etc.)

Program Elements:
- Tennis courts
- Amphitheater
- Picnic areas
- Pavilions/shelters
- Community gardens

Concept A

SAMPLE of FORM USED AT MTG.
PLEASE EMAIL FEEDBACK to jlewis@atlantaga.gov

Likes

Please send comments by November 16th. 2007

Dislikes

Concept B

Likes

Dislikes

Concept C

Likes

Dislikes

BeltLine
Atlanta Connected

BeltLine Subarea 5
NORTHEAST/
North Avenue

Park Concept:
Steering
Committee
Meeting

URBAN | AECOM

OCTOBER 23, 2007

BeltLine
Atlanta Connected
BeltLine Subarea 5:
NORTHEAST/
North Avenue
Park Concept
Option A
NORTH AVENUE
SOMERSET TERRACE
NORTH ANGIER AVENUE
MORGAN STREET
DALLAS STREET
WILMER STREET
RANKIN STREET
ANGIER AVENUE
BELGRADE AVENUE
RALPH MCGILL BOULEVARD
PICNIC AREA
AMPHITHEATER
DOG PARK
GREAT LAWN/
MULTI-USE FIELD
PARKING
PLAYGROUND
SPLASH PARK
FESTIVAL SPACE
MULTI-USE FIELD
MULTI-USE FIELD
TENNIS
BOCCE
TENNIS
MULTI-USE FIELD
PARKING
SKATE PARK
ASHLEY AVENUE
WILLOUGHBY WAY
FREEDOM PARKWAY
FORTUNE STREET
EAST AVENUE
EDAW | AECOM
OCTOBER 23, 2007
SCALE IN FEET

NORTH AVENUE
SOMERSET TERRACE
NORTH ANGIER AVENUE
MORGAN STREET
BELGRADE AVENUE
DALLAS STREET
WILMER STREET
AMPHITHEATER
PLAYGROUND
GREAT LAWN/
MULTI-USE FIELDS
RALPH MCGILL BOULEVARD
RANKIN STREET
DOG PARK
PARKING
SPLASH PARK
ANGIER AVENUE
FESTIVAL SPACE
MULTI-USE FIELDS
PARKING
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BeltLine
Atlanta Connected
BeltLine Subarea 5:
NORTHEAST/
North Avenue
Park Concept
Option B
EDAW | AECOM
OCTOBER 23, 2007
SCALE IN FEET

NORTH AVENUE
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BELGRADE AVENUE
DALLAS STREET
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DOG PARK
PICNIC AREA
WILLIS STREET
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PLAYGROUND
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FREEDOM PARKWAY
FORTUNE STREET
EAST AVENUE
BeltLine
Atlanta Connected
BeltLine Subarea 5:
NORTHEAST/
North Avenue
Park Concept
Option C
EDAW | AECOM
OCTOBER 23, 2007
SCALE IN FEET
0 50 100 150 200 300

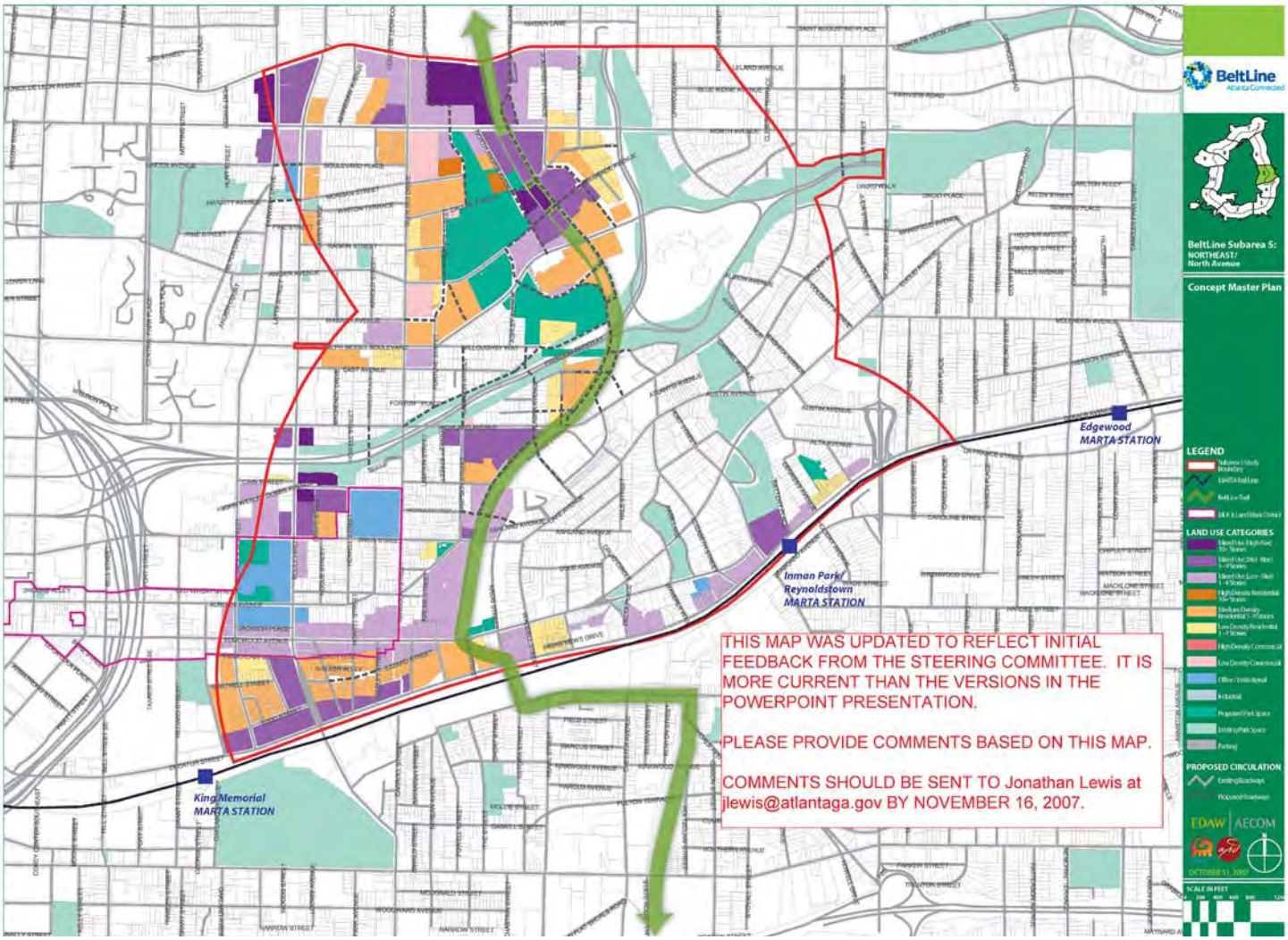
BeltLine

Agenda
NE Study Group Meeting
October 29, 2007

Welcome

Review and Discuss Draft Land Use Transportation Concept Plan

Next Steps


BeltLine
Atlanta Connected
BeltLine Subarea 5:
NORTHEAST/
North Avenue
Concept Master Plan
LEGEND
LAND USE CATEGORIES
PROPOSED CIRCULATION
EDAW | AECOM
Edgewood
MARTA STATION
Inman Park/
Reynoldstown
MARTA STATION
King Memorial
MARTA STATION
THIS MAP WAS UPDATED TO REFLECT INITIAL FEEDBACK FROM THE STEERING COMMITTEE. IT IS MORE CURRENT THAN THE VERSIONS IN THE POWERPOINT PRESENTATION.
PLEASE PROVIDE COMMENTS BASED ON THIS MAP.
COMMENTS SHOULD BE SENT TO Jonathan Lewis at jlewis@atlantaga.gov BY NOVEMBER 16, 2007.

Sub-area 5 Study Area Concept Plan
Presentation

October 29, 2007

OVERVIEW

Background and Context
- BeltLine Land Use and Circulation Goals

Existing Conditions

Land Use Concept

Circulation Concept

KEY ELEMENTS OF THE BELTLINE

BeltLine
Atlanta Connected

Parks
~ 1300 new acres

Trails
33 miles

Transit
22-mile loop

Jobs and Economic Development
20 areas, 30k jobs

Workforce Housing
$240M ~5,600 units

Historic Preservation

Streetscapes and Transportation Infrastructure

Environmental Clean-up

MASTER PLANNING
Overview

BeltLine
Atlanta Connected

City of Atlanta
Draft Northeast BeltLine Planning Area

Detailed interdisciplinary planning for focused study area

- **Builds on previous plans and studies**
- **Provides an opportunity for comprehensive community engagement**
- **Technical analysis for transportation, land use and parks**
- **Interdisciplinary consulting team support**

Redevelopment Plan

Redevelopment Plan

Proposed Park

Areas of focus

- DeKalb Avenue
- Ponce/ Ralph McGill
- BeltLine Right-of-Way

- 6 -

OVERVIEW

Background and Context

Existing Conditions

Concept Plan
- DeKalb Avenue / Edgewood Avenue
- Ponce / Ralph McGill
- BeltLine ROW

Next Steps

- 8 -

CONCEPT PLAN
DeKalb Avenue

BeltLine
Atlanta Connected

Land Use – Options

Focus density near transportation infrastructure

- **MARTA**
- **DeKalb Avenue**
- **Boulevard**

Provide mixed-use activity near major intersections and MARTA

CONCEPT PLAN
DeKalb Avenue

BeltLine
Atlanta Connected

Land Use – Options

- **Focus density near transportation infrastructure**
  - **MARTA**
  - **DeKalb Avenue**
  - **Boulevard**
- **Provide mixed-use activity near major intersections and MARTA**

CONCEPT PLAN
DeKalb Avenue

BeltLine
Atlanta Connected

Land Use – Options

- Step down intensity towards Inman Park neighborhood
- Provide low-rise mixed use and low density residential east of Krog Street
- Redevelop Inman Park MARTA Station parking lot into Transit Oriented Development

- 11 -

CONCEPT PLAN
Edgewood Avenue

BeltLine
Atlanta Connected

Land Use – Options

- Keep "Main Street" feel of Edgewood Avenue
- Provide residential units above street level shops
- Step down intensity near MLK Center and single-family residential

CONCEPT PLAN
Edgewood Avenue

BeltLine
Atlanta Connected

Land Use – Options

- Keep "Main Street" feel of Edgewood Avenue
- Provide residential units above street level shops
- Step down intensity near MLK Center and single-family residential

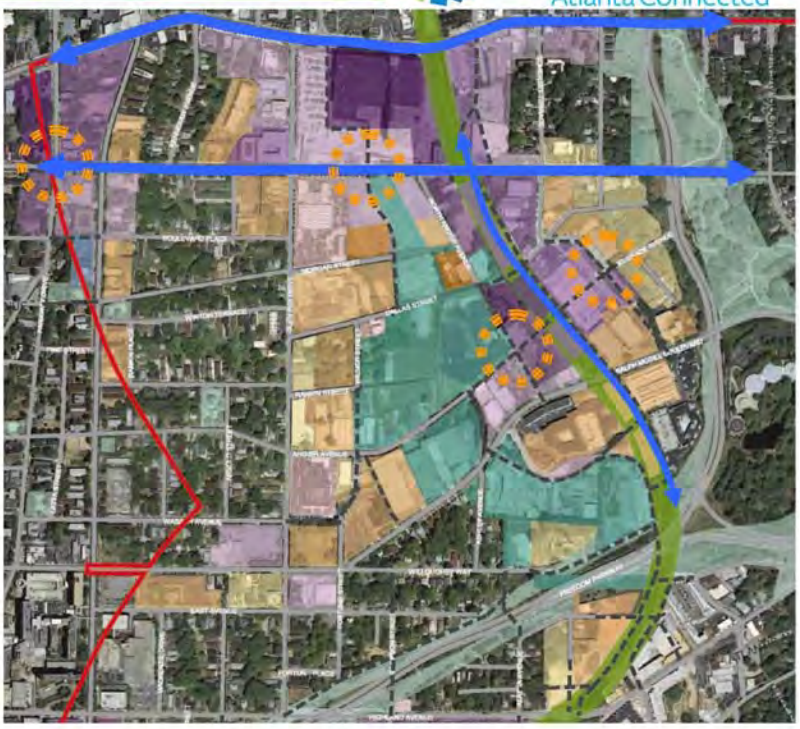
- 13 -

Concept Plan
Ponce / Ralph McGill

BeltLine
Atlanta Connected

Land Use – Options

- Focus density on major corridors and intersections
- Increase utilization of North Avenue
- Provide mixed use on Beltline and major corridors like North Avenue
- Centrally located park to off-set density



Concept Plan
Ponce / Ralph McGill

BeltLine
Atlanta Connected

Land Use – Options

- Focus density on major corridors and intersections
- Increase utilization of North Avenue
- Provide mixed use on Beltline and major corridors like North Avenue
- Centrally located park to off-set density

CONCEPT PLAN
Ponce / Ralph McGill

BeltLine
Atlanta Connected

Land Use – Options

- Re-use existing buildings where possible
- Preserve industrial and post-industrial appearance where appropriate

CONCEPT PLAN
Ponce / Ralph McGill

BeltLine
Atlanta Connected

Land Use – Options

- Step down intensity near single-family residential
- Provide compatible development near single-family

Concept Plan
BeltLine ROW

BeltLine
Atlanta Connected

Land Use – Options

- Focus intensity on Beltline and major corridors
- Provide mixed use on major corridors and areas with good road connectivity

CONCEPT PLAN
BeltLine ROW

BeltLine Atlanta Connected

Land Use – Options

- Requires relocating rail
- Medium density residential compatible with surrounding development

NE Atlanta Beltline
Illustrative Section - Freedom Parkway North, Parcel 4, Site 2
June 27, 2006

*Images from NE Beltline DRI application, Smith Dalia

CONCEPT PLAN
BeltLine ROW

BeltLine Atlanta Connected

Land Use – Options

- Focus intensity on Beltline and major corridors
- Provide mixed use on major corridors and areas with good road connectivity

CONCEPT PLAN

BeltLine ROW

BeltLine Atlanta Connected

Land Use – Options

- Preserve historic industrial structures
- Utilize as mixed use and live/work
- Re-use existing buildings when possible
- New construction compatible with surrounding development

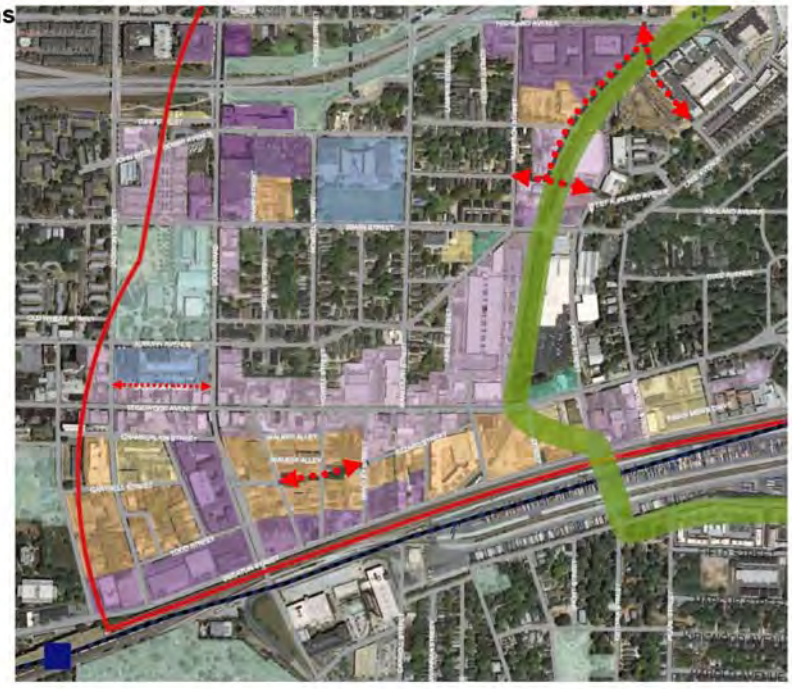
CONCEPT PLAN

DeKalb Avenue/ Edgewood Avenue

BeltLine Atlanta Connected

Transportation – Options

- Provide local street alternatives to major corridors
- Maintain existing alleys when possible
- Minimize curb cuts on major corridors by requiring use of local streets when possible

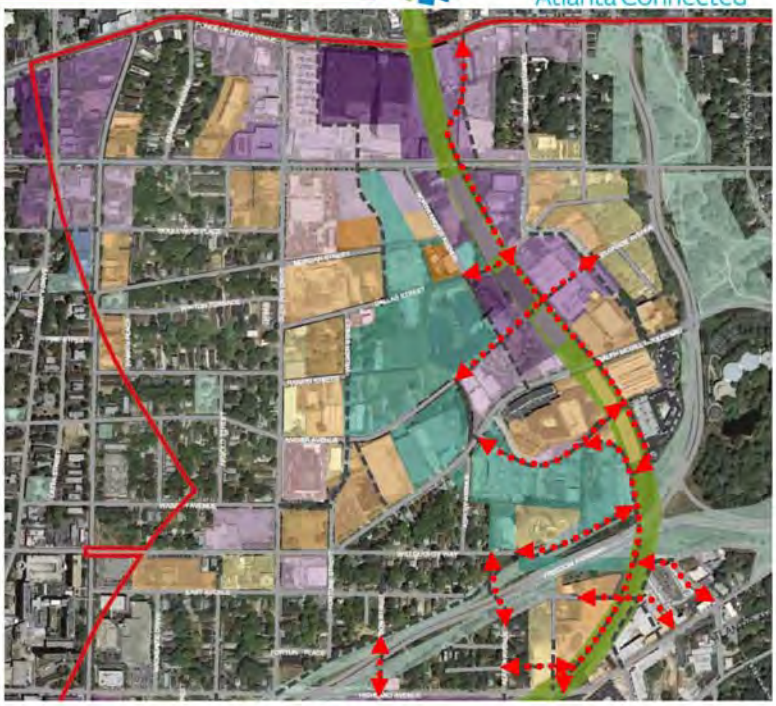


Concept Plan
Ponce / Ralph McGill

BeltLine
Atlanta Connected

Transportation – Options

- Provide east-west connections across beltline
- Provide north-south road adjacent to Beltline where possible
- Increase north-south local connections over Freedom Parkway

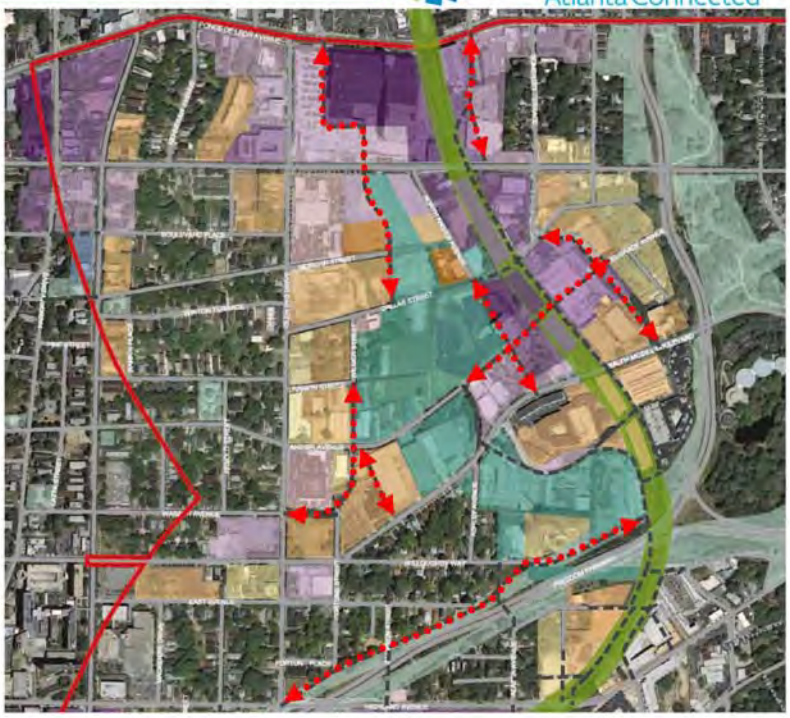


Concept Plan
Ponce / Ralph McGill

BeltLine
Atlanta Connected

Transportation – Options

- Break up super-blocks with new local streets
- Provide local alternatives to Glen Iris and Ralph McGill
- Provide wider sidewalks on major corridors, at least 10 feet wide
- Provide on-street parking for new developments

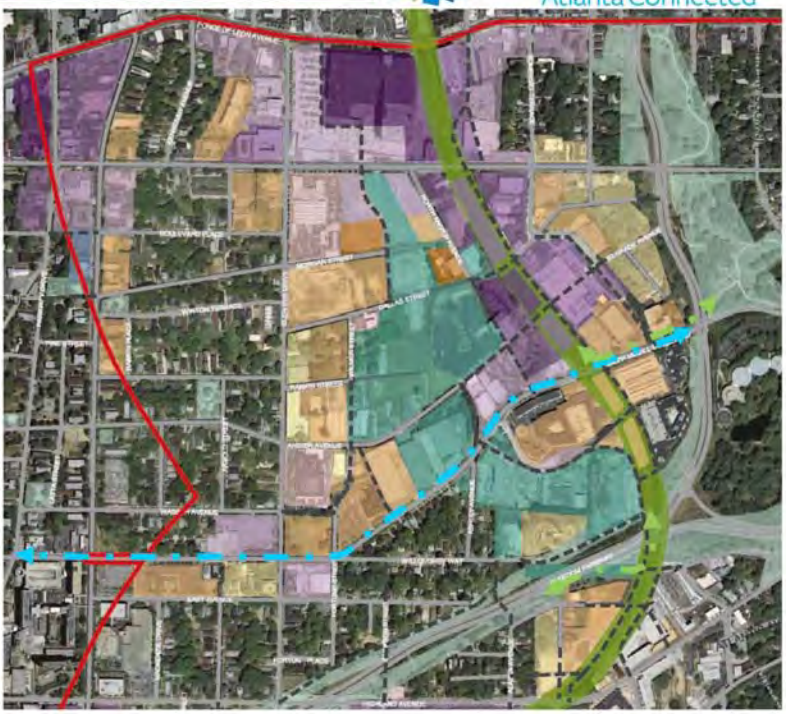


Concept Plan
Ponce / Ralph McGill

BeltLine
Atlanta Connected

Transportation – Options

- Provide on-street bike lanes on Ralph McGill to Jackson Street
- Improve trail connections to Freedom Parkway

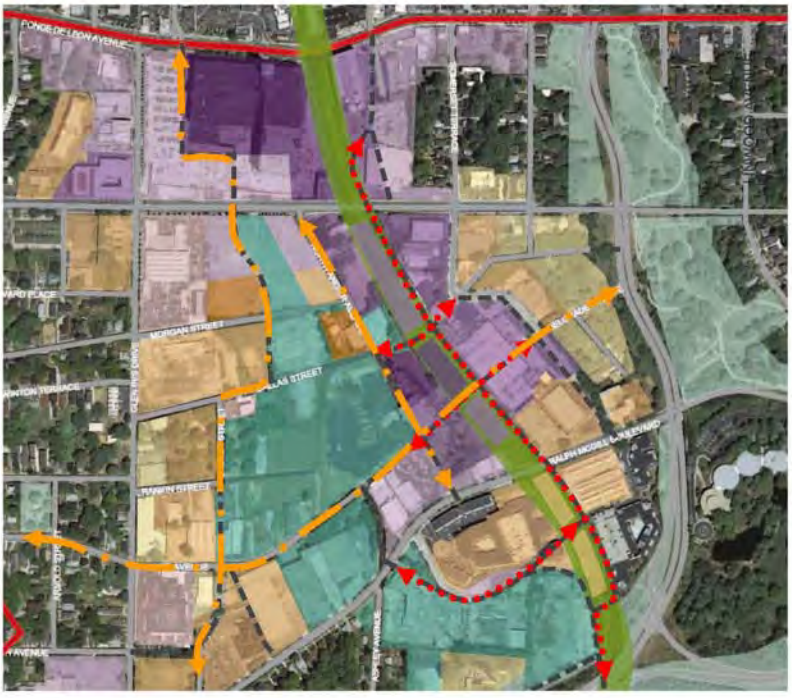


Concept Plan
BeltLine ROW

BeltLine
Atlanta Connected

Transportation – Options

- New east-west connections across Beltline
- Provide north-south roads adjacent to Beltline
- Provide alternatives to major corridors



Concept Plan
Edgewood Avenue

BeltLine
Atlanta Connected

Transportation connectivity and infrastructure needs including

- Provide local street alternatives to major corridors
- Maintain existing alleys when possible
- Minimize curb cuts on major corridors by requiring use of local streets when possible

Concept Plan
Edgewood Avenue

BeltLine
Atlanta Connected

Transportation connectivity and infrastructure needs including

- On-street parking where possible
- Streetscapes
- On-street bike lane

CONCEPT PLAN
Ponce / Ralph McGill

BeltLine
Atlanta Connected

Transportation connectivity and infrastructure needs including

- **Provide east-west connections across beltline**
- **Provide north-south road adjacent to Beltline where possible**
- **Increase north-south local connections over Freedom Parkway**

- 31 -

CONCEPT PLAN
Ponce / Ralph McGill

BeltLine
Atlanta Connected

Transportation connectivity and infrastructure needs including

- **Break up super-blocks with new local streets**
- **Provide local alternatives to Glen Iris and Ralph McGill**
- **Provide wider sidewalks on major corridors, at least 10 feet wide**
- **Provide on-street parking for new developments**

- 32 -

CONCEPT PLAN

Ponce / Ralph McGill

BeltLine Atlanta Connected

Transportation connectivity and infrastructure needs including

- **Provide on-street bike lanes on Ralph McGill to Jackson Street**
- **Improve trail connections,**
  - **Connect Freedom Path to Beltline Trail**
  - **Connect Freedom Path trails on south side of Freedom Parkway**

- 33 -

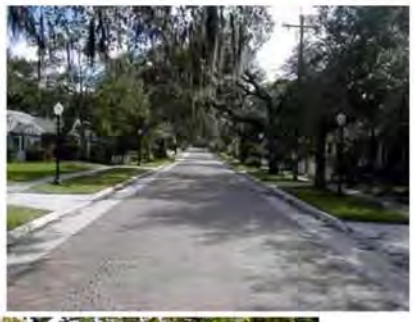
CONCEPT PLAN

BeltLine ROW

BeltLine Atlanta Connected

Transportation connectivity and infrastructure needs including

- **New east-west connections across Beltline**
- **Provide north-south roads adjacent to Beltline**
- **Provide alternatives to major corridors**



- 34 -

CONCEPT PLAN

BeltLine ROW

BeltLine Atlanta Connected

Transportation connectivity and infrastructure needs including

- **Provide wide path along Beltline**
- **Increase connectivity with existing paths**
- **Provide multi-modal access to future transit stations**

OVERVIEW

BeltLine Atlanta Connected

Background and Context

Existing Conditions

Concept Plans

Next Steps

Draft Park Master Plan

Draft Study Area Master Plan

Next Steps

BeltLine
Atlanta Connected

Upcoming Work Steps

- **Prepare Draft Park Master Plan for the new park on North Avenue**
- **Revise Land Use Plan for the Subarea**
- **Conduct Traffic Analysis for the Subarea**

Upcoming Study Group Meetings (public meetings)

- **December 20: Review and Discuss Draft Park Master Plan**
- **February 4: Review and Discuss the Draft Subarea Master Plan**

Both meeings will be from 6:30 to 8:30PM in the MLK Recreation Center, 2nd Floor Meeting Room on Boulevard.

- For MARTA access take the #3 bus.
- Ample parking is around the corner behind the church and King National Park. The gate stays open. You can cut through the courtyard past the Ghandhi Statue.

BeltLine
Atlanta Connected

ATLANTA BELTLINE INC.

BeltLine

Sub-area 5 Study Area Concept Plan Presentation

October 29, 2007

BeltLine

Agenda
NE Study Group Meeting
December 20, 2007

Welcome

Announcements and BeltLine Update

Presentation of the Park Master Plan for the New Park on North Avenue

Discussion of the Park Master Plan

Next Steps

BeltLine
Atlanta Connected

Northeast Study Group
December 20, 2007

1. Welcome
2. Announcement and BeltLine Update
3. Presentation of the Park Master Plan for the Park on North Avenue
4. Discussion of Park Master Plan
5. Next Steps

Lewis started the meeting with a few opening remarks and allowed time for introductions. Lewis also reviewed the agenda and introduced Eric Bishop of EDAW as he walked through a presentation of the new park on North Avenue Master Plan.

Bishop's discussion of the Master Plan focused on comments and recommendations from the Steering Committee and Study Group Meetings in October. At the meeting on October 23, the Steering Committee Reviewed three plans and came to a consensus on one. This option was then presented at the Study Group meeting on 10/29. At this meeting the community was asked to give feedback on likes and dislikes of the plan. The Study Group stated the following:

- Circulation routes
- Flexibility of programming
- Proximity of playground to splash pad
- Separation of active and passive uses
- Flexible space for festivals
- Opportunities for public art throughout the park
- Variety or parking options
- Single pond concept as a bold statement

The community did not like the following aspects of the park:
- Lack of playground in the more active southern half
- No public restrooms
- Lots of tennis and no skate park

Bishop went on to illustrate how the community's concerns were addressed in the skate park. Shortly after the presentation, EDAW staff asked the Study Group what it would like to see incorporated into the new park, and the responses were as follows:

Programmatic Feature Requested by the Community:

- There is an area demand for Tennis
- There should be programming for seniors
    - Specifically Shuffleboard
- Incorporate Functional Art
    - Use Local Art
    - Also feature design competitions
- Adult Fitness
    - Fitness Stations along paths/trails
- Good Park for Kids
    - Programmatic Features for all Ages
        - Skate Park
        - Splash Pad
        - Workout Circuit
- Design the walls that are going to be located in the park
- Rethink Edith Street
- Revisit Tennis Courts idea
- Try to acquire land out to Glen Iris
- Event Space
    - Weddings, Fund Raisers, etc.
- Activate the Roof of the Parking Deck
- Conservancy is under development

The meeting ended at approximately 8:30 pm

BeltLine
Atlanta Connected

ATLANTA BELTLINE INC.

BeltLine

North Avenue Park Final Master Plan
Subarea 5 Study Group Meeting

December 20, 2007

OVERVIEW

BeltLine
Atlanta Connected

Welcome and Announcements

Final Park Master Plan

Discussion

OVERVIEW

BeltLine Atlanta Connected

Welcome and Announcements

Final Park Master Plan

Discussion

Concept Master Plan – Version B
Steering Committee Comments (10/23)

BeltLine Atlanta Connected

Likes

- Minimal grading for a split pond
- Splash pad
- Festival space
- Feels like two separate parks… one active and one passive
- Traffic circulation on eastern side

Dislikes

- Disconnection of Cox property leaves it hard to maintain and keep safe
- Not enough sports fields and associated parking
- Splitting the pond in two
- Number of street crossings
- Isolation of the Cox property
- Amount of park space fronting Ralph McGill, and the isolation of the festival space

Concept Master Plan – Version B
Steering Committee Comments (10/23)

Likes

- Minimal grading for a split pond
- Splash pad
- Festival space
- Feels like two separate parks… one active and one passive
- Traffic circulation on eastern side

Dislikes

- Disconnection of Cox property leaves it hard to maintain and keep safe
- Not enough sports fields and associated parking
- Splitting the pond in two
- Number of street crossings
- Isolation of the Cox property
- Amount of park space fronting Ralph McGill, and the isolation of the festival space

Concept Master Plan – Version C
Steering Committee Comments (10/23)

Likes

- Separation and location of the dog park
- Trails surrounding the pond
- Grouping of playground, picnic space and associated parking
- Length of the pond
- Compact nature of the park
- Grand promenade from North to Ralph McGill

Dislikes

- Connections to the east are not optimal
- Discontinuous flow of the park
- Entrance on Ralph McGill isn't grand enough
- Issues with the pond elevation, and the amount of space it takes up
- Not as much programming

Concept Master Plan – General
Steering Committee Comments (10/23)

BeltLine Atlanta Connected

Likes

- Use of a splash pad rather than a public pool
- Open programmable festival space
- Multiple parking lots associated with different park programming
- A mixture of passive and active uses
- Flow from Elizabeth to North Avenue works well

Comments

- Pedestrian access to the park crossing Ralph McGill should put the pedestrian as the priority
- Splash park and playgrounds should be adjacent to one another
- Make sure that the festival space is accessible for loading and unloading

Dislikes

- No strong western entrance to the park from Glenn Iris and the neighborhood
- Street going through the park… even a temporary road could become permanent
- Use of a tall fence around the pond creating a visual and physical barrier to the water
- Some of the parcels seem remote and may be more difficult to maintain and keep safe
- Not enough thought about the needs of an aging population
- No designated community meeting space

Draft Master Plan
Steering Committee Comments (11/29)

BeltLine Atlanta Connected

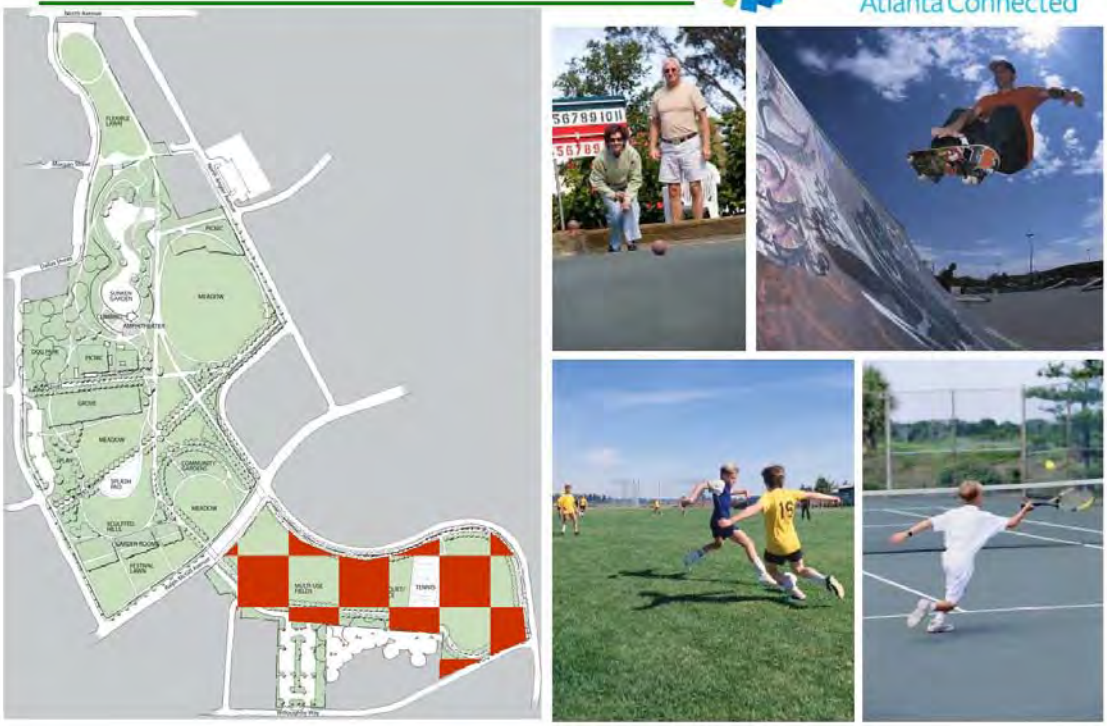
Likes

- Hierarchy of circulation routes
- Flexibility and quantity of programming
- Proximity or playground to splash pad
- Separation of active and passive uses
- Flexible space for festivals, markets, etc. as gateway to Ralph McGill
- Opportunities for public art throughout the park
- Variety or parking options
- Single pond concept as an opportunity for a bold statement

Dislikes

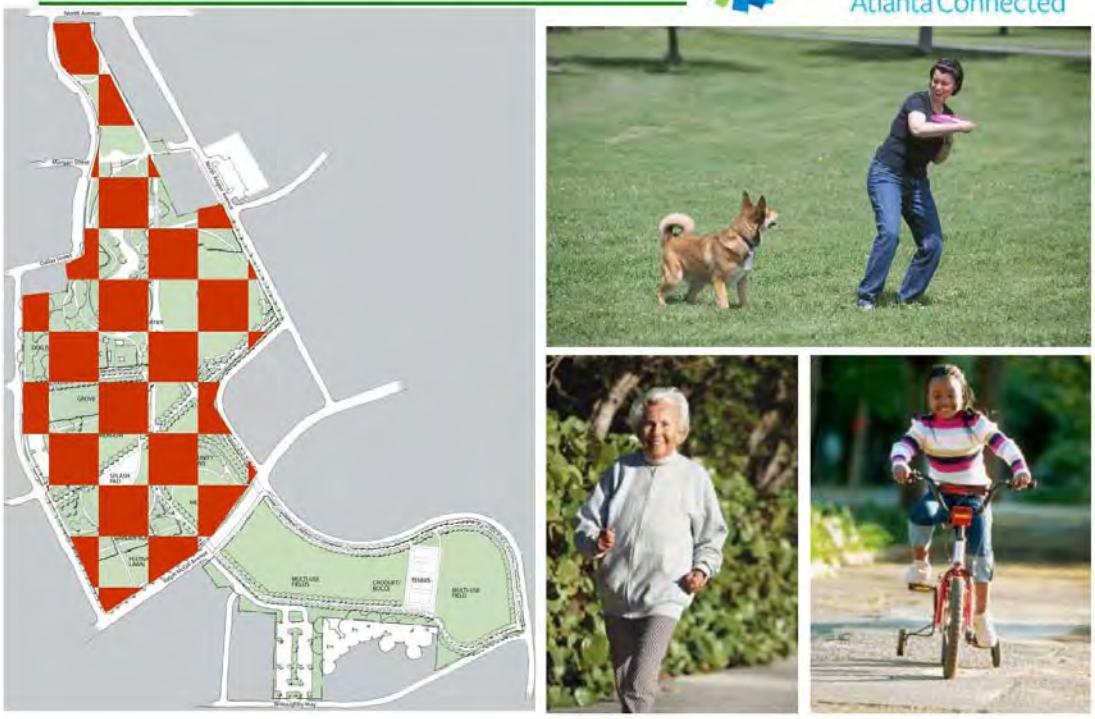
- Lack of playground in the more active southern half
- No public restrooms
- Lots of tennis and no skate park

Park Framework – Active Uses



View North to Active Uses

Park Framework – Passive Uses



Park Framework – Circulation

View East towards BeltLine

Public Art

Rolling Meadows

Primary Paths / Tree Allées

Sunken Garden

Pond Edges

Pond Edges

Climbing / Bouldering Walls

Climbing / Bouldering Walls

Amphitheater

View to the Pond & Sunken Garden

Dog Park

Children's Garden

Community Garden

Garden Rooms

Event Lawn

Park Master Plan – Additional Considerations

- BeltLine Arboretum
- Freedom Park Uses
- City of Atlanta's Project Greenspace
- BeltLine Cultural Master Plan
- Nighttime uses/security
- Gateways
- BeltLine Parking Study
- Materials/amenities/furnishing

OVERVIEW

Welcome and Announcements

Final Park Master Plan

Discussion

Agenda
BeltLine Master Plan
Subarea 5 Steering Committee Meeting
April 21, 2008
MLK Recreation Center

1. Opening Remarks

2. Introductions

3. Draft Plan Review

4. Questions and Discussion

For questions or additional information, please contact:

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Citizen Participation Advocate
readdy@atlbeltline.org
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BeltLine Subarea Five Planning Committee Meeting
Draft Plan Review
April 21, 2008
MLK Recreation Center

Agenda Items Covered:

1. Opening Remarks

2. Introduction

3. Draft Plan Review

4. Questions and Comments

Jonathan Lewis started the meeting with a few opening remarks. Lewis specifically focused his introduction on the standardization of the Northeast Study Group Meeting Schedule. Lewis stated the meeting would take place at Hillside and would be the second Thursday of every month. He stated while there are two master plans running concurrently, the study group meeting agenda would be determined by which master plan possessed the greatest need for immediate attention.

Questions & Concerns regarding EDAW's presentation of the Draft Plan:

One community member stated that EDAW's plan needs to make mention of all of the plans in referenced, specifically area plans focused along the Boulevard and Ponce De Leon Ave. Corridors.

Q: Is it within the scope of the project to look at parks operations and maintenance?
A: Those issues are being discussed in ongoing conversations between Atlanta BeltLine Inc., BeltLine Partnership, and the Parks Department.

Q: Does the planning effort take into account the recent property rezonings/site plans that have been laid forth by individual property owners?

A: Yes, we will illustrate later with the land use map.

Q: Are street improvements being discussed?

A: Yes and we will present them during our traffic analysis portion of the presentation.

Q: Did the city adopt the redevelopment plan?

A: Yes, the City Council did adopt the 2005 Redevelopment Plan, but they did not amend the Future Land Use Plan (the ASAP map) at that time. These plans will go through the formal land use approval process. It may not all be one undertaking but the plan is to have these plans formally adopted. There will probably not be any proactive rezonings, but there will likely be proactive land use plan amendments.

Comment: Some of these densities could seem greater due to the topographic issues in the Subarea.
Response: The plan takes topography into considerations as well as transitions to single family homes.

Q: What determines the locations of the transit stops?
A: These stops are still not final. We have just come up with conceptual ones based on the density and park space. The final stops will come out of a later study done by Atlanta BeltLine Inc., the Draft Environmental Impact Study.

Q: What will determine the transit alignment?
A: The draft Environmental Impact Study has begun, with MARTA, to investigate this issue.

Comment: The community has different ideas for the Somerset Terrace area of your plan. We planned a commercial hub, so I don't think we would support just residential in the area. We envision a lot of retail and residential on both sides of the street. We also envision a street connection down to Ralph McGill from that area. We envision a street connecting from Ponce all the way down to Ralph McGill as a way to relieve some of the traffic congestion through neighborhood streets.

Q: How will you go about converting the streets into multi-use trails?
A: We will use and narrow the existing paved area. It is a common practice in park design to convert these to pedestrian and cyclist paths. The only street that is planned to connect through the park is Ralph McGill.

Q: Earlier concept maps showed additional connections across Freedom Parkway in addition to the Elizabeth St. connection. What happened to the others?

Q: Where does the Elizabeth Street Connection end up?
A: Willoughby Way, Alaska Avenue, and Ensley St.
Comment – There needs to be a conversation about the trail use hours due to the fact that a lot of parks close at 11pm and many of the businesses along these parks will be open until midnight or later.

Q: What other North- South pedestrian/cycling connections should we explore? Everything is centered on East – West and the BeltLine.
A: The Old Fourth Ward Plan is developing a North – South cyclist concept for Parkway. Freedom Parkway also offers a North - South trail connection.

Q: Who is designing the storm water feature?
A: HDR (An engineering and design firm).

Comment - A key component of this plan needs to be area signage. If you are not from the area, you have no idea how to get anywhere from the subarea.

Comment – All of the underpasses should be focal points for public art. It should also be noted that Freedom Park is now a home to temporary and permanent art exhibitions.

Comment – Ford Factory needs local designation from the Urban Design Commission.

Add Stoveworks as an addition to the significant resources priority list.

The city should look into prioritizing the bridges and tunnels along the BeltLine in regards to local historic designation.

Traffic:

North Avenue Recommendations:

- A traffic light along North Ave. at Somerset.
- Parallel parking on North Ave. from Bonaventure on down, due to the lack of traffic along such a wide street.
- Expand the median from the BeltLine bridges.

There should be some serious improvements to pedestrian conditions along Auburn Avenue if the BeltLine plans to run a trail down the street. It is a very dangerous pedestrian environment right now.

There should be better lighting at the Krog St. tunnel than there is now, even during the daytime.

There should also be a lot of attention paid to the pedestrian situation at Freedom Parkway and Boulevard right now.

The meeting ended at approximately 9:15 pm

Subarea 5 Study Area Master Plan
Draft Recommendations Presentation

April 21, 2008

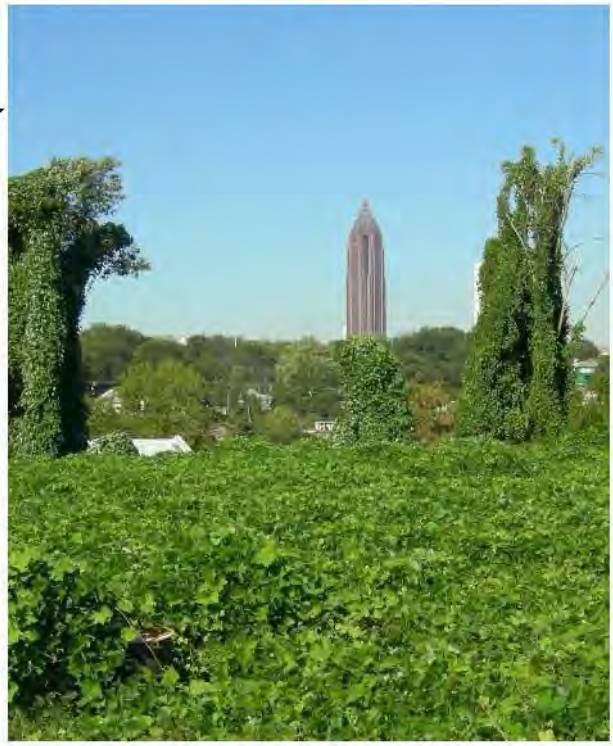
Study Purpose

The Master Plan builds on previous BeltLine planning efforts to establish framework for implementation.

Creates neighborhood-based vehicle for ongoing input on transit and trail planning.

Strategic recommendations for:

- Land Use
- Parks and open space
- Public art
- Historic preservation
- Urban design
- Mobility, circulation



Planning Process

Process includes a Park Master Plan and a Study Area Master Plan

Steering Committee Meeting Dates:

- **July 18, 2007-** Process, Schedule and Background
- **September 10, 2007-** Study area existing conditions
- **October 23, 2007-** Concept Master Park Plan
- **October 29, 2007** Concept Master Plan
- **November 29, 2007-** Draft Park Master Plan
- **April 21, 2008-** Draft Study Area Master Plan

Study Group Public Meeting Dates:

- **August 22, 2007-** Park existing conditions and visioning
- **September 26, 2007-** Goals and Objectives
- **December 20, 2007-** Final Park Master Plan
- **May 8, 2008-** Final Study Area Master Plan

Subarea 5 Study Area

- 1/2 mile buffer on either side of the BeltLine
- Northern limit: Ponce de Leon Avenue
- Southern limit: DeKalb Avenue

Goals

Land Use Goals:

- Put highest density development close to transit stops
- Respect existing neighborhoods when it comes to redevelopment and promote historic preservation wherever possible
- Emphasize quality design
- Create framework for public art

Goals

Mobility and Transit:

- Maximize accessibility to BeltLine
- Provide appropriate connectivity across BeltLine and other constraints
- Mitigate traffic impacts of development
- Promote pedestrian and bicycle circulation

Context

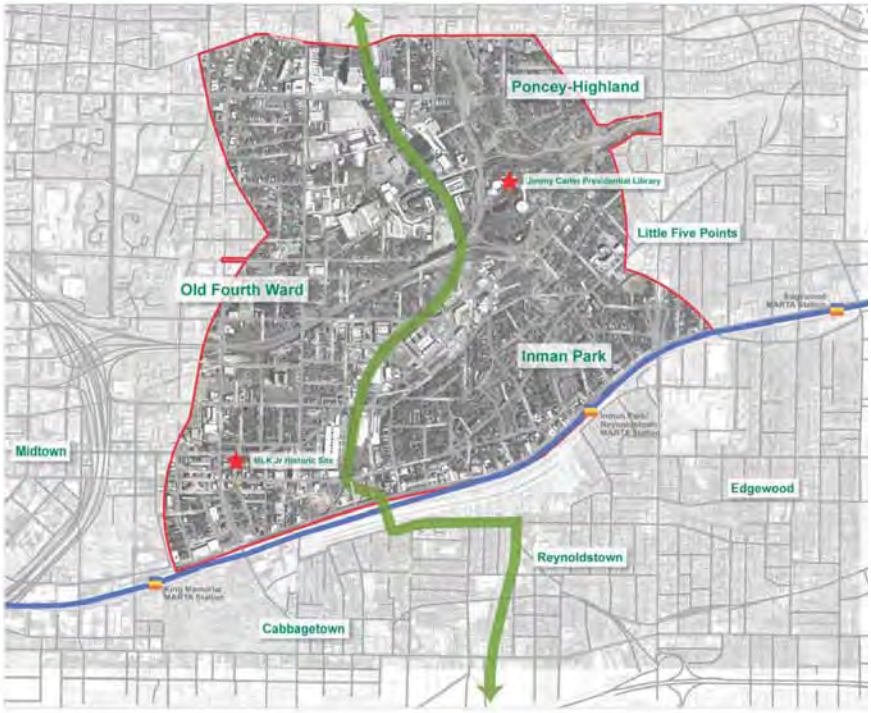
Historic neighborhoods:

- Inman Park
- Old Fourth Ward *(includes the Martin Luther King, Jr. Historic District)*
- Poncey-Highland

National cultural centers:

- Martin Luther King, Jr. Historic Sites
- Jimmy Carter Presidential Library

Historic structures



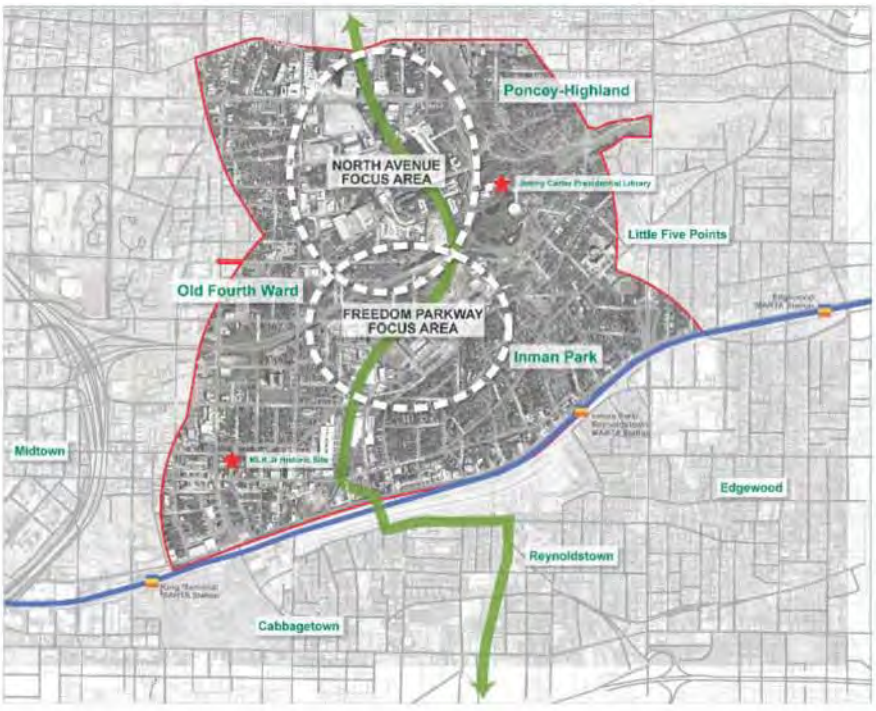
Two Focus Areas

Focus areas where:

- Redevelopment is most likely to occur
- Additional connectivity is needed

North Avenue

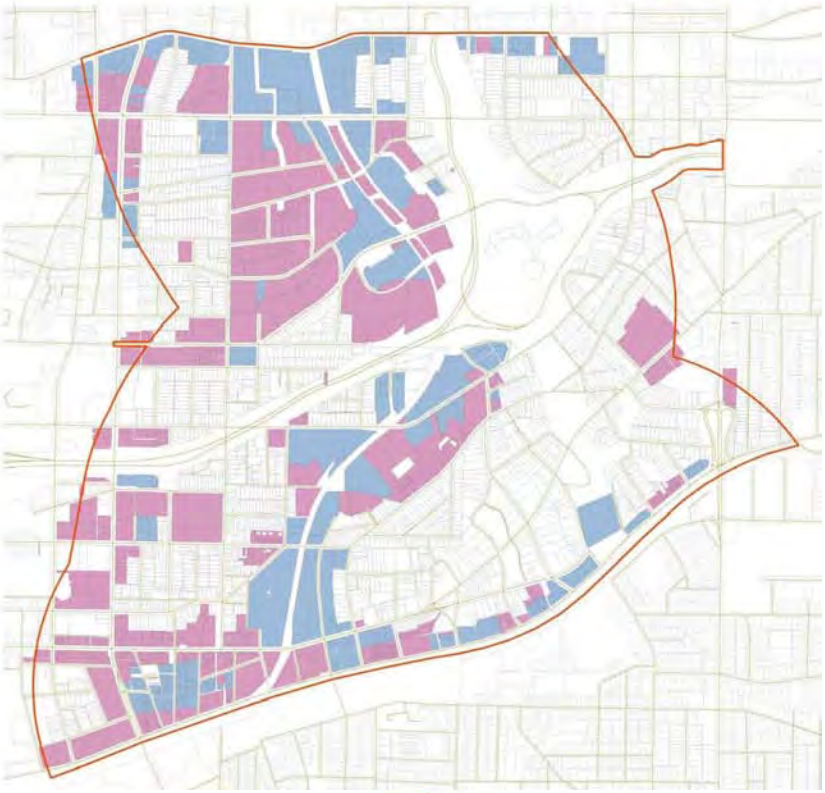
Freedom Parkway



Land Use Change Types

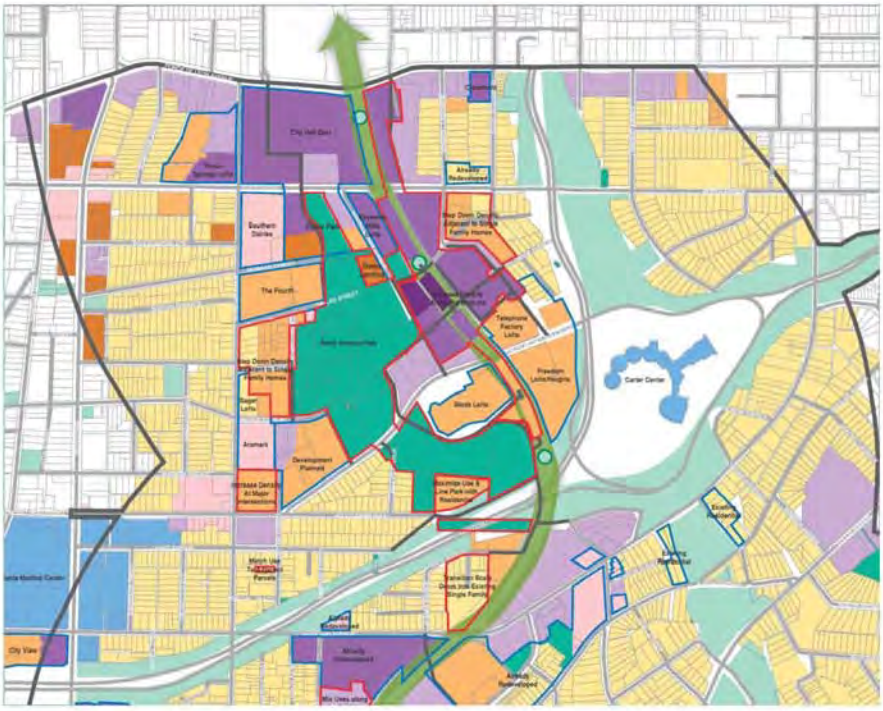
Parcel show change under two conditions:

- **Redevelopment has already occurred or is underway**
- **The Master Planning process has identified a different land use category or intensity more appropriate for sub area goals**



North Avenue Focus Area

- Proposed park with stormwater facility
- Focuses intensity and activity around proposed transit stops
- New development parcels within BeltLine right-of-way
- Steps down intensity near established neighborhoods
- Redevelopment near historic sites should maintain historic integrity



North Avenue Focus Area

BeltLine
Atlanta Connected

North Avenue Park

City of Atlanta Future Land Use Plan:

- Mixed Use

BeltLine Redevelopment Plan:

- Park Space

Proposed Future Land Use:

- Park Space

North Avenue Focus Area

BeltLine
Atlanta Connected

Dallas Street to Angier Avenue

City of Atlanta Future Land Use Plan:

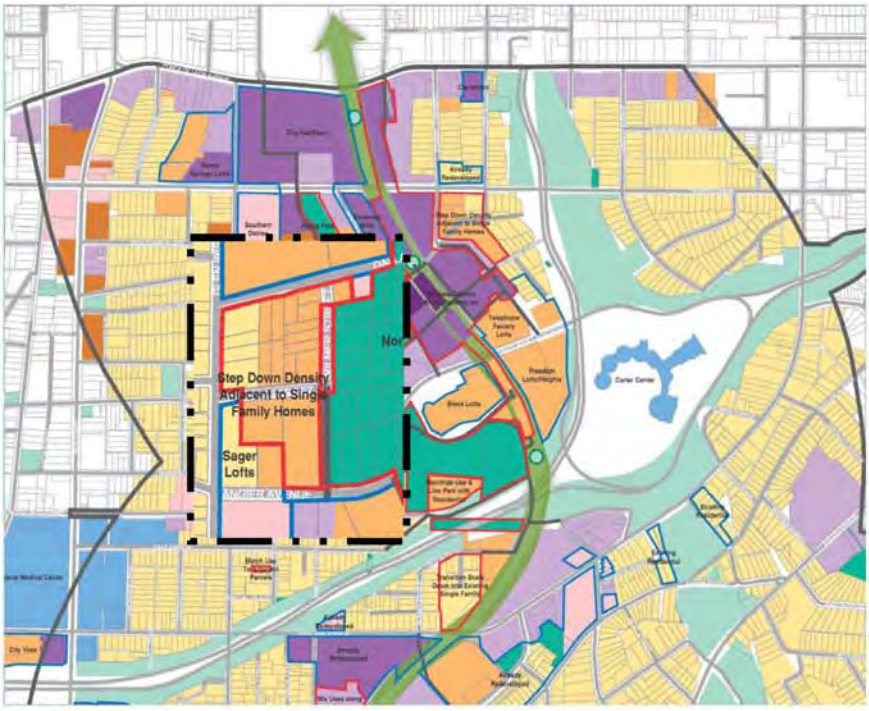
- Mixed Use

BeltLine Redevelopment Plan:

- Medium Density Residential

Proposed Future Land Use:

- Medium Density Residential
- Low Density Residential



North Avenue Focus Area

BeltLine
Atlanta Connected

Ralph McGill/ Glen Iris Drive intersection

City of Atlanta Future Land Use Plan:

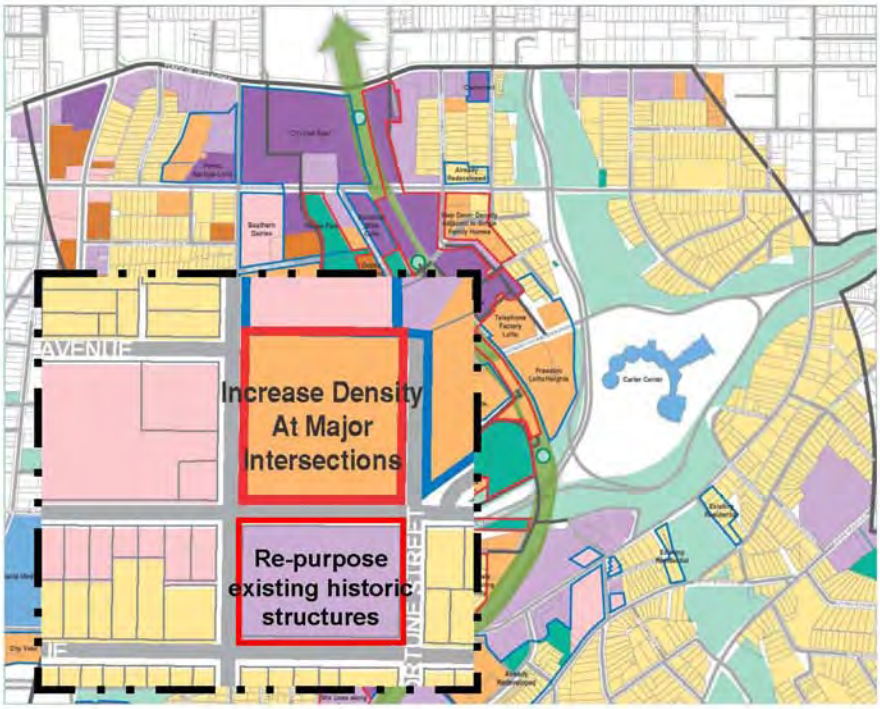
- Low Density Commercial
- Mixed Use

BeltLine Redevelopment Plan:

- Low Density Residential
- Low Density Commercial

Proposed Future Land Use:

- Mixed Use (1-4 Stories)
- Residential (5-9 Stories)



North Avenue Focus Area

BeltLine
Atlanta Connected

BeltLine Right-of-Way

City of Atlanta Future Land Use Plan:

- TCU (Transportation/ Communication/ Utilities)

BeltLine Redevelopment Plan:

- Mid-rise Mixed Use
- Low-rise Mixed Use

Proposed Future Land Use:

- Mixed Use (5-9 Stories)
- Mixed Use (10+ Stories)
- Residential (5-9 Stories)

North Avenue Focus Area

BeltLine
Atlanta Connected

Post Office Property & Warehouses

City of Atlanta Future Land Use Plan:

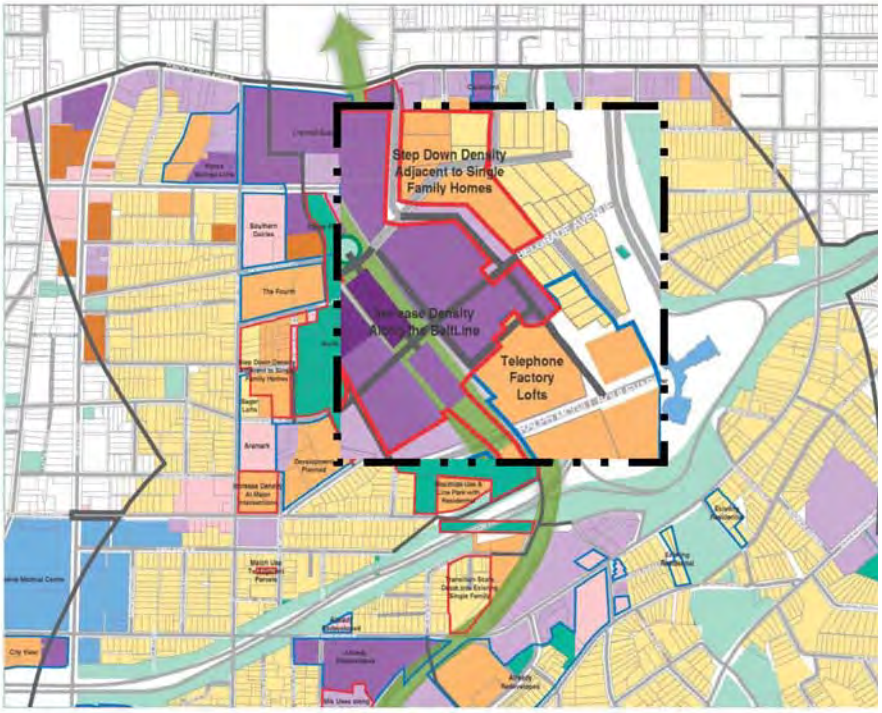
- Mixed Use

BeltLine Redevelopment Plan:

- Low-rise Mixed Use

Proposed Future Land Use:

- Mixed Use (5-9 Stories)



North Avenue Focus Area

BeltLine
Atlanta Connected

2 Blocks North of Post Office

City of Atlanta Future Land Use Plan:

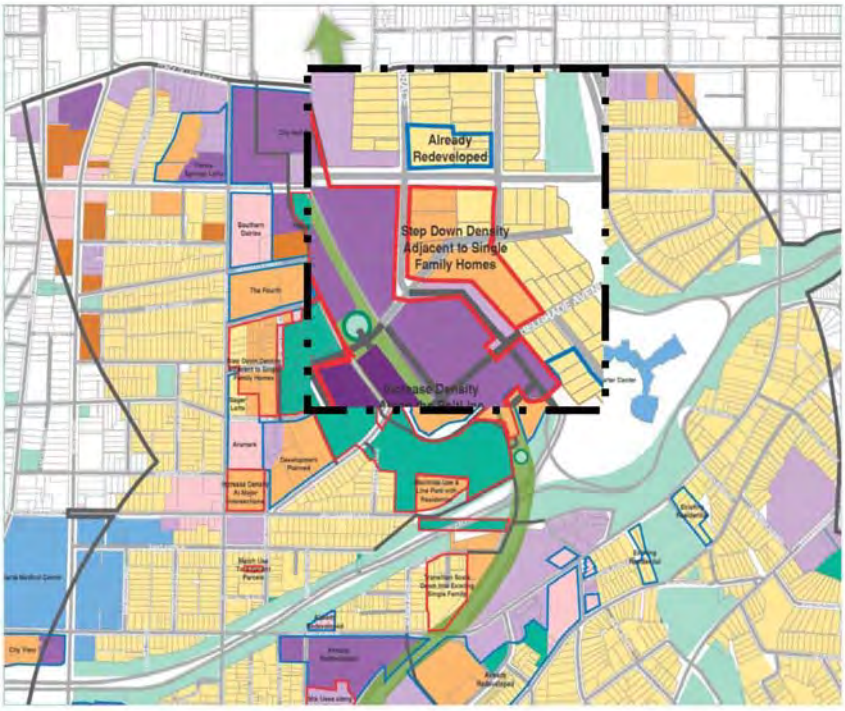
- Mixed Use

BeltLine Redevelopment Plan:

- Low-rise Mixed Use

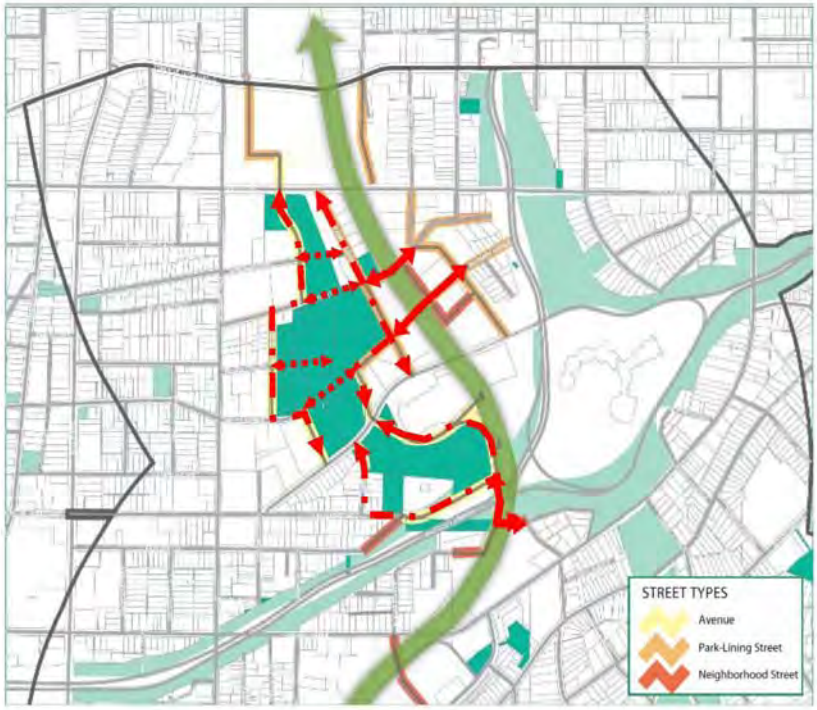
Proposed Future Land Use:

- Residential (5-9 Stories)
- Residential (1-4 Stories)



North Avenue Focus Area

- Interior streets converted to pedestrian/ multi-use paths
- Exterior Park-lining streets maintain neighborhood mobility
- Connectivity improvements across BeltLine



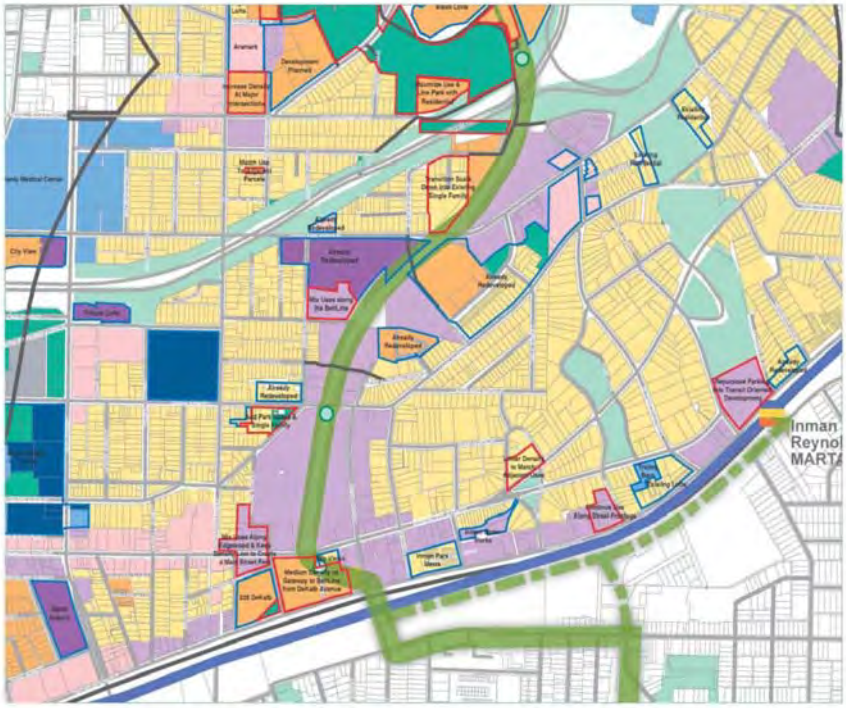
Ralph McGill Boulevard Park Crossing

Insert Before/ After of Ralph McGill

Freedom Parkway Focus Area

BeltLine
Atlanta Connected

- Active uses within park near proposed transit station
- New development parcels within BeltLine right-of-way
- Preservation of culturally significant industrial structures like Virginia Docks and Irwin Street Water Tower



Freedom Parkway Focus Area

BeltLine
Atlanta Connected

WSB-TV Property

City of Atlanta Future Land Use Plan:

- Mixed Use

BeltLine Redevelopment Plan:

- Park Space

Proposed Future Land Use:

- Residential (5-9 Stories)

Freedom Parkway Focus Area

BeltLine
Atlanta Connected

Prospect Street & East Avenue

City of Atlanta Future Land Use Plan:

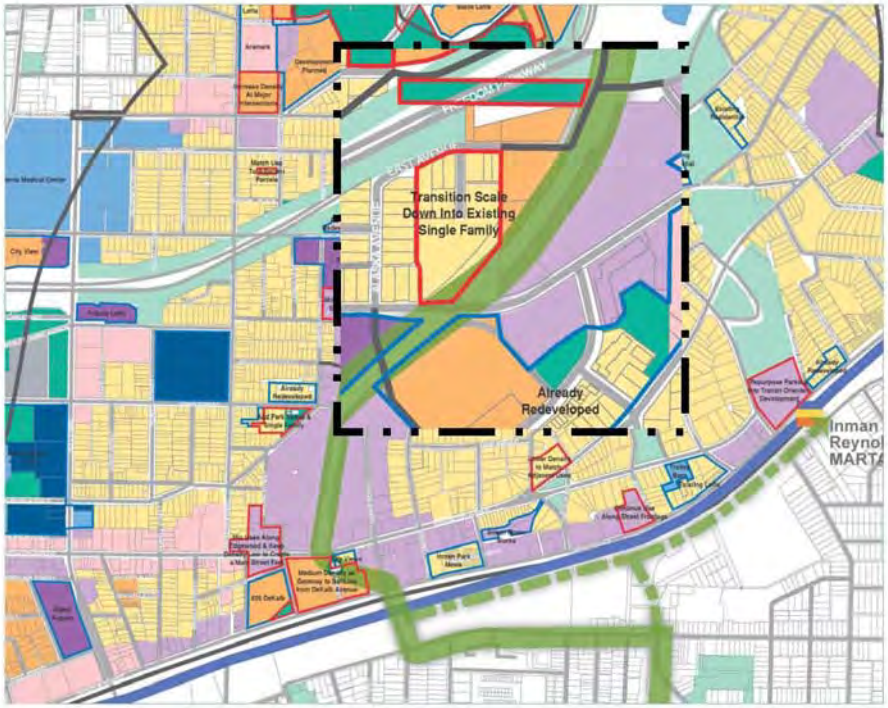
- Medium Density Residential

BeltLine Redevelopment Plan:

- Medium Density Residential

Proposed Future Land Use:

- Residential (5-9 Stories)
- Residential (1-4 Stories)



Freedom Parkway Focus Area

BeltLine
Atlanta Connected

U-Haul Storage Facility

City of Atlanta Future Land Use Plan:

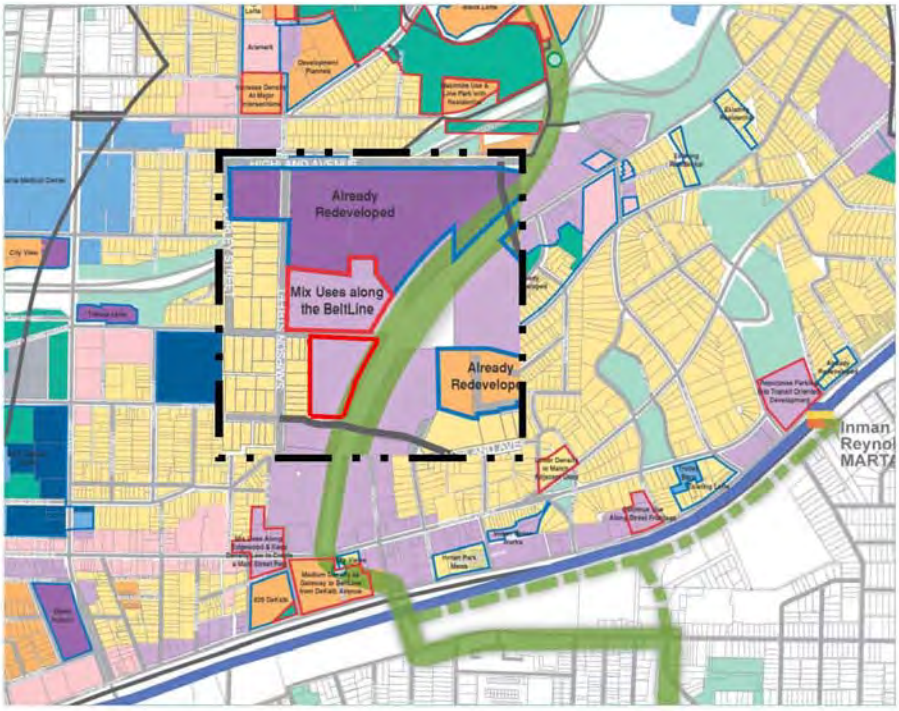
- Low Density Commercial

BeltLine Redevelopment Plan:

- Low-rise Mixed Use

Proposed Future Land Use:

- Mixed Use (1-4 Stories)



Freedom Parkway Focus Area

BeltLine
Atlanta Connected

Irwin Street Tower

City of Atlanta Future Land Use Plan:

- Low Density Commercial

BeltLine Redevelopment Plan:

- N/A

Proposed Future Land Use:

- Park Space

Freedom Parkway Focus Area

BeltLine
Atlanta Connected

Gunby Street/ DeKalb Avenue Area

City of Atlanta Future Land Use Plan:

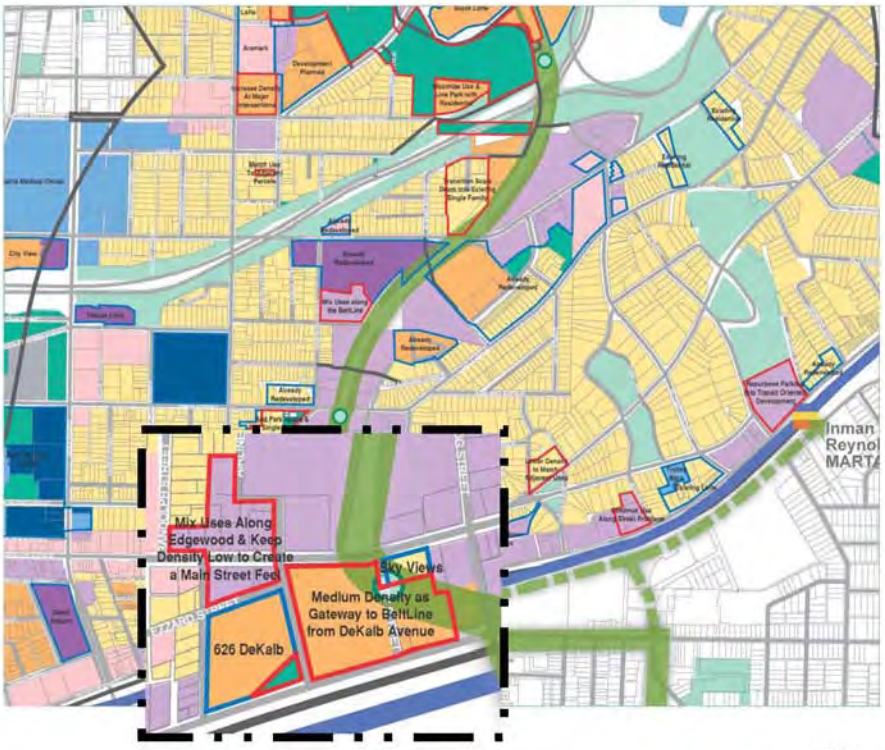
- Low Density Commercial
- High Density Commercial
- Mixed Use

BeltLine Redevelopment Plan:

- Low-rise Mixed Use

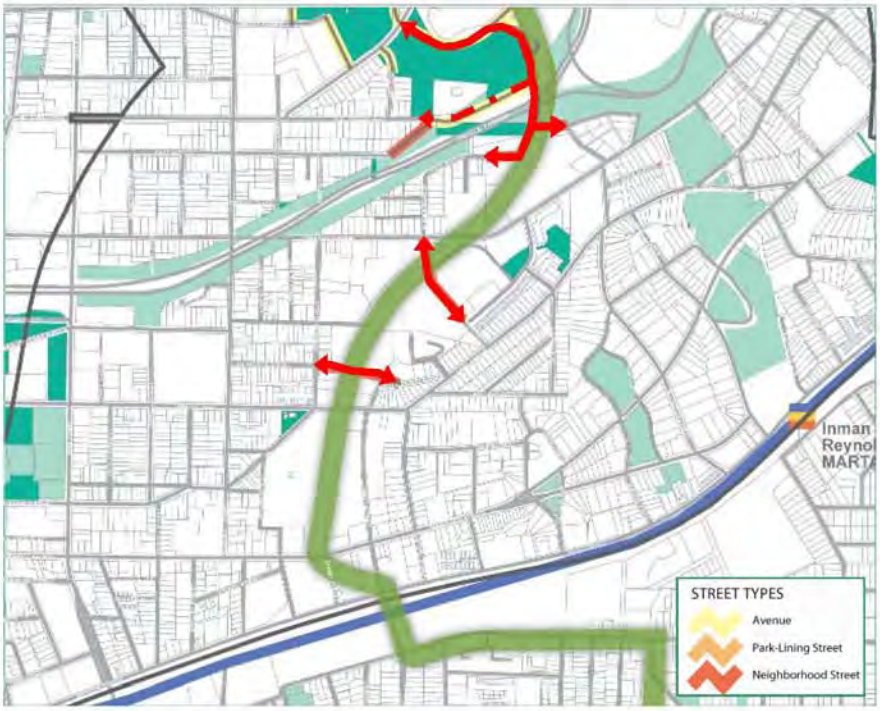
Proposed Future Land Use:

- Mixed Use (1-4 Stories)
- Residential (5-9 Stories)
- Residential (1-4 stories)
- Greenspace



Freedom Parkway Focus Area

- Improved street and trail connection under Freedom Parkway
- Cross-BeltLine streets



Freedom Parkway Underpass

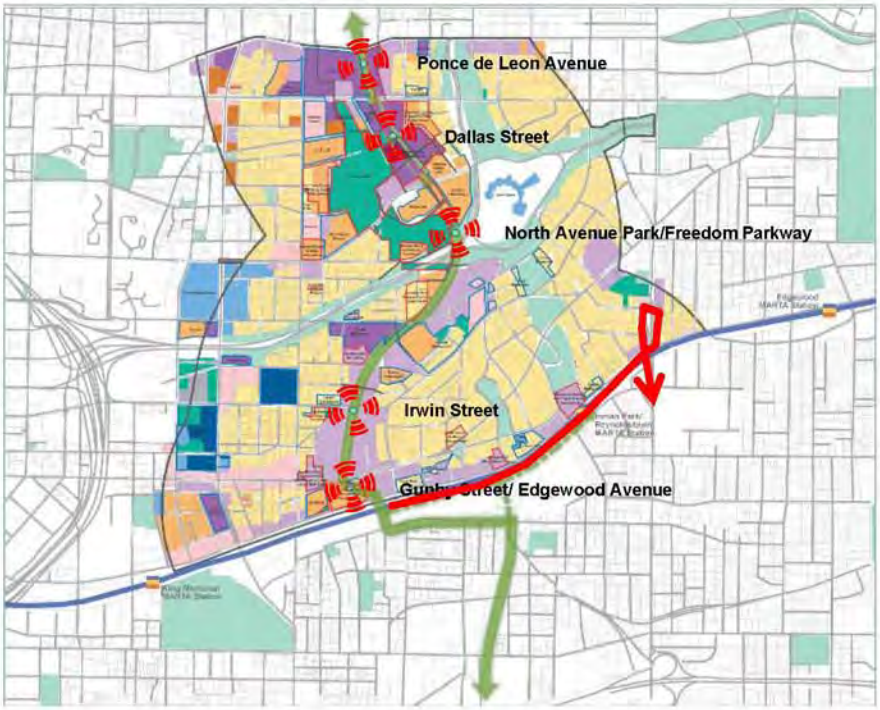
- Elizabeth Street to connect under Freedom Parkway to Willoughby Way
- Two tracks of transit and trail
- BeltLine transit stop at southeast corner of North Avenue Park

Alternative Mode Circulation

Transit stations proposed in 5 places within study area

- Ponce de Leon Avenue at City Hall East/ Ford Factory Lofts
- Dallas Street
- North Avenue Park near Freedom Parkway
- Irwin Street
- Gunby Street/ Edgewood Avenue

Proposed transit link to Inman Park/ Reynoldstown MARTA Station



Krog Street Tunnel

Insert Before/ After image of Krog Tunnel

BeltLine Trail Connectivity

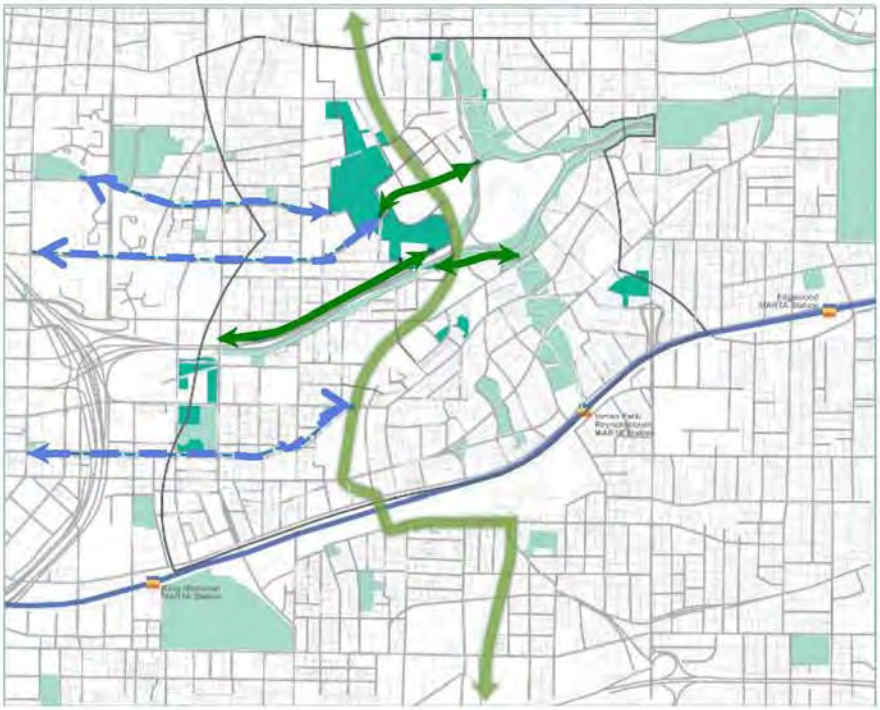
BeltLine Atlanta Connected

Additional trail connections along:

- Ralph McGill from Freedom Parkway to the future site of the North Avenue Park
- The northern side of Freedom Parkway
- Bernina Avenue

Additional bike/pedestrian connections along:

- Angier Avenue
- Ralph McGill from the future site of the North Avenue Park towards downtown
- Irwin Street down to Auburn Avenue



BeltLine Atlanta Connected

Final Vision for the proposed North Avenue Park

North Avenue Park

BeltLine
Atlanta Connected

Major elements

- Stormwater pond
- Trails
- Dog parks
- Community garden
- Picnic areas
- Splash pad
- Festival space
- Amphitheater
- Climbing walls
- Playground
- Multi-use fields
- Skate park

North Avenue Park

BeltLine
Atlanta Connected

Additional Greenspace Opportunities

BeltLine
Atlanta Connected

Bass Park Soccer fields along Moreland Avenue

- Enhance presence along Austin Avenue with gateway treatment and circulation improvements

Irwin Street Historic Water Tower

- Pocket park with iconic tower
- Location for connection between BeltLine transit stop and Sweet Auburn Trolley stop

Corner of Arlene St and DeKalb Ave

- Pocket park
- Location for BeltLine transit connection at DeKalb Avenue

Public Art Opportunities

BeltLine
Atlanta Connected

Potential areas for public art were considered if they had one or more of the following traits:

- Highly trafficked area of a major road or trail
- Easily visible and accessible to the public
- Serves to anchor and activate a site
- Enhances the overall public realm
- Enhances the streetscape experience
- Creates a place of congregation and activity
- Establishes landmarks and neighborhood gateways
- Wayfinding

Public Art Opportunities

Public Art Opportunities

Public art opportunities:

- **System wide - creates a sense of continuity throughout corridor**
- **Temporary/Portable Art**
  - artwork for current or special events
- **Site-Specific, Permanent Installations**
  - sculptures, murals
  - neighborhood specific
- **Infrastructure-based**
  - overpasses, sidewalks, streetscapes, bridges
- **Functional objects**
  - drinking fountains, bike racks, benches, lighting, transit shelters, signs

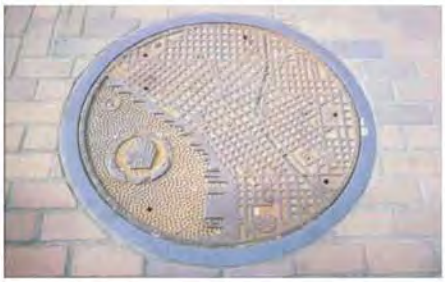
Public Art Opportunities

BeltLine
Atlanta Connected

Public Art Opportunities

BeltLine
Atlanta Connected

Public Art Opportunities



Urban Design & Historic Resources

The Subarea includes many of the historic resources identified by the:

- Atlanta Urban Design Commission (AUDC)
- National Register of Historic Places

BeltLine Historic Resources Survey, GSU study recommends many additions including:

- The water tower on Irwin Street
- Creomulsion building
- The Virginia Docks

Insert updated Historic Resources Map with data received today from Urban Design Commission

Insert images of resources

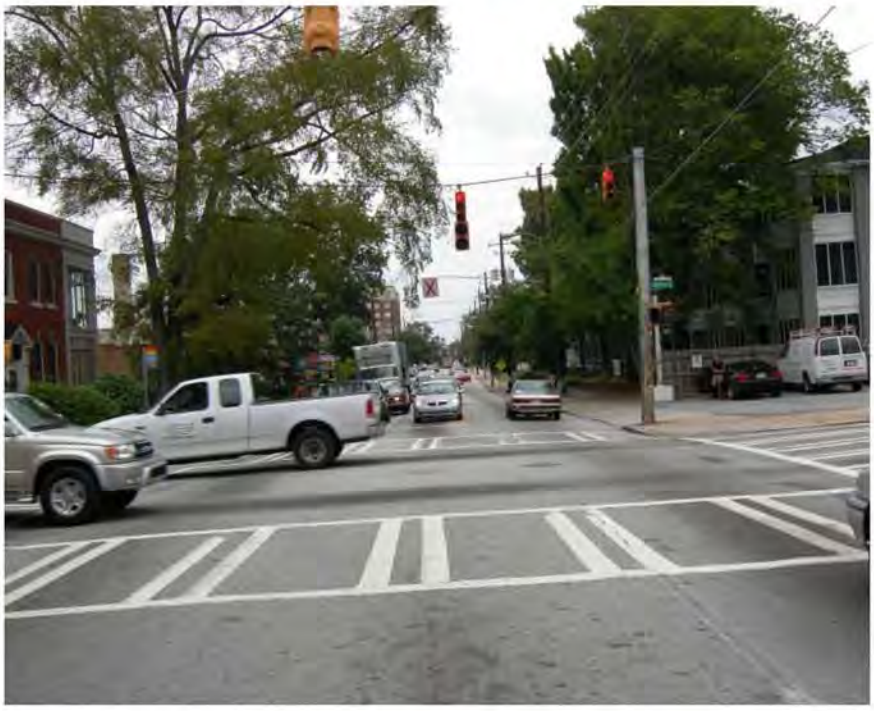
Mobility Analysis

Evaluated existing and future traffic conditions under multiple scenarios:

- Year 2020
- Year 2030
- Worst Case Scenario
  - No trip reduction due to transit
- Best Case Scenario
  - Beltline transit provides a 26 percent trip reduction
- Both Scenarios
  - 10 percent reduction in trips on mixed use parcels

Developed and used a traffic computer model of major roads in the study area

Included predicted new trips from future development



Traffic Study Area

Mobility Results A.M. Peak

BeltLine Atlanta Connected

Intersection	2007	2020			2030		
	Existing	No Build	Worst Case	Best Case	No Build	Worst Case	Best Case
Ponce De Leon @ Boulevard	F	F	F	F	F	F	F
Ponce De Leon @ Glenn Iris	A	A	A	A	A	A	A
Ponce De Leon @ New Road	n/a	n/a	A	A	n/a	A	A
Ponce De Leon @ Home Depot	A	B	B	C	B	C	C
Ponce De Leon @ Ponce Place	B	B	C	B	B	C	C
Ponce De Leon @ Freedom Parkway	B	B	C	B	C	C	B
North Avenue @ Boulevard	B	B	C	B	C	C	B
North Avenue @ Glenn Iris	C	C	C	B	C	C	C
North Avenue @ New Road	C	C	C	B	n/a	C	B
North Avenue @ Freedom Parkway	n/a	n/a	D	D	D	D	D
Boulevard @ Ralph McGill	A	A	B	A	B	B	B
Boulevard @ Freedom Parkway	F	F	F	F	F	F	F
Boulevard @ Irwin	B	C	C	C	D	D	D
Boulevard @ Edgewood	C	C	C	C	C	C	C
Boulevard @ Decatur	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill @ Glenn Iris	C	C	C	B	C	C	C
Ralph McGill @ Freedom Parkway	B	B	C	B	C	C	C
East Freedom Parkway @ N. Highland	D	D	E	E	E	F	E
East Freedom Parkway @ Moreland	A	B	B	A	B	B	B
Moreland @ DeKalb Ave (west)	A	A	A	A	A	A	A
Moreland @ DeKalb Ave (east)	A	A	A	A	A	A	A
Decatur @ Krog	C	D	D	D	E	F	F
Glenn Iris @ Highland	C	C	C	C	C	D	D
Ralph McGill @ Fortune	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill @ New Road 1	n/a	n/a	A	A	n/a	A	A
Ralph McGill @ New Road 2	n/a	n/a	NO SIG	NO SIG	n/a	NO SIG	NO SIG

n/a = not applicable NO SIG = not signalized

Mobility Results P.M. Peak

BeltLine Atlanta Connected

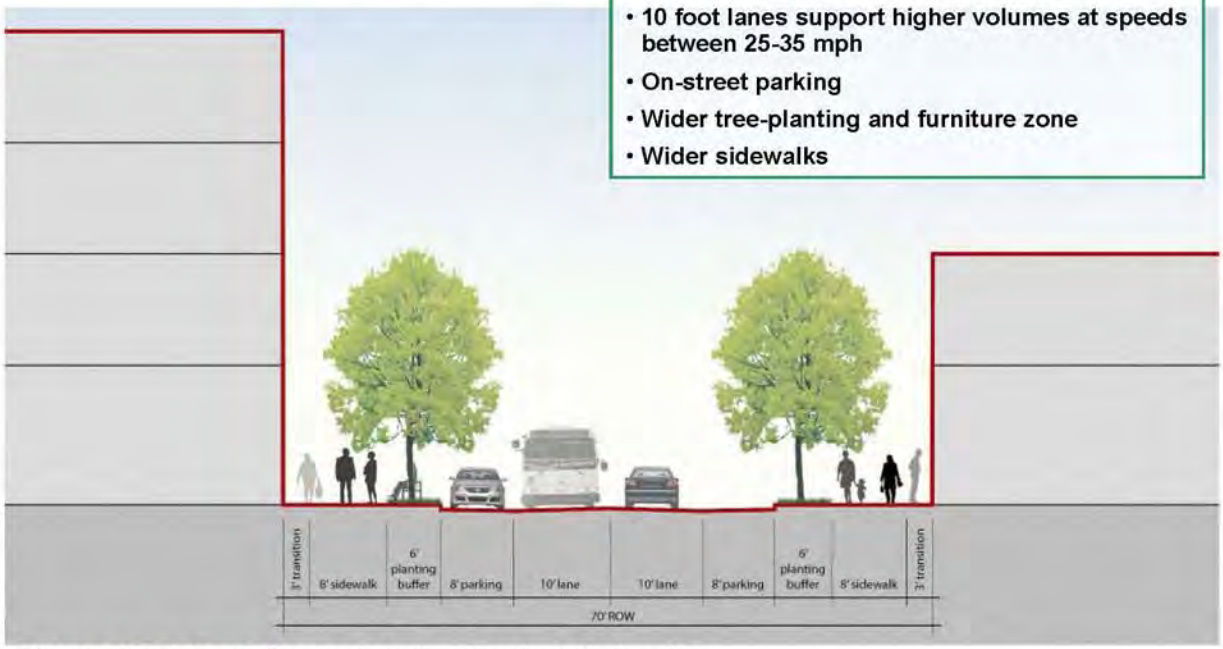
Intersection	2007	2020			2030		
	Existing	No Build	Worst Case	Best Case	No Build	Worst Case	Best Case
Ponce De Leon @ Boulevard	F	F	F	F	F	F	F
Ponce De Leon @ Glenn Iris	B	A	B	B	B	B	B
Ponce De Leon @ New Road	n/a	n/a	A	A	n/a	A	A
Ponce De Leon @ Home Depot	A	B	A	A	B	B	B
Ponce De Leon @ Ponce Place	B	B	B	B	B	D	C
Ponce De Leon @ Freedom Parkway	B	B	B	B	B	B	B
North Avenue @ Boulevard	B	B	C	C	C	C	C
North Avenue @ Glenn Iris	B	B	B	B	B	B	B
North Avenue @ New Road	n/a	n/a	B	B	n/a	B	B
North Avenue @ Freedom Parkway	C	D	D	D	E	F	F
Boulevard @ Ralph McGill	B	B	B	B	C	C	C
Boulevard @ Freedom Parkway	F	F	F	F	F	F	F
Boulevard @ Irwin	A	B	B	B	B	B	B
Boulevard @ Edgewood	B	C	C	C	n/a	D	D
Boulevard @ Decatur	NO SIG	NO SIG	NO SIG	NO SIG	n/a	NO SIG	NO SIG
Ralph McGill @ Glenn Iris	B	B	C	C	C	C	C
Ralph McGill @ Freedom Parkway	B	B	B	B	B	B	B
East Freedom Parkway @ N. Highland	C	D	D	D	E	E	E
East Freedom Parkway @ Moreland	C	C	C	C	D	C	C
Moreland @ DeKalb Ave (west)	A	B	B	B	B	B	B
Moreland @ DeKalb Ave (east)	A	A	A	A	A	A	A
Decatur @ Krog	B	C	D	D	D	F	F
Glenn Iris @ Highland	B	E	C	C	D	D	C
Ralph McGill @ Fortune	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill @ New Road 1	n/a	n/a	B	A	n/a	B	B
Ralph McGill @ New Road 2	NO SIG	NO SIG	NO SIG	NO SIG	n/a	NO SIG	NO SIG

n/a = not applicable NO SIG = not signalized

Avenue Street Type

BeltLine
Atlanta Connected

- Intended for higher-activity areas
- 10 foot lanes support higher volumes at speeds between 25-35 mph
- On-street parking
- Wider tree-planting and furniture zone
- Wider sidewalks



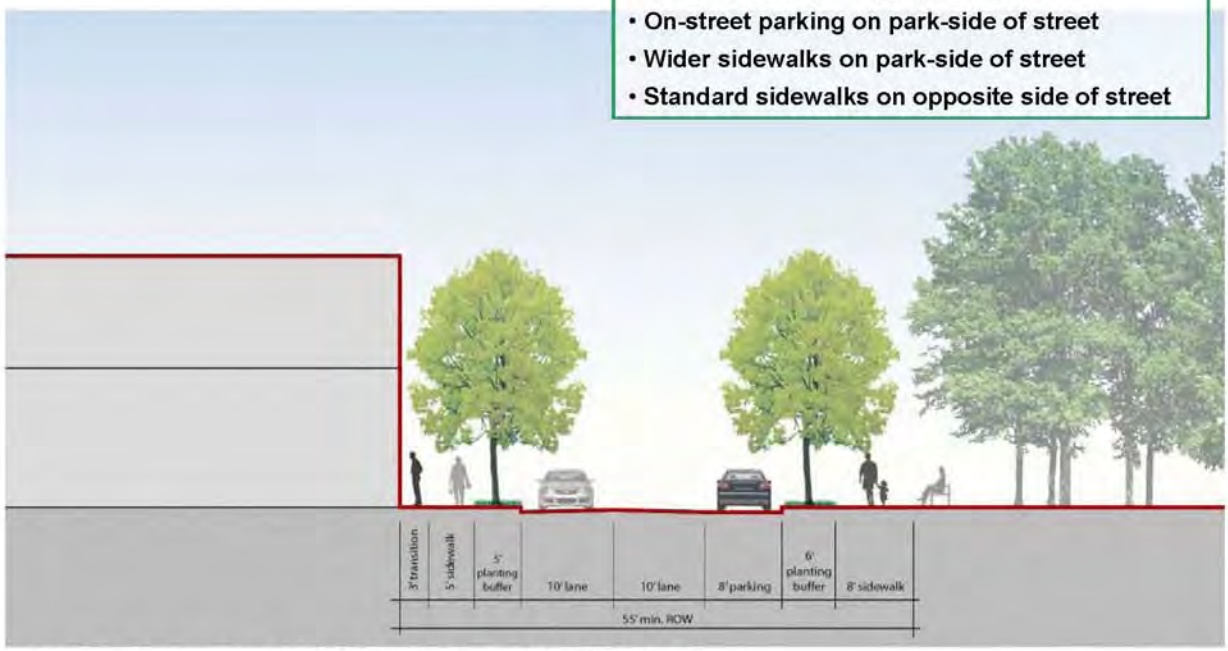
Three street types for new and redeveloped streets:

•Avenue Street •Park-lining Street •Neighborhood Street

Park-lining Street Type

BeltLine
Atlanta Connected

- Create hard edge to proposed park
- On-street parking on park-side of street
- Wider sidewalks on park-side of street
- Standard sidewalks on opposite side of street



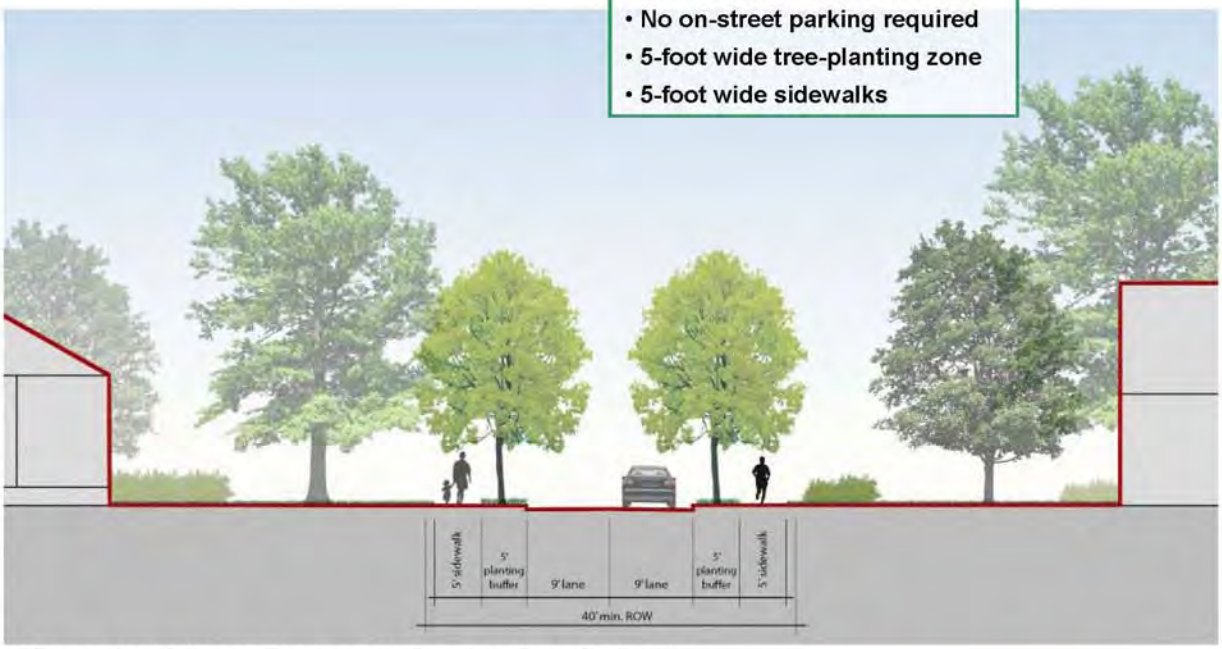
Three street types for new and redeveloped streets:

•Avenue Street •Park-lining Street •Neighborhood Street

Neighborhood Street Type

BeltLine Atlanta Connected

- 9 foot lanes
- No on-street parking required
- 5-foot wide tree-planting zone
- 5-foot wide sidewalks



Three street types for new and redeveloped streets:

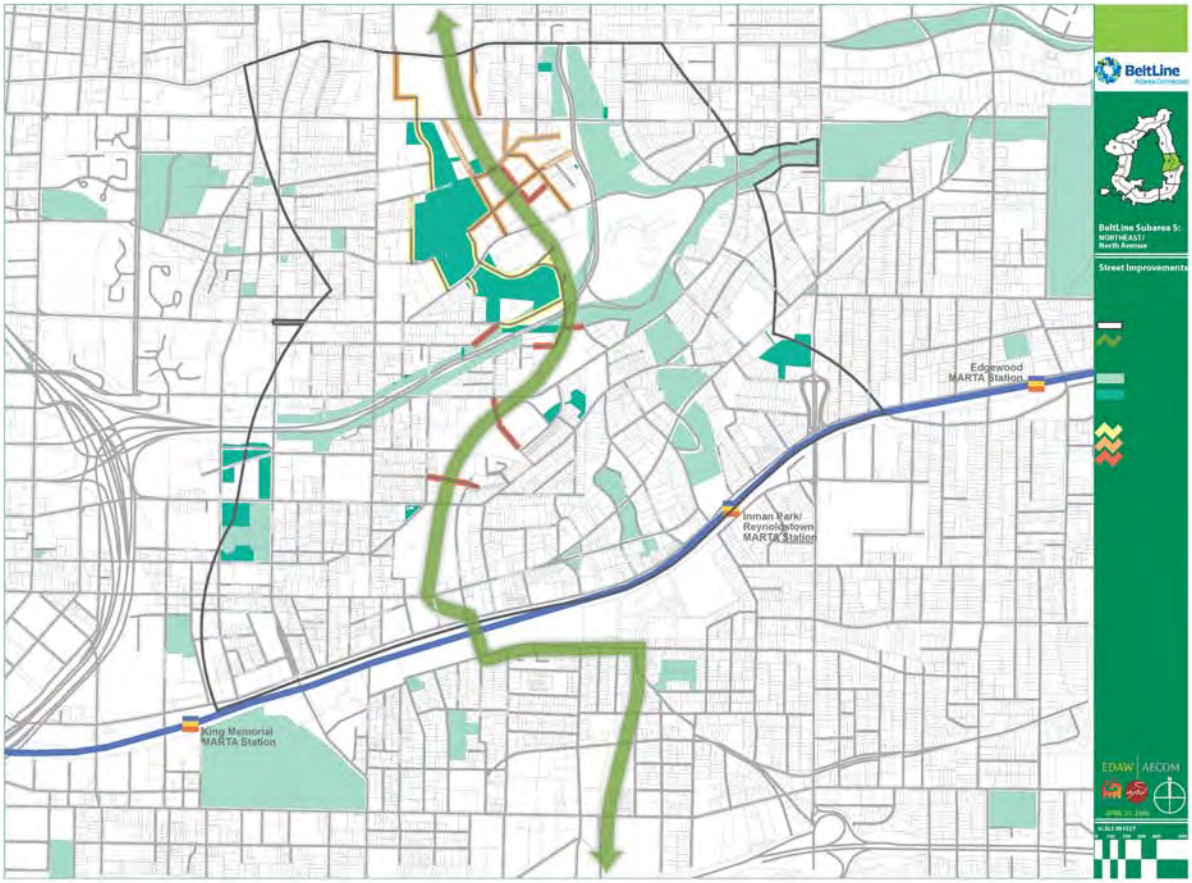
•Avenue Street •Park-lining Street •Neighborhood Street

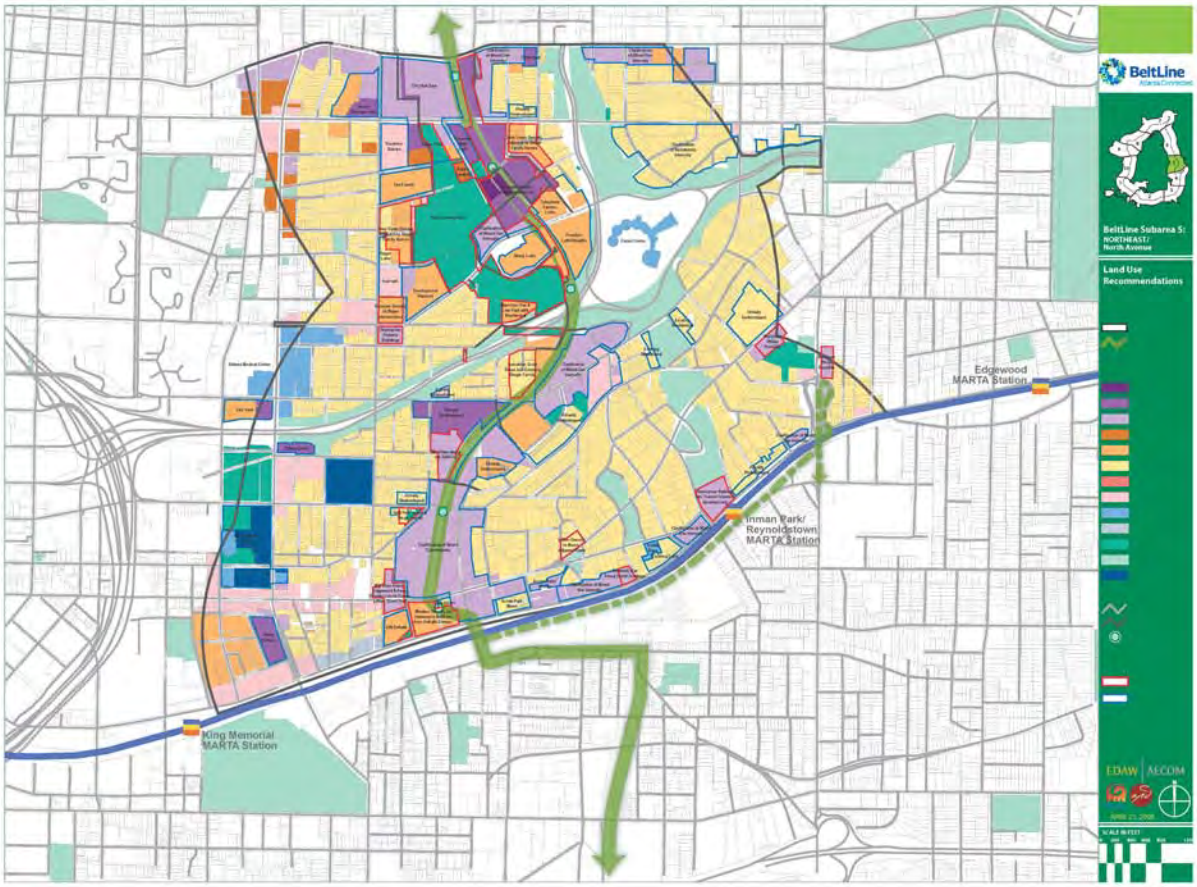
Mobility & Circulation

BeltLine Atlanta Connected

Additional Transportation Recommendations:

- North Avenue
- Intersection A
- Intersection B


BeltLine
BeltLine Subarea 5:
NORTHEAST/
North Avenue
Street Improvements
Edgewood
MARTA Station
Inman Park/
Reynoldstown
MARTA Station
King Memorial
MARTA Station
EDAW | AECOM


BeltLine
BeltLine Subarea 5:
NORTHEAST/
North Avenue
Land Use
Recommendations
Edgewood
MARTA Station
Inman Park/
Reynoldstown
MARTA Station
King Memorial
MARTA Station
EDAW | AECOM

Agenda
BeltLine Master Plan
Northeast Study Group
May 8, 2008; 6:30 – 8:30 pm
Hillside, 690 Courtenay Drive NE, Atlanta, GA 30306

1. Welcome & Introductions
2. Community Participation Advocate Update
3. Overview of Tonight's Agenda
4. Overview of Subarea 5 Master Plan and Recommendations
5. Stormwater Feature Project Introduction & Background
6. Walk-through of Draft Stormwater Feature Design
7. Individual Breakout Groups for Subarea Plan and Stormwater Feature
8. Conclusion

REMINDER: The next Study Group Meeting will be held on June 12th for Subarea 6

For questions or additional information, please contact:

Jonathan Lewis
Project Manager
jlewis@atlantaga.gov
404.865.8593

Rukiya Eaddy
Citizen Participation Advocate
readdy@atlbeltline.org
404.614.8285

BeltLine Subarea Seven Study Group Meeting
Atlanta Memorial Trail Concept Review
May 5, 2008 - 6:30 p.m.
AGL Resources Building - Annex

Agenda Items Covered:

1. Welcome & Introductions
2. Community Participation Advocate Update
3. Overview of Tonight's Agenda
4. Overview of Subarea 5 Master Plan and Recommendations
5. Stormwater Feature Project Introduction & Background
6. Walk-through of Draft Stormwater Feature Design
7. Individual Breakout Groups for Subarea Plan and Stormwater Feature
8. Conclusion

The meeting began with a few opening remarks by Rukiya Eaddy. Eaddy invited everyone out to the Transit Supportive Development Discussion that is taking place May 21st at 6 p.m. The discussion will occur at Tree Atlanta, which is located at 225 Chester Ave.

After Eaddy concluded, Tina Arbes, Chief Operation Officer of Atlanta BeltLine Inc. discussed the work done by the Boston Consulting Group (BCG). BCG has worked to clarify the decision making process in regards to the myriad of decisions ABI has and will have to make in the future. Arbes stated that this information will go public towards the end of the month after a meeting with their Board of Directors.

Liz Drake from EDAW then followed up with a presentation of the Subarea 4 Draft Master Plan.

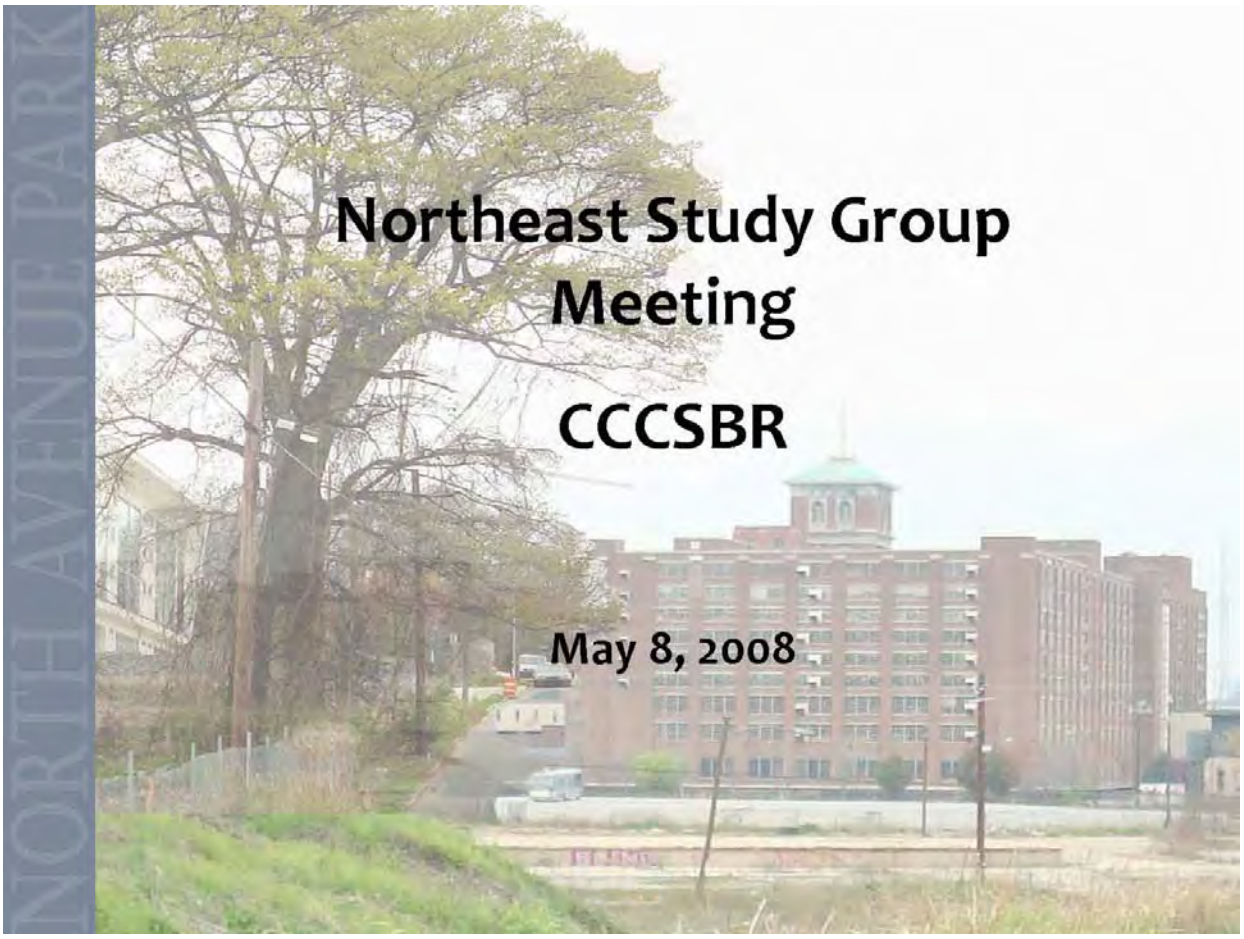
EDAW noted that the connection of Elizabeth St. and East Ave. were two of the more critical connections in the subarea. The need to connect the Inman Park Neighborhood with the Old Fourth Ward was the driving factor.

During the presentation of the streets that line the park, there was concern over the width of the sidewalk. The graphic illustrated a 5' sidewalk and community members stated this should be beefed up to a 10' standard and a 6' minimum.

Statement – Ponce De Leon has the 2nd highest pedestrian fatality rate in the entire state. Any plans to increase the level of safety on Ponce should be presented to GDOT (Georgia Department of Transportation) for possible state funding since Ponce is a state road. The NPU has also worked to establish sidewalk minimums, so they should be reflected in these plans.

K.C. Boyce and representatives from HDR then presented the Clear Creek Combined Sewer Basin Relief Project Design Scheme.

The group then broke out into breakout groups. Shortly afterwards the community members had a chance to discuss the projects in breakout groups, the meeting was adjourned.



Schedule

- 2008
  - March – April
    - Information Gathering
    - Engineering
  - May – June
    - Design / Landscape Architecture
      - May 8: Design Concept Review at NE Study Group
      - June 12 Final Design Presentation at NE Study Group
  - July – August
    - Construction Drawing Production
      - August 31: Design and Engineering Completed
      - Construction Begins
  - September – December
    - Construction
- 2009
  - January – September
    - Construction
      - Construction completed September 2009

Design Opportunities | PARK | Project Organization

City of Atlanta Department of Watershed Management

Role:
- Funding
- Technical assistance/oversight

Atlanta BeltLine Inc.

Role:
- Project management
- Community engagement

Stakeholders

Role:
- Review design (from master plan)
- Provide input on materials
- Provide input on opportunities for public art & other aesthetic treatments
- Provide input on specific programming

HDR

Role:
- Storm water, utility & other engineering
- Landscape architecture

WE

Role:
- Geotechnical testing
- Geotechnical engineering

PEQ

Role:
- Community outreach
- Community engagement strategy

Guiding Principles

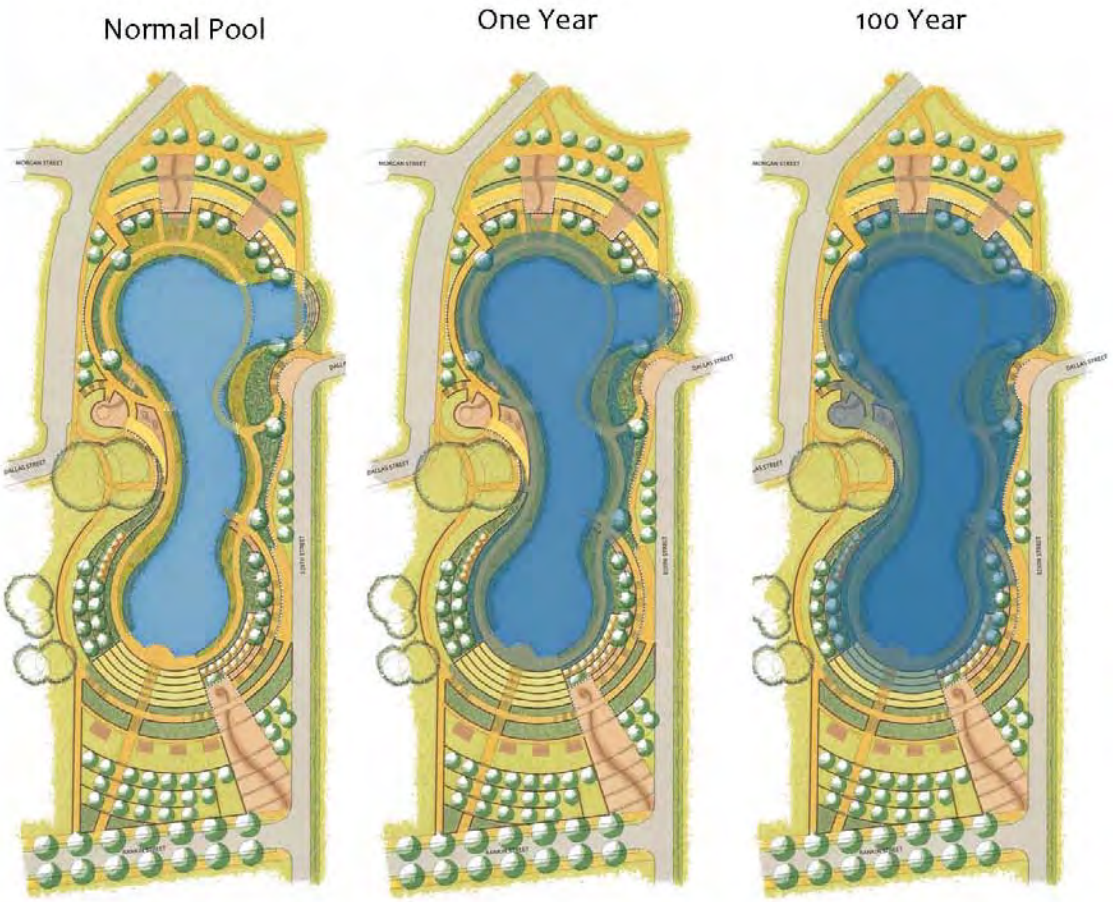
- From Previous Stakeholder Engagement
  - Create a safe and secure environment ('eyes on the park')
  - Minimize railing and maximize feeling of being next to the water
  - Provide amenities shown in the master plan (amphitheater, bouldering, picnic shelters)
  - Maximize view within and external to the facility
  - Protect as many existing mature trees on the western side of the facility as possible without impairing functionality
  - Ensure ease of maintenance in order to minimize downtime after storm events
  - Close Dallas and Morgan Streets to through traffic
  - Design for 'dual use' as a park and a capacity relief project
- Technical Requirements
  - Provide storage for 22 acre feet of water
  - Provide demonstrable capacity relief to the Clear Creek Combined Sewer
  - Complete facility construction by September 2009
  - Complete facility within budget

Context Map

Technical Issues

Grading Plan

Storm Events VENUE PARK

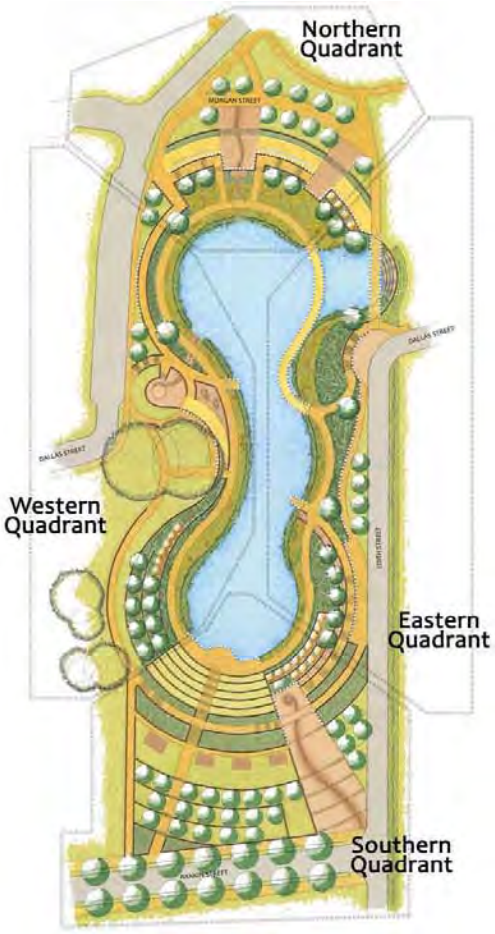


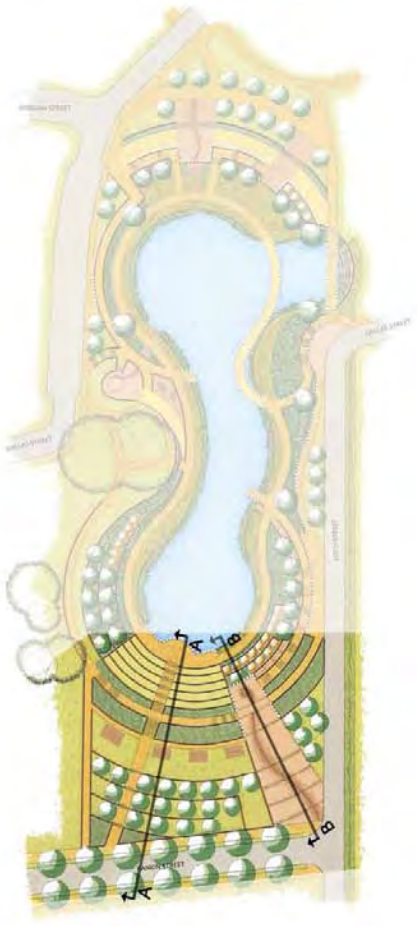
Access Points VENUE PARK

- Pedestrian Site Access
  - **A** – North Entrance
  - **B** – Beltline Entrance
  - **C** - Edith Street Entrance
  - **D** – South Entrance
  - **E** – Rankin Street Entrance
  - **F** - Parking Lot Entrance
  - **G** – Morgan Street Entrance
- Pedestrian Sunken Garden Access
  - **1.** North Plaza
  - **2.** North Plaza
  - **3.** Interpretive Plaza
  - **4.** South Plaza
  - **5.** Amphitheatre
  - **6.** Sculpture Plaza
  - **7.** Parking Lot Ramp
    - ADA Accessible
- Vehicular
  - Roads
  - Parking

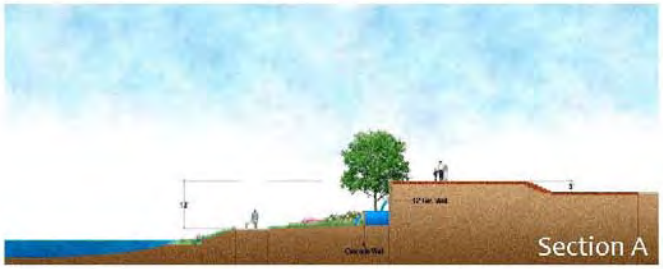
Southern Quadrant of HDR Conceptual Plan

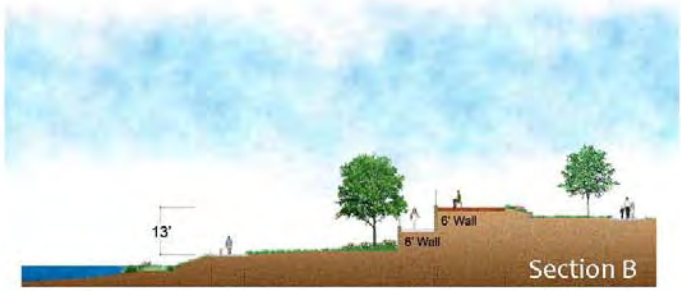
- Southern Quadrant
  - South side of Park Site
  - Sightlines to Atlanta skyline and City Hall East
- Northern Quadrant
  - North Side of Park Site
  - Entry from North Avenue
- Western Quadrant
  - West Side of Park Site
  - Common entry for Residents of Old Fourth Ward
  - Existing Trees to Remain on Site
- Eastern Quadrant
  - East Side of Park Site
  - Future Beltline Connection

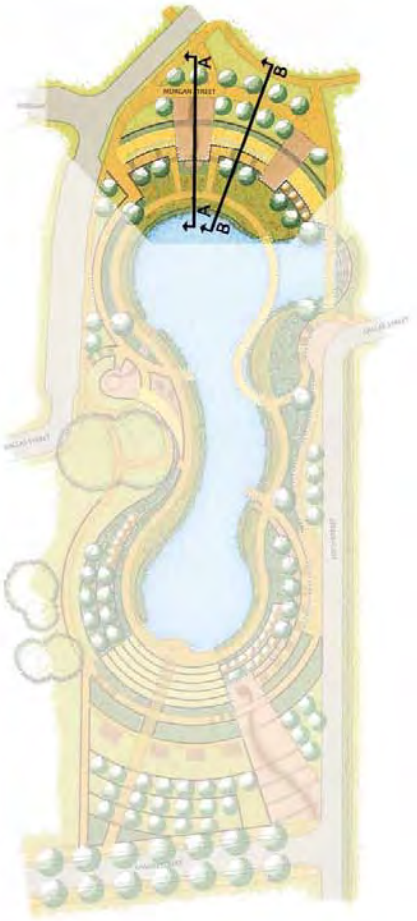




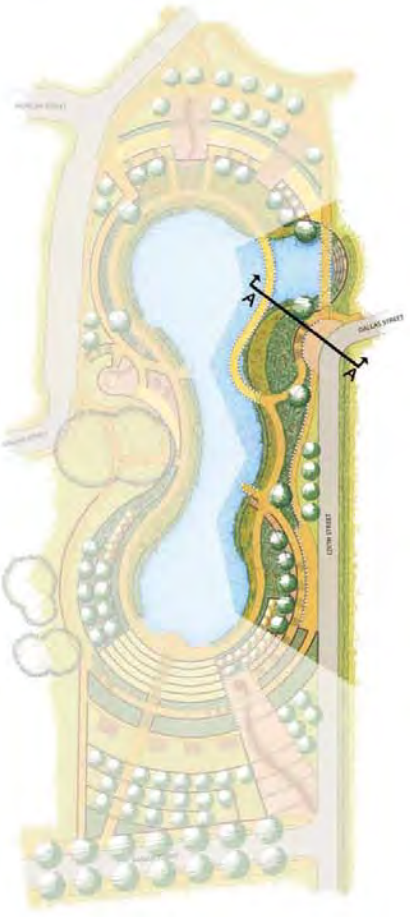
Northern Quadrant







Eastern Quadrant



Character Sketches

Character Sketches

Character Sketches | JEF PARK

Character Sketches | JEF PARK

Conclusion
AVENUE PARK

BeltLine Subarea Five Planning Committee Meeting

Northeast Study Group

November 13, 2008

1. Opening Remarks

2. Overview/Background – Fred Yalouris; ABI

3. Park Plan Review – Samantha Castro; EDAW

4. Questions and Discussion

Jonathan Lewis, Senior Project Manager for the Atlanta BeltLine began the meeting with a few opening remarks and allowed time for introductions. Lewis also reviewed the agenda before stating that the Subarea 5 Master Plan was in the final editing phases. Atlanta BeltLine Inc. hopes to start the adoption process by presenting to the NPUs in January.

Lewis then turned the meeting over to Fred Yalouris who serves as the Director of Design for Atlanta BeltLine Inc. Yalouris stated that the park was redesigned after Atlanta BeltLine Inc. worked with a developer to change the configuration of the northern edge of the park. Yalouris stated that the northern end of the park had been widened by about 100 feet after working with a developer on the northwestern edge. Yalouris noted that the northern end had certain cross sections that originally only measured about 40 ft in width, but now measure over 100 ft.

Yalouris stated that during the process of redesigning the park that Atlanta BeltLine had to limit some acquisition efforts due to a myriad of reasons. Some of those reasons included but where not limited to unwilling sellers, inflated asking prices, etc. Yalouris feels that the final design does a great job of providing connectivity to both portions of the park via a tree lined street and the BeltLine right-of-way.

Yalouris felt that the change to the east of the park showing a connection down from the BeltLine via a new Dallas St. was a vast improvement on the previous design in terms of gaining access to the park from the BeltLine. Yalouris also pointed out that the connections of the streets to the western side of the park have noticeably better connections than on the original plan. The park designers felt that the park has a more defined edge because of the updated design, which would make the park more inviting for those surrounding the park. Yalouris also noted that in the end the total acreage is still planned to be about 34 acres when the park is built out.

Yalouris noted that park had a lot of open space that was without active programming. He stated that this was done intentionally so that the park would have the programming revisited after it was built out. He stated that the intention was not to remove all the programming, but rather, to concentrate on getting the park built and assembled, and then focus on the programming.

After Yalouris walked through the plan, Samantha Castro of EDAW took over and gave another review of the park. She stated that the park also had to re-address the Stormwater pond that is centrally located in the park. Castro stated that the engineering for the pond had been completed, and it required them to rework some of the

designs in order to ensure that circulation near the pond made sense. Castro also pointed out that some of the community's favorite aspects of programming were still in the park's design. The elements included the playground, splash pad and the play lawns.

Castro stated that much of the some of the open space would function like Piedmont Park's Great Lawn. Castro also stated that the park received a couple of entryway upgrades in the Artifact plaza off North Ave. and the greenway connection from the BeltLine. She echoed the sentiments of Yalouris by stating that the connectivity created by this addition creates a great benefit to the park. Once Castro concluded her presentation of the redesigned park, the floor was opened for questions and discussion.

One planning committee member stated that the rain gardens and the artifact plaza were incredible amenities to the park. He did have some concern about the parking for the park as two parking lots were removed, but ABI staff pointed out the large amount of on street parking that would be available with the current design.

There was also some concern about the amount of frontage on Ralph McGill, but it was stated the previous alignment of the street to the north of Ralph McGill was incorrectly shown on the map. The site plan for the 660 Ralph McGill project was estimated on the map, and now it is illustrated correctly. Another committee member stated that he really liked the more defined park edges.

The question was then asked if there was any more effort to acquire the entire parcel to the east that shows the greenway, instead of just that sliver. Yalouris responded that funds for acquisition are currently

maxed, but it was also noted that ABI assumed the rest of the parcel would be developed.

The meeting was adjourned at 7:30 pm.

BeltLine
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BeltLine Subarea 5:
NORTHEAST/ North Avenue

Final Park Master Plan

EDAW | AECOM

NOVEMBER 12, 2007

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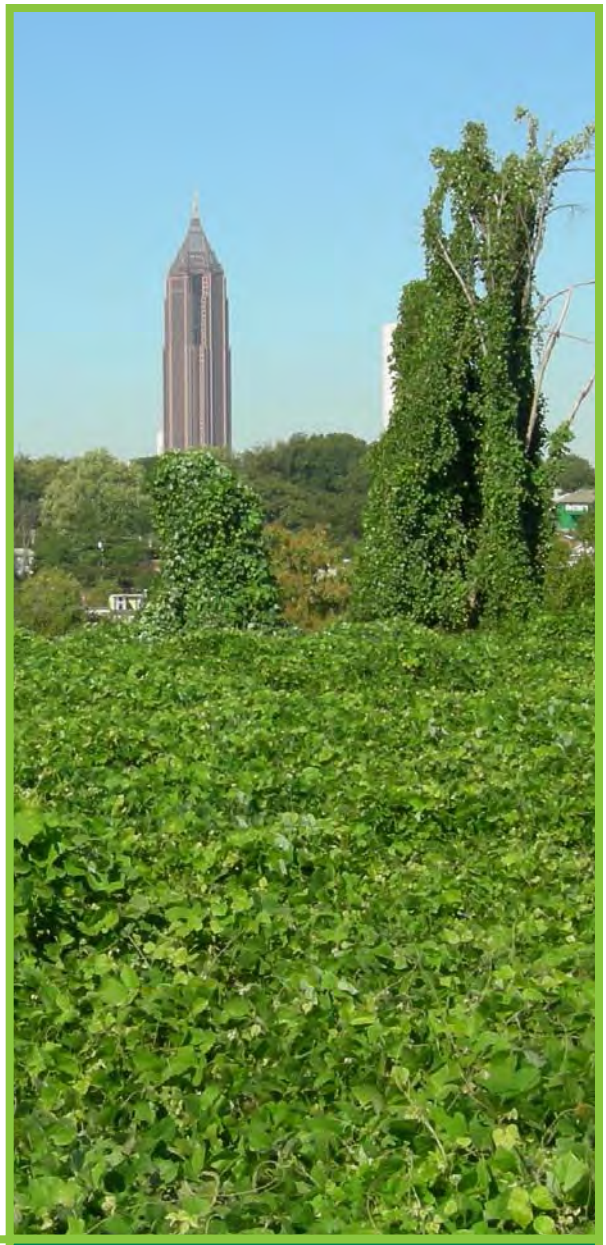


Atlanta BeltLine Master Plan

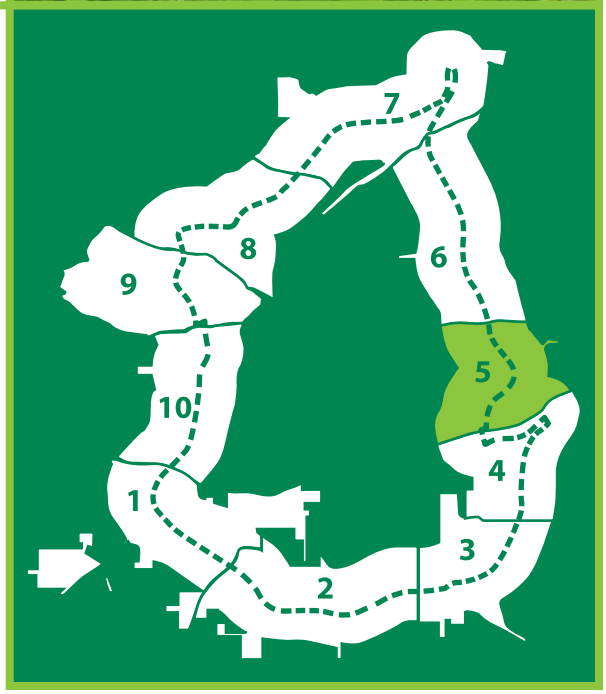
SUBAREA 5

FREEDOM PARKWAY

Inventory and Assessment Report

Prepared for
Atlanta BeltLine, Inc.
by EDAW, Inc., Arcadis & APD

Adopted by the Atlanta City Council March 16, 2009



BeltLine
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ACKNOWLEDGEMENTS

Many stakeholders participated in the engagement process and contributed to development of the vision for Subarea 5 and the recommendations of this Master Plan.

The Honorable Mayor **Shirley Franklin**

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Introduction

The Subarea 5 Master Plan covers a land area of approximately 1,110 acres and is bounded by DeKalb Avenue to the south and Ponce de Leon Avenue on the north. The eastern and western boundaries form a half-mile buffer on either side of the BeltLine as shown in Figure 01. The subarea is made up of distinct neighborhoods such as Inman Park, Poncey-Highland, and Old Fourth Ward which are rich in residential density, historic and cultural resources, and mobility options. Its diverse mix of housing types and socio-economic characteristics make the neighborhoods unique.

The subarea contains a mixture of uses, with the majority of the land area used as residential. When looking at the properties within the BeltLine Tax Allocation District (TAD), the land use mix differs greatly from the surrounding subarea, with the majority of land being used for industrial, light commercial and mixed use developments.

In addition to a review of the existing land use and zoning in the subarea, an assessment of the population and employment base contributes to a robust understanding of the subarea. The analysis shows that the BeltLine project may have already begun influencing the subarea's population and employment base. In the future, the subarea's population is projected to grow at a greater pace than the employment base, shifting the area's balance toward a residential rather than employment focus.

The urban design element of the subarea focusing on the built and natural environment, is also rapidly changing, especially in the area surrounding the North Avenue Park and the Old Fourth Ward. It is important to identify the area's historic and cultural resources to assure that the redevelopment reflects the community's history and values, and so that the community has access to services. Subarea 5 is home to a wealth of historic and cultural resources important to the area, including, most notably, the Martin Luther King, Jr. National Historic Site and the Carter Center and Presidential Library. The subarea also has a number of churches, community centers and parks to serve the local population. Other facilities that serve the subarea entail a medical facility, several fire stations, and a police precinct located at City Hall East.

The TAD properties lack the quality urban design elements, such as tree cover and sidewalk connectivity that characterize the rest of the subarea. Established neighborhoods in the area display a beautiful and valuable tree canopy, while many of the TAD properties are barren cleared sites or large industrial buildings with little space for trees. Also, most of the highly-traveled corridors like DeKalb Avenue and Ponce de Leon Avenue are developed as low-density commercial, creating an urban design pattern catered to the automobile and contributing both to the reduced tree canopy and an unfriendly pedestrian environment.

This disparity between the entire subarea and the TAD properties is also seen in the mobility options for pedestrians. The sidewalk network within the subarea is well connected and relatively consistent. The sidewalks in the TAD area are in poor condition or are all together lacking. bicycle routes and facility conditions are also evaluated providing a snapshot of travel conditions in the subarea.

In addition to contributing to the urban design environment, transportation is another key element to the Subarea 5 Master Plan. The subarea relies heavily on east-west traffic flow. This is mostly seen on arterials such as Ponce de Leon Avenue where volume is high during peak hours. Freedom Parkway is another facility that experiences heavy volumes of traffic.

Transit options are available in the subarea providing further mobility options in an area that must tackle congestion issues. With an abundance of mobility options available, the consideration of safety within the subarea is examined. Discussion on existing crash data is provided in addition to

comparisons with statewide crash data. Bicycle and pedestrian crashes associated with the subarea's roadway networks are also considered due to the walkability and bicycle usage in the area. Supported through the utilization of demographic and model data from the Atlanta Regional Commission, the analysis of existing conditions with respect to transportation presents a solid overview of mobility within the subarea.

Apart from the extensive transportation analysis, a connectivity ratio was developed. Findings show that despite the connectivity ratio being high for Subarea 5 due to its vast mobility options, the subarea still contains some limitations with respect to physical barriers and ease of access. However, recommendations are provided as opportunities to mitigate such issues and enhance connectivity among all modes of travel.

As part of the Subarea 5 Master Plan, this report discusses existing conditions in the subarea and the possible challenges ahead with respect to development and infrastructure improvements. In preparation for the inventory and assessment report, an assessment of previous studies and existing plans were conducted. This assessment entailed an overview of subarea boundaries and recommendations. The goal was to ensure that overlaps among studies did not conflict and that recommendations were integrated as final results were presented. With respect to existing studies and plans, the goal is to ensure that the recommendations set forth by these studies are incorporated into the subarea analysis and final recommendations.

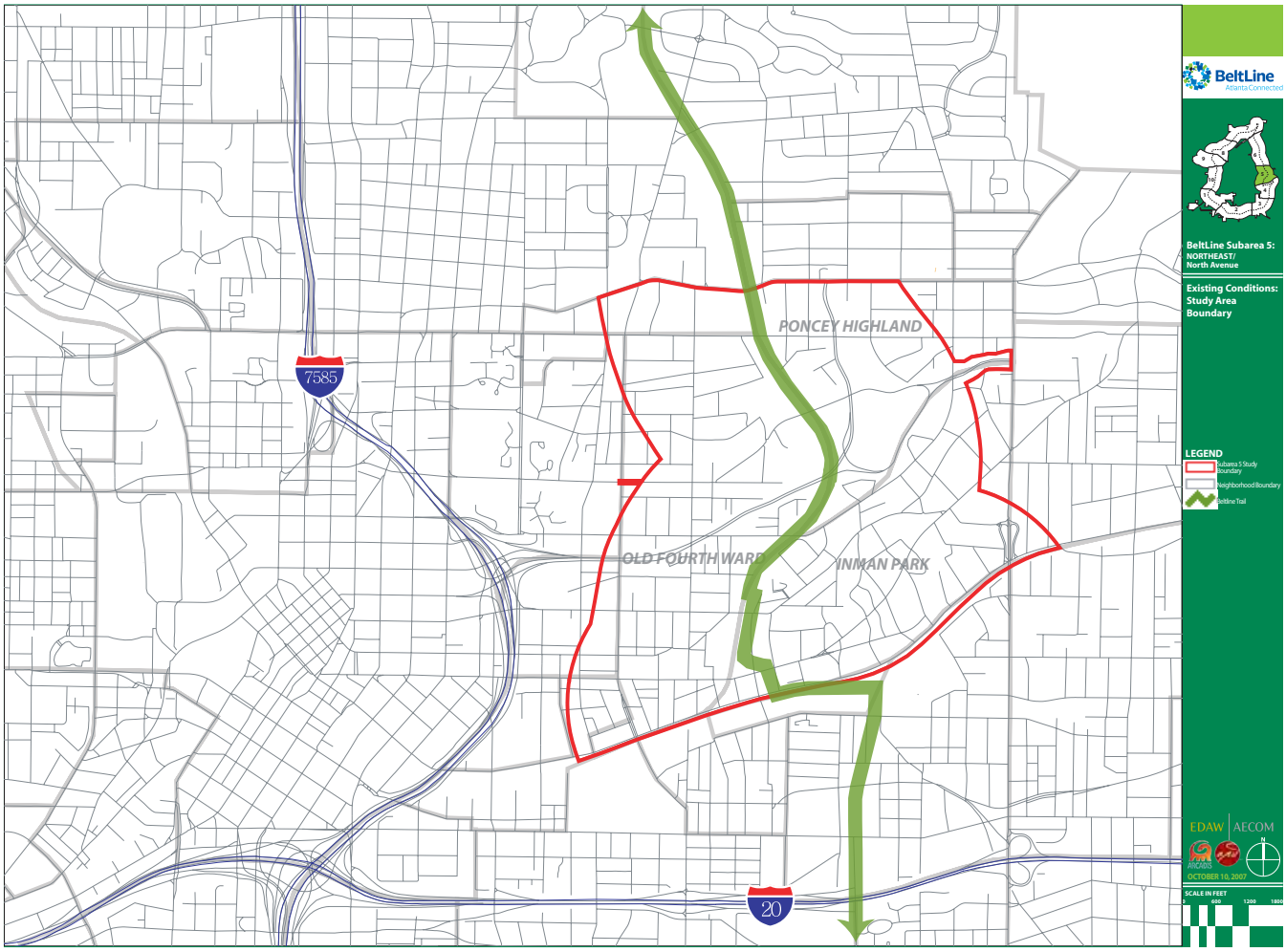


Figure 01 - Study Area Boundary

Land Use

Land Use

Land Use is the way land is developed and used by people in a community. General land use categories can be as broad as "rural" or "urban", while most communities prefer more specific categories such as "residential" or "industrial". In highly developed cities, like Atlanta, these categories are further refined to express the intensity of use. For example, the category of "high density residential" describes both the activity that the land is being used for (residential), and the type of development patterns, or structures, that must be built to accommodate that use (ten stories or greater). During the existing conditions analysis existing and proposed were reviewed to document the future character of the subarea.

Subarea 5 consists of a diverse mix of land uses. Lower density residential uses are concentrated south of Freedom Parkway and major commercial centers are mostly located to the north and east along major arterial corridors. Even with these variations of use, there is a clear pattern of open space and industrial/commercial frontage along the BeltLine. The subarea land uses are displayed in Figure 02.

Data Sources and Methodology

Land Use and parcel data were obtained by the City of Atlanta and reviewed using Geographic Information Systems (GIS). A windshield survey of the Tax Allocation District (TAD) parcels was conducted and the original data updated to reflect current development activity, building conditions, and occupancy status as previously completed in the 2005 Tax Allocation District (TAD) Feasibility Study. This was a cursory windshield survey to verify and update existing GIS files.

Field surveys were conducted using the standardized methodology developed for the TAD Feasibility Study. The assessment ranked building conditions into five categories:

0. Vacant: Property has no physical habitable structure on site. Property may not always be typical Open Space, but can also include parking lots, fences, and other non-habitable structures.
1. Standard: The structure is relatively sound with no visible defects in siding, roofing or foundation. Properties under construction are classified as Standard.
2. Substandard: The structure requires some level of basic repair such as new shingles and replacement windows. These structures should need only minor rehabilitation that requires a modest monetary investment.
3. Deteriorated: The structure requires major repairs such as a new roof, new siding, and major repairs to foundations. These rehabilitations will require significant monetary investment.
4. Dilapidated: The structure is an obvious health and safety hazard where the structure is most likely beyond repair. Little or no roof covering, caved in walls, burned interiors/exteriors and missing foundations are typical of dilapidated structures.

Loft spaces can be found in residential units like the above Block Lofts on Ralph McGill Boulevard

Figure 02 shows the existing land use map using the updated GIS layer. Most changes in building conditions are located in close proximity to the BeltLine and represent development activity. Some lots that were vacant during the survey

are now residential structures, like those along Woodall Avenue. Many properties near the proposed North Avenue Park are in phases of construction, like the large parcel at the intersection of North Angier Avenue and North Avenue.

Some structures in vicinity of the proposed park have continued to deteriorate, such as the metal and cinder block buildings at the intersection of North Angier Avenue and Dallas Street. Since 2005, some properties along DeKalb Avenue have improved as once deteriorated structures are redeveloped into residential lofts and mixed-use properties. Some lots at DeKalb and Gunby Street have redeveloped into residential townhomes, again indicative of redevelopment activity already occurring along the BeltLine.

Example of residential land use within Old Fourth Ward

Residential

Residential land uses within Subarea 5 consist of a mix of single-family and multi-family dwellings. Single-family houses are located in the neighborhoods of Inman Park, Poncey-Highland and Old Fourth Ward. These craftsman-style houses built in the 1880s have great historical and architectural value. The multi-family dwellings also include new construction and conversion loft-style units and condominiums. Examples of such residential types are located along DeKalb Avenue, Freedom Parkway and Ralph McGill Boulevard. Some recent examples of new lofts are the "Block Lofts" and the "Copenhill Lofts" constructed in 2000, both located near the Carter Center. Loft conversions like Bass Lofts on Euclid Avenue (conversion of a 1920s High School) in the Little Five Points area, and Stoveworks on Krog Street, are good examples of adaptive reuse.

Commercial center on the corner of Moreland Avenua and Euclid in Little Five Points

Commercial

Commercial uses are located either along major corridors or concentrated in commercial districts. The density of commercial use is consistently low, and the character of commercial uses within the subarea varies significantly. The retail corridor along Ponce de Leon Avenue is mostly in the form of traditional street-oriented buildings and low-density, automobile-oriented uses with accompanying parking areas. The relatively new Midtown Place Shopping Plaza on Ponce de Leon across from City Hall East includes local and chain retail supported by large anchor stores.

Although not entirely within the subarea, commercial land uses along Moreland Avenue are largely nodal representing a mixture of auto and street-oriented buildings varying in age. The Edgewood Retail District represents an integration

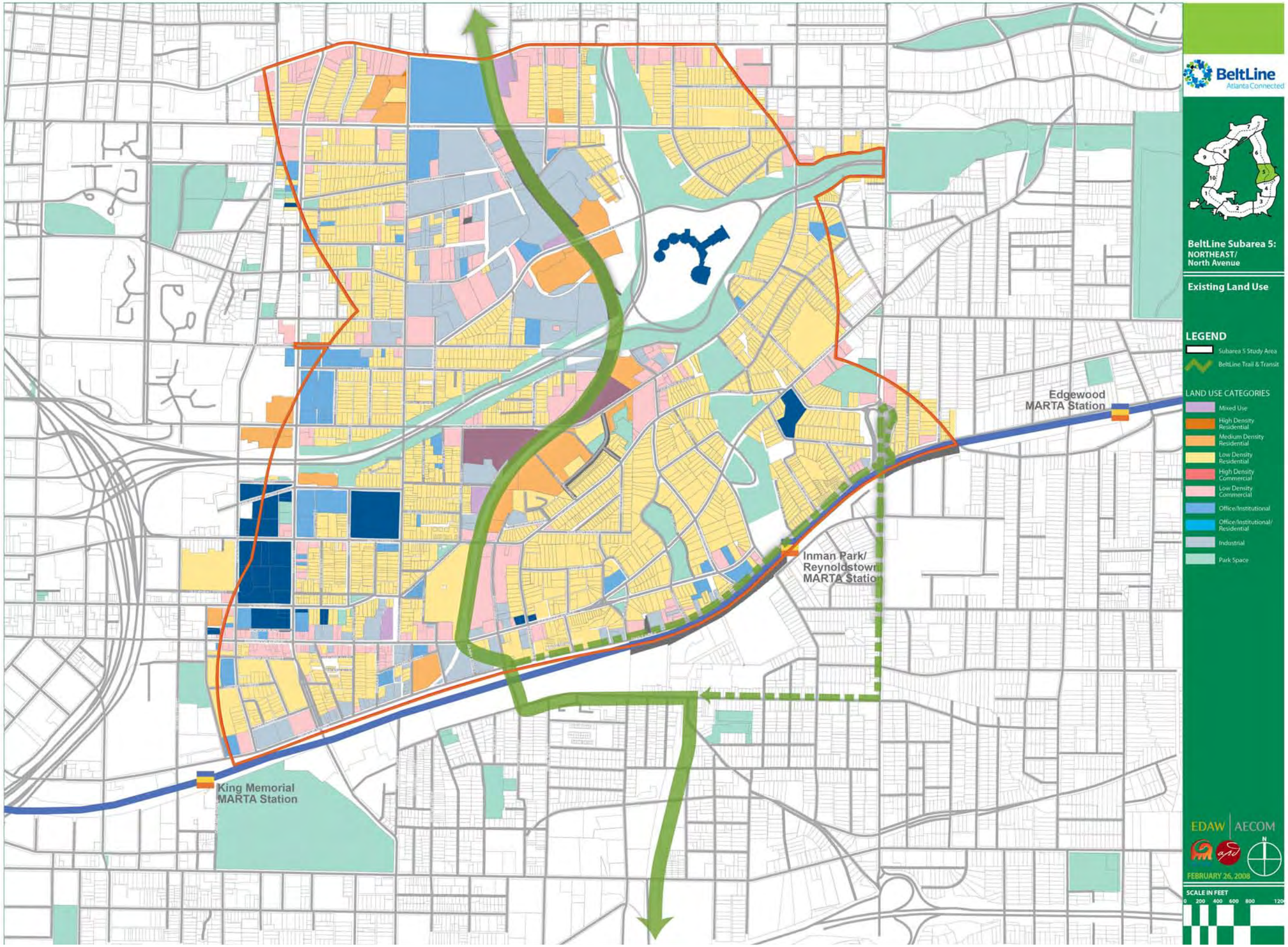


Figure 02 - Existing Land Use

*Collected and revised as of November 2007

Mixed-use on Krog Street in Inman Park

of big box uses into an urban fabric just south of the subarea. Little Five Points is the most street-oriented node and is comprised of eclectic retail boutiques, restaurants, bars, and local art venues that have become a popular weekend shopping and entertainment destination for the younger urban crowd. Edgewood and DeKalb Avenues are the remaining corridors within the subarea that have older, historic storefronts with new retail uses including restaurants, coffee shops, galleries and retail.

Mixed-use

Mixed-use adaptive reuse projects of older industrial warehouses and commercial buildings that have been converted into residential and office spaces are popular in this subarea. Examples of buildings functional for different uses include Krog Street (Stoveworks Lofts), Ponce de Leon Avenue (Ford Factory Lofts), and Ralph McGill Boulevard (Telephone Factory Lofts).

Office/Institutional

Dominating the Office/ Institutional use in the subarea is City Hall East, spanning an entire block between North Avenue and Ponce de Leon

A church in a former industrial building on Angier Avenue in Old Fourth Ward

Avenue. Located directly adjacent to the BeltLine, this parcel is planned for redevelopment by the City of Atlanta and a private developer for a mixed-use project. The Carter Center, located on Freedom Parkway, is another major institution adjacent to the BeltLine. Faith-based institutions are located mostly in residential neighborhoods.

Industrial

Industrial and warehousing facilities are located in the area between North Avenue and Ralph McGill Boulevard. In addition, there is also a

Former industrial building, currently in use as a restaurant on Krog Street in Inman Park

concentration of industrial uses south of DeKalb Avenue, just outside of the subarea.

Parks

Parks within the subarea are contained within the residential neighborhoods of Inman Park, Old Fourth Ward and Poncey-Highland. The parks and the programmed facilities are listed in Table 01 and shown in Figure 03.

Zoning

The City of Atlanta regulates the development of property through the use of zoning districts. Under district control are height, use, setbacks, parking, etc. They are the implementation tools of the 15-Year Future Land Use Plan and should support the desired future land uses. Since such tools directly shape development, zoning has a profound impact on the built environment. More than any other element, zoning affects how a community looks and functions for decades. Figure 04 shows the various zoning categories.

Key Findings

- Subarea's residential land uses consist of single family and multifamily dwellings
- The density of commercial use in the subarea is consistently low
- The conversion of commercial and industrial buildings into residential and office spaces is popular in the subarea

Table 01 - Parks within Subarea 5 Boundary

NAME	ADDRESS	FACILITIES	ACRES
Bass Recreation Center	326 Moreland Ave. NE	Playground, Basketball, Recreation Center	1.0
Delta Park	Edgewood Ave./Delta Place, NE	Open Space	0.2
Freedom Parkway	Moreland Ave at North Ave NE	Open Space	188.6
Inman Park	Euclid Ave./Edgewood Ave. NE	Open Space	0.3
Inman Park Trolley Barn	963 Edgewood Ave NE	Rental Facility	0.7
J.D. Sims Recreation Center	544 Angier Ave. NE	Playground, Basketball, Recreation Center	0.8
M.L.K. Natatorium	70 Boulevard NE	Swimming Pool	10.4
Morgan-Boulevard Park	521 Boulevard NE	Playground, Basketball	0.4
Springvale Park	Euclid Ave. at Waverly Way NE	Playground	4.6
TOTAL			207

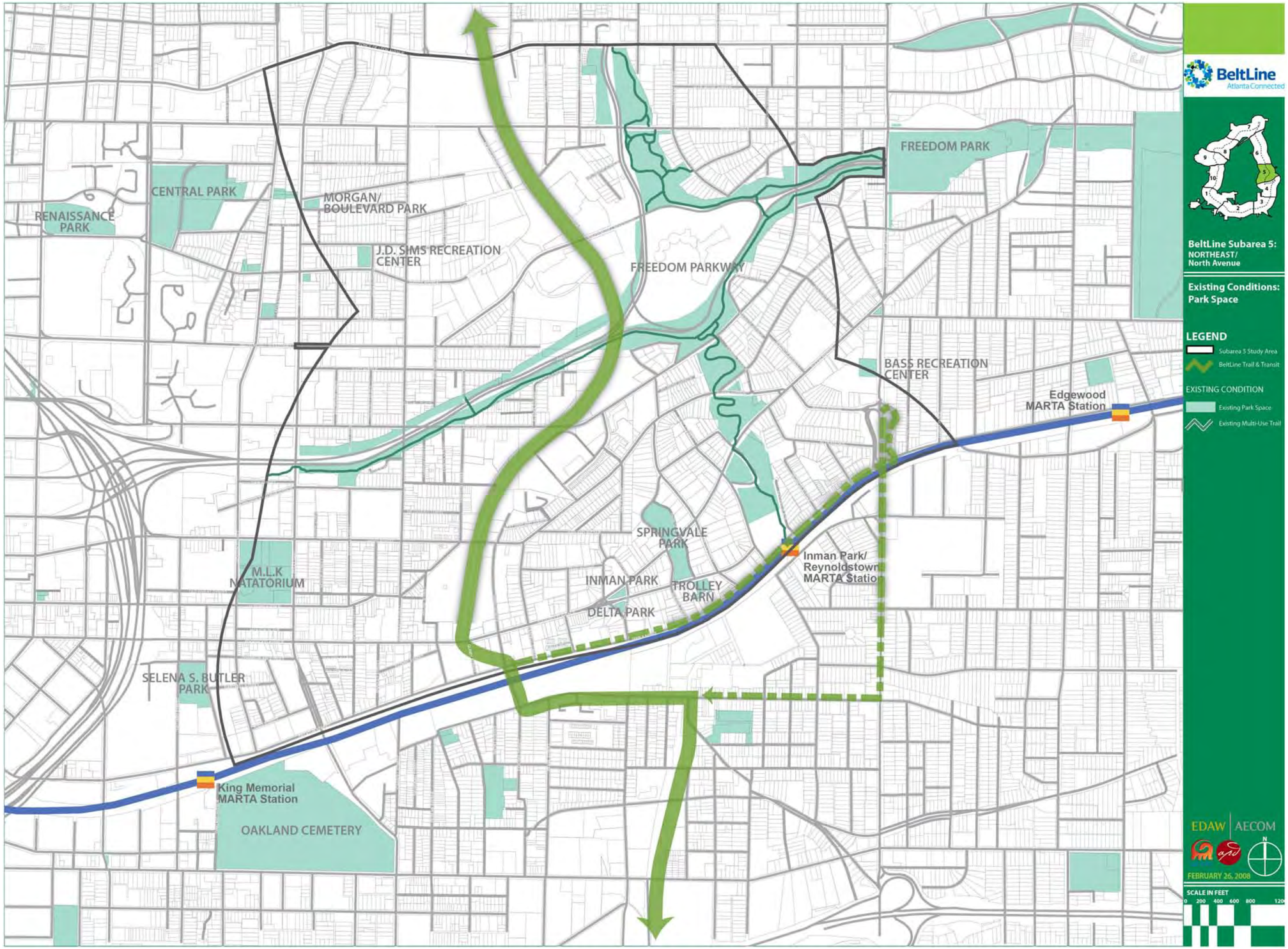


Figure 03 - Existing Park Space

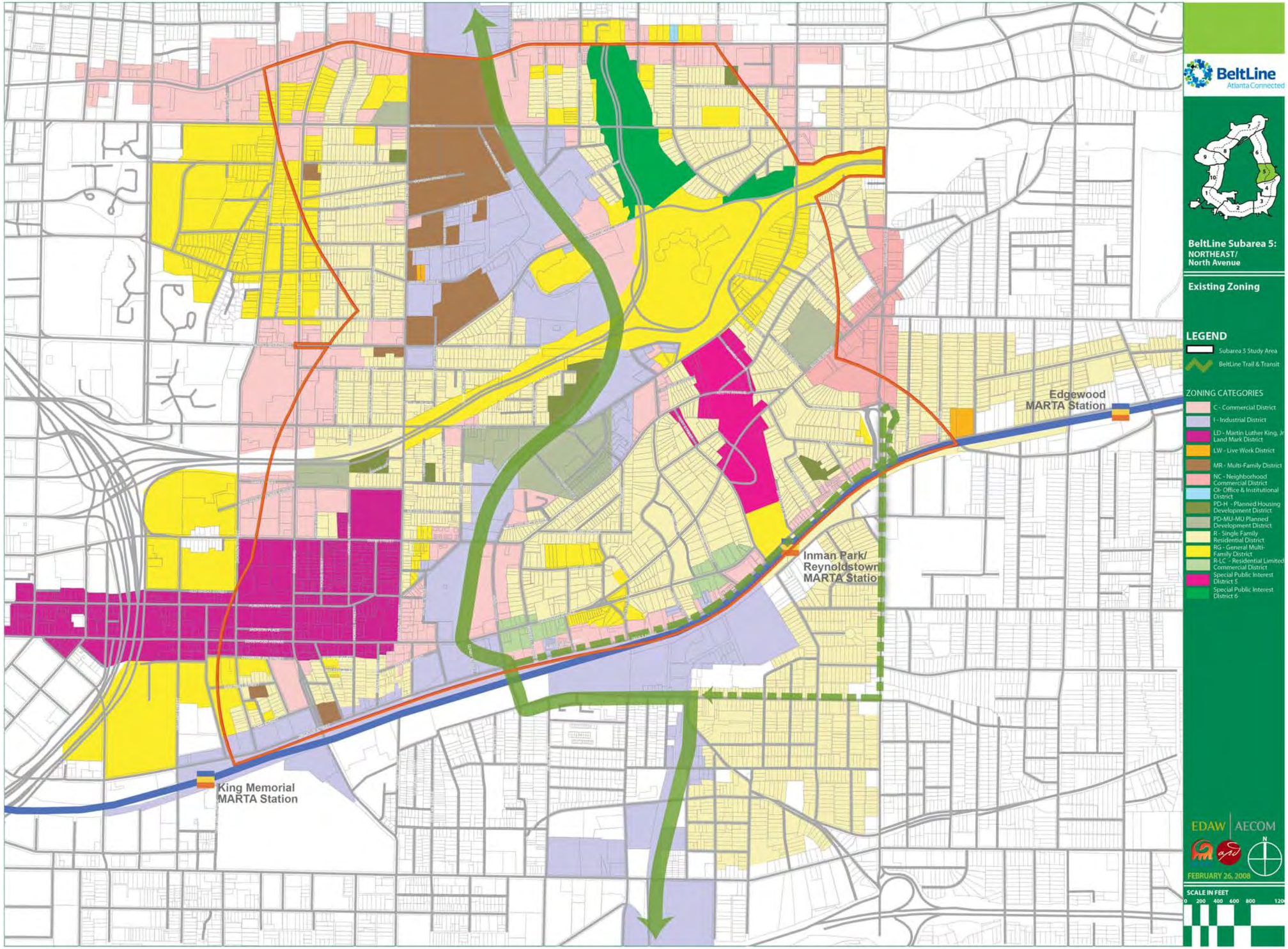


Figure 04 - Existing Zoning

Transportation

The existing transportation system within Subarea 5 includes a network of state and local roadways that fall into four Georgia Department of Transportation (GDOT) classifications (Principal Arterial, Minor Arterial, Collector Road, and Local Street) serving residential, business and regional transportation needs.

Ponce de Leon Avenue (US 29 and 273), is a regional east/west arterial running along the northern boundary of the subarea. Connecting Midtown and Downtown to Decatur. Ponce de Leon Avenue is a major arterial and experiences heavy regional through traffic. With three travel lanes in each direction, Ponce de Leon Avenue is lined with neighborhood and regional retail that benefits from the high traffic volumes.

Moreland Avenue (SR 42) is a minor arterial within the subarea. Although Moreland Avenue is a state road, the roadway consists of two to three travel lanes in each direction and has preserved its neighborhood character with historic buildings, street trees, and streetscapes. The other minor arterials in the subarea include North Avenue, Glen Iris Drive, Boulevard, Randolph Street, Edgewood Avenue and Auburn Avenue. Collector roads in the subarea are Freedom Parkway, Jackson Street, Irwin Street, Highland Avenue and North Highland Avenue. All other roads are classified as local streets.

Existing Traffic Volumes

Traffic volume data provides an incomplete assessment of conditions in the subarea as it measures travel demand but does not account for the supply of transportation capacity. However, this data does provide insight as to travel demand in Subarea 5 and indicates where potential improvements will serve the highest number of travelers.

Data Sources and Methodology

Traffic volume data in the form of average annual daily traffic (AADT) counts were obtained from Georgia DOT's State Traffic and Report Statistics (STARS) at 18 locations in Subarea 5. This data was then entered into a GIS for further analysis. The latest volume data available, for 2006, is used for this analysis. Figure 05 is a map of the count locations that graphically represents volumes.

Key Findings

Travel demand is highest in the subarea from east to west, with two important facilities carrying significant amounts of traffic

- Ponce De Leon Avenue carries the most traffic of any facility in the subarea, with an AADT of 37,360 vehicles per day between Parkway Drive and Boulevard and 34,800 from Freedom Parkway to Barnett Street
- Freedom Parkway serves the second highest number of vehicles, with an AADT of 25,530 just west of Ashley Avenue and 26,330 east of Ashley Avenue

North-South travel demand in the subarea is also substantial

- Krog Street between Edgewood and DeKalb Avenues serve the fifth highest number of vehicles in the subarea, with an AADT of 20,380
- Boulevard also carries a large number of vehicles with an AADT of 18,470 vehicles per day between Ponce De Leon Avenue and North Avenue, 18,760 just north of Wabash Avenue, and 16,560 between Chamberlain Street and Gartrell Street

Other facilities carrying over 10,000 vehicles per day include:

- SR 42 Connector with a volume of 15,720 west of North Highland Avenue
- DeKalb Avenue serves 15,700 vehicles per day between Degress and Haralson Avenues
- North Avenue carries 13,040 vehicles per day between Linwood Avenue and Cleburne Terrace

Crash Data

Existing Crashes

Crash data was analyzed to determine the relative safety of corridors within the subarea and to identify facilities with higher than average crash rates. Additionally, pedestrian and bicycle crashes were analyzed to determine areas dangerous to those transportation system users.

Data Sources and Methodology

Crash data were obtained from Georgia DOT's Office of Traffic Safety & Design Safety Management Section for Subarea 5. This data was then entered into a GIS for further analysis. Crash data for the last five years, from 2002 to 2007 was used in this analysis. Figure 06 is a map of the crash locations that graphically represents frequency.

All Crashes

From 2002 to 2007, there were 4,121 total crashes involving 8,389 vehicles in Subarea 5. There were 902 injury accidents with 1,317 total injuries. 22% of crashes in the subarea resulted in one or more injuries. During the same time period, 2 fatal accidents and 2 total fatalities were recorded in Subarea 5.

In addition to an area wide analysis, an examination of crash data was undertaken for the following key subarea corridors:

- Ponce De Leon from just west of Parkway Drive to Frederica Street
- North Avenue from Parkway Drive to Cleburne Terrace
- Freedom Parkway from Boulevard to SR 42 Connector
- SR 42 Connector from Freedom Parkway to Moreland Avenue
- Edgewood Avenue from just west of Jackson Street to Hurt Street
- Decatur Street/DeKalb Avenue from William H. Borders Street to Moreland Avenue
- Boulevard from Ponce De Leon to Decatur Street
- Glen Iris Drive/Randolph Street from Ponce De Leon to Edgewood Avenue

Within Subarea 5, 77% of all crashes happened along the above corridors for a total of 3,166. The highest number of crashes and injuries occurred on Ponce De Leon Avenue, with 1,347 total crashes resulting in 403 injuries. Boulevard had the second highest with 803 crashes and 246 injuries. Each of the remaining corridors had fewer than 310 accidents and fewer than 100 injuries.

Generally, the total number of crashes is higher on facilities carrying heavier volumes. To identify corridors with high crash rates, the total number of crashes was normalized by vehicle miles traveled on the facility. Crash rates along Subarea 5 corridors are shown in Table 02.

Table 02 - Study Area Corridor Crash Rates

	2002 - 2007 ACCIDENT RATE PER 100 MILLION VMT		
DESCRIPTION	ALL ACCIDENTS	FATALITIES	INJURIES
Ponce De Leon from just west of Parkway Drive to Frederica Street	1,960	1.5	586
North Avenue from Parkway Drive to Cleburne Terrace	657	0.0	256
Freedom Parkway from Boulevard to SR 42 Connector	119	0.0	40
SR 42 Connector from Freedom Parkway to Moreland Avenue	495	0.0	122
Edgewood Avenue from just west of Jackson Street to Hurt Street	979	0.0	224
Decatur Street/DeKalb Avenue from Wm. H. Borders Street to Moreland Avenue	658	2.1	209
Boulevard from Ponce De Leon to Decatur Street	2,097	0.0	643
Glen Iris Drive/Randolph Street from Ponce De Leon to Edgewood Avenue	1,747	0.0	637
TOTAL / AVAERAGE	8,712 / 1,089	3.6 / 0.5	2,717 / 340

Figure 05 - Existing Traffic Volumes

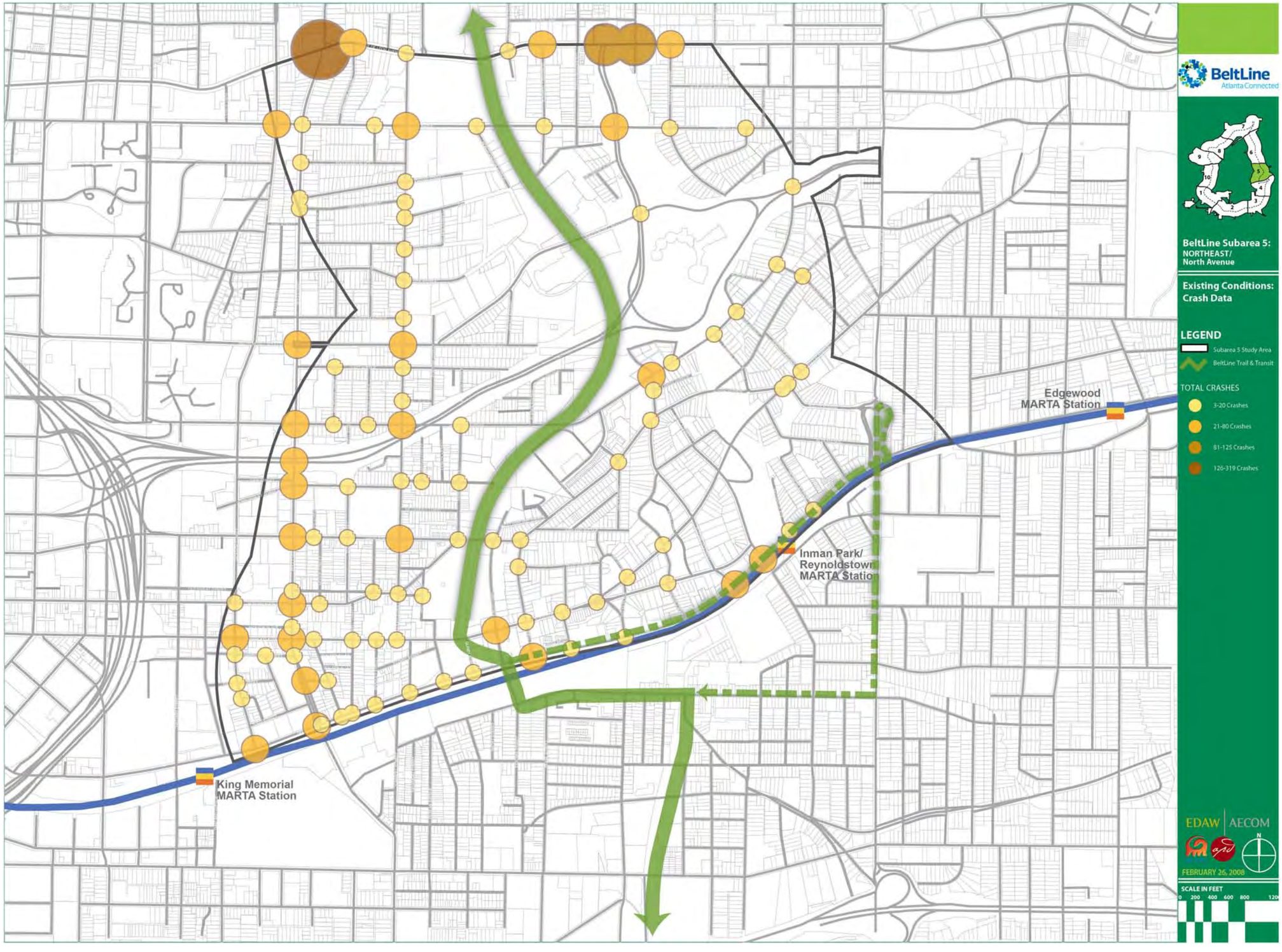


Figure 06 - Crash Data based on locations and intensity

Although Ponce De Leon Avenue has the highest number of crashes in Subarea 5, Boulevard has the highest crash rate, making it the most dangerous corridor in the subarea. The Decatur Street/ DeKalb Avenue corridor has the highest rate of fatal accidents at almost five times higher than the average for all corridors, despite being fifth in terms of total crash rate.

Crash rates of the subarea corridors were then compared with average statewide rates for similar facility types to determine which facilities are more dangerous than average. Table 03 summarizes corridors and whether or not they are over the average statewide accident rate for similar facilities for all, fatal, and injury accidents.

Pedestrian and Bicycle Crashes

Due to the urban nature of Subarea 5 and ongoing development trends towards increased walkability in the subarea, an analysis of pedestrian and bicycle crashes was performed.

From 2002 to 2007, there were 76 crashes in Subarea 5 involving pedestrians, which is1.8% of subarea crashes. None of these crashes were fatal to the pedestrian. In contrast, there were 60 injury crashes, or 79% of the total, which resulted in 62 injured pedestrians.

Slightly less than half, or 41%, of subarea pedestrian crashes were along Ponce De Leon with a total of 31. A total of 21 pedestrian crashes, or 28%, happened on Boulevard. Together, these two corridors account for over two thirds of the subarea pedestrian crashes.

From 2002 to 2007, there were 16 crashes in Subarea 5 involving bicyclists, or 0.4% of all crashes. Fatality and injury data are not available for bicycle crashes. However, by overlaying fatal crashes with bicycle crashes, it was observed that no fatalities occurred at the same sites as bicycle crashes. While 5 bicycle crashes occurred in the Ponce De Leon Avenue corridor, the rest are evenly distributed throughout the subarea.

Key Findings

- Ponce De Leon Avenue, Boulevard, and Glenn Iris Drive/Randolph Street are the three most dangerous corridors in Subarea 5 based on accidents per 100 million vehicle miles traveled (VMT)
  - Boulevard has the highest crash rate for all accidents at 2,097 per 100 million VMT, almost double the Subarea 5 average of 1,089
  - Boulevard also has the highest rate of injuries, 643 per hundred million VMT – this is approximately 12 times the average

Table 03 - Study Area Corridor Comparison to Statewide Crash Rates

	OVER STATEWIDE RATE		
DESCRIPTION	**ALL ACCIDENTS**	**FATALITIES**	**INJURIES**
Ponce De Leon from just west of Parkway Drive to Frederica Street	**Yes**	**Yes**	**Yes**
North Avenue from Parkway Drive to Cleburne Terrace	**Yes**	**No**	**Yes**
Freedom Parkway from Boulevard to SR 42 Connector	**No**	**No**	**No**
SR 42 Connector from Freedom Parkway to Moreland Avenue	**No**	**No**	**No**
Edgewood Avenue from just west of Jackson Street to Hurt Street	**Yes**	**No**	**Yes**
Decatur Street/DeKalb Avenue from Wm. H. Borders Street to Moreland Avenue	**n/a**	**n/a**	**n/a**
Boulevard from Ponce De Leon to Decatur Street	**Yes**	**No**	**Yes**
Glen Iris Drive/Randolph Street from Ponce De Leon to Edgewood Avenue	**Yes**	**No**	**Yes**
Total/Average	**Yes**	**No**	**No**

of 54.2
    - Ponce De Leon is over the statewide rate for total accidents, fatalities, and injuries on similar facilities with 1,960 total per 100 million VMT, 1.45 fatalities per 100 million VMT, and 586 injuries per 100 million VMT compared to statewide averages of 363, 1.4, and 151, respectively.
- Freedom Parkway and the SR 42 Connector are the only two facilities that are lower than the statewide rate for all, fatal, and injury accidents
- Decatur Street/DeKalb Avenue has the highest rate of fatal accidents, with 2.1 per 100 million VMT, which is almost four times the Subarea 5 average of 0.5
- Pedestrian and bicycle crashes, while small in percentage terms cause a disproportionate number of injuries
    - 1.8% of all crashes in Subarea 5 involved pedestrians with 62 injuries, or 4.7% of all subarea injuries
    - Crashes involving bicycles made up 0.4% of all crashes in the subarea
- Pedestrian crashes occur throughout the subarea, but are primarily concentrated on Ponce De Leon Avenue and Boulevard
    - 41% total pedestrian crashes occurred on Ponce De Leon Avenue
    - On Boulevard, there were 21 pedestrian related incidents

Bicycle Routes

Bicycle facilities are being integrated into transportation systems to ensure a wide range of mobility options for commuters. Bicycle facilities can take three major forms:

Off-street facilities

Off-street facilities are normally at least 12 foot wide paved areas that permit bicycle travel in two directions. Lanes may or may not be striped. Usually, these facilities are built in conjunction with greenways.

Bicycle lanes

Bicycle lanes are striped one-way on-street facilities. They are usually located next to the curb and designed for bicyclists to travel in the same direction of traffic flow where the average vehicular speed is greater than 25 miles per hour.

Dedicated bicycle facilities in the subarea are limited to Edgewood and Freedom Parkway, which contains a multi-use trail. Most local streets consist of traffic traveling at minimal speeds to safely accommodate bikes within the vehicular lanes. Bicycle routes are illustrated in Figure 07 below. Ponce de Leon is not a bike friendly environment, as speeds and, sometimes, volumes exceed what would be comfortable for bicyclists.

Signed bicycle routes

Appropriate signage for bicycle routes guide bicyclists to adequate bicycle facilities, promotes connectivity, and further enhances safety directing bicyclists away from vehicular traffic. Signage directing bicyclists to multi-use trails such as the ones maintained by the PATH Foundation enable cyclists to use dedicated facilities away from automobile traffic. Appropriate signage on roadways for dedicated bicycle facilities are also necessary to accommodate cyclists when traveling on roadways with greater automobile presence.

Data Source and Methodologies

Bicycle routes and suitability measurements were extracted from the Atlanta Regional Bicycle and Pedestrian Plan recently updated in 2007. These routes were mapped using GIS and a gap analysis was performed with consideration given to the type of road, including volumes and lane configuration, the number and type of crashes, and the type of bike facility (see Figure 07).

Key Findings

- Bicycle facilities include Freedom Parkway and Edgewood
- Roads like Ponce de Leon are not bicycle friendly due to the high speeds and traffic volumes

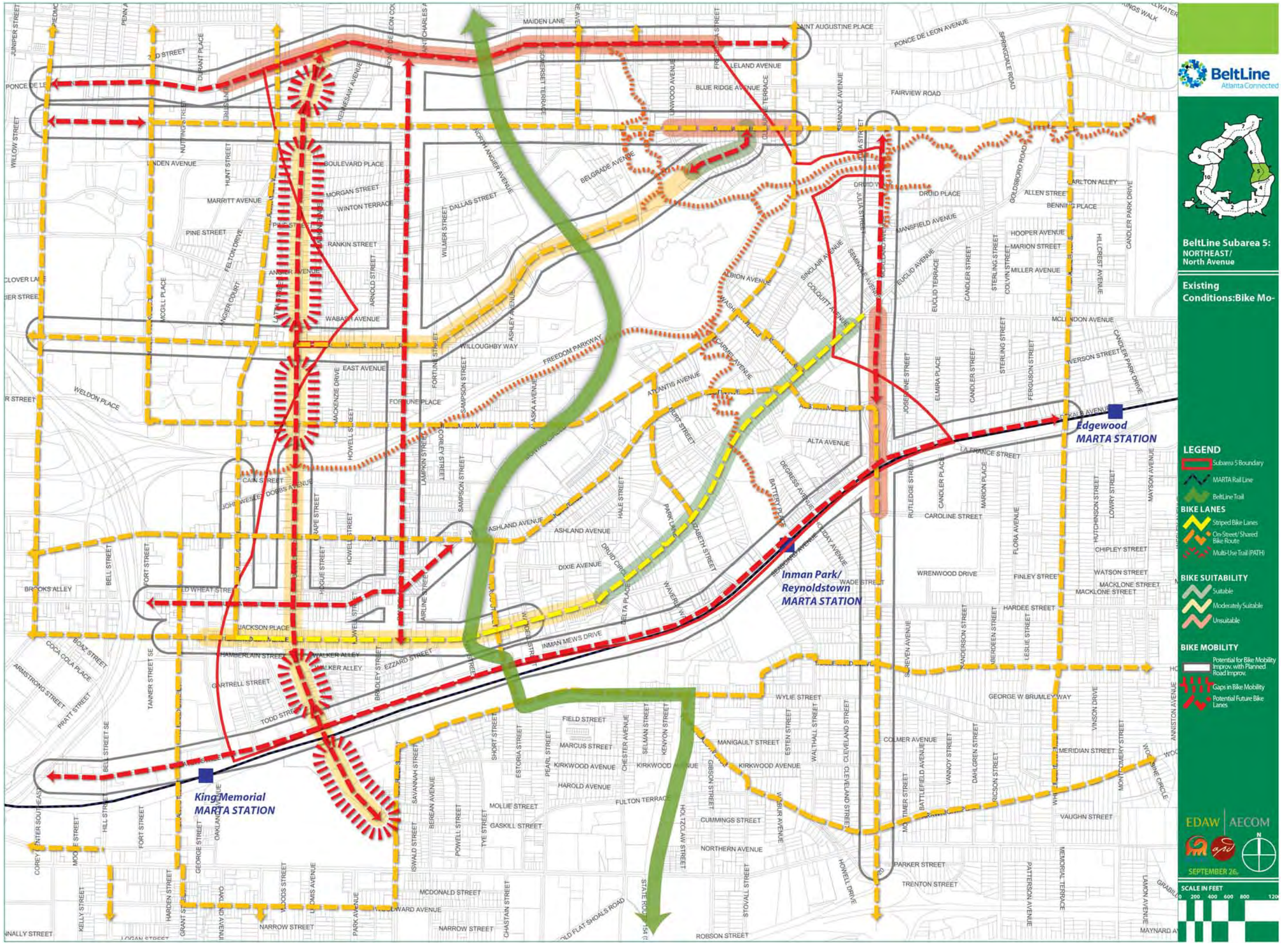


Figure 07 - Existing Bike Mobility and Potential for Improvement

Public Transit

A central goal of the Atlanta BeltLine is to provide multi-modal access to a greater number of Atlanta residents, and the Subarea 5 Study Area is fortunate to be well served by public transit. Metropolitan Atlanta Rapid Transit Authority (MARTA) has two rail stations located in the subarea as well as multiple bus routes.

Data Sources and Methodology

The rail and bus routes were collected from the City of Atlanta. Together with ridership data from MARTA, and site visits to the various stops, the following existing conditions analysis was completed.

MARTA Rail

Two transit rail stations (King Memorial Station and the Inman Park/Reynoldstown Station) serve the subarea. In comparison to other rail stations throughout the MARTA system, these two stations may appear to have low ridership numbers but are comparative to other stations on the East-West line with respect to average monthly ridership. These stations are located primarily in areas where lower ridership would be expected. Higher ridership numbers would be expected at stations that serve as major transfer points or are end of the line stations. Examples include the Five Points station as a major transfer point or the Indian Creek station at the end of the East-West line which carries passengers commuting in from areas outside the MARTA service area.

The Inman Park/Reynoldstown Station (on the east-west MARTA rail line) is accessible to pedestrians on the north and south sides of the freight and MARTA rail lines with some challenges. The greatest accessibility challenge is the access point at the Reynoldstown entrance and the pedestrian bridge leading to the inter-modal bus facility. Its location creates a barrier and increases the walking distance between the station and areas to the east towards Moreland Avenue. The station also lacks visibility from Moreland Avenue and the Edgewood Retail District further compromising its usability and patron-friendly environment.

The King Memorial MARTA station is located on the western edge of Subarea-5 and is also on the east-west MARTA rail line. Accessible to the Oakland Cemetery, the Martin Luther King Historical Sites, the Atlanta Housing Authority's new Capital Gateway residential development, and Grady Homes, the King Memorial MARTA station is elevated and visible/accessible from Decatur Street.

The ridership information for both transit stations is provided in Tables 04 and 05.

MARTA Bus Routes

The bus service in the Subarea 5 is provided by MARTA. The map of bus service and stops illustrates that the subarea is served by eight routes. The following is the list for routes in the area:

Route #2 – Ponce de Leon, crosses at Ponce de Leon Avenue and connects to Midtown, Decatur, and the neighborhoods of Druid Hills, Poncey-Highland, Virginia-Highland and Old Fourth Ward.

Route #3 – Auburn Avenue/M.L. King Drive, crosses

Table 04 - Average Daily Rail Ridership

STATION	JAN '07	FEB '07	MAR '07	APR '07	MAY '07	JUN '07	JUL '07	AUG '07	AVERAGE 12-MONTH
Inman Park	2,963	2,923	3,129	3,111	3,122	3,153	3,002	3,120	3,065
King Memorial	1,841	1,961	2,099	2,126	2,099	2,288	2,078	2,145	2,080

SOURCE: MARTA DATA YIELD APRIL 28 - AUGUST 17, 2007

Table 05 - Average Daily Bus Ridership

ROUTE	2	3	6	16	17	27	45	48	99	100
Average Daily	2,128	2,078	1,888	1,806	1,793	2,127	534	1,118	674	313

SOURCE: MARTA DATA YIELD APRIL 28 - AUGUST 17, 2007

at Euclid/McLendon Avenues and connects to Downtown and the neighborhoods of Old Fourth Ward, Inman Park and Candler Park.

Route #16 – Noble, crosses at North Highland Avenue and connects to Downtown, and the neighborhoods of Old Fourth Ward, Inman Park, Poncey-Highland, Inman Park and Morningside.

Route #17 – Inman Park/Lakewood, operates from Lakewood and connects to Turner Field, Georgia State, Five Points and Inman Park.

Route #27 – Monroe Drive/Lindbergh Station, crosses at Boulevard/Monroe Drive and connects to the Ansley Park neighborhood, Cheshire Bridge Road, and the Lindbergh MARTA rail station.

Route #48 – Thomasville, operates from the Inman Park/Reynoldstown MARTA rail station to Constitution Road and connects the neighborhoods of Inman Park, Edgewood, Reynoldstown, East Atlanta, Ormewood Park, Brownwood Park and Thomasville.

Route #99 – North Ave./Grady Hospital, operates from the North Avenue MARTA rail station to Boulevard serving Atlanta Medical Center and connecting service to Grady Hospital.

Route #100 – Atlanta Tourist Loop Downtown, operates from the North Avenue MARTA rail station and circles Downtown stopping at key tourist attractions along corridors including the Auburn Avenue District, Peachtree Street, and Centennial Olympic Park Drive to name a few.

Compared to many MARTA bus routes, weekday headways on route #2 are frequent at every 20 minutes during peak hours and every 40 minutes during off-peak hours. Routes 3, 17, 27 and 100 are moderately frequent with an average of 30 to 35 minute headways during peak hours and 30 minutes during off-peak hours. Weekday headways are less frequent on routes 48 and 99 averaging 40 and 60 minute headways during peak and off-peak hours. The most frequent route serving the subarea is route 16, with bus service available every 15 minutes during peak hours and every 30 minutes during off-peak hours. Current transit routes in the subarea are displayed in Figure 08.

The user-friendliness of existing bus routes within the subarea is compromised by the lack of shelters, posted schedules, maps, or lighting. As a result, patrons are exposed to the elements and new riders are uninformed of the bus schedule. Existing bus service is also compromised by delays due to frequent stops along the routes (one on almost every block), red-lights, and congestion, all of which contribute to unreliable service. The lack of patron amenities and delays are clear deterrents for choice riders.

The exiting bus ridership is listed in Table 05.

Key Findings

- There are two heavy rail stations in the subarea: Inman Park and King Memorial
- Ridership at both stations has increased over the last year
- There are 8 bus routes in the subarea with peak frequancies between 15 minutes and 60 minutes
- Infrequent service of several routes makes the bus system unreliable

Population and Employment

To understand a place, you must understand the people that live and work there. The data gathered for Subarea 5 speaks of a place rich in diversity, and one that supports many types of housing opportunities. The population, housing and employment data were analyzed to identify these strengths as well as possible weaknesses and threats. Using this information, the community can set goals and begin to determine the feasibility for future transit investment in the area.

Data Source and Methodologies

Data were compared in order to check for the reasonableness of population and employment estimates and forecasts. It should be noted that the geography of the subarea differs from the geography used by the ARC, whose population and employment estimates and projections

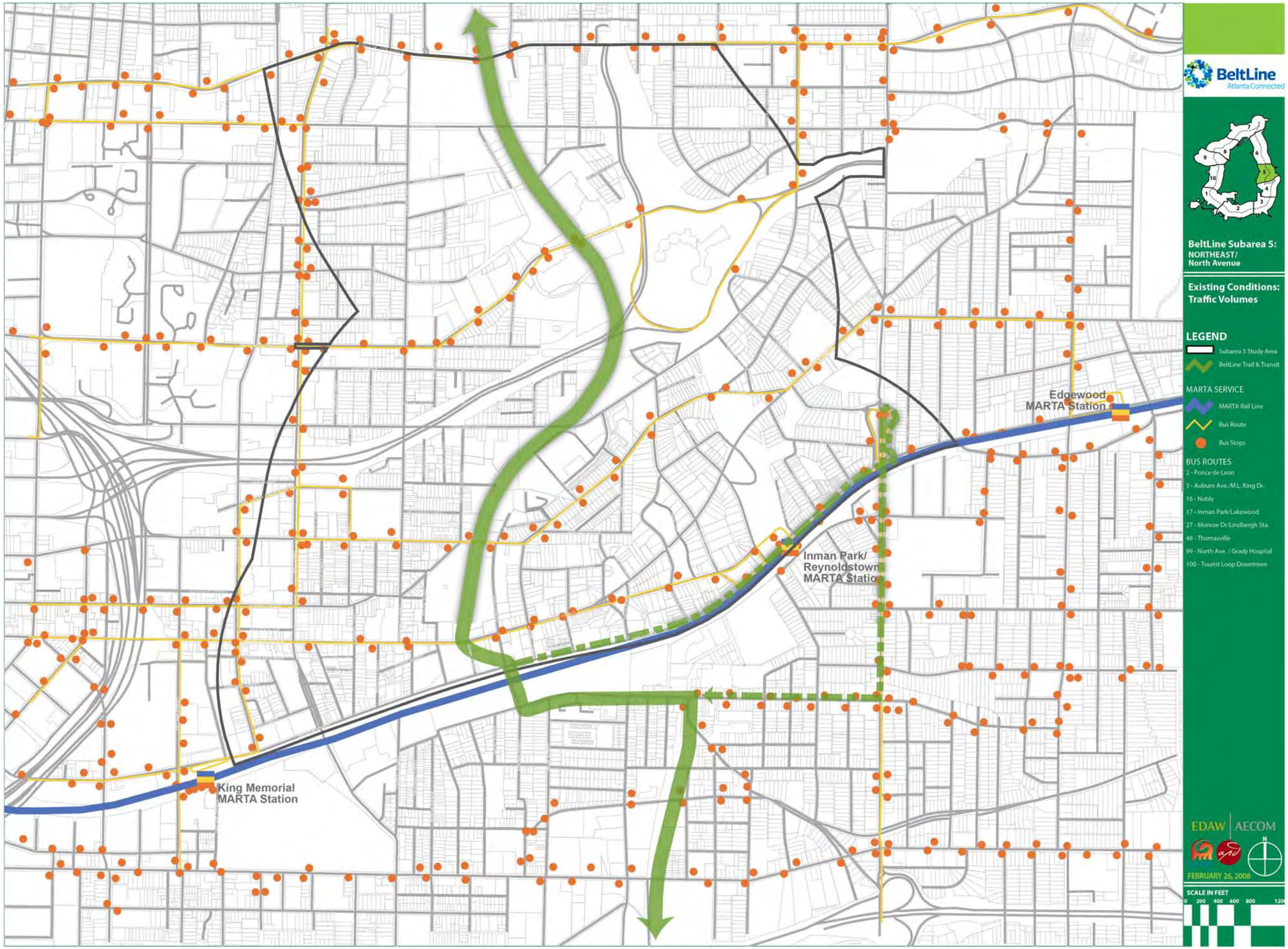


Figure 08 - Existing Public Transit

are based on the U.S. Census Bureau's census tracts. As such, the Subarea 5 boundaries cut across multiple census tract boundaries, and the subarea's population and employment are assumed to be contained within the total population and employment of the combined census tracts. Additionally, it is assumed that geographic boundaries of the Georgia Power data are identical or, at the least approximate, to those of the Subarea 5 boundaries.

As shown by Table 06, Georgia Power data indicate that an estimated 8,300 people lived within the subarea in the year 2000. These 8,300 people comprise approximately 42% of the broader subarea population made up of the census tracts encompassing the Subarea 5 boundaries (census tracts 13, 14, 15, 16, 17, 29, 30, and 33).

According to the collected data, the ARC expects that the population within the census tracts hosting Subarea 5 will increase at a steady rate of 1.4% annually between 2000 and 2030. This modest but steady growth rate was derived from an analysis of population estimates from years 2000 and 2005 along with the forecasts for 2010 through 2030. ARC forecasts that the broader subarea will have 29,100 people residing within it. This is a change of approximately 51% over the year 2000. Table 07 presents this more clearly.

The Southern Dairies Building on Ponce is one of the few opportunities for employment within Subarea 5

The employment outlook for the broader subarea, while positive, is forecasted at a nearly flat rate of growth. Between 2000 and 2005, the broader subarea employment actually fell, decreasing by approximately 1,300 jobs. However, ARC forecasts for the broader subarea show a steady, but fairly small increase in employment with an annual growth rate of less than 1% (0.49% to be exact). By 2015, the number of forecasted jobs in the broader subarea exceeds the year 2000 levels by about 295 jobs. Between the 15-year period of 2015 and 2030, an estimated 3,000 additional jobs will be located in the broader subarea. Table 08 presents this information.

By 2030, there will be more jobs in the subarea than there were in 2000. However, population growth will far outpace employment growth, and analysis of the data clearly shows that the broader subarea is becoming more attractive as a residential community versus an employment destination. Figure 09 shows the difference between population and employment, and their expected change over time. It also shows that

Table 06 - Year 2000 Population Subarea 5 Geography vs. Census Tracts

SOURCE	SUBAREA 5 (GEORGIA POWER)	ARC*	SUBAREA 5'S % OF AREA CENSUS TRACTS
Population	8,314	19,929	41.7%

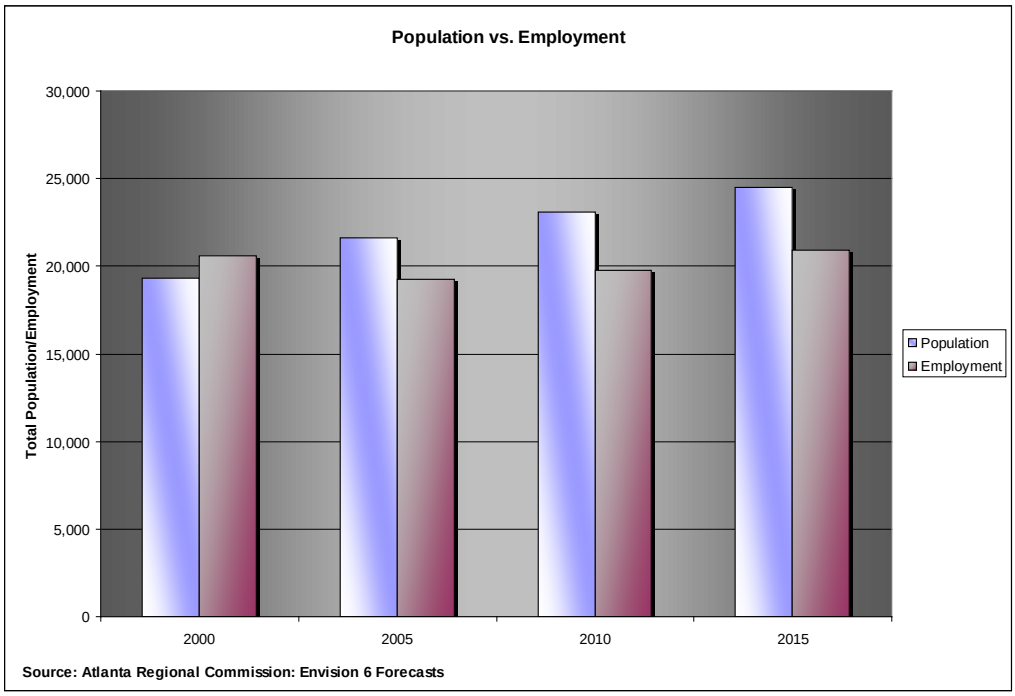
* INCLUDES TOTAL OF CENSUS TRACTS 13, 14, 15, 16, 17, 29, 30 & 33

Table 07 - Population and Employment Estimates and Projections of Census Tracts Hosting Subarea

ARC DATA	POPULATION	EMPLOYMENT	JOBS/POPULATION BALANCE
2000	19,292	20,623	1.07
2005	21,609	19,268	0.89
2010	23,078	19,775	0.86
2015	24,514	20,918	0.85
2020	25,596	21,713	0.85
2025	27,269	22,582	0.83
2030	29,108	23,901	0.82
Annual Increase:	1.4%	0.49%	Average:0.88

* INCLUDES TOTAL OF CENSUS TRACTS 13, 14, 15, 16, 17, 29, 30 & 33
SOURCE: ATLANTA REGIONAL COMMISSION: ENVISION 6 FORECASTS

Figure 09 - Subarea 5 Population Change vs. Employment Change



even though there were more jobs than people located within the broader subarea in year 2000, opportunities for the broader subarea residents to stay within the subarea to work decrease steadily through year 2030. Therefore, for planning purposes only, if it were assumed that all of the broader subarea's residents desired to work within the subarea, on average only 88% of them would be able to find employment. The remaining 12% would have to find employment outside of the subarea as there are not enough jobs to accommodate the entirety of the subarea's population. Despite this, the jobs-to-population balance is fairly strong compared to the Atlanta region in general, and the opportunities to capture the subarea's employment trips internally are greater.

Since two different data sources addressing dissimilar geographies were used in this analysis, it is believed that the best "story" could be told by performing a comparison of ARC data and information provided by Georgia Power specifically for the Subarea 5 boundaries. In order to do this, ARC population and employment estimates and forecasts had to be interpolated for the year 2007 and 2012 so that they matched the Georgia Power dataset's analysis years. Georgia Power's dataset is based on information purchased from ESRI.

Table 08 - Subarea 5 Year 2006 Population Estimate - Subarea 5 Geography vs. Census Tracts

	POPULATION		SUBAREA 5'S % OF AREA CENSUS TRACTS	EMPLOYMENT		SUBAREA 5'S % OF AREA CENSUS TRACTS
	SUBAREA 5	ARC [1,2]		SUBAREA 5 [3])	ARC [4]	
2007	11,863	22,305	53.2%	7,577	19,586	38.7%
2012	14,174	23,821	59.5%	7,893	20,101	39.3%

[1] INCLUDES TOTAL OF CENSUS TRACTS 13, 14, 15, 16, 17, 29, 30 & 33
[2] PROJECTED POPULATION FROM NEAREST ARC ANALYSIS YEAR
[3] PROJECTED 2012 EMPLOYMENT
[4] PROJECTED EMPLOYMENT FROM NEAREST ARC ANALYSIS YEAR

Table 09 - 2000 Civilian Population 16+ by Employment Status

	SUBAREA TOTAL	PERCENT OF POP. 16+	PERCENT OF TOTAL SUBAREA POP.
In Labor Force	5,277	72.7%	63.5%
Civilian Employed	4,885	67.3%	58.8%
Civilian Unemployed	392	5.4%	4.7%
Not in Labor Force	1,982	27.3%	23.8%
TOTAL	7,259		87.3%

Table 10 - 2007 Civilian Population 16+ in Labor Force

	SUBAREA TOTAL	PERCENT OF POP. 16+	PERCENT OF TOTAL SUBAREA POP.
In Labor Force	7,375		
Civilian Employed	6,770	91.8%	57.1%
Civilian Unemployed	605	8.2%	5.1%

Population estimates for 2007 and 2012 indicate that more than half of the broader subarea's population will reside within the Subarea 5 boundaries. Subarea 5's forecasted share of the broader subarea's

Table 11 - 2007 Employed Population 16+ by Occupation

WHITE COLLAR	**72.5%**	**4,908**
Management/Business/Financial	*21.4%*	*1,449*
Professional	*30.5%*	*2,065*
Sales	*12.3%*	*833*
Administrative Support	*8.4%*	*569*
SERVICES	**16.5%**	**1,117**
BLUE COLLAR	**11.0%**	**745**
Farming/Forestry/Fishing	*0.1%*	*7*
Construction/Extraction	*3.1%*	*210*
Installation/Maintenance/Repair	*1.2%*	*81*
Production	*2.9%*	*196*
Transportation/Material Moving	*3.7%*	*250*
TOTAL		**6,770**

SOURCE: GEORGIA POWER AREA STUDY (2006) AND 2000 CENSUS

Table 12 - Subarea 5 Jobs

Government	**1,407**	**18.6%**
Services	**3,980**	**52.5%**
Finance & Real Estate	**320**	**4.2%**
Retail Trade	**1,007**	**13.3%**
Wholesale Trade	**133**	**1.8%**
Transportation & Utilities	**140**	**1.8%**
Construction	**261**	**3.4%**
Miscellaneous	**274**	**3.6%**
TOTAL ALL INDUSTRIES	**7,576**	**100.0%**

SOURCE: GEORGIA POWER AREA STUDY (2006) AND 2000 CENSUS

population is expected to increase population from 53.2% in 2007 and to 59.5% in 2012, up from the 41.7% observed in 2000. Additionally, employment forecasts for the same years show that 39% of the broader subarea's total jobs will be located within the Subarea 5 boundaries. The growth of the Subarea 5 population suggests that the subarea is becoming more attractive as a residential location in comparison to the broader context. Additionally, Subarea 5's share of the broader study area's population and employment suggest that the subarea's density is also increasing.

The employment characteristics of Subarea 5 can best be described in two parts (See Tables 9-11):

- Employment characteristics of the Subarea 5 residents, and
- Characteristics of jobs within the subarea

Tables 9, 10 and 11 display the employment characteristics. Georgia Power data for Subarea 5 indicates that in 2000 approximately 7,300 persons residing in Subarea 5 were age 16 or older. This represents 87.3% of the total Subarea 5 year 2000 population. Of these 7,300 persons, 5,300 were identified as being in the civilian labor force. 67.3% (4,900 persons) of the total population age 16 or older were employed in year 2000. This equates to 59% of the subarea's total population. By contrast, 5.3% (400) persons age 16 or older were classified as unemployed, and represented 4.6% of the total Subarea 5 population. 2,000 persons (27.3%) age 16 or older were not in the civilian labor force at all, and represent 23.8% of the total Subarea 5 population.

The percentage total employed subarea residents age 16 or older in 2007 is estimated to decrease slightly, from 59% of the subarea's year 2000 total population to 57%. This, however, does not equate to a loss of jobs, and in fact an additional 1,900 Subarea 5 residents age 16 or older gained employment. This is a change of 28.3% from 2000. The number of unemployed persons is estimated to increase by 200 persons as well, from 400 in 2000, to 600 in 2007 an increase of 57%. However, the percentage of total Subarea 5 residents classified as unemployed remained below 5%.

2007 estimates show that of the 6,800 employed persons residing in the subarea, fully 72.5% work in a job classified as "white collar." Of these, 30.5% are considered professional while 21.4% are considered management/business, or financial. Service sector employees comprise 16.5% of Subarea 5's total employed population while 11% of the subarea's employed residents hold jobs classified as "blue collar."

Estimates for 2007 show that there are 7,600 jobs represented by 8 types of jobs in Subarea 5, as seen in Table 12. Service jobs represent more than half of these jobs (4,000 - 52.5%). Government

Table 13 - Service Sector Jobs

	BUSINESSES	% OF TOTAL	TOTAL JOBS	% OF TOTAL
Hotels & Lodging	**4**	**0.5%**	**28**	**0.4%**
Automotive Services	**12**	**1.6%**	**80**	**1.1%**
Motion Pictures & Amusements	**47**	**6.1%**	**277**	**3.7%**
Health Services	**80**	**10.4%**	**2,517**	**33.2%**
Legal Services	**16**	**2.1%**	**45**	**0.6%**
Education Institutions & Libraries	**8**	**1.0%**	**131**	**1.7%**
Other Services	**219**	**28.5%**	**902**	**11.9%**
SUMMARY	**386**	**50.2%**	**3,980**	**52.5%**

Table 14 - Housing Units by Occupancy Status and Tenure
Census 2000

	NUMBER	PERCENT
Occupied	**4,282**	**88.3%**
Owner	*1,246*	*25.7%*
Renter	*3,036*	*62.6%*
Vacant	**567**	**11.7%**
TOTAL UNITS	**4,849**	**100.0%**

Table 15 - Housing Units by Occupancy Status and Tenure
Forecast 2007 - 2012

	2007		2012	
	NUMBER	PERCENT	NUMBER	PERCENT
Occupied	**6,191**	**83.5%**	**7,438**	**83.0%**
Owner	*2,113*	*28.5%*	*2,451*	*27.4%*
Renter	*4,078*	*55.0%*	*4,987*	*55.7%*
Vacant	**1,225**	**16.5%**	**1,519**	**17.0%**
Total Units	**7,416**	**100.0%**	**8,957**	**100.0%**

and retail are the second and third number of jobs in the subarea, and represent 18.6% and 13.3% of the total. Within the service industry, the largest percentage of jobs are in the health services sector. Approximately 63.2% of all service sector jobs (33.2% of the total number of jobs in the subarea and 10.4% of all businesses) are Health Services related as shown in Table 13

.

Of Subarea 5's total 4,900 housing units in year 2000, 88.3% (4,300) of these were occupied giving the subarea a fairly substantial vacancy rate of 11.7%. The housing stock of the subarea at this time is overwhelmingly made up of rental units. The housing units commonly associated with renters tend to be apartments or other multi-family styles, however within the subarea there are other rental options, such as single family homes. Table 14 provides additional information about the occupancy status and tenure of Subarea 5's housing units.

The number of housing units in 2007 is estimated to have increased by 2,600 total units or 52.9% over 2000. Between 2007 and 2012, the total number of housing units added to the Subarea 5 housing stock is forecast to increase by an additional 20.8% (1,500 units). This is a forecast total net change of 4,100 housing units between 2000 and 2012, an increase of 84.7%.

As Table 15 shows, the number of total occupied units increased markedly between 2000 and 2007, and between 2000 and 2012. However, the percentage of occupied housing units between 2000 and 2007 is estimated to have decreased by 4.8% to 83.5%. The change in the subarea's vacancy rate between 2007 and 2012 is forecast

Figure 10 - Housing Unit Values

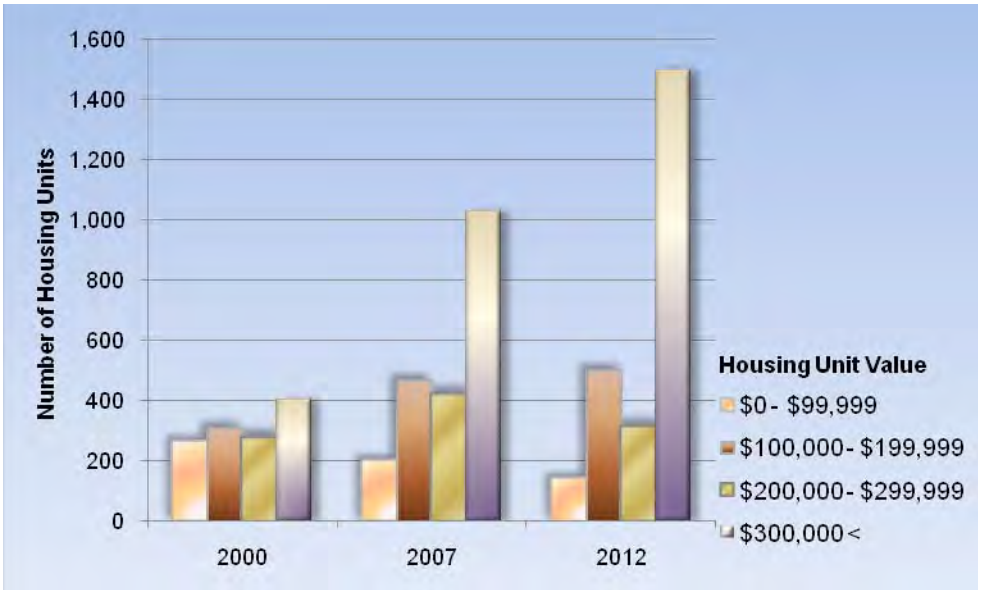


Table 16 - Change in Housing Unit Values 2000 - 2012

	2000		2007		2012	
HOUSING UNIT VALUES	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
$0 - $99,999	263	21.1%	199	9.5%	140	5.6%
$100,000 - $199,999	307	24.6%	467	22.2%	501	20.5%
$200,000 - $299,999	276	22.1%	420	19.9%	314	12.8%
$300,000 <	403	32.3%	1,027	48.6%	1,498	61.1%

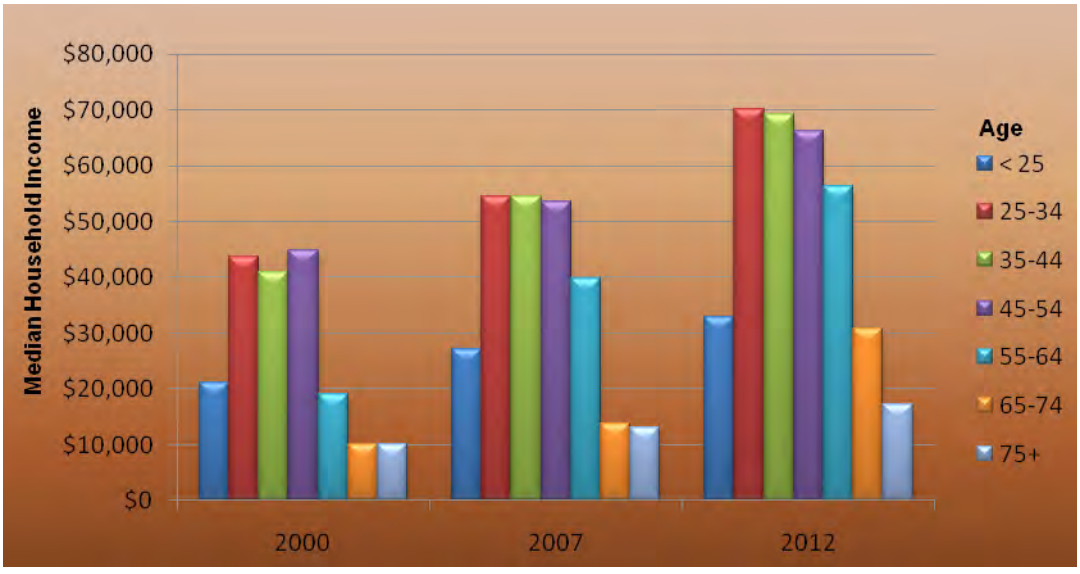
Single Family Residences, such as the above in Inman Park, are quickly becoming unaffordable to those living within the subarea

to increase by 0.5%, to 17.0%. This is a total substantive change in the subarea's vacancy rate of 6.3% from 2000.

Over time, the affordability of the housing stock is expected to decrease. Table 16 and Figure 10 shows that between 2000 and 2012, the number of housing units valued between $100,000 and $200,000 will increase by less than 200 units. In contrast, the number of housing units valued at $300,000 or greater will increase by more than 1,000 units between 2000 and 2012. Housing units valued at under $100,000 decrease while housing units valued between $300,000 and $400,000 increased slightly between 2000 and 2007 and then will decrease between 2007 and 2012.

Overall median household incomes within the subarea will increase over time. Figure 11 illustrates that persons between the age of 25 and 54 had the highest median household incomes in 2000. They will continue to have the highest median household incomes in 2007 and 2012. The largest change in median household income is seen in the 55-64 age cohort. This forecast change reflects the aging of the subarea's population where higher income households identified in younger cohorts for previous years are identified in the latter cohort in the analysis's out years. The most vulnerable of the cohorts in terms of median household income are the elderly, persons age 75 and older. The median household incomes for these persons increased less than $10,000 between 2000 and 2012 while all other age groups saw significant increases in the median household incomes. It could be surmised that at some point, given the increases in the subarea's housing unit values, that certain income groups may not be able to afford housing within the subarea.

Figure 11 - Median Household Income



Density and Transit

Demographics within Subarea 5 are one indicator of potential

demand for transit. General rules of thumb regarding minimum transit supportive population and employment densities are as follows:

- 18 persons per acre is the minimum population density to support bus transit
- 32 to 66 persons per acre are required for higher capacity systems like bus rapid transit or rail
- 25 employees per acre is the minimum employment density to support bus transit
- At least 50 jobs per acre are required for rail

Data Sources and Methodology

Population data at the census block level was obtained from the 2000 census. Employment data at the TAZ level was obtained from the ARC travel demand model. As census block and TAZ geometry was not coterminous with the subarea boundary, the block and TAZ layers were clipped to the subarea boundary. The area for each block split by the subarea boundary and falling within Subarea 5 was then recalculated. The recalculated area was divided by the original area to determine a step down ratio. This ratio was then applied to the population and employment figures to determine population and employment in the clipped blocks and TAZs, respectively. Figures 12-13 show the population and employment density in Subarea 5.

Key Findings

- Total Subarea population is approximately 8,300
- Total Subarea employment is approximately 7,300
- Currently, population and employment densities in the subarea as a whole are not transit supportive
  - Population density in Subarea 5 is 7.4 persons per acre, with the 19 blocks denser than 18 persons per acre and 2 blocks denser than 32 persons per acre
  - Employment density across the subarea is 6.6 jobs per acre, with the highest density TAZ having 20.4 jobs per acre
- However, the current prevailing trend in the subarea is away from single family homes and toward higher densities, such as the recently completed and under construction multi-family for sale product along North Highland Avenue adjacent to the railroad right-of-way and a potential BeltLine station

Half Mile Demographics

Demographics within one half mile of the BeltLine facilities are an indicator of potential demand for transit. One half mile is the generally accepted maximum walking distance.

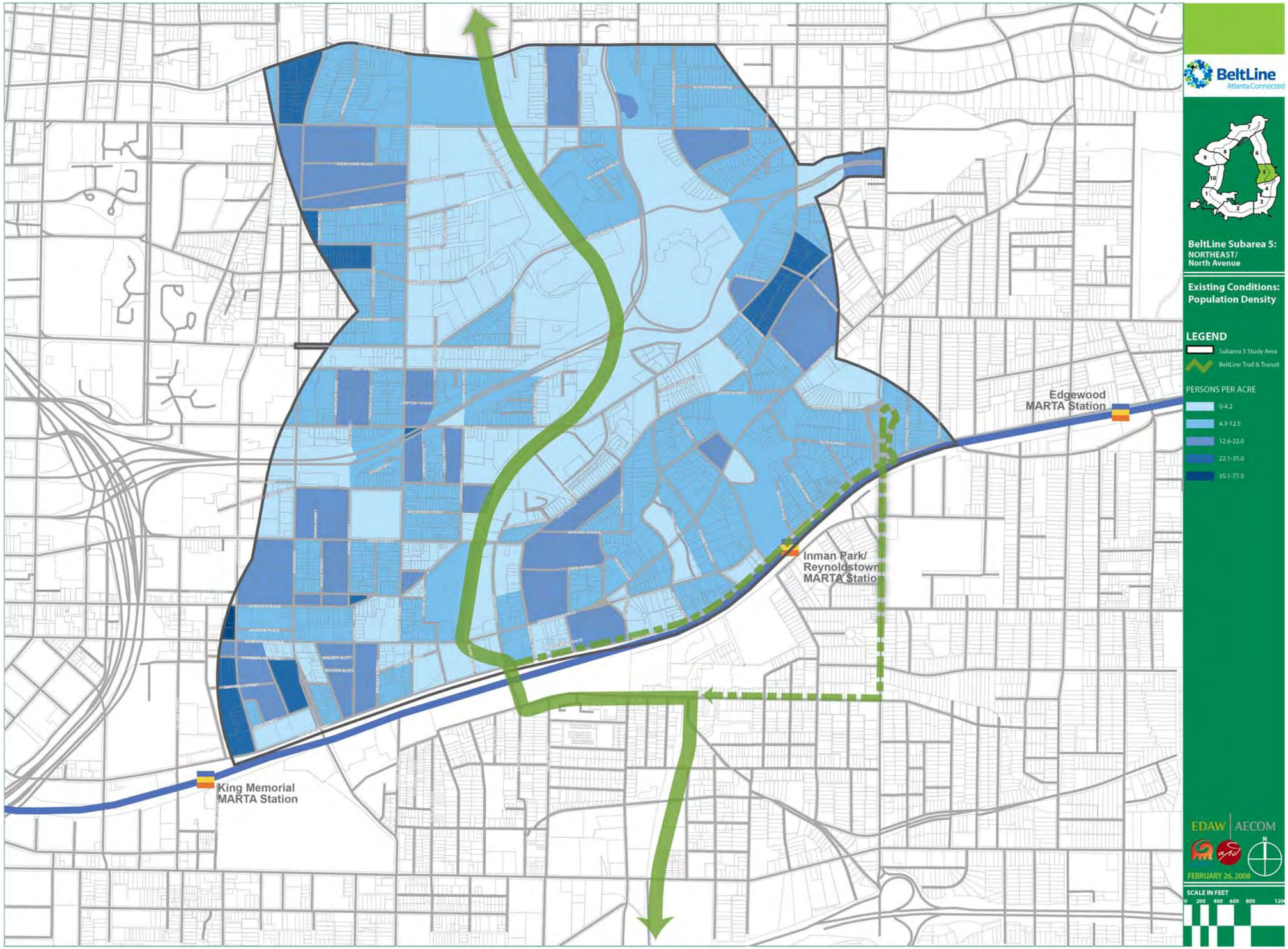


Figure 12 - Population Density in Subarea 5

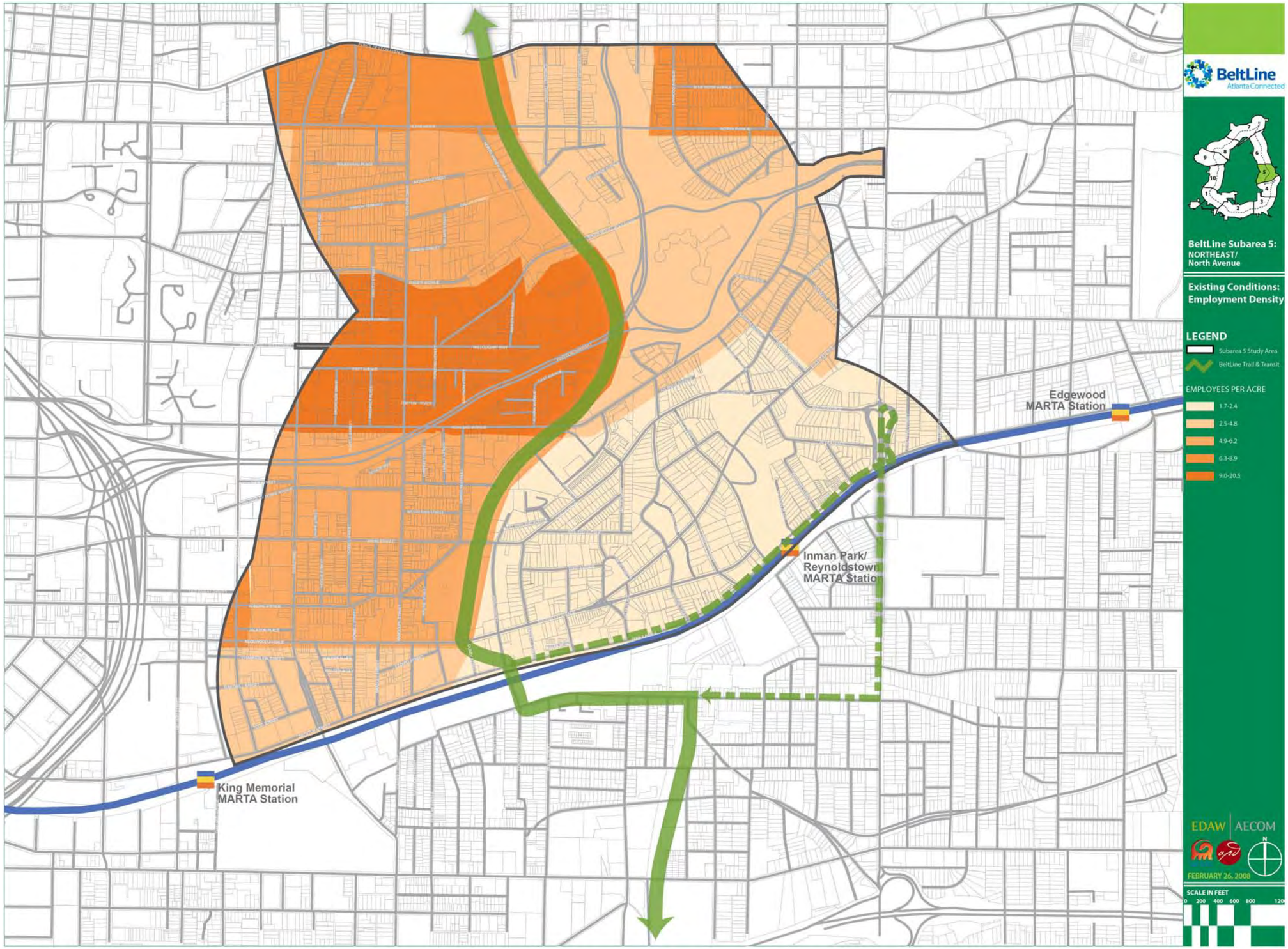


Figure 13 - Employment Density in Subarea 5

Data Sources and Methodology

Five proposed BeltLine stations indicated in the MARTA Inner Core Study are located within Subarea 5 and used for this analysis. The proposed stations are Ponce De Leon, Copenhill-McGill, Highland, Irwin, and Edgewood. There are also three existing MARTA stations in the subarea such as King Memorial, Inman Park/Reynoldstown and Edgewood Candler Park. In addition to obtaining information from a MARTA Transit System Planning Map dated January 2007, ARC ARIS GIS data was also used.

The proposed stations indicated in the Inner Core Study do not fully align with the BeltLine trail plan. Its differences exist within Subarea 5 mostly due to physical constraints at Hulsey Yard. The Inner Core Study shows an alignment to Edgewood Avenue similar to the BeltLine trail plan. However, the Inner Core alignment heads eastbound to the Inman Park MARTA station, continues southbound onto Moreland Avenue, and then westbound on Wylie Street to reconnect to the BeltLine trail corridor. The BeltLine trail plan calls for a continuous trail through Hulsey Yard through areas where transit operations are infeasible. The gap between the BeltLine trail and the Inner Core Study alignment presents issues in the discontinuity of the BeltLine trail and transit service.

The same data sources previously mentioned in the Study Area Demographics section were used for this analysis.

To determine the portion of the subarea within ½-mile of BeltLine facilities, the ArcGIS and the Network Analyst extension were used to measure the actual ½-mile service area along the street network, as opposed to drawing a ½-mile radius circle around the facilities. This methodology was used to provide a more accurate assessment of demographics within a half mile of the facilities by accounting for network connectivity issues. A process similar to the one used in Study Area Demographics was used to determine the population and employment within the ½-mile service area, where the service area split blocks and TAZs.

Key Findings

- While roughly half the land area in Subarea 5 as a whole is within ½-mile of BeltLine facilities, slightly more than half of the subarea population is concentrated within ½-mile of BeltLine facilities.
  - 49% of the total area in Subarea 5 is within ½-mile of BeltLine facilities
  - Total population within ½-mile of BeltLine facilities is 4,333 persons, or 53% of the total Subarea 5 population
  - The population density of 8.0 persons per acre within ½-mile of BeltLine facilities is slightly higher than 7.4 persons per acre in all of Subarea 5
- In contrast to population, employment in Subarea 5 is denser outside of the ½-mile service area of the BeltLine facilities
  - Total employment within ½-mile of BeltLine facilities is 2,741
  - 37% of Subarea 5 employment is within ½-mile of BeltLine
  - Employment density within ½-mile

Figure 14 - District Map for Analysis.

of BeltLine is of 5.1 jobs per acre as compared to 6.6 jobs per acre in Subarea 5

Origin Destination Trips

Origin destination (OD) of trips helps us understand the flow of trips heading to and coming from Subarea 5.

Data Sources and Methodology

We extracted socio-economic characteristic data for Subarea 5 from Atlanta Regional Commission's 20-county travel demand model. To better understand the flow of trips, the twenty county model area was broken into the following ten districts, displayed in Figure 14, and listed below:

1. Subarea 5
2. North BeltLine (North of I-20 & Subarea 5)
3. South BeltLine (south of I-20 and Subarea 5)
4. Inside Beltine (includes downtown and portion of Midtown inside the BeltLine)
5. Northwest City: Northwest of the BeltLine

Figure 15 - Desire Lines for Subarea 5 trips.

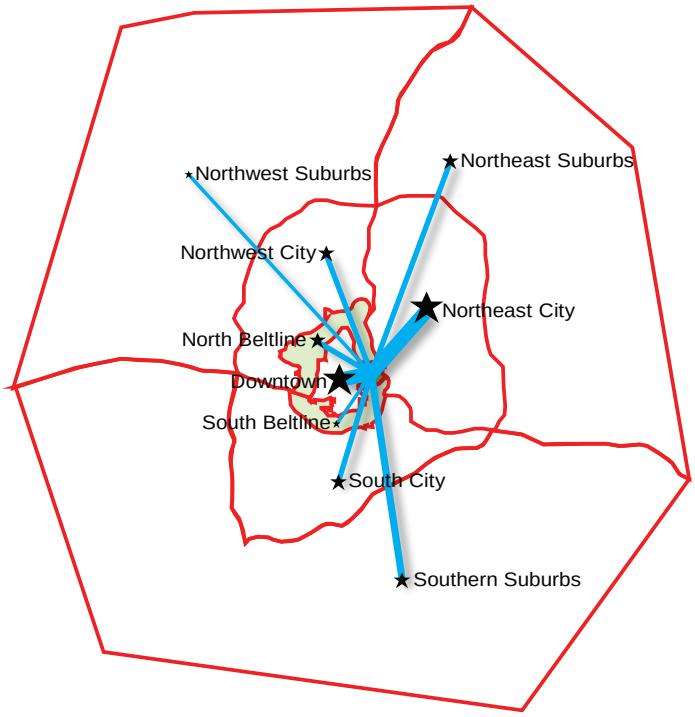


Table 17 - Origin and Destination Trips from Subarea 5 to other districts

	SUBAREA 5	NORTH BELTLINE	SOUTH BELTLINE	INSIDE BELTLINE	NORTHWEST CITY	NORTHEAST CITY	SOUTHERN CITY	NORTHWEST SUBURBS	NORTHEAST SUBURBS	SOUTHERN SUBURBS
Subarea 5	2,042	2,264	1,177	6,522	1,354	6,077	2,407	2,263	2,512	3,724
North BeltLine	2,343	30,193	4,283	26,923	23,140	30,728	10,342	20,367	19,586	18,161
South BeltLine	1,211	4,306	11,345	13,020	4,334	8,563	17,335	7,014	5,586	14,720
Inside BeltLine	4,871	27,151	12,568	84,441	22,238	38,963	28,000	44,360	39,710	62,177
Northwest City	1,330	23,890	4,248	22,483	118,145	49,761	15,712	114,566	43,477	32,733
Northeast City	5,505	29,385	8,852	39,488	49,705	376,596	33,817	74,206	242,370	71,377
Southern City	2,402	10,508	17,572	28,837	16,209	33,582	145,249	42,694	42,501	153,011
Northwest Suburbs	2,149	20,297	6,604	43,268	113,498	72,301	41,683	2,841,759	299,529	183,863
Northeast Suburbs	2,475	18,413	5,570	39,350	43,190	244,450	42,031	299,692	3,363,116	187,921
Southern Suburbs	3,596	17,627	14,634	61,286	32,011	72,480	151,171	176,621	190,793	2,472,335

but inside I-285 and bounded by I-20 and GA-400
6. Northeast City: Northeast of the BeltLine but inside I-285 and bounded by I-20 and GA-400
7. South City: South of BeltLine and I-20
8. Northwest Suburbs: Suburbs outside of I-285, north of I-20 and west of GA-400
9. Northeast Suburbs: Suburbs outside of I-285, north of I-20 and east of GA-400
10. Southern Suburbs: Suburbs outside of I-285 and south of I-20

The daily trip table was aggregated into these 10 districts to study the district to district flow of trips. Figure 15 shows daily traffic flows for the above mentioned districts. Table 17 illustrates the desire lines for Subarea 5 trips.

Key Findings

A majority (about 78%) of the trips originating from Subarea 5 stay within the perimeter. A detailed summary of trips originating in Subarea 5 is given below:

- 21% trips destined for the BeltLine subarea
  - 7% within Subarea 5
  - 7% North BeltLine district
  - 4% South BeltLine district
- 21% trips destined for the Inside BeltLine district
- 20% trips destined for the Northeast City district
- 12% trips destined for the Southern Suburbs district
- 4% trip destined for the Northwest City district
- 7 to 8% destined for each of the remaining districts

Similarly about 62% of the trips destined for Subarea 5 originate within the perimeter. A detailed summary of trips destined for Subarea 5 is given below

- 21% trips originated in the BeltLine subarea
  - 7% within Subarea 5
  - 8% North BeltLine district
  - 4% South BeltLine district
- 17% trips originated in the Inside BeltLine district
- 20% trips originated in the Northeast City district
- 13% trips originated in the Southern Suburbs district
- 4% trips originated in the Northwest City district
- 8 to 9% originated in each of the remaining districts

Block Size Analysis

Grid Network

This section provides an analysis of the city blocks contained in Subarea 5. Block sizes are important from a transportation perspective because they provide an indicator of the characteristics of the area street network to determine important measures such as mobility and connectivity.

Data Source and Methodologies

A combination of the existing street network GIS layer provided by the City of Atlanta and aerial photography were used to identify grid patterns within the subarea and in other parts of the City. Because a super-block is defined by the context of street patterns around it, the super-block analysis in Subarea 5 was defined as a block with a perimeter larger than one standard deviation from the mean block perimeter. The mean block perimeter in the Study Area is 2,118 feet and the standard deviation is 1,088 feet. Therefore, for the purposes of this analysis, any block with a perimeter greater than 3,206 feet is considered a super-block.

The Subarea 5 Study Area is largely characterized by curvilinear streets that create numerous large, oblong blocks. As such, compact rectangular grid street networks are rarely found in the subarea. Those that exist are located in the corridor along Glen Iris Drive and Boulevard, and between Edgewood Avenue and Dekalb Avenue. In these areas of the grid network, there are a variety of block sizes. The block sizes vary in these areas of the grid network. Some blocks are 325′ x 650′ (perimeter =1,950 feet). Others are 450′ x 550′ (perimeter = 2,000 feet) or 425′ x 375′ (perimeter = 1,600 feet).

Block sizes in Subarea 5 are, on average, larger than those found in Atlanta's 'gridded' areas such as Fairlie-Poplar and Midtown. For the purpose of comparing the block sizes in Subarea 5 with other parts of Atlanta, the block sizes in the Fairlie-Poplar and Midtown neighborhoods of Atlanta were measured. Fairlie-Poplar block sizes are generally 250′ x 250′ (perimeter =1,000 feet). The longest block in Fairlie-Poplar is 300 feet in length. Midtown block sizes are larger, generally 440′ x 480′ (perimeter =1,840 feet). Some oblong Midtown residential blocks are as long as 720 feet on one side.

Table 18 - Subarea 5 grids compared to grid networks in other neighborhoods

	FAIRLIE-POPLAR	MIDTOWN	BELTLINE SUBAREA 5
Minimum Perimeter	**669 ft.**	**1371 ft.**	**234 ft.**
Maximum Perimeter	**1,151 ft.**	**2,281 ft.**	**6,641 ft.**
Mean Perimeter	**994 ft.**	**1,731 ft.**	**2,066 ft.**

Table 18 summarizes the characteristics of the city blocks located in the Subarea 5 Study Area and the grid networks found in other neighborhoods in Atlanta. On average, the 202 blocks located in the subarea are larger than the blocks found in the Fairlie-Poplar and Midtown neighborhoods. There is also a wider range of block sizes in the subarea, as its minimum and maximum block perimeters are the smallest and largest found, respectively, in any of the neighborhoods.

In addition to comparing the blocks in Subarea 5 to the rectangular grid networks found in Fairlie-Poplar and Midtown, they were also compared to the blocks found in four nearby neighborhoods. Table 19 displays the grid comparisons. These include Virginia-Highland, Poncey-Highland,

Table19 - Subarea 5 grid blocks compared to nearby grid blocks

	SUB-AREA5	VIRGINIA-HIGHLAND	PONCEY-HIGHLAND	CABBAGETOWN	REYNOLDSTOWN
Dimensions	**vary**	**450′ x 950′**	**500′ x 540′**	**250′ x 925′**	**350′ x 350′**
Perimeter	**1,600 – 2,000 ft.**	**2,800 ft.**	**2,080 ft.**	**2,350 ft.**	**1,400 ft.**

Cabbagetown, and Reynoldstown. While the street networks in these neighborhoods are also not perfect grids, they each include small sections of grid network. The table below compares Subarea 5 to these nearby neighborhoods.

As can be seen in Figure 16, the pockets of grid network found in Subarea 5 are most similar to those found in Poncey-Highland and Reynoldstown. They are generally smaller than the blocks found in Cabbagetown and along St. Charles Avenue in Virginia-Highland.

Super-blocks

This section provides an assessment of the characteristics of the 'super-blocks' found in Subarea 5. Super-blocks are city blocks that are larger than the average city block of the surrounding neighborhood. For example, while city blocks are typically 400 feet on a side, superblocks may be twice that length or more. There is, however, no strict definition of a super-block. They are defined by the degree to which their size differs from the other city blocks in their area.

Super-blocks can have negative transportation, safety, and land use impacts on the surrounding neighborhood. These include:

- Longer trip times due to reduced connectivity (fewer route options)
- Poor accommodation of pedestrians and bicyclists due to reduced visibility and increased trip length
- Deteriorated safety due to reduced pedestrian activity and reduced visibility of the street and sidewalk
- Less diversity of land uses
- Poor aesthetics due to the disproportionately of super-blocks

Figure 17 shows the eighteen super-blocks in the Subarea 5 Study Area.

Over half of the super-blocks (10 of 18) in the Subarea 5 Study Area are adjacent to the abandoned rail right of way. Some contain solely industrial land use, while others are a mix of residential, commercial, and green space.

The most visible super-block adjacent to the BeltLine right of way is likely the block containing City Hall East, to the west of the railroad tracks between Ponce de Leon Avenue and North Avenue. City Hall East is not only the largest building in Subarea 5, it is the largest building in the state of Georgia, with 2 million square feet of space. A redevelopment of this site is planned to create a mixed-use residential, office, and commercial area. The redevelopment project will not improve vehicle connectivity with new streets, but will enhance pedestrian connectivity with a new walkway splitting the block north-south to connect Ponce de Leon Avenue and North Avenue.

Another significant portion of the super-blocks (5 of 18) are sections of Freedom Parkway. These sections are green spaces connected by trails and are occasionally crossed by the local street network. They are not adjacent to the BeltLine.

The remaining super-blocks include residential, residential/commercial, and industrial land uses. They are all bounded by curvilinear streets and, as a result, are oddly shaped.

Several of the identified super-blocks have road segments that enter them but do not pass all the way through. An example is Ensley Street off of Ralph McGill Boulevard. There are opportunities to extend existing roads to break up super-blocks

The Georgia Power property at the end of North Angier Street is considered a "superblock"

and enhance connectivity in the subarea.

Key Findings

- Subarea 5 is largely characterized by curvilinear streets that create numerous large, oblong block. Compact rectangular grid street networks are rarely found in the subarea.
- Block sizes in the subarea, on average, are larger than those found in Atlanta gridded areas, such as Fairlie-Poplar and Midtown
- There are 18 superblocks in the subarea, with the 16 either adjacent to the abandoned rail right-of-way or adjacent to Freedom Parkway

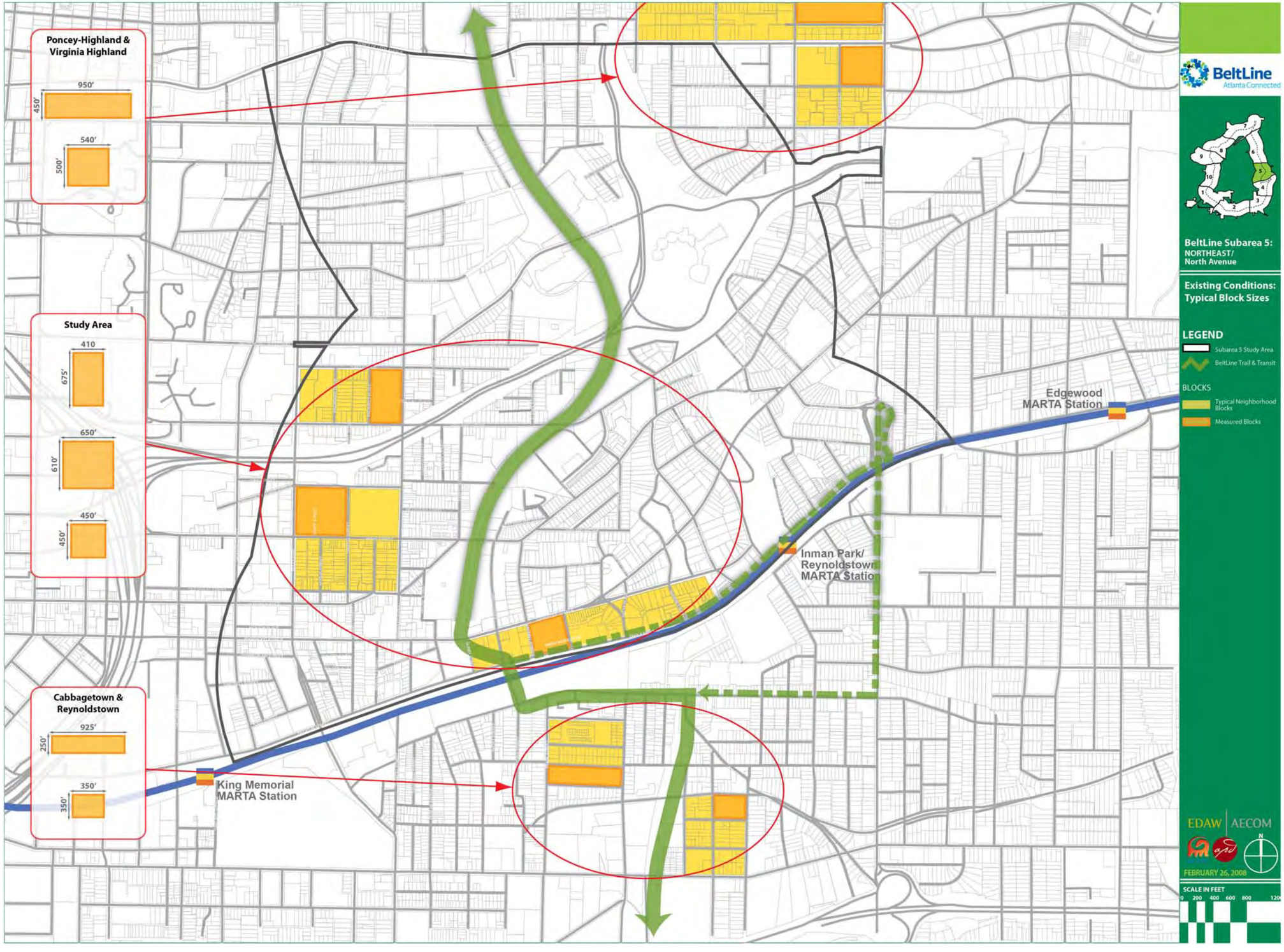


Figure 16 - Existing Conditions:Block Sizes

Figure 17 - Existing Conditions:Superblocks

Connectivity Analysis

Connectivity is a measure of how well a street network provides alternate routes between destinations in an area. A network with a high degree of connectivity offers many short links, numerous intersections, and few dead-end streets to maximize the route options available to users. A grid network composed of many small blocks, for example, offers good connectivity. On the other hand, a street network comprised of cul-de-sacs or other streets with infrequent intersections offers poor connectivity. As connectivity increases, travel time generally decreases because route options increase, allowing direct travel between destinations.

Data Source and Methodologies

Using GIS, the number of roadway links and intersections was calculated. The connectivity of the Subarea was measured using a connectivity ratio, which are calculated by dividing the number of roadway links by the number of roadway nodes within a subarea. Links are the road segments between intersection and nodes are the intersections. Connectivity ratios typically fall between 0 and 2. As the connectivity ratio increases, the number of route choices available to drivers, bicyclists, and pedestrians also increases.

BeltLine Subarea 5 has a connectivity ratio of 1.7. This high connectivity ratio indicates that travelers within the subarea have a high number of route choices available. This is not surprising due to the subarea's large number of small block sizes and numerous street intersections. See Figure 18 for a map of the subarea displaying the street network with intersections highlighted.

For comparison, a street network surrounding one four-sided block has a connectivity ratio of 1.0 (four street segments / four intersections = 1.0). A street grid composed of four blocks has a connectivity ratio of 1.33 (12 street segments / nine intersections = 1.33). Finally, a street network composed of nine blocks has a connectivity ratio of 1.5 (24 street segments / 16 intersections = 1.5). These examples demonstrate how a grid network with frequent street intersections results in a higher connectivity ratio due to its ability to provide a variety of route options to users.

View from the Poncey-Highland end of Dallas Street where it becomes disconnected from the Old Fourth Ward side.

Physical Constraints / Constraint to Mobility

Mobility is the degree to which users of a transportation network are able to move around easily. Increases in miles and/or speed traveled are indicators of improved mobility. Accessibility, on the other hand, is the degree to which key destinations such as employment centers can be reached by those using the transportation network. It is measured by the distance or time it takes to reach a destination. Enhancing mobility is one way of improving accessibility. This section assesses the existing transportation network for locations where mobility and accessibility are constrained due to existing features.

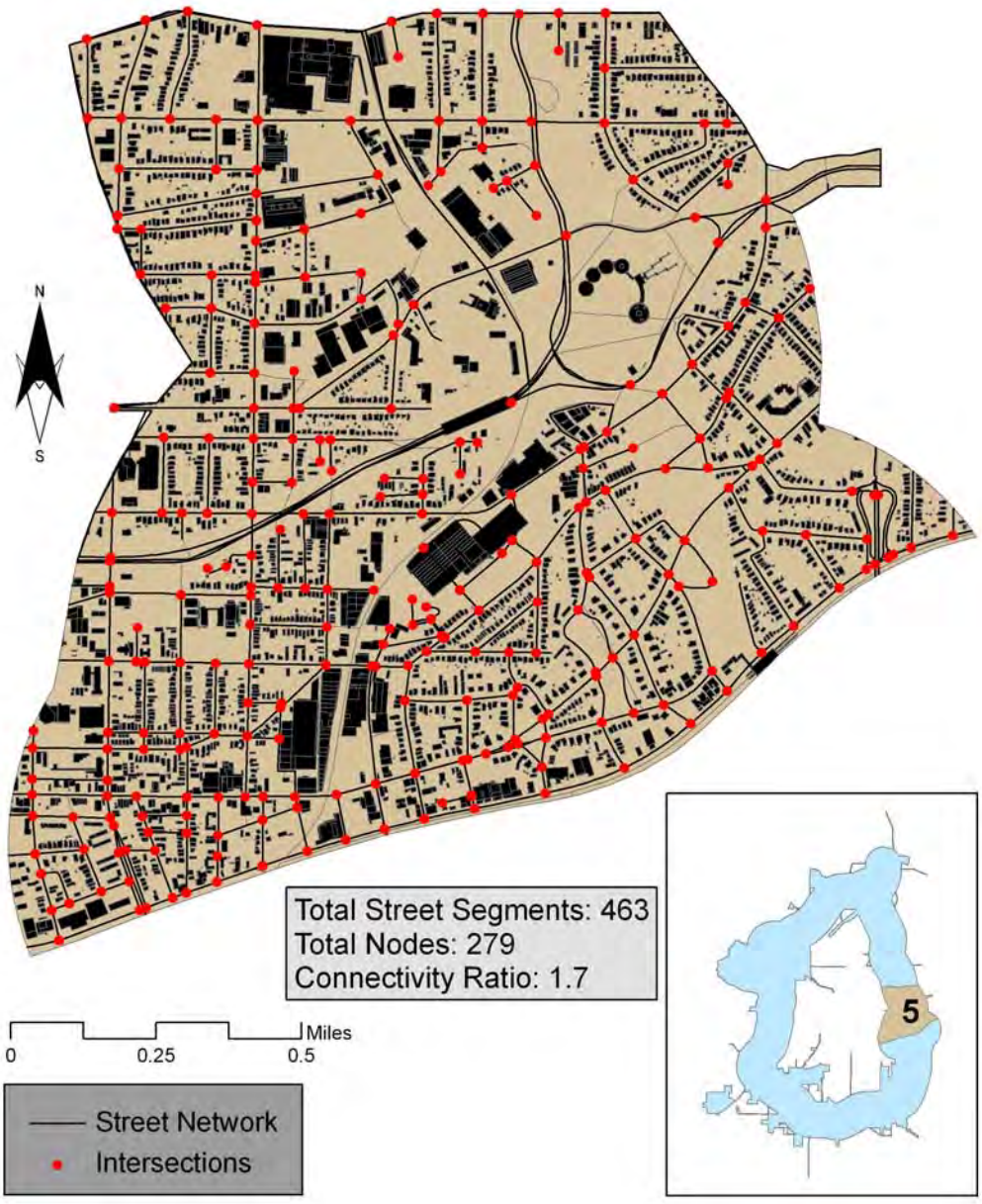
The major constraints to mobility and accessibility within Subarea 5 are Freedom Parkway and two sets of rail lines: the abandoned BeltLine rail and active freight rail. The BeltLine rail disrupts connectivity by physically separating the neighborhoods on either side of it. In the approximately 1.4 mile-long subarea, there are only eight streets that connect the areas on either

side of the tracks. These streets are: Ponce de Leon Avenue, North Avenue, Ralph McGill Boulevard, Freedom Parkway, Highland Avenue, Lake Avenue (Irwin Street), Edgewood Avenue, and Dekalb Avenue. To the north, the BeltLine is above-grade over Ponce de Leon Avenue, North Avenue, and Ralph McGill Boulevard. To the south, the BeltLine is below-grade under Freedom Parkway, Highland Avenue, and Edgewood Avenue. There are two at-grade crossings: Lake Avenue (Irwin Street) and Dekalb Avenue.

Additionally, there is a disconnect in the BeltLine itself which creates a physical constraint to the implementation of a continuous transit, path, and trail loop. At the southern border of Subarea 5, the BeltLine rail hooks west and joins the freight tracks at Dekalb Avenue. However, the abandoned BeltLine rail in the subarea to the south approaches the freight yard approximately one-half mile to the east. This is a major challenge to the continuous loop-shaped connectivity of both the proposed transit route and the multi-use trail. (See Figure 20)

Krog Street Tunnel's limited access make it into a barrier between Study Area's 4 and 5

Figure 18 - Connectivity Analysis



While the freight tracks just to the south of Subarea 5 are located in a separate Subarea, they impose a constraint on mobility and accessibility in Subarea 5 by limiting north-south connections between the two Sub-Areas. Currently there are only three street connections under the freight tracks between Subarea 5 and the neighborhood to the south, at Boulevard, Krog Street, and Moreland Avenue. All other streets in Subarea 5 end at Dekalb Avenue, where travelers of all modes are

forced to head east or west.

The MARTA heavy transit rail is also located in the freight right of way. However, the tracks are elevated, thereby imposing no constraint on mobility and accessibility, save for the location of the tracks' support pillars.

Freedom Parkway causes similar disruption to mobility and accessibility in the subarea. Freedom Parkway is a four-lane divided Urban Principal Arterial that connects I-75/I-85 to the west with Ponce de Leon Avenue NE to the northeast. Access to the 1.75-mile-long Freedom Parkway is limited, as it only provides connections to Boulevard, Highland Avenue, Moreland Avenue, Ralph McGill Boulevard, and North Avenue. Constructed years after the surrounding street network, Freedom Parkway cuts off a number of through streets and creates dead ends. Similarly, it provides an obstacle to project implementation today, especially the creation of new inter-neighborhood street connections.

Freedom Parkway alternates between being at-grade, below-grade, and above-grade. It is situated at-grade from Ponce de Leon Avenue to roughly Ralph McGill Boulevard. It is above-grade from that point over the BeltLine right-of-way, then dives below-grade under several streets until returning to grade near Boulevard. Because of this, it likely constrains improvements to the transportation network surrounding the BeltLine but likely does not constrain the implementation of project activities directly along and adjacent to the rail line.

Despite Subarea 5's relatively high connectivity ratio, it is hampered by the physical barriers created by Freedom Parkway and, to a lesser extent, the abandoned BeltLine rail line. These two transportation corridors create disconnects by slicing through the street network. Additionally, Freedom Parkway generally does not intersect with the surrounding street network, thereby reducing connectivity. The MARTA line along Dekalb Avenue, which forms the southern border of the subarea, also hinders roads from crossing between Sub-Areas 4 and 5.

There are several opportunities to enhance connectivity for vehicles within Subarea 5 by intersecting or bypassing existing physical barriers. Most opportunities are locations where the existing road network could be extended across the BeltLine right-of-way with underpasses, overpasses, or at-grade crossings. Dallas Street, for example, could be extended across the BeltLine right-of-way and connect with the street network to the east. Additional opportunities for increasing connectivity are available where the street network could be extended across Freedom Parkway. For example, Sampson Street could be extended to provide an additional north-south connection between Highland Avenue and East Avenue.

Natural Features Constraints

I. Water

There are no floodplains or wetlands registered in the National Wetlands Inventory (NWI) in the subarea. However, the NWI data should be used for planning purposes only and a more detailed analysis of area wetlands and floodplains can only be identified through field surveys. There are no active above-ground streams or rivers. There are three artificial lakes: one at the Carter Center, Crystal Lake in Springvale Park and one at the Martin Luther King, Jr. National Historic Site. These are all relatively small and entirely contained onsite.

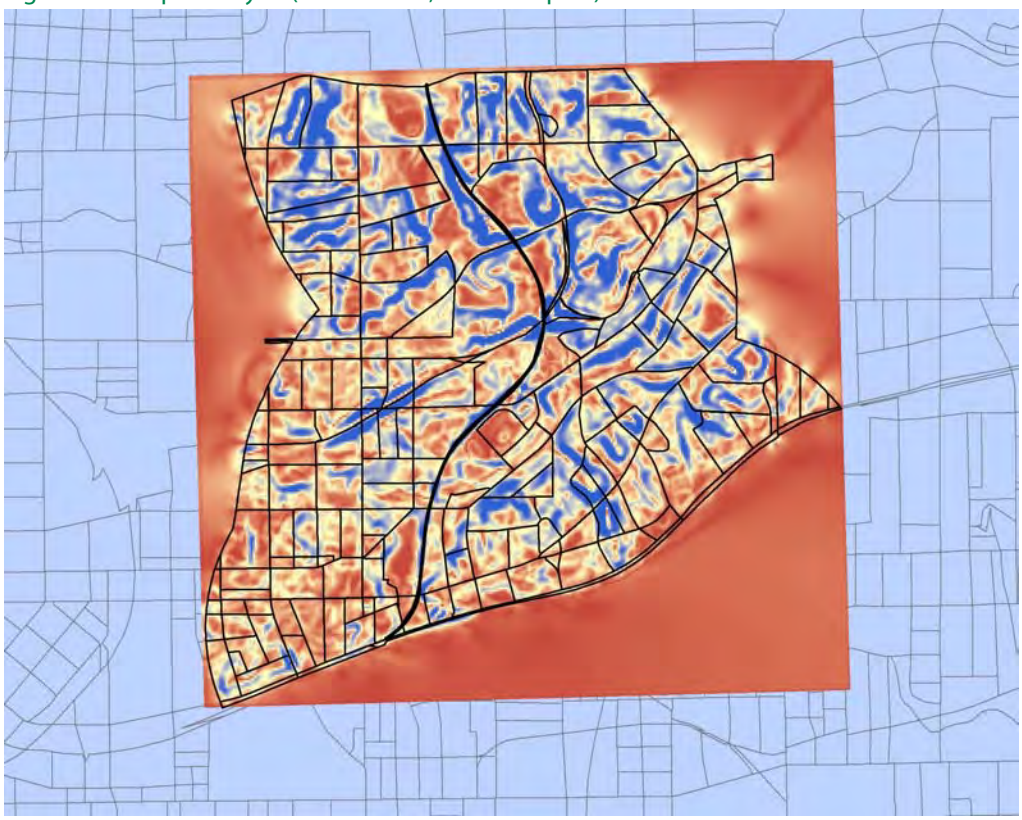
II. Slope

The City Hall East site represents the lowest point in the subarea, at 885 meters above sea level. The highest elevations in the subarea are 985 meters above sea level. The natural slopes connecting these high and low points are generally gradual. The steepest slope in the subarea is west of City Hall East, where North Avenue slopes downhill from Boulevard Avenue to the basin in which City Hall East is located. This average slope is approximately 8.8%, which poses no inherent constraint to project implementation. The BeltLine rail does not gain or lose significant elevation along its route through the subarea.

Figure 19 shows more localized slope information. Throughout the subarea, there are no widespread areas that impose constraints on the development of transportation alternatives.

There are few natural barriers to connectivity in the subarea. Subarea 5 benefits from gradually changing topography and an absence of water bodies or steep grades that impede or prohibit the construction of transportation facilities. One of the few exceptions includes the area of the BeltLine right-of-way that divides Old Fourth Ward and Poncey-Highland just south of North Avenue.

Figure 19 - Slope Analysis (Red: flattest; Blue: steepest)



Because the street network in Subarea 5 is already established, creative connections may be added to improve bicycle and pedestrian connectivity. These links provide connectivity for pedestrians and bicyclists where automobile connectivity has been eliminated. In Subarea 5, this has been done with paths connecting dead-end streets to the multi-use PATH trail, such as at Kendall Street off Alaska Avenue. Pedestrian and bicycle connectivity to the PATH trail is also offered from streets that are not dead-ends, such as Highland Avenue and John Wesley Dobbs Avenue. There are additional opportunities to connect bicyclists and pedestrians to the proposed BeltLine multi-use path from the existing street network.

Water collects on Dallas Street at one of the lowest points in the Study Area.

Key Findings

- Subarea 5 has a high connectivity ratio that allows for several connection choices for the traveler
- Physical constraints are due to the barriers created by the Freedom Parkway and the BeltLine rail alignment
- There are opportunities to enhance vehicular connectivity by intersecting or bypassing the physical barriers

Figure 20 - Existing Constraints to Development

Urban Design and Environment

Urban Design reflects the way in which the placement and massing of buildings work together to a form a space greater than the individual buildings while taking into account the public experience. The subarea consists of four prominent urban patterns. The interior of the subarea contains mostly small block, narrow streets, single family homes and large tree canopies. The periphery of the subarea to the north and east is made up of commercial uses varying from street-oriented buildings and low-density, to automobile-oriented big box uses. The third is the open space fabric dominated by Freedom Parkway located in the heart of the subarea. Finally, there is the area directly adjacent to the BeltLine corridor which is made up large superblocks of industrial or underused land.

Data Source and Methodologies

The City of Atlanta provided a GIS shapefile of

There are large portions of the subarea that remain vacant and could be better incorporated into the urban fabric

potential Brownfields and parks. The tree canopy information was gathered by utilizing current aerial photography and a GIS function. The park data and tree canopy were verified on a site visit. Other elements of urban design such as building setbacks and massing were gathered by using some zoning data, but mostly collected on various site visits.

The majority of public spaces within the subarea consist of streets and sidewalks. Sidewalks are inconsistent and discontinuous throughout the subarea with varying condition, planting, clear, and supplemental zones.

Building setbacks and their relationship to adjacent buildings is another element of urban design. For newer residential developments, setbacks are consistent within the developments, but do not necessarily relate to surrounding buildings. Little Five Points, portions of Ponce de Leon Avenue, Boulevard, Edgewood Avenue and Auburn Avenue overall have good spatial form, with buildings facing the street and similar building massing. In addition, some of the retail buildings along these corridors have integrated areas for outdoor dining and community gathering.

Some of the urban design challenges facing

View towards one of the few stands of mature trees within Old Fourth Ward

Subarea 5 specifically along the major corridors include:

- Auto-oriented corridors and lack of sufficient pedestrian buffering from fast-moving cars
- Lack of enclosure in commercial areas
- Discontinuous sidewalks in need of repair
- Overhead utilities contributing to visual blight

The environmental features are an important balance to developed areas by providing habitats for native and migratory animals, buffer incompatible land uses, provide recreational opportunities and prevent flooding by capturing stormwater and other runoff.

Tree Canopies

Representative of most of Atlanta, the tree cover in the subarea is contained mostly to the residential neighborhoods. The arterials and commercial nodes are poorly planted with limited tree canopies to buffer the large amounts of impervious parking. Ponce de Leon Avenue is a prime example of a treeless arterial, while portions of Boulevard, North Avenue and Moreland Avenue have tree canopies in the residential segments.

Brownfields

As noted on Figure 21, potential contaminated brownfields are mostly limited to sites along the BeltLine. These sites include former gas stations, coal and steel yards, suspected leaking underground storage tanks, scrap metal yards, and auto repair facilities. Many of these sites are inactive, or are active with reason to suspect contamination or have been redeveloped and/or converted to other uses.

Historic and Cultural Resources

Historic Resources

There are a number of historic resources present in the subarea contained within four historic districts. Those historic districts are as follows:

- Inman Park Historic District
- North Avenue/Ralph McGill Boulevard
- Old Fourth Ward
- Poncey Highland

With the exception of the Inman Park Historic District which is on the National Register of Historic Places, the other three districts are listed as significant resources by the Atlanta Urban Design Commission.

Additionally, there are a number of other significant historic resources located within the subarea. According to the Atlanta Urban Design Commission, they are as follows:

- Cleremont Motor Hotel
- Empire Manufacturing Company
- Ford Factory
- Griffith School of Music (Payne-Griffith House)
- Highland School (J.S. Candler School)
- Kriegshaber, Victor H. House (The Wrecking Bar)
- NuGrape
- Sears-Roebuck (City Hall East)
- Southern Dairies
- Telephone Factory
- Troy Peerless Laundry

Existing cultural resource on Boulevard, Tabernacle Baptist Church

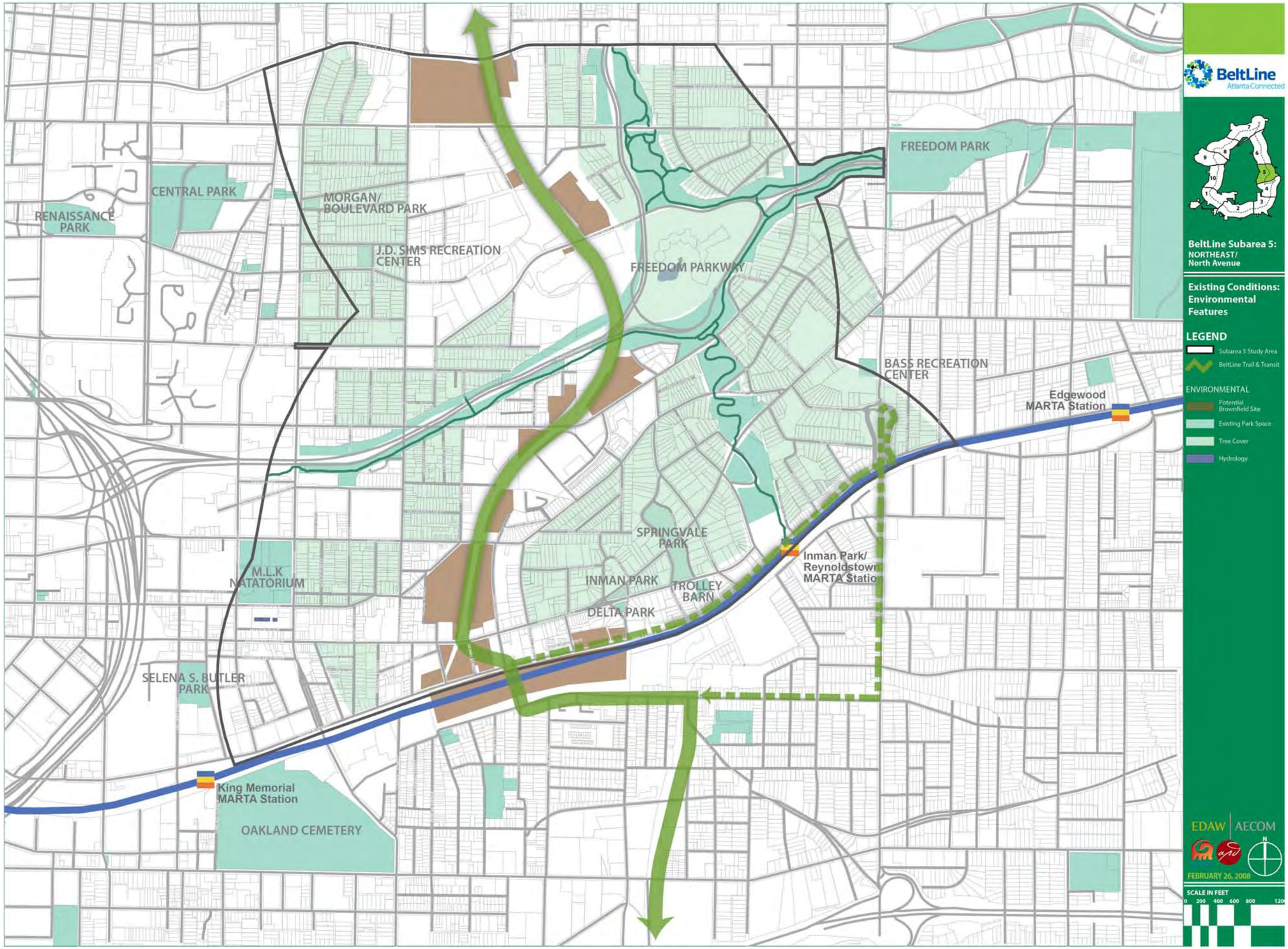


Figure 21 - Existing Environmental Features

The most prominent historic resource in the subarea listed on the National Register of Historic Places is the Martin Luther King, Jr. National Historic Site located in the southwest corner of the subarea. Its campus consists of a park, a museum, the King Center for Nonviolent Change, and other components. Adjacent to the site is also Old Fire Station Number 6 which serves as a museum and bookstore. (See Figure 22)

Community Resources

There are several cultural sites in the subarea.

I. Churches - There are at least twelve churches in the subarea. They are as follows:
   - Druid Hills Church of Christ
   - Fort Street Memorial United Methodist Church
   - Sylvester Baptist Church
   - Tabernacle Baptist Church
   - East Atlanta Primitive Baptist Church
   - Mount Zion Second Baptist Church
   - New Birth Fellowship Church
   - Inman Park United Methodist Church
   - Lizzie Chapel Baptist Church
   - Ebenezer Baptist Church
   - Our Lady of Lourdes Catholic Church
   - Garden of Prayer Church

II. Schools - There is only one active school in the subarea, John Hope Elementary School located on Boulevard Avenue at Irwin Street.

III. Community Services - There are several community service facilities in the subarea. They include:
   - Southern Christian Home for Children
   - Martin Luther King Junior Community Center
   - Martin Luther King Junior Branch Atlanta-Fulton Public Library
   - Martin Luther King Junior Center for Nonviolent Social Change
   - MLK Natatorium

IV. Hospitals - There is one medical facility in the subarea, the Inner City Community Health Center. The Atlanta Medical Center on Boulevard is just outside the subarea boundaries.

V. Parks - There are seven parks in the subarea. Six of them are small neighborhood pocket parks. These include:
   - Springvale Park
   - Morgan-Boulevard Park
   - Old Fourth Ward Park
   - Inman Park
   - Delta Park
   - Bass Recreation Center

In addition to the pocket parks, Freedom Parkway occupies a substantial portion of the subarea. In this area, its hub is the Carter Center, with stretches of park east-west along Freedom Parkway and a swathe running north-south between Ponce de Leon Avenue to the north and the Inman

A small children's playground on Boulevard in Old Fourth Ward

The WSB news station and associated tower

Park-Reynoldstown MARTA Station to the south. Freedom Parkway also contains a multi-use trail.

VI. Municipal - There are limited municipal facilities in the subarea. City Hall East currently contains some city hall functions and a police precinct, though the building has been sold and is slated for mixed-use redevelopment in the near future. There are two fire stations in the subarea. Fire Station Number 12 is located on Dekalb Avenue between Elmire Place and Candler Street.

VII. Media - The WSB news station and tower is located just north of Freedom Parkway approximately one-quarter mile west of the BeltLine right of way.

Data Sources and Methodology

The City of Atlanta has an active Urban Design Commission (UDC), which provided all BeltLine planning teams with a GIS source file of both existing identified historic structures and potential historic sites. In order to generate a list of significant historic resources for each subarea, the UDC conducted a detailed field survey to collect an inventory of historic sites and structures in the City of Atlanta along and adjacent to the TAD boundary. An analysis and evaluation of the inventory was then conducted in addition to a review of structures and districts of significance. Some of the next steps towards developing a more finalized list will be the formation of a panel of architecture, historic, and cultural experts that will review and finalize the inventory list for federal listing.

Another layer provided by the UDC included cultural resources and other points of interest. In addition, the Urban Design Commission provided a shapefile of existing City and National historic districts. This data was reviewed for accuracy during a windshield survey performed by the planning team.

Key Finding

- Public spaces in the subarea consist of streets and sidewalks. However, the quality of the siedwalks vary throughout
- Urban design challenges facing Subarea 5 include lack of sufficient pedestrian buffering and discontinuous sidewalks in need of repair
- The MLK Jr. Center for Nonviolence and Social Change is a community resources of national signifcance in the subarea.

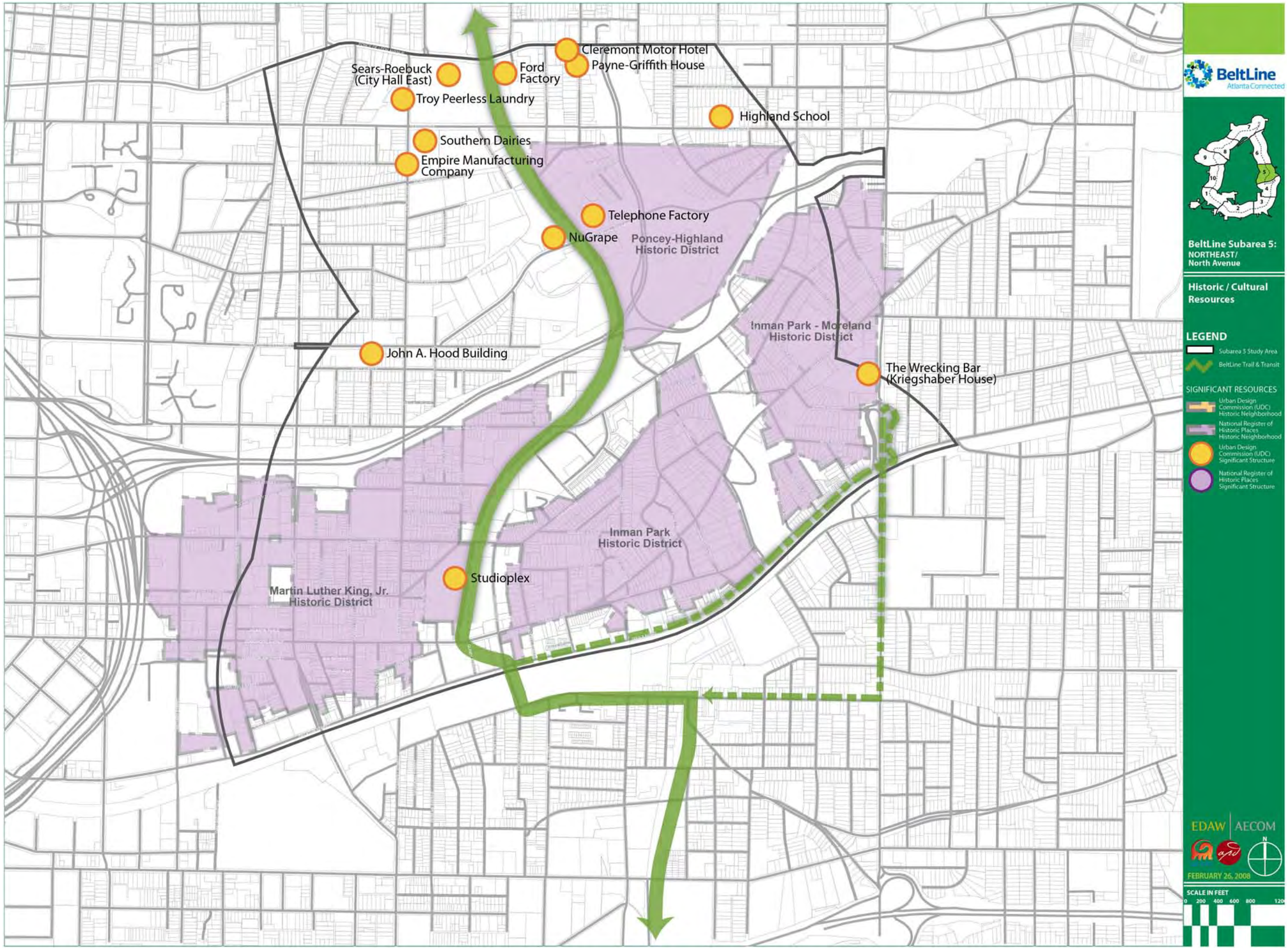


Figure 22 - Existing Historic and Cultural Resources

Previous Plans and Studies

The City of Atlanta currently has several planning initiatives impacting Subarea 5. The subarea has undergone its share of studies and plans ranging from Corridor Studies, Livable Center Initiatives, and the BeltLine Redevelopment Plan. Due to recent development interests, circulation challenges, and economic generators east of Downtown Atlanta, there has been an overlap in boundaries as the plans and studies were developed. Fortunately, the plans were successful in integrating recommendations from previous plans and recognized the community vision previously established. The previous plans and studies containing specific geographic boundaries (not including City-wide plans) that impact Subarea 5 are illustrated in Figure 23. The following are existing studies and plans affecting Subarea 5.

Data Source and Methodology

Previous plans and studies were obtained from the project sponsors who conducted planning studies from 1999 to 2007. These plans are grouped into three categories:

1. City-wide
2. BeltLine Related
3. Local

City-Wide Plans

City of Atlanta Greenspace Plan (under development)

The purpose of Project Greenspace is to produce a world-class greenspace system in Atlanta that connects people to parks, recreational facilities, natural areas, outdoor gathering places, streetscapes, and greenways. Greenspace is a system of parks, natural areas, open spaces, outdoor gathering places, and streetscape and greenway connections that perform vital environmental, economic, and social functions essential to Atlanta's quality of life and community health. Project Greenspace builds on prior park and greenspace initiatives in the City of Atlanta, including the 1993 Parks, Open Space and Greenways Plan, the 2005 Atlanta Park System Agenda, the BeltLine Initiative, and others. There are four major categories that make up the framework of the Greenspace Plan: Parks and Recreation, Natural Resources, Community, and Economic Development. There are two recurring themes of the cities greenspace plan: growing and maintaining the greenspace system.

City of Atlanta BeltLine Brownfield Survey (January 2005)

In January 2005, MACTEC completed a preliminary environmental evaluation of the BeltLine corridor. The purpose was to evaluate potential environmental issues and sites. The study identified 146 properties having potential environmental impact. The Brownfield Initiative is the assessment of real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Of the 146, there are nine potential Brownfield sites in Subarea 5. One of the major sites is located in the Old Fourth Ward where there is major redevelopment opportunity for parks, new housing, commercial space and new greenways. There are a number of sites that have been identified within the Brownfield Survey, but the majority of them are in the planning and consulting stages. There has also been a development of a Property Nomination Form to be used by the general public to nominate potential sites for the program.

Mayor's Economic Development Plan (July 2005)

The New Century Economic Development Plan for the City of Atlanta was adopted in 2004 and updated on July 14, 2005 after the completion of a mid-year review. The major changes with respect to Subarea 5 involve the BeltLine expansion with new projects. There has also been a concern for parks and greenspace. Moving forward with the BeltLine Plans, developing and maintaining the city's parks and greenspace is a major initiative within the economic development plan. Creating standards for greenspace and identifying potential sources of funding to grow dedicated greenspace

and parks are just two of the recommendations within the Mayor's Economic Development Plan. Creating an inventory and tracking private greenspace through public and private initiatives are major concerns as well.

Atlanta Strategic Action Plan (formerly known as the Comprehensive Development Plan) (2005, 2007)

The Strategic Plan is a comprehensive development plan of the City of Atlanta prepared and maintained to be used as a guide for the growth and development of the City and which it will identify its present and planned physical, social and economic development. This plan shall set forth the comprehensive development goals, policies and objectives for both the entire City and for individual geographic areas and communities within the City. In addition, the plan addresses the development goals, objectives and policies; identify the general location, character, and extent of streets and thoroughfares, parks, recreation facilities; sites for public buildings and structures; City and privately-owned utilities; transportation systems and facilities; housing; community facilities; and future land use for all components. A comprehensive plan was compiled in 2005, and updated in 2007. The comprehensive plan brings together and addresses all aspects of community and economic functions with the objective of sustaining and improving these functions in the future. The comprehensive plan addresses, but is not limited to the following issues of current concern for Atlanta such as rapid population growth and suburban sprawl, environmental protection, affordable housing, lack of open space, transportation and quality of life.

Park Program Initiatives

The PATH Foundation

The PATH Foundation has indicated that they have no plans to actively develop any trails in the Subarea 5 subarea outside of those that are identified in the BeltLine Redevelopment Plan. The organization has stated that they will be an active partner in trail facility planning for the BeltLine, even though they may not actively fund or construct any of the trails.

Park Pride

A review of the Park Pride website and the organization's FY 2007 work plan indicates that while the organization has conducted several park planning sessions in the past, and is either currently conducting or planning to conduct additional park planning sessions specifically related to BeltLine corridor parks, they have not stated plans to perform any planning exercises within the Subarea 5 subarea. It is likely that Park Pride will become involved in future planning efforts for the parks within the Subarea 5 subarea that have been identified within the BeltLine Redevelopment Plan, the Emerald Necklace Plan, and the many corridor and LCI plans.

Master Plans

Imagine Downtown (November 2005)

The eastern limits of the Imagine Downtown Plan are within the boundary of the subarea. The plan is a compilation of several other plan documents that, as a whole, address Downtown Atlanta. These plan documents include: Butler/Auburn Redevelopment Plan, City Center Livable Centers Initiative, and the JSA-McGill Livable Centers Initiative.

Imagine Downtown presents a development framework, a transportation network plan, a plan for public spaces, neighborhood and district plans, and an implementation plan. Developed through a very public and collaborative process between Atlanta's Downtown business community, residents, and employees, the Imagine Downtown plan lays out a compelling vision of how people will work, play, and travel in the future. It also ties together several different, but related concepts revolving around culture and entertainment.

The Imagine Downtown plan did not specifically identify shortcomings and/or deficiencies. However, it identified several concepts and projects which can be found in subsequent planning work associated with the BeltLine project.

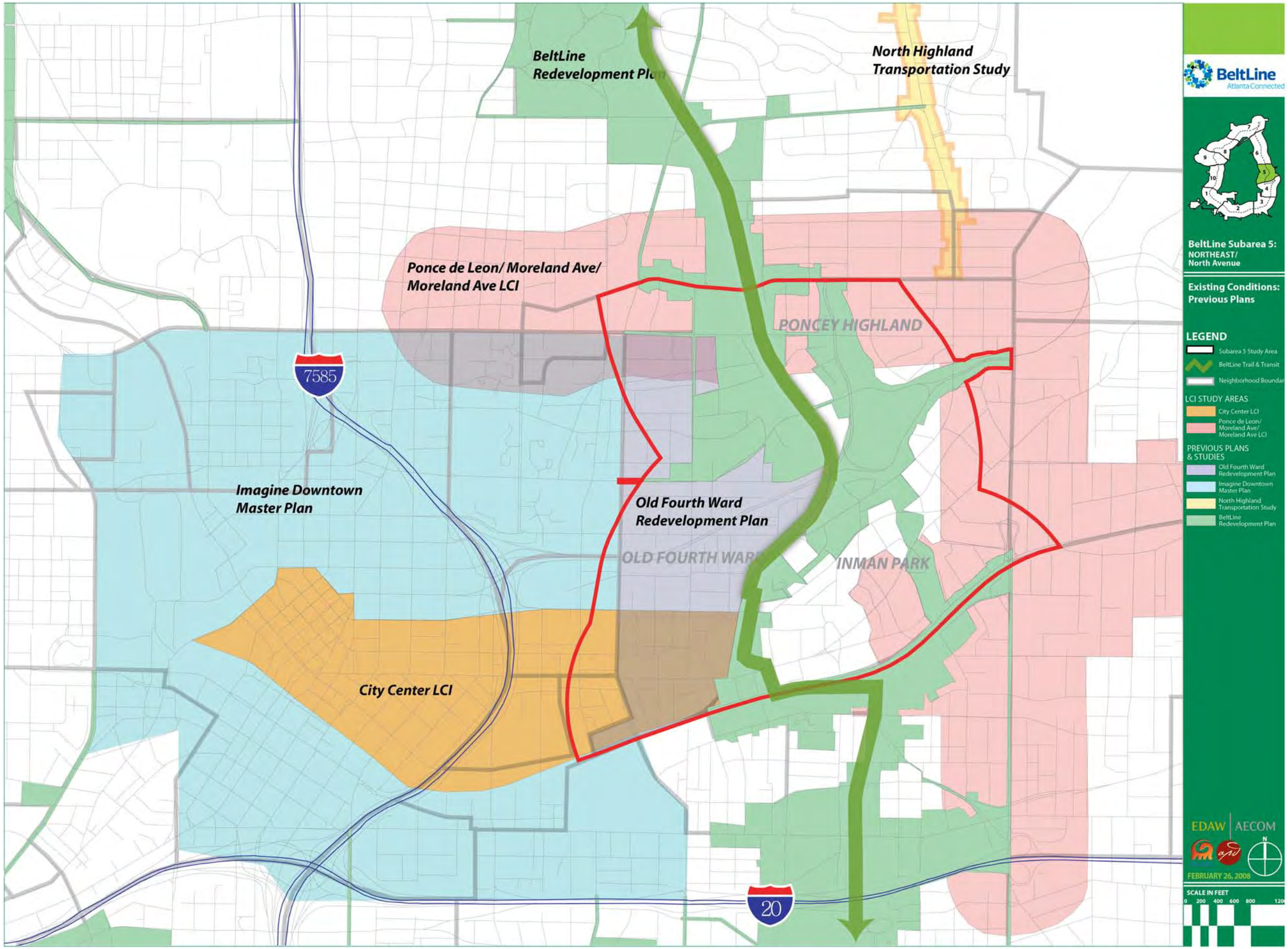


Figure 23 - Previous Plans and Studies

Transportation Studies

North Highland Avenue Transportation and Parking Study (December 1999)

The North Highland Avenue Transportation and Parking Study is an effort to address the issues associated with growth as they affect the North Highland Avenue corridor of the Virginia-Highland community. The study looked at how sprawl within the larger metropolitan area affected the area being studied, and focused on recommendations addressing those issues by taking into consideration the quality of life for the corridor's residents.

The North Highland Transportation and Parking Study is one of numerous corridors studied by the City of Atlanta, and focuses on transportation, parking and pedestrian issues along North Highland Avenue. The study also presents recommendations to preserve the "character" of adjacent neighborhoods, manage new growth and encroachment, and to conserve critical resources.

Redevelopment Plans

BeltLine TAD Redevelopment Plan and FY 2006-2010 Work Program (November 2006)

A direct result of the BeltLine Tax Allocation District (TAD) Feasibility Study, the BeltLine Redevelopment plan performed a detailed evaluation of land use, transportation, greenspace/public space, public infrastructure, urban design, historic preservation, and cultural resources. In addition to these elements, the redevelopment plan sometimes considered issues such as environmental contamination of land, affordable housing, social services, and retail/commercial opportunities.

The redevelopment plan established a framework to guide the implementation of the BeltLine project, and established a multi-year work program to guide funding priorities for the TAD. TAD bond funds will be used to cover the capital costs associated with the development of public infrastructure as well as subsidizing other public policy objectives such as:

- Affordable/workforce housing
- Development incentives for underserved communities, and
- Transportation system improvements for BeltLine adjacent neighborhoods

The redevelopment plan breaks the BeltLine into smaller study areas and subareas for which plans are being developed through a public planning process. These smaller subarea plans are being done to refine and identify priority areas for projects. However, the overall redevelopment plan identifies several specific projects to be undertaken, project cost estimates, and prioritizes them in light of the overall redevelopment plan. Projects identified in Subarea 5 have been programmed into a multi-year work program, and will likely change as the detailed plans for the subarea are completed.

BeltLine Street Framework Plan (September 2006)

A product of the BeltLine Redevelopment Plan, the BeltLine Street Framework is an attempt to inject context sensitivity into the traditional hierarchy of functionally classified streets. The Street Framework addresses roadway design at the urban design level and provides generalized guidance about the features of the roadway. The design of these features is defined by the predominant zoning category that is adjacent to the roadway segment. Establishing this sort of framework enables land use to generally inform the streets design so that the available features of the roadway which are supportive of the land use might be made available. Ideally, the functional classification of the street would also inform the land use decision-making process by assisting in the determination of appropriate land uses which would work best along a given segment of roadway given the roadway's overall function. In theory, this would create an iterative feedback loop in which a balance between land use and transportation is achieved. The BeltLine Street Framework stops short of creating this feedback loop, and instead gives priority to land use as the determining factor in a roadway segment's design. All possible ranges of land use are allowed along each of the Street Framework's functional street

typologies.

A separate BeltLine Design Guidelines document provides design requirements for trails, greenspace and public spaces, transit access, development site design limitations, building form and design expressions, parking, work force housing, mixed use development, historic preservation, and environmental protection considerations. Finally, the land use plan element of the BeltLine Redevelopment Plan provides guidance about density and generally allowable land uses. A more precise determination of allowable land uses will be identified in the subarea plans for the BeltLine project. Specific uses are defined in the redevelopment district's (analogous to the TAD) zoning and/or subdivision regulations.
In short, each of these plan elements works hand-in-hand with the other, and the Street Framework is just one component of a larger mix of available tools.

BeltLine Emerald Necklace (December 2004)

A precursor to the BeltLine TAD Feasibility Study and the Redevelopment Plan, the BeltLine Emerald Necklace study conducted by the Trust for Public Land constructed a unified vision for the development of greenspace and transportation along the proposed BeltLine corridor. The Emerald Necklace looked at opportunities and constraints, available resources, and proposed not only a vision for greenspace and transportation along the corridor, but also proposed an action plan for achieving the vision. This action plan was subsequently acted upon and led to the establishment of both a Tax Allocation District and a detailed redevelopment plan. Proposals from this plan document have supplied not only the BeltLine plans, but also the LCI plan and corridor plan documents as well.

Old Fourth Ward Redevelopment Plan (under development)

This planning study has not been provided by the City of Atlanta or Atlanta BeltLine, Inc. and is currently being updated, with completion expected in 2008.

Livable Centers Initiatives

Ponce de Leon Corridor Plan/Moreland Avenue Corridor Plan Update, and Moreland Livable Centers Initiative (August 2005)

This plan document, assembled by the City of Atlanta's Department of Planning and Community Development, is a combination of three separate planning studies. They are:

- Ponce de Leon Corridor Plan
- Moreland Avenue Corridor Plan
- Moreland Livable Centers Initiative (grandfathered)

These documents effectively address the northern and eastern boundaries of Subarea 5. A variety of issues were identified in each of these plans. These included concerns about transportation barriers, deteriorating and inadequately maintained public facilities, lack of greenspace and public spaces, inconsistent urban design along corridors, transportation system operations, the need for additional retail and housing opportunities, and neighborhood encroachment to name a few. Each of these concerns and more were addressed through a land use plan and a detailed transportation implementation strategy developed for each of the affected areas considered within the plan. The result is a work program that can be easily programmed and tracked through the capital budgeting process.

City Center Livable Centers Initiative (December 2001)

The City Center plan was developed under a Livable Centers Initiative (LCI) grant from the Atlanta Regional Commission (ARC). The LCI project had four sponsoring Project Partners, namely: Central Atlanta Progress, Inc. (CAP), Georgia State University (GSU), Historic District Development Corporation (HDDC), and The Atlanta Housing Authority (AHA).

This document is written in two volumes. The first presents a general description of the plan area, key demographic and socio-economic data, and broad brush recommendations. Volume II of the document is a technical memorandum that

includes:

- Five-year implementation plan
- City of Atlanta development incentives programs
- Demographic trends
- Public input
- Land use and zoning analysis and recommendations
- Stakeholder interview summary
- Housing stock evaluation
- LCI steering committee notes
- Transportation analysis and recommendations

This plan and its recommendations have been incorporated into the Imagine Downtown Plan and the BeltLine Redevelopment Plan. Several of the identified projects are either being refined as part

Table 20 - City of Atlanta FY 2007-2011 Capital Improvements Program (Status: Adopted)

PROJECT NAME	STATUS	COMPLETION DATE	COST	PROJECT TYPE	DESCRIPTION
Angier Avenue	Complete	Apr-2006	$67,829	Resurfacing	From Boulevard to Argonne Avenue
Arnold Street	Not Started	2008	$26,461	Resurfacing	From Ranking Street to Wabash Avenue
Auburn Avenue	Not Started	Feb-2007	$25,000	Speed Hump Installation	Bulbouts at the two existing pedestrian crossings at Hogue Street and at Howell Street.
Boulevard Place	Not Started	Aug-2008	$78,000	Resurfacing	from Boulevard to Glen Iris Drive
Dallas Street	Not Started	Aug-2006	$39,495	Resurfacing	From Glen Iris Drive to North Angier Avenue
DeKalb Avenue	Construction	Jun-2006	$220,000	Sidewalk Improvements	From Martin Luther King MARTA to Moreland Avenue
East Avenue	Not Started	Aug-2006	$90,783	Resurfacing	From Boulevard to Dead End
Edgewood Avenue	Not Started	Jul-2007	$500,000	Streetscape	From Butler Street to Hurt Plaza
Moreland Avenue	Construction	Nov-2006	$115,375	Traffic Signals and Communication	Install and upgrade traffic signals; Link signal system to the ATCC via fiber optic communications; Develop signal-timing plans for corridor
Moreland Avenue North	Evaluation/ Design	Jul-2009	$168,750	Streetscape	From North Avenue to I-20
Morgan Street	Not Started	Aug-2006	$38,389	Resurfacing	From Boulevard to North Angier Avenue
North Angier Avenue	Not Started	Aug-2006	$25,377	Resurfacing	From North Avenue to Dallas Street
Ponce de Leon Avenue	Design	Jul-2009	$252,000	Streetscape	From I-75/85 to Moreland Avenue,
Ponce de Leon Avenue and Moreland Avenue	Design	Apr-2009	$26,900	Intersection Improvement	Add LT signal for SB approach
Ponce de Leon Avenue and Moreland Avenue	Design	Apr-2009	$26,900	Intersection Improvement	Add LT signal for SB approach
Rankin Street	Not Started	Aug-2006	$38,479	Resurfacing	From Boulevard to Dead End
Wabash Avenue	Not Started	Aug-2006	$38,310	Resurfacing	From Boulevard to Glen Iris Drive

SOURCE: CITY OF ATLANTA, ANNUAL CAPITAL IMPROVEMENTS BUDGET, SEPTEMBER 2006

Table 21 - City of Atlanta FY 2007-2011 Capital Improvements Program - Park Improvements (Status: Adopted)

PROJECT NAME	STATUS	COMPLETION DATE	COST	PROJECT TYPE	DESCRIPTION
J. D. Sims Playground	Construction	Sep-2007	$150,000	Replacement	Replace entire playground
J. D. Sims Recreation Center	Planning	Jun-2007	$253,750	Renovation	Center to be renovated to serve as a cultural arts center
J. D. Sims Recreation Center	Construction	Jun-2008	$378,000	Renovation	Center to be renovated to serve as a cultural arts center
M. L. King Natatorium	Construction	Apr-2007	$1,700,000	Renovation	Pool and deck to be resurfaced, new roof, locker room renovations, fitness room, paint the entire facility

SOURCE: CITY F ATLANTA, ANNUAL CAPITAL IMPROVEMENTS BUDGET, SEPTEMBER 2006

Table 22 - City of Atlanta FY 2007-2011 Capital Improvements Program - Pedestrian Improvements (Status: Adopted)

PROJECT NAME	STATUS	COMPLETION DATE	COST	PROJECT TYPE	DESCRIPTION
North Highland Streetscapes, Phase 1	Construction	Jun-2007	$1,205,360	Pedestrian	Streetscape improvements along North Highland Ave from Virginia Ave to Los Angeles Ave, and a on Virginia Ave. both directions from North Highland Ave.
Downtown Atlanta Pedestrian Corridor Improvements	Evaluation/ Design Dev	Oct-2007	$4,375,000	Bike/Pedestrian	This project will implement streetscape and safety improvements recommended in the City Center Livability Project LCI Study on Marietta Street and Centennial Olympic

SOURCE: CITY F ATLANTA, ANNUAL CAPITAL IMPROVEMENTS BUDGET, SEPTEMBER 2006

of the BeltLine planning process or implemented as planned.

City of Atlanta Capital Improvement Projects (2006)

A listing of Capital Improvement Projects slated for 2007-2011 are listed in Tables 20 through 22. Table 20 outlines the major capital improvement projects in Subarea 5. Projects range from sidewalk improvements, resurfacing projects, and intersection improvements at major intersections such as Ponce de Leon Avenue and Moreland Avenue. Table 21 shows projects related to park improvements while Table 22 presents pedestrian improvement projects.

Key Findings

The Subarea 5 Master Plan represents an opportunity to build on the plans previously conducted. The land use and park facility recommendations suggested by the Redevelopment plan were compiled on a Proposed Land Use and Open Space Map, seen in Figure 24.

For the most part previous planning efforts were reflected in more recent plans, but there are circumstances where conflicts occur. In addition, there were land use recommendations that conflict with the City of Atlanta 15-Year Future Land Use Plan in Figure 25. These conflicts are described below and labeled on Figure 26.

The majority of conflicts lie within proximity to the proposed North Avenue Park and along major corridors such as Ponce de Leon Avenue and DeKalb Avenue. The Future Land Use Plan calls for the proposed park land and surrounding properties to all be mixed-use low-rise. The Redevelopment Plan suggests that the park be surrounded by different levels of intensity of

residential use, and to focus mixed-use at larger intersections.

Other conflicts between the Future Land Use Plan and other studies are located along Boulevard, DeKalb Avenue and Ponce de Leon:

- Ponce de Leon at Parkway Drive: Mixed Use low rise to low and high density residential
- Ponce de Leon at Boulevard: Mixed use low rise to low density commercial
- Ponce de Leon between Linwood Avenue and Frederica Street: Mixed use low rise to low density residential or commercial
- Boulevard at John Wesley Dobbs Avenue: Open Space to high density residential and parking
- Boulevard at Auburn Avenue: Office/ institutional to mixed use low rise
- Boulevard at Edgewood Avenue: Low density commercial to mixed use low rise
- DeKalb Avenue at Hurt Street: Mixed Use low rise to office/ institutional
- DeKalb Avenue between Battery Place and Moreland Avenue: Mixed Use low rise to low rise residential

In developing the subarea master plan, efforts will be focused on resolving the conflicts identified above. Once the land use conflicts are resolved transportation improvements will be identified to support the modified land use plan. Transportation recommendations from previous studies will be assessed when developing the update transportation improvements. (See Figure 27)

A goal of the Subarea 5 Master Plan is to ensure that conflicts between previous plans and studies are resolved and appropriate modifications are developed.

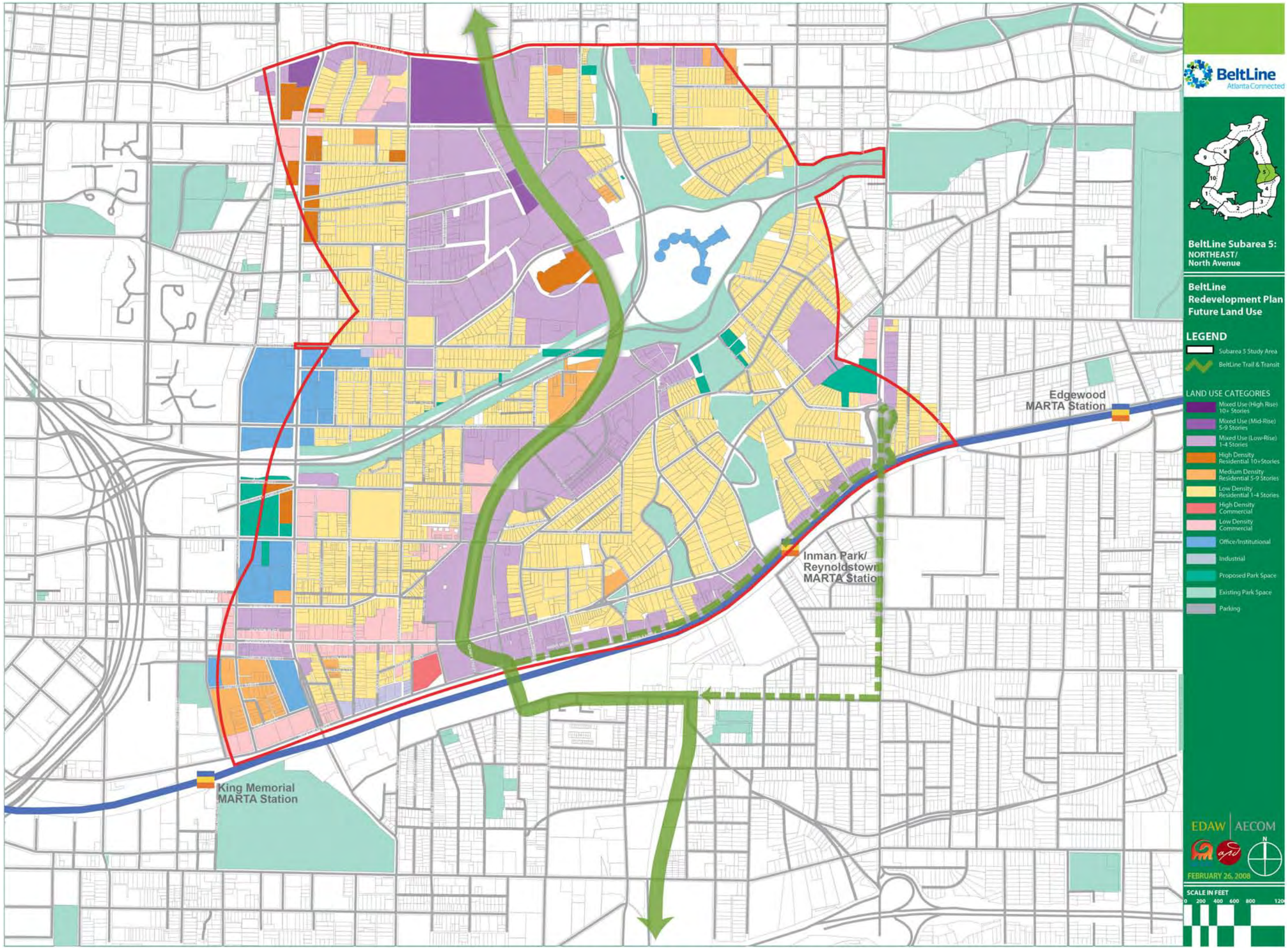
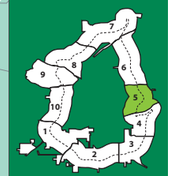


Figure 24 - Proposed Land Use and Open Space from the BeltLine Redevelopment Plan

BeltLine
Atlanta Connected



BeltLine Subarea 5:
NORTHEAST/
North Avenue

Future / Proposed Conditions:
Land Use from the City of Atlanta's 15-Year Plan

LEGEND

- Subarea 5 Study Boundary
- MARTA Rail Line
- BeltLine Trail

LAND USE CATEGORIES

- Mixed Use (High Rise) 10+ Stories
- Mixed Use (Mid - Rise) 5 - 9 Stories
- Mixed Use (Low - Rise) 1 - 4 Stories
- High Density Residential 10+ Stories
- Medium Density Residential 5 -9 Stories
- Low Density Residential 1 - 4 Stories
- High Density Commercial
- Low Density Commercial
- Office / Institutional
- Industrial
- Proposed Park Space
- Existing Park Space
- Parking

EDAW | AECOM
ARCADIS

OCTOBER 10, 2007

SCALE IN FEET
0 200 400 600 800 1200

Figure 25 - Proposed Land Use from the City of Atlanta's 15 YearLand Use Plan

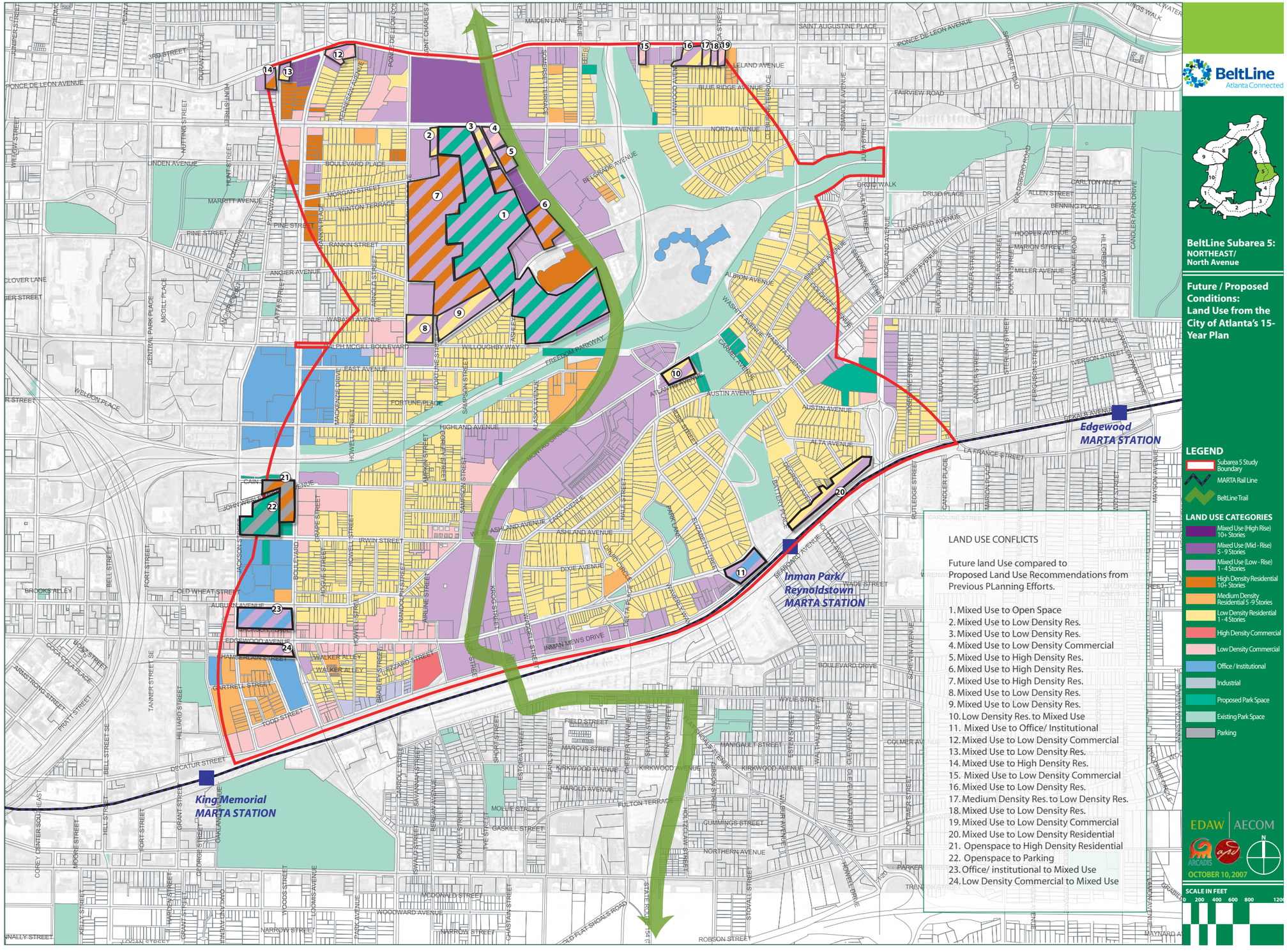


Figure 26 - Conflicts between the BeltLine Redevelopment Plan's Proposed Future Land Use and any Previous Plans & Studies

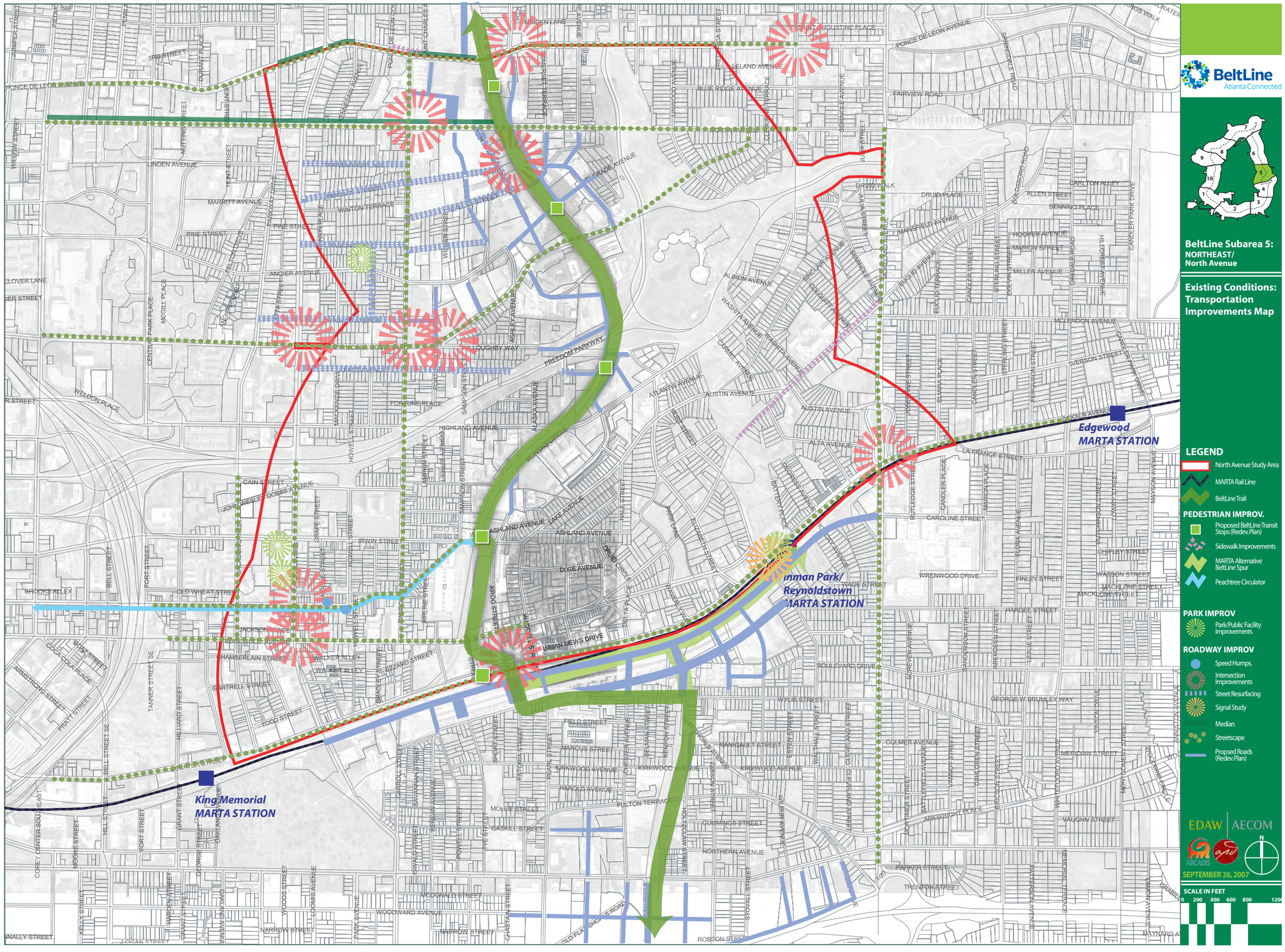


Figure 27 - Proposed Transportation Improvements

Appendix A

Beltline Corridor Preparation

DRAFT

21 March 2006

participants

Beltline Partnership	*	Jim Morgens, chair of Parks & Trails Taskforce
	*	KC Boyce
	*	Ryan Gravel
PATH Foundation	*	Ed McBrayer
	*	Matthew Humphries
MARTA		Johnny Dunning, Senior Project Manager
	*	Adelee LeGrand, URS
	*	Paul Pattison, URS
		Scott Caples, URS
		George Manning, URS

* *core participants*

purpose

The purpose of this analysis is to get a better understanding of the entire Beltline corridor in order to begin the discussion of segment priority. Important: **This analysis is not complete. This is a DRAFT.**

contents

2 Structure Analysis
16 Segment Analysis
18 MARTA connections & Beltline Length Totals

assumptions

general

Analysis considers our best recommendation for each challenge - no cheap fixes.
Structure is deemed 'inadequate' if it cannot accommodate transit in two directions and a 15' trail.
Trail will cross transit at numerous points.
Measurements are preliminary and not exact.
Transit will be built in the NE corridor per the Inner Core study in 2011

ROW access

Mason team will accommodate our best recommendations in NE corridor
Norfolk Southern will not exercise turnaround capability on wye south of Armour Yard
If NS uses wye, substantial costs will incur at I-85, Buford Highway and Montgomery Ferry Road
Analysis assumes redevelopment of Hulsey Yard
LaFarge sand plant is relocated; SE line bought from CSX
SW line obtained from GDOT - not shared with freight
Westside Gap - a western route from the Redevelopment Plan and an alternate eastern route are considered.
Analysis assumes shared corridor with frieght, transit and trail in NW corridor

costs

URS provided costs for transit structures
URS suggested $3,000 per lf for bike/ped tunnels (includes assumptions for contingencies).
PATH recommends $2,000 per lf for bike/ped bridges

crossing Virginia Avenue 11

quarter	northeast		*road type*	neighborhood connector; 2 lanes		
key	11		*recommendation*	add bike/ped tunnel		
type	underpass		*structure added*	bike/ped tunnel		
length	65		*notes*	alt. discussion rebuilt entire structure		
width	25-30		*phasing opp?*	prior to transit, use exist. underpass for bike/ped		
clearance	20+		*transit*		$	-
historic	no		*bike/ped*	65	$	195,000
status	inadequate	0	*cost assumption*		$	195,000

crossing Ponce de Leon Avenue 12

quarter	northeast		*road type*	city thoroughfare (US 78); 4 lanes		
key	12		*recommendation*	modify exist. bridge for bike/ped; add transit (2)		
type	bridge		*structure added*	transit (2) bridge		
length	90		*notes*	requires further thought for decision		
width	8		*phasing opp?*			
clearance			*transit*	90	$	472,500
historic	yes		*bike/ped*	0	$	100,000
status	inadequate	0	*cost assumption*		$	572,500

crossing North Avenue 13

quarter	northeast		*road type*	city thoroughfare (US 278); 4 lanes		
key	13		*recommendation*	rehab bridge for transit (2) & bike/ped		
type	bridge		*structure added*	none		
length	85		*notes*			
width	45		*phasing opp?*			
clearance			*transit*		$	255,000
historic	no		*bike/ped*		$	-
status	adequate	0	*cost assumption*		$	255,000

crossing Ralph McGill Boulevard 14

quarter	northeast		*road type*	neighborhood connector; 2 lanes		
key	14		*recommendation*	rehab bridge for transit (2); add bike/ped		
type	bridge		*structure added*	bike/ped bridge		
length	85		*notes*			
width	35		*phasing opp?*	prior to transit, use exist. bridge for bike/ped		
clearance			*transit*		$	255,000
historic	yes		*bike/ped*	85	$	250,000
status	inadequate	0	*cost assumption*		$	505,000

crossing Freedom Parkway 15

quarter	northeast		*road type*	limited access highway (SR 10); 4 lanes + trail		
key	15		*recommendation*	simple improvements		
type	underpass		*structure added*	none		
length	150		*notes*			
width	100		*phasing opp?*			
clearance	30		*transit*		$	-
historic	no		*bike/ped*		$	-
status	adequate	0	*cost assumption*		$	-

crossing Highland Avenue 16

quarter	northeast		*road type*	neighborhood connector; 4 lanes (2 parking)	
key	16		*recommendation*	simple improvements	
type	underpass		*structure added*	none	
length	90		*notes*		
width	60		*phasing opp?*		
clearance	25+		*transit*	$	-
historic	no		*bike/ped*	$	-
status	adequate	0	*cost assumption*	$	-

crossing Irwin Street 17

quarter	northeast		*road type*	neighborhood connector; 2 lanes	
key	17		*recommendation*	signalized crossing for bike/ped & transit	
type	grade		*structure added*	none	
length			*notes*		
width			*phasing opp?*		
clearance			*transit*	$	-
historic	-		*bike/ped*	$	-
status	adequate	g	*cost assumption*	$	-

crossing Edgewood Avenue 18

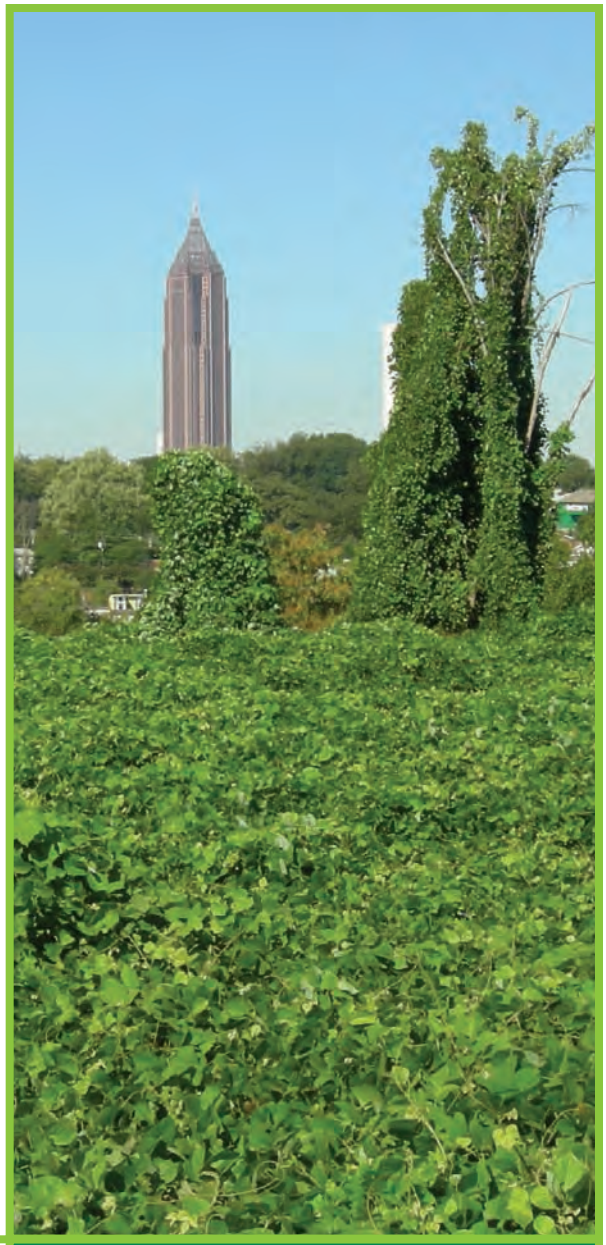
quarter	northeast		*road type*	neighborhood connector; 3 lanes (1 parking)	
key	18		*recommendation*	simple improvements	
type	underpass		*structure added*	none	
length	60		*notes*		
width	50		*phasing opp?*		
clearance	20+		*transit*	$	-
historic	yes		*bike/ped*	$	-
status	adequate	0	*cost assumption*	$	-

crossing Decatur Street 19

quarter	northeast		*road type*	city thoroughfare; 3 lanes	
key	19		*recommendation*	signalized crossing for bike/ped & transit	
type	grade		*structure added*	none	
length			*notes*	alt. route elevates Decatur Street over Beltline	
width			*phasing opp?*		
clearance			*transit*	$	-
historic	-		*bike/ped*	$	-
status	adequate	0	*cost assumption*	$	-

crossing Hulsey Yard 20

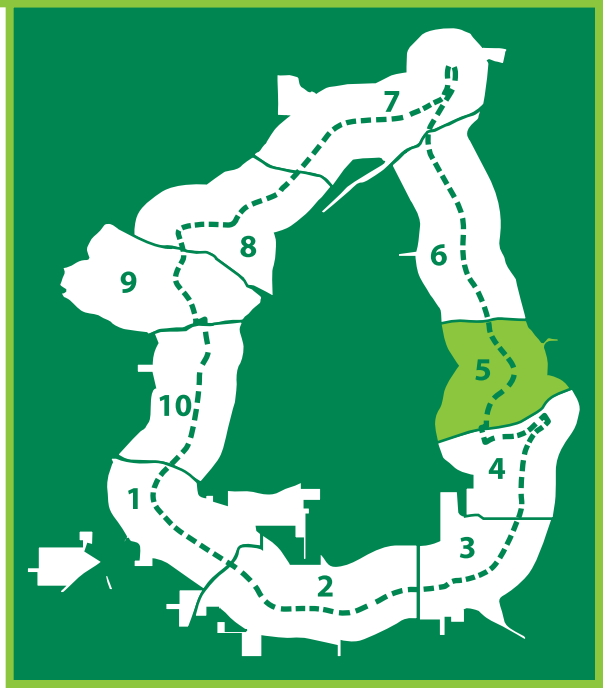
quarter	northeast		*road type*	main line CSX railroad + MARTA line (E)	
key	20		*recommendation*	add tunnel parallel to Krog Street - 30'+20' clear	
type	tunnel		*structure added*	tunnel (and $2 million for retaining walls in vicinity)	
length			*notes*	3 alt. alignments at Decatur Belt, Airline, Gunby	
width			*phasing opp?*	prior to transit, use Krog Street tunnel for bike/ped	
clearance			*transit*	450 $	2,525,000
historic	-		*bike/ped*	450 $	-
status	new	0	*cost assumption*	$	2,525,000



Atlanta BeltLine Master Plan

SUBAREA 5

FREEDOM PARKWAY
Historic Fourth Ward Park Master Plan



Prepared for
Atlanta BeltLine, Inc.
by EDAW, Inc., Arcadis & APD

Adopted by the Atlanta City Council on March 16, 2009

BeltLine
Atlanta Connected

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Introduction

The Master Plan for the Historic Fourth Ward Park establishes a preliminary framework for development of a major open space set within the Old Fourth Ward neighborhood of Atlanta BeltLine's Subarea 5. It will also guide the orderly acquisition of the most critical parcels.

The Master Plan takes into account the priorities and concerns of the many stakeholders involved, including the neighborhood, adjacent developments, both existing and proposed, as well as the relationship of this park with the larger park system for the city of Atlanta. These comments form the basis for a series of design and programming elements within the park plan.

The Master Plan lays out the key features of the park and also sets up a preliminary design for the landscape, illustrating massings of trees and focal areas.

The plan also includes a phasing element to establish the order of property acquisition and build-out. In the case of Historic Fourth Ward Park, phasing will be based primarily on when land can be acquired from the individual property owners, as well as when development funding becomes available for construction.

As the park progresses into schematic design and construction documents, the design team will refer to the original Master Plan as a guide for detailed work. The purpose of the plan is to provide the necessary flexibility during construction activities, while preserving the original design intent.

Existing Conditions

The proposed site for the Historic Fourth Ward Park is a conglomeration of industrial and commercial property along or directly adjacent to the BeltLine. The exact parcels that will be combined to form the final outline of the park have yet to be determined, based on availability of funds and willingness to sell by the current property owners. However, in general they fall in the categories of either former industrial sites that are now vacant or razed, or active commercial or industrial property.

The physical features of the land reflect considerable grade change across the site. This change is most pronounced in the area of the proposed stormwater detention facility, along the centerline of a major watershed. There is limited vegetation throughout the site with the exception of a small cluster of existing canopy trees on Wilmer Street. The lack of tree cover is due to the large industrial structures that either existed or remain on site, as well as the sheer area covered in concrete.

Park facilities within the vicinity of the Proposed Historic Fourth Ward Park

Subarea 5 has a number of parks within the three major neighborhoods of Old Fourth Ward, Poncey-Highland and Inman Park. However, many of these parks, specifically those in Old Fourth Ward, are in a state of disrepair and fail to meet the needs of current residents. The influx of residents expected as City Hall East and Ponce Place develop will increase park needs in the area, straining an already overburdened system. Table 01 details the list of park facilities within one mile of the proposed Historic Fourth Ward Park.

Facilities within Sub Area 5

- 5 playgrounds
- A rental facility
- A lake
- 3.5 miles of PATH Foundation bike/pedestrian trails
- Basketball courts
- A recreation center
- An indoor swimming pool

Facilities within 1 Mile of Historic Fourth Ward Park

- 8 playgrounds
- Passive park space
- A stage
- A rental facility
- A lake
- 3.5 miles of Path Foundation bike/pedestrian trails
- A volleyball court
- Basketball courts
- 2 recreation centers
- An indoor swimming pool
- 2 ballfields
- 4 tennis courts
- Basketball courts

Facilities lacking in the sub area

- Pavilions/gazebos
- Picnic shelters/tables/grills
- Restrooms
- Covered ballfields
- Dog parks
- Tracks
- An open multi-use lawn

Table 01: Park Facilities within Range of the Proposed Historic Fourth Ward Park

NAME	SIZE	NEIGHBORHOOD	WITHIN SUBAREA 5	WITHIN 1 MILE OF PROPOSED PARK
Bass Recreation Center	1 acre	Inman Park	yes	yes
• 2,300 sf playground				
Boulevard-Angier Park	under 1 acre	Bedford-Pine	no	yes
• passive park space only				
Central Park	17 acres	Bedford-Pine	no	yes
• 12,500 sf playground				
• 2 ballfields				
• 4 tennis courts				
• 2 basketball courts				
• recreation center				
Charles Allen Median	under 1 acre	Midtown	no	yes
• passive park space only				
Delta Park	under 1 acre	Inman Park	yes	yes
• passive park space only				
Findley Plaza	under 1 acre	Inman Park	no	yes
• passive park space				
• stage				
Freedom Park	124 acres	Poncey-Highlands	yes	yes
• playground				
• 3.5 miles of Path Foundation bike/pedestrian trails				
Greenwood-Charles Allen Triangle	under 1 acre	Midtown	no	yes
• passive park space only				
Inman Park	under 1 acre	Inman Park	yes	yes
• passive park space only				
Inman Park Trolley Barn	1 acre	Inman Park	yes	yes
• rental facility				
J.D. Sims Recreation Center	1 acre	Old Fourth Ward	yes	yes
• 4,000 sf playground				
• basketball court				
• recreation center				
John Howell Memorial Park	3 acres	Virginia-Highland	no	yes
• 2,000 sf playground				
• volleyball court				
M.L.K. Natatorium	10 acres	Butler Street - Auburn Ave.	yes	yes
• indoor swimming pool				
Morgan-Boulevard Park	under 1 acre	Bedford-Pine	yes	yes
• 3,600 sf playground				
• basketball court				
Parkway-Angier Park	under 1 acre	Bedford-Pine	no	yes

• basketball court				
Parkway-Merritts Park	**1 acre**	**Bedford-Pine**	**no**	**yes**
• basketball court				
Parkway-Wabash Park	**1 acre**	**Bedford-Pine**	**no**	**yes**
• 100 sf playground				
• basketball court				
Ray Kluka Memorial Park	**under 1 acre**	**Midtown**	**no**	**yes**
• passive park space only				
Renaissance Park	**6 acres**	**Bedford-Pine**	**no**	**yes**
• passive park space only				
Springvale Park	**4 acres**	**Inman Park**	**yes**	**yes**
• 3,400 sf playground				
• lake				
Todd Street Triangle	**under 1 acre**	**Virginia-Highland**	**no**	**yes**
• passive park space only				
Vedado-Greenwood Triangle (under 1 acre)	**under 1 acre**	**Midtown**	**no**	**yes**
• passive park space only				

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The Process

Initial Community-Driven Design (March 2006)

A previous design team in collaboration with the Friends of Historic Fourth Ward Park developed an initial program for park development in March 2006. Their efforts suggested the following elements and identified concerns to be addressed during the subsequent design of the park.

Proposed Park Program Elements from "Initial Community-Driven Design"

- A soft edge to the lake (without allowing access to the water)
- A dog park (clearly defined, and within the less desirable/under-utilized parcels of the park)
- Trails (multi-use, including pedestrian, bike, in-line skating, etc.)
- Sport fields
- Interesting water features (perhaps a waterfall, or some type of interactive fountain)
- A space for community interaction (spaces for meeting rooms)
- Event space (such as a rental space like the Trolley Barn, but not as grand as Magnolia Hall in Piedmont Park)
- An outdoor theater (which would accommodate between 500 and 3,000 guests with both permanent and flexible seating, and would encourage BeltLine use, rather than neighborhood parking)
- Large lawn space
- Picnic areas (both smaller scale picnic tables, and pavilions for larger gatherings)
- Active recreation areas (occurring south of Ralph McGill and including multi-purpose fields)
- Public restroom facilities
- Concession stands (to be located in small kiosks throughout the park)
- A library (with a focus on children's literature, and a potential space to hold smaller events, such as movie screenings)
- A flexible outdoor event space (able to accommodate markets, small concerts, parties, etc.)

Park Design Considerations/ Concerns

- Maintenance
- Safety (especially the discouragement of the homeless population from settling, and the constant patrol of the park)
- Provision for a future influx of children to the Old Fourth Ward neighborhood as younger couples begin to start families
- Handicapped accessibility
- Fencing (used to define the edges of the park rather than to discourage use)
- Sport fields (maintenance and control)
- Parking (could be accommodated along Ralph McGill in bulb-outs)
- Bringing early evening and nighttime life to the park (this could be accomplished through restaurants, cafes, retail or festivals)
- Future street connections (both North/South, and East/West across the BeltLine
- The creation of way-finding devices that speak to the historic and industrial character of the area
- Potential to raise money through a permanent fundraising device (for instance through the selling of bricks with donors names, as was done in Centennial Olympic Park)
- Bringing the feel and texture of the adjacent neighborhoods into the park
- Pocket parks with a consistent theme (one example was a music theme)
- WiFi accessibility throughout the park
- Play areas that have easily monitored access points
- Involving the local community in helping to landscape the park

Concept Park Master Plan – Steering Committee Comments (October 2007)

In a meeting with the Subarea 5 Steering Committee on October 23, 2007, the consultant presented three different concept plans. Each plan featured a different combination of program elements and different configurations of potential park parcels for acquisition.

Figure 01 - Park Master Plan Concept A

Concept Plan A

Likes

- Feel of a linear park
- Placement of tennis courts
- A single pond concept
- Orientation of the outdoor theater
- Use of a large wall for art or activities
- Multiple uses and connections

Comments

- Playground functions better next to picnic area
- Potential exists for multiple picnic areas
- Does it have the ability to expand west or east?
- Parking lots may need to be larger
- Skate park and fields in a remote corner might attract crime
- The position and size of the pond walls might pose a security risk

Figure 02 - Park Master Plan Concept B

Concept Plan B

Likes

- Minimal grading for a split pond
- Splash pad
- Festival space
- Feels like two separate parks…one active and one passive
- Traffic circulation on eastern side

Dislikes

- Disconnection of Cox property leaves it hard to maintain and keep safe
- Not enough sports fields and associated parking
- Splitting the pond in two
- Number of street crossings
- Amount of park space fronting Ralph McGill, and the isolation of the festival space

Figure 03 - Park Master Plan Concept C

Concept Plan C

Likes

- Separation and location of the dog park
- Trails surrounding the pond
- Grouping of playground, picnic space and associated parking
- Length of the pond
- Compact nature of the park
- Grand promenade from North to Ralph McGill

Dislikes

- Connections to the eastern parcel are not optimal
- Discontinuous flow of circulation throughout the park
- Entrance on Ralph McGill isn't grand enough
- Issues with the pond elevation, and the amount of space it takes up
- Not as much programming
- Isolation of the Cox property

General Steering Committee Comments

Likes

- Use of a splash pad rather than a public pool
- Open programmable festival space
- Multiple parking lots associated with different park programming
- A mixture of passive and active uses
- Flow from Elizabeth to North Avenue works well

Comments

- Pedestrian access to the park crossing Ralph McGill should put the pedestrian as the priority
- Splash park and playgrounds should be adjacent to one another
- Make sure that the festival space is accessible for loading and unloading

Dislikes

- No strong western entrance to the park from Glenn Iris and the neighborhood
- Street going through the park…even a temporary road could become permanent
- Use of a tall fence around the pond creating a visual and physical barrier to the water
- Some of the parcels seem remote and may be more difficult to maintain and keep safe
- Not enough thought about the needs of an aging population
- No designated community meeting space

Draft Park Master Plan Steering Committee Comments (November 2007)

Likes

- Hierarchy of circulation routes
- Flexibility and quantity of programming
- Proximity of playground to splash pad
- Separation of active and passive uses
- Flexible space for festivals, markets, etc. as gateway to Ralph McGill
- Opportunities for public art throughout the park
- Variety of parking options
- Single pond concept as an opportunity for a bold statement

Dislikes

- Lack of playground in the more active southern half
- No public restrooms
- Lots of tennis and no skate park

Translation of the Vision Into Park Elements

After review of the comments and concerns raised from the evaluation of the initial three concept park designs, the planning team assembled a list of desired elements for inclusion in the final park plan. The list of elements included the following items, with other elements to be added as space allowed:

- Multi-use Fields
- Dog Parks (for small and large dogs)
- Picnic Areas
- Lawns
- Playgrounds
- Splash Pad
- Festival Space
- Garden Rooms
- Community Gardens
- Skate Park
- Outdoor theater space
- Fitness Stations

Previous suggestions from the initial community-driven design and from the BeltLine Northeast Study Group were discussed and either added to the above list, or removed from consideration due to factors such as cost, feasibility of use by neighborhood residents or space requirements.

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Master Plan

The Master Plan celebrates two key elements in the park: public art and innovative stormwater management. The Master Plan envisions a park with a balance of passive and active recreation uses. The Master Plan re-envisions parking lots, buildings, and groves of trees as a green oasis linked by a network of pedestrian paths.

Program Elements

Vehicular Circulation

To maintain the continuity of the park, the plan proposes the permanent closure of several east-west streets to vehicular traffic. The idea is not to discourage access, but rather to encourage circulation around the perimeter of the park. In activating the area, it also adds safety and security by putting eyes on the park. In addition, the new roadways will provide critical north-south routes for local residents and commuters who currently use Glenn Iris, Freedom Parkway, or Highland to get from North Avenue to their respective destinations.

In addition, the closed streets can then be refitted into the primary pedestrian/bike circulation routes with only some minor changes to the hardscape.

Successful vehicular circulation along the edge of a park in London, England

Eco-sensitive paving option at Ladd Statium in Mobile, AL includes pervious pavement and bioswales

Parking

The concept proposes primary day to day parking needs serviced with on street parking spaces. In addition, two distinct parking areas service the park. The first is on North Angier Street at the corner of the proposed Dallas connection to the BeltLine, servicing the northern portion of the park. This parking could either be a surface lot or a parking structure that could generate funds. Demand for this type of parking should be determined by the ultimate use for the amphitheater, with an initial estimate of approximately 50 spaces. One additional parking area would service the active recreation for the Southern portion of the park and should accomodate around 30 vehicles.

Pervious paving allows stormwater to percolate into the ground

Pedestrian Circulation

Pedestrian circulation would occur on a hierarchy of paths. Major linear paths would use the existing road footprints, while secondary paths would meander throughout the site. The primary paths would be highlighted through plantings of tree allees, which would act as a shade element and way-finding tool. Users could choose a specific loop based on walking distance around the park. All of the paths would be made from a hard material and would be at a grade compliant with ADA standards.

Mutli-use fields can flexibly accommodate a range of activities from soccer to baseball and football

Multi-use fields

There is a recognized shortage of multi-use fields in Atlanta. The Cox property at the southeastern end of the site will provide dedicated 180' x 260' mulit-use space for a variety of sports such as soccer, football, rugby, and ultimate Frisbee. The "open meadow" north of Ralph McGill can also serve as a 400' x 200' multi-use field space. In both areas, artificical turf may be used to maximize use and minimize drought impacts.

Reuse of a former street as a primary park path in which the curb and side-walks are removed

Dog Parks (Small and Large Dogs)

The community indentified a need for dog parks within this park. Although not shown as part of the current master plan, several potential areas for this amenity have been identified. The northwest corner of North Angier and Ralph McGill is one strong possibility, as are taking corners from the "flexibilty play lawn", "event lawn" or "open meadow". It is imperative that the community remain involved in identifying a location for dog parks, as well in their development and ongoing maintenance.

Any dog park(s) will have double gated entries with fenced areas. The entry areas will be carefully located to minimize conflicts with visitors that do not want to interact with dogs. The entry area should have concrete surfaces to withstand heavy use. Water fountains in the dog park are another amenity that should be considered. Maintenance practices used

Figure 04 - Historic Fourth Ward Park Master Plan

BeltLine
Atlanta Connected

BeltLine Subarea 5:
NORTHEAST/
North Avenue

Final Park
Master Plan

EDAW | AECOM
ATCOR

NOVEMBER 12, 2007

SCALE IN FEET
0 50 100 150 200 300

Dog parks have become a common part of today's urban environment where city-dwellers lack yards

in the large dog park should be similar to turf sports fields, including fertilization, aeration, mowing, and over-seeding. Irrigation will help the turf withstand the intensive use of a dog park. A successful method of turf management in other dog parks is the rotation of use areas to allow turf to recover from heavy activity. The dog park would need to be divided in half to accommodate rotation. The small size of these parks may preclude this management system.

The provision for an amenity such as a dog park, and its associated maintenance will have to be assumed by a community organization space, as the Parks Department will not maintain a recreational space that is under two acres.

Picnic Areas

An area located in the center of the park to the south of the stormwater pond will offer an ideal spot for picnics. The highlight of this area will be several shelters with an architectural design inspired by the Ponce De Leon Amusement Park shelters that were once located nearby. The design should reference these shelters rather than attempt a direct replication. These structures will create a link to the rich history of the site.

Lawns

Four lawns will serve as flexible open space for use in informal recreation and passive enjoyment. An approximate 4.6 acre meadow in a level area on the east side of the park will create a large space framed by 0.4 mile walking path. Additional meadows in the center of the park will offer rolling slopes ideal for picnics and sunbathing. The soil should be carefully prepared in these meadows to promote

The original structures found in Ponce Park should inspire the design of contemporary picnic pavillions

The lawn at Piedmont Park is popular year round

deep root growth for the turf. Deep root growth lessens the amount of water that will be required for the turf. These meadows should be designed and managed in a less intensive manner than the formal athletic fields.

Playgrounds

The two playground areas for the park will afford play opportunities for children of all ages and maintain safety through adult supervision during daylight areas. The playground area located in the southeast corner of the park will consist of play areas that appeal to both toddlers and older children, with a range of play equipment, including swing sets and play structures. A second playground will be located near the splash pad at the center of the park. This play area will be designed as a children's play space. The play space will be laid out as a natural sequence of "events" – small-scale, intimate places, ripe for exploration and full of things for

kids to do. It will be an experiential space that will intrigue and delight visitors of all ages. Canopy trees will be planted to create shade near the play areas. Shade structures will help supplement the shade, while newly planted trees mature.

Modern day playgrounds can be thought of as an interactive art installation piece, rather than as traditional ready-made equipment

Splash Pad

With a central location and a dynamic attraction for park visitors, the splash pad will be a focal point of the park in warm weather. As the Olympic fountains of Centennial Olympic Park demonstrate, the splash pad will be a magnet for children and will entertain visitors of all ages. The water feature may also provide an opportunity for the incorporation of public art. Careful design of the plaza surface and features in the splash pad will ensure that the splash pad is an amenity at all times of the year.

Splash pads are quickly becoming a sustainable alternative approach to public pools

The Splash Pad will need to be designed to Fulton County Pool Standards, including a restroom facility located within 300' feet of the splash pad.

Space also needs to be provided around the perimeter of the splash pad to accomodate parents, caregivers, and spectators.

Festival Space

An open lawn at the northern end of the park will serve as a gathering place for events. A perimeter path and two interior paths will provide circulation through this approximate 2.9 acre space.

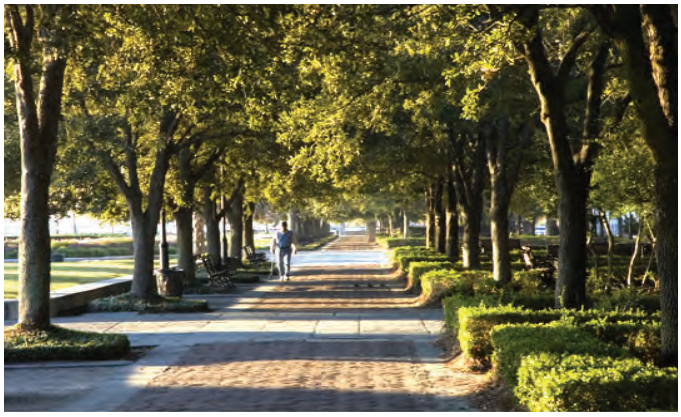
Park areas, such as Centennial Olympic Park, can be readily transformed into an active festival space

Garden Rooms

A series of garden rooms at the southern end of the park space will create attractive alcoves where visitors can relax on benches with a view of the adjacent path. A low hedge will define each garden room to create a sense of enclosure, while maintaining views into the spaces. A formal allee of trees will define the ceiling of the "rooms" and create shade.

Community Garden

Another essential piece of the park program is the community garden. Like dog park(s), there are several areas within the park that could be home to



Garden rooms should feel like they are close, secluded spaces, but still be transparent enough for safety purposes

the community garden. Community involvement as the park grows to its final size will be critical in identifying a location for and implementing this piece of the program.

Community gardens are a great way for people who live in the city to learn about the environment, and feel like they have their own piece of land

Skate Park

An approximate 12,000 SF skate park will be located in the Cox property on the southeastern end of the park. This location will provide good access to the East-West MARTA line, the future BeltLine transit, and a network of pedestrian paths in Freedom Park and the BeltLine. This park will feature elements commonly found in urban plazas as well as concrete ramps or bowls. A fence will encircle this skate park with a gated entrance. A skate park designer should be consulted in the design of the elements for the skate park.

Amenities such as drinking fountains, lighting and shade structures should be included, as well as adequate space for spectaters.

Rather than occuring underground, skateboarding is becoming increasingly mainstream, with many cities investing in the creation of parks

Outdoor Theater

A 250 seat outdoor theater will be terraced into a hillside near the stormwater pond. Seat walls will define the edge of the terraces with flat lawn areas in between. The sunken garden and pond will create a dramatic backdrop for the outdoor theater.

Sunken Garden

The descent into the recessed cove surrounding the pond will take visitors into an experience apart from the rest of the park, a sunken garden. A sinuous network of paths will wind through this lushly

An outdoor outdoor theater that uses the surrounding topography and natural elements

planted landscape of flowers, shrubs, and trees. Plantings will emphasize broad sweeps and drifts of color of drought tolerant plants. The advantage of a sunken garden is that the user has the feeling of seclusion and privacy, while at the same time being highly visible to those above them.

Storm Water Pond

The City's Department of Watershed Management has provided funding for a storm water pond which is providing capacaity relief for the nearby combined sewer while integrating aesthetically into the park. The storm water pond will be owned and primarily maintained by the Department of Watershed Management, and as a critical piece of the City's sewer infrastructure, may be subject to constraints and requirements different from that of the surrounding park. For instance, during heavy storms, the pond is designed to fill up and inundate walking pathways and plazas. During this time and immediately afterwards, public access will be restricted. However, the storm water pond is designed to minimize downtime as well as maintenance, and it is anticipated that it will become a highly-utilized park amenity.

The sunken feeling of Butchart Gardens in Canada

An artist's rendering of the proposed Storm water pond

Gateways

Major gateways should be incorporated where the highest volume of visitors will be entering the park. Gateways should include the major pedestrian entrances for the neighborhoods located on Ralph McGill Boulevard and North Avenue. Also of critical importance are the gateway elements to be located along North Angier and the BeltLine to help draw people into the park from the trail and transit.

Public Art

The incorporation of public art throughout the park and the participation of artists in the development of feature areas such as the splash pad zone encourages local artists and generates creative and cutting edge design alternatives to what would otherwise remain standard park elements, such as playground equipment. In addition, art done locally will help to incorporate the feeling and attitude of the local community and evoke the nature and history of the neighborhoods.

A piece of public art made from repurposed tires

Hiden valtakunta -The Sacred Realm of the Forest Elf

Sustainability

Sustainability policies are recommended to minimize the environmental impact of park development. Sustainability means meeting the needs of the present without compromising the ability of future generations to meet their needs. A sustainable approach to park design will result in long-term economic and health benefits.

Measures can be undertaken in new construction, site design, and park management. If enclosed facilities are considered for future developments in the park, they should adhere to sustainable design and construction principles. The LEED™ building rating system can be used as a minimum benchmark for enclosed climate-controlled facilities. This system, developed by the United States Green Building Council, offers third party verification of a project's sustainable features. Likewise, the Sustainable Sites Initiative can guide the development of the non-enclosed park infrastucture. Innovative strategies for site design and management include tree preservation and tree canopy maximization, drought-tolerant landscape design, improved storm water management, and storm water capture for irrigation systems, minimization of impervious land cover, and reduced automobile usage.

One key area where the park can lessen its impact on the environment is by minimizing the urban heat island effect. Many of the design solutions proposed in this Master Plan will address this issue, such as the conversion of surface parking lots and buildings into lawn areas, the preservation of existing tree canopy, and tree planting along existing road beds in advance of park development. Other techniques that would mitigate the urban heat island effect include parking lot tree islands, maintaining tree cover, light colored roofing, and

Constructed wetland at National Museum of the American Indian in Washington, DC

Bioretention system, South Australia Museum

green roofs.

Many of these measures will have the additional benefit of improving the storm water management on the site by reducing the amount of impervious surface in the park. Other techniques that would improve the water quality of the storm water on the site include the use of porous pavements, as proposed for the two parking lots. When porous pavements such as porous concrete, gravel, and porous unit pavers are considered for new developments, the life cycle costs and the accompanying infrastructure should be taken into consideration. Porous pavements may cost more than conventional asphalt or concrete in comparison of material cost, but they may require less infrastructure (storm pipes and catch basins) or less land for detention areas.

Another opportunity for sustainable park development is the use of rain gardens and constructed wetlands to promote infiltration of

Bioretention system, Victoria Park, Zetland Australia

Drought tolerant plants

storm water. The storm water pond will be the most visible water treatment measure in the park, but other measures can be woven into the design of the park, such as rain gardens. Rain gardens are landscaped bio-retention areas that catch and then filter storm water by allowing the water to infiltrate into the soil. Developments in the park are bound by law (National Pollutant Discharge Elimination System NPDES regulations) to control the quantity and quality of the storm water leaving the site. Developments in the park should look beyond fulfilling the basic requirements of this law to explore ways to make storm water management visible to the public. This approach could include taking water that is currently in storm pipes and redirecting it to a natural overland flow to improve water quality and infiltration of storm water. Rain gardens and constructed wetlands can be designed so that the infiltration of storm water is visible to park visitors, rather than screened from view in fenced off detention ponds. Rain gardens can thus become amenities and opportunities for educational signage.

The conversion of the existing road beds into pedestrian pathways are an excellent opportunity for rain gardens. A linear rain garden can be created on each side of these pathways by converting the asphalt into bio-retention areas. Weirs can be integrated into the rain gardens to promote infiltration. This system would help clean the storm water before the water flows into the existing storm water system. These linear rain gardens would create a dispersed infiltration system that simulates the natural hydrology of the site.

The reuse of these existing road beds highlights another sustainable component of this master plan. In addition to saving money, the reuse of these road beds will limit the amount of demolition waste and new resources that are required for park development.

Naturalistic landscape management can be employed in select areas of the park. With the large area of turf grass in the park there will be limited opportunities for this management technique. Some of the landscape management methods that can be employed include the following:

- Use of native plants to provide habitat and food source for wildlife
- Retaining dead trees or stumps for wildlife habitat (only in areas away from pedestrian paths, after consultation with a licensed arborist)
- Include bird and bat nesting boxes

These landscape management measures must be balanced with the needs of park users, as well as safety and aesthetic considerations.

Water use is a vital concern today in Metro Atlanta, and will continue to be an important consideration in the future. Rainwater harvested from roofs and paved areas can also be used as a source of irrigation water. The storm water pond could be used as a potential source of irrigation water for the site. The best way to minimize water use in the landscape is through design that uses drought tolerant plants, groups plants with similar needs, and considers micro-climates. If irrigation is required for areas, water efficient irrigation technologies such as rain sensors and drip irrigation should be utilized. Drip

irrigation can be used in place of traditional spray rotary heads to limit the amount of water used.

Additionally, energy-consuming devices such as lights and pumps should be selected for low power consumption in addition to meeting performance requirements. LED streetlights, for instance, use up to 50% less energy than standard streetlights, reducing both energy use and operating costs. These efforts can be further enhanced by seeking opportunities for small-scale distributed power generation such as wind and PV solar.

The park's location along the BeltLine will facilitate transit, bicycle, and walking access. Use of these alternatives modes of transit will lessen the amount of traffic and the amount of land area dedicated to parking. The extensive network of pathways in the park will promote walking and bicycling. Automobiles will be a primary means of transport to the park, especially for those transporting supplies for the landscape; picnics or other events; the disabled, etc.; but given the limited land available and the desire to minimize the ecological footprint of the park, efforts should be made through user groups to encourage the use of alternative modes of transportation.

Operation and Maintenance

The Historic 4th Ward park has been planned in such a way to minimize maintenance requirements. The plant palette in Appendix A is developed to encourage the use of native and adaptive species to minimize inputs for water and overall maintenance.

Drip irrigation installation

Figure 05 - Phase I development program

Design Guidelines

The park's visual quality, user-friendliness and sense of place will benefit from a consistent approach to materials, site furniture, landscaping, lighting, and signage.

Material Palette

A simple palette of low-maintenance, durable materials should be utilized in the park, including the following: asphalt, concrete, and granite.

Rough granite ashlar stone walls should be a primary building material for wall construction in the park. Granite is a local material that is relatively economical and links the park with the regional landscape.

Granite random ashlar wall

Site Furnishings

In order to create a unique park experience, a design competition should be sponsored for the benches to be installed in specific areas of the park such as the sunken garden. Custom designed site furnishings would reinforce the sense of place. The standard guidelines of durable, functional, low maintenance materials should be employed in the evaluation of custom designed features.

Standard BeltLine furnishings should be used throughout the remainder of the park.

Lighting

The same lighting fixtures that are used throughout the BeltLine should be used in the park.

Signage

A consistency of design and materials for all public realm signage should be maintained. The signage should allow the opportunity for an expression of the specific character of the park while providing useful guidance in park visitor wayfinding. These signs should be limited in both size and quantity to prevent visual clutter in all areas of the park. The locations of these signs should primarily be at the major park entrances - Ralph McGill, Angier Connection, and North Avenue.

Additional signs should include interpretive and wayfinding signs that highlight the unique character of the park, identify the primary circulation routes and provide orientation, and interpret the natural systems employed for the treatment of storm water and the site's heritage as the former location of Clear Creek.

Planting Design

Plant palettes

A range of plants suitable to wetland areas, arboretum plantings, and general landscape areas are outlined in Appendix A. There are two themes common to these plant palettes: plants that require minimal maintenance and irrigation are to be used, and no invasive plants are recommended. Invasive plants, such as English Ivy (Hedera helix), Privet (Ligustrum sinensis), and Elaeagnus (Elaeagnus pungens.), have a deleterious impact on native ecosystems within the park and should be avoided. Plants that require ongoing care and excessive maintenance throughout their life span should not be used. It is not sustainable for the park's maintenance budget or the region's water resources for plants that require long term water and care to be used.

The Atlanta BeltLine Arboretum, formed through Trees Atlanta will be a primary source for much of the larger landscape materials, such as trees and shrubs. Various areas along the BeltLine have been selected as locations for nursery stock as well as arboretum specimen plantings.

Planting Design

Three guidelines apply to all landscape plantings

- Plants should be massed to create a bold appearance.
- Avoid using trees and shrubs with low branches where visibility is important, such as path and sidewalk areas. Large shrubs should not be planted next to walkway areas, so that pedestrian views are obscured. Good visibility is important for safety
- Use well defined layers of plants

Appendix A

American Holly, *Ilex opaca*

Bottlebrush Buckeye, *Aesculus parviflora*

Piedmont Azalea, *Rhododendron canescens*

Arboretum Plant Pallete

Botanical Name	Common Name
Canopy Trees	
Liriodendron tulipifera	Tulip Poplar
Acer rubrum	Red Maple
Quercus phellos	Willow Oak
Quercus coccínea	Scarlet Oak
Ulmus parviflora	Chinese Elm
Evergreen Trees	
Ilex opaca	American Holly
Magnolia grandiflora 'Claudia Wannemaker'	Claudia Wannemaker Magnolia
Understory Trees	
Amelanchier arborea	Serviceberry
Asiminia triloba	Pawpaw
Chionanthus virginicus	Fringe tree
Cercis canadensis	Redbud
Cornus florida	Flowering dogwood
Cornus kousa	Kousa Dogwood
Cotinus obovata	American Smoketree
Crataegus viridis 'Winter King'	Winter King Hawthorn
Lagerstroemia indica	Crape Myrtle
Oxydendrum arboreum	Sourwood
Large Evergreen Shrubs	
Abelia x grandiflora	Abelia
Camellia japonica	Camellia
Camellia sasanqua	Sasanqua
Gardenia jasminoides 'August Beauty'	August Beauty Gardenia
Osmanthus americanus	Devilwood
Osmanthus x fortunei	Fortune's Osmanthus
Osmanthus fragrans	Tea Olive
Rhododendron 'Indica Hybrids'	Indica Azalea
Large Deciduous Shrubs	
Aesculus parviflora	Bottlebrush Buckeye
Buddleia davidii	Butterfly Bush
Croton alabemensis	Alabama Croton
Deutzia scabra	Deutzia
Hydrangea quercifolia	Oakleaf hydrangea
Philadelphus coronarius	Sweet Mock-Orange
Punica granatum	Pomegranate

Crossvine, *Bignonia capreolata*

Carolina Yellow Jessamine, *Gelsemium sempervirens*

Rhododendron austrinum	Florida Azalea
Rhododendron canescens	Piedmont Azalea
Vaccinium ashei	Highbush Blueberry
Viburnum bracteatum 'Emerald Luster'	Bracted Viburnum 'Emerald Luster'
Viburnum microcephalum	Chinese Snowball Viburnum
Viburnum nudum	Smooth Witherod
Viburnum plicatum tomentosum	Summer Snowflake Viburnum
Viburnum x juddii	Judd Viburnum

Low Evergreen Shrubs

Ilex vomitoria 'Nana'	Dwarf Yaupon Holly
Ilex glabra 'Shamrock'	Inkberry
Jasminum floridum	Florida Jasmine
Kerria japonica 'Shannon'	Japanese Kerria
Ruscus aculeatus	Butcher's Broom
Viburnum obovatum	Small Viburnum
Yucca filamentosa	Yucca

Low Deciduous Shrubs

Callicarpa americana	Beautyberry
Calycanthus floridus	Sweetshrub
Euonymus americanus	Strawberry bush
Hypericum frondosum 'Sunburst'	Sunburst St. John's Wort
Itea virginica	Virginia Sweetspire
Rosa 'Knockout'	Knockout Rose

Vines

Bignonia capreolata	Crossvine
Gelsemium sempervirens	Carolina Yellow Jessamine
Rosa banksia 'Lutea'	Lady Bank's Rose

Groundcover

Hemerocallis species	Daylily
Echinacea purpurea 'Kim's Knee High'	Coneflower
Liriope muscari	Liriope
Muhlenbergia capillaris	Pink Muhly Grass
Polystichum acrostichoides	Christmas Fern
Rudbeckia fulgida 'Goldstrum'	Black eyed Susan

Cryptomeria, *Cryptomeria japonica*

Eastern Red Cedar, *Juniperus virginiana*

Wax Myrtle, *Myrica cerifera*

Evergreen Screening Plant Palette

Botanical Name	Common Name
Evergreen Trees	
Cryptomeria japonica	Cryptomeria
Ilex opaca	American Holly
Ilex latifolia	Lusterleaf Holly
Ilex attenuata 'Savannah'	Savannah Holly
Juniperus virginiana	Eastern Red Cedar
Magnolia virginiana	Sweetbay
Magnolia grandiflora	Magnolia
Myrica cerifera	Wax Myrtle
Osmanthus x fortunei	Fortune's Osmanthus
Pinus taeda	Loblolly Pine
Prunus caroliniana	Cherry Laurel
Large Evergreen Shrubs	
Agarista populifolia	Leucothoe
Ilex vomitoria	Yaupon Holly
Illicium parviflorum	Small Anise
Low Evergreen Shrubs	
Ilex cornuta 'Carissa'	Carissa Holly
Ilex glabra	Inkberry
Ilex vomitoria 'Nana'	Dwarf yaupon holly
Viburnum obovatum 'Reifler's Dense'	Reiflers Dense Small Viburnum
Vines	
Gelsemium sempervirens	Carolina Yellow Jessamine

Red Maple, *Acer rubrum*

Black Gum/Tupelo, *Nyssa sylvatica*

Rain Garden Plant Palette

Botanical Name	Common Name
Canopy Trees	
Acer rubrum 'October Glory'	October Glory Red Maple
Betula nigra	River Birch
Nyssa sylvatica	Blackgum
Quercus lyrata	Overcup Oak
Taxodium distichum	Common Bald Cypress
Low Evergreen Shrubs	
Ilex glabra	Inkberry
Groundcover	
Chasmanthium latifolium	River Oats
Crinum americanum	Crinum
Dichromena colorata	Whitetop sedge
Eleocharis sp.	Spike rush
Equisetum sp.	Horsetail
Iris fulva	Copper Iris
Juncus effusus	Soft Rush
Osmunda cinnamomea	Cinnamon Fern
Zephyranthes atamasco	Atamasco Lily

Bald Cypress, *Taxodium distichum*

Swamp Milkweed, *Asclepias incarnata*

Stormwater Pond Plant Palette

Botanical Name	Common Name
Canopy Trees	
Acer saccahrum	Sugar Maple
Acer rubrum	Red Maple
Betula nigra	River Birch
Nyssa sylvatica	Blackgum
Quercus lyrata 'Highbeam'	Highbeam Overcup Oak
Salix babylonica	Weeping Willow
Salix nigra	Black Willow
Taxodium distichum	Common Bald Cypress
Deep Water	
Nuphur luteum	Spattedock
Nymphaea odorata	Fragrant Waterlily
Shallow Water Bench	
Carex sp.	Sedges
Hibiscus sp	Hibiscus
Hymenocallis sp.	Spider-Lily
Iris sp.	Louisiana Iris
Juncus effusus	Soft Rush
Panicum virgatum	Switchgrass
Peltandra virginica	Tuckahoe
Pontederia cordata	Pickeral Plant
Saurus cernus	Lizard's tail
Thalia dealbata	Thalia
Shoreline Fringe	
Asclepias incarnata	Swamp Milkweed
Cephalanthus occidentalis 'Sputnik'	Buttonbush
Chasmanthium latifolium	River oats
Clethra alnifolia 'Sixteen Candles'	Sweet Pepperbush
Eleocharis sp.	Spike rush
Itea virginica	Virginia Sweetspire
Lobelia cardinalis	Cardinal Flower
Onoclea sensibilis	Sensitive Fern
Osmunda cinnamomea	Cinnamon Fern
Osmunda regalis	Royal Fern

Ronweed, *Vernonia gigantea*

Beautyberry, *Callicarpa americana*

Arrowwood Viburnum, *Viburnum dentatum*

Riparian Fringe

Andropogon virginicus	Broomsedge
Eupatorium coelestinum	Wild Ageratum
Eupatorium fistulosum	Joe Pye Weed
Helianthus angustifolius	Swamp Sunflower
Sorghastrum nutans	Indiangrass
Vernonia gigantea	Ironweed

Floodplain terrace

Agarista populifolia	Leucothoe
Callicarpa americana	Beautyberry
Illicium parviflorum	Anise
Sambucus canadensis	Elderberry
Vaccinium ashei	Blueberry
Viburnum dentatum	Arrowwood Viburnum
Viburnum nudum	Possumhaw Viburnum

Prairie Dropseed, *Sporobolus heterolepis*

Russian Sage, *Perovskia*

Meadow Plant Palette

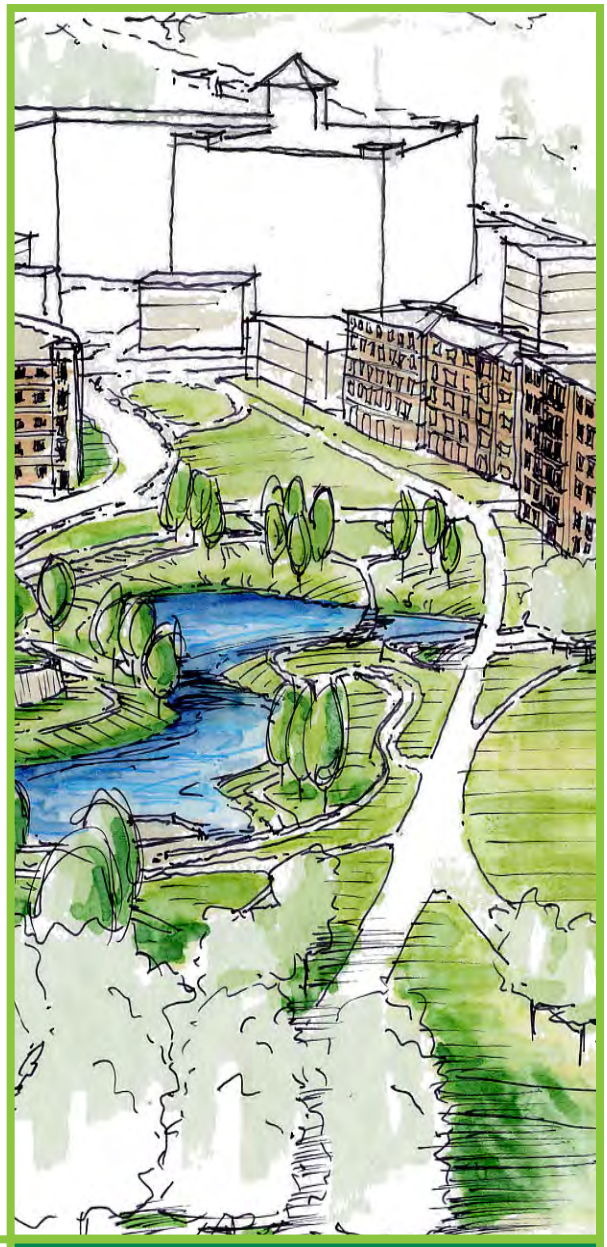
Botanical Name	Common Name
Grasses	
Muhlenbergia capillaris	Pink Muhly Grass
Panicum virgatum 'Northwind'	Northwind' Switchgrass
Panicum virgatum 'Cloud Nine'	Cloud Nine Panic Grass
Schizachryium scoparium 'The Blues'	The Blues Little bluestem
Sporobolus heterolepis	Prarie Dropseed
Perennials	
Amsonia hubrichtii	Arkansas Amsonia
Asclepias tuberosa	Milkweed
Baptisia alba	White False Indigo
Echinacea cultivars	Coneflower
Eryngium yuccifolium	Rattlesnake Master
Gaura lindheimeri	Whirling Butterflies
Liatris microcephala	Liatris
Perovskia	Russian Sage
Rudbeckia fulgida 'Goldstrum'	Black eyed Susan
Solidago 'Fireworks'	Fireworks Goldenrod
Bulbs	
Narcissus pseudonarcissus	Daffodills (Ice Follies, Carlton, Camperrelli cultivars)

Inkberry, *Ilex glabra*

Liriope, *Liriope spicata*

Streetscape/ Parking Area Plant Palette

Botanical Name	Common Name
Canopy Trees	
Quercus nuttallii 'QNSTC'	Esplanade Nuttall Oak
Quercus x 'QS20'	Promenade Red Oak
Metasequoia glyptostrobodies '1042'	Dawn Redwood
Understory Trees	
Acer buergerianum	Trident Maple
Cercis canadensis	Redbud
Chionanthus virginicus	Fringe tree
Lagerstroemia indica	Crape Myrtle
Quercus georgiana	Georgia Oak
Parrotia persica	Parrotia
Low Evergreen Shrubs	
Ilex cornuta 'Carissa'	Carissa Holly
Ilex glabra	Inkberry
Ilex vomitoria 'Nana'	Dwarf yaupon holly
Viburnum obovatum 'Reifler's Dense'	Reiflers Dense Small Viburnum
Low Deciduous Shrubs	
Hypericum frondosum	St. John's Wort
Itea virginica	Virginia Sweetspire
Groundcover	
Chasmanthium latifolium	River oats
Echinacea purpurea 'Kim's Knee High'	Coneflower
Hemerocallis species	Daylily
Liriope muscari	Liriope
Liriope spicata	Liriope
Ophiopogon japonicus	Mondo Grass
Miscanthus sinensis 'Adagio'	Dwarf Maiden Grass
Muhlenbergia capillaris	Pink Muhly Grass
Rudbeckia fulgida 'Goldstrum'	Black eyed Susan
Sporobolous hetreolopus	Prarie Dropseed

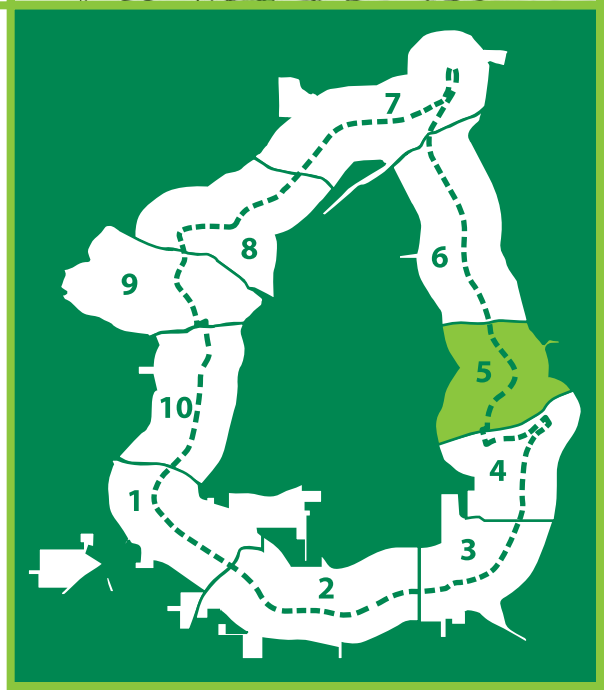


Atlanta BeltLine Master Plan

SUBAREA 5

FREEDOM PARKWAY

Transportation Analysis Report



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Adopted by the Atlanta City Council on March 16, 2009

BeltLine
Atlanta Connected

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Introduction

The intent of the subarea master planning process is to build on previous BeltLine planning efforts and establish the foundation for overall BeltLine project implementation by refining strategic-level recommendations related to parks, open space, mobility, circulation, land use, and urban design. The master planning process is also intended to create an ongoing mechanism for community participation in the development of neighborhood-based recommendations for the trail and transit corridor.

Purpose of the Report

As part of the subarea master planning process, this report details existing and future traffic operations and provides a list of recommended projects to address identified deficiencies.

Overview of the BeltLine Project

The subarea master plan sets a framework to build and maintain vital communities around the BeltLine so that new development respects established neighborhoods and historic resources, takes advantage of transit and trail for transportation access, improves the street network, and creates special places for residents and visitors. The plan creates compact activity centers along the proposed BeltLine transit corridor. Activity centers along the corridor create destinations for transit users and establish necessary transit-supportive densities.

The subarea master plan builds on the wealth of historic structures, cultural resources, and historic districts in the area by improving connections and public access to these where appropriate. To reinforce the subarea's physical character, land use recommendations are appropriately scaled around historic structures. Additionally, any proposed change in a zoning designation for a historic structure indicates a recommended change in land use rather than a physical alteration to the exterior of the structure. StudioPlex and Ponce Park redevelopments are good examples of re purposed historic structures that do not compromise the character of the building. Smaller-scale redevelopment of buildings along DeKalb Avenue, such as the Marble Lofts, are also positive examples of building re-use that maintains the unique and cultural significance of these structures.

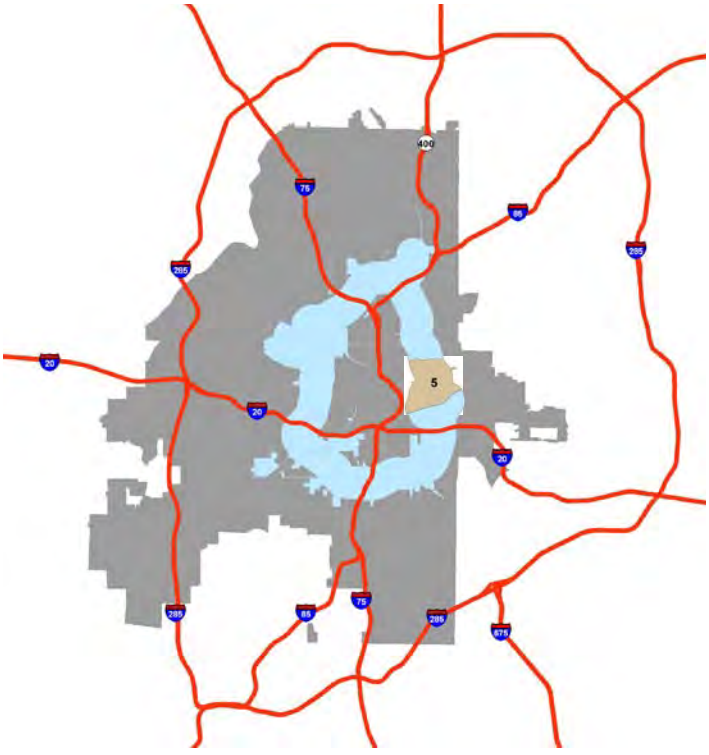


Figure 01 - BeltLine Subarea 5 Location Sketch

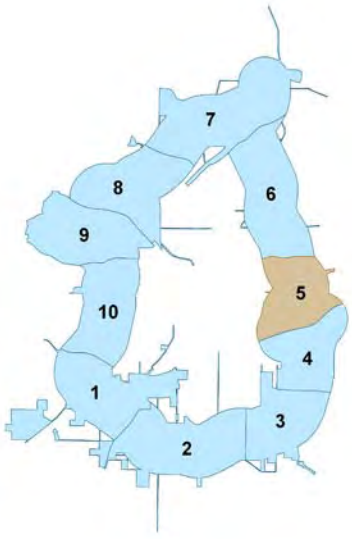


Figure 02 - BeltLine Planning Subarea 5

The subarea master plan also protects single family neighborhoods by stepping down intensity near existing homes and guiding compact mixed-use developments to activity centers. Infill development should also be appropriately scaled to enhance surrounding single-family homes, and former houses that have been converted to commercial uses should maintain their residential appearance, especially along Edgewood and DeKalb avenues.

New development must contribute to the street network by re-establishing street connections or creating new links, especially around the BeltLine and Freedom Parkway. Over the years, these neighborhoods have lost portions of the street network, forcing vehicular traffic to use remaining roadways. The diverted traffic flow often travels through residential neighborhoods and disrupts quality of life. The subarea master plan calls for several street connections across the BeltLine and Freedom Parkway. Just as critical, though, are the new streets around the edge of the proposed park. The park master plan eliminates vehicular traffic across the park and reinforces the role of new park-edge streets in maintaining circulation in the area.

The park master plan incorporates City of Atlanta stormwater management ponds that are designed to be an asset to the community while supporting much-needed stormwater improvements in the area. The park also includes active and passive programming, such as sports fields, nature trails, and multi-purpose lawns. The trail system connects to the BeltLine trail, the Freedom PATH, and bicycle lanes along Ralph McGill Boulevard. Inside the park, the Park master plan highlights several opportunities for public art. The Green Space Opportunities section of the Park master plan describes the proposed elements of the park more fully, and the appendices contain the full Historic Fourth Ward Park master plan study.

The master plan proposes additional green spaces along Moreland Avenue and Irwin Street. The City should incorporate the soccer fields on Moreland Avenue into the official recreation inventory and establish a better presence on Austin Avenue. The Irwin Street Pocket Park that includes the historic brick water tower would be an iconic feature denoting where the BeltLine and the proposed Sweet Auburn Trolley share a transit stop. The plan also identifies improved trail connections, including the addition of a PATH on the northern side of Freedom Parkway and BeltLine trail enhancements through the Krog Street Tunnel.

Recommendations from this transportation analysis report will be incorporated into the subarea master plan. It also serves as a standalone document providing detailed analysis of traffic conditions.

Mobility Policies

As part of the engagement process with the planning committee and study group, the planning team identified the following specific mobility goals for BeltLine Subarea 5. These goals serve as the basis for the mobility and connectivity recommendations of this transportation analysis report and lay the groundwork for implementation actions.

Mobility policies are as follows:

- Maximize accessibility to BeltLine transit
- Minimize impacts of the BeltLine transit
- Foster transit-supportive economic development along the BeltLine
- Mitigate traffic impacts of BeltLine redevelopment
- Emphasize pedestrian connectivity
- Create a network of sidewalks and trails
- Enhance street grid and improve street connectivity
- Provide disabled accessibility
- Minimize trail intrusion on existing neighborhoods
- Provide connectivity to all neighborhoods

Summary of Report Contents

This report begins with a brief description of existing key roadway facilities. Roadway geometry, traffic control, posted speed, functional classification, and average annual daily traffic (AADT) counts are included. Next, the study

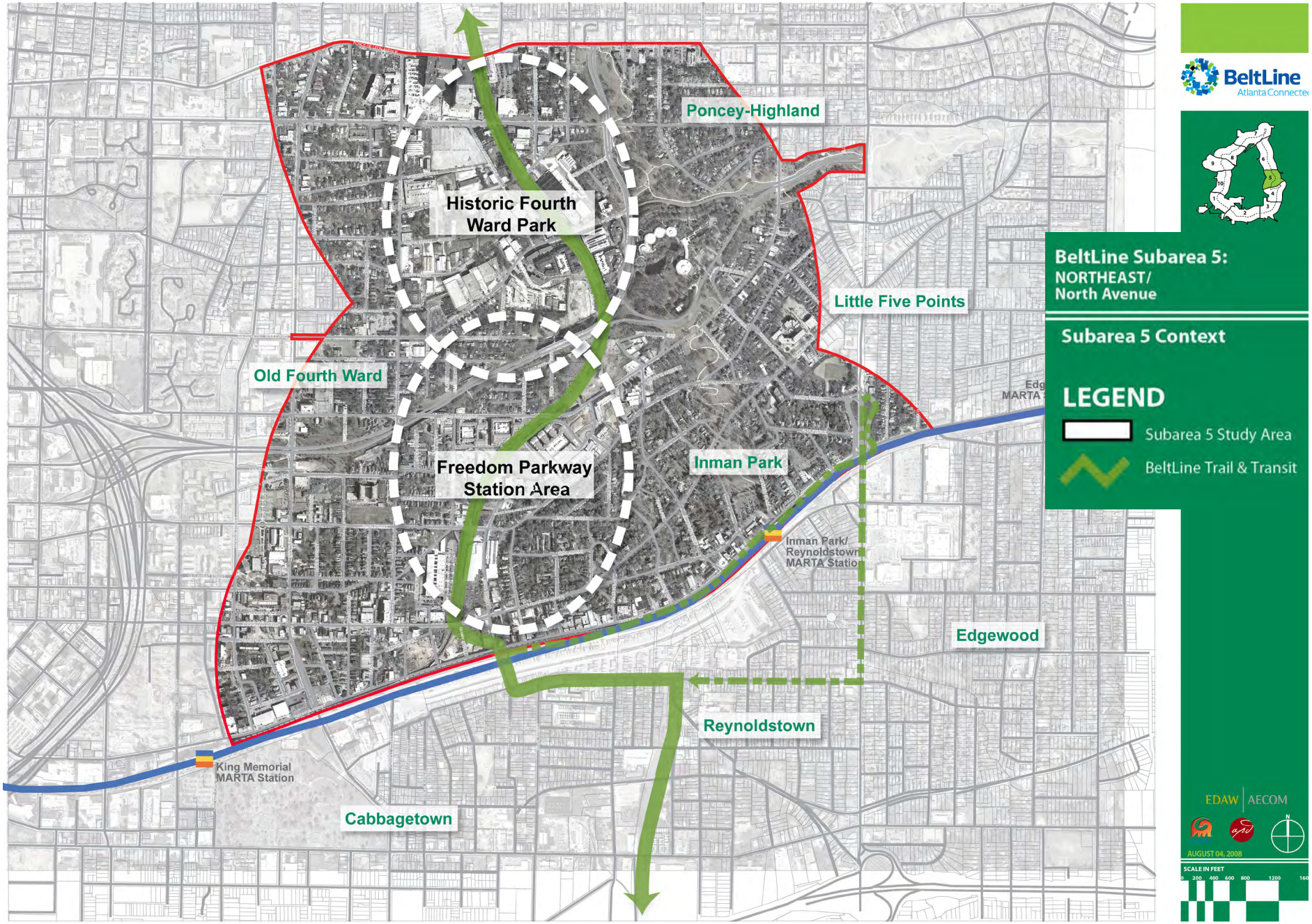


Figure 03 - BeltLine Subarea 5 Planning Context

methodology used to perform traffic analysis is explained.

The next three sections of this report analyze existing as well as future Build, No Transit and Build Best Case traffic operations. The Build, No Transit scenario evaluates traffic without BeltLine transit in place. The Build Best Case scenario assumes that BeltLine transit will be in operation. For each scenario, transportation improvements that address deficiencies identified in the analysis are recommended for implementation by 2020 or 2030.

Finally, the conclusions and recommendations section presents a list of all projects that are recommended for implementation.

Existing Roadway Facilities

For Subarea 5, a review of existing key roadway facilities, including functional classification, an overview of geometry, traffic control, posted speed, and AADT, was undertaken.

Key Roadways

Key roadways are streets with a functional classification of collector and above. They provide connectivity from the study area to destinations throughout Atlanta and the region. In general, these streets carry the bulk of vehicular traffic in the study area. Key roadways identified are as follows:

Ponce de Leon Avenue –

Urban principal arterial; geometry varies from six lanes between Parkway Drive and the railroad bridge to five lanes (two westbound lanes and three eastbound lanes) from the railroad bridge to North Highland Avenue.

North Avenue –

Urban minor arterial; geometry varies from six lanes between Parkway Drive and the railroad bridge east of North Angier Avenue to four lanes between the railroad bridge and Bonaventure Avenue, then drops to two lanes to Freedom Parkway, where it becomes three lanes (one westbound lane and two eastbound lanes) to North Highland Avenue.

Ralph McGill Boulevard –

Urban collector; geometry and operations vary, beginning with four lanes and two-way operation between Boulevard and Ashley Avenue. Here, operation changes to one-way in the westbound direction and becomes two lanes to Village Parkway, where operation becomes two-way again with one lane in each direction to its terminus at Freedom Parkway.

Highland/North Highland Avenue –

Urban collector; geometry varies from three lanes (two westbound lanes and one eastbound lane) between Boulevard and Randolph Street before dropping to two lanes from Randolph Street to Ponce de Leon Avenue.

Freedom Parkway –

Urban principal arterial; geometry is four lanes separated by a raised median; East Freedom Parkway is two lanes from Freedom Parkway to its terminus at Moreland Avenue.

Irwin Street/Lake Avenue/Sinclair Avenue –

Urban collector; geometry varies from four lanes between Jackson Street and Randolph Street to two lanes from Randolph Street to the study area boundary.

Auburn Avenue –

Urban minor arterial; geometry varies from four lanes between Jackson Street and Boulevard to three lanes (two westbound lanes and one eastbound lane) to Howell Street, then two lanes to its terminus at Irwin Street.

Edgewood/Euclid Avenue –

Urban minor arterial; geometry varies from five lanes between Jackson Street and Boulevard (two westbound lanes, one eastbound through lane, one eastbound left-turn lane, and one eastbound right-turn lane) to two lanes from Boulevard to the study area boundary.

Jackson Street/Parkway Drive –

Urban collector; geometry varies from two lanes between Decatur Street and Edgewood Avenue, incorporates a continuous center left-turn lane to Highland Avenue, becomes four lanes to Ralph McGill Boulevard, and then drops to two lanes to Ponce de Leon Avenue.

Boulevard –

Urban minor arterial; geometry varies from three lanes (two northbound lanes and one southbound lane) between Decatur Street and Edgewood Avenue to four lanes from Edgewood Avenue to Ponce de Leon Avenue.

Figure 04 - BeltLine Subarea 5 Existing Traffic Volumes

Randolph Street/Glen Iris Drive –

Urban minor arterial; geometry varies from three lanes (two southbound lanes and one northbound lane) between Edgewood Avenue and Old Wheat Street to two lanes from Edgewood Avenue to Ponce de Leon Avenue.

Posted speeds in the study area range from 25 miles per hour (mph) to 35 mph. More detailed speed limit data are included in Appendix D, which also provides substantial additional detail regarding intersection geometry and traffic control.

Exiting Traffic Volumes

Traffic volume data provide an incomplete assessment of conditions in the study area because they measure travel demand without accounting for the supply of transportation capacity. However, these data do indicate where potential improvements in Subarea 5 will serve the highest number of travelers.

Data Sources and Methodology

Traffic volume data in the form of AADT counts were obtained from the Georgia Department of Transportation's (DOT's) State Traffic and Report Statistics at 18 locations in Subarea 5. These data were then entered into a geographic information system (GIS) for further analysis. The latest volume data available (2006) were used for this analysis. Although some Georgia DOT count stations provide percent truck traffic, these data were not available for any of the stations in the study area. Figure 4 represents volumes at count locations.

Key Findings

Travel demand is highest in the study area from east to west with two important facilities carrying significant amounts of traffic:

- Ponce de Leon Avenue carries the most traffic of any facility in the study area with an AADT of 37,360 vehicles per day between Parkway Drive and Boulevard and 34,800 from Freedom Parkway to Barnett Street.
- Freedom Parkway serves the second highest number of vehicles with an AADT of 25,530 just west of where Ashley Avenue would intersect Freedom Parkway if it continued south from Willoughby Way and 26,330 east of that point.

North-south travel demand in the study area is also substantial:

- Krog Street between Edgewood and DeKalb avenues serves the fifth-highest number of vehicles in the study area with an AADT of 20,380.
- Boulevard caries the sixth, seventh, and eighth largest number of vehicles with an AADT of 18,470 vehicles per day between Ponce de Leon Avenue and North Avenue, 18,760 just north of Wabash Avenue, and 16,560 between Chamberlain and Gartrell streets.

Other facilities that carry more than 10,000 vehicles per day include:

- The SR 42 (Freedom Parkway) connector carries 15,720 vehicles per day west of North Highland Avenue.
- DeKalb Avenue serves 15,700 vehicles per day between Degress and Haralson avenues.
- North Avenue carries 13,040 vehicles per day between Linwood Avenue and Cleburne Terrace.

Study Methodology

This section describes the methodology used to evaluate existing traffic conditions and to forecast future operations in Subarea 5. Twenty-four intersections within the study area were modeled, and levels of service (LOS) were calculated for each intersection.

LOS Methodology

LOS analysis is commonly used in transportation planning to identify existing and future deficiencies in the transportation network. LOS is based on average delay in seconds and provides a qualitative assessment of traffic conditions. LOS ranges from A to F with A corresponding to no congestion and F corresponding to severe congestion. In dense urban environments, LOS A through LOS D is considered acceptable. In general, LOS D is the service standard, which means that intersections operating at LOS E or LOS F are considered unacceptable.

LOS at signalized intersections is derived from the seconds of delay calculated by Synchro traffic modeling software. The following table lists seconds of delay and their corresponding LOS.

Microsimulation Methodology

The roadway network was modeled using Synchro 7.0 traffic simulation software to analyze existing traffic conditions and to identify issues within the study area. Traffic flow was analyzed for morning and afternoon peak-hour conditions. The simulation analysis resulted in the determination of existing peak-hour delays and corresponding LOS for each of the 24 intersections studied.

Several data items were collected as input to the model. Turning volume data (traffic counts) during the morning and afternoon peak periods were gathered at 21 intersections in the study area. In addition, 24-hour traffic volume counts were gathered at four locations throughout the study area. Counts were gathered on October 23rd and 24th, 2007. The counts are available in Appendix C.

Additional information gathered included number of lanes, lane assignments, intersection lane configuration, and traffic signal phasing. This information was used to create a model network of the entire study area for capacity analysis. Additionally, field visits were conducted to study the traffic flow and to identify critical intersections within the study area. Figure 05 identifies the intersections where counts were performed. Figure 06 identifies the traffic control methods (stop signs or traffic signals) at those intersections.

LOS	VEHICLES TO CAPACITY RATIO	SECONDS OF DELAY (INTERSECTIONS)	DESCRIPTION
A, B	< 0.50	< 20	Uncongested, vehicles clear in a single traffic signal cycle
C	0.50 – 0.65	20 – 35	Vehicle speeds slightly below the posted limit with occasional delay at intersections
D	0.65 – 0.85	35 – 55	Vehicle speeds below the posted limit with limited opportunities to pass and noticeable intersection delay
E	0.85 – 1.00	55 – 80	At capacity, vehicle speeds far below posted limits, no gaps in traffic, and significant intersection delays
F	> 1.00	> 80	Over capacity, stop-and-go traffic, and extreme delays at intersections

Table 01 - Level of Service Thresholds and Descriptions

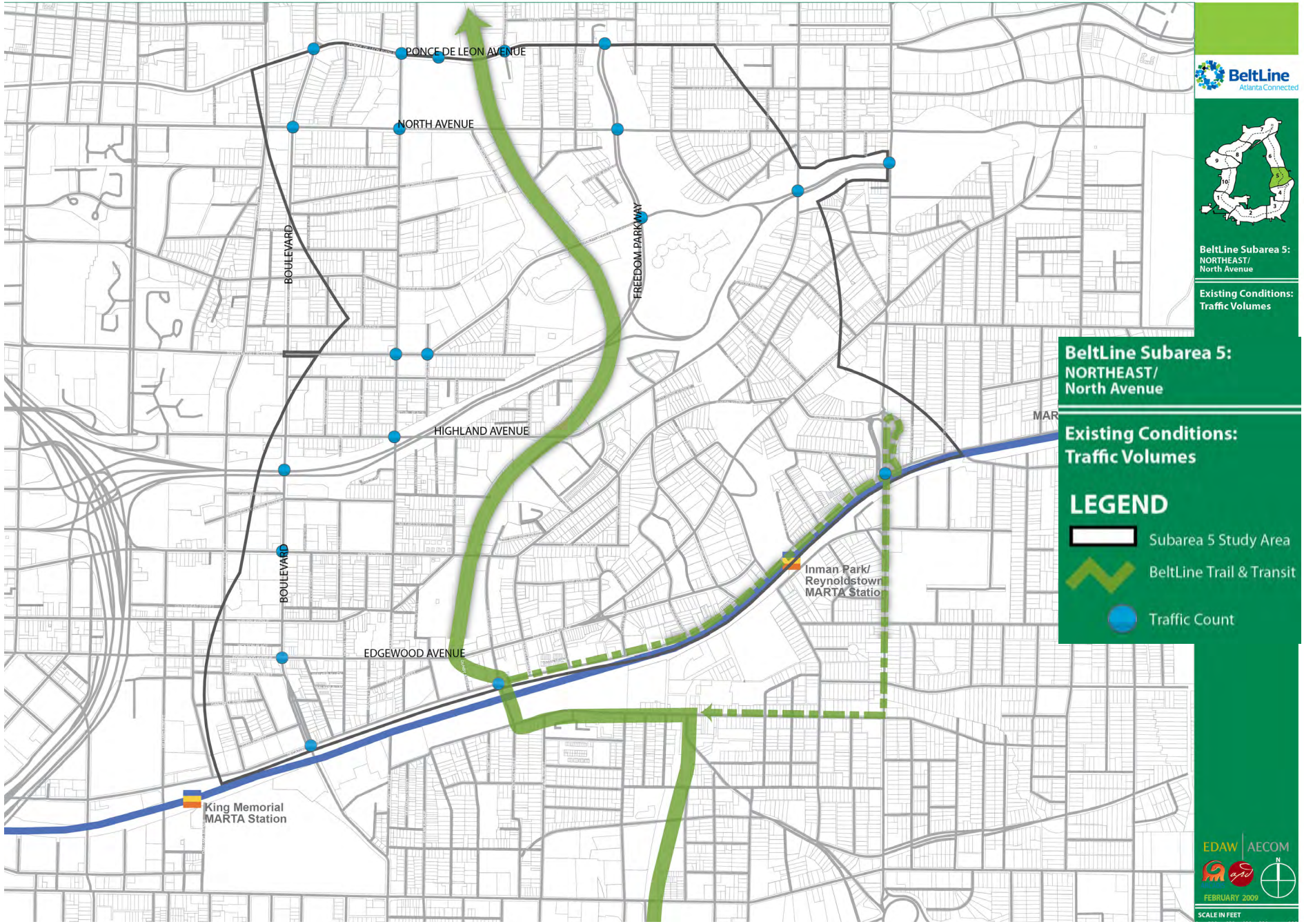


Figure 05 - BeltLine Subarea 5 Intersection Count Locations

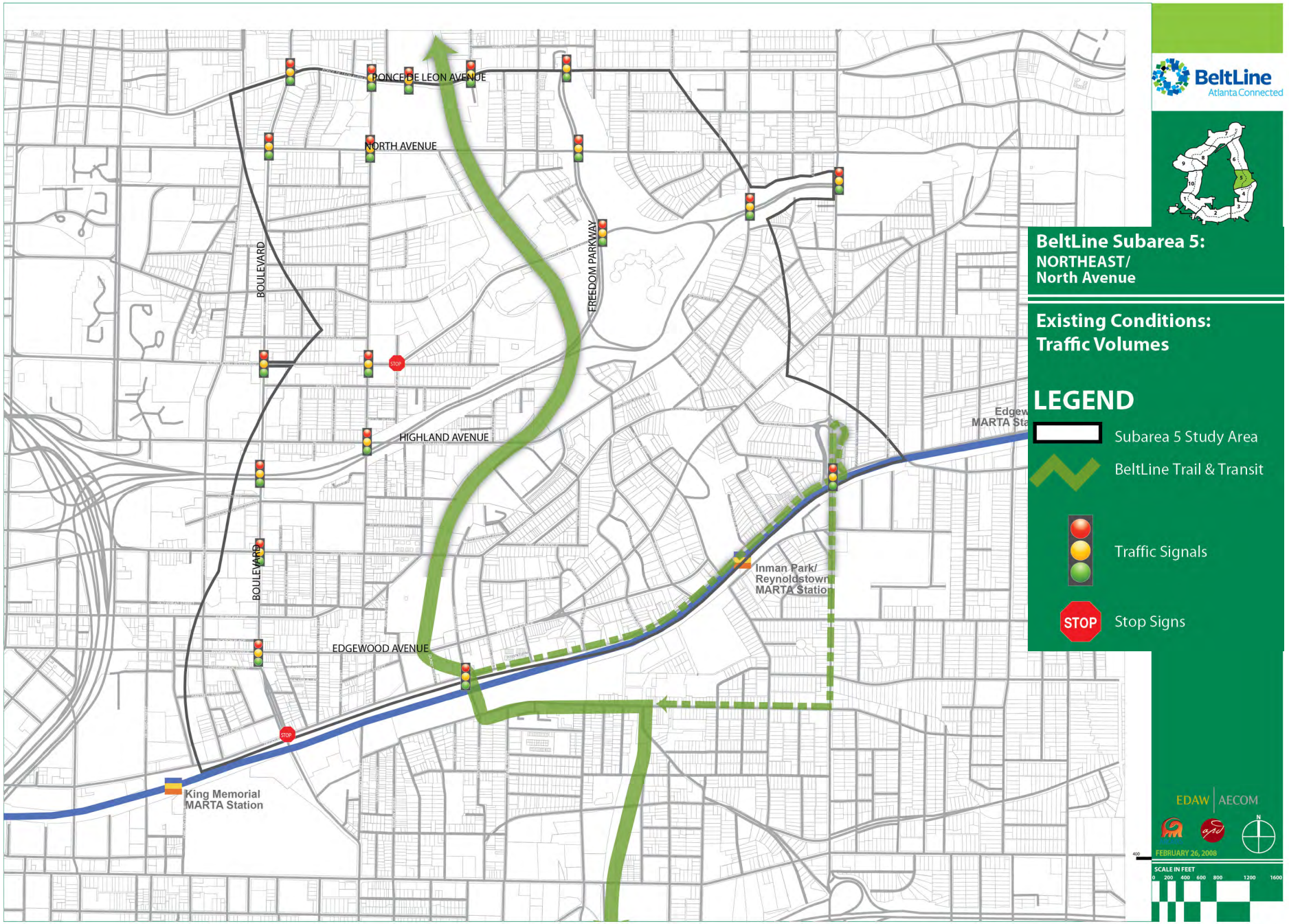


Figure 06 -BeltLine Subarea 5 Intersection Traffic Control

Existing Traffic Operations

An analysis of existing conditions based on current intersection turning movement counts was performed using Synchro traffic simulation software. The existing traffic operations analysis identified current intersections that provide an unacceptable LOS, which is E or worse by city standards, and provides a reference point against which to evaluate traffic conditions and transportation improvements.

Except for three intersections, all intersections studied are currently operating at LOS C or better during both a.m. and p.m. peak hours. East Freedom Parkway at North Highland Avenue is operating at LOS D during the a.m. peak hour, Boulevard/Monroe Drive at Ponce de Leon Avenue is operating at LOS D during the p.m. peak hour, and Boulevard at Freedom Parkway is currently failing during a.m. and p.m. peak hours. Figure 7 provides a graphical depiction of existing lane geometry, Figure 8 depicts existing traffic volumes and Figure 9 shows existing LOS. Table 2 provides an overview of LOS during both a.m. and p.m. peak hours for all intersections analyzed.

INTERSECTION	A.M. PEAK LOS	A.M. PEAK V/C RATIO	P.M. PEAK LOS	P.M. PEAK V/C RATIO
Ponce de Leon Avenue at Boulevard	C	0.94	D	1.01
Ponce de Leon Avenue at Glen Iris Drive	B	0.49	A	0.68
Ponce de Leon Avenue at Ford Place Extension	n/a	n/a	n/a	n/a
Ponce de Leon Avenue at Home Depot	A	0.72	B	0.65
Ponce de Leon Avenue at Ponce Place	B	0.72	B	0.62
Ponce de Leon Avenue at Freedom Parkway	B	0.71	B	0.71
North Avenue at Boulevard	B	0.51	B	0.69
North Avenue at Glen Iris Drive	C	0.53	B	0.60
North Avenue at Ford Place Extension	n/a	n/a	n/a	n/a
North Avenue at Freedom Parkway	C	0.72	C	0.86
Boulevard at Ralph McGill Boulevard	A	0.55	B	0.63
Boulevard at Freedom Parkway	F	1.46	F	1.31
Boulevard at Irwin Street	B	0.79	A	0.60
Boulevard at Edgewood Avenue	B	0.65	B	0.84
Boulevard at Decatur Street	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Boulevard at Glen Iris Drive	C	0.47	B	0.75
Ralph McGill Boulevard at Freedom Parkway	D	0.72	D	0.54
Freedom Parkway at North Highland Avenue	D	0.85	D	0.82
Freedom Parkway at Moreland Avenue	A	0.63	C	0.80
Moreland Avenue at DeKalb Avenue (west)	A	0.50	A	0.62
Moreland Avenue at DeKalb Avenue (east)	A	0.47	A	0.47
Decatur Street at Krog Street	C	0.90	B	0.78
Glen Iris Drive at Highland Avenue	C	0.71	B	0.83
Ralph McGill Boulevard at Fortune Street	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Boulevard at Angier Avenue Connector	n/a	n/a	n/a	n/a
Ralph McGill Boulevard at Freedom Parkway Underpass Street	n/a	n/a	n/a	n/a

Table 02 - Existing Conditions Peak-Hour Level of Service (2007)

Baseline Traffic Operations

This section details planned road improvements and current development trends in BeltLine Subarea 5. Capacity analyses for interim year 2020 and horizon year 2030 are documented

Planned Road Improvement

There are no planned road improvements in Subarea 5 listed in either the Atlanta Regional Commission's (ARC's) Transportation Improvement Program or Regional Transportation Plan.

Current Development Trends

The study area is actively transforming, especially around the site of the proposed Historic Fourth Ward Park and along the BeltLine corridor. One successful redevelopment, the Mead factory site, is largely complete and serves as a model for other redevelopment opportunities in the area. This project reintroduced a grid street network, a mixture of housing types, environmentally friendly stormwater management ponds, and pedestrian-friendly streets lined with ground-level retail. Other proposed redevelopment around the Historic Fourth Ward Park includes the Ponce Park redevelopment, which would convert the historic Sears Roebuck building to mixed use and introduce 2 acres of green space.

Year 2020 Traffic Operations

A baseline traffic operation scenario was modeled and analyzed to predict intersection LOS in 2020. The baseline scenario assumes that no BeltLine-related development takes place and no transportation improvements that are not currently programmed or planned are implemented.

Trip Generation

Baseline scenario trips were taken from a 2020 run of ARC's Envision6 travel demand model. An annual growth factor was calculated based on the change in volumes between 2005 and 2020 and then applied to the current turning movement counts.

Because the ARC travel demand model historically under predicts growth inside the City of Atlanta limits, the socio-economic (SE) data for traffic analysis zones (TAZs) 42, 43, 44, 55, 1658, and 1659, which roughly correspond to the Subarea 5 study boundary, was analyzed. From 2005 to 2030, an increase in population of 5,072 persons (47.3 percent, or 1.6 percent per year) is forecast by ARC. Employment during the same time period is expected to increase by 2,324 jobs (20.6 percent or 1.1 percent annually). These rates of growth are consistent with current development trends in Subarea 5 and are likely realistic if no BeltLine transit is in place to spur redevelopment. However, the ARC SE data growth rates are likely to be somewhat lower than what actually occurs because no individual TAZ has an increase over 75.6 percent, which implies redevelopment of existing properties with a substantial increase in density is not factored into the ARC forecast for TAZs in Subarea 5.

Capacity Analysis

Currently, there is excess capacity at most intersections in the study area. As new development is added in the future, this capacity will begin to be used up by the additional traffic. Because forecasted future development is spread throughout the study area and not focused on one or two key intersections, study area intersection LOS drops but remains acceptable (LOS D or better) at most intersections. While existing and future conditions are reasonable in the majority of the study area, there are a few problem intersections. One intersection, Boulevard at Freedom Parkway, will operate at LOS F during all time periods and under all scenarios.

Some reduction in intersection LOS is forecast in 2020 under the baseline scenario, as expected. Four intersections will drop from a current LOS of C to LOS D or worse and one intersection will decline to LOS E in 2020 from LOS B. Results of the baseline analysis are detailed on Table 03. Figure 11 depicts the future roadway geometry,

which does not change from existing conditions (no roadway improvements are planned in the City's Capital Improvement Plan). Figures 12 and 13 depict the future traffic volumes and Level of Service for the 2020 Baseline scenario.

Intersections predicted to operate at an unacceptable level of service are summarized as follows:

- Ponce de Leon Avenue at Boulevard will decline to LOS E from the current LOS C during the a.m. peak hour.
- Ponce de Leon Avenue at Boulevard will decline from the current LOS D to LOS F in the p.m. peak hour.
- Glen Iris Drive at Highland Avenue will fare the worst, deteriorating from the current LOS B to LOS E during the p.m. peak hour.

Projects needed to improve the Level of Service are provided in the Conclusions and Recommendations Section.

INTERSECTION	A.M. PEAK LOS	A.M. PEAK V/C RATIO	P.M. PEAK LOS	P.M. PEAK V/C RATIO
Ponce de Leon Avenue at Boulevard	E	1.08	E	1.26
Ponce de Leon Avenue at Glen Iris Drive	B	0.54	B	0.71
Ponce de Leon Avenue at Ford Place Extension	n/a	n/a	n/a	n/a
Ponce de Leon Avenue at Home Depot	B	0.80	B	0.71
Ponce de Leon Avenue at Ponce Place	B	0.77	B	0.75
Ponce de Leon Avenue at Freedom Parkway	B	0.76	B	0.80
North Avenue at Boulevard	B	0.60	B	0.78
North Avenue at Glen Iris Drive	C	0.61	B	0.62
North Avenue at Ford Place Extension	n/a	n/a	n/a	n/a
North Avenue at Freedom Parkway	C	0.81	D	0.98
Boulevard at Ralph McGill Boulevard	A	0.67	B	0.83
Boulevard at Freedom Parkway	F	1.72	F	1.41
Boulevard at Irwin Street	C	0.89	B	0.69
Boulevard at Edgewood Avenue	C	0.73	C	0.95
Boulevard at Decatur Street	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Boulevard at Glen Iris Drive	C	0.53	B	0.84
Ralph McGill Boulevard at Freedom Parkway	B	0.76	B	0.49
Freedom Parkway at North Highland Avenue	E	0.99	D	0.92
Freedom Parkway at Moreland Avenue	B	0.70	C	0.94
Moreland Avenue at DeKalb Avenue (west)	A	0.55	B	0.70
Moreland Avenue at DeKalb Avenue (east)	A	0.49	A	0.52
Decatur Street at Krog Street	E	0.96	D	0.92
Glen Iris Drive at Highland Avenue	C	0.81	C	0.94
Ralph McGill Boulevard at Fortune Street	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Boulevard at Angier Avenue Connector	n/a	n/a	n/a	n/a
Ralph McGill Boulevard at Freedom Parkway Underpass Street	n/a	n/a	n/a	n/a

Table 03 - 2020 Baseline Peak-Hour Level of Service

Year 2030 Traffic Operations

The same baseline traffic operation scenario was analyzed with a horizon year of 2030. An annual growth factor was calculated based on historic rates between 2005 and 2030 and then applied to the current turning movement counts.

Capacity Analysis

Traffic is projected to be worse in 2030 when compared to existing conditions and 2020 conditions under the baseline scenario.

Significant reduction in intersection LOS is forecast in 2030 under the baseline scenario. Results of the baseline analysis are detailed in Table 4 and illustrated on Figures 13- 15. The following list summarizes intersections operating at an unacceptable LOS under 2030 baseline conditions during the a.m. peak hour:

- Ponce de Leon Avenue at Boulevard
- Freedom Parkway at North Highland Avenue
- Decatur Street at Krog Street

Intersections operating at LOS E or worse under the 2030 baseline scenario during the p.m. peak hour are:

- Ponce de Leon Avenue at Boulevard
- North Avenue at Freedom Parkway.
- Freedom Parkway at North Highland Avenue

While Freedom Parkway at North Highland Avenue is predicted to operate below the City of Atlanta's LOS standards, improving the intersection will require widening both Freedom Parkway and North Highland Avenue. Aside from the substantial cost, adding capacity to North Highland Avenue would negatively impact the Freedom Parkway Trail crossing at the southern leg of the intersection.

Both Freedom Parkway and North Highland Avenue are two lane facilities with left turn bays at the intersection. Therefore, increasing left turn capacity to improve the LOS requires additional through lanes on both roadways to receive the left turning traffic. This project is a substantial undertaking and the cost and impacts are unlikely to justify the improvement in LOS, so no projects are recommended.

INTERSECTION	*A.M. PEAK LOS*	*A.M. PEAK V/C RATIO*	*P.M. PEAK LOS*	*P.M. PEAK V/C RATIO*
Ponce de Leon Avenue at Boulevard	*F*	*1.19*	*F*	*1.29*
Ponce de Leon Avenue at Glen Iris Drive	*A*	*0.59*	*A*	*0.77*
Ponce de Leon Avenue at Ford Place Extension	*n/a*	*n/a*	*n/a*	*n/a*
Ponce de Leon Avenue at Home Depot	*C*	*0.84*	*B*	*0.73*
Ponce de Leon Avenue at Ponce Place	*B*	*0.85*	*B*	*0.79*
Ponce de Leon Avenue at Freedom Parkway	*C*	*0.80*	*B*	*0.63*
North Avenue at Boulevard	*B*	*0.68*	*C*	*0.89*
North Avenue at Glen Iris Drive	*C*	*0.66*	*B*	*0.63*
North Avenue at Ford Place Extension	*n/a*	*n/a*	*n/a*	*n/a*
North Avenue at Freedom Parkway	*D*	*0.91*	*F*	*1.04*
Boulevard at Ralph McGill Boulevard	*B*	*0.79*	*C*	*0.93*
Boulevard at Freedom Parkway	*F*	*1.76*	*F*	*1.48*
Boulevard at Irwin Street	*C*	*0.99*	*B*	*0.77*
Boulevard at Edgewood Avenue	*C*	*0.80*	*D*	*1.02*
Boulevard at Decatur Street	*NO SIG*	*NO SIG*	*NO SIG*	*NO SIG*
Ralph McGill Boulevard at Glen Iris Drive	*C*	*0.58*	*C*	*0.88*
Ralph McGill Boulevard at Freedom Parkway	*C*	*0.87*	*B*	*0.64*
Freedom Parkway at North Highland Avenue	*F*	*1.03*	*E*	*0.99*
Freedom Parkway at Moreland Avenue	*B*	*0.74*	*D*	*1.04*
Moreland Avenue at DeKalb Avenue (west)	*A*	*0.60*	*B*	*0.74*
Moreland Avenue at DeKalb Avenue (east)	*A*	*0.53*	*A*	*0.54*
Decatur Street at Krog Street	*E*	*1.09*	*D*	*1.09*
Glen Iris Drive at Highland Avenue	*C*	*0.89*	*C*	*0.98*
Ralph McGill Boulevard at Fortune Street	*NO SIG*	*NO SIG*	*NO SIG*	*NO SIG*
Ralph McGill Boulevard at Angier Avenue Connector	*n/a*	*n/a*	*n/a*	*n/a*
Ralph McGill Boulevard at Freedom Parkway Underpass Street	*n/a*	*n/a*	*n/a*	*n/a*

Table 04 - 2030 Baseline Peak-Hour Level of Service

BeltLine Traffic Operations

This section details the traffic operations with BeltLine development in place. The trip generation methodology based on forecasted BeltLine development is described for each scenario, as well as the methodology used to determine trip reduction attributable to BeltLine transit. Capacity analyses for interim year 2020 and horizon year 2030 are documented for each scenario, and recommended 2020 and 2030 projects are listed.

Proposed BeltLine Development

The proposed land uses are detailed in the subarea master plan and are used in trip generation for each scenario.

Redevelopment Concept for TAD

The land use for the area surrounding the BeltLine between Ponce de Leon Avenue and Ralph McGill Boulevard is proposed to include mixed-use and residential development of varying height and density. The proposed land use plan shows a slight change in land uses that mostly reflects the change in park boundaries. Other proposed changes reduce the scale of the mixed-use designation along North Avenue and Angier Springs Road to one story to four stories to step down from the compact development along the BeltLine into the existing neighborhood of Poncey-Highland. The land use along Ralph McGill Boulevard at Willoughby Way reflects the proposed redevelopment of these industrial structures into a mixed-use development of mostly medium-density residential.

The recommended land use around Freedom Parkway and south along the BeltLine reflects the need to balance higher transit-supportive densities with protection of the existing single-family fabric and historic resources. The plan continues its guiding theme of directing intensity to appropriate areas, such as along the BeltLine and in close proximity to similar developments.

Just south of Freedom Parkway, the Mead site redevelopment project is largely complete, and recommended land use changes reflect this new development pattern. The parcel across the BeltLine from the Mead redevelopment is the largest remaining undeveloped assemblage in the focus area. The City's plan recommends medium-density residential for the entire area, but local representatives have voiced concerns that this designation is too intense for the area. The proposal thus recommends a step down in intensity to residential (one story to four stories) adjacent to historic single-family homes.

The parcel just south of the Highland Walk mixed-use development along Highland Avenue is currently used for light commercial use and U-Haul truck storage. The recommended land use is mixed-use in similar nature to Highland Walk, but of lower intensity and more in scale with the Virginia Docks, which are adjacent to the south.

Many of the light industrial uses in the area are proposed for mixed-use redevelopment and have already converted to exciting mixed-use developments that, like the Krog Street docks, preserve the structural and cultural history of the BeltLine and its role in the growth of Atlanta. The encroachment of these structures into the BeltLine right-of-way poses implementation challenges that must be addressed individually with private property owners.

Figure 16 is a graphical representation of the proposed land use changes in BeltLine Subarea 5.

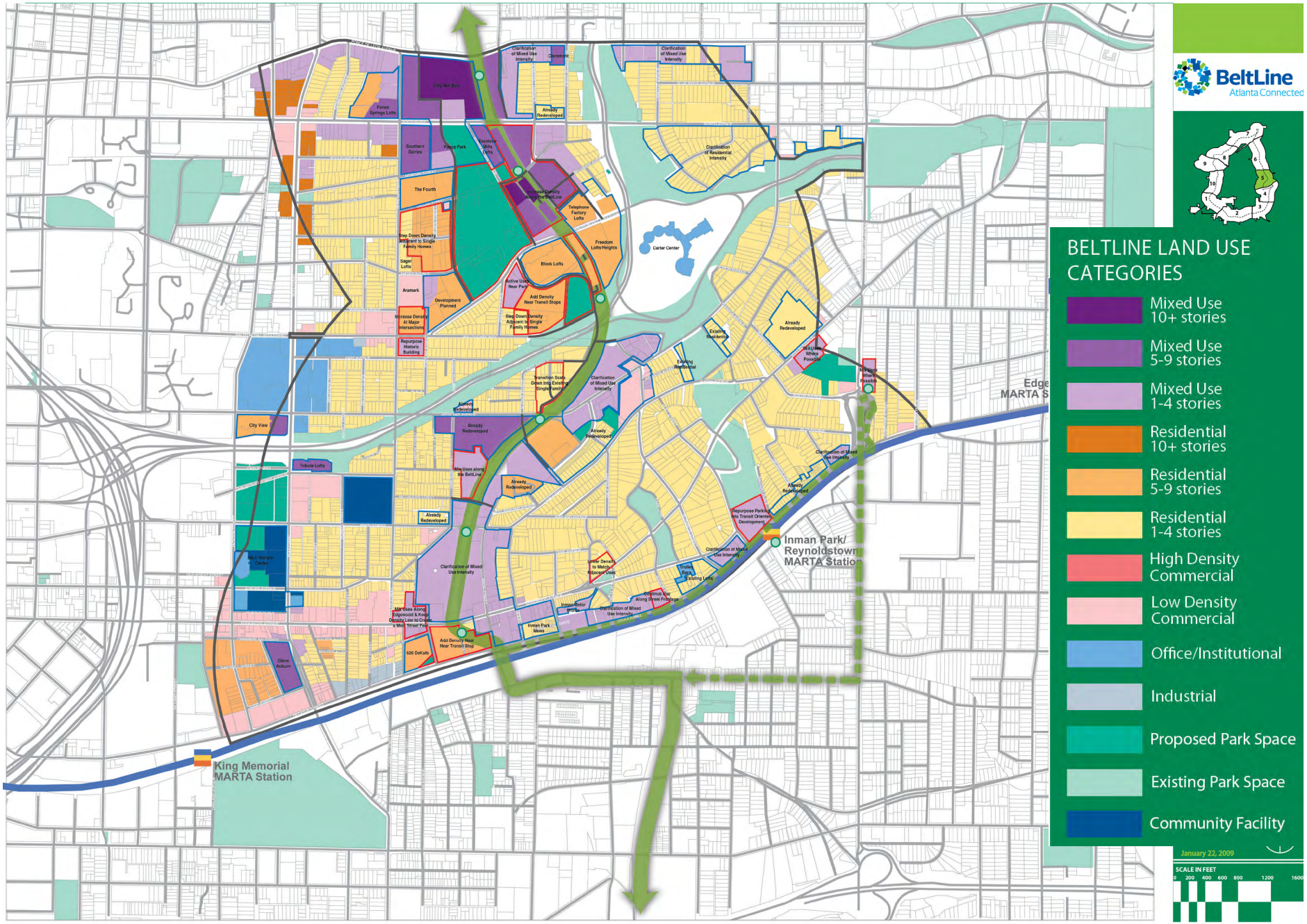


Figure 16 - BeltLine Subarea 5 Proposed Land Use

BeltLine Facilities

The initial BeltLine redevelopment proposed potential BeltLine transit stop locations, which have since been revised to accommodate planned redevelopment locations and maximize ridership. Revisions also took into account a cost/benefit analysis, in which more costly station locations were passed up for areas where a station can be more easily built and accessed. The final location and number of transit stops in the subarea will be determined at a later time. As shown in Figure 17, the following is a revised list of potential BeltLine transit locations:

Ponce de Leon Avenue:

Access would be through the redeveloped City Hall East property adjacent to the Ford Factory.

Dallas Street:

Access would be at the reconnection of Dallas Street across the BeltLine.

Historic Fourth Ward Park:

The station would be located at the southern end of the park, adjacent to the skate park and multi-use fields, and with easy access to the new Elizabeth Street connection.

Highland Avenue:

The station would be located near the intersection at Alaska Avenue and adjacent to existing commercial uses and high pedestrian activity.

Irwin Street:

The existing at-grade crossing provides easy access to both Old Fourth Ward and Inman Park.

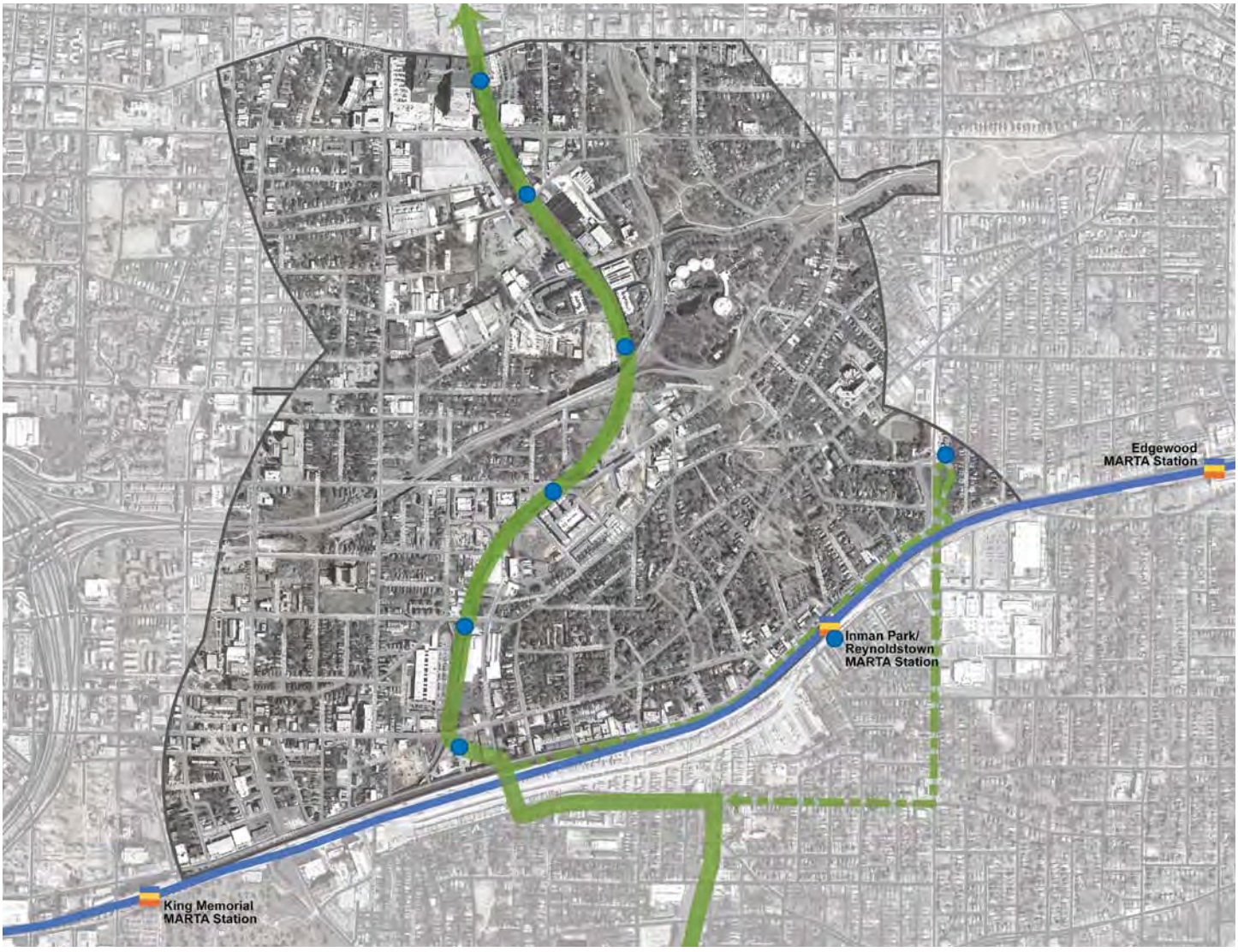


Figure 17 - BeltLine Subarea 5 Proposed Transit Stops and Trail Alignment
Proposed Transit stops are highlighted in blue.

Edgewood Avenue:

The Edgewood Avenue stop is the most variable depending on the final alignment of the transit. However, the location will likely be near both the BeltLine underpass of Edgewood Avenue and the Krog Street Tunnel.

Inman Park MARTA station:

The station may be near the existing heavy-rail station, but the exact location will depend on the final alignment of the BeltLine transit.

Moreland Avenue:

The locally preferred alternative alignment for the BeltLine transit would allow for a transit stop near the jug-handle ramp and less than ¼ mile south of Little Five Points.

A trail currently runs along the south side of Freedom Parkway, and the neighborhoods on the north side can only access the trail at the beginning of Freedom Parkway at Jackson Street, the pedestrian bridge at the end of Sampson Street, and the intersection of Freedom Parkway at Ralph McGill Boulevard. A trail should be placed along the north side of Freedom Parkway running from its intersection at Boulevard to the proposed Historic Fourth Ward Park. See the Plan Recommendations Report for a full list of trail connections and further details.

Year 2020 Traffic Operations

Traffic operations for a Build, No Transit and Build Best Case scenario were modeled to determine traffic operations for interim year 2020 and identify improvements needed to address any deficiencies. The Build, No Transit scenario is included to determine the impact of BeltLine development on traffic operations if the BeltLine transit is not operational until after 2020.

Build, No Transit

The Build, No Transit scenario is a sensitivity analysis to determine how intersections will operate without any BeltLine transit and with BeltLine-related development in place. The analysis will show which intersections have traffic operations improved by BeltLine transit and which will not. This is important, as the BeltLine transit is unlikely to affect each intersection in the same way.

Because market fundamentals for development in Subarea 5 are strong, it is likely that most of the BeltLine development will occur even without the transit component. Therefore, the Build, No Transit traffic operation scenario will also provide insight into potential intersection projects needed if transit implementation in the corridor is delayed.

Trip Generation

The first step in modeling the Build, No Transit scenario is trip generation, which estimates the number of trips attracted by the projected new development. Trip generation rates are included in the Appendix. The trip generation methodology for the Build, No Transit scenario is described as follows.

Because the exact configuration of retail and office components is unknown, the most generic ITE land use categories were used (e.g., shopping center or general office). Based on the future land use, average vehicle trip ends for each land use were multiplied by gross floor area or number of dwelling units anticipated on each parcel at interim year 2020 to determine the raw number of trips generated for both a.m. and p.m. peak periods.

After determining a.m. and p.m. peak average vehicle trip ends, the percent of trips entering and exiting (also from the *ITE Trip Generation 7th Edition*) was applied to the raw number of trips.
For mixed-use parcels, a reduction of 10 percent was then applied to entering and exiting trips for each land use.Trips for each land use were then summed to determine the total number of trips for each parcel.

Subarea 5 includes 189 parcels that are anticipated to be developed or redeveloped at a higher intensity. Because trip distribution for all 189 parcels is error-prone, individual parcels were aggregated into 13 traffic analysis zones (TAZs) based on land uses, intersections to be analyzed,

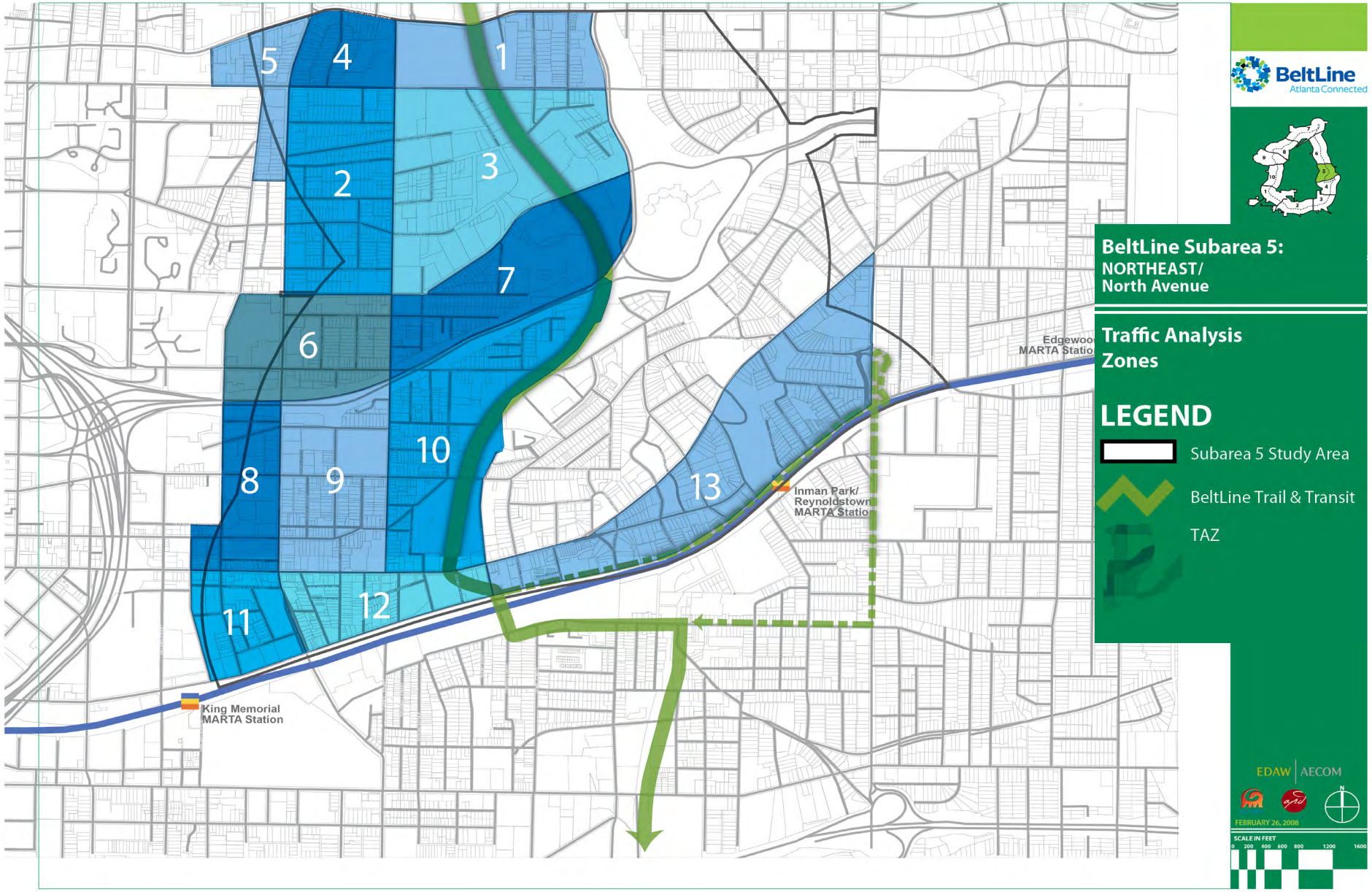


Figure 18 - BeltLine Subarea 5 Traffic Analysis Zones Map

and the roadway network configuration (see Figure 18 on the previous page for a map of the TAZs).

For each parcel, the number of trips was summed by zone for the Build, No Transit scenario. This resulted in the year 2020 trip generation. It was assumed the study area would be approximately 50 percent built out based on Robert Charles Lesser & Company's demand projections and forecasted land uses in Subarea 5. A portion of Subarea 5 is not included in the TAZs, because no development is projected there. Therefore, no additional trips will be generated or assigned in that area.

Park land use trip generation data in *ITE Trip Generation 7th Edition* for the land use category City Park (411) is limited. Only an average weekday rate is provided with no rate for a.m. and p.m. peak hours. This is a problem because the LOS methodology analyzes morning and afternoon peak hours. However, based on the average trip generation rate of 1.59 vehicle trip ends per acre, the proposed 35.5-acre Historic Fourth Ward Park is projected to generate only 57 trips over the course of an entire weekday. Because the number of trips generated by the park is insignificant compared to existing traffic volumes, no attempt was made to assign park traffic to peak hours.

Trip generation results by land use category are listed in Table 5. Trip generation results by TAZ are presented for each scenario in Table 6. Table 7 displays mixed use and transit trip reductions by zone.

Trip Distribution

To distribute traffic to roadways, existing traffic patterns were closely studied. Additionally, analysis of existing population and employment centers was used to manually distribute the forecasted traffic from proposed developments.

As a first step, directional factors (D-factors) were estimated on all roadways. The D factor represents the proportion of traffic moving in the peak direction during the design hour. It is needed because the design hourly distribution

NEW DEVELOPMENT TRIPS (2020)				
	A.M. PEAK		P.M. PEAK	
LAND USE	ENTER	EXIT	ENTER	EXIT
Residential 4,913 DU	436	1,132	391	22
Retail 421,756 SF	262	172	707	768
Office 287,686 SF	361	48	64	322

Table 05 - 2020 Build, No Transit Trip Generation by Land Use Category.
Some rounding occurs

NEW DEVELOPMENT TRIPS (2020) BUILD, NO TRANSIT (INCLUDES MIXED-USE REDUCTIONS ONLY) WEEKDAY (PEAK HOUR)				
Zone	A.M. Enter	A.M. Exit	P.M. Enter	P.M. Exit
1	271	227	328	394
2	16	33	15	9
3	252	358	274	229
4	38	56	41	43
5	46	59	48	45
6	38	52	42	35
7	45	95	46	5
8	17	22	17	20
9	42	53	43	46
10	137	159	154	161
11	54	78	58	44
12	63	104	65	40
13	44	69	39	45

Table 06 - 2020 Build, No Transit Trip Generation by Analysis Zone

of traffic is not evenly split (i.e., a 50/50 split) during the design (peak) hours. As a second step, existing population and employment centers, in addition to access control measures (driveways, intersections, etc.), were studied to estimate entry and exit points for new traffic.

The primary assumption was that any new traffic would follow existing travel patterns. Therefore, any traffic entering or leaving these new developments would be in proportion to the D-factors. The trips generated by a zone were therefore assigned to the roadways surrounding the zone in proportion with the D-factors of those zones. These trips were then added to the baseline volumes for that year and input into Synchro for traffic analysis. The Trip Distribution is shown in Figure 19.

NEW DEVELOPMENT TRIPS 2020 BUILD, NO TRANSIT TRIP REDUCTIONS BY ZONE							
		A.M. Peak Hour			P.M. Peak Hour		
Zone		A.M. Total	A.M. Enter	A.M. Exit	P.M. Total	P.M. Enter	P.M. Exit
1	Gross Trip Generation	553	304	249	839	364	474
	Mixed Use Trip Reduction	-55	-30	-25	-84	-36	-47
	Transit Trip Reduction	0	0	0	0	0	0
2	Gross Trip Generation	49	16	33	31	15	16
	Mixed Use Trip Reduction	-2	-1	-1	-2	-1	-1
	Transit Trip Reduction	0	0	0	0	0	0
3	Gross Trip Generation	635	263	374	604	286	317
	Mixed Use Trip Reduction	-32	-12	-20	-24	-12	-12
	Transit Trip Reduction	0	0	0	0	0	0
4	Gross Trip Generation	103	42	60	100	45	55
	Mixed Use Trip Reduction	-9	-4	-5	-9	-4	-5
	Transit Trip Reduction	0	0	0	0	0	0
5	Gross Trip Generation	113	49	64	114	53	61
	Mixed Use Trip Reduction	-11	-5	-6	-11	-5	-6
	Transit Trip Reduction	0	0	0	0	0	0
6	Gross Trip Generation	85	36	49	90	41	48
	Mixed Use Trip Reduction	-7	-3	-4	-8	-4	-5
	Transit Trip Reduction	0	0	0	0	0	0
7	Gross Trip Generation	141	45	96	82	46	36
	Mixed Use Trip Reduction	-1	0	-1	-1	0	-1
	Transit Trip Reduction	0	0	0	0	0	0
8	Gross Trip Generation	42	17	25	43	18	25
	Mixed Use Trip Reduction	-4	-2	-2	-4	-2	-2
	Transit Trip Reduction	0	0	0	0	0	0
9	Gross Trip Generation	102	44	58	105	47	58
	Mixed Use Trip Reduction	-10	-4	-6	-10	-5	-6
	Transit Trip Reduction	0	0	0	0	0	0
10	Gross Trip Generation	320	148	171	375	167	207
	Mixed Use Trip Reduction	-25	-12	-13	-33	-14	-19
	Transit Trip Reduction	0	0	0	0	0	0
11	Gross Trip Generation	142	58	84	132	64	68
	Mixed Use Trip Reduction	-11	-5	-6	-12	-5	-6
	Transit Trip Reduction	0	0	0	0	0	0
12	Gross Trip Generation	165	62	103	132	65	66
	Mixed Use Trip Reduction	-8	-4	-4	-9	-4	-5
	Transit Trip Reduction	0	0	0	0	0	0
13	Gross Trip Generation	119	45	74	101	43	58
	Mixed Use Trip Reduction	-9	-4	-5	-9	-4	-5
	Transit Trip Reduction	0	0	0	0	0	0

Table 07 - 2020 Build, No Transit Trip Reductions by Zone

Due to rounding, totals will not match the new development trips by zone shown in Table 05.

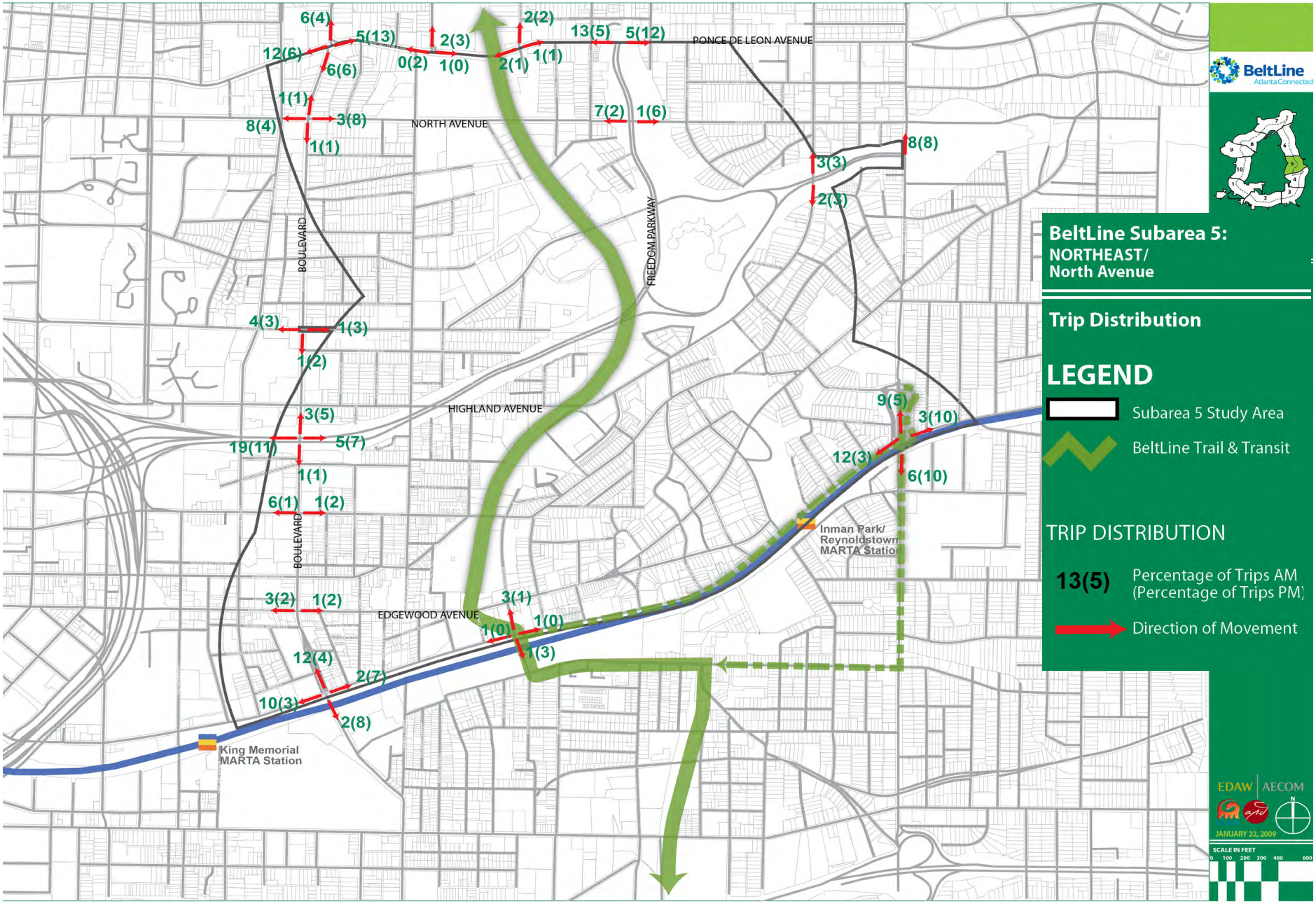


Figure 19 - BeltLine Subarea 5 Trip Distribution Assumptions

Capacity Analysis

The 2020 Build, No Transit scenario provides a lower LOS overall than the 2020 baseline scenario because of increased travel demand from the addition of BeltLine-associated development without any BeltLine transit improvements. Table 8 details Build, No Transit traffic operations in 2020 by intersection, and Figures 20-22 depict them graphically. The following is a comparison between 2020 baseline and Build, No Transit traffic operations at intersections with an unacceptable LOS:

- Ponce de Leon Avenue at Boulevard will remain at LOS E during the a.m. peak hour.
- Ponce de Leon Avenue at Boulevard will decline from LOS E in the baseline scenario to F in the p.m. peak hour.
- Freedom Parkway at North Highland Avenue will decline from LOS D under the baseline scenario to LOS E during the a.m. peak hour.
- Glen Iris Drive at Highland Avenue will improve to LOS C from LOS E under the baseline scenario in the p.m. peak hour.

INTERSECTION	A.M. PEAK LOS	A.M. PEAK V/C RATIO	P.M. PEAK LOS	P.M. PEAK V/C RATIO
Ponce de Leon Avenue at Boulevard	E	1.15	F	1.19
Ponce de Leon Avenue at Glen Iris Drive	A	0.56	A	0.74
Ponce de Leon Avenue at Ford Place Extension	A	0.49	A	0.63
Ponce de Leon Avenue at Home Depot	C	0.78	B	0.67
Ponce de Leon Avenue at Ponce Place	B	0.79	B	0.81
Ponce de Leon Avenue at Freedom Parkway	B	0.76	B	0.87
North Avenue at Boulevard	B	0.63	C	0.80
North Avenue at Glen Iris Drive	C	0.68	B	0.62
North Avenue at Ford Place Extension	C	0.29	B	0.40
North Avenue at Freedom Parkway	D	0.93	D	1.02
Boulevard at Ralph McGill Boulevard	A	0.71	B	0.78
Boulevard at Freedom Parkway	F	1.71	F	1.46
Boulevard at Irwin Street	C	0.93	B	0.70
Boulevard at Edgewood Avenue	C	0.79	C	0.96
Boulevard at Decatur Street	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Boulevard at Glen Iris Drive	B	0.60	C	0.83
Ralph McGill Boulevard at Freedom Parkway	B	0.80	B	0.58
Freedom Parkway at North Highland Avenue	E	0.99	D	0.96
Freedom Parkway at Moreland Avenue	B	0.70	C	0.89
Moreland Avenue at DeKalb Avenue (west)	A	0.58	B	0.68
Moreland Avenue at DeKalb Avenue (east)	A	0.50	A	0.49
Decatur Street at Krog Street	D	1.02	D	1.02
Glen Iris Drive at Highland Avenue	C	0.87	C	0.91
Ralph McGill Boulevard at Fortune Street	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Boulevard at Angier Avenue Connector	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Boulevard at Freedom Parkway Underpass Street	NO SIG	NO SIG	NO SIG	NO SIG

Table 08 - 2020 Build, No Transit Traffic Operations Peak-Hour Level of Service

Build Best Case Scenario

The Build Best Case scenario was modeled and analyzed to predict intersection LOS in 2020 with BeltLine transit in place. Additionally, the Best Case scenario assumes that BeltLine-related development occurs.

Trip Generation

In the Best Case scenario, a transit reduction of 26 percent was applied to Build, No Transit trip generation numbers to account for the BeltLine transit being operational. Retail, office, and residential trips were then summed to determine total trips for each parcel. Table 9 presents trips by land use category and Table 10 summarizes 2020 Best Case trips by zone. Table 11 displays mixed use and transit trip reductions by zone.

NEW DEVELOPMENT TRIPS (2020)				
	A.M. PEAK		P.M. PEAK	
LAND USE	ENTER	EXIT	ENTER	EXIT
Residential 4,913 DU	316	830	287	13
Retail 421,756 SF	189	120	523	570
Office 287,686 SF	268	28	47	243

Table 09 - 2020 Best Case Trip Generation by Land Use Category. *Some rounding occurs*

NEW DEVELOPMENT TRIPS (2020) BEST CASE SCENARIO (INCLUDES MIXED-USE AND TRANSIT REDUCTIONS) WEEKDAY (PEAK HOUR)				
Zone	A.M. Enter	A.M. Exit	P.M. Enter	P.M. Exit
1	201	165	244	292
2	11	23	11	7
3	185	258	202	170
4	28	42	30	32
5	35	40	36	33
6	28	38	30	26
7	32	70	34	4
8	12	16	13	16
9	29	39	30	33
10	100	117	114	121
11	39	58	43	32
12	47	73	48	30
13	31	49	29	34

Table 10 - 2020 Build, Best Case Trip Generation by Analysis Zone

The Atlanta BeltLine transit percentage reduction methodology provided by ABI was used to arrive at the transit reduction of 26 percent. The transit percentage reduction methodology consists of four categories: walk distance, density, land use, and social economics. Within each of these categories, points are assigned depending on how well a development meets transit-supportive criteria.

Because of the high number of proposed new developments and re-developments in Subarea 5 (189), the ABI transit percentage reduction methodology was not applied to each individual parcel. Instead, a GIS was used to aggregate the properties within each category and determine a score for Subarea 5 as a whole.

For each major category, the total number of properties was identified. Next, the number of properties meeting each criterion was divided by the total number of properties to determine the percentage of properties that met the criterion. This percentage was multiplied by the score for that criterion, and scores for all criteria in the category were summed and rounded to determine a Subarea 5-wide score for the category. For example, using GIS, it was determined that there were 52 properties (28 percent of the total) that met the ¼-mile criterion in the walk distance category. Multiplying the transit percentage reduction methodology score of 10 for that criterion by 28 percent resulted in a Subarea 5-wide score of 2.75. Similarly, 92 properties (21 percent) were within ¼ mile to ½ mile, resulting in a score of 1.06. Because no points were assigned to criterion greater than ½ mile, the total rounded score for this category is 4.

All proposed residential units (121 properties total) in the study area have a density of 20 units per acre or higher. Because the criterion in the density per acre category with the highest score is greater than 16 units per acre, the maximum score of 10 was assigned to Subarea 5.

Within the land use category, 35 percent of the proposed developments were residential only,

NEW DEVELOPMENT TRIPS 2020 BEST CASE TRIP REDUCTIONS BY ZONE							
		A.M. Peak Hour			P.M. Peak Hour		
Zone		A.M. Total	A.M. Enter	A.M. Exit	P.M. Total	P.M. Enter	P.M. Exit
1	Gross Trip Generation	553	304	249	839	364	474
	Mixed Use Trip Reduction	-55	-30	-25	-84	-36	-47
	Transit Trip Reduction	-129	-71	-58	-188	-85	-103
2	Gross Trip Generation	49	16	33	31	15	16
	Mixed Use Trip Reduction	-2	-1	-1	-2	-1	-1
	Transit Trip Reduction	-12	-4	-8	-6	-4	-2
3	Gross Trip Generation	635	263	374	604	286	317
	Mixed Use Trip Reduction	-32	-12	-20	-24	-12	-12
	Transit Trip Reduction	-157	-65	-92	-131	-71	-60
4	Gross Trip Generation	103	42	60	100	45	55
	Mixed Use Trip Reduction	-9	-4	-5	-9	-4	-5
	Transit Trip Reduction	-24	-10	-14	-22	-11	-11
5	Gross Trip Generation	113	49	64	114	53	61
	Mixed Use Trip Reduction	-11	-5	-6	-11	-5	-6
	Transit Trip Reduction	-26	-12	-15	-24	-12	-12
6	Gross Trip Generation	85	36	49	90	41	48
	Mixed Use Trip Reduction	-7	-3	-4	-8	-4	-5
	Transit Trip Reduction	-20	-9	-12	-19	-10	-9
7	Gross Trip Generation	141	45	96	82	46	36
	Mixed Use Trip Reduction	-1	0	-1	-1	0	-1
	Transit Trip Reduction	-36	-12	-25	-13	-12	-1
8	Gross Trip Generation	42	17	25	43	18	25
	Mixed Use Trip Reduction	-4	-2	-2	-4	-2	-2
	Transit Trip Reduction	-10	-4	-6	-10	-4	-5
9	Gross Trip Generation	102	44	58	105	47	58
	Mixed Use Trip Reduction	-10	-4	-6	-10	-5	-6
	Transit Trip Reduction	-24	-10	-14	-23	-11	-12
10	Gross Trip Generation	320	148	171	375	167	207
	Mixed Use Trip Reduction	-25	-12	-13	-33	-14	-19
	Transit Trip Reduction	-77	-35	-41	-82	-40	-42
11	Gross Trip Generation	142	58	84	132	64	68
	Mixed Use Trip Reduction	-11	-5	-6	-12	-5	-6
	Transit Trip Reduction	-34	-14	-20	-27	-15	-11
12	Gross Trip Generation	165	62	103	132	65	66
	Mixed Use Trip Reduction	-8	-4	-4	-9	-4	-5
	Transit Trip Reduction	-41	-15	-26	-26	-16	-10
13	Gross Trip Generation	119	45	74	101	43	58
	Mixed Use Trip Reduction	-9	-4	-5	-9	-4	-5
	Transit Trip Reduction	-28	-11	-18	-22	-10	-12

Table 11 - 2020 Best Case Trip Reductions by Zone

so multiplying that by the score of 4 resulted in a composite score of 1.42. Only 2 percent of proposed developments were exclusively commercial, which when multiplied by the criterion score of 6, resulted in a score of 0.13 for the study area. Mixed-use accounted for 51 percent of proposed developments, which resulted in a score of 5.08 for the study area when multiplied by the criterion score of 10. The Subarea 5 rounded total score for this category is 7.

In contrast to other categories, the social economics category did not lay out specific criteria. Because poverty status correlates with transit dependency, poverty statistics by Census tract and GIS were used to determine the number of developments that met each criterion. The following poverty thresholds were used to calculate scores:

- 0 percent to 25 percent – Area does not rely on transit
- 25 percent to 50 percent – Area does not rely heavily on transit
- 50 percent to 75 percent – Area relies on transit
- 75 percent to 100 percent – Area relies heavily on transit

Within Subarea 5, 16 percent of proposed developments fall in Census tracts with no reliance on transit, which resulted in a composite score of 0.16 when multiplied by the criterion score of 1. Of the proposed developments, 53 percent do not heavily rely on transit, which when multiplied by the criterion score of 5 resulted in a composite score of 2.67 for the study area. New developments in Census tracts that rely heavily on transit make up 15 percent of the total, for a composite score of 1.19 when multiplied by the criterion score of 8. No tracts in the study area rely heavily on transit, so a score of 0 was assigned for that criterion. The total rounded score for the social economics category is 4.

To determine the transit reduction percentage applied during trip generation, composite scores for each category were totaled and then run through the score equivalency to trip/transit reduction percentage.

In summary, transit scores were as follows:

1. Walk Distance: 4
2. Density per Acre: 10
3. Land Use: 7
4. Social Economics: 4
5. Total: 25, which corresponds with a 26 percent trip reduction

Trip Distribution

Trip distribution methodology is the same as the .Build, No Transit scenario discussed previously.

Capacity Analysis

Currently, there is excess capacity at most intersections in the study area. As new development is added in the future, this capacity will begin to be used up by the additional traffic. Because forecasted future development is spread throughout the study area and not focused on one or two key intersections, study area intersection LOS drops but remains acceptable (LOS D or better) at most intersections. While existing and future conditions are reasonable in the majority of the study area and BeltLine transit improvements are expected to significantly reduce automobile trip volumes, there are a few problem intersections. One intersection, Boulevard at Freedom Parkway, will operate at LOS F during all time periods and under all scenarios.

While the 2020 Best Case scenario shows some improvement from LOS C to LOS B over the 2020 baseline and Build, No Transit scenarios, the results are not substantially different from those intersections operating at LOS D or worse in the 2020 Build, No Transit scenario. Results of the Build Best Case traffic operations analysis are detailed in Table 12 and illustrated on Figures 23-25. The following list summarizes intersections operating at LOS E or worse under the 2020 Build Best Case scenario during the a.m. peak hour:

- Ponce de Leon Avenue at Boulevard will remain at LOS E under all three 2020 scenarios.
- East Freedom Parkway at North Highland Avenue will drop from LOS D under the baseline scenario to LOS E in the Build Best Case scenario.

One intersection operating at LOS E or worse and one with significantly improved operations under the 2020 BeltLine traffic operations scenario during the p.m. peak hour are summarized as follows:

- Ponce de Leon Avenue at Boulevard will remain at LOS F.

INTERSECTION	A.M. PEAK LOS	A.M. PEAK HOUR V/C RATIO	P.M. PEAK LOS	P.M. PEAK HOUR V/C RATIO
Ponce de Leon Avenue at Boulevard	E	1.07	F	1.16
Ponce de Leon Avenue at Glen Iris Drive	A	0.56	A	0.74
Ponce de Leon Avenue at Ford Place Extension	A	0.48	A	0.61
Ponce de Leon Avenue at Home Depot	C	0.78	B	0.67
Ponce de Leon Avenue at Ponce Place	B	0.78	B	0.79
Ponce de Leon Avenue at Freedom Parkway	B	0.76	B	0.87
North Avenue at Boulevard	B	0.61	C	0.79
North Avenue at Glen Iris Drive	C	0.67	B	0.65
North Avenue at Ford Place Extension	B	0.27	A	0.38
North Avenue at Freedom Parkway	D	0.96	D	0.98
Boulevard at Ralph McGill Boulevard	A	0.7	B	0.78
Boulevard at Freedom Parkway	F	1.79	F	1.34
Boulevard at Irwin Street	C	0.92	B	0.69
Boulevard at Edgewood Avenue	C	0.77	C	0.95
Boulevard at Decatur Street	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Boulevard at Glen Iris Drive	B	0.58	C	0.83
Ralph McGill Boulevard at Freedom Parkway	B	0.79	B	0.6
Freedom Parkway at North Highland Avenue	E	0.98	D	0.96
Freedom Parkway at Moreland Avenue	B	0.7	C	0.89
Moreland Avenue at DeKalb Avenue (west)	A	0.57	B	0.68
Moreland Avenue at DeKalb Avenue (east)	A	0.5	A	0.49
Decatur Street at Krog Street	D	1	D	1.01
Glen Iris Drive at Highland Avenue	C	0.85	C	0.9
Ralph McGill Boulevard at Fortune Street	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Boulevard at Angier Avenue Connector	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Boulevard at Freedom Parkway Underpass Street	NO SIG	NO SIG	NO SIG	NO SIG

Table 12 - 2020 Build Best Case Scenario Traffic Operations Peak-Hour Level of Service

Year 2020 Projects

As Subarea 5 is located in a desirable section of the City of Atlanta and significant redevelopment is already taking place, it is likely that a significant amount of the BeltLine redevelopment will take place even without the transit improvements. Therefore, project recommendations are made for both the Build, No Transit and Best Case scenarios.

Build, No Transit

Based on unfavorable LOS conditions for Ponce de Leon Avenue at Boulevard/Monroe Drive the following year 2020 project is recommended:

- Additional left-turn-only bay from southbound Monroe Drive to eastbound Ponce de Leon Avenue
- Change the existing shared through/left-turn lane to through only

This improvement will allow the intersection to operate at an acceptable LOS, D, during the a.m. peak hour and improves the operations one letter grade during the p.m. peak hour from F to E. However, adding a left turn bay will increase the crossing distance for pedestrians by at least 12 feet and likely require a partial taking of the gas station located in the northwest corner of the intersection.

Boulevard at Freedom Parkway is currently operating at LOS F during the a.m. and p.m. peak hours. This is also the case in 2020. To correct this deficiency, an additional left-turn lane from eastbound Freedom Parkway to northbound Boulevard, an additional left-turn lane from northbound Boulevard to westbound Freedom Parkway, and additional queue length for right turns from southbound Boulevard to westbound Freedom Parkway were analyzed.

While vehicle delay at Boulevard and Freedom Parkway, will be reduced by the modifications, they will reduce pedestrian LOS in the intersection and are in conflict with the plans for the area presented in the City of Atlanta Comprehensive Transportation Plan. Therefore, this project is not recommended. It should be noted however that this table records the intersection LOS if the additional lanes were constructed. Without improvements, the intersection LOS will remain as provided in Table 8 as an LOS F during both AM and PM peak hours.

INTERSECTION	A.M. PEAK LOS	A.M. PEAK V/C RATIO	P.M. PEAK LOS	P.M. PEAK V/C RATIO
Ponce de Leon Ave at Boulevard	D	1.03	E	1.23
Ponce de Leon Ave at Glen Iris Drive	B	0.55	A	0.74
Ponce de Leon Ave at Ford Pl. Extension	A	0.48	A	0.63
Ponce de Leon Ave at Home Depot	B	0.78	B	0.67
Ponce de Leon Ave at Ponce de Leon Pl	B	0.79	B	0.81
Ponce de Leon Ave at Freedom Pkwy	B	0.80	B	0.87
North Avenue at Boulevard	A	0.65	C	0.80
North Avenue at Glen Iris Drive	B	0.73	B	0.65
North Avenue at Ford Pl. Extension	B	0.30	B	0.40
North Avenue at Freedom Pkwy	D	0.85	D	1.02
Boulevard at Ralph McGill Boulevard	B	0.72	B	0.78
Boulevard at Freedom Parkway	F*	0.52	E	1.18
Boulevard at Irwin Street	C	0.92	B	0.70
Boulevard at Edgewood Avenue	B	0.83	C	0.96
Boulevard at Decatur Street	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Blvd at Glen Iris Drive	B	0.62	C	0.83
Ralph McGill Blvd at Freedom Pkwy	C	0.78	B	0.58
Freedom Pkwy at N. Highland Ave	E	0.97	D	0.96
Freedom Pkwy at Moreland Ave	B	0.71	C	0.89
Moreland Ave at DeKalb Ave (west)	A	0.57	B	0.68
Moreland Ave at DeKalb Ave (east)	A	0.50	A	0.49
Decatur Street at Krog Street	D	1.07	D	0.84
Glen Iris Drive at Highland Avenue	C	0.90	C	0.91
Ralph McGill Blvd at Fortune Street	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Blvd at Angier Ave Conn.	A	0.17	B	0.33
Ralph McGill Blvd at Freedom Pkwy Underpass St	NO SIG	NO SIG	NO SIG	NO SIG

Table 13 - 2020 Build , No Transit Traffic Operations (With 2020 Projects/ Improvements)

As expected, intersection LOS will be slightly better overall when recommended year 2020 projects are added to the 2020 Build, No Transit scenario. During the a.m. peak hour, several intersections will improve from LOS C to LOS A or LOS B. Table 13 includes LOS for all intersections studied.

Build Best Case

Based on unfavorable LOS conditions for Ponce de Leon Avenue at Boulevard/Monroe Drive the same year 2020 project discussed previously is also recommended under the Build Best Case scenario.

Intersection LOS in the 2020 Build Best Case scenario is slightly better with the inclusion of the 2020 roadway improvements. Table 14 includes LOS for all intersections studied.

While vehicle delay at Boulevard and Freedom Parkway, could be reduced by the addition of turn lanes, this additional pavement will increase pedestrian crossing times and reduce pedestrian LOS. In addition, the addition of turn lanes at the intersection would be in conflict with the plans for the area presented in the City of Atlanta Comprehensive Transportation Plan. Therefore, this project is not recommended. It should be noted however that Table 14 records the intersection LOS if the additional lanes were constructed. Without improvements, the intersection LOS will remain as provided in Table 12 as an LOS F during both AM and PM peak hours.

INTERSECTION	A.M. PEAK LOS	A.M. PEAK V/C RATIO	P.M. PEAK LOS	P.M. PEAK V/C RATIO
Ponce de Leon Ave at Boulevard	D	0.97	E	1.21
Ponce de Leon Ave at Glen Iris Drive	A	0.56	A	0.74
Ponce de Leon Ave at Ford Pl. Exten.	A	0.48	A	0.61
Ponce de Leon Ave at Home Depot	B	0.78	A	0.67
Ponce de Leon Ave at Ponce deLeon Pl	B	0.78	B	0.79
Ponce de Leon Ave at Freedom Pkwy	B	0.76	B	0.87
North Avenue at Boulevard	B	0.65	C	0.79
North Avenue at Glen Iris Drive	C	0.68	B	0.65
North Avenue at Ford Pl. Exten.	B	0.29	A	0.38
North Avenue at Freedom Pkwy	D	0.96	D	0.98
Boulevard at Ralph McGill Blvd	B	0.70	B	0.78
Boulevard at Freedom Pkwy	F **	1.48	E	1.04
Boulevard at Irwin Street	C	0.93	B	0.69
Boulevard at Edgewood Ave	C	0.79	C	0.95
Boulevard at Decatur Street	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Blvd at Glen Iris Drive	B	0.59	C	0.83
Ralph McGill Blvd at Freedom Pkwy	C	0.79	B	0.60
Freedom Pkwy at N. Highland Ave	D	0.99	D	0.96
Freedom Pkwy at Moreland Ave	B	0.70	C	0.89
Moreland Ave at DeKalb Ave (west)	A	0.56	B	0.68
Moreland Ave at DeKalb Ave (east)	A	0.50	A	0.49
Decatur Street at Krog Street	D	1.04	D	0.81
Glen Iris Drive at Highland Avenue	C	0.87	C	0.90
Ralph McGill Blvd at Fortune Street	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Blvd at Angier Ave Conn	A	0.71	C	0.32
Ralph McGill Blvd at Freedom Pkwy Underpass Street	NO SIG	NO SIG	NO SIG	NO SIG

Table 14 - 2020 Build Best Case Scenario Traffic Operations (With 2020 Projects/ Improvements)

Year 2030 Traffic Operations

All BeltLine new development was assumed to be 100 percent built out in 2030 based on the market demand in Subarea 5 detailed in a Robert Charles Lesser & Company market study through 2020. If the rate of build out in the market study continues past 2020, all space in Subarea 5 identified in the land use plan as developable or redevelopable is likely to be absorbed by 2030.

Build, No Transit

The purpose of the Build, No Transit scenario is to determine how the street network will operate without any BeltLine transit but with BeltLine-related development in place.

Trip Generation

2020 trips in each zone generated by the development associated with the BeltLine were multiplied by a growth factor of 99 percent to determine horizon year trips by zone. This growth factor is a straight-line projection of the Robert Charles Lesser & Company estimated demand from 2020 to 2030. A mixed use reduction of 10 percent was applied to the trip generation. Table 15 lists trips by land use category and Table 16 summarizes the number of trips by zone. Table 17 displays mixed use and transit trip reductions by zone.

Trip Distribution

The same methodology was used to distribute trips for each scenario and is discussed in the Trip Distribution section of the 2020 Build, No Transit scenario.

NEW DEVELOPMENT TRIPS (2030)				
	A.M. PEAK		P.M. PEAK	
LAND USE	ENTER	EXIT	ENTER	EXIT
Residential 9,826 DU	871	2,263	782	44
Retail 843,512 SF	523	343	1,414	1,536
Office 575,371 SF	722	96	128	644

Table 15 - 2030 Build, No Transit Trip Generation by Land Use Category.
Some rounding occurs

NEW DEVELOPMENT TRIPS (2030) BUILD, NO TRANSIT (INCLUDES MIXED-USE ONLY) WEEKDAY (PEAK HOUR)				
Zone	A.M. Enter	A.M. Exit	P.M. Enter	P.M. Exit
1	542	453	655	788
2	31	66	29	18
3	504	716	548	457
4	76	111	82	85
5	91	118	96	90
6	76	104	84	70
7	89	190	92	9
8	34	44	34	40
9	84	106	86	91
10	274	317	307	321
11	107	155	116	87
12	126	207	130	79
13	88	138	78	90

Table 16 - 2020 Build, No Transit Trip Generation by Analysis Zone

NEW DEVELOPMENT TRIPS 2030 BUILD, NO TRANSIT TRIP REDUCTIONS BY ZONE							
		A.M. Peak Hour			P.M. Peak Hour		
Zone		A.M. Total	A.M. Enter	A.M. Exit	P.M. Total	P.M. Enter	P.M. Exit
1	Gross Trip Generation	1,105	607	498	1,677	728	474
	Mixed Use Trip Reduction	-110	-61	-49	-168	-73	-47
	Transit Trip Reduction	0	0	0	0	0	-103
2	Gross Trip Generation	98	31	67	62	30	16
	Mixed Use Trip Reduction	-3	-1	-2	-3	-1	-1
	Transit Trip Reduction	0	0	0	0	0	-2
3	Gross Trip Generation	1,270	525	748	1,207	572	317
	Mixed Use Trip Reduction	-63	-23	-40	-48	-23	-12
	Transit Trip Reduction	0	0	0	0	0	-60
4	Gross Trip Generation	205	85	120	200	91	55
	Mixed Use Trip Reduction	-17	-8	-10	-19	-8	-5
	Transit Trip Reduction	0	0	0	0	0	-11
5	Gross Trip Generation	225	99	127	228	106	61
	Mixed Use Trip Reduction	-23	-10	-13	-23	-11	-6
	Transit Trip Reduction	0	0	0	0	0	-12
6	Gross Trip Generation	170	73	97	179	83	48
	Mixed Use Trip Reduction	-15	-7	-8	-17	-8	-5
	Transit Trip Reduction	0	0	0	0	0	-9
7	Gross Trip Generation	281	90	191	164	93	36
	Mixed Use Trip Reduction	-2	-1	-1	-2	-1	-1
	Transit Trip Reduction	0	0	0	0	0	-1
8	Gross Trip Generation	84	35	49	86	37	25
	Mixed Use Trip Reduction	-8	-3	-5	-9	-4	-2
	Transit Trip Reduction	0	0	0	0	0	-5
9	Gross Trip Generation	204	88	116	209	93	58
	Mixed Use Trip Reduction	-20	-9	-11	-21	-9	-6
	Transit Trip Reduction	0	0	0	0	0	-12
10	Gross Trip Generation	639	296	343	749	334	207
	Mixed Use Trip Reduction	-50	-25	-25	-66	-29	-19
	Transit Trip Reduction	0	0	0	0	0	-42
11	Gross Trip Generation	283	116	167	264	128	68
	Mixed Use Trip Reduction	-22	-10	-12	-23	-11	-6
	Transit Trip Reduction	0	0	0	0	0	-11
12	Gross Trip Generation	329	123	206	263	130	66
	Mixed Use Trip Reduction	-16	-7	-9	-17	-8	-5
	Transit Trip Reduction	0	0	0	0	0	-10
13	Gross Trip Generation	237	90	147	201	85	58
	Mixed Use Trip Reduction	-18	-8	-10	-19	-8	-5
	Transit Trip Reduction	0	0	0	0	0	-12

Table 17 - 2030 Build, No Transit Trip Reductions by Zone

INTERSECTION	A.M. PEAK LOS	A.M. PEAK HOUR V/C RATIO	P.M. PEAK LOS	P.M. PEAK HOUR V/C RATIO
Ponce de Leon Avenue at Boulevard	F	1.18	F	1.52
Ponce de Leon Avenue at Glen Iris Drive	A	0.59	B	0.81
Ponce de Leon Avenue at Ford Place Extension	A	0.53	A	1.09
Ponce de Leon Avenue at Home Depot	B	0.87	B	0.78
Ponce de Leon Avenue at Ponce Place	C	0.89	D	0.99
Ponce de Leon Avenue at Freedom Parkway	C	0.80	B	0.92
North Avenue at Boulevard	C	0.75	C	1.02
North Avenue at Glen Iris Drive	C	0.73	B	0.71
North Avenue at Ford Place Extension	C	0.68	B	0.62
North Avenue at Freedom Parkway	D	0.96	F	1.15
Boulevard at Ralph McGill Boulevard	B	0.85	B	0.72
Boulevard at Freedom Parkway	F	1.80	F	1.47
Boulevard at Irwin Street	D	1.02	B	0.80
Boulevard at Edgewood Avenue	D	0.87	D	1.08
Boulevard at Decatur Street	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Boulevard at Glen Iris Drive	C	0.69	C	0.93
Ralph McGill Boulevard at Freedom Parkway	C	0.86	B	0.66
Freedom Parkway at North Highland Avenue	F	1.06	E	1.14
Freedom Parkway at Moreland Avenue	B	0.75	C	1.02
Moreland Avenue at DeKalb Avenue (west)	A	0.61	B	0.77
Moreland Avenue at DeKalb Avenue (east)	A	0.53	A	0.54
Decatur Street at Krog Street	F	1.18	F	1.29
Glen Iris Drive at Highland Avenue	D	0.99	D	1.01
Ralph McGill Boulevard at Fortune Street	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Boulevard at Angier Avenue Connector	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Boulevard at Freedom Parkway Underpass Street	NO SIG	NO SIG	NO SIG	NO SIG

Table 18 - 2030 Build , No Transit Traffic Operations Peak-Hour Level of Service

Capacity Analysis

The Build, No Transit scenario in 2030 performs worse than the baseline scenario, primarily because of substantial new development without any corresponding increases in roadway or transit capacity. Results of the Build, No Transit traffic operations analysis are detailed in Table 18 and graphically depicted on Figures 26-28 on the following pages.

The following list summarizes intersections that will operate at LOS E or worse under the 2030 Build, No Transit scenario during the a.m. peak hour:

- Ponce de Leon Avenue at Boulevard
- Freedom Parkway at North Highland Avenue
- Decatur Street at Krog Street

Intersections operating at LOS E or worse under the 2030 Build, No Transit scenario during the p.m. peak hour are summarized as follows:

- Ponce de Leon Avenue at Boulevard
- North Avenue at Freedom Parkway
- Freedom Parkway at North Highland Avenue
- Decatur Street at Krog Street

Build Best Case

The Build Best Case scenario was run with a horizon year of 2030. The scenario includes a fully operational transit service in the Northeast Quadrant along with the BeltLine redevelopment ability

Trip Generation

Horizon year trips in each zone were multiplied by a growth factor of 99 percent to determine horizon year trips by zone. This growth factor is a straight-line projection of the Robert Charles Lesser & Company estimated demand from 2020 to 2030. A mixed use reduction of 10 percent and a transit reduction of 26 percent was applied to the trip generation., Table 19 presents them by land use category and Table 20 summarizes entering and exiting trips by zone for the peak hours. Table 21 displays mixed use and transit reductions by zone.

Trip Distribution

The same methodology was used to distribute trips for each scenario and is discussed in the Trip Distribution section of the 2020 Build, No Transit scenario.

Capacity Analysis

With the addition of BeltLine transit in the 2030 Build Best Case scenario, several intersections will improve from LOS C to LOS B during the a.m. peak hour compared to the Build, No Transit scenario. However, problem intersections tend to operate similarly to the Build, No Transit scenario and will remain congested despite an aggressive trip reduction of 26 percent. Trips produced by projected future development are substantial enough at build out that transit cannot make the study area congestion-free. Transit does provide an additional mode choice that bypasses congestion, however.

While the 2030 Build Best Case scenario shows some improvement from LOS C to LOS B over the 2030 baseline and Build, No Transit scenarios, several intersections still operate at LOS E or worse in the 2030 Build Best Case scenario. Results of the Build Best Case traffic operations analysis are detailed in Table 22 and depicted graphically

NEW DEVELOPMENT TRIPS (2030)				
	A.M. PEAK		P.M. PEAK	
LAND USE	ENTER	EXIT	ENTER	EXIT
Residential 9,826 DU	631	1,660	573	26
Retail 843,512 SF	378	239	1,046	1,140
Office 575,371 SF	536	55	94	485

Table 19 - 2030 Best Case Scenario Trip Generation by Land Use Category.
Some rounding occurs

NEW DEVELOPMENT TRIPS (2030) BEST CASE SCENARIO (INCLUDES MIXED-USE AND TRANSIT REDUCTIONS) WEEKDAY (PEAK HOUR)				
Zone	A.M. Enter	A.M. Exit	P.M. Enter	P.M. Exit
1	402	330	487	563
2	22	46	21	13
3	370	515	403	339
4	55	83	59	63
5	69	79	72	66
6	55	76	60	52
7	64	140	68	7
8	23	32	25	31
9	57	77	59	65
10	200	234	227	241
11	78	115	85	64
12	93	146	96	60
13	62	97	58	68

Table 20 - 2030 Build Best Case Scenario Trip Generation by Analysis Zone

on Figures 29-30. The following list summarizes intersections operating at LOS E or worse under the 2030 Build Best Case during the a.m. peak hour:

- Ponce de Leon Avenue at Boulevard
- Freedom Parkway at North Highland Avenue
- Decatur Street at Krog Street

Intersections operating at LOS E or worse under the 2030 Build Best Case during the p.m. peak hour are summarized as follows:

- North Avenue at Freedom Parkway
- Freedom Parkway at North Highland Avenue
- Decatur Street at Krog Street

NEW DEVELOPMENT TRIPS 2030 BEST CASE TRIP REDUCTIONS BY ZONE							
		A.M. Peak Hour			P.M. Peak Hour		
Zone		A.M. Total	A.M. Enter	A.M. Exit	P.M. Total	P.M. Enter	P.M. Exit
1	Gross Trip Generation	1,105	607	498	1,677	728	474
	Mixed Use Trip Reduction	-110	-61	-49	-168	-73	-47
	Transit Trip Reduction	-259	-142	-117	-376	-170	-103
2	Gross Trip Generation	98	31	67	62	30	16
	Mixed Use Trip Reduction	-3	-1	-2	-3	-1	-1
	Transit Trip Reduction	-25	-8	-17	-12	-8	-2
3	Gross Trip Generation	1,270	525	748	1,207	572	317
	Mixed Use Trip Reduction	-63	-23	-40	-48	-23	-12
	Transit Trip Reduction	-315	-130	-184	-262	-143	-60
4	Gross Trip Generation	205	85	120	200	91	55
	Mixed Use Trip Reduction	-17	-8	-10	-19	-8	-5
	Transit Trip Reduction	-49	-20	-29	-43	-21	-11
5	Gross Trip Generation	225	99	127	228	106	61
	Mixed Use Trip Reduction	-23	-10	-13	-23	-11	-6
	Transit Trip Reduction	-53	-23	-30	-48	-25	-12
6	Gross Trip Generation	170	73	97	179	83	48
	Mixed Use Trip Reduction	-15	-7	-8	-17	-8	-5
	Transit Trip Reduction	-40	-17	-23	-38	-20	-9
7	Gross Trip Generation	281	90	191	164	93	36
	Mixed Use Trip Reduction	-2	-1	-1	-2	-1	-1
	Transit Trip Reduction	-73	-23	-49	-26	-24	-1
8	Gross Trip Generation	84	35	49	86	37	25
	Mixed Use Trip Reduction	-8	-3	-5	-9	-4	-2
	Transit Trip Reduction	-20	-8	-12	-19	-9	-5
9	Gross Trip Generation	204	88	116	209	93	58
	Mixed Use Trip Reduction	-20	-9	-11	-21	-9	-6
	Transit Trip Reduction	-48	-21	-27	-46	-22	-12
10	Gross Trip Generation	639	296	343	749	334	207
	Mixed Use Trip Reduction	-50	-25	-25	-66	-29	-19
	Transit Trip Reduction	-153	-71	-83	-164	-79	-42
11	Gross Trip Generation	283	116	167	264	128	68
	Mixed Use Trip Reduction	-22	-10	-12	-23	-11	-6
	Transit Trip Reduction	-68	-28	-40	-53	-30	-11
12	Gross Trip Generation	329	123	206	263	130	66
	Mixed Use Trip Reduction	-16	-7	-9	-17	-8	-5
	Transit Trip Reduction	-81	-30	-51	-51	-32	-10
13	Gross Trip Generation	237	90	147	201	85	58
	Mixed Use Trip Reduction	-18	-8	-10	-19	-8	-5
	Transit Trip Reduction	-57	-21	-36	-44	-20	-12

Table 21 - 2030 Best Case Trip Reductions by Zone

INTERSECTION	A.M. PEAK LOS	A.M. PEAK HOUR V/C RATIO	P.M. PEAK LOS	P.M. PEAK HOUR V/C RATIO
Ponce de Leon Avenue at Boulevard	F	1.10	F	1.28
Ponce de Leon Avenue at Glen Iris Drive	B	0.59	B	0.84
Ponce de Leon Avenue at Ford Place Extension	A	0.52	A	0.72
Ponce de Leon Avenue at Home Depot	B	0.84	A	0.77
Ponce de Leon Avenue at Ponce Place	C	0.91	C	0.94
Ponce de Leon Avenue at Freedom Parkway	C	0.71	B	0.92
North Avenue at Boulevard	B	0.73	C	0.99
North Avenue at Glen Iris Drive	C	0.71	B	0.69
North Avenue at Ford Place Extension	C	0.56	B	0.54
North Avenue at Freedom Parkway	D	0.95	F	1.16
Boulevard at Ralph McGill Boulevard	B	0.83	C	1.01
Boulevard at Freedom Parkway	F	1.80	F	1.50
Boulevard at Irwin Street	D	1.01	B	0.79
Boulevard at Edgewood Avenue	C	0.85	D	1.09
Boulevard at Decatur Street	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Boulevard at Glen Iris Drive	C	0.66	C	0.93
Ralph McGill Boulevard at Freedom Parkway	C	0.86	B	0.67
Freedom Parkway at North Highland Avenue	E	1.04	E	1.12
Freedom Parkway at Moreland Avenue	B	0.75	C	1.04
Moreland Avenue at DeKalb Avenue (west)	A	0.61	A	0.76
Moreland Avenue at DeKalb Avenue (east)	A	0.53	A	0.54
Decatur Street at Krog Street	F	1.13	F	1.23
Glen Iris Drive at Highland Avenue	D	0.97	C	1.01
Ralph McGill Boulevard at Fortune Street	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Boulevard at Angier Avenue Connector	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Boulevard at Freedom Parkway Underpass Street	NO SIG	NO SIG	NO SIG	NO SIG

Table 22 - 2030 Best Case Scenario Traffic Operations Peak-Hour Level of Service

Year 2030 Projects

As Subarea 5 is located in a desirable section of the City of Atlanta and significant redevelopment is already taking place, it is likely that a significant amount of the BeltLine redevelopment will take place even without the transit improvements. Therefore, project recommendations are made for both the Build, No Transit and Best Case scenarios.

Build, No Transit

Based on unfavorable LOS conditions for Krog Street at Decatur Street, the following year 2030 projects are recommended:

- Additional left-turn lane from southbound Krog Street to eastbound Decatur Street
- Rebuild the Krog Street tunnel to properly align the intersection. Implementation of this project should be timed to coincide with replacement of the Krog Street Tunnel to minimize the expense associated with the project.

In the a.m. peak hour, LOS improves to acceptable, D, from LOS F under the Build Best Case scenario. During the p.m. peak hour, the intersection still operates at LOS F, however delay is reduced from 97 seconds to 81 seconds with the improvement

A key issue with this project is the need to rebuild the Krog Street Tunnel to properly line up the intersection legs. Rebuilding the tunnel to reduce delay at the intersection is not cost effective, however, when the tunnel is eventually replaced, it should include a provision for this project.

As expected, intersection LOS in the 2030 Build, No Transit scenario is slightly better overall with the inclusion of the 2020 and 2030 roadway improvements. However, conditions are slightly worse in 2030 as compared to 2020. During the a.m. peak hour, several intersections will improve from LOS C to LOS A or LOS B.

Table 23 includes LOS for all intersections studied. It should be noted that the Table reflects the analysis including additional turn lanes at the Freedom Parkway and Boulevard intersection. However, this project is not recommended as it will not raise the Level of Service to an acceptable level. In addition, the addition of turn lanes at the intersection would be in conflict with the plans for the area presented in the City of Atlanta Comprehensive Transportation Plan. Therefore, this project is not recommended.

INTERSECTION	A.M. PEAK LOS	A.M. PEAK V/C RATIO	P.M. PEAK LOS	P.M. PEAK V/C RATIO
Ponce de Leon Ave at Boulevard	E	1.08	E	1.31
Ponce de Leon Ave at Glen Iris Drive	A	0.59	B	0.81
Ponce de Leon Ave at Ford Pl. Extens.	A	0.54	A	1.09
Ponce de Leon Ave at Home Depot	B	0.87	B	0.78
Ponce de Leon Ave at Ponce de Leon Pl	C	0.89	D	0.99
Ponce de Leon Ave at Freedom Pkwy	B	0.84	B	0.92
North Avenue at Boulevard	B	0.77	C	1.02
North Avenue at Glen Iris Drive	C	0.73	B	0.71
North Avenue at Ford Pl. Extens.	C	0.68	B	0.62
North Avenue at Freedom Pkwy	D	0.97	F	1.15
Boulevard at Ralph McGill Blvd	B	0.87	B	0.72
Boulevard at Freedom Pkwy	F	1.73	F	1.18
Boulevard at Irwin Street	D	1.02	B	0.58
Boulevard at Edgewood Ave	C	0.93	D	1.08
Boulevard at Decatur Street	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Blvd at Glen Iris Drive	B	0.72	C	0.93
Ralph McGill Blvd at Freedom Pkwy	C	0.87	B	0.66
Freedom Pkwy at N. Highland Ave	E	1.06	E	1.14
Freedom Pkwy at Moreland Ave	B	0.76	C	1.02
Moreland Ave at DeKalb Ave (west)	A	0.62	B	0.77
Moreland Ave at DeKalb Ave (east)	A	0.54	A	0.54
Decatur Street at Krog Street	D	1.20	F^^	1.22
Glen Iris Drive at Highland Ave	D	0.99	D	1.01
Ralph McGill Blvd at Fortune Street	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Blvd at Angier Ave Conn	A	0.22	B	0.39
Ralph McGill Blvd at Freedom Pkwy Underpass Street	NO SIG	NO SIG	NO SIG	NO SIG

Table 23 - 2030 Build , No Transit Traffic Operations (With 2030 Projects)

Some intersections perform slightly worse in the Build Best Case Scenario, which is counterintuitive. Because the modeling software optimizes the signal timings for the corridor as a whole and not for each individual intersection, non-critical intersections may experience slightly more delay. This is happening under the Build Best Case Scenario and delay at the affected intersections is 1 to 5 seconds higher than under the Build, No Transit Scenario. Under the Build Best Case Scenario, the corridor overall works better, but the delay at the non-critical intersections is enough to push them over the letter grade threshold

Build Best Case

Based on unfavorable LOS conditions for Krog Street at Decatur Street, the same project described previously is recommended (see page 43).

Table 25 summarizes LOS for all scenarios without projects.

INTERSECTION	A.M. PEAK LOS	A.M. PEAK V/C RATIO	P.M. PEAK LOS	P.M. PEAK V/C RATIO
Ponce de Leon Ave at Boulevard	E	1.11	E	1.12
Ponce de Leon Ave at Glen Iris Drive	B	0.59	B	0.84
Ponce de Leon Ave at Ford Pl. Extens.	A	0.52	A	0.72
Ponce de Leon Ave at Home Depot	B	0.84	A	0.77
Ponce de Leon Ave at Ponce de Leon Pl	C	0.91	C	0.94
Ponce de Leon Ave at Freedom Pkwy	C	0.71	B	0.92
North Ave at Boulevard	C	0.73	C	0.99
North Ave at Glen Iris Drive	C	0.71	B	0.69
North Ave at Ford Pl. Extension	C	0.556	B	0.54
North Ave at Freedom Pkwy	D	0.95	F	1.16
Boulevard at Ralph McGill Blvd	B	0.83	C	1.01
Boulevard at Freedom Pkwy	F	1.67	F	1.23
Boulevard at Irwin Street	D	1.01	B	0.79
Boulevard at Edgewood Ave	C	0.85	D	1.09
Boulevard at Decatur Street	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Blvd at Glen Iris Drive	C	0.68	C	0.93
Ralph McGill Bldv at Freedom Parkway	C	0.86	B	0.67
Freedom Pkwy at N. Highland Ave	E	1.04	E	1.12
Freedom Pkwy at Moreland Ave	B	0.75	C	1.04
Moreland Ave at DeKalb Ave (west)	A	0.61	B	0.76
Moreland Ave at DeKalb Ave (east)	A	0.53	A	0.54
Decatur Street at Krog Street	F	1.15	E	1.16
Glen Iris Drive at Highland Ave	D	0.97	C	1.01
Ralph McGill Bldv at Fortune Street	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Bldv at Angier Ave Conn	A	0.20	B	0.13
Ralph McGill Bldv at Freedom Pkwy Underpass Street	NO SIG	NO SIG	NO SIG	NO SIG

Table 24 - 2030 Build Best Case Scenario Traffic Operations (With 2030 Projects)

Table 25 - Summary Table of Level of Service for all Traffic Analysis Scenarios

NS = No Signal

INTERSECTION	EXISTING CONDITIONS PEAK LOS (2007)		BASELINE PEAK LOS (2020)		BASELINE PEAK LOS (2030)		BUILD, NO TRANSIT TRAFFIC OPERATIONS PEAK LOS (2020)		BUILD BEST CASE TRAFFIC OPERATIONS PEAK LOS (2020)		BUILD, NO TRANSIT TRAFFIC OPERATIONS PEAK LOS (2030)		BUILD BEST CASE TRAFFIC OPERATIONS PEAK LOS (2030)	
	A.M. PEAK LOS	P.M. PEAK LOS	A.M. PEAK LOS	P.M. PEAK LOS	A.M. PEAK LOS	P.M. PEAK LOS	A.M. PEAK LOS	P.M. PEAK LOS	A.M. PEAK LOS	P.M. PEAK LOS	A.M. PEAK LOS	P.M. PEAK LOS	A.M. PEAK LOS	P.M. PEAK LOS
Ponce de Leon Avenue @ Boulevard	C	D	E	E	F	F	E	F	E	F	F	F	F	F
Ponce de Leon Avenue @ Glen Iris Drive	B	A	B	B	A	A	A	A	A	A	A	B	B	B
Ponce de Leon Avenue @ Ford Place Extension	n/a	n/a	n/a	n/a	n/a	n/a	A	A	A	A	A	A	A	A
Ponce de Leon Avenue @ Home Depot	A	B	B	B	C	B	C	B	C	B	B	B	B	A
Ponce de Leon Avenue @ Ponce Place	B	B	B	B	B	B	B	B	B	B	C	D	C	C
Ponce de Leon Avenue @ Freedom Parkway	B	B	B	B	C	B	B	B	B	B	C	B	C	B
North Avenue @ Boulevard	B	B	B	B	B	C	B	C	B	C	C	C	B	C
North Avenue @ Glen Iris Drive	C	B	C	B	C	B	C	B	C	B	C	B	C	B
North Avenue @ Ford Place Extension	n/a	n/a	n/a	n/a	n/a	n/a	C	B	B	A	C	B	C	B
North Avenue @ Freedom Parkway	C	C	C	D	D	F	D	D	D	D	D	F	D	F
Boulevard @ Ralph McGill Boulevard	A	B	A	B	B	C	A	B	A	B	B	B	B	C
Boulevard @ Freedom Parkway	F	F	F	F	F	F	F	F	F	F	F	F	F	F
Boulevard @ Irwin Street	B	A	C	B	C	B	C	B	C	B	D	B	D	B
Boulevard @ Edgewood Avenue	B	B	C	C	C	D	C	C	C	C	D	D	C	D
Boulevard @ Decatur Street	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Boulevard @ Glen Iris Drive	C	B	C	B	C	C	B	C	B	C	C	C	C	C
Ralph McGill Boulevard @ Freedom Parkway	D	D	B	B	C	B	B	B	B	B	C	B	C	B
Freedom Parkway @ North Highland Avenue	D	D	E	D	F	E	E	D	E	D	F	E	E	E
Freedom Parkway @ Moreland Avenue	A	C	B	C	B	D	B	C	B	C	B	C	B	C
Moreland Avenue @ DeKalb Avenue (west)	A	A	A	B	A	B	A	B	A	B	A	B	A	A
Moreland Avenue @ DeKalb Avenue (east)	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Decatur Street @ Krog Street	C	B	E	D	E	D	D	D	D	D	F	F	F	F
Glen Iris Drive @ Highland Avenue	C	B	C	E	C	C	C	C	C	C	D	D	D	C
Ralph McGill Boulevard @ Fortune Street	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Boulevard @ Angier Avenue Connector	n/a	n/a	n/a	n/a	n/a	n/a	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Boulevard @ Freedom Parkway Underpass Street	n/a	n/a	n/a	n/a	n/a	n/a	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG

Table 26 - Summary Table of Peak Hour Volume to Capacity Ratio for all Traffic Analysis Scenarios

NS = No Signal

INTERSECTION	EXISTING CONDITIONS PEAK V/C RATIO (2007)		BASELINE PEAK V/C RATIO (2020)		BASELINE PEAK V/C RATIO (2030)		BUILD, NO TRANSIT TRAFFIC OPERATIONS PEAK V/C RATIO (2020)		BUILD BEST CASE TRAFFIC OPERATIONS PEAK V/C RATIO (2020)		BUILD, NO TRANSIT TRAFFIC OPERATIONS PEAK V/C RATIO (2030)		BUILD BEST CASE TRAFFIC OPERATIONS PEAK V/C RATIO (2030)	
	A.M. PEAK V/C	P.M. PEAK V/C	A.M. PEAK V/C	P.M. PEAK V/C	A.M. PEAK V/C	P.M. PEAK V/C	A.M. PEAK V/C	P.M. PEAK V/C	A.M. PEAK V/C	P.M. PEAK V/C	A.M. PEAK V/C	P.M. PEAK V/C	A.M. PEAK V/C	P.M. PEAK V/C
Ponce de Leon Avenue @ Boulevard	0.94	1.01	1.08	1.26	1.19	1.29	1.15	1.19	1.07	1.16	1.18	1.52	1.10	1.28
Ponce de Leon Avenue @ Glen Iris Drive	0.49	0.68	0.54	0.71	0.59	0.77	0.56	0.74	0.56	0.74	0.59	0.81	0.59	0.84
Ponce de Leon Avenue @ Ford Place Extension	n/a	n/a	n/a	n/a	n/a	n/a	0.49	0.63	0.48	0.61	0.53	1.09	0.52	0.72
Ponce de Leon Avenue @ Home Depot	0.72	0.65	0.80	0.71	0.84	0.73	0.78	0.67	0.78	0.67	0.87	0.78	0.84	0.77
Ponce de Leon Avenue @ Ponce Place	0.72	0.62	0.77	0.75	0.85	0.79	0.79	0.81	0.78	0.79	0.89	0.99	0.91	0.94
Ponce de Leon Avenue @ Freedom Parkway	0.71	0.71	0.76	0.80	0.80	0.63	0.76	0.87	0.76	0.87	0.80	0.92	0.71	0.92
North Avenue @ Boulevard	0.51	0.69	0.60	0.78	0.68	0.89	0.63	0.80	0.61	0.79	0.75	1.02	0.73	0.99
North Avenue @ Glen Iris Drive	0.53	0.60	0.61	0.62	0.66	0.63	0.38	0.62	0.67	0.65	0.73	0.71	0.71	0.69
North Avenue @ Ford Place Extension	n/a	n/a	n/a	n/a	n/a	n/a	0.29	0.40	0.27	0.38	0.68	0.62	0.56	0.54
North Avenue @ Freedom Parkway	0.72	0.86	0.81	0.98	0.91	1.04	0.93	1.02	0.96	0.98	0.96	1.15	0.95	1.16
Boulevard @ Ralph McGill Boulevard	0.55	0.63	0.67	0.83	0.79	0.93	0.71	0.78	0.70	0.78	0.85	0.72	0.83	1.01
Boulevard @ Freedom Parkway	1.46	1.31	1.72	1.41	1.76	1.48	1.71	1.46	1.79	1.34	1.80	1.47	1.80	1.50
Boulevard @ Irwin Street	0.79	0.60	0.89	0.69	0.99	0.77	0.93	0.80	0.92	069	1.02	0.80	1.01	0.79
Boulevard @ Edgewood Avenue	0.65	0.84	0.73	0.95	0.80	1.02	0.79	0.96	0.77	0.95	0.87	1.08	0.85	1.09
Boulevard @ Decatur Street	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Boulevard @ Glen Iris Drive	0.47	0.75	0.53	0.84	0.58	0.88	0.60	0.83	0.58	0.83	0.69	0.93	0.66	0.93
Ralph McGill Boulevard @ Freedom Parkway	0.72	0.54	0.76	0.49	0.87	0.64	0.80	0.58	0.79	0.60	0.86	0.66	0.86	0.67
Freedom Parkway @ North Highland Avenue	0.85	0.82	0.99	0.92	1.03	0.99	0.99	0.96	0.98	0.96	1.06	1.14	1.04	1.12
Freedom Parkway @ Moreland Avenue	0.63	0.80	0.70	0.94	0.74	1.04	0.70	0.89	0.70	0.89	0.75	1.02	0.75	1.04
Moreland Avenue @ DeKalb Avenue (west)	0.50	0.62	0.55	0.70	0.60	0.74	0.58	0.68	0.57	0.68	0.61	0.77	0.61	0.76
Moreland Avenue @ DeKalb Avenue (east)	0.47	0.47	0.49	0.52	0.53	0.54	0.50	0.49	0.50	0.49	0.53	0.54	0.53	0.54
Decatur Street @ Krog Street	0.90	0.78	0.93	0.92	1.09	1.09	1.02	1.02	1.00	1.01	1.18	1.29	1.13	1.23
Glen Iris Drive @ Highland Avenue	0.71	0.83	0.81	0.94	0.89	0.98	0.87	0.91	0.85	0.90	0.99	1.01	0.97	1.01
Ralph McGill Boulevard @ Fortune Street	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Boulevard @ Angier Avenue Connector	n/a	n/a	n/a	n/a	n/a	n/a	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Boulevard @ Freedom Parkway Underpass Street	n/a	n/a	n/a	n/a	n/a	n/a	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG

Table 26 - Summary Table of Peak Hour Volume to Capacity Ratio for all Traffic Analysis Scenarios, Continued

NS = No Signal

INTERSECTION	BUILD, NO TRANSIT WITH IMPROVEMENTS TRAFFIC OPERATIONS PEAK V/C RATIO (2020)		BUILD BEST CASE WITH IMPROVEMENTS TRAFFIC OPERATIONS PEAK V/C RATIO (2020)		BUILD, NO TRANSIT WITH IMPROVEMENTS TRAFFIC OPERATIONS PEAK V/C RATIO (2030)		BUILD BEST CASE WITH IMPROVEMENTS TRAFFIC OPERATIONS PEAK V/C RATIO (2030)	
	A.M. PEAK V/C	P.M. PEAK V/C	A.M. PEAK V/C	P.M. PEAK V/C	A.M. PEAK V/C	P.M. PEAK V/C	A.M. PEAK V/C	P.M. PEAK V/C
Ponce de Leon Avenue @ Boulevard	1.03	1.23	0.97	1.21	1.08	1.31	1.11	1.12
Ponce de Leon Avenue @ Glen Iris Drive	0.55	0.74	0.56	0.74	0.59	0.81	0.59	0.84
Ponce de Leon Avenue @ Ford Place Extension	0.48	0.63	0.48	0.61	0.54	1.09	0.52	0.72
Ponce de Leon Avenue @ Home Depot	0.78	0.67	0.78	0.67	0.87	0.78	0.84	0.77
Ponce de Leon Avenue @ Ponce Place	0.79	0.81	0.78	0.79	0.89	0.99	0.91	0.94
Ponce de Leon Avenue @ Freedom Parkway	0.80	0.87	0.76	0.87	0.84	0.92	0.71	0.81
North Avenue @ Boulevard	0.65	0.80	0.65	0.79	0.77	1.02	0.73	0.99
North Avenue @ Glen Iris Drive	0.73	0.62	0.68	0.65	0.73	0.71	0.71	0.69
North Avenue @ Ford Place Extension	0.30	0.40	0.29	0.38	0.68	0.62	0.56	0.54
North Avenue @ Freedom Parkway	0.85	10.2	0.86	0.98	0.97	1.15	0.95	1.16
Boulevard @ Ralph McGill Boulevard	0.72	0.78	0.70	0.78	0.87	0.72	0.83	1.01
Boulevard @ Freedom Parkway	0.52	1.18	1.48	1.04	1.73	1.18	1.67	1.23
Boulevard @ Irwin Street	0.92	0.70	0.93	0.69	1.02	0.58	1.01	0.79
Boulevard @ Edgewood Avenue	0.83	0.96	0.79	0.95	0.93	1.08	0.85	1.09
Boulevard @ Decatur Street	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Boulevard @ Glen Iris Drive	0.62	0.83	0.59	0.83	0.72	0.93	0.66	0.93
Ralph McGill Boulevard @ Freedom Parkway	0.78	0.58	0.79	0.60	0.87	0.66	0.86	0.67
Freedom Parkway @ North Highland Avenue	0.97	0.96	0.99	0.96	1.06	1.14	1.04	1.12
Freedom Parkway @ Moreland Avenue	0.71	0.89	0.70	0.89	0.76	1.02	0.75	1.04
Moreland Avenue @ DeKalb Avenue (west)	0.57	0.68	0.56	0.68	0.62	0.77	0.61	0.76
Moreland Avenue @ DeKalb Avenue (east)	0.50	0.49	0.50	0.49	0.54	0.54	0.53	0.54
Decatur Street @ Krog Street	1.07	0.84	1.04	0.81	1.20	1.22	1.15	1.16
Glen Iris Drive @ Highland Avenue	0.90	0.91	0.87	0.90	0.99	1.01	0.97	1.01
Ralph McGill Boulevard @ Fortune Street	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG
Ralph McGill Boulevard @ Angier Avenue Connector	0.17	0.33	0.17	0.32	0.22	0.39	0.20	0.34
Ralph McGill Boulevard @ Freedom Parkway Underpass Street	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG	NO SIG

Figure 32 - BeltLine Subarea 5 Intersection Project Sketch: Decatur Street/ DeKalb Avenue at Krog Street

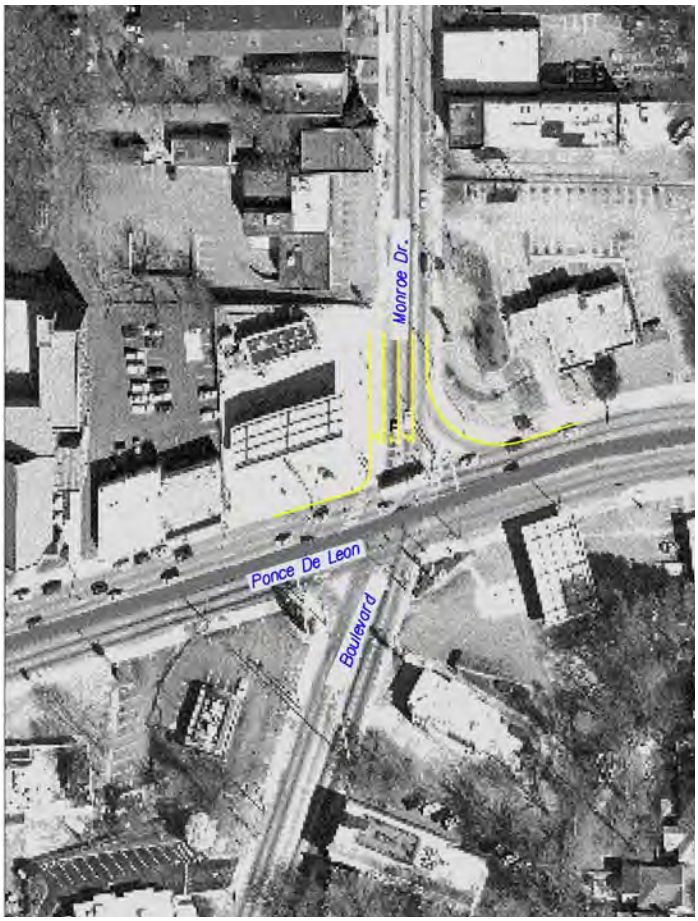


Figure 33 - BeltLine Subarea 5 Intersection Project Sketch: Ponce de Leon Avenue at Boulevard/ Monroe Drive

Conclusions and Recommendations

Recommended transportation improvements are presented in five broad categories: roadway improvements, intersection improvements, internal park circulation, mobility, and connectivity. Roadway improvements address insufficient as well as excess capacity. Intersection improvements address deficiencies identified using the LOS methodology. Internal park circulation improvements are the conversion of existing streets to pedestrian and bicycle-only facilities. Mobility improvements address circulation around the park. Connectivity projects improve access to the park as well as other parcels in the study area.

Build, No Transit Traffic Operations Recommended Improvements

Additional capacity on Decatur Street/DeKalb Avenue was analyzed and found to improve operations. While this is a potential improvement, the existing MARTA line, railroad, and townhome/condominium development adjacent to the right-of-way makes widening to a six-lane facility impractical.

A road diet is recommended for North Avenue from Boulevard to Bonaventure Avenue for implementation by 2020 because the current volume of 13,040 vehicles per day (VPD) is far below the LOS C threshold of 21,400 VPD in the Generalized Annual Average Daily Volumes for Florida's Urbanized Areas. One travel lane in each direction would be replaced with on-street parking, wider sidewalks, or streetscape improvements. The exact configuration and amenities would be determined during the concept development phase.

The North Avenue road diet was subject to analysis using Florida's General Annual Average Daily Volumes instead of intersection LOS because the road diet recommendation is proposed to remove excess through capacity. The road diet recommendation will not remove turning lanes at any intersections.

The following intersection improvements are recommended to address LOS deficiencies identified and detailed in the Build, No Transit traffic operations section:

- Ponce de Leon Avenue at Boulevard/Monroe Drive (2020)
  - Additional left-turn-only bay from southbound Monroe Drive to eastbound Ponce de Leon Avenue
  - Change the existing shared through/left-turn lane to through only
- Krog Street at Decatur Street (2030)
  - Additional left-turn lane from southbound Krog Street to eastbound Decatur Street
  - Rebuild the Krog Street Tunnel to properly align the intersection (recommended when the Krog Street Tunnel is rebuilt)

To provide internal park circulation, streets falling within the park will be converted to pedestrian-use or multi-use paths and will include the following:

- Morgan Street
- Dallas Street
- Rankin Street
- Angier Avenue
- Edith Street

Street extension and new location recommendations are made based on improving circulation within the study area and around the park as well as connectivity to parcels in the study area. These improvements are not justified on a capacity basis. These are new roadways based on the Street Framework Plan and identified as NR-0 on Figure 16.

Several connectivity improvements are recommended as follows to enhance connectivity across the BeltLine right-of-way:

- Angier Springs Road Extension – Avenue/mixed-use, including sidewalks and on-street parking with an at-grade crossing of the BeltLine
- Elizabeth Street Extension – Multi-family street extending Elizabeth Street to intersect

with the new Freedom Parkway Underpass

- Freedom Parkway Underpass Street – Multi-family street paralleling the BeltLine transit and running underneath Freedom Parkway to connect existing Ralph McGill Boulevard with the Willoughby Way Extension and the street framework improvements, which connect East Avenue and terminate at Highland Avenue.
- McGruder Street Extension – Multi-family street extending across the BeltLine connecting to Krog Street
- Montag Circle Extension – Multi-family street crossing the BeltLine at-grade and connecting Montag Circle with Highland Avenue
- Willoughby Way Extension – Multi-family street extending Willoughby Way to intersect with the new Freedom Parkway Underpass

Build Best Case Traffic Operations Recommended Improvements

Based on the traffic analysis, intersections with projects recommended for the Build, No Transit scenario will also operate at unacceptable LOS under the BeltLine Best Case scenario. In addition, the Historic Fourth Ward Park will be in place whether or not the transit component of the BeltLine is implemented. Therefore, connectivity and circulation needs related to it still need to be addressed. Therefore, all improvements recommended in the Build, No Transit scenario are also recommended under the BeltLine scenario.

Figure 34 - BeltLine Subarea 5 Recommended Circulation

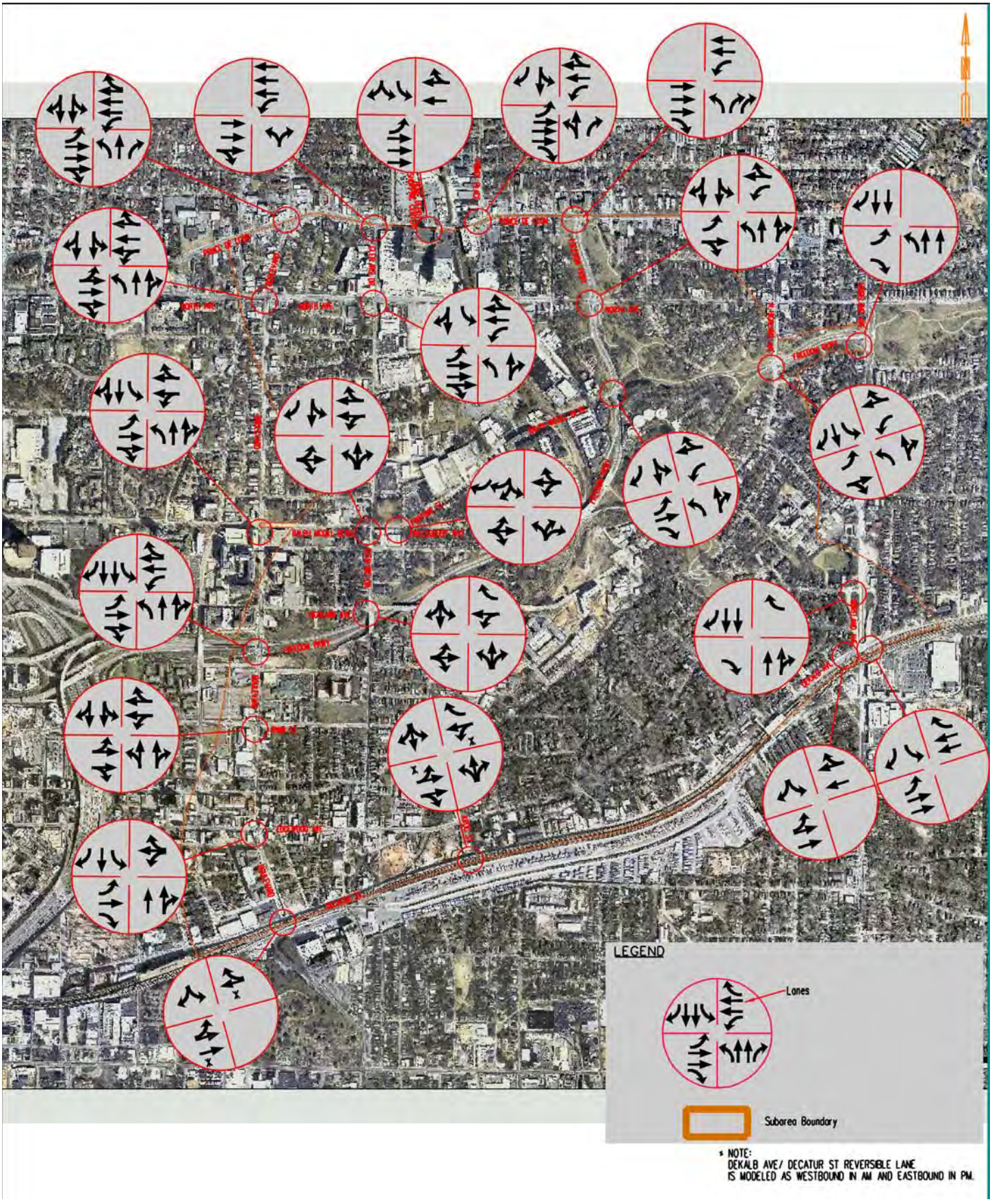


Figure 07 - Existing Geometry

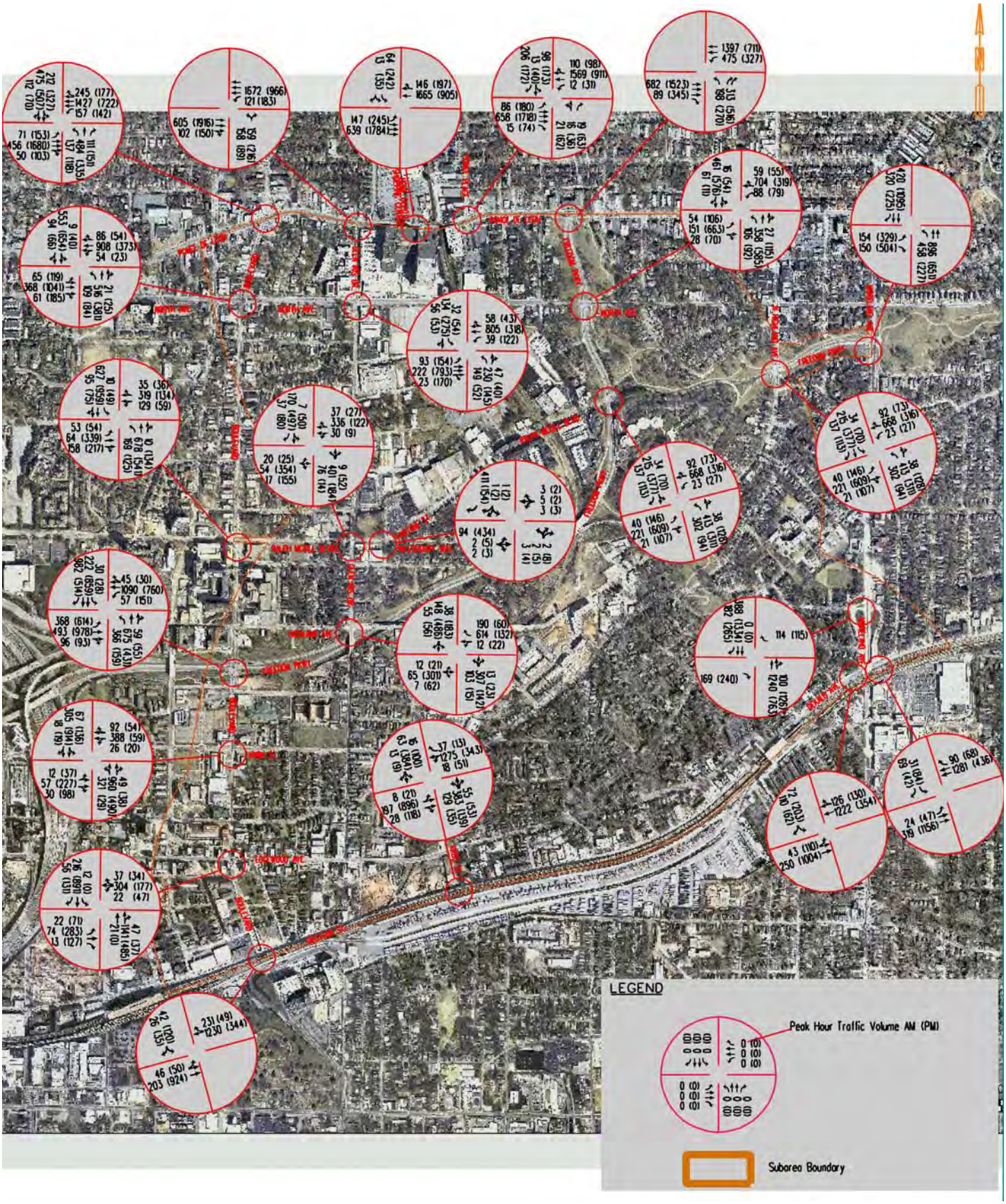


Figure 08 - Existing Traffic Volumes

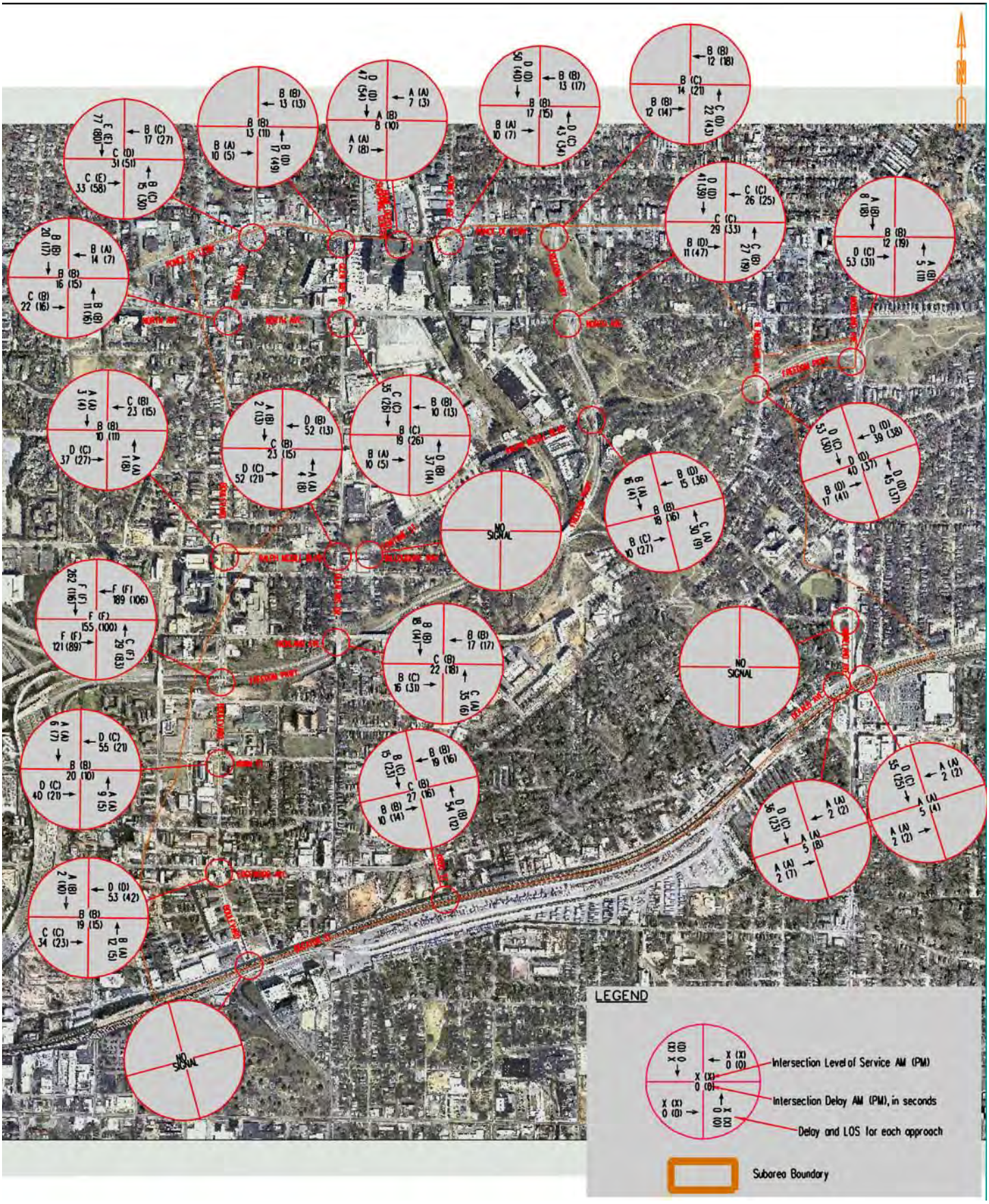


Figure 09 - Existing Levels of Service

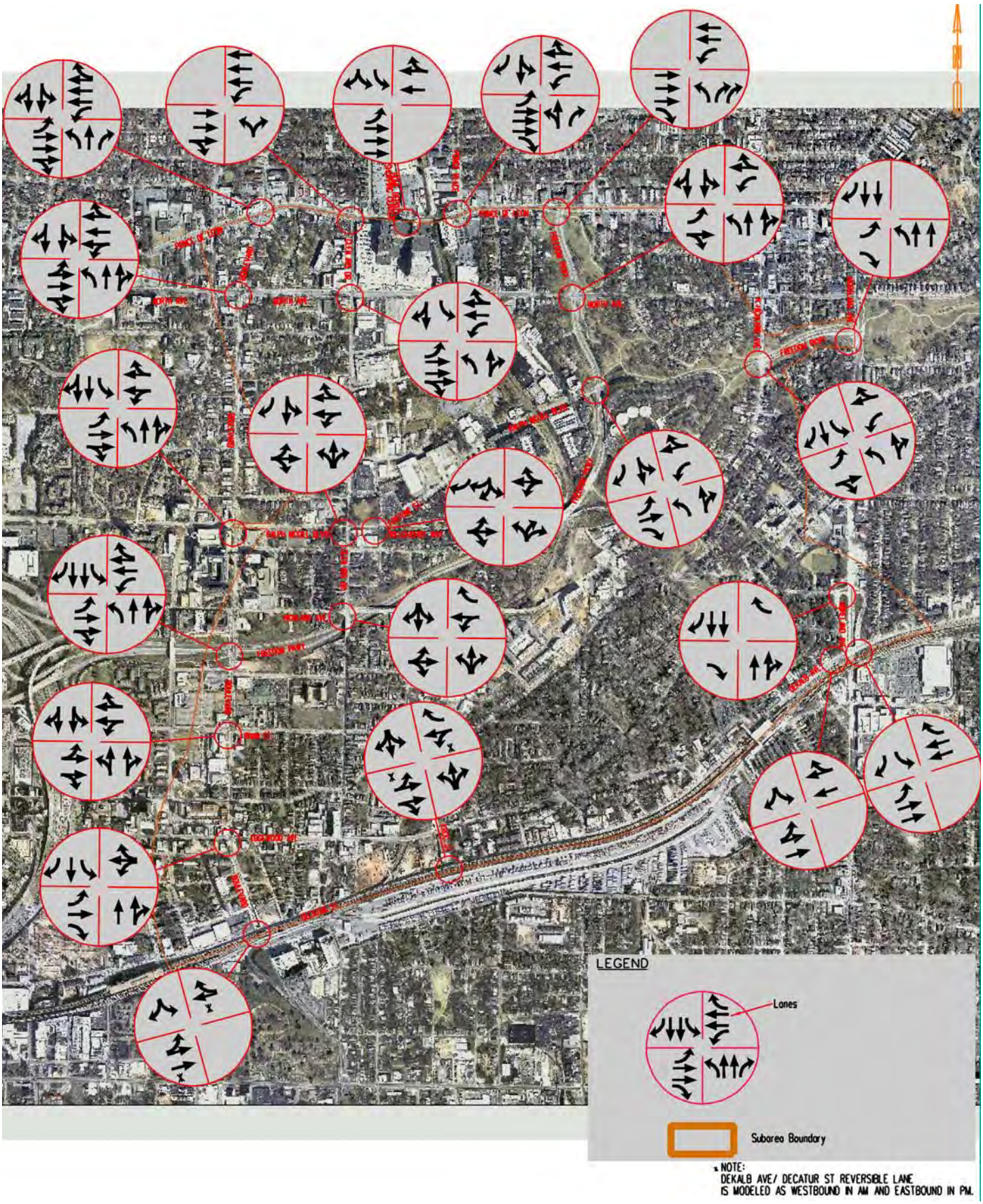


Figure 10 - 2020 Baseline Geometry

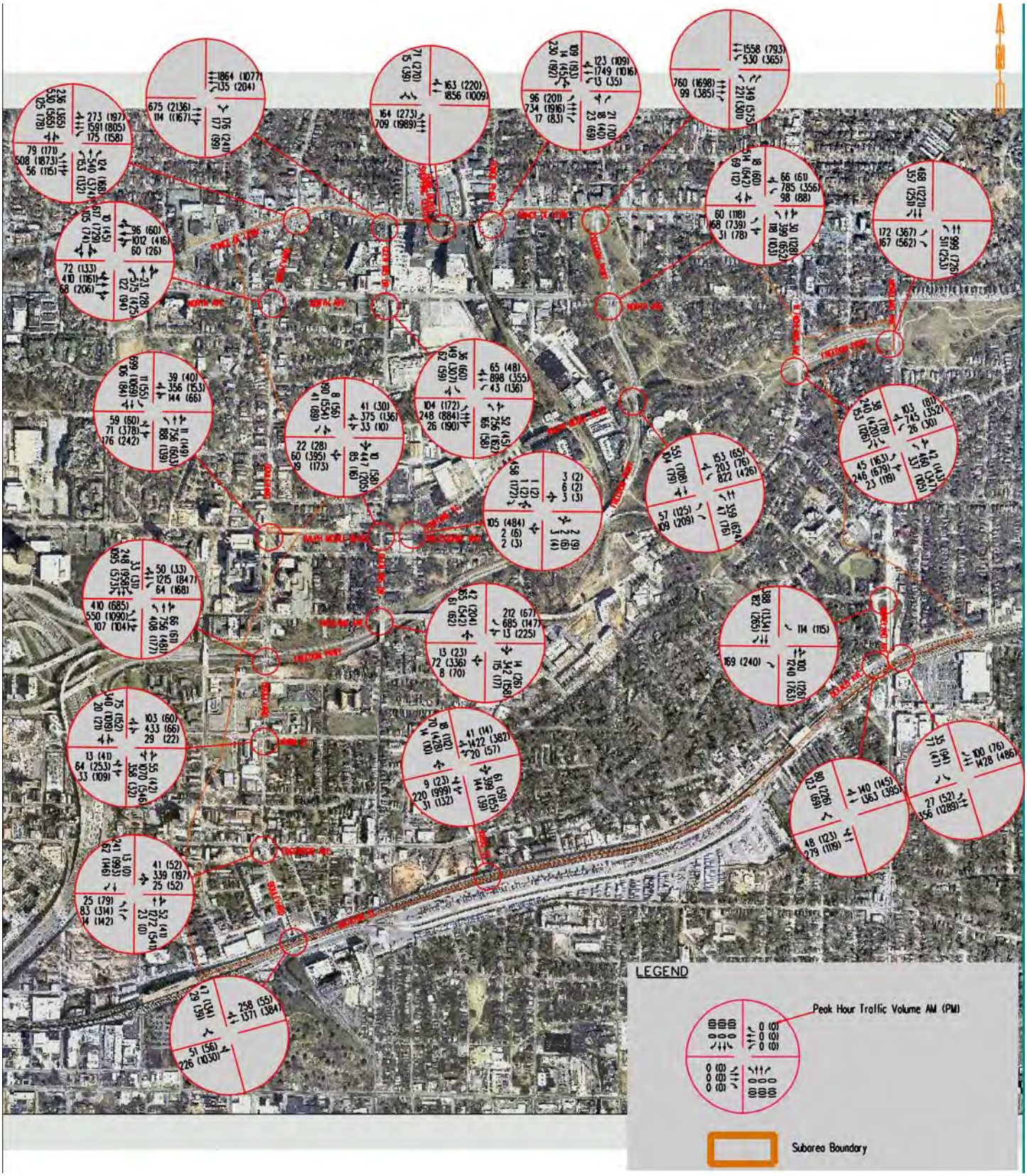


Figure 11 - 2020 Baseline Traffic Volumes

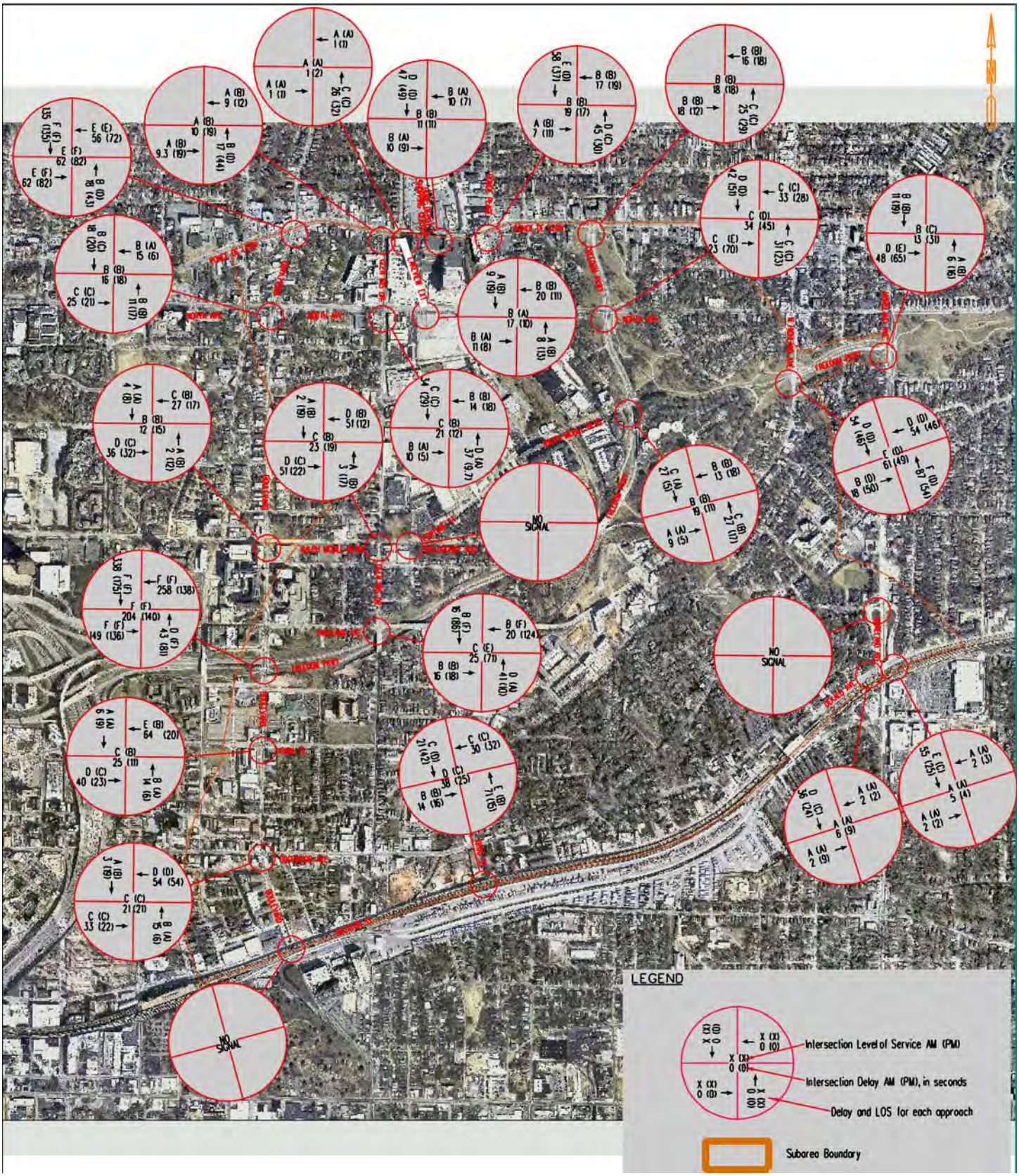


Figure 12 - 2020 Baseline Level of Service

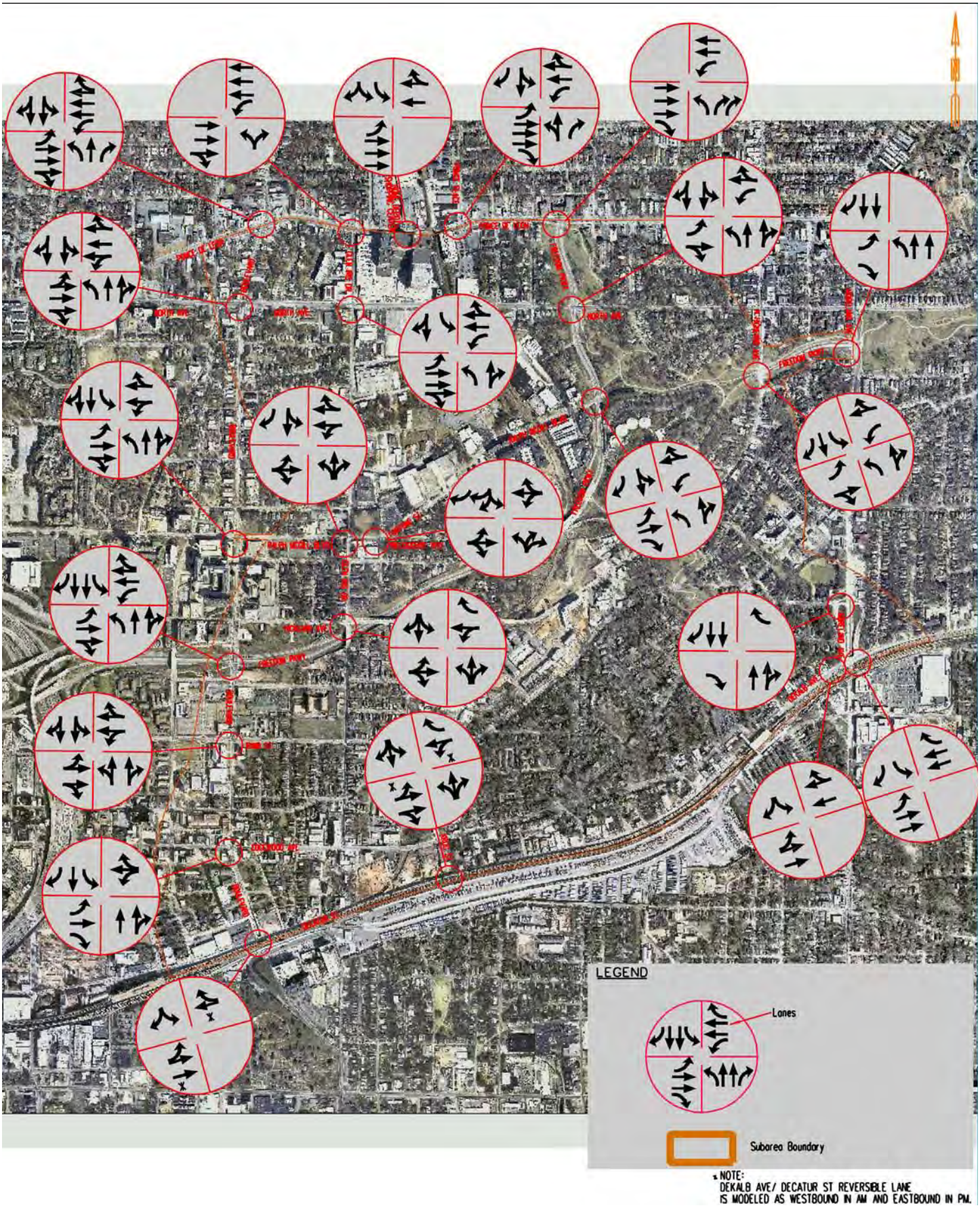


Figure 13 - 2030 Baseline Geometry

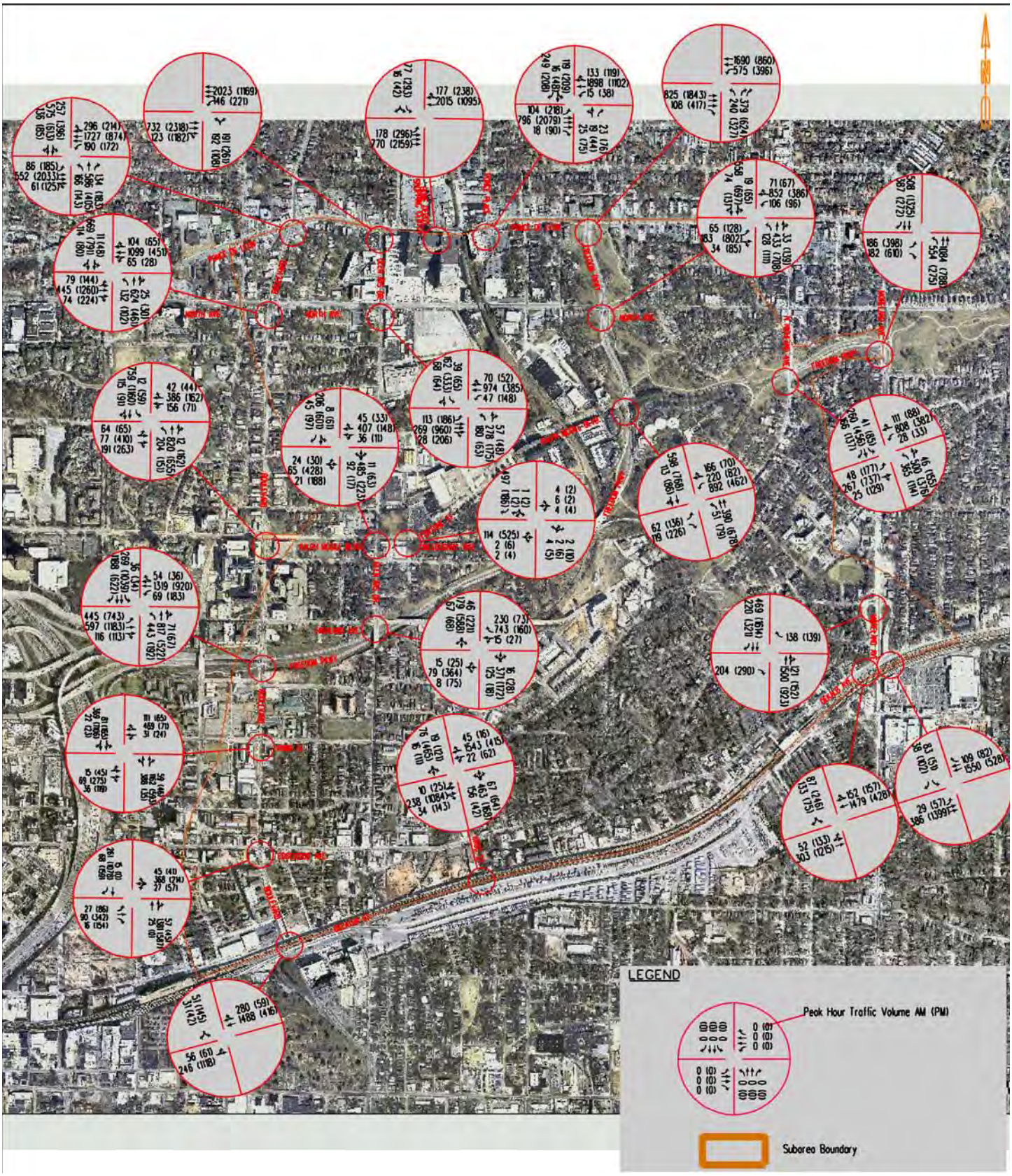


Figure 14 - 2030 Baseline Traffic Volumes

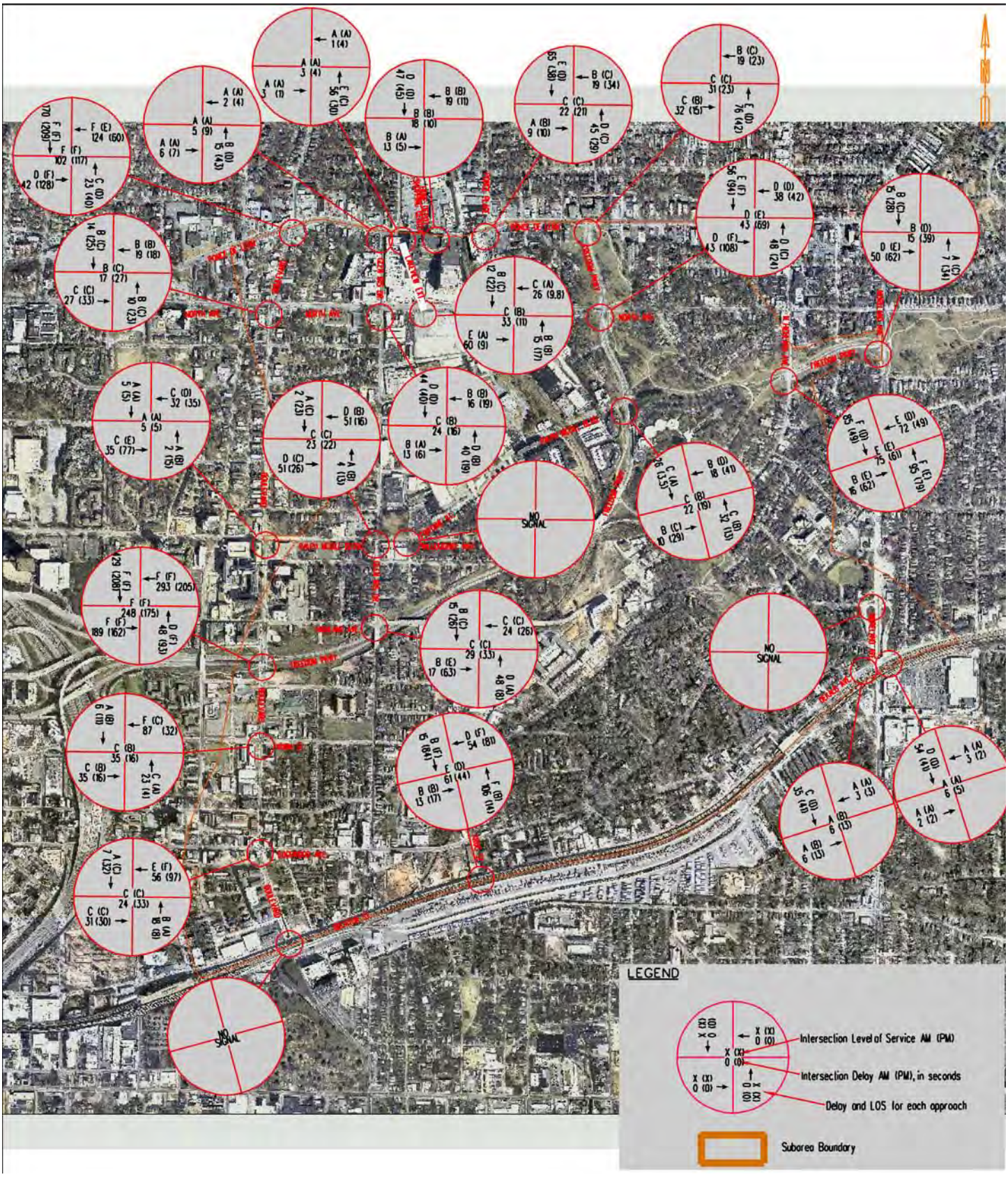


Figure 15 - 2030 Baseline Level of Service

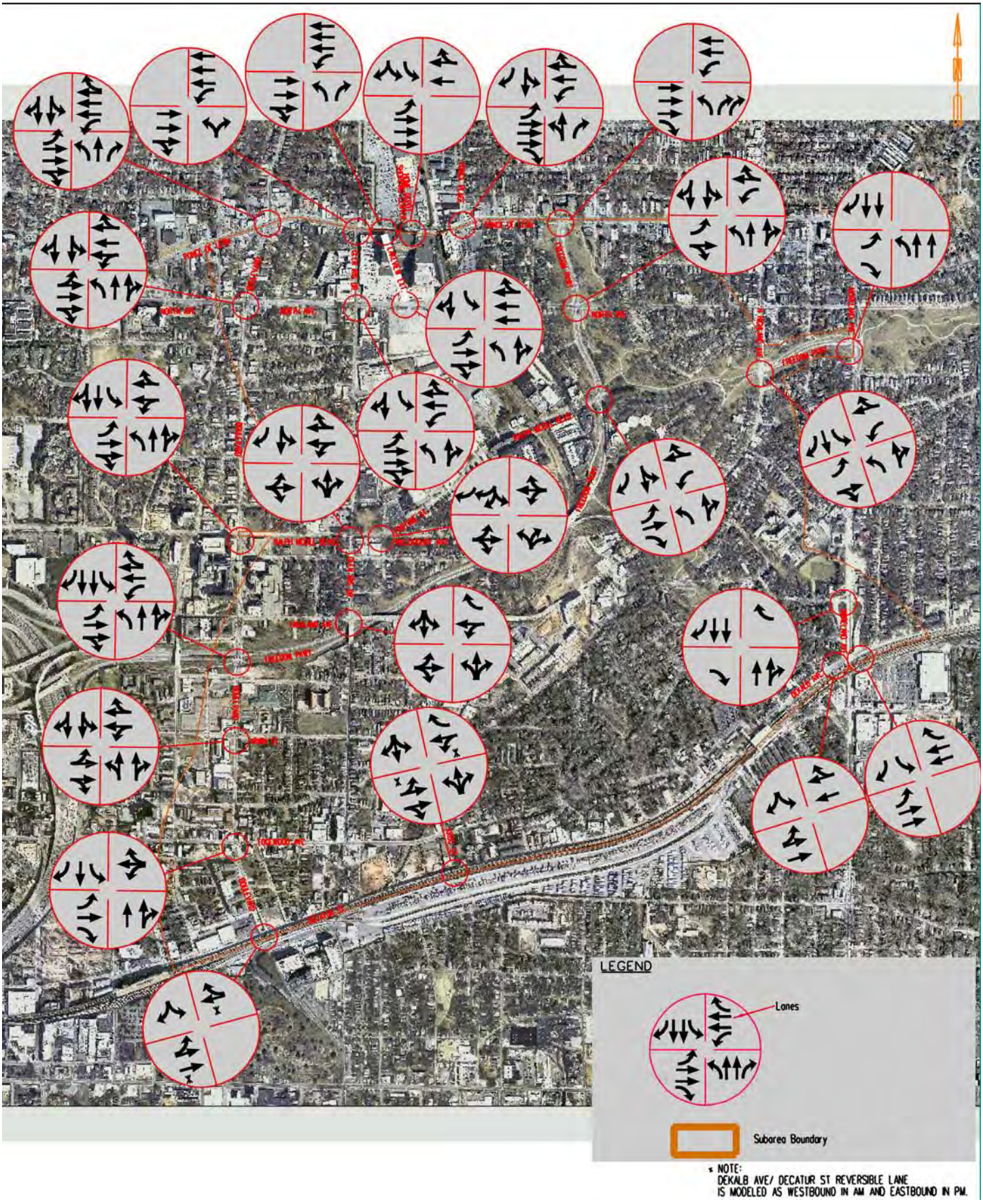


Figure 20 - 2020 Build with No Transit Geometry

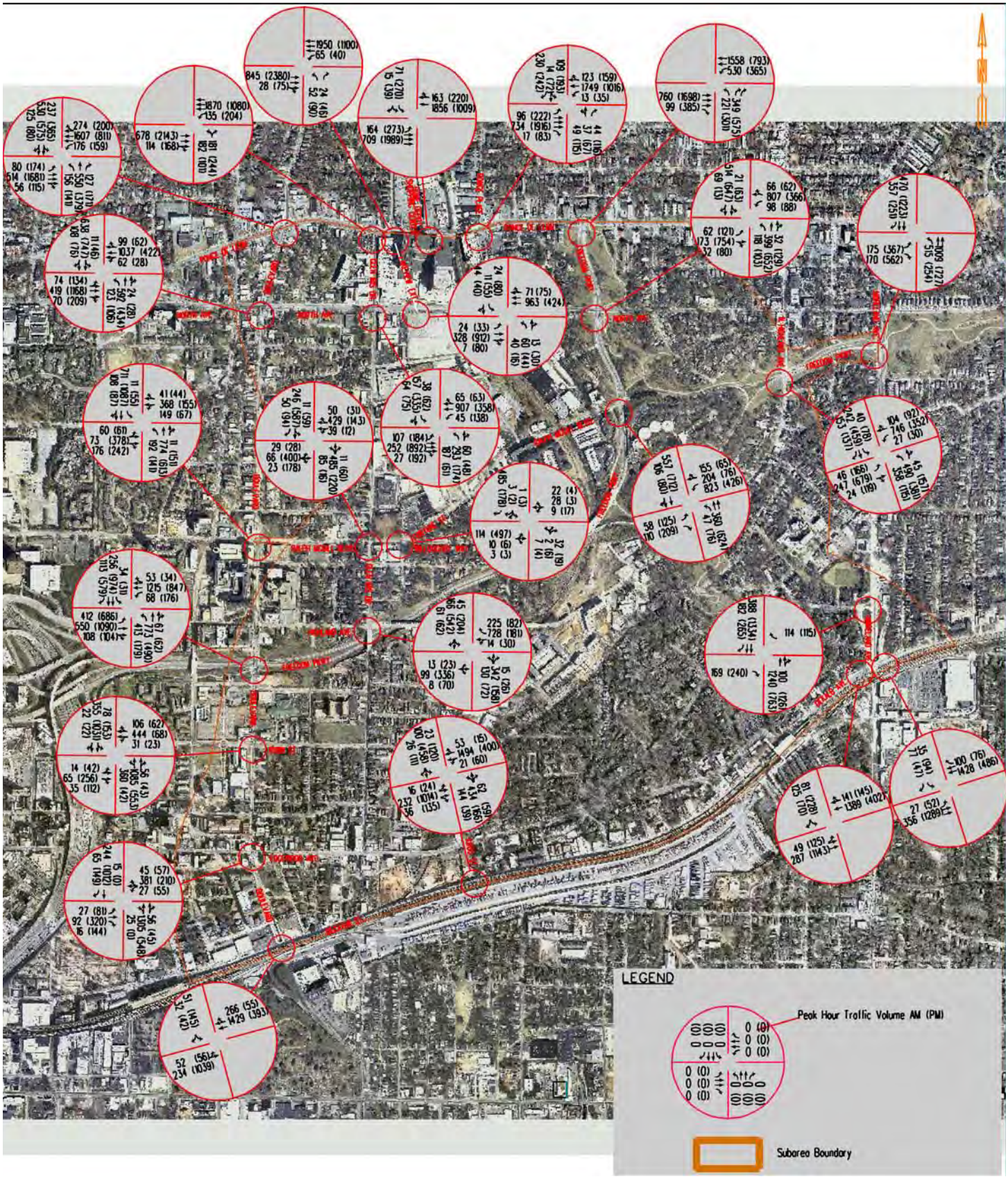


Figure 21 - 2020 Build with No Transit Traffic Volumes

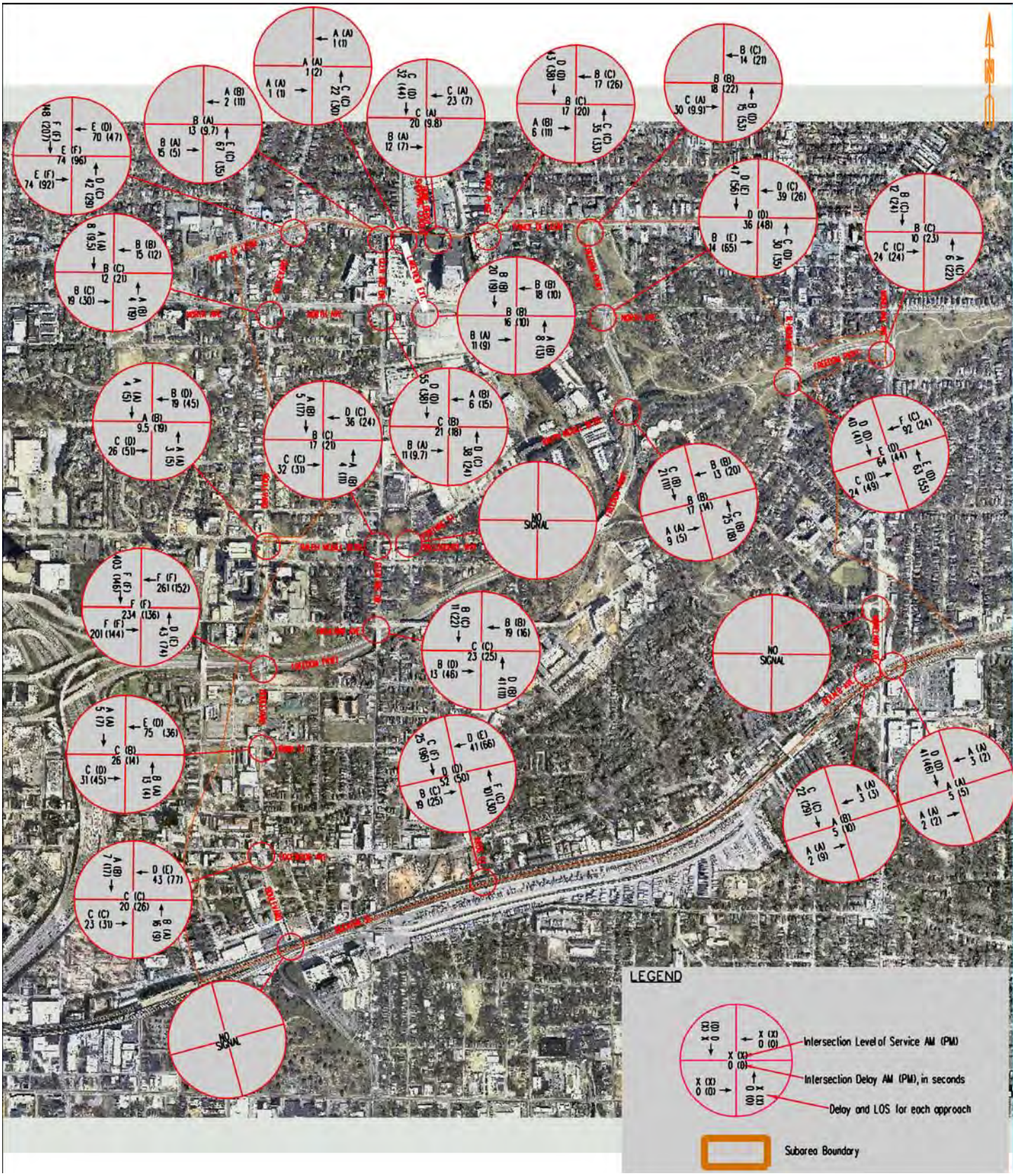


Figure 22 - 2020 Build with No Transit Level of Service

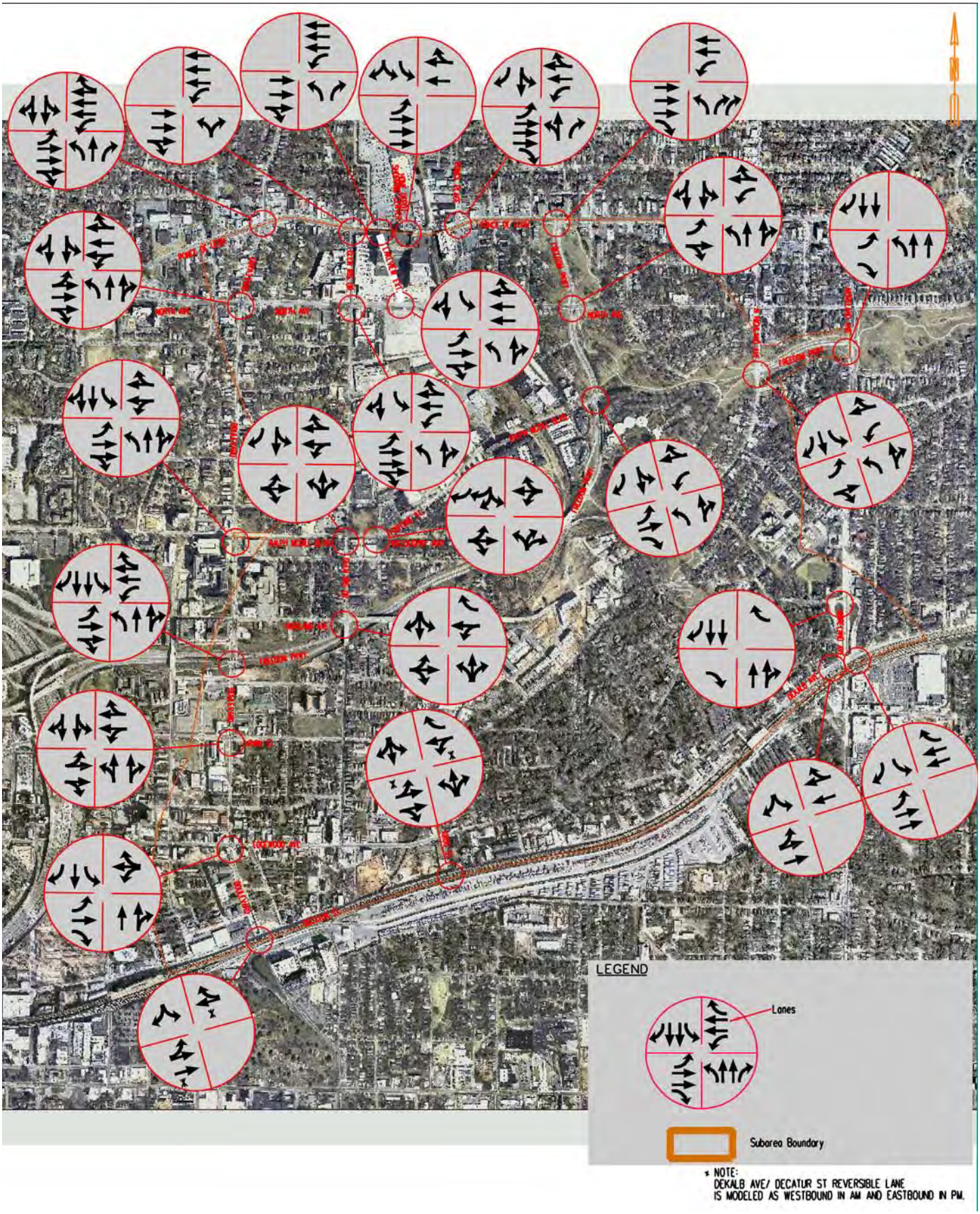


Figure 23 - 2020 Build with Transit (Best Case) Geometry

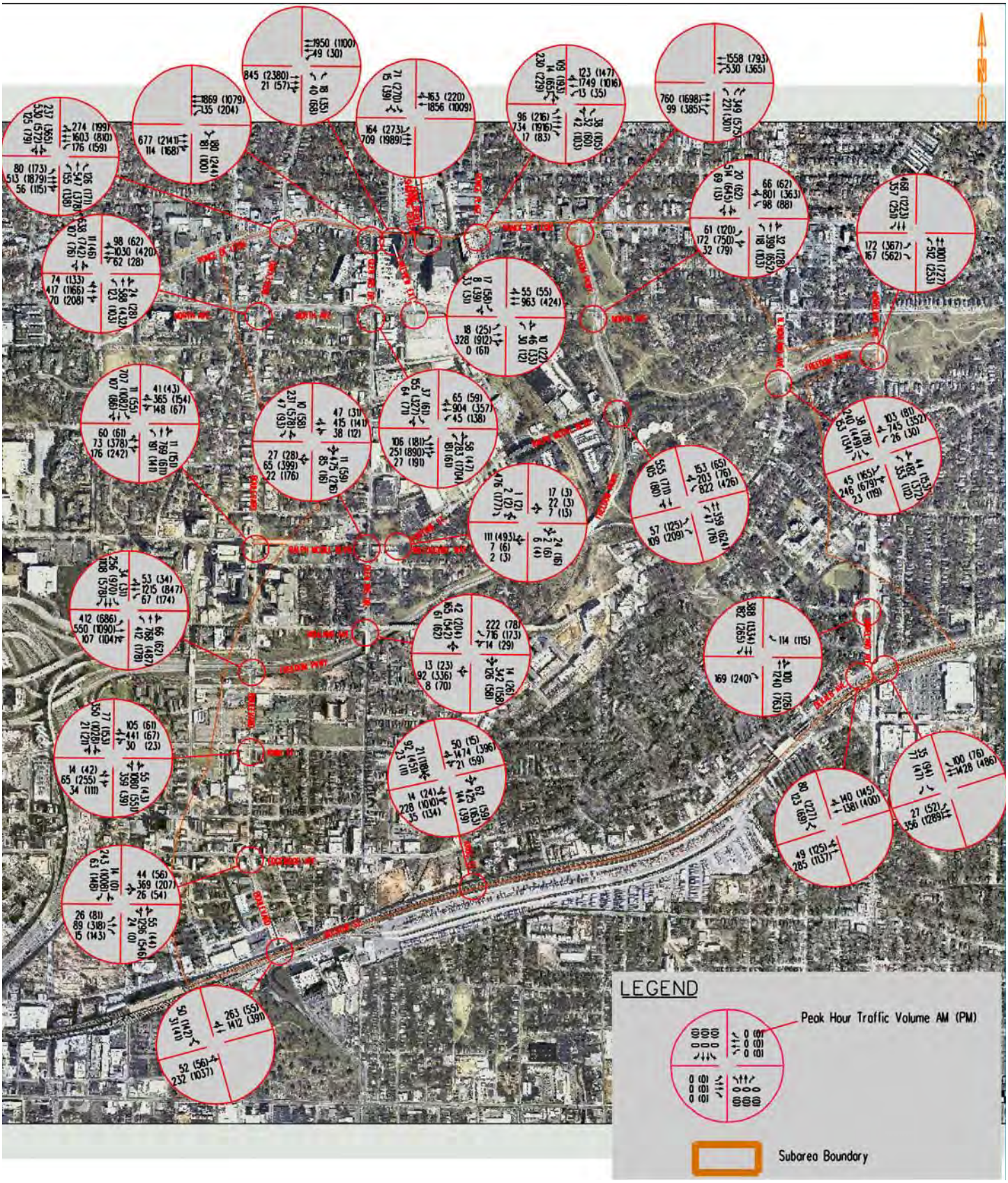


Figure 24 - 2020 Build with Transit (Best Case) Traffic Volumes

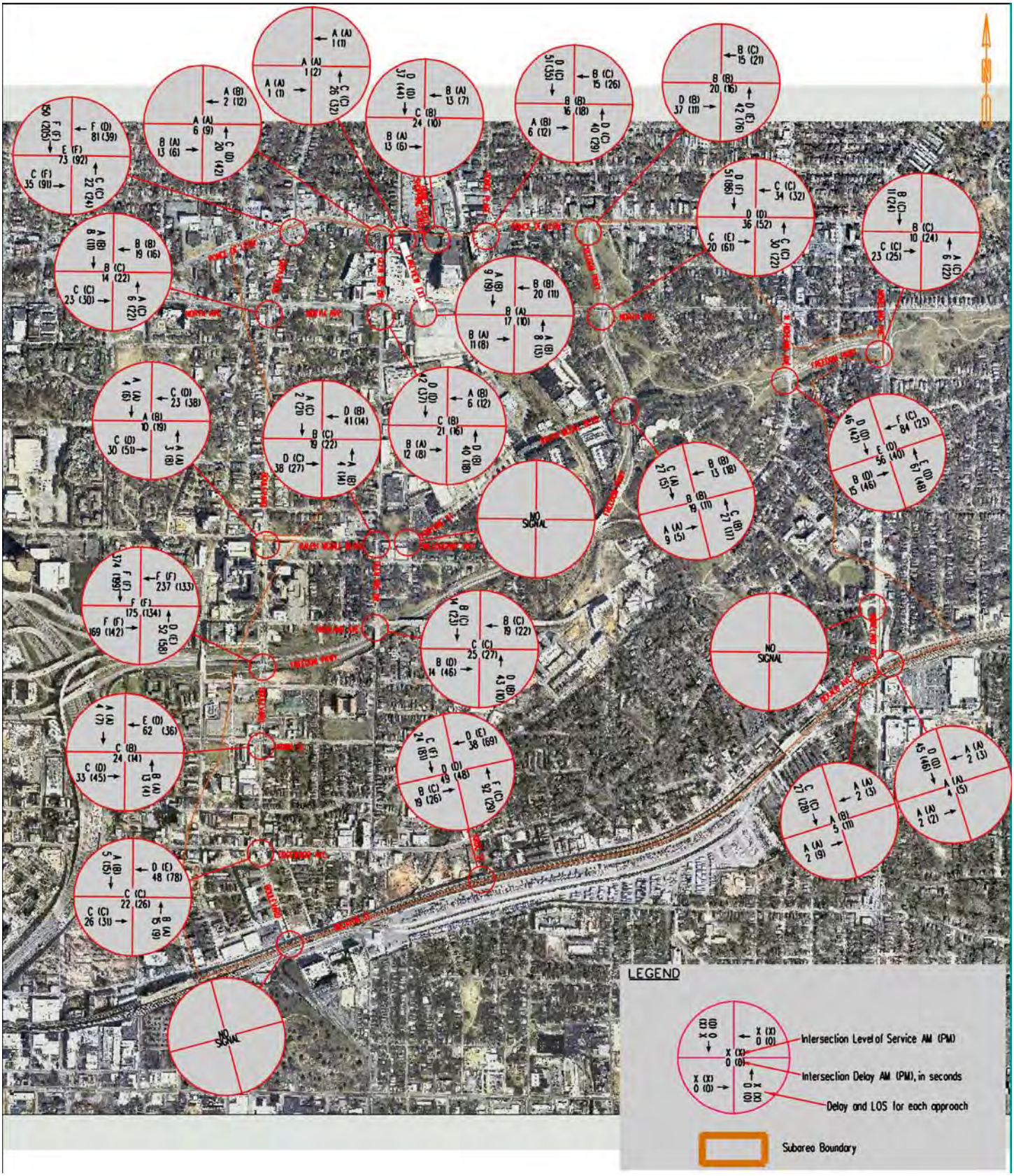


Figure 25 - 2020 Build with Transit (Best Case) Level of Service

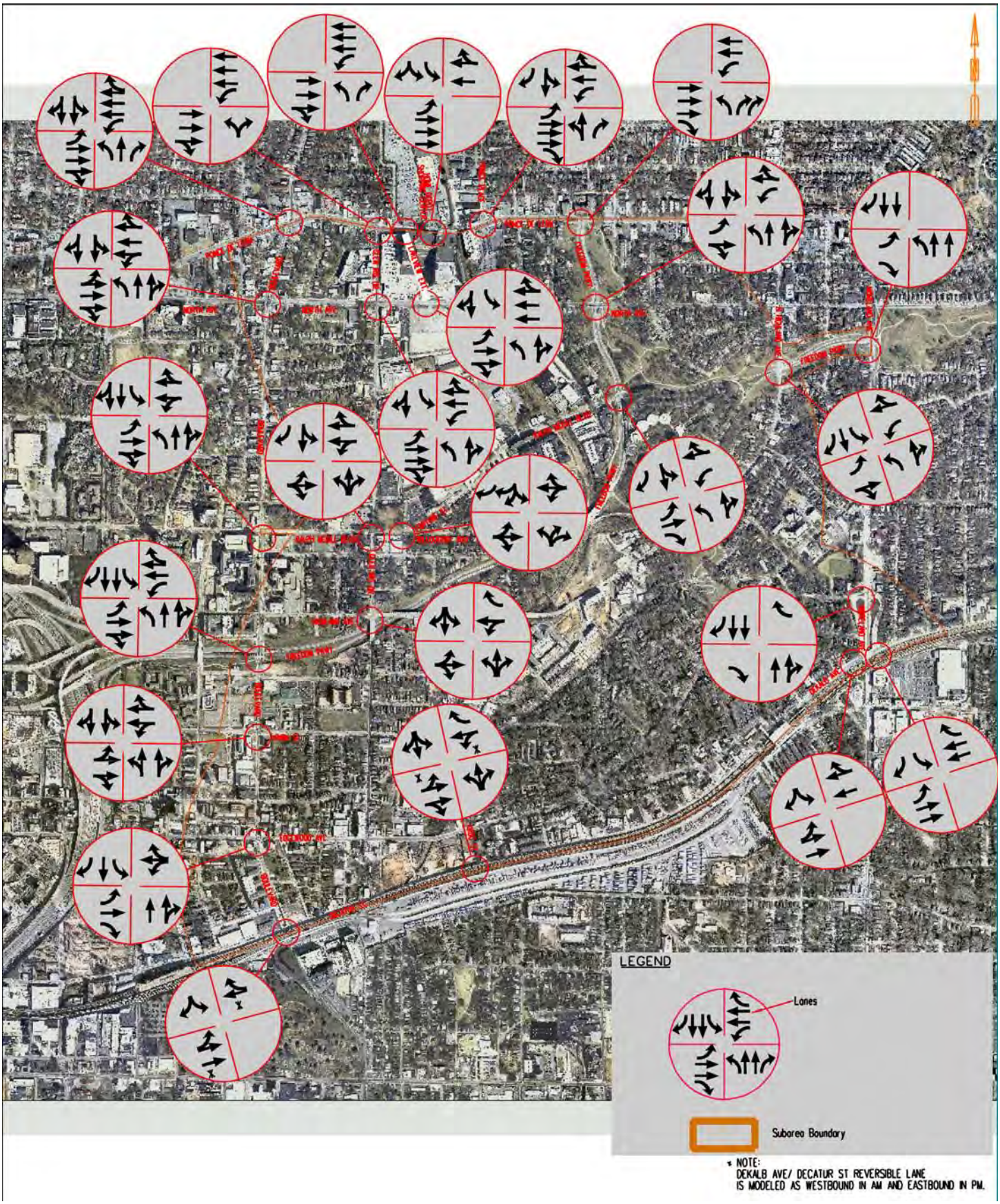


Figure 26 - 2030 Build, No Transit Geometry

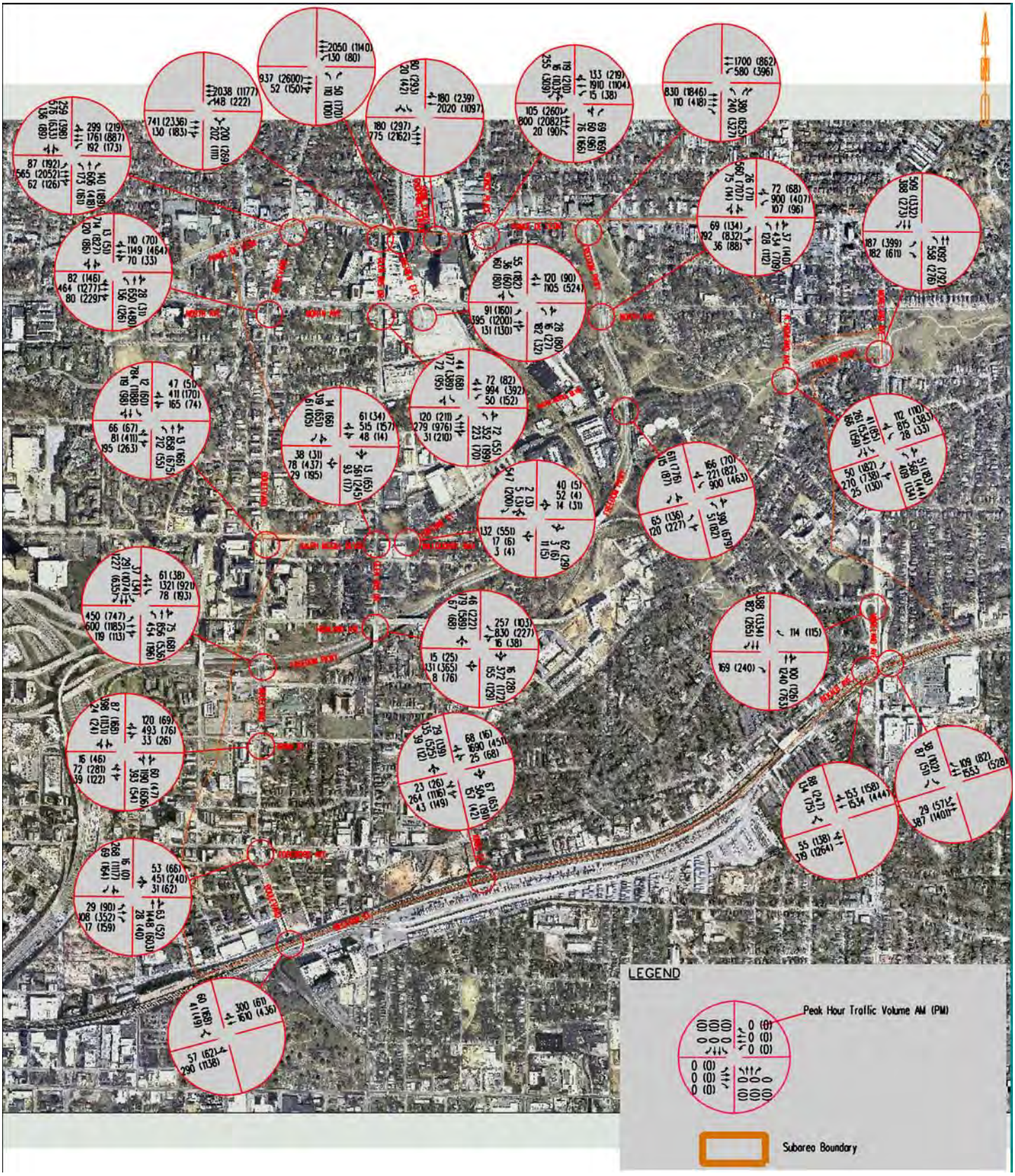


Figure 27 - 2030 Build, No Transit Traffic Volumes

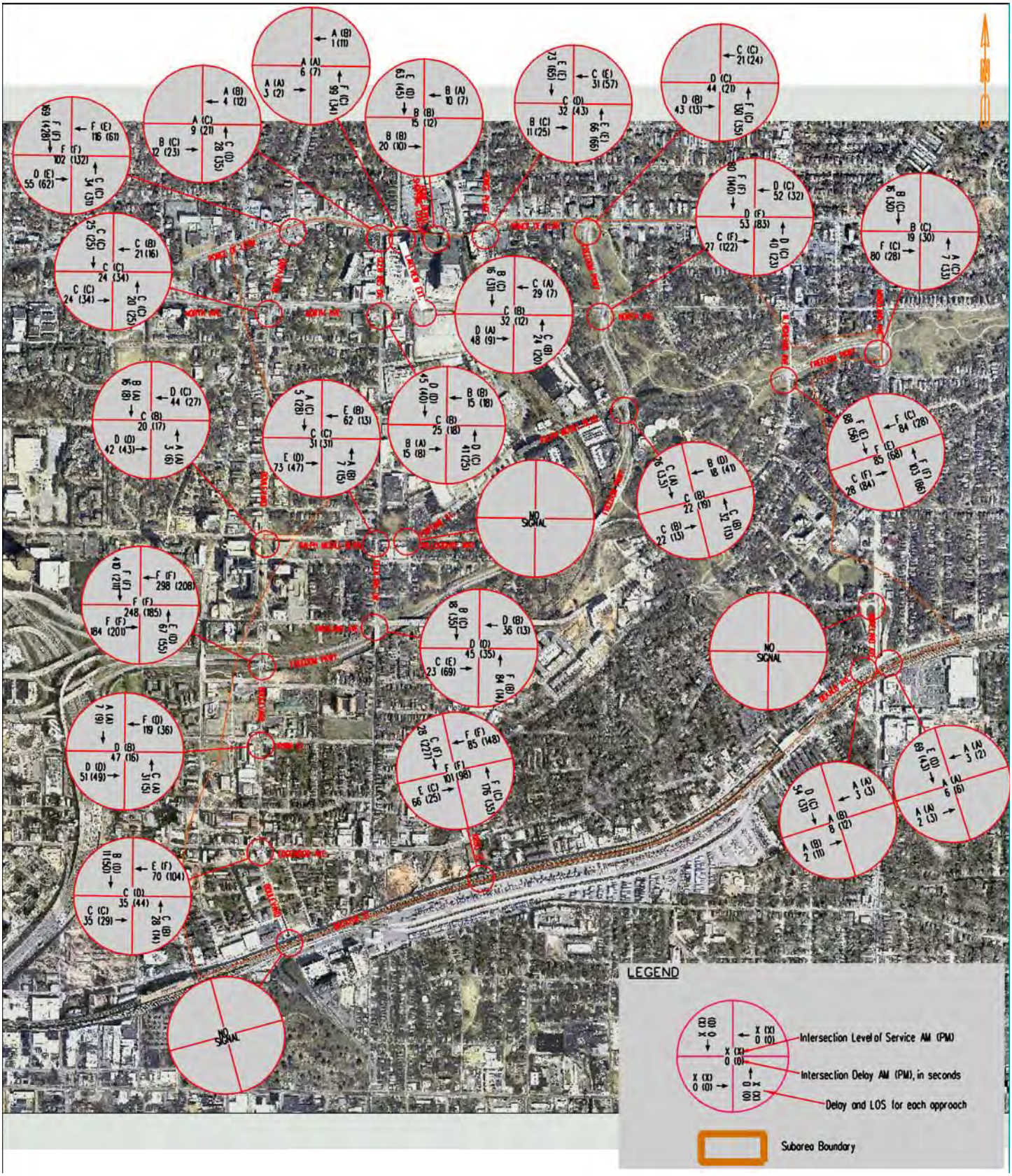


Figure 28 - 2030 Build, No Transit Level of Service

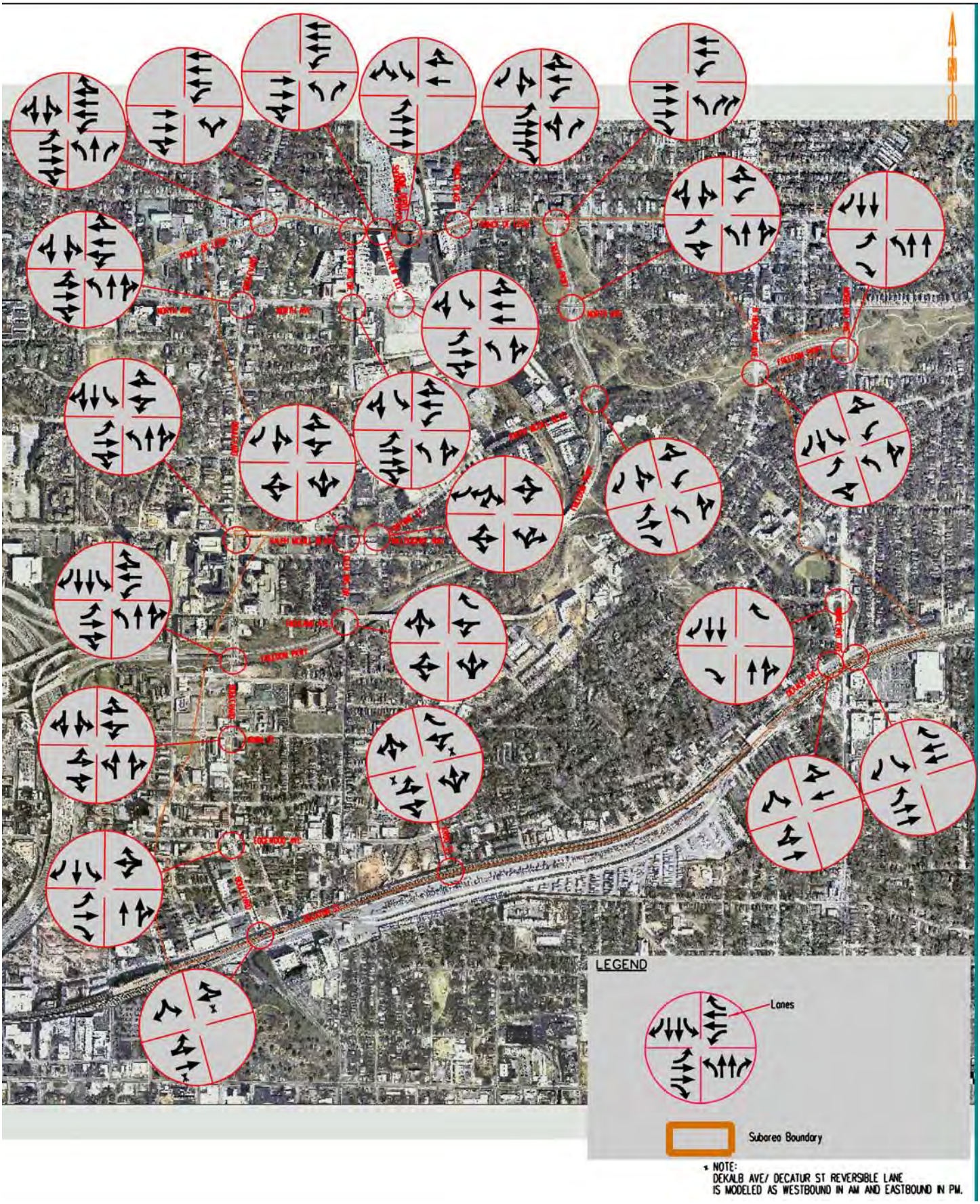


Figure 29 - 2030 Build, with Transit (Best Case) Geometry

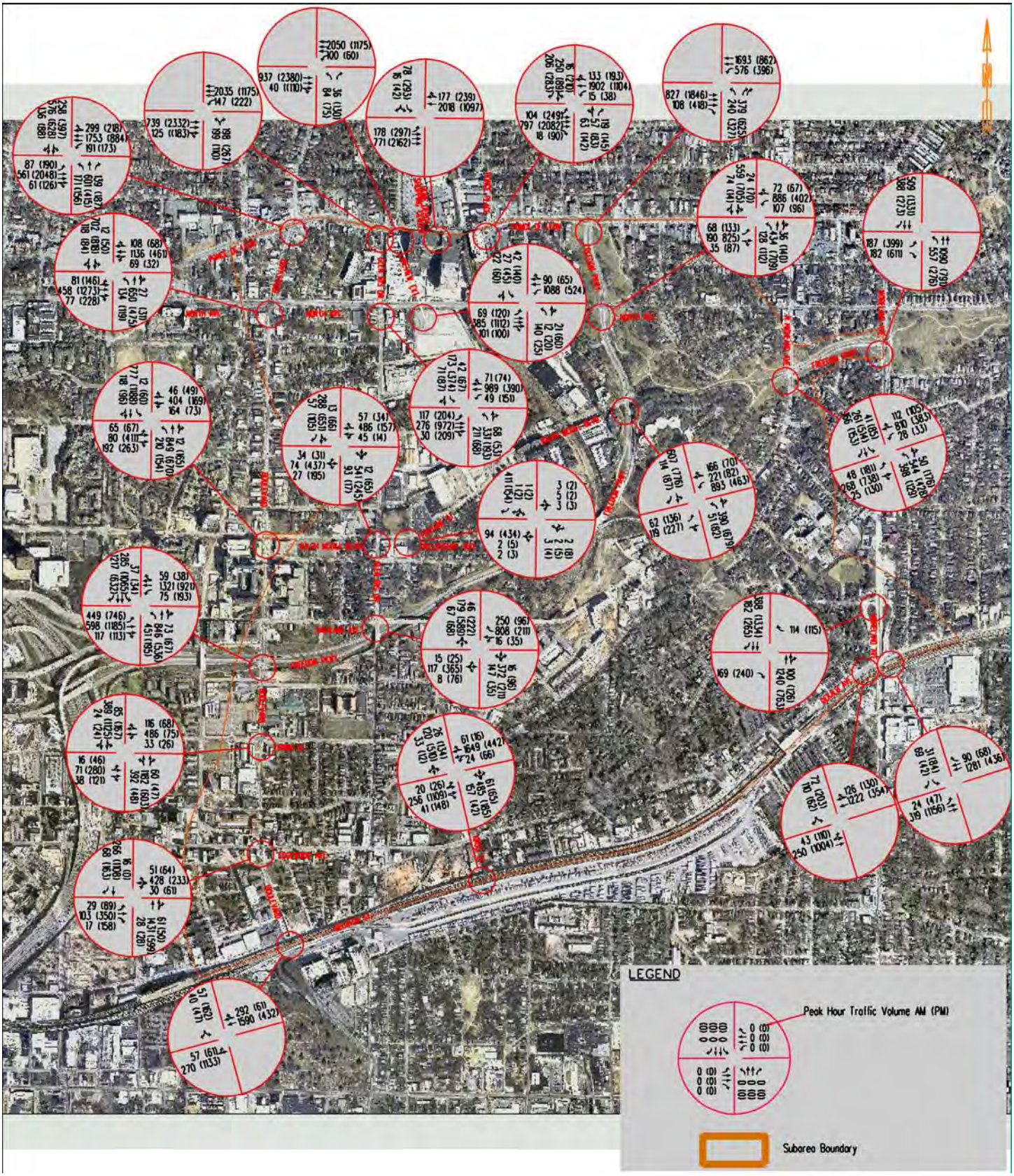


Figure 30 - 2030 Build with Transit (Best Case) Traffic Volumes

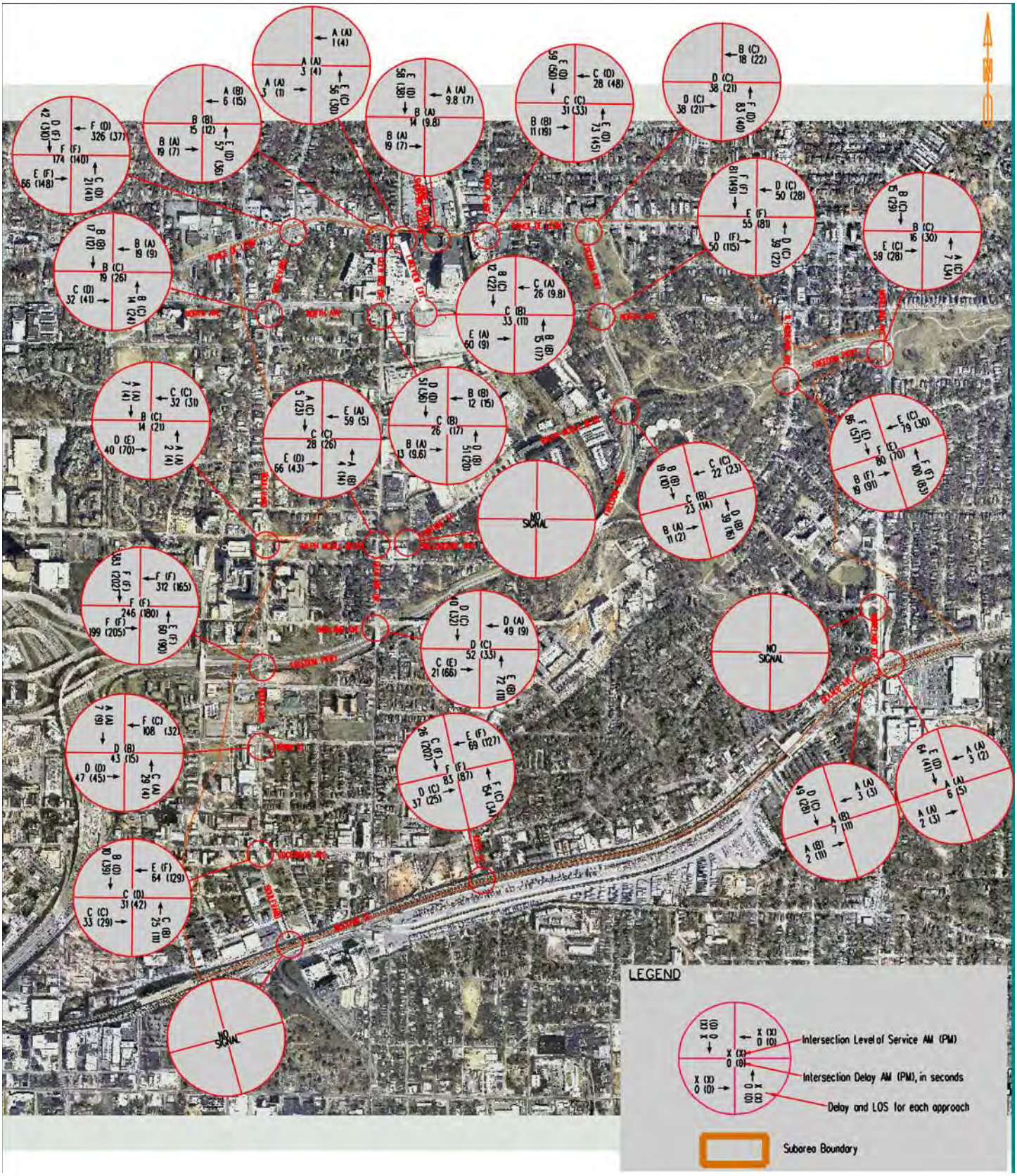
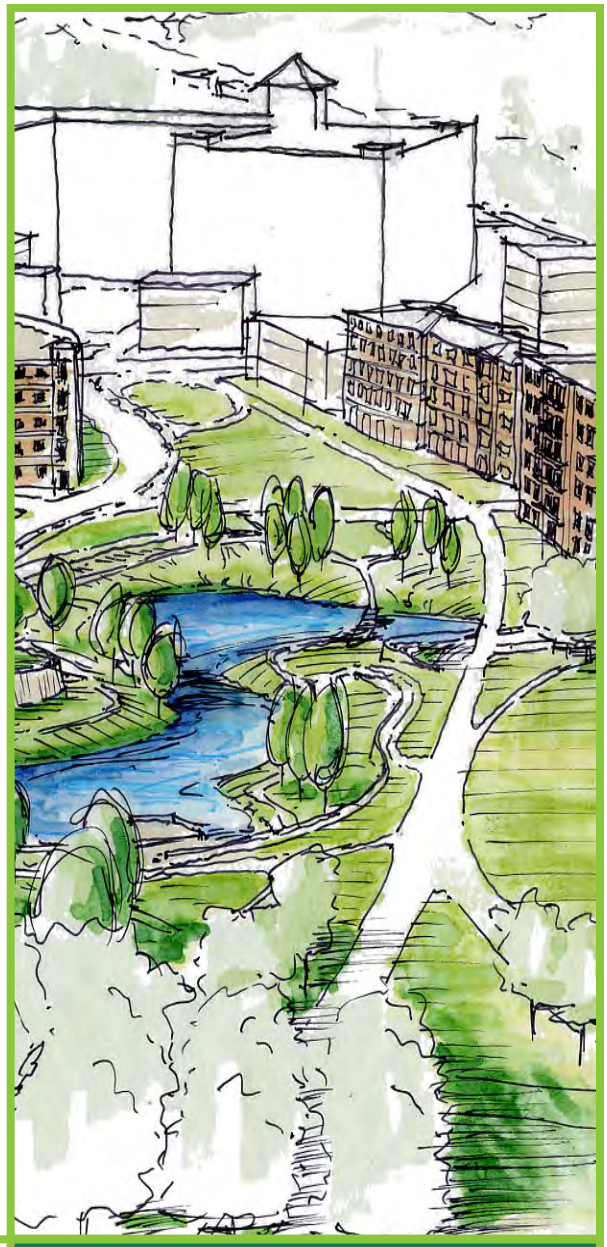


Figure 31 - 2030 Build with Transit (Best Case) Level of Service



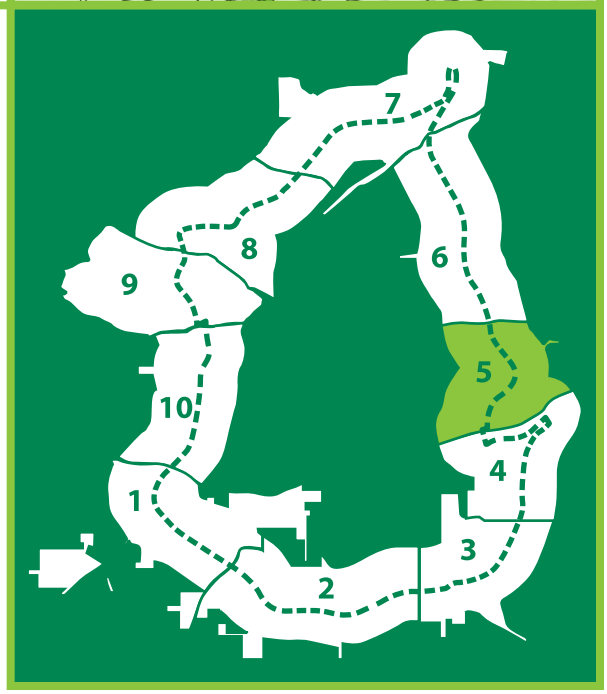
Atlanta BeltLine Master Plan

SUBAREA 5

FREEDOM PARKWAY
Transportation Analysis Report
APPENDICES

Prepared for
Atlanta BeltLine, Inc.
by EDAW, Inc., Arcadis & APD

Adopted by the Atlanta City County on March 16, 2009



BeltLine
Atlanta Connected

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this report has been formatted to be printed double-sided in an effort to save paper

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Master Planning Glossary

Adaptive Reuse: A process that adapts buildings for new uses while retaining their historic features.

At-grade: Level for a road, building or other structure at the same grade or level as the adjoining property (as opposed to a depressed or elevated road, building or other facility).

Atlanta Strategic Action Plan: The Atlanta Strategic Action Plan (ASAP) is the new 2007 - 2032 Comprehensive Planning Document for the City of Atlanta. Land use amendments coming out of the BeltLine planning process will be placed into the ASAP, which is updated on a quarterly basis.

BeltLine Planning Area: The area on which the overlay district is superimposed. It is generally ½ mile on either side of the BeltLine transit right-of-way.

Brownfield: Land that is environmentally contaminated as a result of past development, typically past industrial development

Build-out: Build-out is the point at which a community's total land area is completely developed as envisioned by a land use plan.

Capacity: The maximum number of vehicles that have a reasonable expectation of passing over a given section of a lane or a roadway during a given period under a specified speed or level of service.

Concept Plans: A number of options presented in order to elicit the advantages and disadvantages of each plan and approach the selection of an option, or a blend of options, for a Draft Master Plan.

Consolidated Transportation Program (CTP): This is Atlanta's first transportation plan to evaluate coordination of all modes of transportation, including roadway, air, transit, freight, bicycle and walking facilities.

Density: The number of dwelling units (housing, apartments, townhouses, duplexes, etc.), or building per unit of land.

Easement: The right to use the real property of another for a specific purpose.

Existing Conditions: A review and synthesis of existing demographics, precedent studies, land use, transportation, parks, historic resources, and public art. It typically represents the first phase of the BeltLine Master Planning process.

Floodplain: A relatively flat or lowland area adjoining a river, stream, or watercourse, which is subject to periodic, partial or complete inundation.

Floor Area Ratio (FAR): The ratio of the total floor area of a building to the total land area of the site.

Goals and Objectives: A phase in the planning process which elicits aspirations for the future development of the Sub Area. These aspirations are used as a framework for creating and evaluating concepts in a later phase of the Master Planning process.

Greenspace: Open space, undeveloped space designated for parks, playgrounds, trails, gardens, and habitat restoration and preservation.

Greenways: Areas of protected open space that follow natural and manmade linear features for recreation, transportation, and conservation purposes and link ecological, cultural and recreational amenities.

Historic District: A group of historic resources comprised of two or more properties that are significant as a cohesive unit and contribute to the historical, architectural, or cultural values. Historic districts sometimes have federal or local designations.

Infill Development: Development that takes place on vacant or underutilized parcels within

an area that is already characterized by urban development and has access to urban services.

Infrastructure: The built facilities, generally publicly funded, that are required in order to serve a community's developmental and operational needs. The infrastructure includes such things as roads and water and sewer systems.

Intensity: A term referring to the gross (total) floor area of commercial and industrial land uses.

Land Use: The categories of buildings and activities existing in an area or on a specific site. A land use plan is a guide for the location and intensity of future development in a community. Unlike zoning, land use designations do not place legal requirements on property owners.

Level of Service: A set of operating conditions describing the ability of a road network to handle traffic. Level A specifies the best traffic conditions; Level F indicates gridlock.

Master Plan – Draft: A preliminary version of the master plan, which occurs after existing conditions, goals and objectives, and concepts have been developed. After the draft master plan has been released, there is time for comment and input prior to the release of the Final Plan.

Master Plan – Final: This plan is submitted for endorsement by the study group. The final plan must also be approved by City Council and the Mayor prior to adoption into the ASAP. Certain components of the Plan will also be submitted to other groups for recommendations. For example, the land use portion of the plan will be submitted to the NPU.

Master Planning: Through mid-2008, Atlanta BeltLine, Inc is master planning the entire 22-mile BeltLine loop. While several BeltLine-wide studies and plans have been prepared, the master plans go into greater detail while building on and validating previous efforts and recommendations. To achieve the necessary level of detail, the BeltLine was divided into ten sub areas. Five of the sub area plans began in 2007. Once the sub area plans are complete, each will be a stand alone document, but they will all fit together seamlessly as one master plan for the entire Beltline. Atlanta BeltLine Inc is taking an interdisciplinary planning approach within each sub area. Each master plan addresses land use, transportation, parks and recreation, public art, and historic preservation in a comprehensive way.

Mixed Use: The combination of two or more land uses in a single development project. Optimal mixed development promotes pedestrian activity and the creation of a vibrant area.

Mobility: The ease with which desired destinations can be reached

Mode: A particular form of travel- e.g. walking, traveling by automobile, traveling by bus, traveling by train.

Multi-Family: A building that is designed to house more than one family. Examples would be a fourplex, condominiums, or an apartment building.

Office Hours: Designated hours when groups can schedule an appointment to ask questions and discuss the Master Plans.

Open House: A flexible meeting format with various tables with different components from master planning.

Overlay District: A zoning district superimposed on the existing underlying zoning district, but having validity in governing the use of the property. It establishes a set of regulatory criteria relating to certain characteristics that anticipates manages and encourages quality development opportunities in the Beltline planning area. The BeltLine Overlay District is designed to preserve a continuous transit corridor, preserve historic physical character, and promote smart growth urban design principles.

Neighborhood Planning Unit (NPU): The City of Atlanta is divided into twenty-five NPUs, which are citizen advisory councils that make

recommendations to the Mayor and City Council on zoning, land use, and other planning issues. The NPU system was established in 1974 to provide an opportunity for citizens to participate actively in the Comprehensive Development Plan, now called the Atlanta Strategic Action Plan, which is the city's vision for the next five, ten, and fifteen years. It is also used as a way for citizens to receive information concerning all functions of city government. The system enables citizens to express ideas and comment on city plans and proposals while assisting the city in developing plans that best meet the needs of their communities.

Non-Conforming Use: A use that is prohibited by, or does not conform to, the Zoning Ordinance.

Open Space: Areas of land not covered by structures, driveways, or parking lots.

Pedestrian Friendly: Development and infrastructure designed so a person can comfortably walk from one location to another. It encourages strolling, window-shopping, and other pedestrian activities, and typically is fostered by a mix of land uses.

Recreation – Active: Includes recreation activities that have a noticeable impact on the surrounding environment and are usually rigorously athletic and not quiet. May include individual or team sports, large
picnics or playground activities, and recreational events with a high density of people.

Recreation – Passive: Includes recreation activities that are usually quiet and not rigorously athletic, and have a low impact on the surrounding environment. May include walking, hiking, fishing, bird watching, and quiet picnicking.

Right-of-Way: The strip of land over which facilities such as highways, railroads, or power lines are built, which can be obtained through outright ownership of or an easement on the strip.

Setback: The distance between a building or structure from property lines or from other buildings.

Smart Growth: Metropolitan area development characterized by compact, mixed use districts, efficient use of infrastructure, choices of travel model, and protection of environmental resources and open space.

Special Administrative Permit (SAP): An approval process used where complex or unusual technical determinations are involved and/or in conjunction with temporary uses and structures when the matter does not require public notifications and hearings.

Special Use Permit: Permits used in connection with land uses identified within particular zoning classifications that are of substantial significance or of unusual operational characteristics.

Streetscape: The view along a street from the perspective of a driver or pedestrian, particularly views of natural and built elements in the street right-of-way, including street trees, signs, street lights, above-ground utilities, sidewalks, bus shelters, bike racks, street furniture and public art.

Sub Area: The sub area is a temporary geographic area for detailed master planning. Each sub area will undergo detailed study and has a temporary steering committee. There are two sub areas in each Study Group.

Steering Committee: A group of local stakeholders, many times with local knowledge, property ownership, or expertise, who are convened to provide detailed input into a planning process.

Traffic Impact Analysis: A determination of how street networks can manage increased households and employment at a future date. Creates an understanding of future pedestrian and road facility needs.

Transit Supportive Development: Mixed-use, higher density development centered around transit stations. The goal of Transit Supportive Development is to create development patterns

that supports the use of mass transit and reduces dependence on the automobile. Also referred to as "Transit Oriented Development" or "TOD."

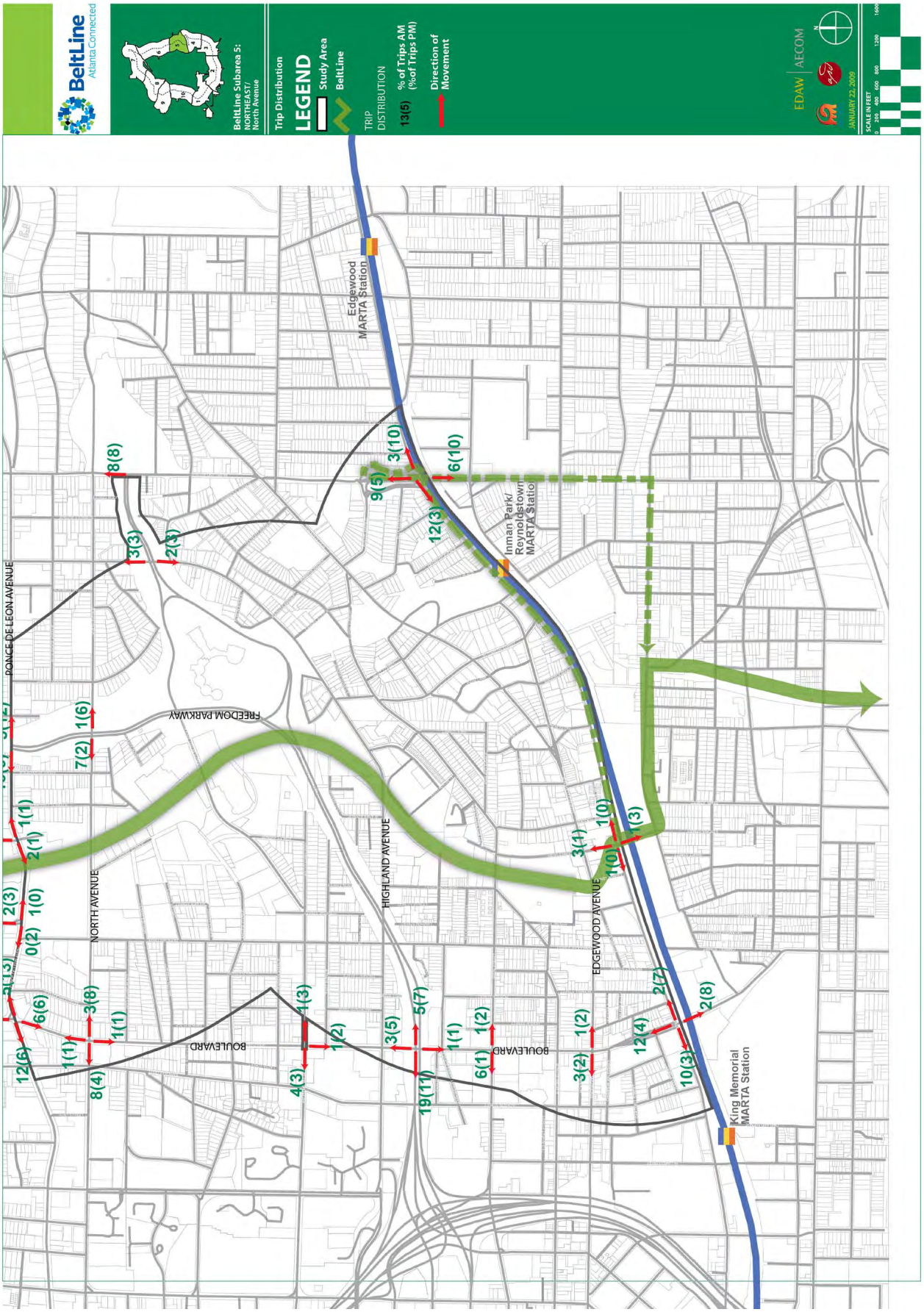
Urban Design: the process of giving form, shape and character to the arrangement of buildings, to whole neighborhoods, or the city.

Variances or Special Exceptions: Used in conjunction with construction proposals where consideration of effects on the surrounding property is of principal importance, and include, but are not limited to: building additions that involve yard set-back reductions, construction of fences and walls, and reductions in required parking.

Watershed: An area of land with a common drainage point.

Zoning: A set of laws that restrict the type of development that can occur on each parcel of land. Zoning typically divides a community into districts that group compatible uses together and exclude compatible uses. Zoning is a tool that is used to implement a land use plan.

Trip Distribution



Traffic Counts

Reliable Traffic Data Services, LLC
Tel: (770) 578-5158 Fax: (770) 578-8159
email: reliabletraffic@msn.com

TMC Data

File Name : 24020001
Site Code : 24020001
Start Date : 10/23/2007
Page No : 1

Groups Printed- Cars, Trucks & Buses

	Boulevard Northbound				Monroe Dr Southbound				Ponce de leon Ave Eastbound				Ponce de leon Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	22	96	20	138	37	101	20	158	10	88	8	106	30	285	47	362	764
07:15 AM	26	103	23	152	43	107	21	171	11	97	9	117	33	304	52	389	829
07:30 AM	30	112	26	168	47	114	25	186	13	115	12	140	38	317	55	410	904
07:45 AM	35	119	29	183	52	118	29	199	16	113	10	139	41	326	59	426	947
Total	113	430	98	641	179	440	95	714	50	413	39	502	142	1232	213	1587	3444
08:00 AM	32	123	27	182	48	124	26	198	15	117	11	143	37	345	63	445	968
08:15 AM	37	127	29	193	59	119	27	205	19	112	15	146	32	369	56	457	1001
08:30 AM	33	115	26	174	53	114	30	197	21	114	14	149	47	387	67	501	1021
08:45 AM	28	104	22	154	48	107	28	183	19	105	12	136	43	364	59	466	939
Total	130	469	104	703	208	464	111	783	74	448	52	574	159	1465	245	1869	3929
*** BREAK ***																	
04:00 PM	28	70	27	125	66	113	17	196	28	376	15	419	28	155	36	219	959
04:15 PM	31	73	31	135	70	116	18	204	33	389	21	443	31	163	39	233	1015
04:30 PM	33	77	36	146	75	121	22	218	35	407	27	469	30	177	41	248	1081
04:45 PM	31	83	41	155	82	128	16	226	42	418	29	489	33	185	45	263	1133
Total	123	303	135	561	293	478	73	844	138	1590	92	1820	122	680	161	963	4188
05:00 PM	28	89	38	155	87	132	12	231	40	432	24	496	37	176	43	256	1138
05:15 PM	26	86	36	148	83	126	20	229	36	423	23	482	42	184	48	274	1133
05:30 PM	23	83	35	141	81	114	17	212	32	417	20	469	39	176	44	259	1081
05:45 PM	25	79	31	135	79	108	15	202	29	411	18	458	37	165	42	244	1039
Total	102	337	140	579	330	480	64	874	137	1683	85	1905	155	701	177	1033	4391
Grand Total	468	1539	477	2484	1010	1862	343	3215	399	4134	268	4801	578	4078	796	5452	15952
Apprch %	18.8	62	19.2		31.4	57.9	10.7		8.3	86.1	5.6		10.6	74.8	14.6		
Total %	2.9	9.6	3	15.6	6.3	11.7	2.2	20.2	2.5	25.9	1.7	30.1	3.6	25.6	5	34.2	

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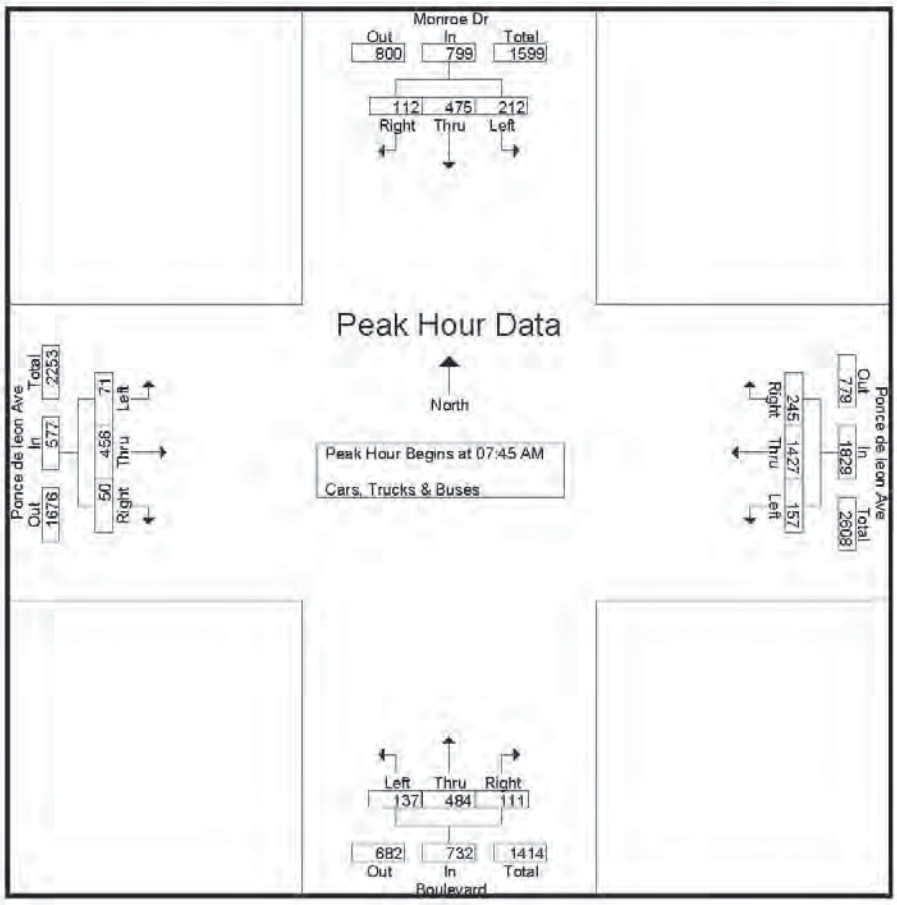
File Name : 24020001
Site Code : 24020001
Start Date : 10/23/2007
Page No : 2

	Boulevard Northbound				Monroe Dr Southbound				Ponce de leon Ave Eastbound				Ponce de leon Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	35	119	29	183	52	118	29	199	16	113	10	139	41	326	59	426	947
08:00 AM	32	123	27	182	48	124	26	198	15	117	11	143	37	345	63	445	968
08:15 AM	37	127	29	193	59	119	27	205	19	112	15	146	32	369	56	457	1001
08:30 AM	33	115	26	174	53	114	30	197	21	114	14	149	47	387	67	501	1021
Total Volume	137	484	111	732	212	475	112	799	71	456	50	577	157	1427	245	1829	3937
% App. Total	18.7	66.1	15.2		26.5	59.4	14		12.3	79	8.7		8.6	78	13.4		
PHF	.926	.953	.957	.948	.898	.958	.933	.974	.845	.974	.833	.968	.835	.922	.914	.913	.964



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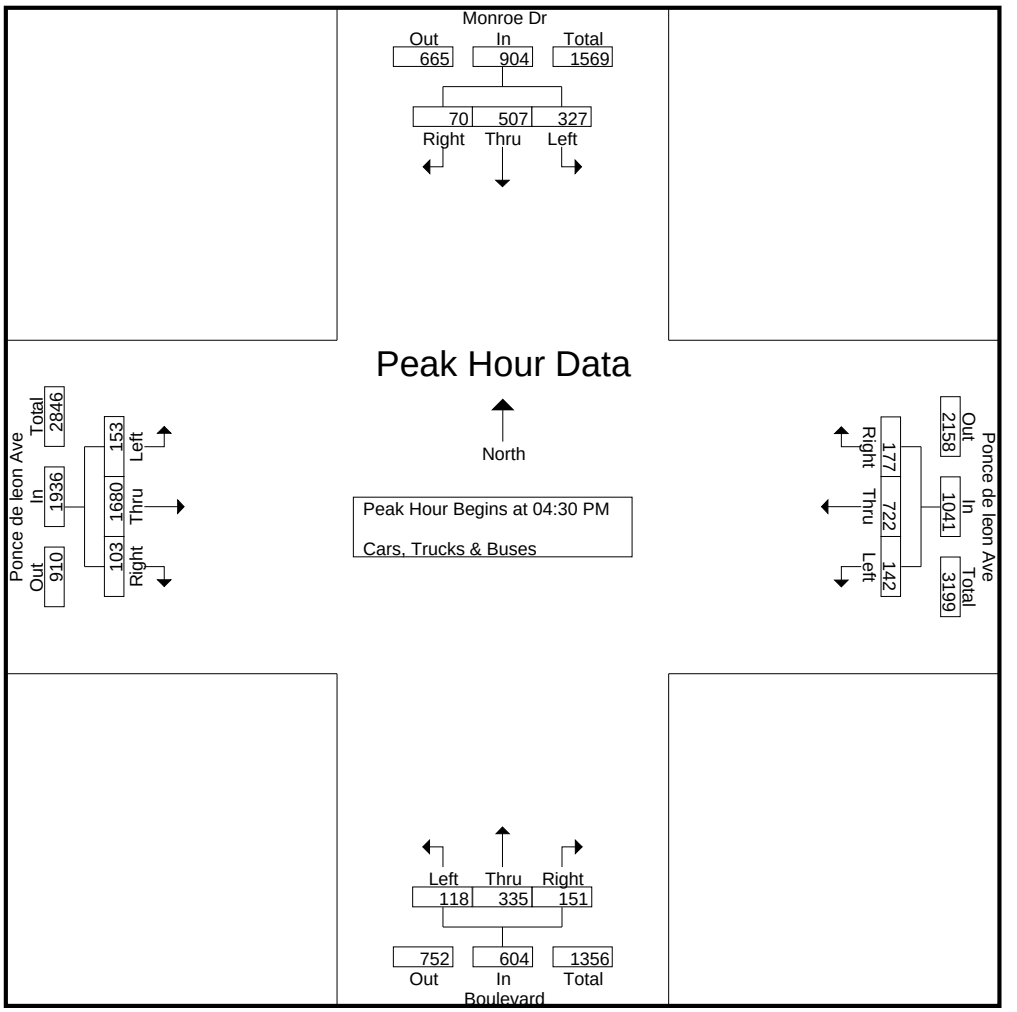
Page No : 3

	Boulevard Northbound				Monroe Dr Southbound				Ponce de leon Ave Eastbound				Ponce de leon Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	33	77	36	146	75	121	22	218	35	407	27	469	30	177	41	248	1081
04:45 PM	31	83	41	155	82	128	16	226	42	418	29	489	33	185	45	263	1133
05:00 PM	28	89	38	155	87	132	12	231	40	432	24	496	37	176	43	256	1138
05:15 PM	26	86	36	148	83	126	20	229	36	423	23	482	42	184	48	274	1133
Total Volume	118	335	151	604	327	507	70	904	153	1680	103	1936	142	722	177	1041	4485
% App. Total	19.5	55.5	25		36.2	56.1	7.7		7.9	86.8	5.3		13.6	69.4	17		
PHF	.894	.941	.921	.974	.940	.960	.795	.978	.911	.972	.888	.976	.845	.976	.922	.950	.985



Reliable Traffic Data Services, LLC

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email: reliabletraffic@msn.com

TMC Data

File Name : 24020002
Site Code : 23420002
Start Date : 10/23/2007
Page No : 1

Groups Printed- Cars, Trucks & Buses

	Glen Iris Dr Northbound				Private Store Drwy Southbound				Ponce de Leon Ave Eastbound				Ponce de Leon Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	26	0	24	50	0	0	0	0	0	124	17	141	24	304	0	328	519
07:15 AM	29	0	27	56	0	0	0	0	0	129	19	148	16	331	0	347	551
07:30 AM	32	1	33	66	0	0	0	0	0	137	20	157	29	369	0	398	621
07:45 AM	35	0	38	73	0	0	0	0	0	146	23	169	35	406	0	441	683
Total	122	1	122	245	0	0	0	0	0	536	79	615	104	1410	0	1514	2374
08:00 AM	38	0	43	81	0	0	0	0	0	157	29	186	32	435	0	467	734
08:15 AM	41	1	41	83	0	1	0	1	0	149	26	175	28	423	0	451	710
08:30 AM	45	0	36	81	0	0	0	0	0	153	24	177	26	408	0	434	692
08:45 AM	42	1	31	74	0	0	0	0	0	148	20	168	31	389	0	420	662
Total	166	2	151	319	0	1	0	1	0	607	99	706	117	1655	0	1772	2798
*** BREAK ***																	
04:00 PM	19	0	51	70	0	0	0	0	0	423	28	451	39	219	0	258	779
04:15 PM	23	0	54	77	0	0	0	0	0	437	32	469	42	229	0	271	817
04:30 PM	24	0	58	82	0	0	0	0	1	463	35	499	44	234	1	279	860
04:45 PM	16	0	51	67	0	0	0	0	1	486	38	525	48	251	0	299	891
Total	82	0	214	296	0	0	0	0	2	1809	133	1944	173	933	1	1107	3347
05:00 PM	25	0	56	81	0	0	0	0	0	495	40	535	44	243	0	287	903
05:15 PM	24	0	51	75	0	0	0	0	0	472	37	509	47	238	0	285	869
05:30 PM	15	0	58	73	0	0	0	0	0	467	34	501	45	226	0	271	845
05:45 PM	14	0	53	67	0	0	0	0	2	458	32	492	42	219	0	261	820
Total	78	0	218	296	0	0	0	0	2	1892	143	2037	178	926	0	1104	3437
Grand Total	448	3	705	1156	0	1	0	1	4	4844	454	5302	572	4924	1	5497	11956
Apprch %	38.8	0.3	61		0	100	0		0.1	91.4	8.6		10.4	89.6	0		
Total %	3.7	0	5.9	9.7	0	0	0	0	0	40.5	3.8	44.3	4.8	41.2	0	46	

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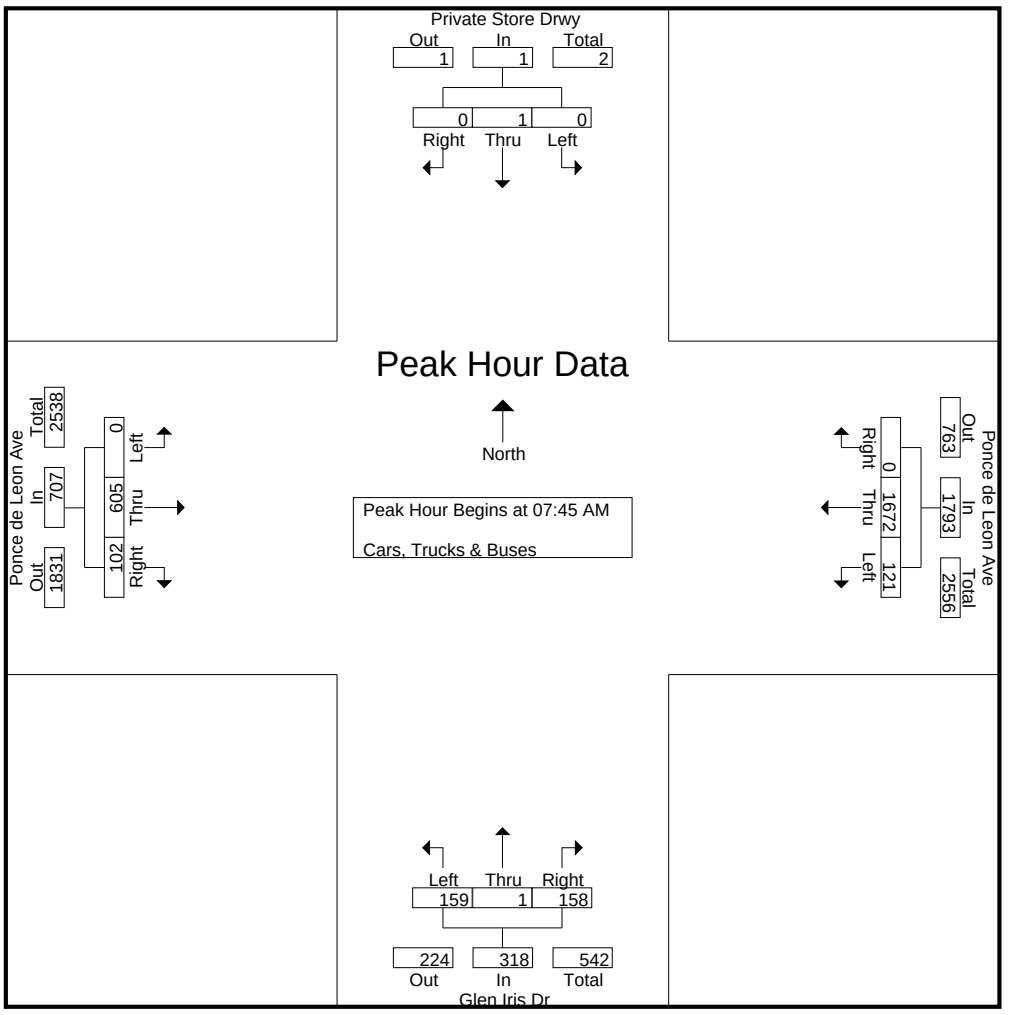
TMC Data

File Name : 24020002
Site Code : 23420002
Start Date : 10/23/2007
Page No : 2

	Glen Iris Dr Northbound				Private Store Drwy Southbound				Ponce de Leon Ave Eastbound				Ponce de Leon Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	35	0	38	73	0	0	0	0	0	146	23	169	35	406	0	441	683
08:00 AM	38	0	43	81	0	0	0	0	0	157	29	186	32	435	0	467	734
08:15 AM	41	1	41	83	0	1	0	1	0	149	26	175	28	423	0	451	710
08:30 AM	45	0	36	81	0	0	0	0	0	153	24	177	26	408	0	434	692
Total Volume	159	1	158	318	0	1	0	1	0	605	102	707	121	1672	0	1793	2819
% App. Total	50	0.3	49.7		0	100	0		0	85.6	14.4		6.7	93.3	0		
PHF	.883	.250	.919	.958	.000	.250	.000	.250	.000	.963	.879	.950	.864	.961	.000	.960	.960



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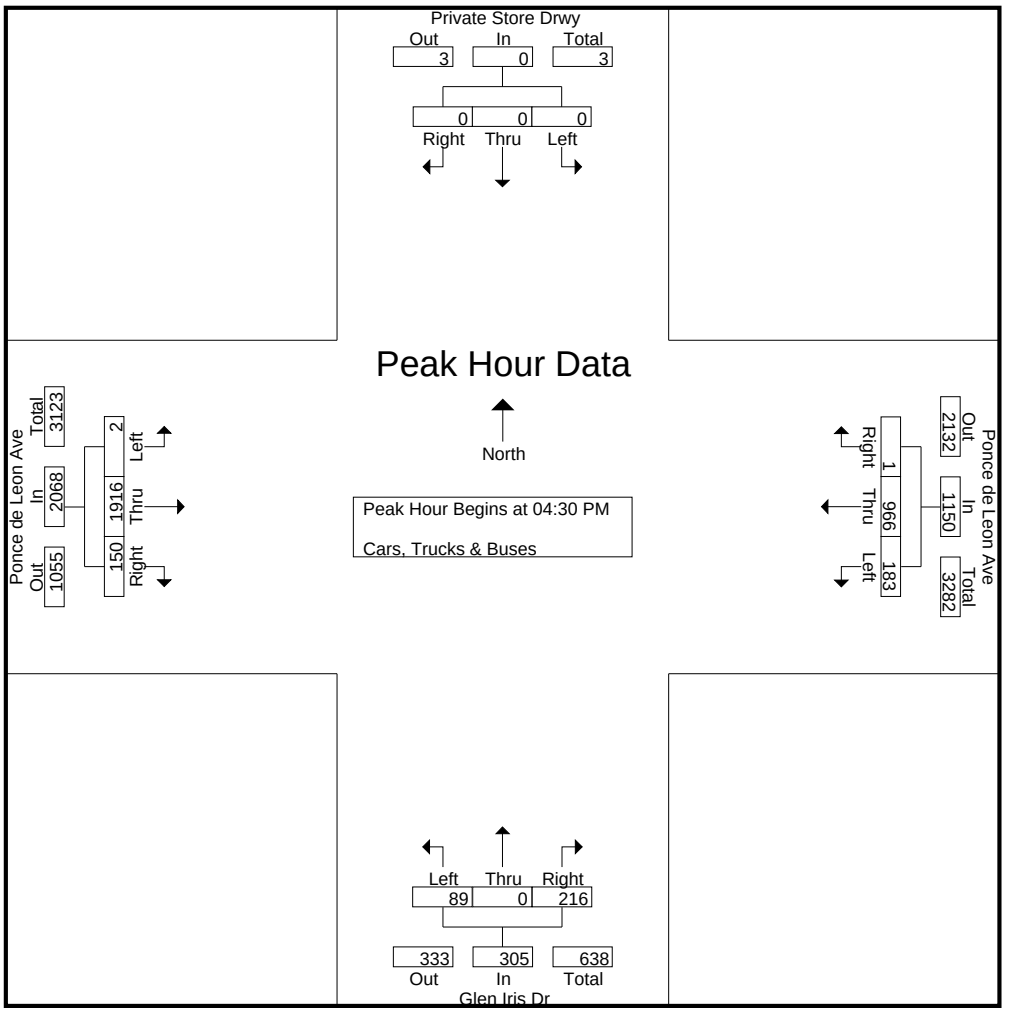
TMC Data

File Name : 24020002
Site Code : 23420002
Start Date : 10/23/2007
Page No : 3

	Glen Iris Dr Northbound				Private Store Drwy Southbound				Ponce de Leon Ave Eastbound				Ponce de Leon Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	24	0	58	82	0	0	0	0	1	463	35	499	44	234	1	279	860
04:45 PM	16	0	51	67	0	0	0	0	1	486	38	525	48	251	0	299	891
05:00 PM	25	0	56	81	0	0	0	0	0	495	40	535	44	243	0	287	903
05:15 PM	24	0	51	75	0	0	0	0	0	472	37	509	47	238	0	285	869
Total Volume	89	0	216	305	0	0	0	0	2	1916	150	2068	183	966	1	1150	3523
% App. Total	29.2	0	70.8		0	0	0		0.1	92.6	7.3		15.9	84	0.1		
PHF	.890	.000	.931	.930	.000	.000	.000	.000	.500	.968	.938	.966	.953	.962	.250	.962	.975



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TMC Data

File Name : 24020003
Site Code : 24020003
Start Date : 10/23/2007
Page No : 1

Groups Printed- Cars, Trucks & Buses

	Northbound				Home Depot & Others Drwy Southbound				Ponce de Leon Ave Eastbound				Ponce de Leon Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	11	0	3	14	28	126	0	154	0	347	18	365	533
07:15 AM	0	0	0	0	9	0	2	11	33	135	0	168	0	352	21	373	552
07:30 AM	0	0	0	0	11	0	2	13	30	143	0	173	0	364	25	389	575
07:45 AM	0	0	0	0	10	0	1	11	24	146	0	170	0	376	31	407	588
Total	0	0	0	0	41	0	8	49	115	550	0	665	0	1439	95	1534	2248
08:00 AM	0	0	0	0	13	0	2	15	45	162	0	207	0	411	36	447	669
08:15 AM	0	0	0	0	17	0	4	21	33	169	0	202	0	429	41	470	693
08:30 AM	0	0	0	0	18	0	2	20	36	157	0	193	0	418	37	455	668
08:45 AM	0	0	0	0	16	0	5	21	33	148	0	181	0	407	32	439	641
Total	0	0	0	0	64	0	13	77	147	636	0	783	0	1665	146	1811	2671
*** BREAK ***																	
04:00 PM	0	0	0	0	52	0	8	60	46	411	0	457	0	208	51	259	776
04:15 PM	0	0	0	0	56	0	11	67	50	426	0	476	0	211	57	268	811
04:30 PM	0	0	0	0	69	0	9	78	53	432	0	485	0	218	61	279	842
04:45 PM	0	0	0	0	53	0	7	60	58	445	0	503	0	234	55	289	852
Total	0	0	0	0	230	0	35	265	207	1714	0	1921	0	871	224	1095	3281
05:00 PM	0	0	0	0	68	0	8	76	65	449	0	514	0	225	36	261	851
05:15 PM	0	0	0	0	52	0	11	63	69	458	0	527	0	228	45	273	863
05:30 PM	0	0	0	0	61	0	10	71	64	437	0	501	0	214	53	267	839
05:45 PM	0	0	0	0	59	0	12	71	56	428	0	484	0	211	62	273	828
Total	0	0	0	0	240	0	41	281	254	1772	0	2026	0	878	196	1074	3381
Grand Total	0	0	0	0	575	0	97	672	723	4672	0	5395	0	4853	661	5514	11581
Apprch %	0	0	0		85.6	0	14.4		13.4	86.6	0		0	88	12		
Total %	0	0	0	0	5	0	0.8	5.8	6.2	40.3	0	46.6	0	41.9	5.7	47.6	

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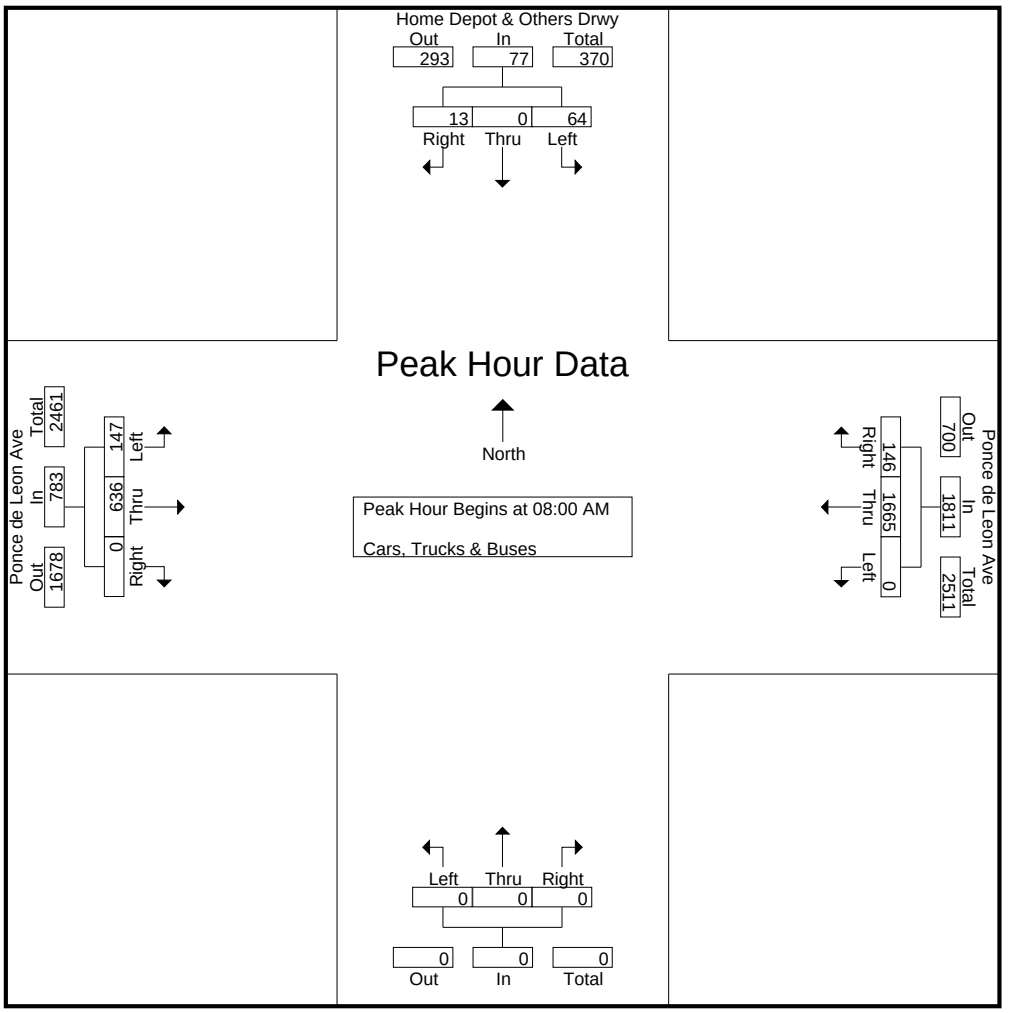
TMC Data

File Name : 24020003
Site Code : 24020003
Start Date : 10/23/2007
Page No : 2

	Northbound				Home Depot & Others Drwy Southbound				Ponce de Leon Ave Eastbound				Ponce de Leon Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	0	0	0	13	0	2	15	45	162	0	207	0	411	36	447	669
08:15 AM	0	0	0	0	17	0	4	21	33	169	0	202	0	429	41	470	693
08:30 AM	0	0	0	0	18	0	2	20	36	157	0	193	0	418	37	455	668
08:45 AM	0	0	0	0	16	0	5	21	33	148	0	181	0	407	32	439	641
Total Volume	0	0	0	0	64	0	13	77	147	636	0	783	0	1665	146	1811	2671
% App. Total	0	0	0		83.1	0	16.9		18.8	81.2	0		0	91.9	8.1		
PHF	.000	.000	.000	.000	.889	.000	.650	.917	.817	.941	.000	.946	.000	.970	.890	.963	.964



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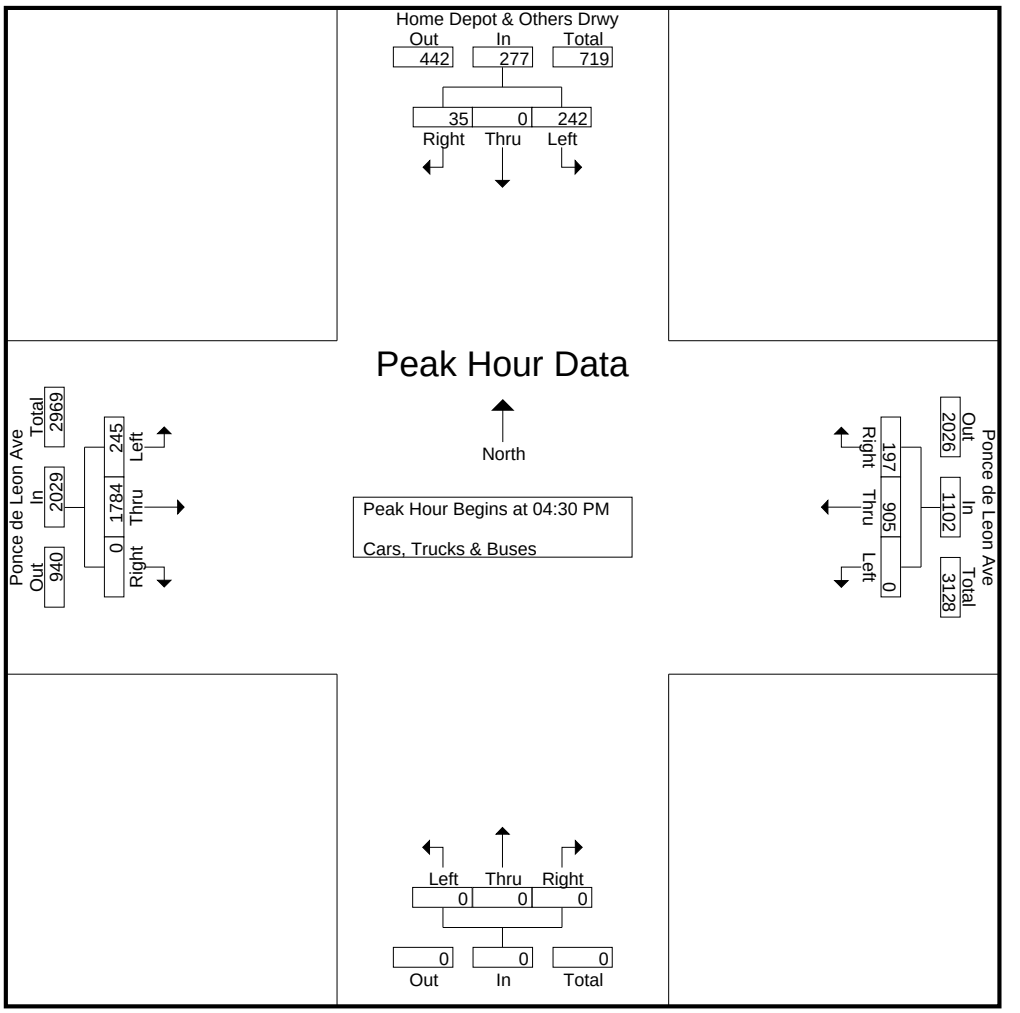
TMC Data

File Name : 24020003
Site Code : 24020003
Start Date : 10/23/2007
Page No : 3

	Northbound				Home Depot & Others Drwy Southbound				Ponce de Leon Ave Eastbound				Ponce de Leon Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	0	0	69	0	9	78	53	432	0	485	0	218	61	279	842
04:45 PM	0	0	0	0	53	0	7	60	58	445	0	503	0	234	55	289	852
05:00 PM	0	0	0	0	68	0	8	76	65	449	0	514	0	225	36	261	851
05:15 PM	0	0	0	0	52	0	11	63	69	458	0	527	0	228	45	273	863
Total Volume	0	0	0	0	242	0	35	277	245	1784	0	2029	0	905	197	1102	3408
% App. Total	0	0	0		87.4	0	12.6		12.1	87.9	0		0	82.1	17.9		
PHF	.000	.000	.000	.000	.877	.000	.795	.888	.888	.974	.000	.963	.000	.967	.807	.953	.987



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TMC Data

File Name : 24020004
Site Code : 24020004
Start Date : 10/23/2007
Page No : 1

Groups Printed- Cars, Trucks & Buses

	Kroger Drwy Northbound				Ponce de Leon Pl Southbound				Ponce de Leon Ave Eastbound				Ponce de Leon Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	4	3	5	12	18	2	33	53	15	126	4	145	3	332	12	347	557
07:15 AM	3	2	4	9	23	1	38	62	17	135	7	159	5	341	15	361	591
07:30 AM	4	5	7	16	27	3	43	73	21	147	5	173	4	348	19	371	633
07:45 AM	6	4	6	16	30	1	46	77	15	154	8	177	2	365	21	388	658
Total	17	14	22	53	98	7	160	265	68	562	24	654	14	1386	67	1467	2439
08:00 AM	4	2	3	9	26	2	52	80	18	168	5	191	1	378	24	403	683
08:15 AM	5	3	5	13	23	1	56	80	21	175	3	199	2	399	28	429	721
08:30 AM	4	7	4	15	28	5	47	80	26	161	1	188	4	404	31	439	722
08:45 AM	8	4	7	19	21	5	51	77	21	154	6	181	5	388	27	420	697
Total	21	16	19	56	98	13	206	317	86	658	15	759	12	1569	110	1691	2823
*** BREAK ***																	
04:00 PM	10	6	11	27	33	8	34	75	39	368	14	421	8	193	17	218	741
04:15 PM	13	9	14	36	38	10	36	84	42	396	13	451	11	208	19	238	809
04:30 PM	19	7	17	43	41	13	43	97	48	423	16	487	8	216	22	246	873
04:45 PM	15	12	15	42	45	8	47	100	45	437	19	501	9	235	23	267	910
Total	57	34	57	148	157	39	160	356	174	1624	62	1860	36	852	81	969	3333
05:00 PM	18	8	13	39	43	10	42	95	42	432	21	495	8	231	25	264	893
05:15 PM	10	9	18	37	44	9	40	93	45	426	18	489	6	229	28	263	882
05:30 PM	11	10	14	35	42	8	45	95	53	417	14	484	7	217	26	250	864
05:45 PM	12	7	12	31	37	12	41	90	46	395	11	452	9	208	23	240	813
Total	51	34	57	142	166	39	168	373	186	1670	64	1920	30	885	102	1017	3452
Grand Total	146	98	155	399	519	98	694	1311	514	4514	165	5193	92	4692	360	5144	12047
Apprch %	36.6	24.6	38.8		39.6	7.5	52.9		9.9	86.9	3.2		1.8	91.2	7		
Total %	1.2	0.8	1.3	3.3	4.3	0.8	5.8	10.9	4.3	37.5	1.4	43.1	0.8	38.9	3	42.7	

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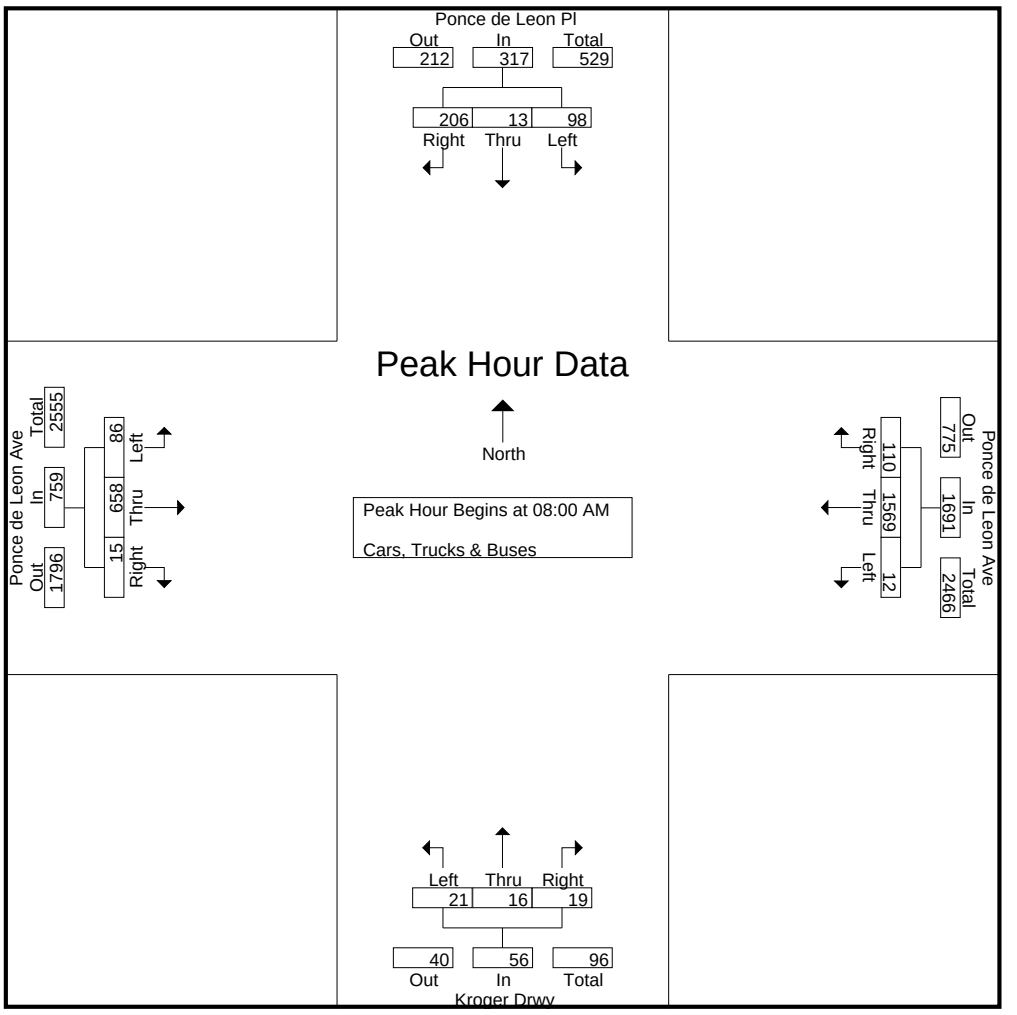
TMC Data

File Name : 24020004
Site Code : 24020004
Start Date : 10/23/2007

	Kroger Drwy Northbound				Ponce de Leon Pl Southbound				Ponce de Leon Ave Eastbound				Ponce de Leon Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	4	2	3	9	26	2	52	80	18	168	5	191	1	378	24	403	683
08:15 AM	5	3	5	13	23	1	56	80	21	175	3	199	2	399	28	429	721
08:30 AM	4	7	4	15	28	5	47	80	26	161	1	188	4	404	31	439	722
08:45 AM	8	4	7	19	21	5	51	77	21	154	6	181	5	388	27	420	697
Total Volume	21	16	19	56	98	13	206	317	86	658	15	759	12	1569	110	1691	2823
% App. Total	37.5	28.6	33.9		30.9	4.1	65		11.3	86.7	2		0.7	92.8	6.5		
PHF	.656	.571	.679	.737	.875	.650	.920	.991	.827	.940	.625	.954	.600	.971	.887	.963	.977



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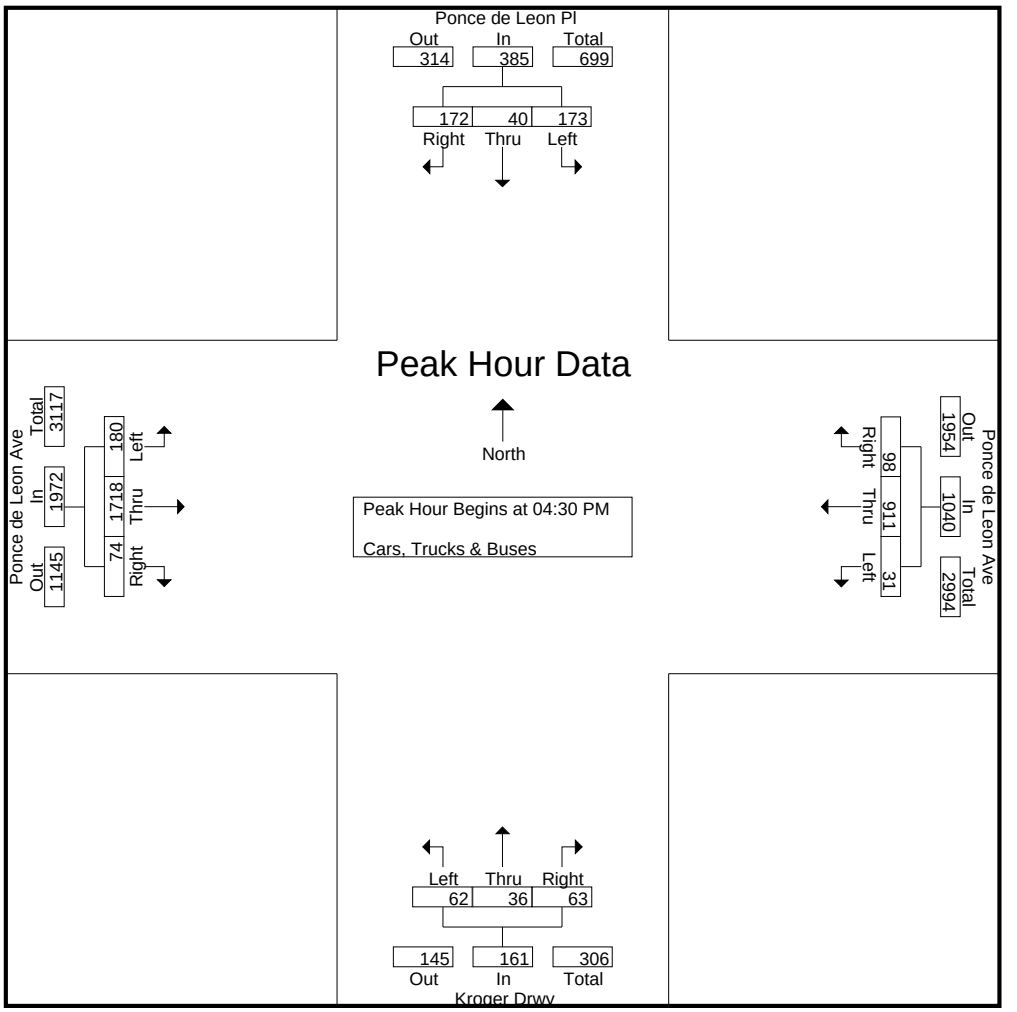
TMC Data

File Name : 24020004
Site Code : 24020004
Start Date : 10/23/2007
Page No : 3

	Kroger Drwy Northbound				Ponce de Leon Pl Southbound				Ponce de Leon Ave Eastbound				Ponce de Leon Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	19	7	17	43	41	13	43	97	48	423	16	487	8	216	22	246	873
04:45 PM	15	12	15	42	45	8	47	100	45	437	19	501	9	235	23	267	910
05:00 PM	18	8	13	39	43	10	42	95	42	432	21	495	8	231	25	264	893
05:15 PM	10	9	18	37	44	9	40	93	45	426	18	489	6	229	28	263	882
Total Volume	62	36	63	161	173	40	172	385	180	1718	74	1972	31	911	98	1040	3558
% App. Total	38.5	22.4	39.1		44.9	10.4	44.7		9.1	87.1	3.8		3	87.6	9.4		
PHF	.816	.750	.875	.936	.961	.769	.915	.963	.938	.983	.881	.984	.861	.969	.875	.974	.977



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TMC Data

File Name : 24020005
Site Code : 24020005
Start Date : 10/23/2007
Page No : 1

Groups Printed- Cars, Trucks & Buses

	Freedom Pkwy Northbound				Southbound				Ponce de Leon Ave Eastbound				Ponce de Leon Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	31	0	54	85	0	0	0	0	0	139	14	153	106	301	0	407	645
07:15 AM	36	0	69	105	0	0	0	0	0	148	17	165	115	305	0	420	690
07:30 AM	41	0	75	116	0	0	0	0	0	157	19	176	123	311	0	434	726
07:45 AM	46	0	77	123	0	0	0	0	0	174	24	198	128	328	0	456	777
Total	154	0	275	429	0	0	0	0	0	618	74	692	472	1245	0	1717	2838
08:00 AM	54	0	85	139	0	0	0	0	0	182	22	204	117	346	0	463	806
08:15 AM	51	0	79	130	0	0	0	0	0	169	26	195	112	364	0	476	801
08:30 AM	47	0	72	119	0	0	0	0	0	157	17	174	118	359	0	477	770
08:45 AM	45	0	67	112	0	0	0	0	0	142	12	154	112	347	0	459	725
Total	197	0	303	500	0	0	0	0	0	650	77	727	459	1416	0	1875	3102
*** BREAK ***																	
04:00 PM	48	0	108	156	0	0	0	0	0	332	62	394	84	164	0	248	798
04:15 PM	54	0	116	170	0	0	0	0	0	345	79	424	73	169	0	242	836
04:30 PM	61	0	117	178	0	0	0	0	0	365	87	452	79	177	0	256	886
04:45 PM	65	0	121	186	0	0	0	0	0	387	95	482	86	182	0	268	936
Total	228	0	462	690	0	0	0	0	0	1429	323	1752	322	692	0	1014	3456
05:00 PM	67	0	126	193	0	0	0	0	0	397	91	488	76	171	0	247	928
05:15 PM	68	0	134	202	0	0	0	0	0	378	85	463	79	183	0	262	927
05:30 PM	70	0	135	205	0	0	0	0	0	361	74	435	86	175	0	261	901
05:45 PM	70	0	112	182	0	0	0	0	0	347	68	415	78	164	0	242	839
Total	275	0	507	782	0	0	0	0	0	1483	318	1801	319	693	0	1012	3595
Grand Total	854	0	1547	2401	0	0	0	0	0	4180	792	4972	1572	4046	0	5618	12991
Apprch %	35.6	0	64.4		0	0	0		0	84.1	15.9		28	72	0		
Total %	6.6	0	11.9	18.5	0	0	0	0	0	32.2	6.1	38.3	12.1	31.1	0	43.2	

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TMC Data

File Name : 24020005
Site Code : 24020005
Start Date : 10/23/2007
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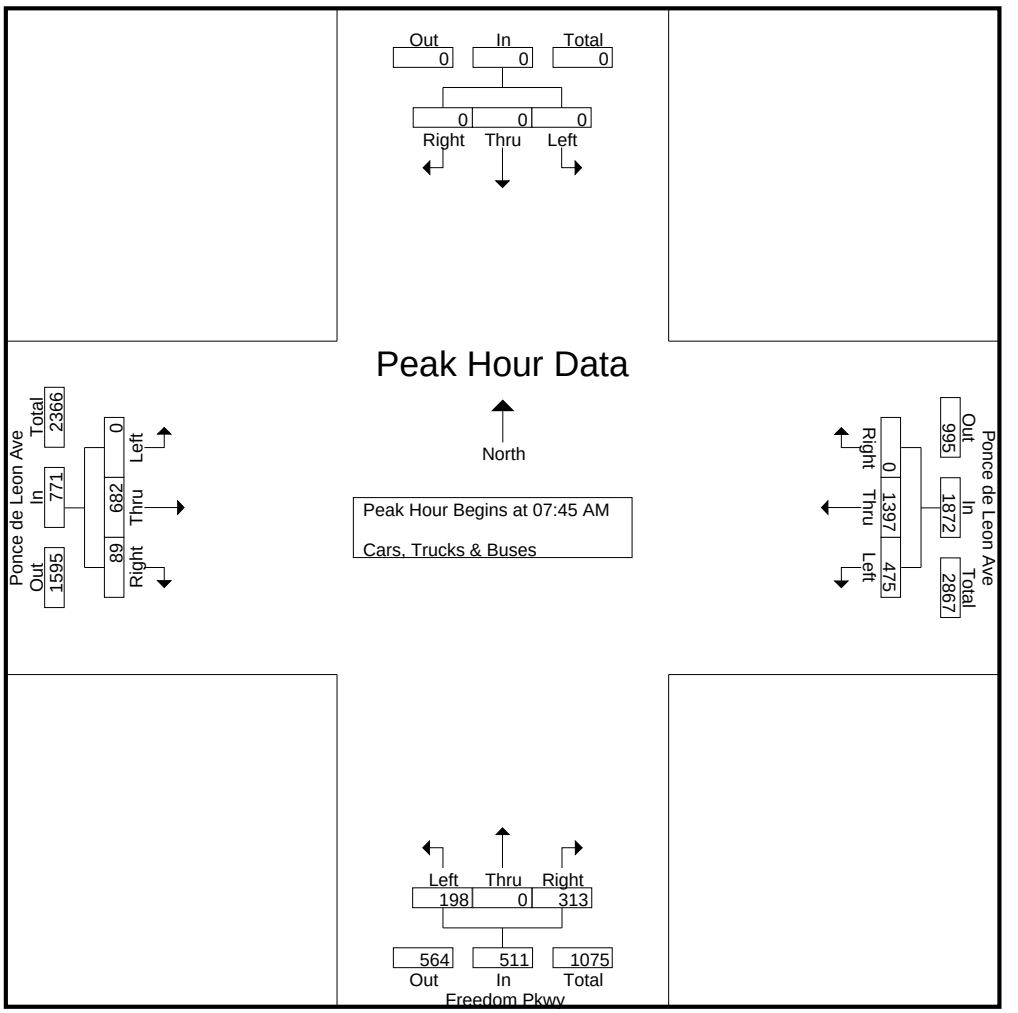
	Freedom Pkwy Northbound				Southbound				Ponce de Leon Ave Eastbound				Ponce de Leon Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	46	0	77	123	0	0	0	0	0	174	24	198	128	328	0	456	777
08:00 AM	54	0	85	139	0	0	0	0	0	182	22	204	117	346	0	463	806
08:15 AM	51	0	79	130	0	0	0	0	0	169	26	195	112	364	0	476	801
08:30 AM	47	0	72	119	0	0	0	0	0	157	17	174	118	359	0	477	770
Total Volume	198	0	313	511	0	0	0	0	0	682	89	771	475	1397	0	1872	3154
% App. Total	38.7	0	61.3		0	0	0		0	88.5	11.5		25.4	74.6	0		
PHF	.917	.000	.921	.919	.000	.000	.000	.000	.000	.937	.856	.945	.928	.959	.000	.981	.978



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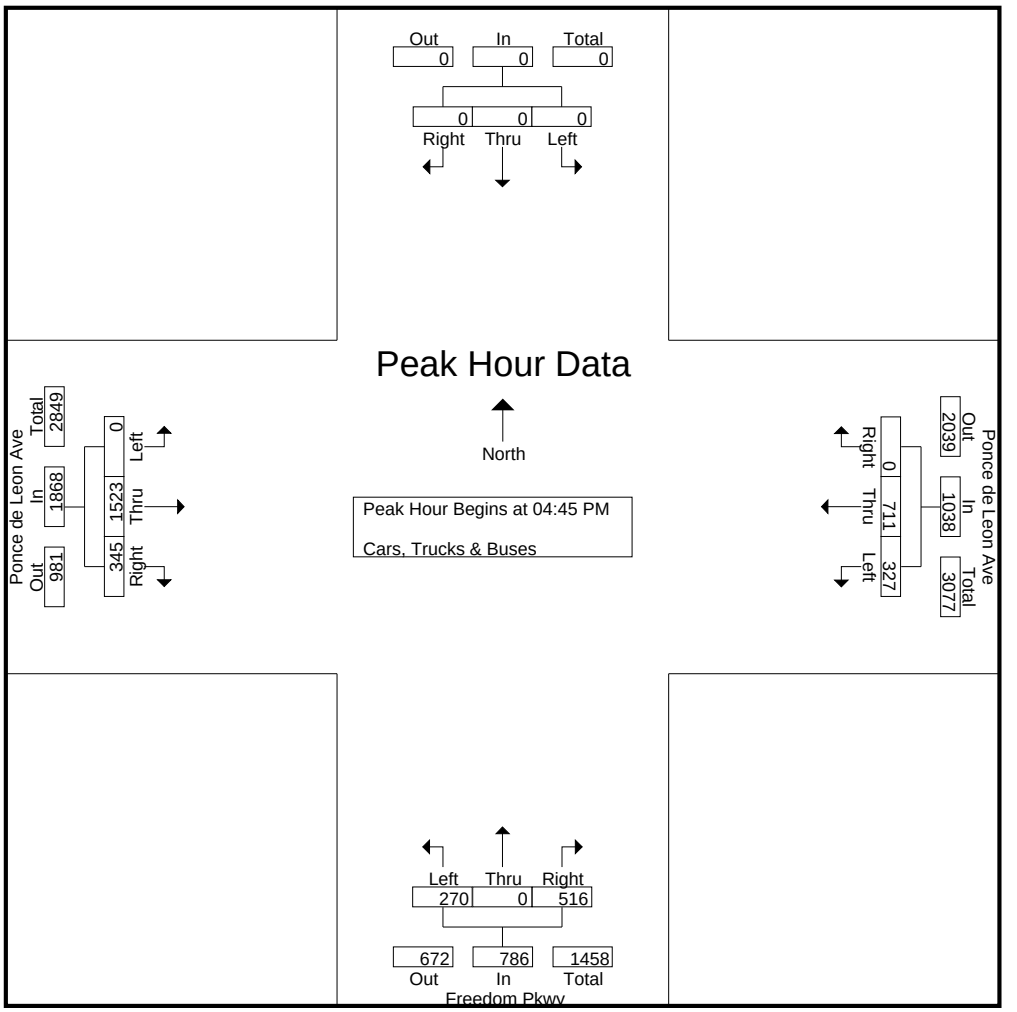
TMC Data

File Name : 24020005
Site Code : 24020005
Start Date : 10/23/2007
Page No : 3

	Freedom Pkwy Northbound				Southbound				Ponce de Leon Ave Eastbound				Ponce de Leon Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	65	0	121	186	0	0	0	0	0	387	95	482	86	182	0	268	936
05:00 PM	67	0	126	193	0	0	0	0	0	397	91	488	76	171	0	247	928
05:15 PM	68	0	134	202	0	0	0	0	0	378	85	463	79	183	0	262	927
05:30 PM	70	0	135	205	0	0	0	0	0	361	74	435	86	175	0	261	901
Total Volume	270	0	516	786	0	0	0	0	0	1523	345	1868	327	711	0	1038	3692
% App. Total	34.4	0	65.6		0	0	0		0	81.5	18.5		31.5	68.5	0		
PHF	.964	.000	.956	.959	.000	.000	.000	.000	.000	.959	.908	.957	.951	.971	.000	.968	.986



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TMC Data

File Name : 24020006
Site Code : 24020006
Start Date : 10/23/2007
Page No : 1

Groups Printed- Cars, Trucks & Buses

	Boulevard Northbound				Boulevard Southbound				North Ave Eastbound				North Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	22	107	3	132	2	108	12	122	10	79	7	96	7	186	12	205	555
07:15 AM	24	114	6	144	1	127	14	142	13	81	10	104	8	193	16	217	607
07:30 AM	28	126	7	161	3	136	17	156	14	84	9	107	9	198	18	225	649
07:45 AM	30	143	4	177	4	141	19	164	18	92	11	121	10	220	21	251	713
Total	104	490	20	614	10	512	62	584	55	336	37	428	34	797	67	898	2524
08:00 AM	23	136	4	163	3	146	23	172	19	105	15	139	17	239	26	282	756
08:15 AM	30	124	5	159	1	139	28	168	11	86	11	108	13	228	21	262	697
08:30 AM	26	113	8	147	1	127	24	152	17	85	24	126	14	221	18	253	678
08:45 AM	28	108	6	142	2	121	21	144	10	79	19	108	11	213	15	239	633
Total	107	481	23	611	7	533	96	636	57	355	69	481	55	901	80	1036	2764
*** BREAK ***																	
04:00 PM	19	78	6	103	9	144	19	172	21	251	48	320	8	74	15	97	692
04:15 PM	18	86	5	109	11	153	23	187	24	258	53	335	10	87	18	115	746
04:30 PM	21	92	9	122	10	158	21	189	27	263	59	349	7	91	15	113	773
04:45 PM	25	97	6	128	9	152	17	178	30	257	39	326	6	96	13	115	747
Total	83	353	26	462	39	607	80	726	102	1029	199	1330	31	348	61	440	2958
05:00 PM	20	93	4	117	11	179	15	205	31	272	40	343	5	91	12	108	773
05:15 PM	18	99	6	123	10	165	13	188	31	249	47	327	5	95	14	114	752
05:30 PM	19	95	6	120	13	150	16	179	38	247	38	323	11	84	13	108	730
05:45 PM	17	89	6	112	9	147	13	169	29	236	38	303	8	81	11	100	684
Total	74	376	22	472	43	641	57	741	129	1004	163	1296	29	351	50	430	2939
Grand Total	368	1700	91	2159	99	2293	295	2687	343	2724	468	3535	149	2397	258	2804	11185
Apprch %	17	78.7	4.2		3.7	85.3	11		9.7	77.1	13.2		5.3	85.5	9.2		
Total %	3.3	15.2	0.8	19.3	0.9	20.5	2.6	24	3.1	24.4	4.2	31.6	1.3	21.4	2.3	25.1	

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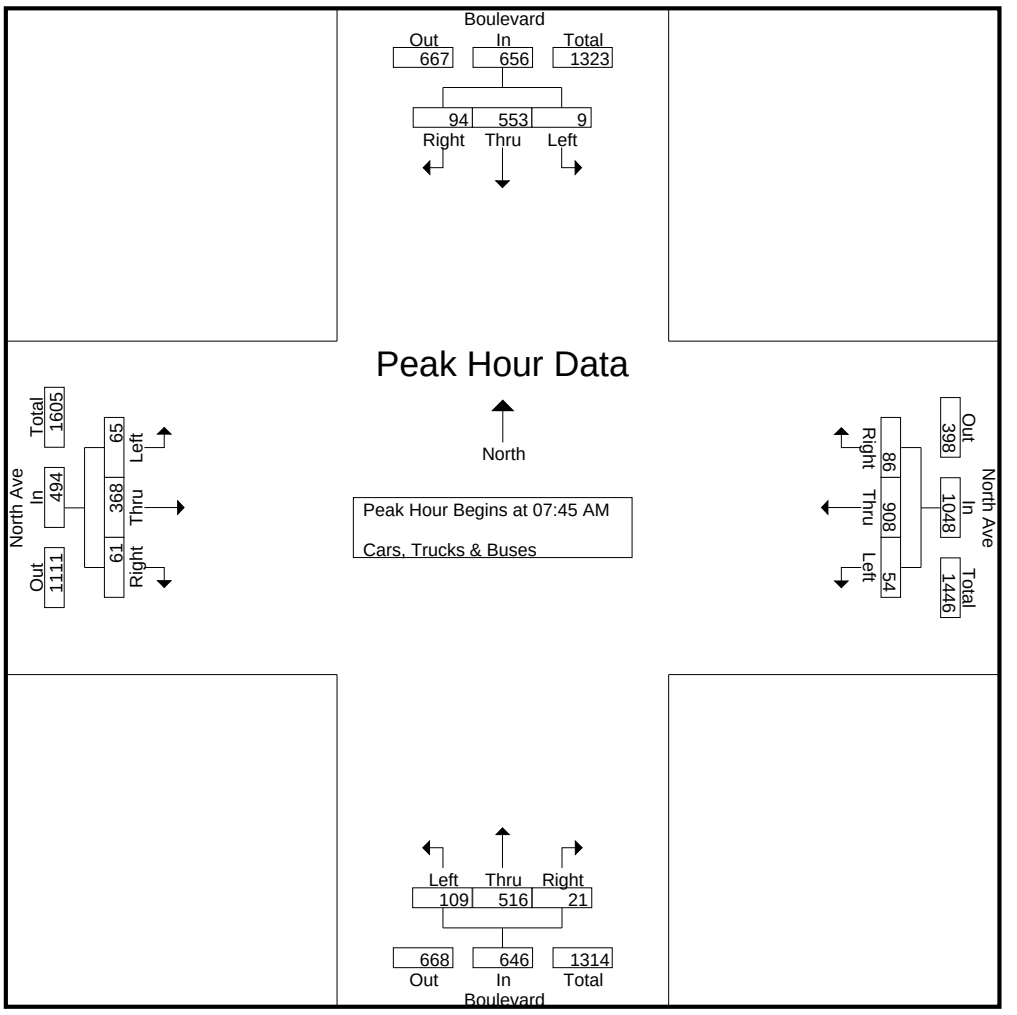
TMC Data

File Name : 24020006
Site Code : 24020006
Start Date : 10/23/2007
Page No : 2

	Boulevard Northbound				Boulevard Southbound				North Ave Eastbound				North Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	30	143	4	177	4	141	19	164	18	92	11	121	10	220	21	251	713
08:00 AM	23	136	4	163	3	146	23	172	19	105	15	139	17	239	26	282	756
08:15 AM	30	124	5	159	1	139	28	168	11	86	11	108	13	228	21	262	697
08:30 AM	26	113	8	147	1	127	24	152	17	85	24	126	14	221	18	253	678
Total Volume	109	516	21	646	9	553	94	656	65	368	61	494	54	908	86	1048	2844
% App. Total	16.9	79.9	3.3		1.4	84.3	14.3		13.2	74.5	12.3		5.2	86.6	8.2		
PHF	.908	.902	.656	.912	.563	.947	.839	.953	.855	.876	.635	.888	.794	.950	.827	.929	.940



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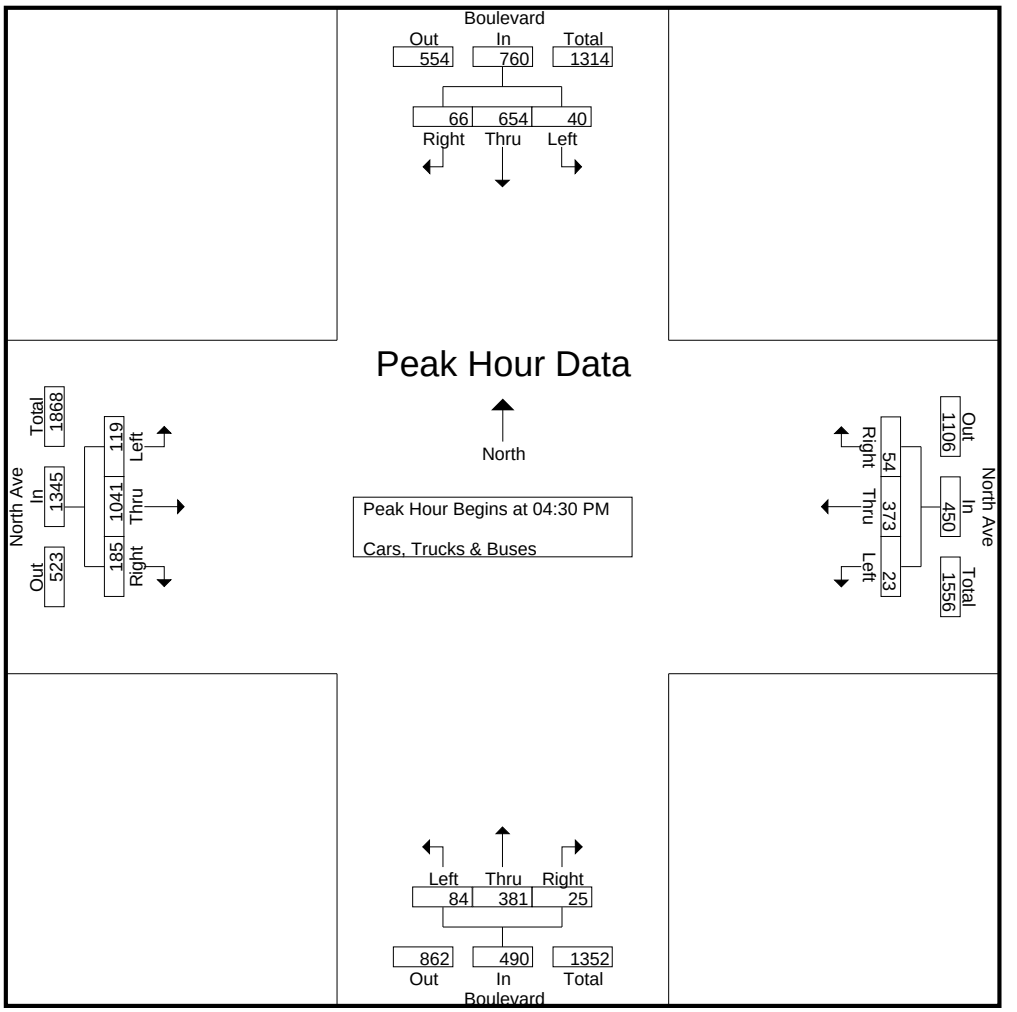
TMC Data

File Name : 24020006
Site Code : 24020006
Start Date : 10/23/2007
Page No : 3

	Boulevard Northbound				Boulevard Southbound				North Ave Eastbound				North Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	21	92	9	122	10	158	21	189	27	263	59	349	7	91	15	113	773
04:45 PM	25	97	6	128	9	152	17	178	30	257	39	326	6	96	13	115	747
05:00 PM	20	93	4	117	11	179	15	205	31	272	40	343	5	91	12	108	773
05:15 PM	18	99	6	123	10	165	13	188	31	249	47	327	5	95	14	114	752
Total Volume	84	381	25	490	40	654	66	760	119	1041	185	1345	23	373	54	450	3045
% App. Total	17.1	77.8	5.1		5.3	86.1	8.7		8.8	77.4	13.8		5.1	82.9	12		
PHF	.840	.962	.694	.957	.909	.913	.786	.927	.960	.957	.784	.963	.821	.971	.900	.978	.985



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TMC Data

File Name : 24020007
Site Code : 24420007
Start Date : 10/23/2007
Page No : 1

Groups Printed- Cars, Trucks & Buses

	Glen Iris Dr Northbound				Glen Iris Dr Southbound				North Ave Eastbound				North Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	33	48	8	89	6	21	11	38	13	44	3	60	7	163	8	178	365
07:15 AM	36	44	9	89	8	23	16	47	17	49	5	71	10	168	10	188	395
07:30 AM	40	40	11	91	6	27	13	46	22	55	5	82	8	179	13	200	419
07:45 AM	42	47	14	103	9	32	14	55	19	58	3	80	9	187	16	212	450
Total	151	179	42	372	29	103	54	186	71	206	16	293	34	697	47	778	1629
08:00 AM	39	46	10	95	4	37	13	54	22	53	5	80	12	205	12	229	458
08:15 AM	36	60	13	109	11	34	17	62	27	57	9	93	10	217	13	240	504
08:30 AM	32	77	10	119	8	31	12	51	25	54	6	85	8	196	17	221	476
08:45 AM	30	61	11	102	9	27	16	52	21	51	8	80	7	193	15	215	449
Total	137	244	44	425	32	129	58	219	95	215	28	338	37	811	57	905	1887
*** BREAK ***																	
04:00 PM	9	23	8	40	12	53	11	76	34	176	31	241	23	81	7	111	468
04:15 PM	10	28	9	47	16	56	13	85	38	189	36	263	26	85	9	120	515
04:30 PM	12	36	11	59	18	64	10	92	41	192	41	274	29	87	11	127	552
04:45 PM	14	42	8	64	13	71	14	98	39	197	44	280	34	79	9	122	564
Total	45	129	36	210	59	244	48	351	152	754	152	1058	112	332	36	480	2099
05:00 PM	10	38	9	57	11	76	12	99	36	205	41	282	31	71	11	113	551
05:15 PM	16	29	12	57	12	64	17	93	38	199	44	281	28	81	12	121	552
05:30 PM	14	34	11	59	10	59	12	81	33	191	49	273	24	71	10	105	518
05:45 PM	11	31	9	51	9	58	10	77	30	187	46	263	20	67	9	96	487
Total	51	132	41	224	42	257	51	350	137	782	180	1099	103	290	42	435	2108
Grand Total	384	684	163	1231	162	733	211	1106	455	1957	376	2788	286	2130	182	2598	7723
Apprch %	31.2	55.6	13.2		14.6	66.3	19.1		16.3	70.2	13.5		11	82	7		
Total %	5	8.9	2.1	15.9	2.1	9.5	2.7	14.3	5.9	25.3	4.9	36.1	3.7	27.6	2.4	33.6	

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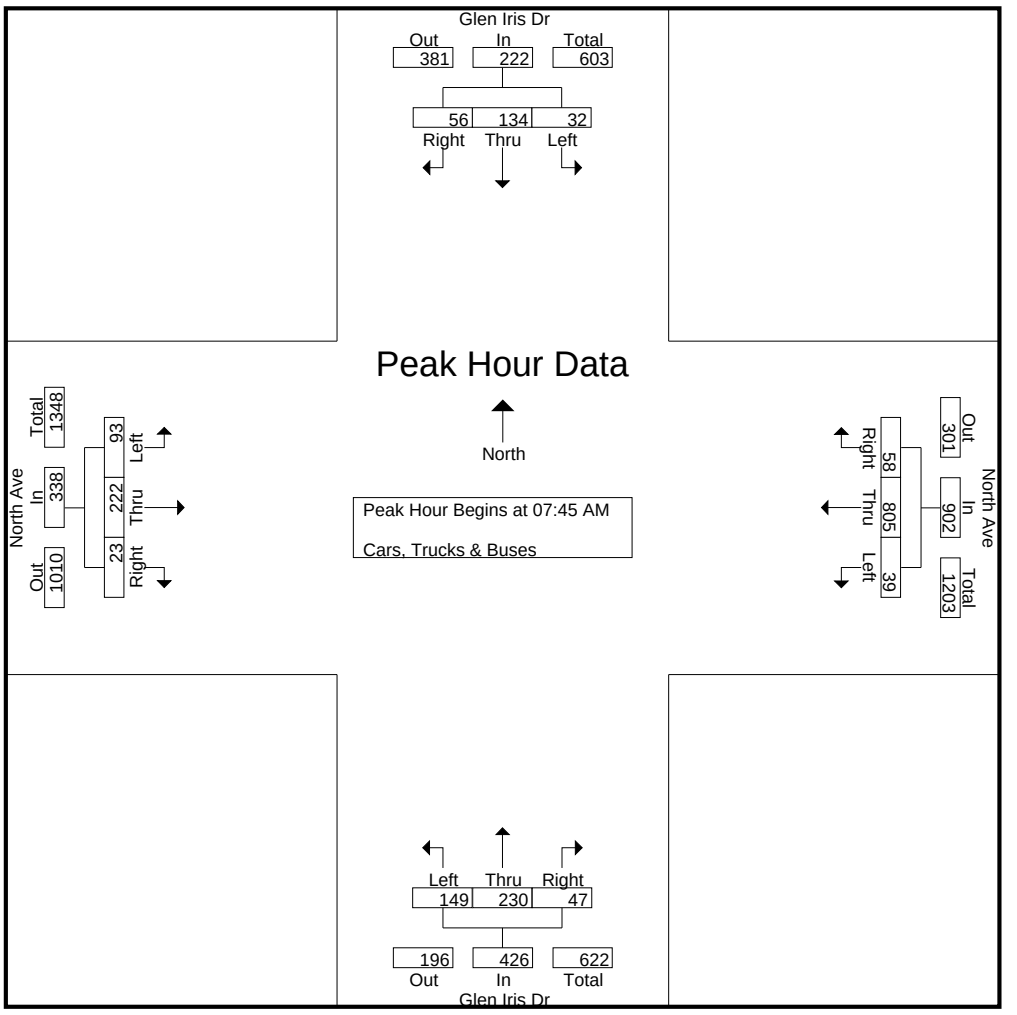
TMC Data

File Name : 24020007
Site Code : 24420007
Start Date : 10/23/2007
Page No : 2

	Glen Iris Dr Northbound				Glen Iris Dr Southbound				North Ave Eastbound				North Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	42	47	14	103	9	32	14	55	19	58	3	80	9	187	16	212	450
08:00 AM	39	46	10	95	4	37	13	54	22	53	5	80	12	205	12	229	458
08:15 AM	36	60	13	109	11	34	17	62	27	57	9	93	10	217	13	240	504
08:30 AM	32	77	10	119	8	31	12	51	25	54	6	85	8	196	17	221	476
Total Volume	149	230	47	426	32	134	56	222	93	222	23	338	39	805	58	902	1888
% App. Total	35	54	11		14.4	60.4	25.2		27.5	65.7	6.8		4.3	89.2	6.4		
PHF	.887	.747	.839	.895	.727	.905	.824	.895	.861	.957	.639	.909	.813	.927	.853	.940	.937



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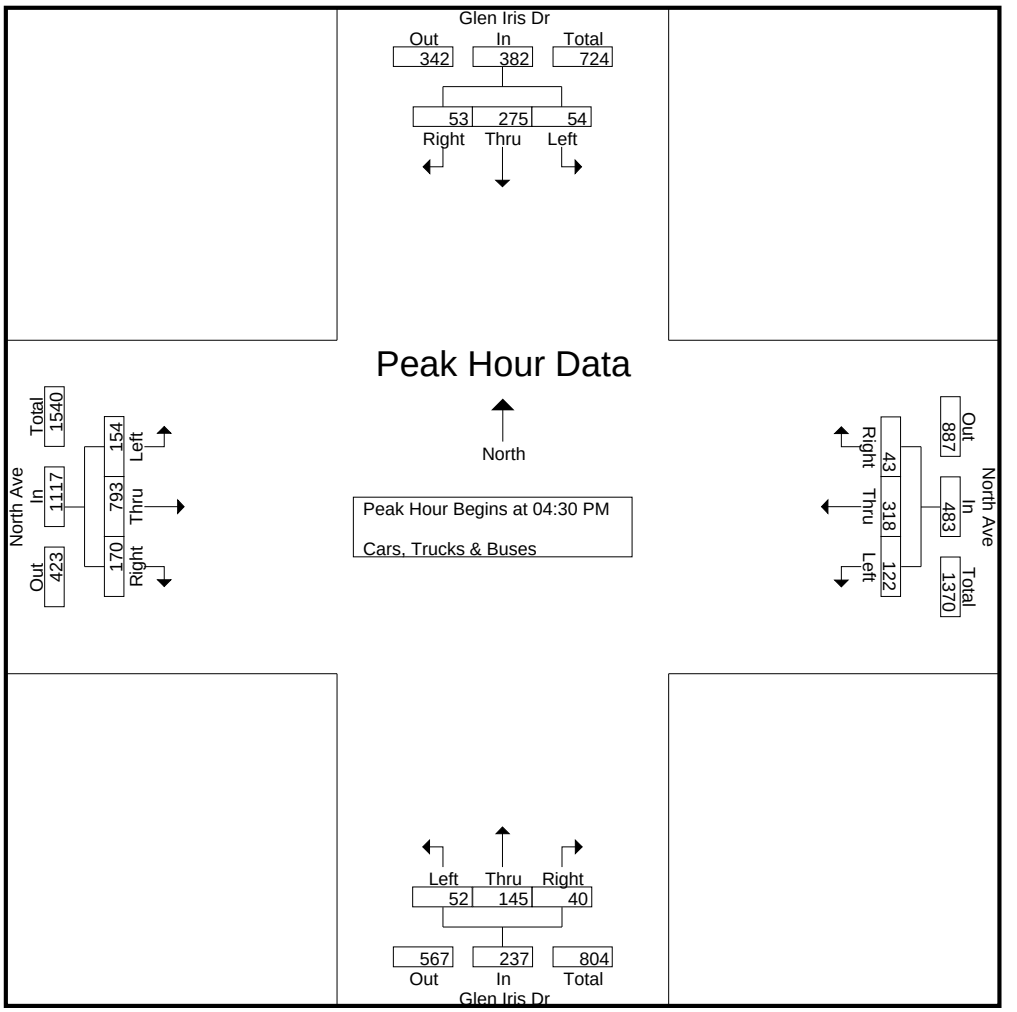
TMC Data

File Name : 24020007
Site Code : 24420007
Start Date : 10/23/2007
Page No : 3

	Glen Iris Dr Northbound				Glen Iris Dr Southbound				North Ave Eastbound				North Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	12	36	11	59	18	64	10	92	41	192	41	274	29	87	11	127	552
04:45 PM	14	42	8	64	13	71	14	98	39	197	44	280	34	79	9	122	564
05:00 PM	10	38	9	57	11	76	12	99	36	205	41	282	31	71	11	113	551
05:15 PM	16	29	12	57	12	64	17	93	38	199	44	281	28	81	12	121	552
Total Volume	52	145	40	237	54	275	53	382	154	793	170	1117	122	318	43	483	2219
% App. Total	21.9	61.2	16.9		14.1	72	13.9		13.8	71	15.2		25.3	65.8	8.9		
PHF	.813	.863	.833	.926	.750	.905	.779	.965	.939	.967	.966	.990	.897	.914	.896	.951	.984



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TMC Data

File Name : 24020008
Site Code : 24020008
Start Date : 10/23/2007
Page No : 1

Groups Printed- Cars, Trucks & Buses

	Freedom Pkwy Northbound				Freedom Pkwy Southbound				North Ave Eastbound				North Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	16	85	6	107	2	103	11	116	9	29	5	43	11	128	7	146	412
07:15 AM	21	92	5	118	3	114	16	133	10	33	7	50	15	134	9	158	459
07:30 AM	25	97	8	130	3	119	12	134	12	36	9	57	17	148	11	176	497
07:45 AM	18	86	5	109	4	126	18	148	11	39	6	56	20	179	13	212	525
Total	80	360	24	464	12	462	57	531	42	137	27	206	63	589	40	692	1893
08:00 AM	23	85	7	115	5	115	14	134	14	37	8	59	19	175	17	211	519
08:15 AM	32	91	9	132	3	112	15	130	16	39	8	63	26	181	12	219	544
08:30 AM	33	96	6	135	4	108	14	126	13	36	6	55	23	169	17	209	525
08:45 AM	35	88	2	125	2	105	10	117	11	32	7	50	19	157	11	187	479
Total	123	360	24	507	14	440	53	507	54	144	29	227	87	682	57	826	2067
*** BREAK ***																	
04:00 PM	16	124	21	161	11	129	4	144	27	152	13	192	21	69	9	99	596
04:15 PM	18	128	27	173	16	135	3	154	24	159	16	199	24	75	13	112	638
04:30 PM	21	137	30	188	12	139	2	153	21	172	19	212	26	79	16	121	674
04:45 PM	22	143	26	191	13	147	4	164	25	161	17	203	22	86	10	118	676
Total	77	532	104	713	52	550	13	615	97	644	65	806	93	309	48	450	2584
05:00 PM	27	149	23	199	15	148	4	167	28	168	18	214	15	79	12	106	686
05:15 PM	22	156	36	214	14	142	1	157	32	162	16	210	16	75	17	108	689
05:30 PM	19	147	25	191	15	135	3	153	39	156	13	208	20	71	16	107	659
05:45 PM	16	138	23	177	13	129	2	144	35	153	11	199	17	66	12	95	615
Total	84	590	107	781	57	554	10	621	134	639	58	831	68	291	57	416	2649
Grand Total	364	1842	259	2465	135	2006	133	2274	327	1564	179	2070	311	1871	202	2384	9193
Apprch %	14.8	74.7	10.5		5.9	88.2	5.8		15.8	75.6	8.6		13	78.5	8.5		
Total %	4	20	2.8	26.8	1.5	21.8	1.4	24.7	3.6	17	1.9	22.5	3.4	20.4	2.2	25.9	

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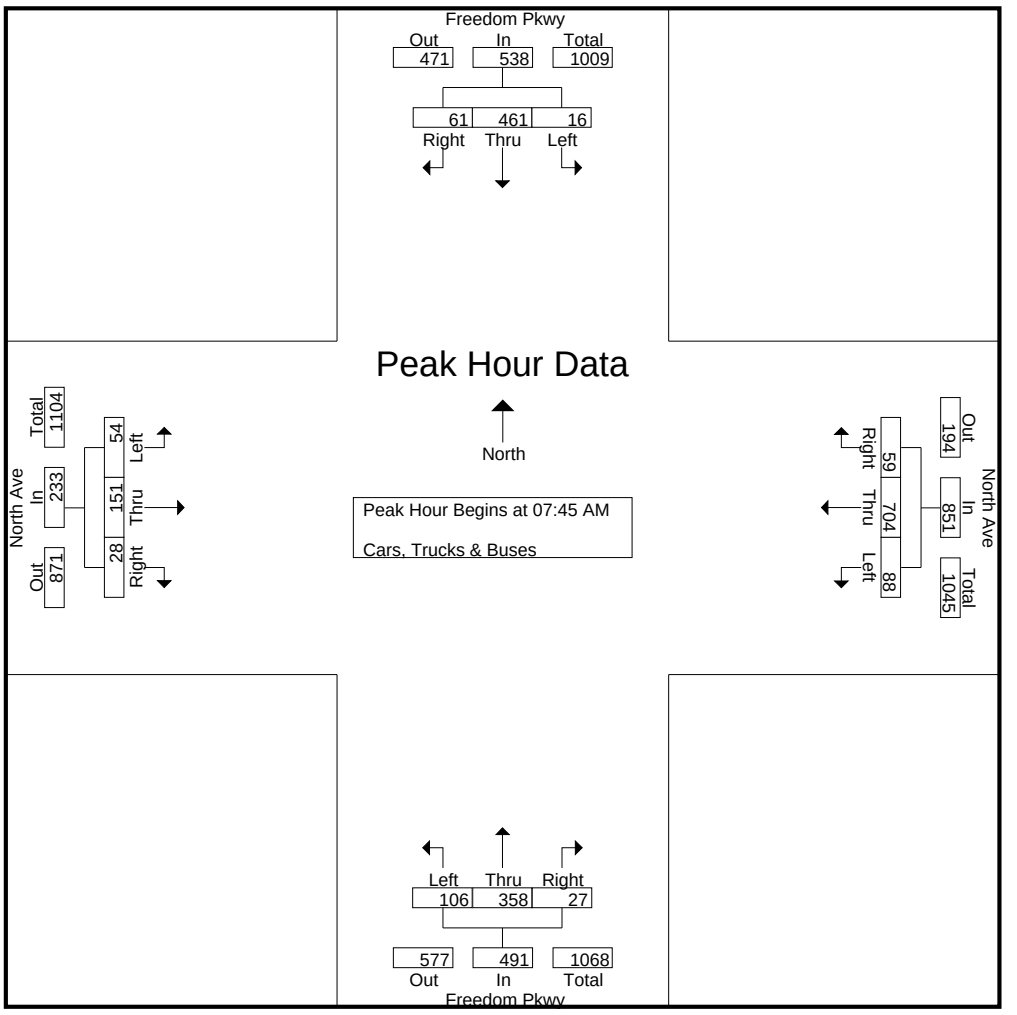
TMC Data

File Name : 24020008
Site Code : 24020008
Start Date : 10/23/2007
Page No : 2

	Freedom Pkwy Northbound				Freedom Pkwy Southbound				North Ave Eastbound				North Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	18	86	5	109	4	126	18	148	11	39	6	56	20	179	13	212	525
08:00 AM	23	85	7	115	5	115	14	134	14	37	8	59	19	175	17	211	519
08:15 AM	32	91	9	132	3	112	15	130	16	39	8	63	26	181	12	219	544
08:30 AM	33	96	6	135	4	108	14	126	13	36	6	55	23	169	17	209	525
Total Volume	106	358	27	491	16	461	61	538	54	151	28	233	88	704	59	851	2113
% App. Total	21.6	72.9	5.5		3	85.7	11.3		23.2	64.8	12		10.3	82.7	6.9		
PHF	.803	.932	.750	.909	.800	.915	.847	.909	.844	.968	.875	.925	.846	.972	.868	.971	.971



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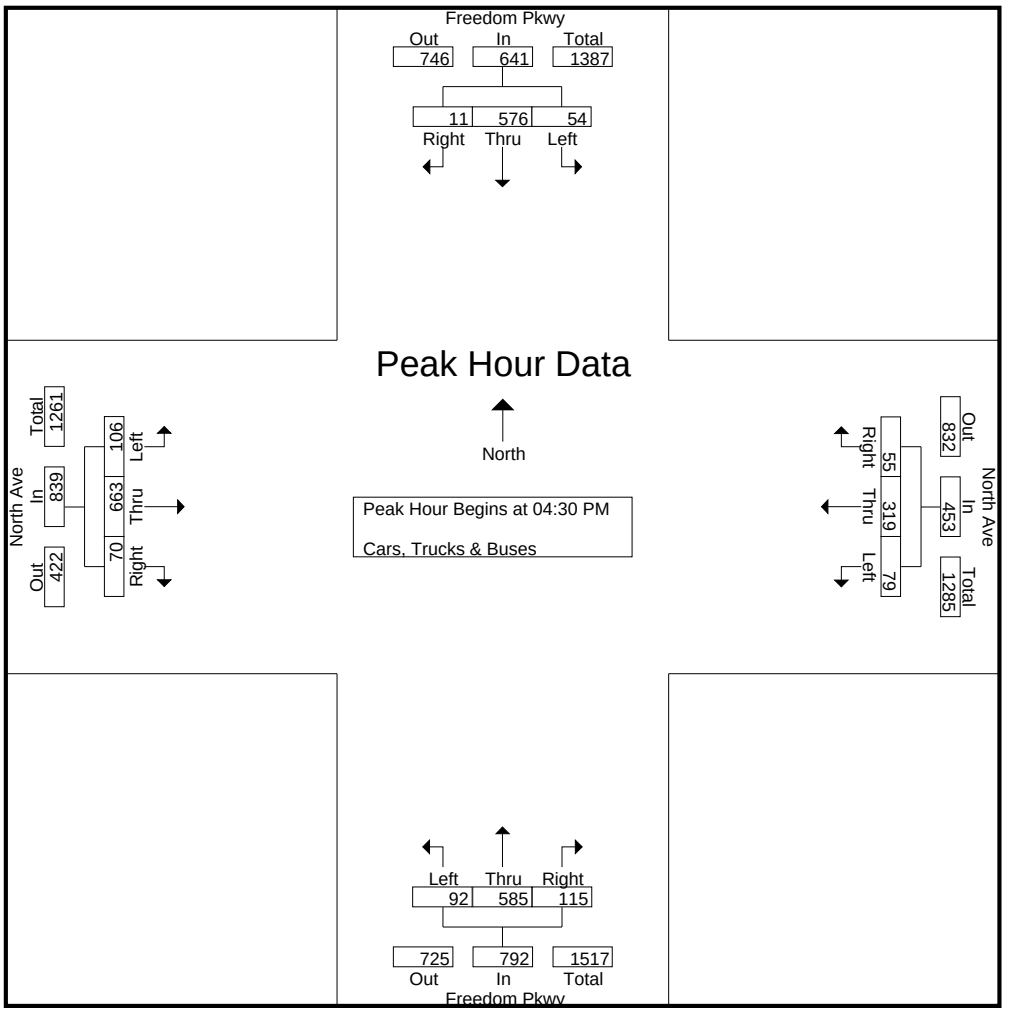
TMC Data

File Name : 24020008
Site Code : 24020008
Start Date : 10/23/2007
Page No : 3

	Freedom Pkwy Northbound				Freedom Pkwy Southbound				North Ave Eastbound				North Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	21	137	30	188	12	139	2	153	21	172	19	212	26	79	16	121	674
04:45 PM	22	143	26	191	13	147	4	164	25	161	17	203	22	86	10	118	676
05:00 PM	27	149	23	199	15	148	4	167	28	168	18	214	15	79	12	106	686
05:15 PM	22	156	36	214	14	142	1	157	32	162	16	210	16	75	17	108	689
Total Volume	92	585	115	792	54	576	11	641	106	663	70	839	79	319	55	453	2725
% App. Total	11.6	73.9	14.5		8.4	89.9	1.7		12.6	79	8.3		17.4	70.4	12.1		
PHF	.852	.938	.799	.925	.900	.973	.688	.960	.828	.964	.921	.980	.760	.927	.809	.936	.989



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TMC Data

File Name : 24020009
Site Code : 24020009
Start Date : 10/24/2007
Page No : 1

Groups Printed- Cars, Trucks & Buses

	Boulevard Northbound				Boulevard Southbound				Ralph McGill Blvd Eastbound				Ralph McGill Blvd Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	28	150	4	182	2	128	20	150	7	11	19	37	22	61	6	89	458
07:15 AM	33	162	2	197	1	137	22	160	9	13	22	44	27	65	9	101	502
07:30 AM	36	178	2	216	3	142	29	174	13	17	28	58	28	72	7	107	555
07:45 AM	39	186	3	228	2	149	28	179	11	10	37	58	31	76	8	115	580
Total	136	676	11	823	8	556	99	663	40	51	106	197	108	274	30	412	2095
08:00 AM	42	154	1	197	1	156	25	182	14	10	45	69	33	82	10	125	573
08:15 AM	46	163	3	212	4	168	22	194	18	21	39	78	34	85	9	128	612
08:30 AM	42	175	3	220	3	154	20	177	10	23	37	70	31	76	8	115	582
08:45 AM	40	162	1	203	1	143	18	162	12	15	24	51	29	71	6	106	522
Total	170	654	8	832	9	621	85	715	54	69	145	268	127	314	33	474	2289
*** BREAK ***																	
04:00 PM	22	123	24	169	12	217	13	242	10	72	39	121	10	21	4	35	567
04:15 PM	25	129	28	182	10	229	15	254	13	78	41	132	12	27	6	45	613
04:30 PM	26	136	32	194	13	237	17	267	17	84	45	146	13	33	7	53	660
04:45 PM	29	141	37	207	10	239	21	270	12	91	57	160	16	39	10	65	702
Total	102	529	121	752	45	922	66	1033	52	325	182	559	51	120	27	198	2542
05:00 PM	33	135	34	202	12	246	18	276	14	89	61	164	13	34	11	58	700
05:15 PM	37	129	31	197	14	237	19	270	11	75	54	140	17	28	8	53	660
05:30 PM	34	122	28	184	17	213	16	246	11	92	47	150	15	25	11	51	631
05:45 PM	28	115	25	168	14	205	14	233	11	79	43	133	12	23	7	42	576
Total	132	501	118	751	57	901	67	1025	47	335	205	587	57	110	37	204	2567
Grand Total	540	2360	258	3158	119	3000	317	3436	193	780	638	1611	343	818	127	1288	9493
Apprch %	17.1	74.7	8.2		3.5	87.3	9.2		12	48.4	39.6		26.6	63.5	9.9		
Total %	5.7	24.9	2.7	33.3	1.3	31.6	3.3	36.2	2	8.2	6.7	17	3.6	8.6	1.3	13.6	

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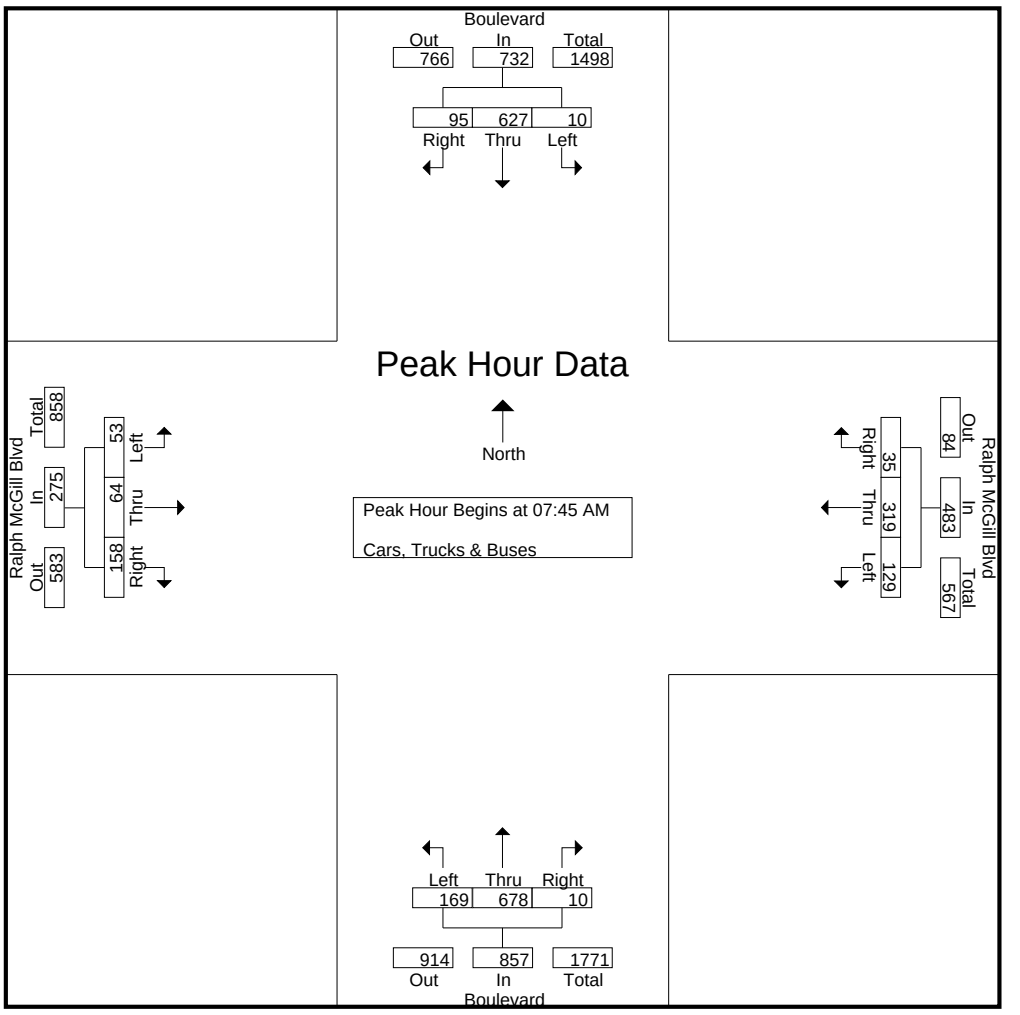
TMC Data

File Name : 24020009
Site Code : 24020009
Start Date : 10/24/2007
Page No : 2

	Boulevard Northbound				Boulevard Southbound				Ralph McGill Blvd Eastbound				Ralph McGill Blvd Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	39	186	3	228	2	149	28	179	11	10	37	58	31	76	8	115	580
08:00 AM	42	154	1	197	1	156	25	182	14	10	45	69	33	82	10	125	573
08:15 AM	46	163	3	212	4	168	22	194	18	21	39	78	34	85	9	128	612
08:30 AM	42	175	3	220	3	154	20	177	10	23	37	70	31	76	8	115	582
Total Volume	169	678	10	857	10	627	95	732	53	64	158	275	129	319	35	483	2347
% App. Total	19.7	79.1	1.2		1.4	85.7	13		19.3	23.3	57.5		26.7	66	7.2		
PHF	.918	.911	.833	.940	.625	.933	.848	.943	.736	.696	.878	.881	.949	.938	.875	.943	.959



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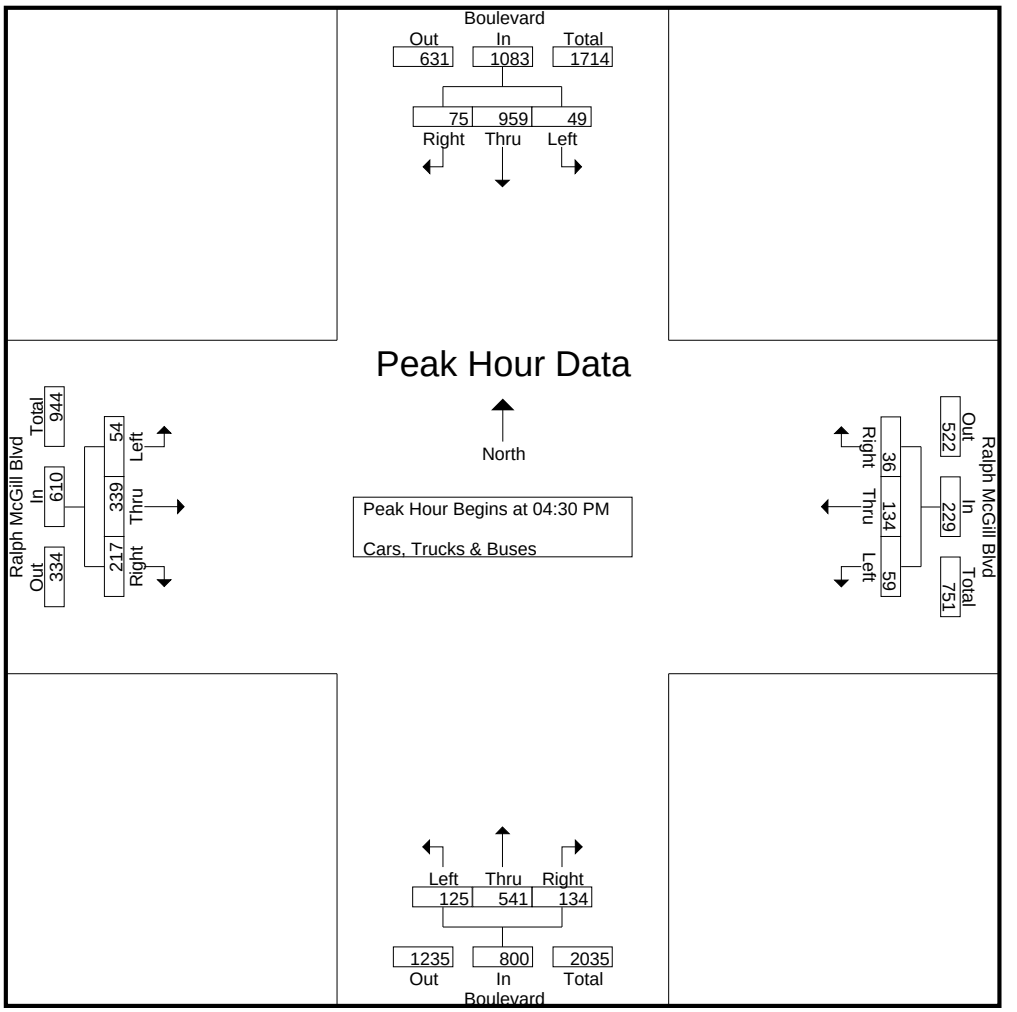
TMC Data

File Name : 24020009
Site Code : 24020009
Start Date : 10/24/2007
Page No : 3

	Boulevard Northbound				Boulevard Southbound				Ralph McGill Blvd Eastbound				Ralph McGill Blvd Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	26	136	32	194	13	237	17	267	17	84	45	146	13	33	7	53	660
04:45 PM	29	141	37	207	10	239	21	270	12	91	57	160	16	39	10	65	702
05:00 PM	33	135	34	202	12	246	18	276	14	89	61	164	13	34	11	58	700
05:15 PM	37	129	31	197	14	237	19	270	11	75	54	140	17	28	8	53	660
Total Volume	125	541	134	800	49	959	75	1083	54	339	217	610	59	134	36	229	2722
% App. Total	15.6	67.6	16.8		4.5	88.6	6.9		8.9	55.6	35.6		25.8	58.5	15.7		
PHF	.845	.959	.905	.966	.875	.975	.893	.981	.794	.931	.889	.930	.868	.859	.818	.881	.969



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TMC Data

File Name : 24020010
Site Code : 24020010
Start Date : 10/24/2007
Page No : 1

Groups Printed- Cars, Trucks & Buses

	Boulevard Northbound				Boulevard Southbound				Freedom Pkwy Eastbound				Freedom Pkwy Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	75	149	8	232	4	41	211	256	76	106	19	201	9	256	7	272	961
07:15 AM	84	155	10	249	5	45	218	268	82	113	21	216	12	268	8	288	1021
07:30 AM	91	164	11	266	7	52	234	293	86	118	24	228	15	278	11	304	1091
07:45 AM	96	178	14	288	9	63	245	317	91	124	27	242	17	289	13	319	1166
Total	346	646	43	1035	25	201	908	1134	335	461	91	887	53	1091	39	1183	4239
08:00 AM	92	171	16	279	8	51	256	315	94	129	24	247	14	275	10	299	1140
08:15 AM	87	162	18	267	6	56	247	309	97	122	21	240	11	248	11	270	1086
08:30 AM	84	153	15	252	7	53	235	295	93	117	17	227	9	229	7	245	1019
08:45 AM	77	137	12	226	5	47	228	280	87	108	15	210	7	218	8	233	949
Total	340	623	61	1024	26	207	966	1199	371	476	77	924	41	970	36	1047	4194
*** BREAK ***																	
04:00 PM	33	107	10	150	3	184	118	305	132	229	18	379	34	176	4	214	1048
04:15 PM	37	111	11	159	5	189	121	315	139	236	20	395	37	187	5	229	1098
04:30 PM	42	113	13	168	7	207	128	342	143	244	22	409	34	196	7	237	1156
04:45 PM	38	105	17	160	6	213	137	356	148	249	28	425	38	187	8	233	1174
Total	150	436	51	637	21	793	504	1318	562	958	88	1608	143	746	24	913	4476
05:00 PM	41	101	14	156	8	215	126	349	164	237	24	425	42	194	9	245	1175
05:15 PM	38	112	11	161	7	224	123	354	159	248	19	426	37	183	6	226	1167
05:30 PM	35	107	9	151	5	217	116	338	154	251	17	422	35	167	5	207	1118
05:45 PM	31	96	7	134	3	213	108	324	147	247	14	408	39	138	6	183	1049
Total	145	416	41	602	23	869	473	1365	624	983	74	1681	153	682	26	861	4509
Grand Total	981	2121	196	3298	95	2070	2851	5016	1892	2878	330	5100	390	3489	125	4004	17418
Apprch %	29.7	64.3	5.9		1.9	41.3	56.8		37.1	56.4	6.5		9.7	87.1	3.1		
Total %	5.6	12.2	1.1	18.9	0.5	11.9	16.4	28.8	10.9	16.5	1.9	29.3	2.2	20	0.7	23	

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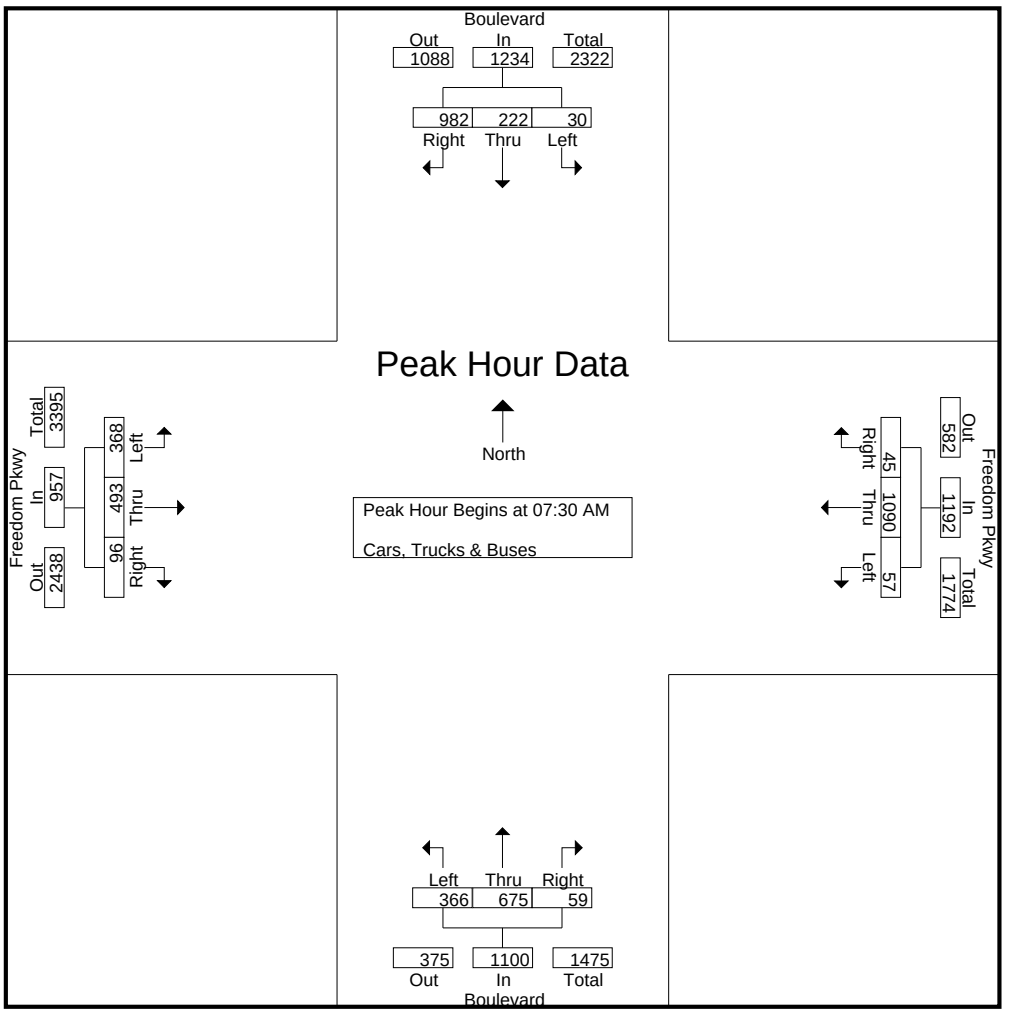
TMC Data

File Name : 24020010
Site Code : 24020010
Start Date : 10/24/2007
Page No : 2

	Boulevard Northbound				Boulevard Southbound				Freedom Pkwy Eastbound				Freedom Pkwy Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	91	164	11	266	7	52	234	293	86	118	24	228	15	278	11	304	1091
07:45 AM	96	178	14	288	9	63	245	317	91	124	27	242	17	289	13	319	1166
08:00 AM	92	171	16	279	8	51	256	315	94	129	24	247	14	275	10	299	1140
08:15 AM	87	162	18	267	6	56	247	309	97	122	21	240	11	248	11	270	1086
Total Volume	366	675	59	1100	30	222	982	1234	368	493	96	957	57	1090	45	1192	4483
% App. Total	33.3	61.4	5.4		2.4	18	79.6		38.5	51.5	10		4.8	91.4	3.8		
PHF	.953	.948	.819	.955	.833	.881	.959	.973	.948	.955	.889	.969	.838	.943	.865	.934	.961



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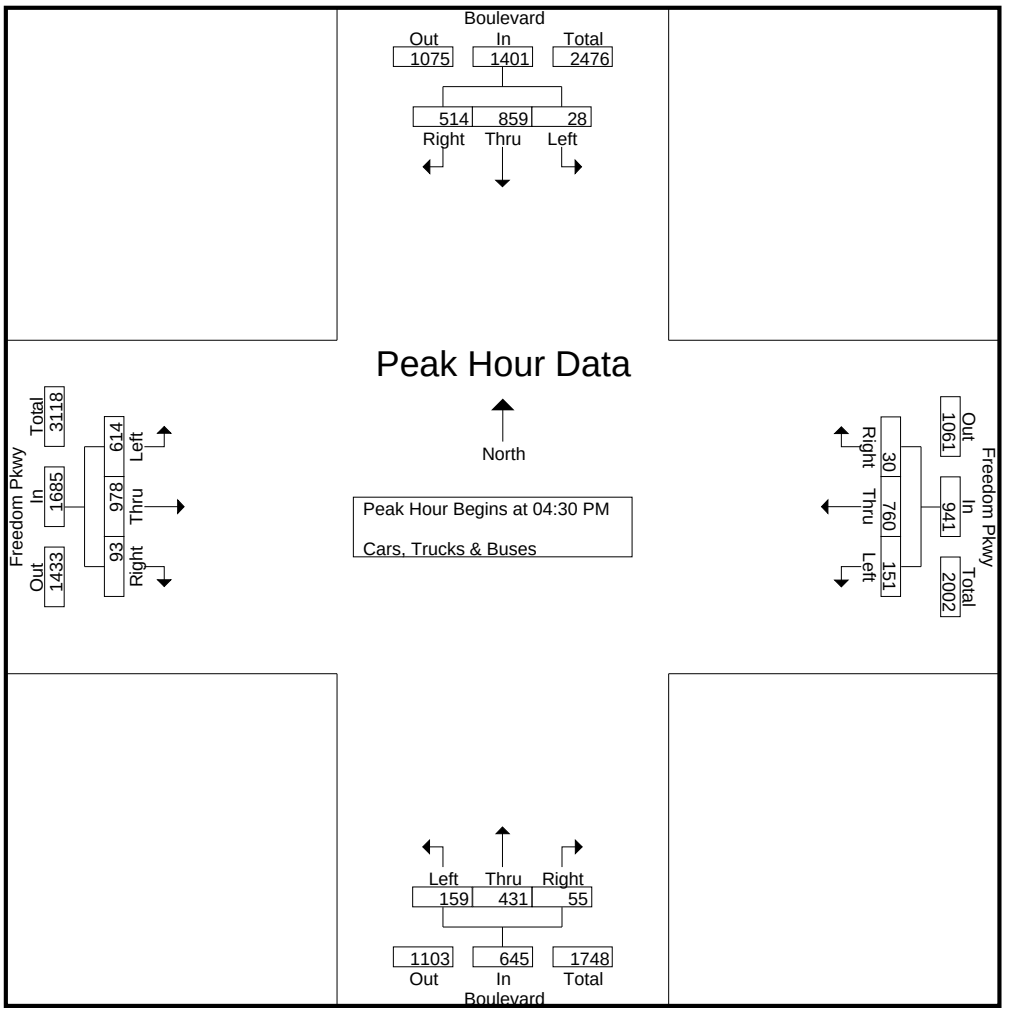
TMC Data

File Name : 24020010
Site Code : 24020010
Start Date : 10/24/2007
Page No : 3

	Boulevard Northbound				Boulevard Southbound				Freedom Pkwy Eastbound				Freedom Pkwy Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	42	113	13	168	7	207	128	342	143	244	22	409	34	196	7	237	1156
04:45 PM	38	105	17	160	6	213	137	356	148	249	28	425	38	187	8	233	1174
05:00 PM	41	101	14	156	8	215	126	349	164	237	24	425	42	194	9	245	1175
05:15 PM	38	112	11	161	7	224	123	354	159	248	19	426	37	183	6	226	1167
Total Volume	159	431	55	645	28	859	514	1401	614	978	93	1685	151	760	30	941	4672
% App. Total	24.7	66.8	8.5		2	61.3	36.7		36.4	58	5.5		16	80.8	3.2		
PHF	.946	.954	.809	.960	.875	.959	.938	.984	.936	.982	.830	.989	.899	.969	.833	.960	.994



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TMC Data

File Name : 24020011
Site Code : 24020011
Start Date : 10/24/2007
Page No : 1

Groups Printed- Cars, Trucks & Buses

	Boulevard Northbound				Boulevard Southbound				Irwin St Eastbound				Irwin St Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	65	189	7	261	9	54	7	70	4	16	5	25	4	64	19	87	443
07:15 AM	76	247	8	331	12	61	10	83	6	19	9	34	5	73	20	98	546
07:30 AM	77	251	10	338	18	68	6	92	5	17	11	33	4	86	24	114	577
07:45 AM	86	247	13	346	17	75	4	96	3	14	8	25	6	98	22	126	593
Total	304	934	38	1276	56	258	27	341	18	66	33	117	19	321	85	425	2159
08:00 AM	77	232	13	322	17	78	5	100	2	11	5	18	7	93	25	125	565
08:15 AM	81	230	13	324	15	84	3	102	2	15	6	23	9	111	21	141	590
08:30 AM	67	216	14	297	13	87	9	109	3	12	4	19	5	86	23	114	539
08:45 AM	59	197	11	267	14	82	7	103	2	10	2	14	6	68	21	95	479
Total	284	875	51	1210	59	331	24	414	9	48	17	74	27	358	90	475	2173
*** BREAK ***																	
04:00 PM	5	137	7	149	13	207	3	223	5	29	13	47	4	10	9	23	442
04:15 PM	7	142	8	157	14	212	5	231	8	36	17	61	5	13	11	29	478
04:30 PM	4	149	5	158	26	218	3	247	7	45	22	74	5	19	15	39	518
04:45 PM	9	136	7	152	38	226	4	268	9	58	24	91	4	15	13	32	543
Total	25	564	27	616	91	863	15	969	29	168	76	273	18	57	48	123	1981
05:00 PM	6	123	10	139	29	234	4	267	12	62	21	95	4	17	11	32	533
05:15 PM	5	118	8	131	24	229	7	260	9	59	27	95	7	13	14	34	520
05:30 PM	9	113	13	135	45	225	4	274	7	48	26	81	5	14	16	35	525
05:45 PM	6	106	10	122	37	211	3	251	8	43	22	73	6	11	14	31	477
Total	26	460	41	527	135	899	18	1052	36	212	96	344	22	55	55	132	2055
Grand Total	639	2833	157	3629	341	2351	84	2776	92	494	222	808	86	791	278	1155	8368
Apprch %	17.6	78.1	4.3		12.3	84.7	3		11.4	61.1	27.5		7.4	68.5	24.1		
Total %	7.6	33.9	1.9	43.4	4.1	28.1	1	33.2	1.1	5.9	2.7	9.7	1	9.5	3.3	13.8	

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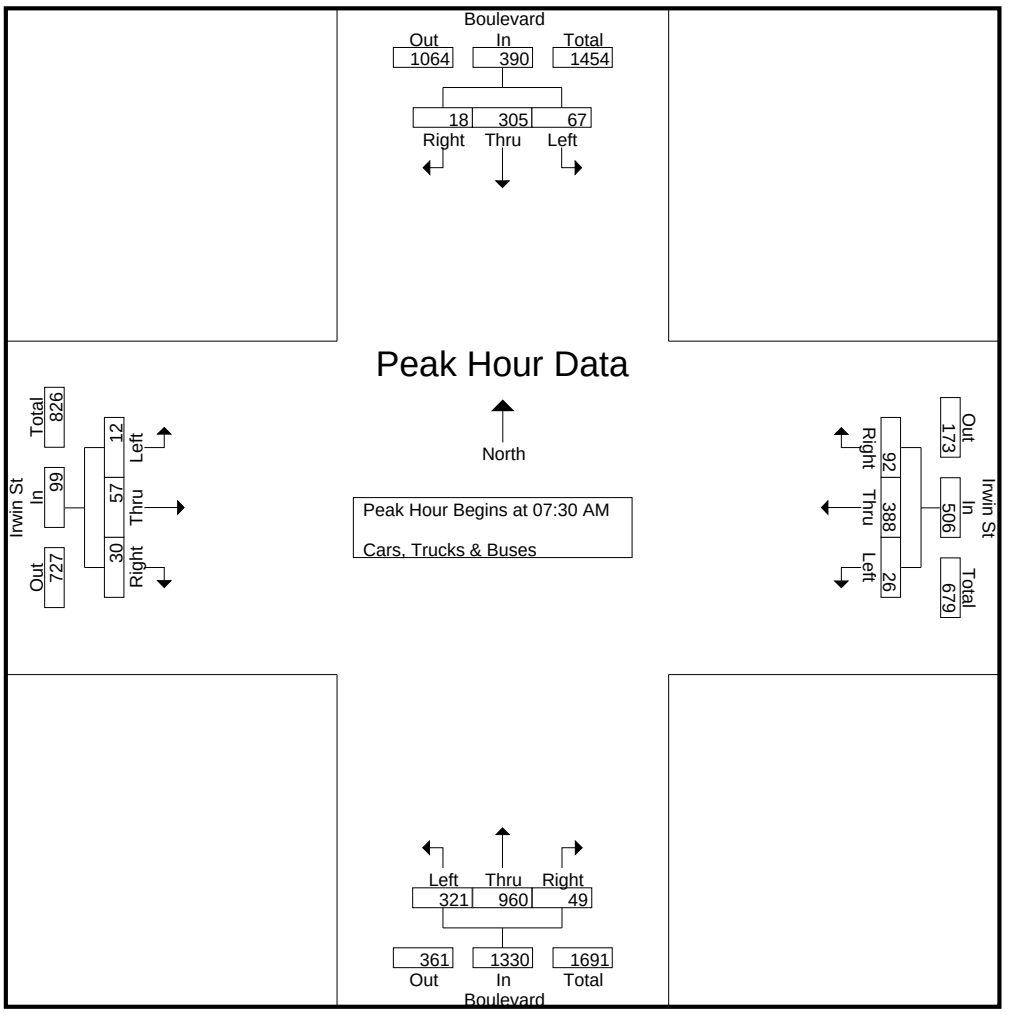
TMC Data

File Name : 24020011
Site Code : 24020011
Start Date : 10/24/2007

	Boulevard Northbound				Boulevard Southbound				Irwin St Eastbound				Irwin St Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	77	251	10	338	18	68	6	92	5	17	11	33	4	86	24	114	577
07:45 AM	86	247	13	346	17	75	4	96	3	14	8	25	6	98	22	126	593
08:00 AM	77	232	13	322	17	78	5	100	2	11	5	18	7	93	25	125	565
08:15 AM	81	230	13	324	15	84	3	102	2	15	6	23	9	111	21	141	590
Total Volume	321	960	49	1330	67	305	18	390	12	57	30	99	26	388	92	506	2325
% App. Total	24.1	72.2	3.7		17.2	78.2	4.6		12.1	57.6	30.3		5.1	76.7	18.2		
PHF	.933	.956	.942	.961	.931	.908	.750	.956	.600	.838	.682	.750	.722	.874	.920	.897	.980



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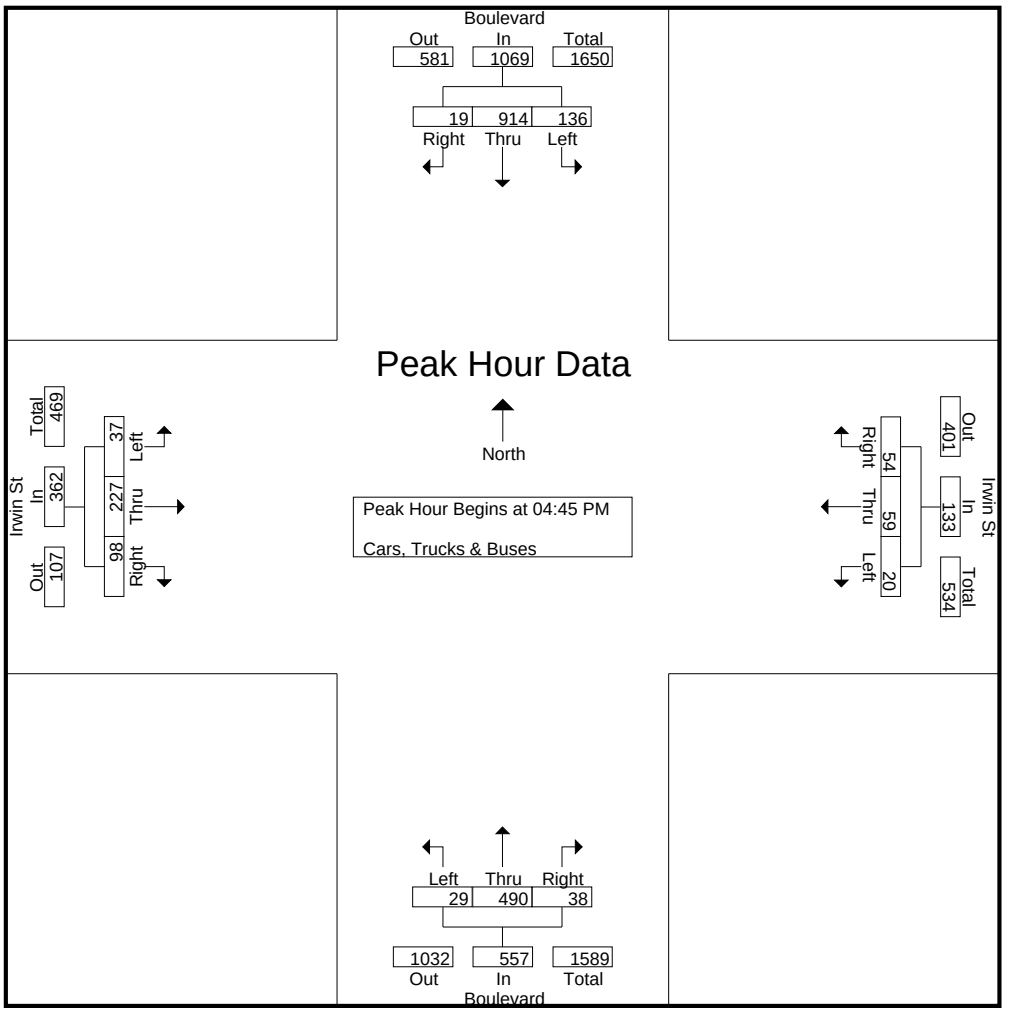
TMC Data

File Name : 24020011
Site Code : 24020011
Start Date : 10/24/2007
Page No : 3

	Boulevard Northbound				Boulevard Southbound				Irwin St Eastbound				Irwin St Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	9	136	7	152	38	226	4	268	9	58	24	91	4	15	13	32	543
05:00 PM	6	123	10	139	29	234	4	267	12	62	21	95	4	17	11	32	533
05:15 PM	5	118	8	131	24	229	7	260	9	59	27	95	7	13	14	34	520
05:30 PM	9	113	13	135	45	225	4	274	7	48	26	81	5	14	16	35	525
Total Volume	29	490	38	557	136	914	19	1069	37	227	98	362	20	59	54	133	2121
% App. Total	5.2	88	6.8		12.7	85.5	1.8		10.2	62.7	27.1		15	44.4	40.6		
PHF	.806	.901	.731	.916	.756	.976	.679	.975	.771	.915	.907	.953	.714	.868	.844	.950	.977



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TMC Data

File Name : 24020012
Site Code : 24020012
Start Date : 10/24/2007
Page No : 1

Groups Printed- Cars, Trucks & Buses

	Boulevard Northbound				Boulevard Southbound				Edgewood Ave Eastbound				Edgewood Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	3	248	11	262	3	49	14	66	8	18	3	29	4	52	4	60	417
07:15 AM	4	267	12	283	2	51	12	65	11	21	2	34	7	56	6	69	451
07:30 AM	8	295	10	313	3	52	13	68	7	20	3	30	5	68	8	81	492
07:45 AM	4	283	11	298	2	44	13	59	4	17	4	25	3	73	7	83	465
Total	19	1093	44	1156	10	196	52	258	30	76	12	118	19	249	25	293	1825
08:00 AM	6	289	10	305	3	62	12	77	6	18	2	26	6	79	9	94	502
08:15 AM	3	274	16	293	4	58	18	80	5	19	4	28	8	84	13	105	506
08:30 AM	7	252	13	272	3	54	17	74	6	15	9	30	5	86	8	99	475
08:45 AM	4	246	10	260	2	49	14	65	5	14	5	24	4	72	9	85	434
Total	20	1061	49	1130	12	223	61	296	22	66	20	108	23	321	39	383	1917
*** BREAK ***																	
04:00 PM	3	107	9	119	8	207	22	237	15	47	21	83	9	31	8	48	487
04:15 PM	2	102	7	111	10	215	28	253	18	51	23	92	11	36	6	53	509
04:30 PM	2	108	10	120	8	218	31	257	21	54	26	101	13	33	8	54	532
04:45 PM	2	125	8	135	5	224	34	263	17	69	35	121	11	42	7	60	579
Total	9	442	34	485	31	864	115	1010	71	221	105	397	44	142	29	215	2107
05:00 PM	2	119	9	130	13	229	29	271	18	65	32	115	13	49	9	71	587
05:15 PM	4	127	12	143	10	221	37	268	16	69	30	115	11	45	10	66	592
05:30 PM	3	114	8	125	6	217	31	254	20	80	30	130	12	41	8	61	570
05:45 PM	3	110	6	119	7	213	28	248	17	72	28	117	10	36	11	57	541
Total	12	470	35	517	36	880	125	1041	71	286	120	477	46	171	38	255	2290
Grand Total	60	3066	162	3288	89	2163	353	2605	194	649	257	1100	132	883	131	1146	8139
Apprch %	1.8	93.2	4.9		3.4	83	13.6		17.6	59	23.4		11.5	77.1	11.4		
Total %	0.7	37.7	2	40.4	1.1	26.6	4.3	32	2.4	8	3.2	13.5	1.6	10.8	1.6	14.1	

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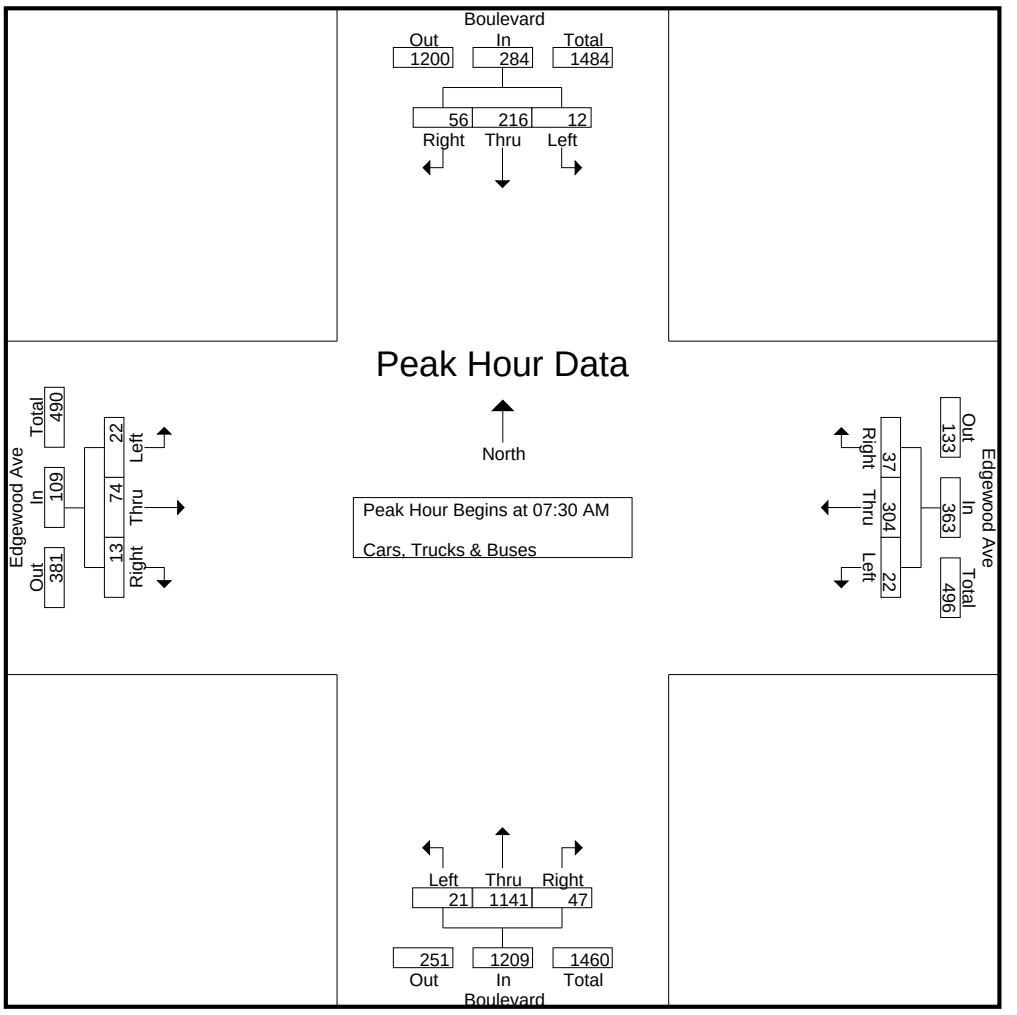
TMC Data

File Name : 24020012
Site Code : 24020012
Start Date : 10/24/2007
Page No : 2

	Boulevard Northbound				Boulevard Southbound				Edgewood Ave Eastbound				Edgewood Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	8	295	10	313	3	52	13	68	7	20	3	30	5	68	8	81	492
07:45 AM	4	283	11	298	2	44	13	59	4	17	4	25	3	73	7	83	465
08:00 AM	6	289	10	305	3	62	12	77	6	18	2	26	6	79	9	94	502
08:15 AM	3	274	16	293	4	58	18	80	5	19	4	28	8	84	13	105	506
Total Volume	21	1141	47	1209	12	216	56	284	22	74	13	109	22	304	37	363	1965
% App. Total	1.7	94.4	3.9		4.2	76.1	19.7		20.2	67.9	11.9		6.1	83.7	10.2		
PHF	.656	.967	.734	.966	.750	.871	.778	.888	.786	.925	.813	.908	.688	.905	.712	.864	.971



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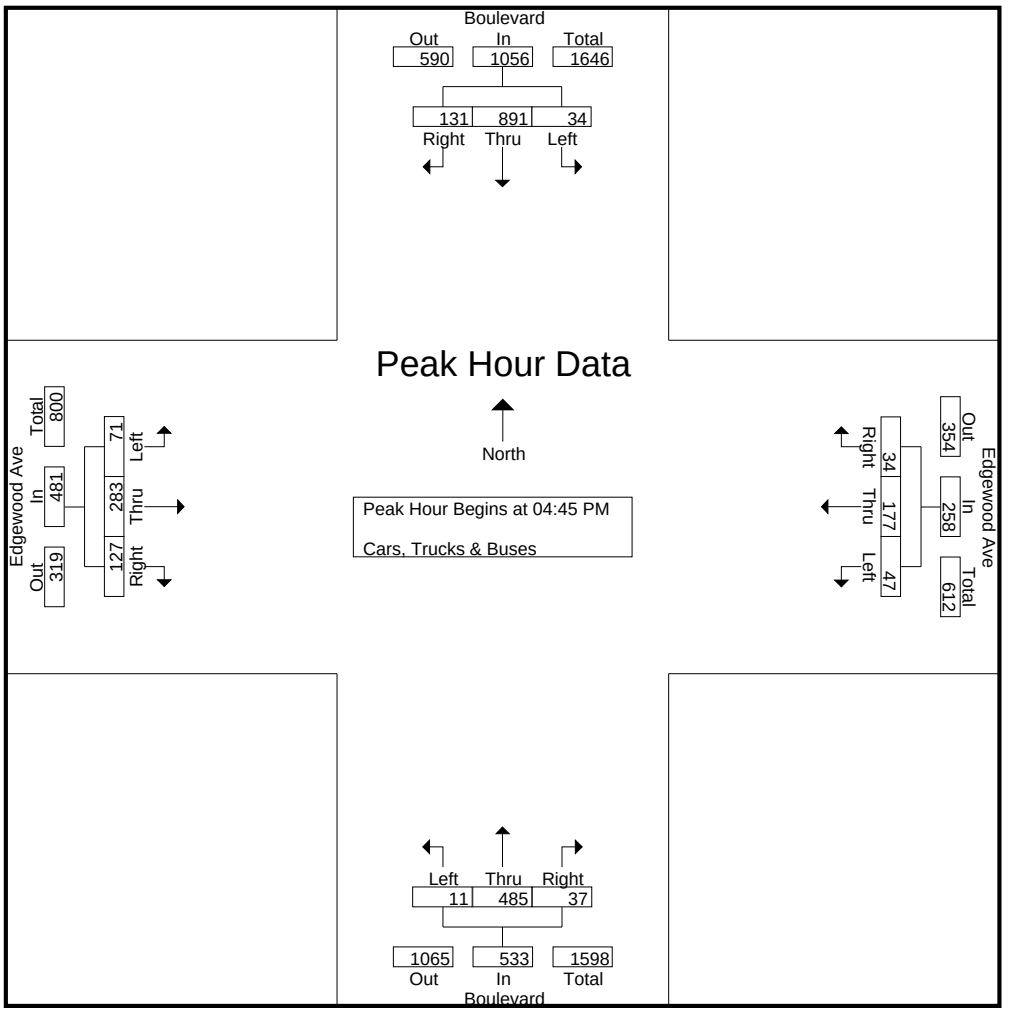
TMC Data

File Name : 24020012
Site Code : 24020012
Start Date : 10/24/2007
Page No : 3

	Boulevard Northbound				Boulevard Southbound				Edgewood Ave Eastbound				Edgewood Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	2	125	8	135	5	224	34	263	17	69	35	121	11	42	7	60	579
05:00 PM	2	119	9	130	13	229	29	271	18	65	32	115	13	49	9	71	587
05:15 PM	4	127	12	143	10	221	37	268	16	69	30	115	11	45	10	66	592
05:30 PM	3	114	8	125	6	217	31	254	20	80	30	130	12	41	8	61	570
Total Volume	11	485	37	533	34	891	131	1056	71	283	127	481	47	177	34	258	2328
% App. Total	2.1	91	6.9		3.2	84.4	12.4		14.8	58.8	26.4		18.2	68.6	13.2		
PHF	.688	.955	.771	.932	.654	.973	.885	.974	.888	.884	.907	.925	.904	.903	.850	.908	.983



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TMC Data

File Name : 24020013
Site Code : 24020013
Start Date : 10/24/2007
Page No : 1

Groups Printed- Cars, Trucks & Buses

	Northbound				Boulevard Southbound				Decatur St Eastbound				Decatur St Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	7	0	4	11	5	37	0	42	0	206	38	244	297
07:15 AM	0	0	0	0	9	0	5	14	7	41	0	48	0	217	45	262	324
07:30 AM	0	0	0	0	11	0	4	15	6	46	0	52	0	224	51	275	342
07:45 AM	0	0	0	0	14	0	7	21	9	48	0	57	0	256	56	312	390
Total	0	0	0	0	41	0	20	61	27	172	0	199	0	903	190	1093	1353
08:00 AM	0	0	0	0	12	0	5	17	11	53	0	64	0	287	64	351	432
08:15 AM	0	0	0	0	10	0	4	14	13	50	0	63	0	326	55	381	458
08:30 AM	0	0	0	0	11	0	8	19	12	53	0	65	0	315	59	374	458
08:45 AM	0	0	0	0	9	0	9	18	10	47	0	57	0	302	53	355	430
Total	0	0	0	0	42	0	26	68	46	203	0	249	0	1230	231	1461	1778
*** BREAK ***																	
04:00 PM	0	0	0	0	21	0	8	29	6	186	0	192	0	72	9	81	302
04:15 PM	0	0	0	0	23	0	7	30	8	194	0	202	0	76	10	86	318
04:30 PM	0	0	0	0	28	0	11	39	10	204	0	214	0	79	13	92	345
04:45 PM	0	0	0	0	24	0	6	30	14	216	0	230	0	82	11	93	353
Total	0	0	0	0	96	0	32	128	38	800	0	838	0	309	43	352	1318
05:00 PM	0	0	0	0	27	0	8	35	11	228	0	239	0	97	12	109	383
05:15 PM	0	0	0	0	32	0	9	41	13	241	0	254	0	84	14	98	393
05:30 PM	0	0	0	0	37	0	12	49	12	239	0	251	0	81	12	93	393
05:45 PM	0	0	0	0	33	0	10	43	9	205	0	214	0	73	9	82	339
Total	0	0	0	0	129	0	39	168	45	913	0	958	0	335	47	382	1508
Grand Total	0	0	0	0	308	0	117	425	156	2088	0	2244	0	2777	511	3288	5957
Apprch %	0	0	0		72.5	0	27.5		7	93	0		0	84.5	15.5		
Total %	0	0	0	0	5.2	0	2	7.1	2.6	35.1	0	37.7	0	46.6	8.6	55.2	

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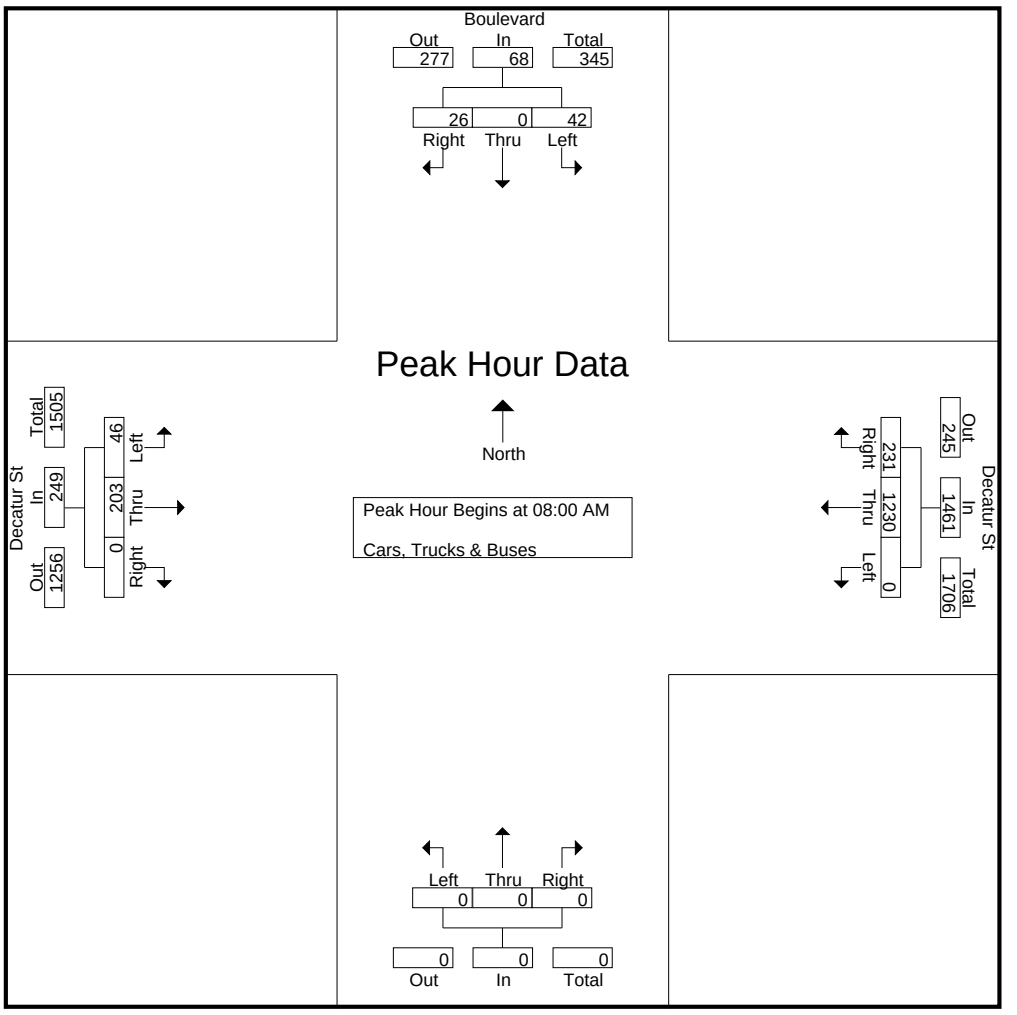
TMC Data

File Name : 24020013
Site Code : 24020013
Start Date : 10/24/2007
Page No : 2

	Northbound				Boulevard Southbound				Decatur St Eastbound				Decatur St Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	0	0	0	12	0	5	17	11	53	0	64	0	287	64	351	432
08:15 AM	0	0	0	0	10	0	4	14	13	50	0	63	0	326	55	381	458
08:30 AM	0	0	0	0	11	0	8	19	12	53	0	65	0	315	59	374	458
08:45 AM	0	0	0	0	9	0	9	18	10	47	0	57	0	302	53	355	430
Total Volume	0	0	0	0	42	0	26	68	46	203	0	249	0	1230	231	1461	1778
% App. Total	0	0	0		61.8	0	38.2		18.5	81.5	0		0	84.2	15.8		
PHF	.000	.000	.000	.000	.875	.000	.722	.895	.885	.958	.000	.958	.000	.943	.902	.959	.971



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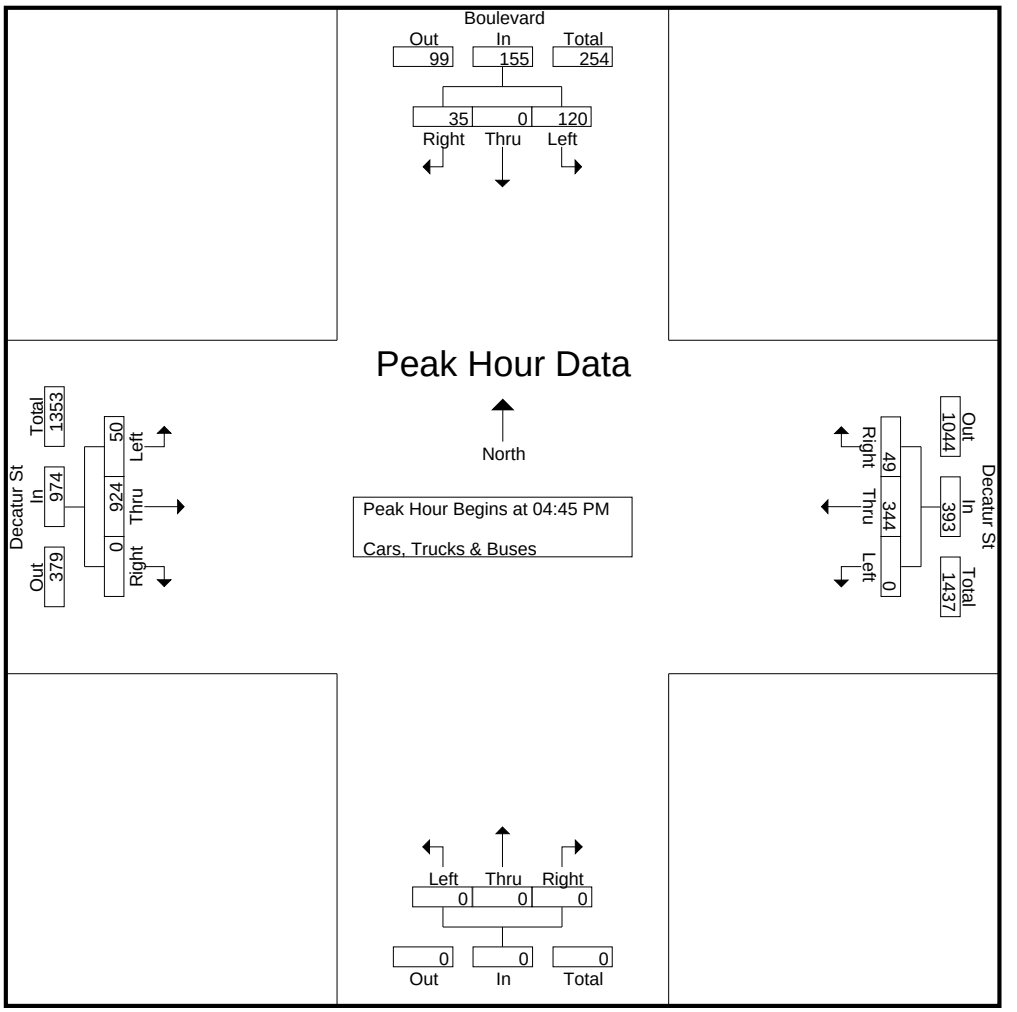
TMC Data

File Name : 24020013
Site Code : 24020013
Start Date : 10/24/2007
Page No : 3

	Northbound				Boulevard Southbound				Decatur St Eastbound				Decatur St Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	24	0	6	30	14	216	0	230	0	82	11	93	353
05:00 PM	0	0	0	0	27	0	8	35	11	228	0	239	0	97	12	109	383
05:15 PM	0	0	0	0	32	0	9	41	13	241	0	254	0	84	14	98	393
05:30 PM	0	0	0	0	37	0	12	49	12	239	0	251	0	81	12	93	393
Total Volume	0	0	0	0	120	0	35	155	50	924	0	974	0	344	49	393	1522
% App. Total	0	0	0		77.4	0	22.6		5.1	94.9	0		0	87.5	12.5		
PHF	.000	.000	.000	.000	.811	.000	.729	.791	.893	.959	.000	.959	.000	.887	.875	.901	.968



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TMC Data

File Name : 24020014
Site Code : 24020014
Start Date : 10/24/2007
Page No : 1

Groups Printed- Cars, Trucks & Buses

	Glen Iris Dr Northbound				Glen Iris Dr Southbound				Ralph McGill Blvd Eastbound				Ralph McGill Blvd Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	13	84	4	101	3	24	3	30	3	11	4	18	3	77	6	86	235
07:15 AM	15	76	4	95	2	31	1	34	4	14	3	21	4	81	8	93	243
07:30 AM	16	81	5	102	3	36	2	41	6	12	4	22	6	83	9	98	263
07:45 AM	15	98	3	116	2	41	7	50	3	15	4	22	7	86	12	105	293
Total	59	339	16	414	10	132	13	155	16	52	15	83	20	327	35	382	1034
08:00 AM	17	106	1	124	2	46	13	61	4	12	7	23	7	89	11	107	315
08:15 AM	16	98	4	118	2	42	10	54	7	14	3	24	8	86	6	100	296
08:30 AM	28	99	1	128	1	41	7	49	6	13	3	22	8	75	8	91	290
08:45 AM	16	93	3	112	2	37	9	48	7	11	5	23	7	72	12	91	274
Total	77	396	9	482	7	166	39	212	24	50	18	92	30	322	37	389	1175
*** BREAK ***																	
04:00 PM	3	37	7	47	10	109	12	131	4	76	28	108	3	28	3	34	320
04:15 PM	5	40	9	54	9	114	15	138	5	79	31	115	1	34	6	41	348
04:30 PM	4	44	12	60	12	126	18	156	7	82	36	125	2	33	9	44	385
04:45 PM	3	45	17	65	15	119	23	157	8	87	39	134	2	29	7	38	394
Total	15	166	45	226	46	468	68	582	24	324	134	482	8	124	25	157	1447
05:00 PM	5	48	14	67	11	125	19	155	5	97	36	138	3	24	2	29	389
05:15 PM	2	47	9	58	12	127	20	159	5	88	44	137	2	36	9	47	401
05:30 PM	1	46	7	54	15	124	16	155	6	85	38	129	2	35	6	43	381
05:45 PM	2	42	8	52	13	119	17	149	4	67	34	105	6	28	2	36	342
Total	10	183	38	231	51	495	72	618	20	337	152	509	13	123	19	155	1513
Grand Total	161	1084	108	1353	114	1261	192	1567	84	763	319	1166	71	896	116	1083	5169
Apprch %	11.9	80.1	8		7.3	80.5	12.3		7.2	65.4	27.4		6.6	82.7	10.7		
Total %	3.1	21	2.1	26.2	2.2	24.4	3.7	30.3	1.6	14.8	6.2	22.6	1.4	17.3	2.2	21	

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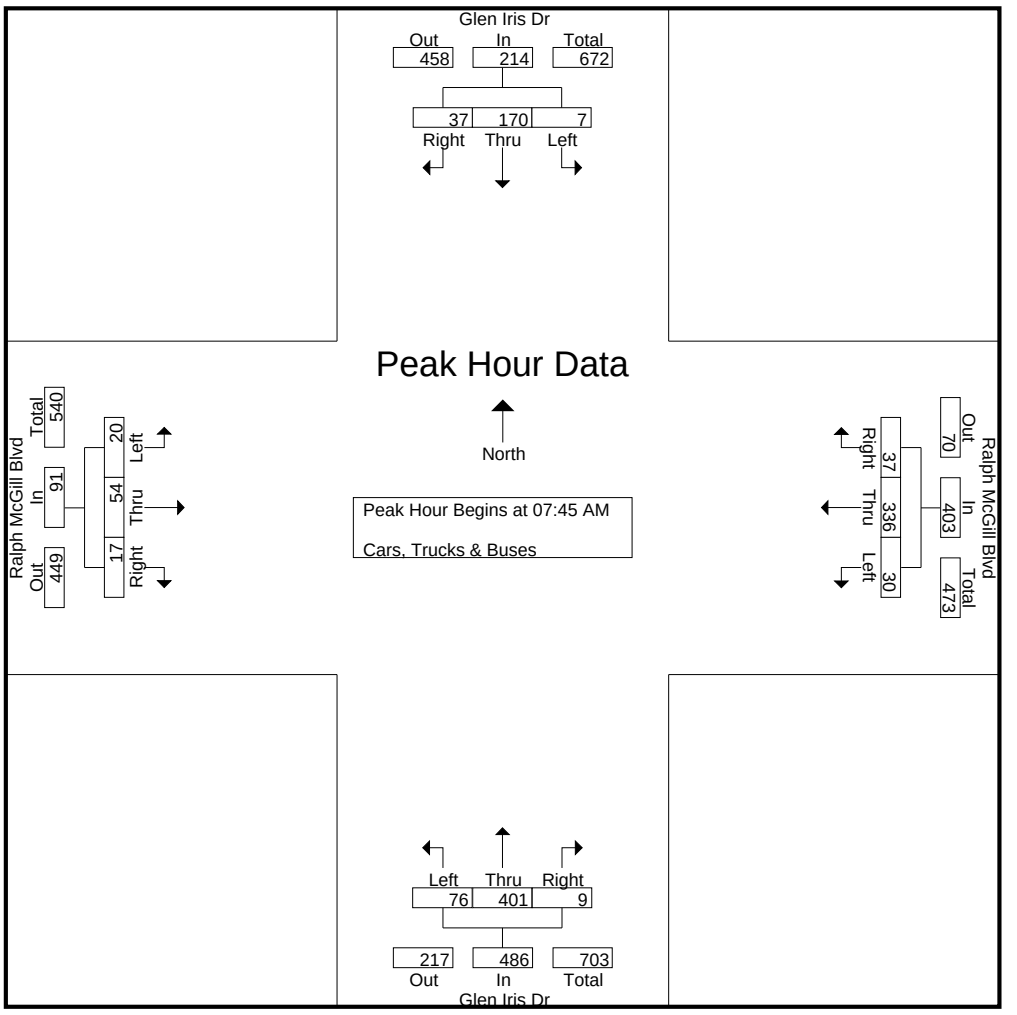
TMC Data

File Name : 24020014
Site Code : 24020014
Start Date : 10/24/2007
Page No : 2

	Glen Iris Dr Northbound				Glen Iris Dr Southbound				Ralph McGill Blvd Eastbound				Ralph McGill Blvd Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	15	98	3	116	2	41	7	50	3	15	4	22	7	86	12	105	293
08:00 AM	17	106	1	124	2	46	13	61	4	12	7	23	7	89	11	107	315
08:15 AM	16	98	4	118	2	42	10	54	7	14	3	24	8	86	6	100	296
08:30 AM	28	99	1	128	1	41	7	49	6	13	3	22	8	75	8	91	290
Total Volume	76	401	9	486	7	170	37	214	20	54	17	91	30	336	37	403	1194
% App. Total	15.6	82.5	1.9		3.3	79.4	17.3		22	59.3	18.7		7.4	83.4	9.2		
PHF	.679	.946	.563	.949	.875	.924	.712	.877	.714	.900	.607	.948	.938	.944	.771	.942	.948



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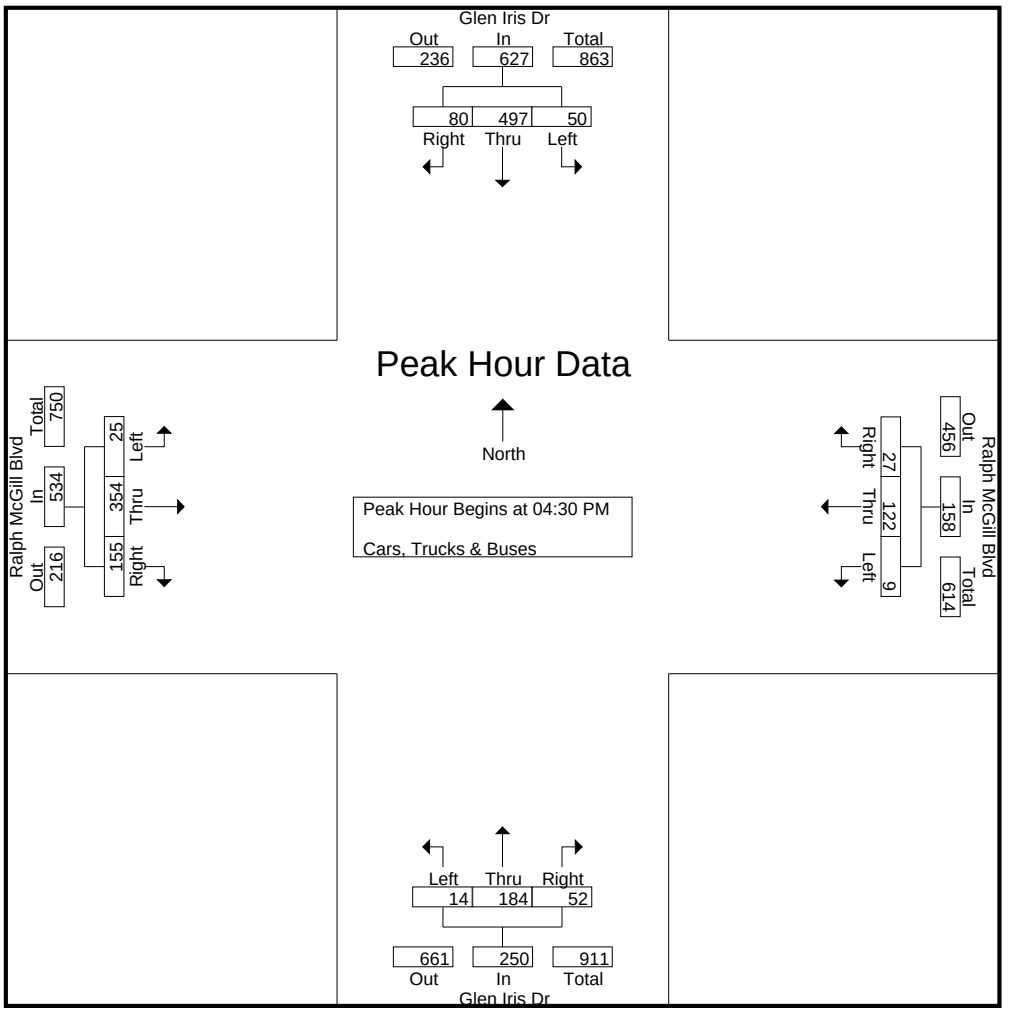
TMC Data

File Name : 24020014
Site Code : 24020014
Start Date : 10/24/2007
Page No : 3

	Glen Iris Dr Northbound				Glen Iris Dr Southbound				Ralph McGill Blvd Eastbound				Ralph McGill Blvd Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	4	44	12	60	12	126	18	156	7	82	36	125	2	33	9	44	385
04:45 PM	3	45	17	65	15	119	23	157	8	87	39	134	2	29	7	38	394
05:00 PM	5	48	14	67	11	125	19	155	5	97	36	138	3	24	2	29	389
05:15 PM	2	47	9	58	12	127	20	159	5	88	44	137	2	36	9	47	401
Total Volume	14	184	52	250	50	497	80	627	25	354	155	534	9	122	27	158	1569
% App. Total	5.6	73.6	20.8		8	79.3	12.8		4.7	66.3	29		5.7	77.2	17.1		
PHF	.700	.958	.765	.933	.833	.978	.870	.986	.781	.912	.881	.967	.750	.847	.750	.840	.978



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TMC Data

File Name : 24020015
Site Code : 24020015
Start Date : 10/23/2007
Page No : 1

Groups Printed- Cars, Trucks & Buses

	Freedom Pkwy Northbound				Freedom Pkwy Southbound				Ralph McGill Blvd Eastbound				E Freedom Pkwy Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	7	64	0	71	0	97	15	112	8	0	15	23	148	31	25	204	410
07:15 AM	9	71	0	80	0	104	18	122	10	0	19	29	163	35	28	226	457
07:30 AM	8	76	0	84	0	118	21	139	11	0	21	32	175	45	31	251	506
07:45 AM	10	97	0	107	0	137	25	162	14	0	24	38	182	53	33	268	575
Total	34	308	0	342	0	456	79	535	43	0	79	122	668	164	117	949	1948
08:00 AM	11	75	0	86	0	123	23	146	12	0	28	40	194	43	39	276	548
08:15 AM	13	74	0	87	0	116	24	140	14	0	25	39	186	41	34	261	527
08:30 AM	11	83	0	94	0	108	22	130	13	0	22	35	172	33	27	232	491
08:45 AM	10	78	0	88	0	103	17	120	10	0	20	30	164	26	23	213	451
Total	45	310	0	355	0	450	86	536	49	0	95	144	716	143	123	982	2017
*** BREAK ***																	
04:00 PM	12	123	0	135	0	139	14	153	25	0	33	58	89	13	10	112	458
04:15 PM	14	128	0	142	0	142	16	158	27	0	38	65	92	16	12	120	485
04:30 PM	17	132	0	149	0	156	19	175	31	0	42	73	105	15	14	134	531
04:45 PM	14	139	0	153	0	167	17	184	23	0	45	68	97	16	15	128	533
Total	57	522	0	579	0	604	66	670	106	0	158	264	383	60	51	494	2007
05:00 PM	18	146	0	164	0	158	16	174	29	0	49	78	93	18	13	124	540
05:15 PM	16	143	0	159	0	154	19	173	29	0	51	80	87	19	16	122	534
05:30 PM	20	140	0	160	0	149	16	165	31	0	46	77	83	15	19	117	519
05:45 PM	18	134	0	152	0	143	13	156	28	0	55	83	79	12	17	108	499
Total	72	563	0	635	0	604	64	668	117	0	201	318	342	64	65	471	2092
Grand Total	208	1703	0	1911	0	2114	295	2409	315	0	533	848	2109	431	356	2896	8064
Apprch %	10.9	89.1	0		0	87.8	12.2		37.1	0	62.9		72.8	14.9	12.3		
Total %	2.6	21.1	0	23.7	0	26.2	3.7	29.9	3.9	0	6.6	10.5	26.2	5.3	4.4	35.9	

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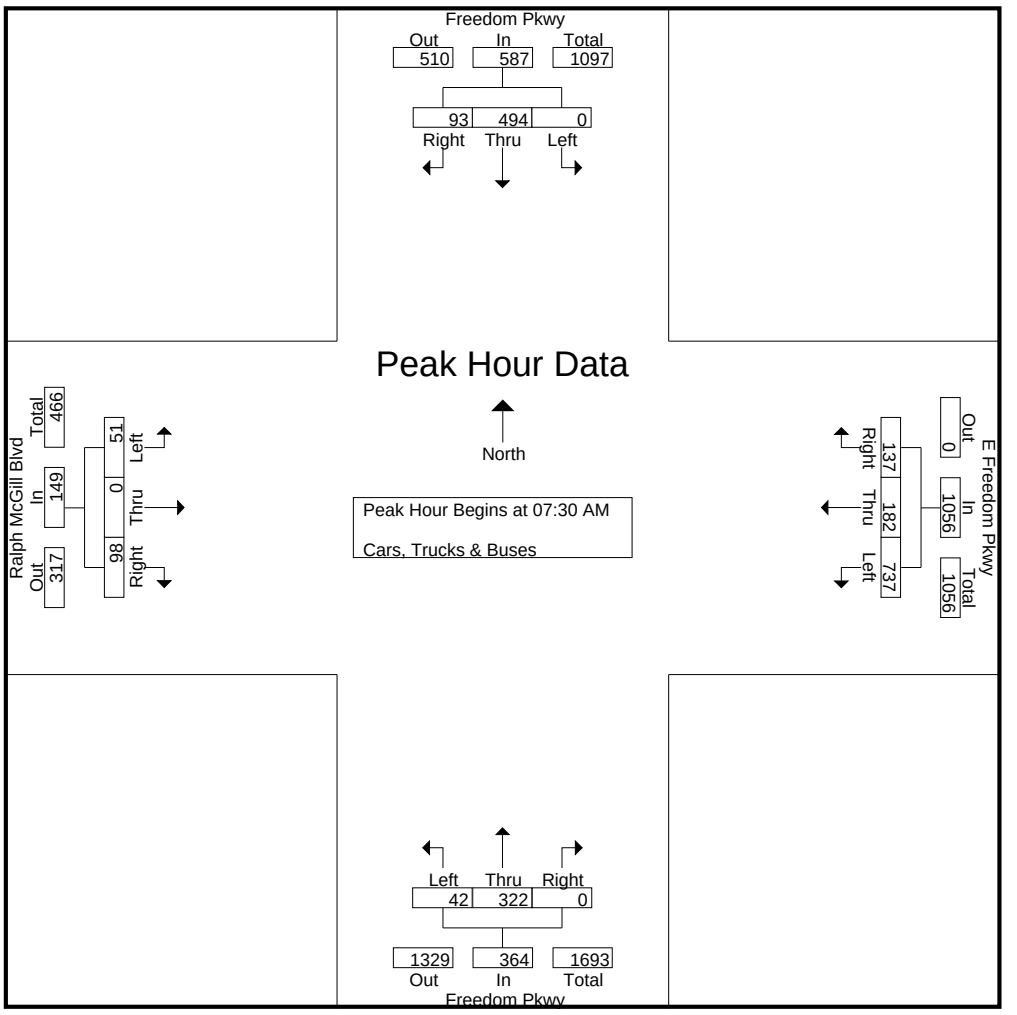
TMC Data

File Name : 24020015
Site Code : 24020015
Start Date : 10/23/2007
Page No : 2

	Freedom Pkwy Northbound				Freedom Pkwy Southbound				Ralph McGill Blvd Eastbound				E Freedom Pkwy Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	8	76	0	84	0	118	21	139	11	0	21	32	175	45	31	251	506
07:45 AM	10	97	0	107	0	137	25	162	14	0	24	38	182	53	33	268	575
08:00 AM	11	75	0	86	0	123	23	146	12	0	28	40	194	43	39	276	548
08:15 AM	13	74	0	87	0	116	24	140	14	0	25	39	186	41	34	261	527
Total Volume	42	322	0	364	0	494	93	587	51	0	98	149	737	182	137	1056	2156
% App. Total	11.5	88.5	0		0	84.2	15.8		34.2	0	65.8		69.8	17.2	13		
PHF	.808	.830	.000	.850	.000	.901	.930	.906	.911	.000	.875	.931	.950	.858	.878	.957	.937



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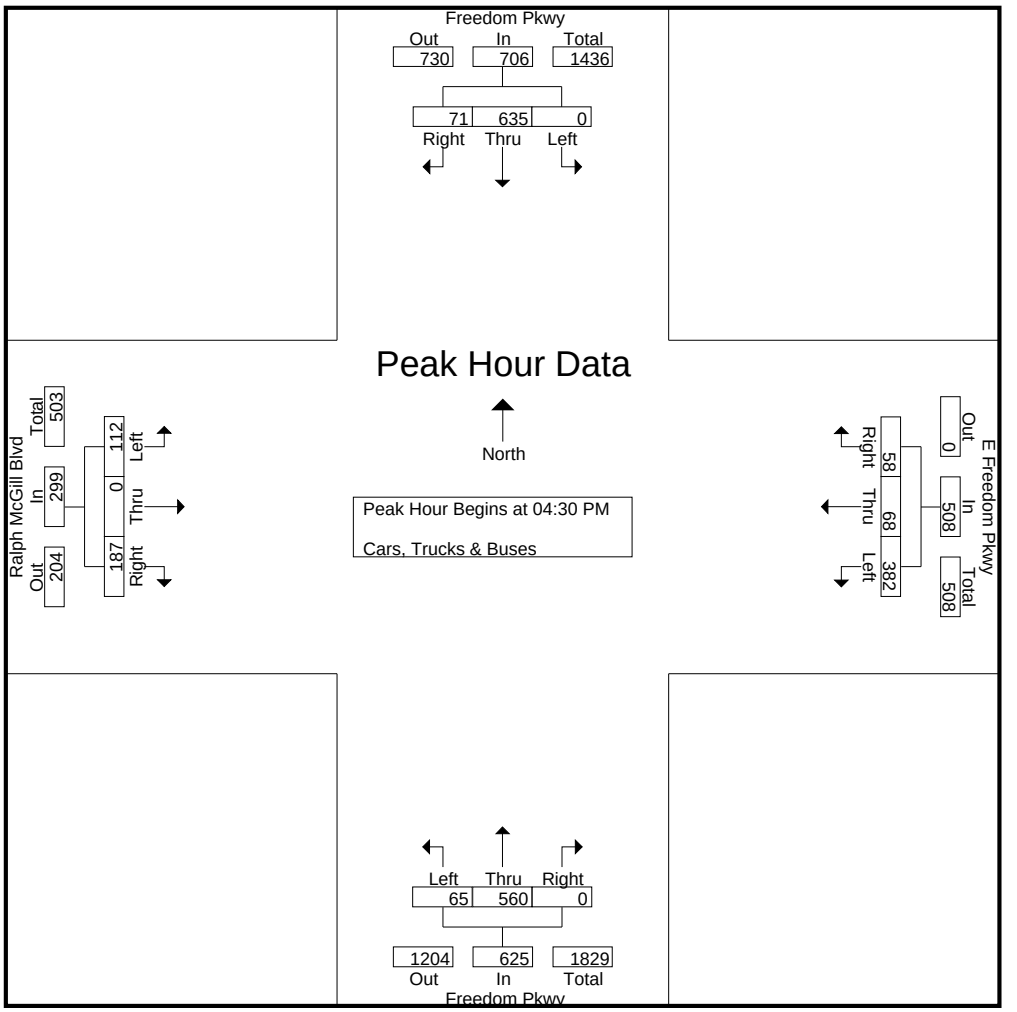
TMC Data

File Name : 24020015
Site Code : 24020015
Start Date : 10/23/2007
Page No : 3

	Freedom Pkwy Northbound				Freedom Pkwy Southbound				Ralph McGill Blvd Eastbound				E Freedom Pkwy Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	17	132	0	149	0	156	19	175	31	0	42	73	105	15	14	134	531
04:45 PM	14	139	0	153	0	167	17	184	23	0	45	68	97	16	15	128	533
05:00 PM	18	146	0	164	0	158	16	174	29	0	49	78	93	18	13	124	540
05:15 PM	16	143	0	159	0	154	19	173	29	0	51	80	87	19	16	122	534
Total Volume	65	560	0	625	0	635	71	706	112	0	187	299	382	68	58	508	2138
% App. Total	10.4	89.6	0		0	89.9	10.1		37.5	0	62.5		75.2	13.4	11.4		
PHF	.903	.959	.000	.953	.000	.951	.934	.959	.903	.000	.917	.934	.910	.895	.906	.948	.990



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TMC Data

File Name : 24020016
Site Code : 24020016
Start Date : 10/23/2007
Page No : 1

Groups Printed- Cars, Trucks & Buses

	N Highland Ave Northbound				N Highland Ave Southbound				E Freedom Pkwy Eastbound				E Freedom Pkwy Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	46	67	7	120	7	33	25	65	6	44	4	54	4	146	12	162	401
07:15 AM	52	81	11	144	9	37	28	74	8	47	3	58	6	153	15	174	450
07:30 AM	65	86	14	165	12	42	31	85	8	51	4	63	6	164	18	188	501
07:45 AM	71	110	10	191	8	47	35	90	9	55	6	70	8	169	23	200	551
Total	234	344	42	620	36	159	119	314	31	197	17	245	24	632	68	724	1903
08:00 AM	87	114	8	209	9	65	32	106	11	59	5	75	4	177	28	209	599
08:15 AM	79	103	6	188	5	61	39	105	12	56	6	74	5	158	23	186	553
08:30 AM	67	84	7	158	6	53	33	92	9	51	5	65	5	139	20	164	479
08:45 AM	62	71	5	138	6	46	26	78	7	47	4	58	3	132	17	152	426
Total	295	372	26	693	26	225	130	381	39	213	20	272	17	606	88	711	2057
*** BREAK ***																	
04:00 PM	21	68	24	113	14	83	23	120	30	135	21	186	5	73	16	94	513
04:15 PM	18	70	28	116	15	86	26	127	32	142	23	197	6	76	19	101	541
04:30 PM	20	73	33	126	17	92	28	137	34	148	26	208	9	81	22	112	583
04:45 PM	23	76	37	136	19	95	31	145	37	159	29	225	5	84	18	107	613
Total	82	287	122	491	65	356	108	529	133	584	99	816	25	314	75	414	2250
05:00 PM	27	83	32	142	16	98	29	143	39	149	24	212	8	79	19	106	603
05:15 PM	24	79	26	129	18	92	25	135	36	153	28	217	5	72	14	91	572
05:30 PM	20	74	23	117	17	87	23	127	31	147	22	200	4	69	16	89	533
05:45 PM	22	71	19	112	19	84	24	127	27	142	24	193	6	67	13	86	518
Total	93	307	100	500	70	361	101	532	133	591	98	822	23	287	62	372	2226
Grand Total	704	1310	290	2304	197	1101	458	1756	336	1585	234	2155	89	1839	293	2221	8436
Apprch %	30.6	56.9	12.6		11.2	62.7	26.1		15.6	73.5	10.9		4	82.8	13.2		
Total %	8.3	15.5	3.4	27.3	2.3	13.1	5.4	20.8	4	18.8	2.8	25.5	1.1	21.8	3.5	26.3	

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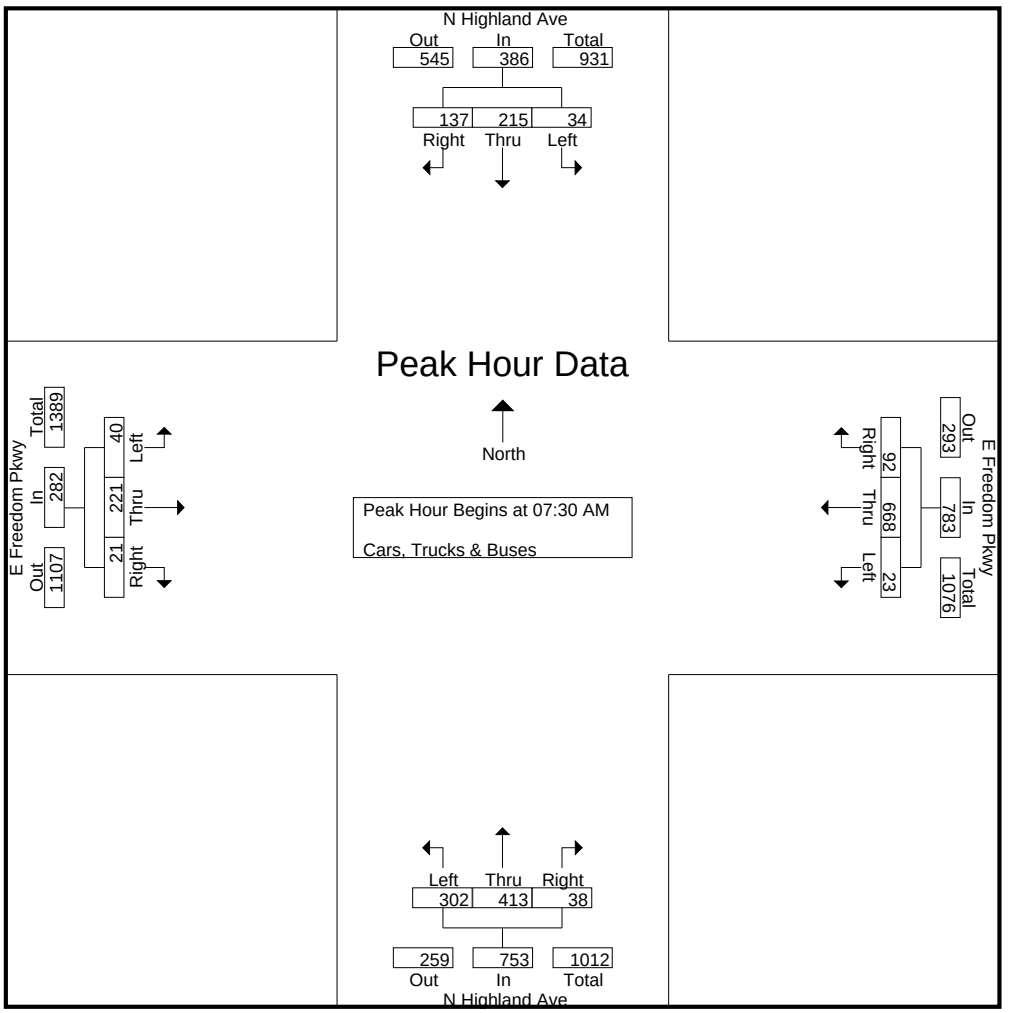
TMC Data

File Name : 24020016
Site Code : 24020016
Start Date : 10/23/2007
Page No : 2

	N Highland Ave Northbound				N Highland Ave Southbound				E Freedom Pkwy Eastbound				E Freedom Pkwy Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	65	86	14	165	12	42	31	85	8	51	4	63	6	164	18	188	501
07:45 AM	71	110	10	191	8	47	35	90	9	55	6	70	8	169	23	200	551
08:00 AM	87	114	8	209	9	65	32	106	11	59	5	75	4	177	28	209	599
08:15 AM	79	103	6	188	5	61	39	105	12	56	6	74	5	158	23	186	553
Total Volume	302	413	38	753	34	215	137	386	40	221	21	282	23	668	92	783	2204
% App. Total	40.1	54.8	5		8.8	55.7	35.5		14.2	78.4	7.4		2.9	85.3	11.7		
PHF	.868	.906	.679	.901	.708	.827	.878	.910	.833	.936	.875	.940	.719	.944	.821	.937	.920



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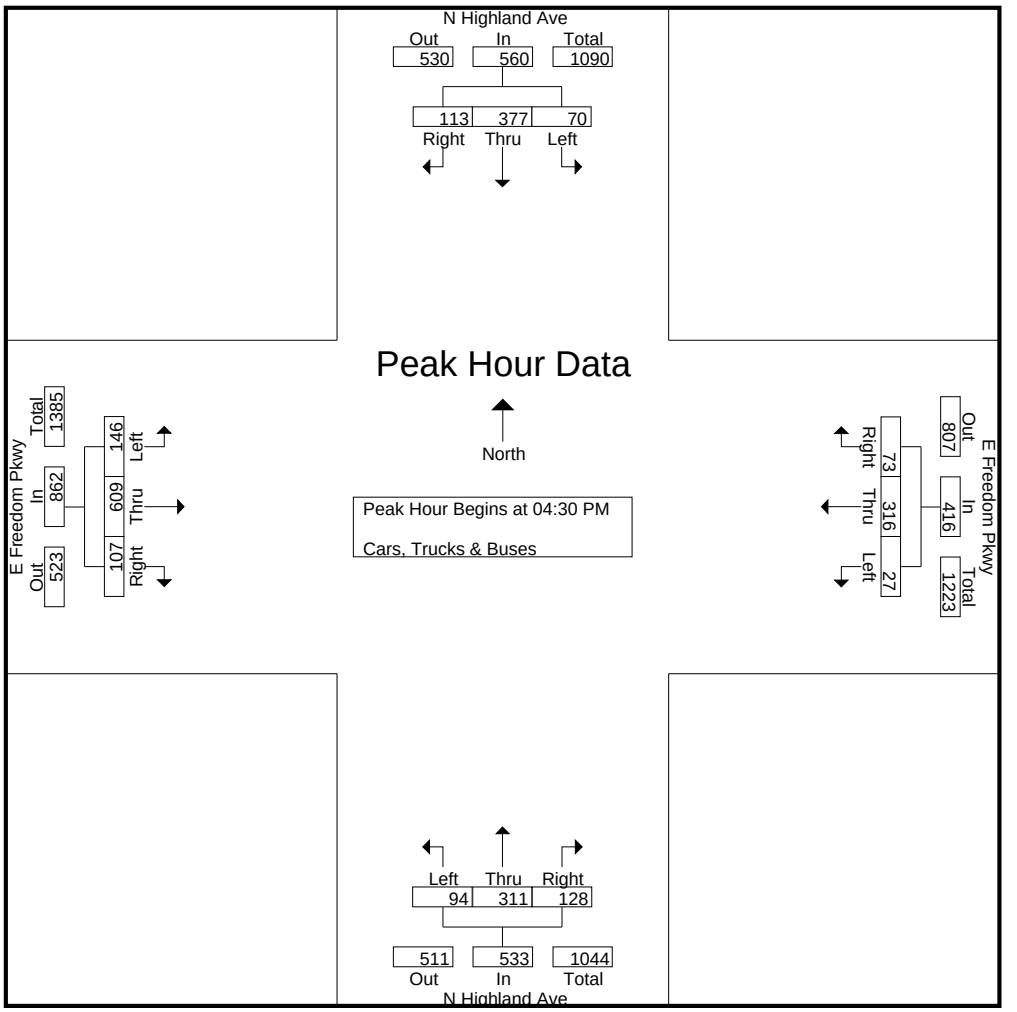
TMC Data

File Name : 24020016
Site Code : 24020016
Start Date : 10/23/2007
Page No : 3

	N Highland Ave Northbound				N Highland Ave Southbound				E Freedom Pkwy Eastbound				E Freedom Pkwy Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	20	73	33	126	17	92	28	137	34	148	26	208	9	81	22	112	583
04:45 PM	23	76	37	136	19	95	31	145	37	159	29	225	5	84	18	107	613
05:00 PM	27	83	32	142	16	98	29	143	39	149	24	212	8	79	19	106	603
05:15 PM	24	79	26	129	18	92	25	135	36	153	28	217	5	72	14	91	572
Total Volume	94	311	128	533	70	377	113	560	146	609	107	862	27	316	73	416	2371
% App. Total	17.6	58.3	24		12.5	67.3	20.2		16.9	70.6	12.4		6.5	76	17.5		
PHF	.870	.937	.865	.938	.921	.962	.911	.966	.936	.958	.922	.958	.750	.940	.830	.929	.967



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TMC Data

File Name : 24020017
Site Code : 24020017
Start Date : 10/23/2007
Page No : 1

Groups Printed- Cars, Trucks & Buses

	Moreland Ave Northbound				Moreland Ave Southbound				E Freedom Pkwy Eastbound				Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	104	211	0	315	0	92	64	156	32	0	27	59	0	0	0	0	530
07:15 AM	111	215	0	326	0	96	68	164	36	0	32	68	0	0	0	0	558
07:30 AM	117	223	0	340	0	107	76	183	39	0	35	74	0	0	0	0	597
07:45 AM	127	234	0	361	0	112	81	193	43	0	38	81	0	0	0	0	635
Total	459	883	0	1342	0	407	289	696	150	0	132	282	0	0	0	0	2320
08:00 AM	123	223	0	346	0	103	78	181	38	0	40	78	0	0	0	0	605
08:15 AM	118	216	0	334	0	98	85	183	34	0	37	71	0	0	0	0	588
08:30 AM	103	207	0	310	0	93	67	160	29	0	33	62	0	0	0	0	532
08:45 AM	87	194	0	281	0	87	58	145	26	0	28	54	0	0	0	0	480
Total	431	840	0	1271	0	381	288	669	127	0	138	265	0	0	0	0	2205
*** BREAK ***																	
04:00 PM	53	148	0	201	0	245	48	293	66	0	119	185	0	0	0	0	679
04:15 PM	56	156	0	212	0	251	50	301	73	0	127	200	0	0	0	0	713
04:30 PM	62	163	0	225	0	269	57	326	76	0	134	210	0	0	0	0	761
04:45 PM	59	175	0	234	0	286	59	345	87	0	123	210	0	0	0	0	789
Total	230	642	0	872	0	1051	214	1265	302	0	503	805	0	0	0	0	2942
05:00 PM	57	167	0	224	0	273	56	329	82	0	128	210	0	0	0	0	763
05:15 PM	49	146	0	195	0	267	53	320	84	0	119	203	0	0	0	0	718
05:30 PM	44	141	0	185	0	259	44	303	75	0	114	189	0	0	0	0	677
05:45 PM	41	135	0	176	0	246	35	281	71	0	111	182	0	0	0	0	639
Total	191	589	0	780	0	1045	188	1233	312	0	472	784	0	0	0	0	2797
Grand Total	1311	2954	0	4265	0	2884	979	3863	891	0	1245	2136	0	0	0	0	10264
Apprch %	30.7	69.3	0		0	74.7	25.3		41.7	0	58.3		0	0	0		
Total %	12.8	28.8	0	41.6	0	28.1	9.5	37.6	8.7	0	12.1	20.8	0	0	0	0	

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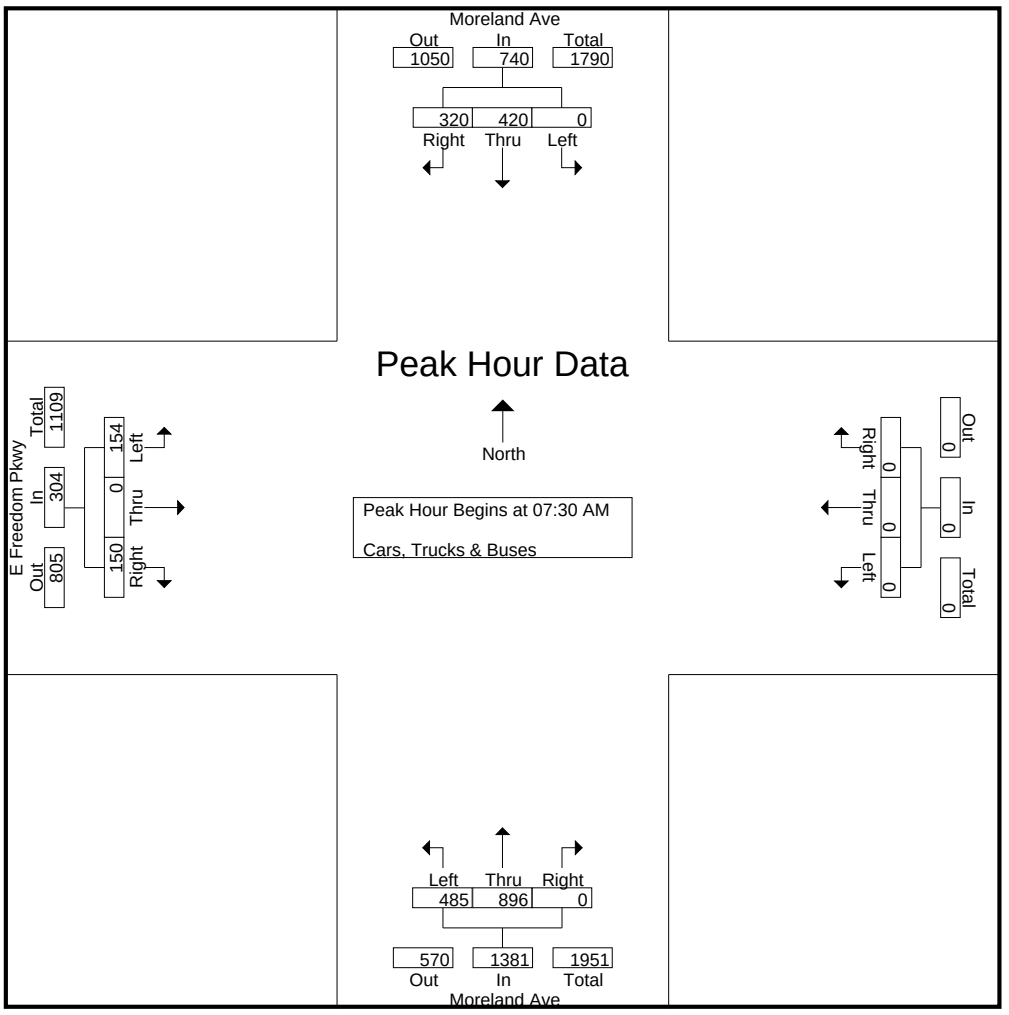
TMC Data

File Name : 24020017
Site Code : 24020017
Start Date : 10/23/2007
Page No : 2

	Moreland Ave Northbound				Moreland Ave Southbound				E Freedom Pkwy Eastbound				Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	117	223	0	340	0	107	76	183	39	0	35	74	0	0	0	0	597
07:45 AM	127	234	0	361	0	112	81	193	43	0	38	81	0	0	0	0	635
08:00 AM	123	223	0	346	0	103	78	181	38	0	40	78	0	0	0	0	605
08:15 AM	118	216	0	334	0	98	85	183	34	0	37	71	0	0	0	0	588
Total Volume	485	896	0	1381	0	420	320	740	154	0	150	304	0	0	0	0	2425
% App. Total	35.1	64.9	0		0	56.8	43.2		50.7	0	49.3		0	0	0		
PHF	.955	.957	.000	.956	.000	.938	.941	.959	.895	.000	.938	.938	.000	.000	.000	.000	.955



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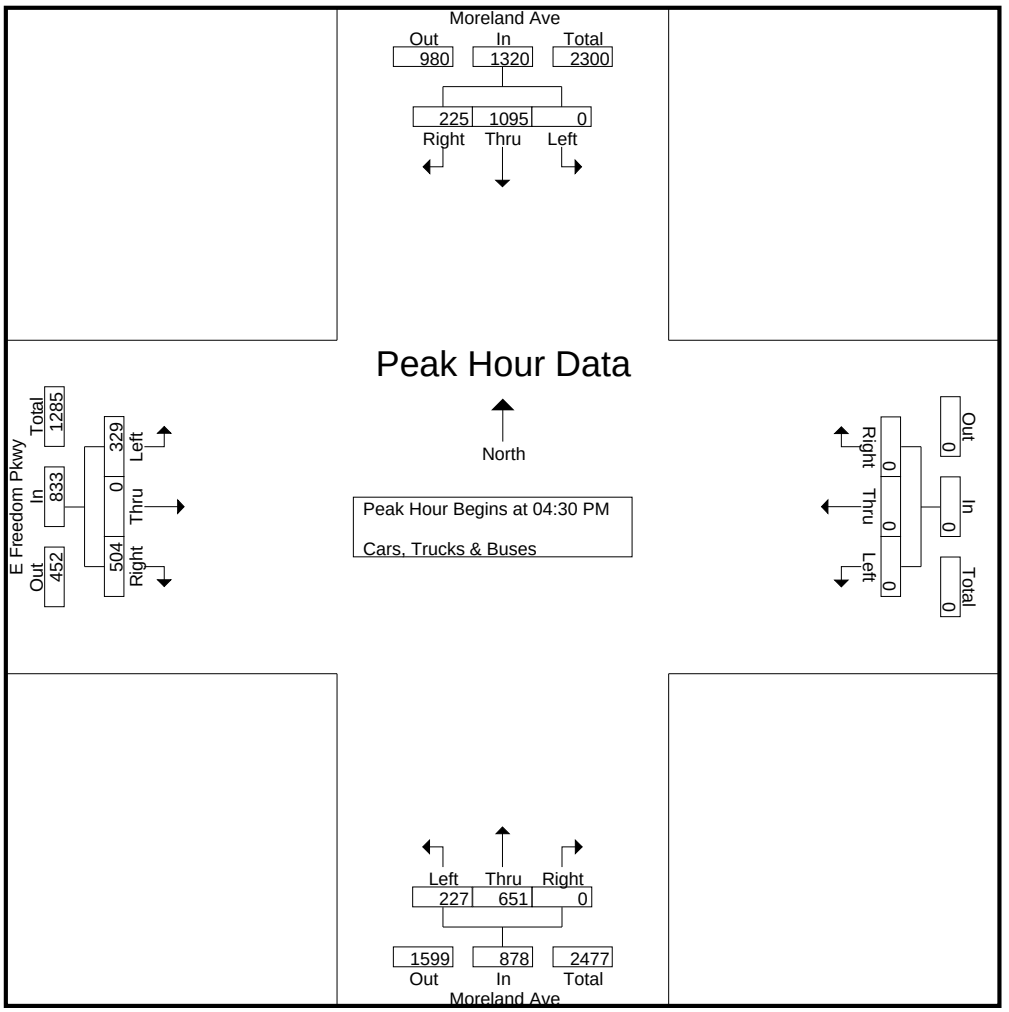
TMC Data

File Name : 24020017
Site Code : 24020017
Start Date : 10/23/2007
Page No : 3

	Moreland Ave Northbound				Moreland Ave Southbound				E Freedom Pkwy Eastbound				Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	62	163	0	225	0	269	57	326	76	0	134	210	0	0	0	0	761
04:45 PM	59	175	0	234	0	286	59	345	87	0	123	210	0	0	0	0	789
05:00 PM	57	167	0	224	0	273	56	329	82	0	128	210	0	0	0	0	763
05:15 PM	49	146	0	195	0	267	53	320	84	0	119	203	0	0	0	0	718
Total Volume	227	651	0	878	0	1095	225	1320	329	0	504	833	0	0	0	0	3031
% App. Total	25.9	74.1	0		0	83	17		39.5	0	60.5		0	0	0		
PHF	.915	.930	.000	.938	.000	.957	.953	.957	.945	.000	.940	.992	.000	.000	.000	.000	.960



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TMC Data

File Name : 24020018-1
Site Code : 24020018
Start Date : 10/24/2007
Page No : 1

Groups Printed- Cars, Trucks & Buses

	Northbound				Moreland Ave SB Ramp Southbound				Dekalb Ave Eastbound				Dekalb Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	10	0	15	25	6	46	0	52	0	221	21	242	319
07:15 AM	0	0	0	0	12	0	18	30	8	50	0	58	0	225	25	250	338
07:30 AM	0	0	0	0	15	0	22	37	11	57	0	68	0	247	31	278	383
07:45 AM	0	0	0	0	18	0	26	44	9	63	0	72	0	284	27	311	427
Total	0	0	0	0	55	0	81	136	34	216	0	250	0	977	104	1081	1467
08:00 AM	0	0	0	0	19	0	31	50	14	61	0	75	0	328	32	360	485
08:15 AM	0	0	0	0	17	0	28	45	11	65	0	76	0	314	35	349	470
08:30 AM	0	0	0	0	18	0	25	43	9	61	0	70	0	296	32	328	441
08:45 AM	0	0	0	0	15	0	23	38	7	58	0	65	0	273	26	299	402
Total	0	0	0	0	69	0	107	176	41	245	0	286	0	1211	125	1336	1798
*** BREAK ***																	
04:00 PM	0	0	0	0	36	0	10	46	21	224	0	245	0	78	24	102	393
04:15 PM	0	0	0	0	39	0	12	51	23	228	0	251	0	84	22	106	408
04:30 PM	0	0	0	0	42	0	11	53	26	237	0	263	0	89	26	115	431
04:45 PM	0	0	0	0	45	0	13	58	28	244	0	272	0	96	31	127	457
Total	0	0	0	0	162	0	46	208	98	933	0	1031	0	347	103	450	1689
05:00 PM	0	0	0	0	48	0	15	63	30	267	0	297	0	85	35	120	480
05:15 PM	0	0	0	0	57	0	18	75	27	250	0	277	0	91	31	122	474
05:30 PM	0	0	0	0	53	0	16	69	25	243	0	268	0	82	33	115	452
05:45 PM	0	0	0	0	50	0	13	63	22	234	0	256	0	76	27	103	422
Total	0	0	0	0	208	0	62	270	104	994	0	1098	0	334	126	460	1828
Grand Total	0	0	0	0	494	0	296	790	277	2388	0	2665	0	2869	458	3327	6782
Apprch %	0	0	0		62.5	0	37.5		10.4	89.6	0		0	86.2	13.8		
Total %	0	0	0	0	7.3	0	4.4	11.6	4.1	35.2	0	39.3	0	42.3	6.8	49.1	

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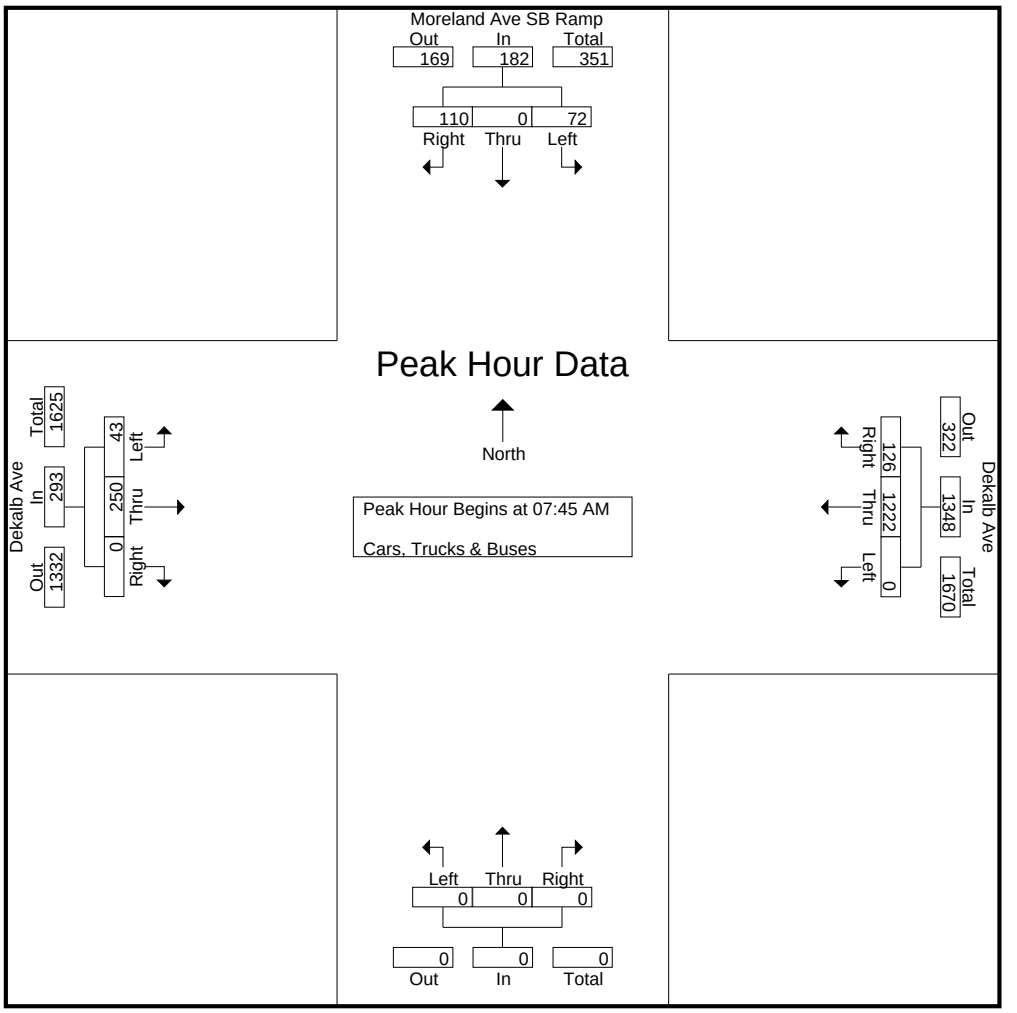
TMC Data

File Name : 24020018-1
Site Code : 24020018
Start Date : 10/24/2007
Page No : 2

	Northbound				Moreland Ave SB Ramp Southbound				Dekalb Ave Eastbound				Dekalb Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	0	0	0	18	0	26	44	9	63	0	72	0	284	27	311	427
08:00 AM	0	0	0	0	19	0	31	50	14	61	0	75	0	328	32	360	485
08:15 AM	0	0	0	0	17	0	28	45	11	65	0	76	0	314	35	349	470
08:30 AM	0	0	0	0	18	0	25	43	9	61	0	70	0	296	32	328	441
Total Volume	0	0	0	0	72	0	110	182	43	250	0	293	0	1222	126	1348	1823
% App. Total	0	0	0		39.6	0	60.4		14.7	85.3	0		0	90.7	9.3		
PHF	.000	.000	.000	.000	.947	.000	.887	.910	.768	.962	.000	.964	.000	.931	.900	.936	.940



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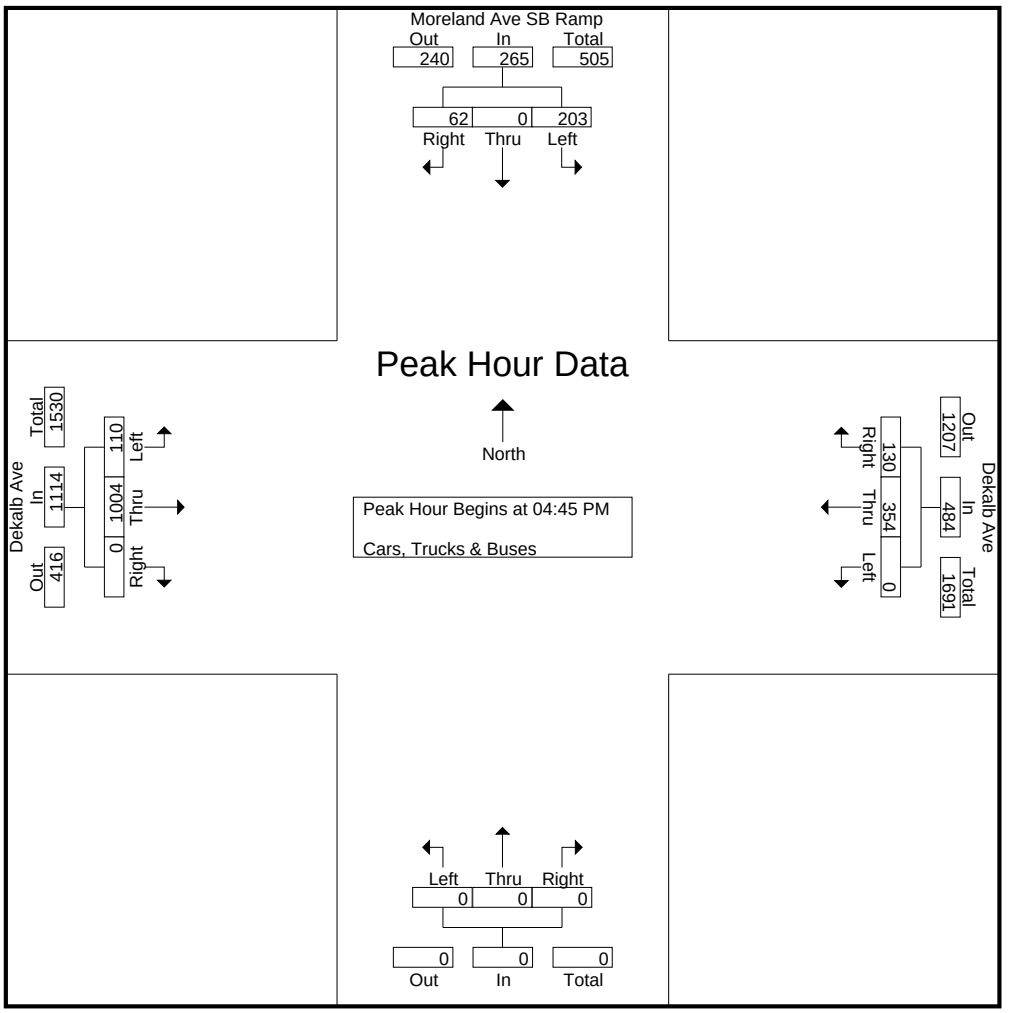
TMC Data

File Name : 24020018-1
Site Code : 24020018
Start Date : 10/24/2007
Page No : 3

	Northbound				Moreland Ave SB Ramp Southbound				Dekalb Ave Eastbound				Dekalb Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	45	0	13	58	28	244	0	272	0	96	31	127	457
05:00 PM	0	0	0	0	48	0	15	63	30	267	0	297	0	85	35	120	480
05:15 PM	0	0	0	0	57	0	18	75	27	250	0	277	0	91	31	122	474
05:30 PM	0	0	0	0	53	0	16	69	25	243	0	268	0	82	33	115	452
Total Volume	0	0	0	0	203	0	62	265	110	1004	0	1114	0	354	130	484	1863
% App. Total	0	0	0		76.6	0	23.4		9.9	90.1	0		0	73.1	26.9		
PHF	.000	.000	.000	.000	.890	.000	.861	.883	.917	.940	.000	.938	.000	.922	.929	.953	.970



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TMC Data

File Name : 24020018-2
Site Code : 24020018
Start Date : 10/24/2007
Page No : 1

Groups Printed- Cars, Trucks & Buses

	Northbound				Moreland Ave NB Ramp Southbound				Dekalb Ave Eastbound				Dekalb Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	5	0	11	16	3	64	0	67	0	221	17	238	321
07:15 AM	0	0	0	0	7	0	13	20	5	69	0	74	0	235	21	256	350
07:30 AM	0	0	0	0	8	0	10	18	7	74	0	81	0	256	24	280	379
07:45 AM	0	0	0	0	10	0	15	25	6	81	0	87	0	287	22	309	421
Total	0	0	0	0	30	0	49	79	21	288	0	309	0	999	84	1083	1471
08:00 AM	0	0	0	0	7	0	18	25	5	88	0	93	0	342	19	361	479
08:15 AM	0	0	0	0	8	0	15	23	8	83	0	91	0	327	26	353	467
08:30 AM	0	0	0	0	7	0	17	24	5	75	0	80	0	318	23	341	445
08:45 AM	0	0	0	0	9	0	19	28	6	73	0	79	0	294	22	316	423
Total	0	0	0	0	31	0	69	100	24	319	0	343	0	1281	90	1371	1814
*** BREAK ***																	
04:00 PM	0	0	0	0	15	0	10	25	10	253	0	263	0	96	14	110	398
04:15 PM	0	0	0	0	18	0	13	31	9	269	0	278	0	103	12	115	424
04:30 PM	0	0	0	0	20	0	11	31	12	274	0	286	0	112	15	127	444
04:45 PM	0	0	0	0	24	0	9	33	10	286	0	296	0	117	17	134	463
Total	0	0	0	0	77	0	43	120	41	1082	0	1123	0	428	58	486	1729
05:00 PM	0	0	0	0	21	1	12	34	13	297	0	310	0	108	19	127	471
05:15 PM	0	0	0	0	19	0	10	29	12	308	0	320	0	99	17	116	465
05:30 PM	0	0	0	0	17	0	12	29	14	287	0	301	0	93	12	105	435
05:45 PM	0	0	0	0	15	0	10	25	11	276	0	287	0	85	15	100	412
Total	0	0	0	0	72	1	44	117	50	1168	0	1218	0	385	63	448	1783
Grand Total	0	0	0	0	210	1	205	416	136	2857	0	2993	0	3093	295	3388	6797
Apprch %	0	0	0		50.5	0.2	49.3		4.5	95.5	0		0	91.3	8.7		
Total %	0	0	0	0	3.1	0	3	6.1	2	42	0	44	0	45.5	4.3	49.8	

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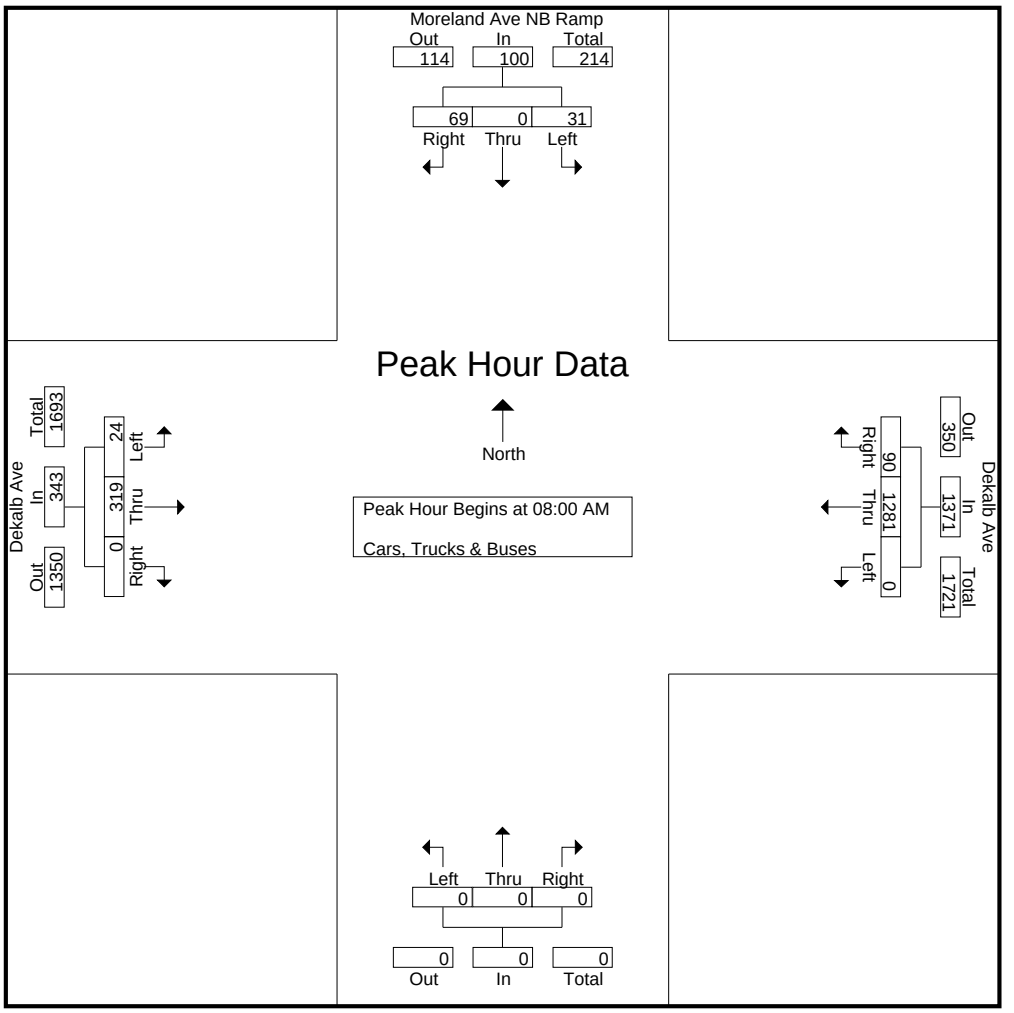
TMC Data

File Name : 24020018-2
Site Code : 24020018
Start Date : 10/24/2007
Page No : 2

	Northbound				Moreland Ave NB Ramp Southbound				Dekalb Ave Eastbound				Dekalb Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	0	0	0	7	0	18	25	5	88	0	93	0	342	19	361	479
08:15 AM	0	0	0	0	8	0	15	23	8	83	0	91	0	327	26	353	467
08:30 AM	0	0	0	0	7	0	17	24	5	75	0	80	0	318	23	341	445
08:45 AM	0	0	0	0	9	0	19	28	6	73	0	79	0	294	22	316	423
Total Volume	0	0	0	0	31	0	69	100	24	319	0	343	0	1281	90	1371	1814
% App. Total	0	0	0		31	0	69		7	93	0		0	93.4	6.6		
PHF	.000	.000	.000	.000	.861	.000	.908	.893	.750	.906	.000	.922	.000	.936	.865	.949	.947



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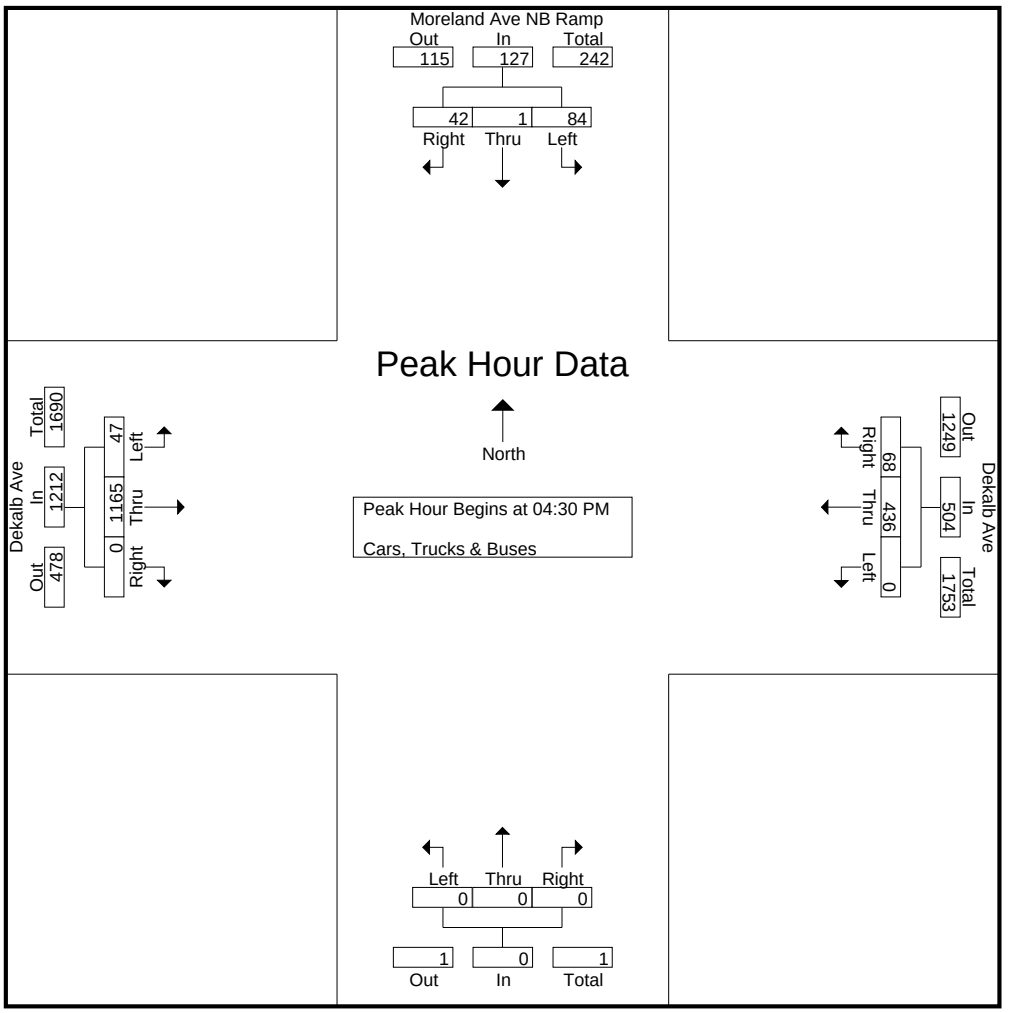
TMC Data

File Name : 24020018-2
Site Code : 24020018
Start Date : 10/24/2007
Page No : 3

	Northbound				Moreland Ave NB Ramp Southbound				Dekalb Ave Eastbound				Dekalb Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	0	0	20	0	11	31	12	274	0	286	0	112	15	127	444
04:45 PM	0	0	0	0	24	0	9	33	10	286	0	296	0	117	17	134	463
05:00 PM	0	0	0	0	21	1	12	34	13	297	0	310	0	108	19	127	471
05:15 PM	0	0	0	0	19	0	10	29	12	308	0	320	0	99	17	116	465
Total Volume	0	0	0	0	84	1	42	127	47	1165	0	1212	0	436	68	504	1843
% App. Total	0	0	0		66.1	0.8	33.1		3.9	96.1	0		0	86.5	13.5		
PHF	.000	.000	.000	.000	.875	.250	.875	.934	.904	.946	.000	.947	.000	.932	.895	.940	.978



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TMC Data

File Name : 24020019
Site Code : 24020019
Start Date : 10/24/2007
Page No : 1

Groups Printed- Cars, Trucks & Buses

	Krog St Northbound				Krog St Southbound				Decatur St Eastbound				Dekalb Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	15	68	11	94	3	8	2	13	2	36	4	42	4	222	5	231	380
07:15 AM	18	74	16	108	5	7	2	14	3	41	4	48	7	227	7	241	411
07:30 AM	23	76	18	117	5	9	3	17	1	45	6	52	7	247	2	256	442
07:45 AM	32	92	12	136	3	16	1	20	1	52	5	58	6	283	5	294	508
Total	88	310	57	455	16	40	8	64	7	174	19	200	24	979	19	1022	1741
08:00 AM	33	104	12	149	4	10	2	16	2	56	6	64	4	346	7	357	586
08:15 AM	40	90	20	150	2	16	2	20	2	51	7	60	5	327	10	342	572
08:30 AM	34	95	8	137	4	17	6	27	1	47	7	55	4	316	12	332	551
08:45 AM	22	94	15	131	6	20	3	29	3	43	8	54	5	286	8	299	513
Total	129	383	55	567	16	63	13	92	8	197	28	233	18	1275	37	1330	2222
*** BREAK ***																	
04:00 PM	7	35	6	48	15	97	3	115	3	187	18	208	7	69	4	80	451
04:15 PM	8	39	8	55	18	103	2	123	4	206	20	230	10	78	3	91	499
04:30 PM	10	40	9	59	23	110	2	135	5	211	24	240	12	86	3	101	535
04:45 PM	9	38	18	65	28	89	3	120	7	218	28	253	11	92	2	105	543
Total	34	152	41	227	84	399	10	493	19	822	90	931	40	325	12	377	2028
05:00 PM	7	26	12	45	25	93	2	120	4	236	35	275	13	84	3	100	540
05:15 PM	9	35	14	58	24	92	2	118	5	231	31	267	15	81	5	101	544
05:30 PM	5	40	16	61	20	102	1	123	4	217	27	248	25	76	2	103	535
05:45 PM	7	31	11	49	15	94	3	112	2	202	22	226	21	73	7	101	488
Total	28	132	53	213	84	381	8	473	15	886	115	1016	74	314	17	405	2107
Grand Total	279	977	206	1462	200	883	39	1122	49	2079	252	2380	156	2893	85	3134	8098
Apprch %	19.1	66.8	14.1		17.8	78.7	3.5		2.1	87.4	10.6		5	92.3	2.7		
Total %	3.4	12.1	2.5	18.1	2.5	10.9	0.5	13.9	0.6	25.7	3.1	29.4	1.9	35.7	1	38.7	

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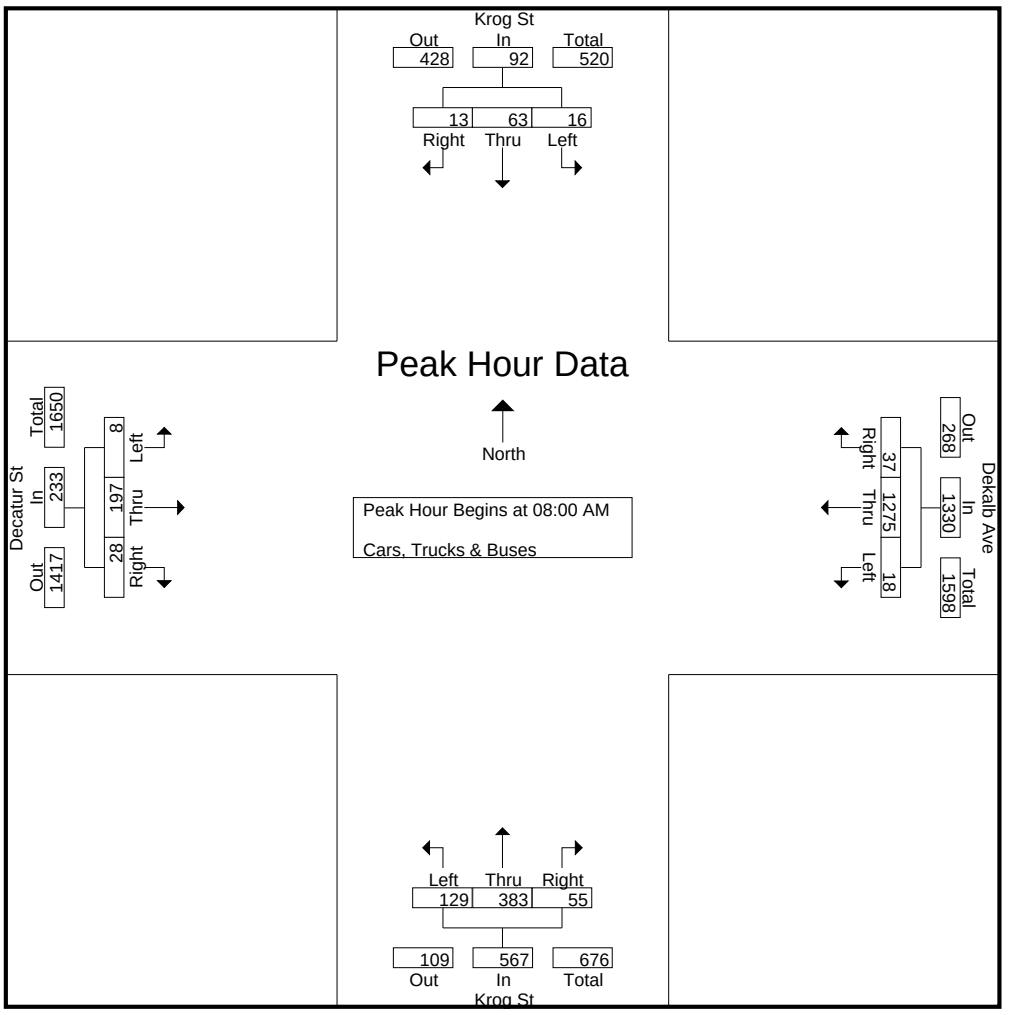
TMC Data

File Name : 24020019
Site Code : 24020019
Start Date : 10/24/2007
Page No : 2

	Krog St Northbound				Krog St Southbound				Decatur St Eastbound				Dekalb Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	33	104	12	149	4	10	2	16	2	56	6	64	4	346	7	357	586
08:15 AM	40	90	20	150	2	16	2	20	2	51	7	60	5	327	10	342	572
08:30 AM	34	95	8	137	4	17	6	27	1	47	7	55	4	316	12	332	551
08:45 AM	22	94	15	131	6	20	3	29	3	43	8	54	5	286	8	299	513
Total Volume	129	383	55	567	16	63	13	92	8	197	28	233	18	1275	37	1330	2222
% App. Total	22.8	67.5	9.7		17.4	68.5	14.1		3.4	84.5	12		1.4	95.9	2.8		
PHF	.806	.921	.688	.945	.667	.788	.542	.793	.667	.879	.875	.910	.900	.921	.771	.931	.948



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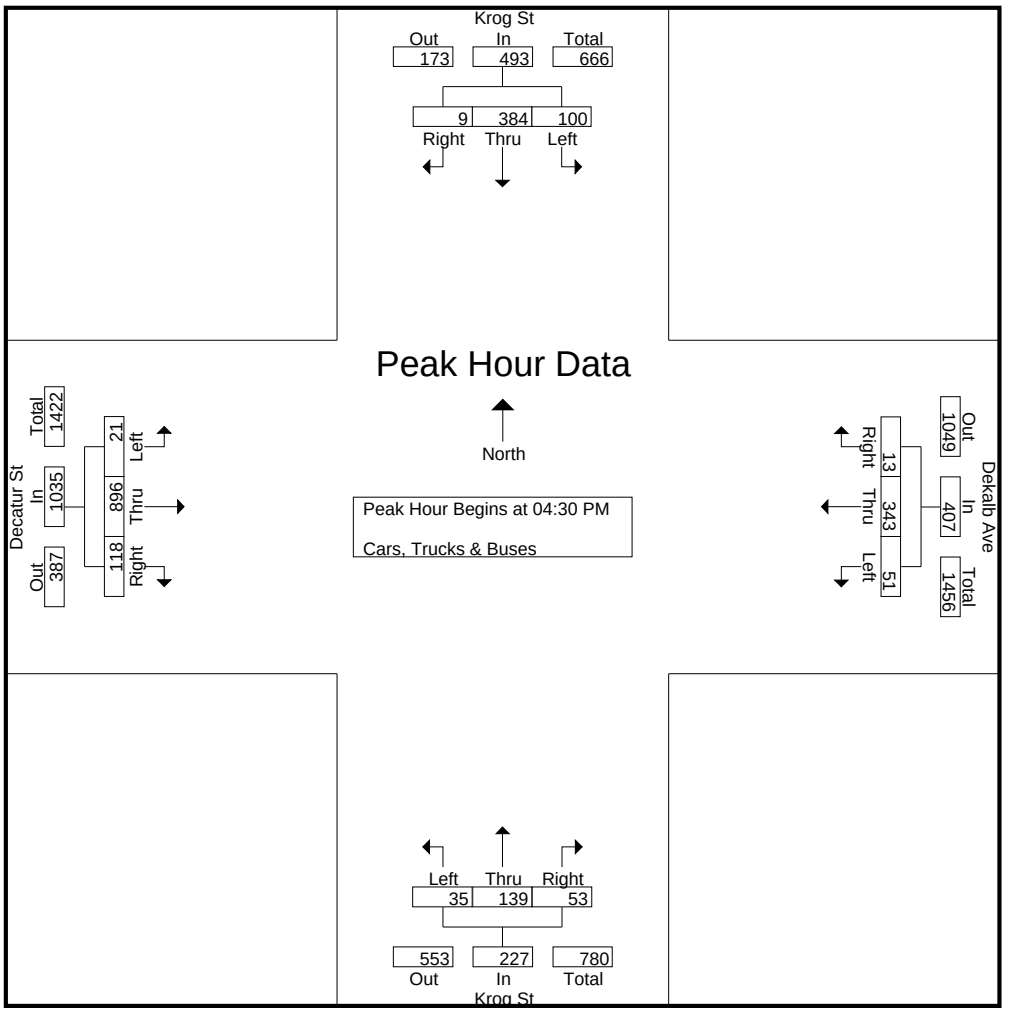
TMC Data

File Name : 24020019
Site Code : 24020019
Start Date : 10/24/2007
Page No : 3

	Krog St Northbound				Krog St Southbound				Decatur St Eastbound				Dekalb Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	10	40	9	59	23	110	2	135	5	211	24	240	12	86	3	101	535
04:45 PM	9	38	18	65	28	89	3	120	7	218	28	253	11	92	2	105	543
05:00 PM	7	26	12	45	25	93	2	120	4	236	35	275	13	84	3	100	540
05:15 PM	9	35	14	58	24	92	2	118	5	231	31	267	15	81	5	101	544
Total Volume	35	139	53	227	100	384	9	493	21	896	118	1035	51	343	13	407	2162
% App. Total	15.4	61.2	23.3		20.3	77.9	1.8		2	86.6	11.4		12.5	84.3	3.2		
PHF	.875	.869	.736	.873	.893	.873	.750	.913	.750	.949	.843	.941	.850	.932	.650	.969	.994



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TMC Data

File Name : 24020020
Site Code : 24020020
Start Date : 10/24/2007
Page No : 1

Groups Printed- Cars, Trucks & Buses

	Glen Iris Dr Northbound				Glen Iris Dr Southbound				Highland Ave Eastbound				Highland Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	15	64	3	82	5	21	5	31	2	10	1	13	2	14	26	42	168
07:15 AM	18	71	4	93	7	23	8	38	2	12	1	15	3	114	31	148	294
07:30 AM	21	76	5	102	5	26	7	38	3	14	2	19	4	128	35	167	326
07:45 AM	25	83	4	112	6	31	10	47	4	16	2	22	2	145	38	185	366
Total	79	294	16	389	23	101	30	154	11	52	6	69	11	401	130	542	1154
08:00 AM	28	79	5	112	9	34	13	56	3	15	1	19	3	149	48	200	387
08:15 AM	29	77	3	109	12	38	11	61	4	17	1	22	2	161	53	216	408
08:30 AM	24	82	3	109	9	39	17	65	3	15	2	20	3	156	47	206	400
08:45 AM	22	69	2	93	8	37	14	59	2	18	3	23	4	148	42	194	369
Total	103	307	13	423	38	148	55	241	12	65	7	84	12	614	190	816	1564
*** BREAK ***																	
04:00 PM	2	28	3	33	33	102	11	146	3	62	12	77	4	26	10	40	296
04:15 PM	4	31	5	40	37	108	13	158	5	69	11	85	7	29	11	47	330
04:30 PM	5	33	6	44	41	115	14	170	7	65	13	85	5	31	13	49	348
04:45 PM	4	36	4	44	48	118	16	182	6	72	15	93	8	36	17	61	380
Total	15	128	18	161	159	443	54	656	21	268	51	340	24	122	51	197	1354
05:00 PM	3	39	6	48	44	123	12	179	4	76	12	92	6	32	14	52	371
05:15 PM	5	33	5	43	49	119	13	181	5	79	16	100	3	33	16	52	376
05:30 PM	3	34	8	45	42	126	15	183	6	74	19	99	5	31	13	49	376
05:45 PM	2	31	5	38	37	117	11	165	4	71	15	90	3	28	12	43	336
Total	13	137	24	174	172	485	51	708	19	300	62	381	17	124	55	196	1459
Grand Total	210	866	71	1147	392	1177	190	1759	63	685	126	874	64	1261	426	1751	5531
Apprch %	18.3	75.5	6.2		22.3	66.9	10.8		7.2	78.4	14.4		3.7	72	24.3		
Total %	3.8	15.7	1.3	20.7	7.1	21.3	3.4	31.8	1.1	12.4	2.3	15.8	1.2	22.8	7.7	31.7	

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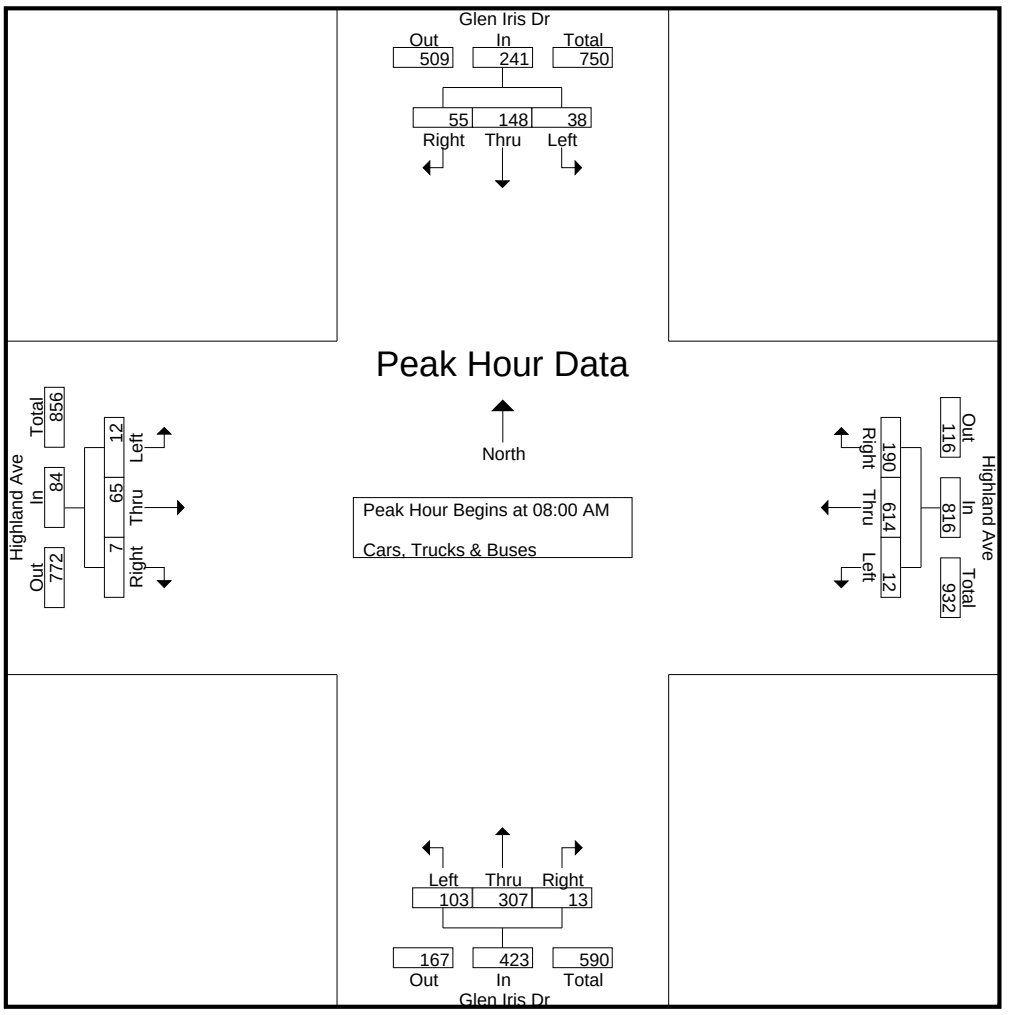
TMC Data

File Name : 24020020
Site Code : 24020020
Start Date : 10/24/2007

	Glen Iris Dr Northbound				Glen Iris Dr Southbound				Highland Ave Eastbound				Highland Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	28	79	5	112	9	34	13	56	3	15	1	19	3	149	48	200	387
08:15 AM	29	77	3	109	12	38	11	61	4	17	1	22	2	161	53	216	408
08:30 AM	24	82	3	109	9	39	17	65	3	15	2	20	3	156	47	206	400
08:45 AM	22	69	2	93	8	37	14	59	2	18	3	23	4	148	42	194	369
Total Volume	103	307	13	423	38	148	55	241	12	65	7	84	12	614	190	816	1564
% App. Total	24.3	72.6	3.1		15.8	61.4	22.8		14.3	77.4	8.3		1.5	75.2	23.3		
PHF	.888	.936	.650	.944	.792	.949	.809	.927	.750	.903	.583	.913	.750	.953	.896	.944	.958



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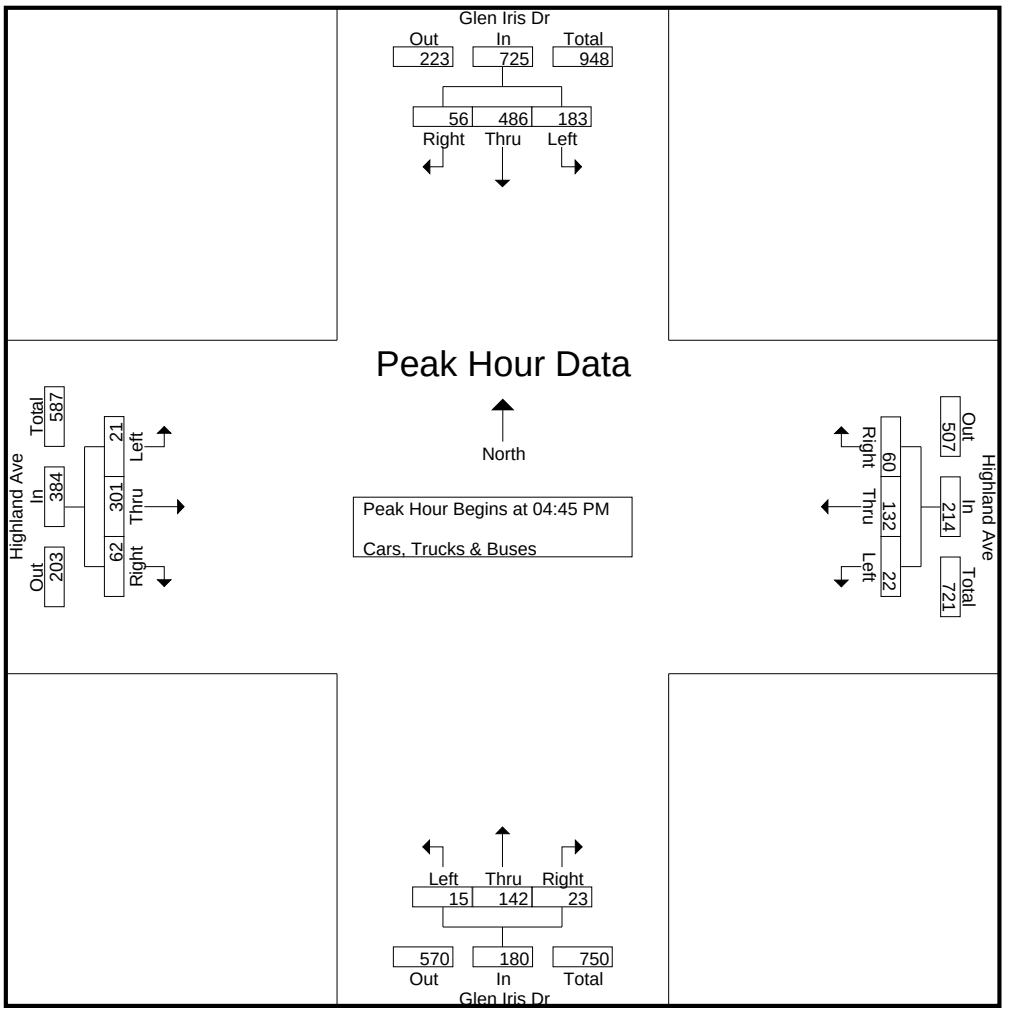
TMC Data

File Name : 24020020
Site Code : 24020020
Start Date : 10/24/2007
Page No : 3

	Glen Iris Dr Northbound				Glen Iris Dr Southbound				Highland Ave Eastbound				Highland Ave Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	4	36	4	44	48	118	16	182	6	72	15	93	8	36	17	61	380
05:00 PM	3	39	6	48	44	123	12	179	4	76	12	92	6	32	14	52	371
05:15 PM	5	33	5	43	49	119	13	181	5	79	16	100	3	33	16	52	376
05:30 PM	3	34	8	45	42	126	15	183	6	74	19	99	5	31	13	49	376
Total Volume	15	142	23	180	183	486	56	725	21	301	62	384	22	132	60	214	1503
% App. Total	8.3	78.9	12.8		25.2	67	7.7		5.5	78.4	16.1		10.3	61.7	28		
PHF	.750	.910	.719	.938	.934	.964	.875	.990	.875	.953	.816	.960	.688	.917	.882	.877	.989



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TMC Data

File Name : 24020021
Site Code : 24020021
Start Date : 10/24/2007
Page No : 1

Groups Printed- Cars, Trucks & Buses

	Fortune St Northbound				Ralph McGill Blvd Southbound				Ralph McGill Blvd Eastbound				Willoughby Way Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	85	85	19	0	0	19	1	1	0	2	106
07:15 AM	0	0	0	0	1	0	93	94	21	0	0	21	0	0	1	1	116
07:30 AM	1	1	1	3	0	1	97	98	25	1	1	27	1	1	0	2	130
07:45 AM	1	0	0	1	0	0	105	105	24	0	0	24	0	1	1	2	132
Total	2	1	1	4	1	1	380	382	89	1	1	91	2	3	2	7	484
08:00 AM	0	1	1	2	0	0	108	108	26	0	1	27	2	2	0	4	141
08:15 AM	1	0	0	1	1	0	101	102	19	1	0	20	0	1	2	3	126
08:30 AM	0	1	1	2	0	0	96	96	19	0	0	19	1	3	0	4	121
08:45 AM	0	0	0	0	1	0	92	93	16	0	1	17	1	2	1	4	114
Total	1	2	2	5	2	0	397	399	80	1	2	83	4	8	3	15	502
*** BREAK ***																	
04:00 PM	1	1	1	3	0	0	36	36	86	2	0	88	1	1	1	3	130
04:15 PM	0	0	1	1	0	0	43	43	97	1	0	98	1	0	0	1	143
04:30 PM	1	1	2	4	1	0	41	42	102	2	0	104	0	1	1	2	152
04:45 PM	0	1	1	2	0	1	39	40	115	0	0	115	2	0	0	2	159
Total	2	3	5	10	1	1	159	161	400	5	0	405	4	2	2	8	584
05:00 PM	2	2	4	8	1	1	32	34	112	2	2	116	1	0	1	2	160
05:15 PM	1	1	1	3	0	0	42	42	105	1	1	107	0	1	0	1	153
05:30 PM	0	0	2	2	1	0	45	46	96	4	1	101	1	1	1	3	152
05:45 PM	1	1	1	3	0	0	38	38	89	3	3	95	0	0	0	0	136
Total	4	4	8	16	2	1	157	160	402	10	7	419	2	2	2	6	601
Grand Total	9	10	16	35	6	3	1093	1102	971	17	10	998	12	15	9	36	2171
Apprch %	25.7	28.6	45.7		0.5	0.3	99.2		97.3	1.7	1		33.3	41.7	25		
Total %	0.4	0.5	0.7	1.6	0.3	0.1	50.3	50.8	44.7	0.8	0.5	46	0.6	0.7	0.4	1.7	

Reliable Traffic Data Services, LLC

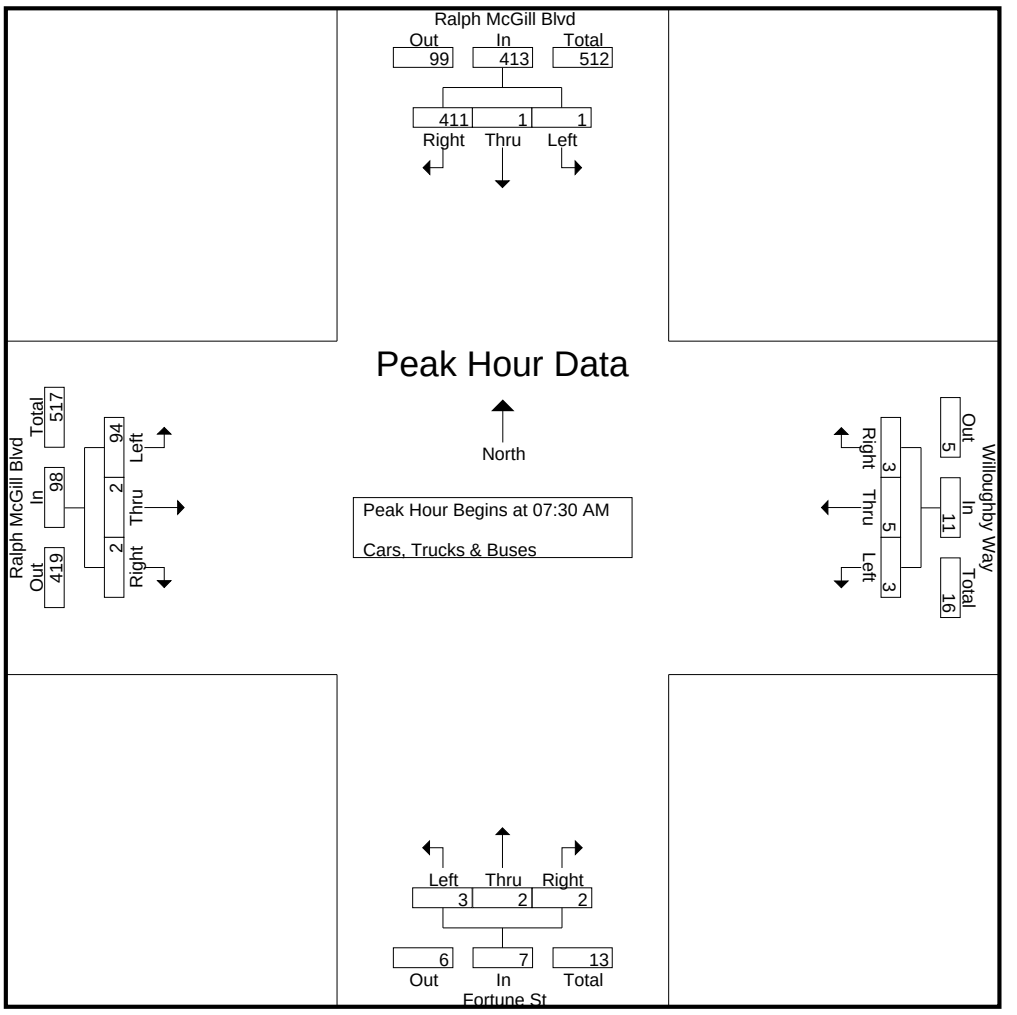
Tel: (770) 578-5158 Fax: (770) 578-8159

email: reliabletraffic@msn.com

TMC Data

File Name : 24020021
Site Code : 24020021
Start Date : 10/24/2007
Page No : 2

	Fortune St Northbound				Ralph McGill Blvd Southbound				Ralph McGill Blvd Eastbound				Willoughby Way Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	1	1	1	3	0	1	97	98	25	1	1	27	1	1	0	2	130
07:45 AM	1	0	0	1	0	0	105	105	24	0	0	24	0	1	1	2	132
08:00 AM	0	1	1	2	0	0	108	108	26	0	1	27	2	2	0	4	141
08:15 AM	1	0	0	1	1	0	101	102	19	1	0	20	0	1	2	3	126
Total Volume	3	2	2	7	1	1	411	413	94	2	2	98	3	5	3	11	529
% App. Total	42.9	28.6	28.6		0.2	0.2	99.5		95.9	2	2		27.3	45.5	27.3		
PHF	.750	.500	.500	.583	.250	.250	.951	.956	.904	.500	.500	.907	.375	.625	.375	.688	.938



Reliable Traffic Data Services, LLC

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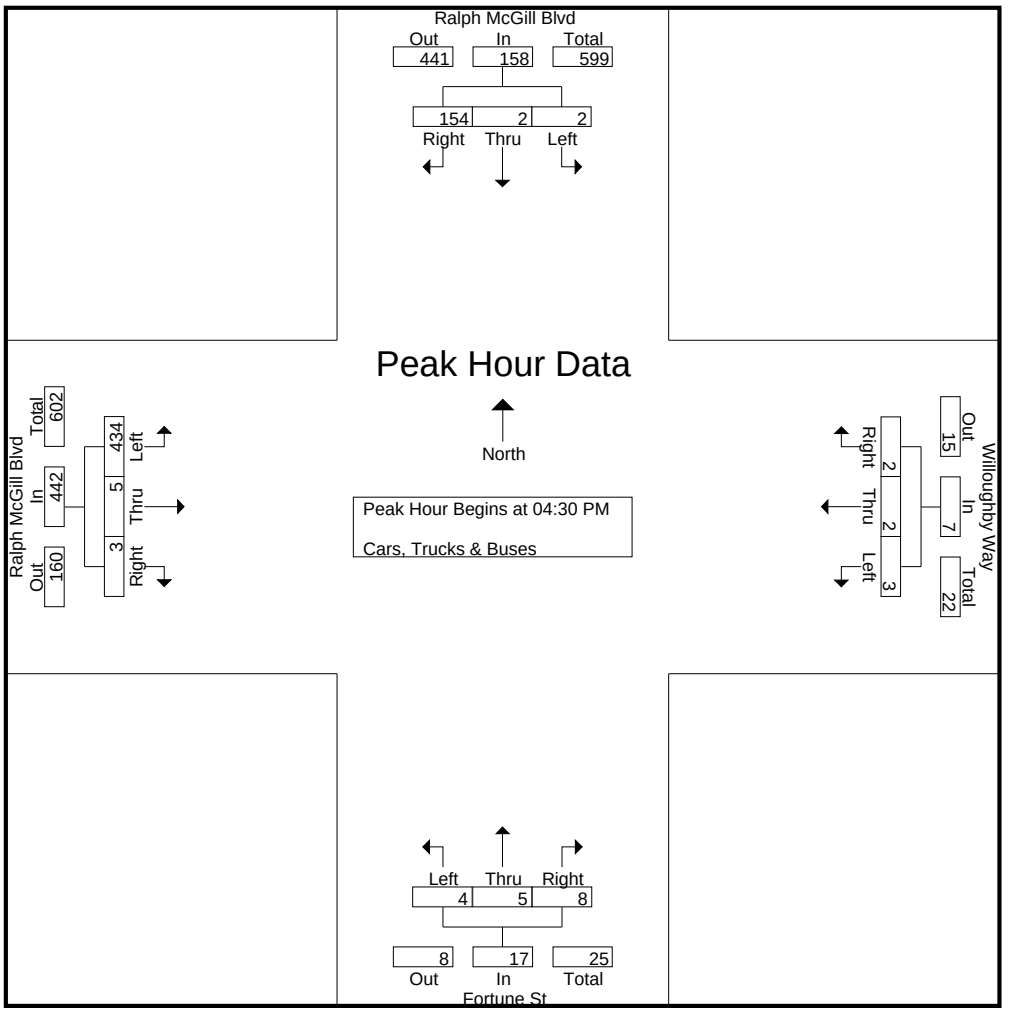
email: reliabletraffic@msn.com

TMC Data

File Name : 24020021
Site Code : 24020021
Start Date : 10/24/2007
Page No : 3

	Fortune St Northbound				Ralph McGill Blvd Southbound				Ralph McGill Blvd Eastbound				Willoughby Way Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	1	1	2	4	1	0	41	42	102	2	0	104	0	1	1	2	152
04:45 PM	0	1	1	2	0	1	39	40	115	0	0	115	2	0	0	2	159
05:00 PM	2	2	4	8	1	1	32	34	112	2	2	116	1	0	1	2	160
05:15 PM	1	1	1	3	0	0	42	42	105	1	1	107	0	1	0	1	153
Total Volume	4	5	8	17	2	2	154	158	434	5	3	442	3	2	2	7	624
% App. Total	23.5	29.4	47.1		1.3	1.3	97.5		98.2	1.1	0.7		42.9	28.6	28.6		
PHF	.500	.625	.500	.531	.500	.500	.917	.940	.943	.625	.375	.953	.375	.500	.500	.875	.975



Reliable Traffic Data Services, LLC
Tel: (770) 578-8158 Fax: (770)578-8159
email: reliabletraffic@msn.com

Site Code: 24020101
Station ID: 8950
Ponce de Leon Ave East of
Boulevard / Monroe Dr
Latitude: 0' 0.000 Undefined

Start	23-Oct-07	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
Time	Tue	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		89	317			74	319				
12:15		84	305			69	290				
12:30		81	343			77	323				
12:45		47	349	301	1314	57	335	277	1267	578	2581
01:00		45	341			50	350				
01:15		39	298			38	357				
01:30		45	323			55	342				
01:45		35	285	164	1247	43	373	186	1422	350	2669
02:00		34	322			24	337				
02:15		38	289			32	321				
02:30		38	327			25	302				
02:45		43	316	153	1254	28	299	109	1259	262	2513
03:00		30	307			39	270				
03:15		29	363			30	257				
03:30		23	333			23	259				
03:45		18	370	100	1373	14	268	106	1054	206	2427
04:00		20	392			12	261				
04:15		15	487			26	274				
04:30		22	464			23	263				
04:45		12	460	69	1803	25	274	86	1072	155	2875
05:00		14	452			24	264				
05:15		24	507			29	273				
05:30		21	447			43	258				
05:45		42	486	101	1892	49	264	145	1059	246	2951
06:00		49	457			74	254				
06:15		58	442			85	274				
06:30		74	404			124	294				
06:45		86	393	267	1696	193	289	476	1111	743	2807
07:00		124	385			286	325				
07:15		143	401			352	293				
07:30		158	343			369	281				
07:45		179	320	604	1449	394	260	1401	1159	2005	2608
08:00		184	279			389	273				
08:15		196	265			438	221				
08:30		172	220			431	225				
08:45		176	287	728	1051	448	219	1706	938	2434	1989
09:00		189	211			413	213				
09:15		212	228			362	223				
09:30		221	195			283	192				
09:45		208	248	830	882	267	174	1325	802	2155	1684
10:00		200	184			265	167				
10:15		208	160			273	182				
10:30		220	184			290	166				
10:45		233	150	861	678	299	138	1127	653	1988	1331
11:00		240	111			305	145				
11:15		251	114			311	123				
11:30		274	124			319	101				
11:45		291	105	1056	454	322	89	1257	458	2313	912
Total		5234	15093			8201	12254			13435	27347
Percent		25.7%	74.3%			40.1%	59.9%			32.9%	67.1%
Grand Total		5234	15093			8201	12254			13435	27347
Percent		25.7%	74.3%			40.1%	59.9%			32.9%	67.1%
ADT	Not Calculated										

Reliable Traffic Data Services, LLC
Tel: (770) 578-8158 Fax: (770)578-8159
email: reliabletraffic@msn.com

Site Code: 24020102
Station ID: 8815
Ponce de Leon Ave West of Freedom Pkwy

Latitude: 0' 0.000 Undefined

Start	23-Oct-07	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
Time	Tue	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		45	279			45	297				
12:15		41	263			40	301				
12:30		57	322			49	281				
12:45		44	261	187	1125	25	326	159	1205	346	2330
01:00		35	274			28	266				
01:15		35	256			32	252				
01:30		30	286			28	281				
01:45		55	305	155	1121	36	279	124	1078	279	2199
02:00		39	296			25	265				
02:15		23	318			21	256				
02:30		32	318			23	244				
02:45		13	319	107	1251	21	252	90	1017	197	2268
03:00		12	387			17	249				
03:15		16	382			21	259				
03:30		12	398			22	240				
03:45		19	415	59	1582	24	252	84	1000	143	2582
04:00		13	424			31	257				
04:15		8	442			41	264				
04:30		22	448			41	263				
04:45		28	431	71	1745	67	273	180	1057	251	2802
05:00		28	444			86	258				
05:15		37	452			103	282				
05:30		35	467			159	272				
05:45		86	448	186	1811	196	319	544	1131	730	2942
06:00		90	417			213	278				
06:15		114	408			279	279				
06:30		117	365			257	251				
06:45		130	329	451	1519	279	282	1028	1090	1479	2609
07:00		163	273			345	251				
07:15		189	277			342	241				
07:30		177	253			368	255				
07:45		170	247	699	1050	390	214	1445	961	2144	2011
08:00		184	237			461	195				
08:15		196	204			423	168				
08:30		184	206			386	166				
08:45		157	207	721	854	345	172	1615	701	2336	1555
09:00		196	214			226	178				
09:15		163	155			244	159				
09:30		163	164			225	151				
09:45		173	181	695	714	245	124	940	612	1635	1326
10:00		161	155			215	123				
10:15		218	126			233	105				
10:30		238	114			204	93				
10:45		197	136	814	531	247	89	899	410	1713	941
11:00		261	97			200	96				
11:15		209	72			234	101				
11:30		254	76			263	85				
11:45		285	71	1009	316	280	67	977	349	1986	665
Total		5154	13619			8085	10611			13239	24230
Percent		27.5%	72.5%			43.2%	56.8%			35.3%	64.7%
Grand Total		5154	13619			8085	10611			13239	24230
Percent		27.5%	72.5%			43.2%	56.8%			35.3%	64.7%
ADT	Not Calculated										

Reliable Traffic Data Services, LLC
Tel: (770) 578-8158 Fax: (770)578-8159
email: reliabletraffic@msn.com

Site Code: 24020103
Station ID: SN:018432
Ralph McGill Blvd West of Freedom Pkwy

Latitude: 0' 0.000 Undefined

Start	23-Oct-07	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
Time	Tue	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		4	47			6	40				
12:15		8	19			11	36				
12:30		9	29			13	37				
12:45		8	27	29	122	12	31	42	144	71	266
01:00		2	29			4	44				
01:15		4	35			5	46				
01:30		3	36			5	28				
01:45		3	41	12	141	4	29	18	147	30	288
02:00		2	34			2	31				
02:15		2	34			3	36				
02:30		4	34			5	31				
02:45		2	35	10	137	2	44	12	142	22	279
03:00		2	42			3	39				
03:15		4	36			5	40				
03:30		3	61			4	44				
03:45		1	68	10	207	2	40	14	163	24	370
04:00		1	82			2	40				
04:15		1	89			1	43				
04:30		2	94			2	48				
04:45		3	97	7	362	5	53	10	184	17	546
05:00		4	103			6	47				
05:15		3	116			5	42				
05:30		3	111			4	40				
05:45		7	85	17	415	10	48	25	177	42	592
06:00		10	76			16	51				
06:15		12	71			18	46				
06:30		18	59			28	48				
06:45		19	54	59	260	28	53	90	198	149	458
07:00		27	49			41	64				
07:15		20	45			56	55				
07:30		21	34			75	64				
07:45		31	43	99	171	87	38	259	221	358	392
08:00		35	32			73	56				
08:15		33	39			69	52				
08:30		27	40			58	41				
08:45		36	33	131	144	57	61	257	210	388	354
09:00		32	33			52	46				
09:15		27	35			46	42				
09:30		25	33			37	37				
09:45		20	33	104	134	30	28	165	153	269	287
10:00		34	30			41	39				
10:15		26	23			31	34				
10:30		22	44			45	33				
10:45		29	39	111	136	37	31	154	137	265	273
11:00		38	33			25	28				
11:15		34	35			36	28				
11:30		33	29			32	17				
11:45		25	30	130	127	32	23	125	96	255	223
Total		719	2356			1171	1972			1890	4328
Percent		23.4%	76.6%			37.3%	62.7%			30.4%	69.6%
Grand Total		719	2356			1171	1972			1890	4328
Percent		23.4%	76.6%			37.3%	62.7%			30.4%	69.6%
ADT	Not Calculated										

Reliable Traffic Data Services, LLC
Tel: (770) 578-8158 Fax: (770)578-8159
email: reliabletraffic@msn.com

Site Code: 24020104
Station ID: 8607
Ralph McGill Blvd West of Glen Iris Dr

Latitude: 0' 0.000 Undefined

Start	24-Oct-07	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
Time	Wed	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		4	29			8	36				
12:15		10	24			5	32				
12:30		4	27			10	37				
12:45		5	29	23	109	5	33	28	138	51	247
01:00		6	36			3	35				
01:15		2	24			4	36				
01:30		2	41			2	40				
01:45		0	43	10	144	5	28	14	139	24	283
02:00		2	43			4	35				
02:15		2	26			3	25				
02:30		6	26			4	34				
02:45		3	39	13	134	1	28	12	122	25	256
03:00		1	30			0	27				
03:15		0	31			1	39				
03:30		1	39			2	33				
03:45		1	63	3	163	2	35	5	134	8	297
04:00		1	96			1	41				
04:15		0	108			1	46				
04:30		2	114			4	52				
04:45		1	117	4	435	1	45	7	184	11	619
05:00		2	123			5	49				
05:15		3	115			1	45				
05:30		3	112			7	56				
05:45		4	116	12	466	6	47	19	197	31	663
06:00		9	110			8	38				
06:15		12	94			17	37				
06:30		13	80			16	35				
06:45		18	53	52	337	28	29	69	139	121	476
07:00		27	62			56	25				
07:15		24	48			88	27				
07:30		20	42			112	26				
07:45		21	31	92	183	126	28	382	106	474	289
08:00		24	36			132	34				
08:15		25	32			125	19				
08:30		27	22			117	30				
08:45		26	21	102	111	113	25	487	108	589	219
09:00		24	19			92	20				
09:15		26	18			80	25				
09:30		31	14			74	16				
09:45		28	16	109	67	72	25	318	86	427	153
10:00		30	15			67	21				
10:15		27	18			66	21				
10:30		23	16			62	12				
10:45		25	15	105	64	59	8	254	62	359	126
11:00		27	16			54	18				
11:15		30	11			48	16				
11:30		28	13			44	11				
11:45		25	15	110	55	40	13	186	58	296	113
Total		635	2268			1781	1473			2416	3741
Percent		21.9%	78.1%			54.7%	45.3%			39.2%	60.8%
Grand Total		635	2268			1781	1473			2416	3741
Percent		21.9%	78.1%			54.7%	45.3%			39.2%	60.8%
ADT	Not Calculated										

Reliable Traffic Data Services, LLC
Tel: (770) 578-8158 Fax: (770)578-8159
email: reliabletraffic@msn.com

Site Code: 24020105
Station ID: 8837
Dekalb Ave West of Kroger St

Latitude: 0' 0.000 Undefined

Start Time	24-Oct-07 Wed	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		34	70			17	91				
12:15		28	75			15	89				
12:30		21	68			16	82				
12:45		24	70	107	283	16	86	64	348	171	631
01:00		17	78			10	94				
01:15		18	84			7	98				
01:30		9	92			9	91				
01:45		7	74	51	328	6	82	32	365	83	693
02:00		9	66			6	85				
02:15		6	75			8	93				
02:30		8	96			3	85				
02:45		8	109	31	346	10	74	27	337	58	683
03:00		9	99			5	85				
03:15		9	110			2	74				
03:30		7	128			3	58				
03:45		5	157	30	494	2	88	12	305	42	799
04:00		3	186			7	91				
04:15		6	211			6	84				
04:30		4	217			4	95				
04:45		2	234	15	848	6	92	23	362	38	1210
05:00		8	226			6	96				
05:15		7	235			7	99				
05:30		6	261			19	97				
05:45		7	276	28	998	26	86	58	378	86	1376
06:00		5	257			24	79				
06:15		21	229			42	58				
06:30		15	215			43	83				
06:45		23	165	64	866	89	60	198	280	262	1146
07:00		34	163			164	72				
07:15		46	152			195	54				
07:30		53	138			246	59				
07:45		64	123	197	576	307	49	912	234	1109	810
08:00		61	108			275	50				
08:15		72	86			283	50				
08:30		63	76			365	47				
08:45		53	86	249	356	379	22	1302	169	1551	525
09:00		56	73			295	36				
09:15		53	84			239	42				
09:30		57	64			226	42				
09:45		51	68	217	289	174	45	934	165	1151	454
10:00		47	60			147	26				
10:15		55	67			138	21				
10:30		52	46			110	33				
10:45		48	31	202	204	97	25	492	105	694	309
11:00		45	40			94	32				
11:15		58	43			85	27				
11:30		62	30			82	24				
11:45		65	34	230	147	98	24	359	107	589	254
Total		1421	5735			4413	3155			5834	8890
Percent		19.9%	80.1%			58.3%	41.7%			39.6%	60.4%
Grand Total		1421	5735			4413	3155			5834	8890
Percent		19.9%	80.1%			58.3%	41.7%			39.6%	60.4%
ADT	Not Calculated										

Traffic Operations Model Backup

Beltline Subarea 5
3: North Ave & Freedom

AM Existing
12/17/2008

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	54	151	28	88	704	59	106	368	27	16	461	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95			0.95	
Frt	1.00	0.98		1.00	0.99		1.00	0.99			0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770	1820		1770	1841		1770	3502			3474	
Flt Permitted	0.14	1.00		0.60	1.00		0.22	1.00			0.93	
Satd. Flow (perm)	253	1820		1125	1841		411	3502			3251	
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)	59	164	30	96	765	64	115	389	29	17	501	66
RTOR Reduction (vph)	0	5	0	0	3	0	0	5	0	0	9	0
Lane Group Flow (vph)	59	189	0	96	826	0	115	413	0	0	575	0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	69.2	66.0		70.8	66.8		38.0	38.0			27.0	
Effective Green, g (s)	69.2	66.0		70.8	66.8		38.0	38.0			27.0	
Actuated g/C Ratio	0.58	0.55		0.59	0.56		0.32	0.32			0.22	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	186	1001		685	1025		209	1109			731	
v/s Ratio Prot	c0.01	0.10		0.00	c0.45		c0.03	0.12				
v/s Ratio Perm	0.17			0.08			0.14				c0.18	
v/c Ratio	0.32	0.19		0.14	0.81		0.55	0.37			0.79	
Uniform Delay, d1	18.7	13.6		10.7	21.4		45.8	31.8			43.8	
Progression Factor	0.85	0.69		1.00	1.00		0.68	0.74			0.76	
Incremental Delay, d2	1.0	0.4		0.1	6.8		3.0	0.9			7.3	
Delay (s)	16.9	9.7		10.8	28.2		34.4	24.5			40.8	
Level of Service	B	A		B	C		C	C			D	
Approach Delay (s)		11.4			26.4			26.6			40.8	
Approach LOS		B			C			C			D	

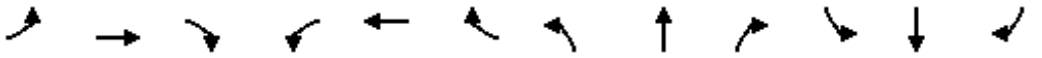
Intersection Summary			
HCM Average Control Delay	28.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Baseline
%user_name%

Synchro 7 - Report
Page 1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↱	↰	↑↑	↰	↱↱
Volume (vph)	682	89	475	1397	198	313
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	1.00	0.95	1.00	0.88
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	1770	3539	1770	2787
Flt Permitted	1.00	1.00	0.28	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	525	3539	1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	741	97	516	1518	215	340
RTOR Reduction (vph)	0	39	0	0	0	261
Lane Group Flow (vph)	741	58	516	1518	215	79
Turn Type		Perm	pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases		2	6			8
Actuated Green, G (s)	52.3	52.3	84.0	84.0	28.0	28.0
Effective Green, g (s)	52.3	52.3	84.0	84.0	28.0	28.0
Actuated g/C Ratio	0.44	0.44	0.70	0.70	0.23	0.23
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2216	690	655	2477	413	650
v/s Ratio Prot	0.15		c0.18	0.43	c0.12	
v/s Ratio Perm		0.04	c0.37			0.03
v/c Ratio	0.33	0.08	0.79	0.61	0.52	0.12
Uniform Delay, d1	22.4	19.8	10.3	9.5	40.1	36.3
Progression Factor	0.53	0.30	1.00	1.00	0.52	0.56
Incremental Delay, d2	0.4	0.2	6.2	1.1	4.4	0.4
Delay (s)	12.3	6.2	16.5	10.6	25.1	20.6
Level of Service	B	A	B	B	C	C
Approach Delay (s)	11.6			12.1	22.3	
Approach LOS	B			B	C	

Intersection Summary			
HCM Average Control Delay	13.6	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	60.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



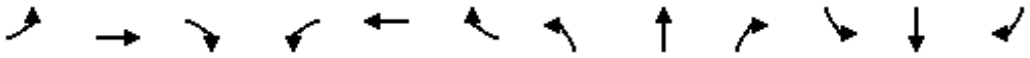
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	222	23	39	805	58	149	230	47	32	134	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	10	10	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5014		1770	3504		1652	1694		1770	1780	
Flt Permitted	0.26	1.00		0.54	1.00		0.54	1.00		0.26	1.00	
Satd. Flow (perm)	487	5014		1007	3504		932	1694		490	1780	
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)	101	241	25	42	875	63	162	250	51	35	146	61
RTOR Reduction (vph)	0	9	0	0	4	0	0	7	0	0	14	0
Lane Group Flow (vph)	101	257	0	42	934	0	162	294	0	35	193	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	68.3	68.3		62.9	62.9		27.3	27.3		18.2	18.2	
Effective Green, g (s)	68.3	68.3		62.9	62.9		27.3	27.3		18.2	18.2	
Actuated g/C Ratio	0.57	0.57		0.52	0.52		0.23	0.23		0.15	0.15	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	393	2854		562	1837		285	385		106	270	
v/s Ratio Prot	c0.02	0.05		0.00	c0.27		0.06	c0.17		0.01	c0.11	
v/s Ratio Perm	0.12			0.04			0.07			0.04		
v/c Ratio	0.26	0.09		0.07	0.51		0.57	0.76		0.33	0.72	
Uniform Delay, d1	18.2	11.7		14.0	18.5		42.9	43.3		44.6	48.4	
Progression Factor	0.69	0.74		0.53	0.53		0.71	0.70		0.56	0.57	
Incremental Delay, d2	0.3	0.1		0.0	0.7		2.4	8.1		1.8	8.6	
Delay (s)	12.9	8.8		7.5	10.5		32.9	38.5		26.9	36.1	
Level of Service	B	A		A	B		C	D		C	D	
Approach Delay (s)		9.9			10.4			36.5			34.8	
Approach LOS		A			B			D			C	

Intersection Summary			
HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

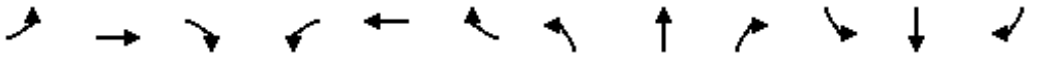
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	605	102	121	1672	159	158
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.91		1.00	0.91	1.00	1.00
Frt	0.98		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	4975		1770	5085	1770	1583
Flt Permitted	1.00		0.30	1.00	0.95	1.00
Satd. Flow (perm)	4975		560	5085	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	658	111	132	1817	173	172
RTOR Reduction (vph)	18	0	0	0	0	126
Lane Group Flow (vph)	751	0	132	1817	173	46
Turn Type			pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Actuated Green, G (s)	67.3		80.0	80.0	32.0	32.0
Effective Green, g (s)	67.3		80.0	80.0	32.0	32.0
Actuated g/C Ratio	0.56		0.67	0.67	0.27	0.27
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2790		461	3390	472	422
v/s Ratio Prot	0.15		0.02	c0.36	c0.10	
v/s Ratio Perm			0.17			0.03
v/c Ratio	0.27		0.29	0.54	0.37	0.11
Uniform Delay, d1	13.6		7.7	10.4	35.8	33.2
Progression Factor	0.72		0.85	1.27	0.59	0.29
Incremental Delay, d2	0.2		0.2	0.4	2.0	0.5
Delay (s)	10.1		6.8	13.6	23.1	10.1
Level of Service	B		A	B	C	B
Approach Delay (s)	10.1			13.1	16.6	
Approach LOS	B			B	B	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



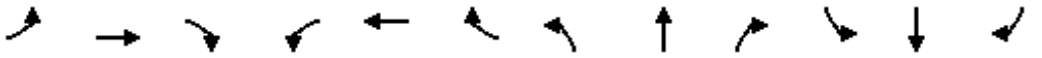
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	54	17	30	336	37	76	401	9	7	170	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	4.0
Lane Util. Factor		1.00			0.95			1.00			1.00	1.00
Frt		0.98			0.99			1.00			1.00	0.85
Flt Protected		0.99			1.00			0.99			1.00	1.00
Satd. Flow (prot)		1797			3478			1844			1859	1583
Flt Permitted		0.70			0.93			0.92			0.98	1.00
Satd. Flow (perm)		1280			3238			1705			1827	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)	22	59	18	33	365	40	83	436	10	8	185	40
RTOR Reduction (vph)	0	7	0	0	7	0	0	0	0	0	0	10
Lane Group Flow (vph)	0	92	0	0	431	0	0	529	0	0	193	30
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		21.3			21.3			90.7			90.7	90.7
Effective Green, g (s)		21.3			21.3			90.7			90.7	90.7
Actuated g/C Ratio		0.18			0.18			0.76			0.76	0.76
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		227			575			1289			1381	1196
v/s Ratio Prot												
v/s Ratio Perm		0.07			c0.13			c0.31			0.11	0.02
v/c Ratio		0.40			0.75			0.41			0.14	0.03
Uniform Delay, d1		43.7			46.8			5.2			4.0	3.6
Progression Factor		1.15			1.00			0.53			0.39	0.01
Incremental Delay, d2		1.1			5.3			0.8			0.2	0.0
Delay (s)		51.6			52.1			3.6			1.8	0.1
Level of Service		D			D			A			A	A
Approach Delay (s)		51.6			52.1			3.6			1.5	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	23.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



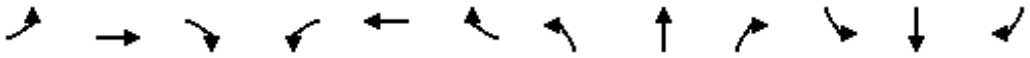
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	368	61	54	908	86	109	516	21	9	553	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	
Lane Util. Factor		0.91			0.91		1.00	0.95			0.95	
Frt		0.98			0.99		1.00	0.99			0.98	
Flt Protected		0.99			1.00		0.95	1.00			1.00	
Satd. Flow (prot)		4959			5010		1770	3518			3461	
Flt Permitted		0.70			0.87		0.30	1.00			0.95	
Satd. Flow (perm)		3500			4359		558	3518			3275	
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)	71	400	66	59	987	93	118	561	23	10	601	102
RTOR Reduction (vph)	0	15	0	0	9	0	0	3	0	0	11	0
Lane Group Flow (vph)	0	522	0	0	1130	0	118	581	0	0	702	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		54.0			54.0		58.0	58.0			58.0	
Effective Green, g (s)		54.0			54.0		58.0	58.0			58.0	
Actuated g/C Ratio		0.45			0.45		0.48	0.48			0.48	
Clearance Time (s)		4.0			4.0		4.0	4.0			4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1575			1962		270	1700			1583	
v/s Ratio Prot								0.17				
v/s Ratio Perm		0.15			c0.26		0.21				c0.21	
v/c Ratio		0.33			0.58		0.44	0.34			0.44	
Uniform Delay, d1		21.3			24.5		20.3	19.2			20.4	
Progression Factor		1.00			0.53		0.53	0.52			0.94	
Incremental Delay, d2		0.6			1.1		4.9	0.5			0.4	
Delay (s)		21.9			14.1		15.6	10.5			19.5	
Level of Service		C			B		B	B			B	
Approach Delay (s)		21.9			14.1			11.3			19.5	
Approach LOS		C			B			B			B	

Intersection Summary			
HCM Average Control Delay	16.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	77.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



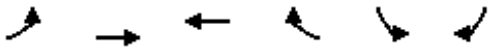
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	71	456	50	157	1427	245	137	484	111	212	475	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00		0.95	
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85		0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00		0.99	
Satd. Flow (prot)	1770	5010		1770	4974		1770	1863	1583		3419	
Flt Permitted	0.10	1.00		0.33	1.00		0.21	1.00	1.00		0.57	
Satd. Flow (perm)	189	5010		623	4974		385	1863	1583		1975	
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)	77	496	54	171	1551	266	149	526	121	230	516	122
RTOR Reduction (vph)	0	11	0	0	20	0	0	0	63	0	12	0
Lane Group Flow (vph)	77	539	0	171	1797	0	149	526	58	0	856	0
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	42.7	39.5		54.0	46.8		58.0	58.0	58.0		50.0	
Effective Green, g (s)	42.7	39.5		54.0	46.8		58.0	58.0	58.0		50.0	
Actuated g/C Ratio	0.36	0.33		0.45	0.39		0.48	0.48	0.48		0.42	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	109	1649		381	1940		232	900	765		823	
v/s Ratio Prot	c0.02	0.11		0.04	c0.36		0.02	c0.28				
v/s Ratio Perm	0.23			0.16			0.29		0.04		c0.43	
v/c Ratio	0.71	0.33		0.45	0.93		0.64	0.58	0.08		1.04	
Uniform Delay, d1	32.6	30.3		20.6	35.0		36.9	22.3	16.6		35.0	
Progression Factor	1.00	1.00		0.23	0.28		0.58	0.50	0.14		1.00	
Incremental Delay, d2	18.8	0.5		0.7	8.1		5.7	2.7	0.2		42.4	
Delay (s)	51.4	30.8		5.6	17.9		27.2	13.8	2.6		77.4	
Level of Service	D	C		A	B		C	B	A		E	
Approach Delay (s)		33.3			16.9			14.6			77.4	
Approach LOS		C			B			B			E	

Intersection Summary			
HCM Average Control Delay	31.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	98.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



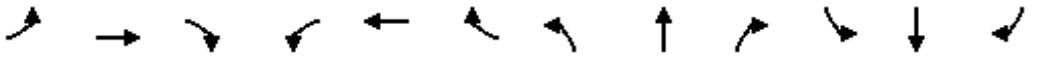
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	53	64	158	129	319	35	169	678	10	10	627	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95		1.00	0.95		1.00	0.95	
Frt		0.91			0.99		1.00	1.00		1.00	0.98	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3204			3455		1770	3531		1770	3470	
Flt Permitted		0.67			0.71		0.32	1.00		0.34	1.00	
Satd. Flow (perm)		2170			2484		601	3531		630	3470	
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	70	172	140	347	38	184	737	11	11	682	103
RTOR Reduction (vph)	0	129	0	0	5	0	0	1	0	0	8	0
Lane Group Flow (vph)	0	171	0	0	520	0	184	747	0	11	777	0
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		82.0	82.0		82.0	82.0	
Effective Green, g (s)		30.0			30.0		82.0	82.0		82.0	82.0	
Actuated g/C Ratio		0.25			0.25		0.68	0.68		0.68	0.68	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		543			621		411	2413		431	2371	
v/s Ratio Prot								0.21			0.22	
v/s Ratio Perm		0.08			c0.21		c0.31			0.02		
v/c Ratio		0.31			0.84		0.45	0.31		0.03	0.33	
Uniform Delay, d1		36.6			42.7		8.7	7.6		6.1	7.8	
Progression Factor		1.00			0.32		0.10	0.09		0.41	0.34	
Incremental Delay, d2		0.3			9.0		1.0	0.1		0.1	0.3	
Delay (s)		37.0			22.6		1.9	0.8		2.6	3.0	
Level of Service		D			C		A	A		A	A	
Approach Delay (s)		37.0			22.6			1.0			3.0	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



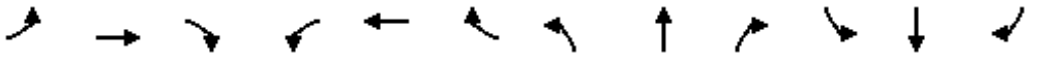
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	147	636	1665	146	64	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91	0.95		0.97	
Frt	1.00	1.00	0.99		0.98	
Flt Protected	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1770	5085	3496		3382	
Flt Permitted	0.05	1.00	1.00		0.96	
Satd. Flow (perm)	87	5085	3496		3382	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	160	691	1810	159	70	14
RTOR Reduction (vph)	0	0	5	0	12	0
Lane Group Flow (vph)	160	691	1964	0	72	0
Turn Type	pm+pt					
Protected Phases	5	2	6		4	
Permitted Phases	2					
Actuated Green, G (s)	96.0	96.0	81.3		16.0	
Effective Green, g (s)	96.0	96.0	81.3		16.0	
Actuated g/C Ratio	0.80	0.80	0.68		0.13	
Clearance Time (s)	4.0	4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	220	4068	2369		451	
v/s Ratio Prot	c0.06	0.14	c0.56		c0.02	
v/s Ratio Perm	0.52					
v/c Ratio	0.73	0.17	0.83		0.16	
Uniform Delay, d1	35.7	2.8	14.2		46.0	
Progression Factor	0.52	0.45	0.32		1.00	
Incremental Delay, d2	11.1	0.1	2.3		0.8	
Delay (s)	29.6	1.3	6.8		46.8	
Level of Service	C	A	A		D	
Approach Delay (s)		6.7	6.8		46.8	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	7.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	86	658	15	12	1569	110	21	16	19	98	13	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.97	1.00		0.96	1.00
Satd. Flow (prot)	1770	5085	1583	1770	3504			1811	1583		1784	1583
Flt Permitted	0.05	1.00	1.00	0.37	1.00			0.82	1.00		0.72	1.00
Satd. Flow (perm)	98	5085	1583	686	3504			1536	1583		1345	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)	93	715	16	13	1705	120	23	17	21	107	14	224
RTOR Reduction (vph)	0	0	4	0	4	0	0	0	18	0	0	132
Lane Group Flow (vph)	93	715	12	13	1821	0	0	40	4	0	121	92
Turn Type	pm+pt		Perm	pm+pt			Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6			8		8	4		4
Actuated Green, G (s)	86.4	86.4	86.4	80.3	80.3			20.0	20.0		20.0	20.0
Effective Green, g (s)	86.4	86.4	86.4	80.3	80.3			20.0	20.0		20.0	20.0
Actuated g/C Ratio	0.72	0.72	0.72	0.67	0.67			0.17	0.17		0.17	0.17
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	178	3661	1140	474	2345			256	264		224	264
v/s Ratio Prot	c0.03	0.14		0.00	c0.52							
v/s Ratio Perm	0.34		0.01	0.02				0.03	0.00		c0.09	0.06
v/c Ratio	0.52	0.20	0.01	0.03	0.78			0.16	0.01		0.54	0.35
Uniform Delay, d1	19.3	5.5	4.7	6.7	13.7			42.8	41.8		45.8	44.2
Progression Factor	1.32	1.25	2.15	0.52	0.80			1.00	1.00		1.00	1.00
Incremental Delay, d2	2.7	0.1	0.0	0.0	2.2			1.3	0.1		9.0	3.6
Delay (s)	28.2	6.9	10.2	3.5	13.0			44.1	41.9		54.8	47.9
Level of Service	C	A	B	A	B			D	D		D	D
Approach Delay (s)		9.4			13.0			43.3			50.3	
Approach LOS		A			B			D			D	

Intersection Summary			
HCM Average Control Delay	16.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

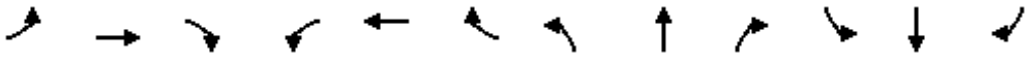


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	0	98	737	182	137	42	322	0	0	494	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95			0.95	
Frt	1.00		0.85	1.00	0.94		1.00	1.00			0.98	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770		1583	1770	1743		1770	3539			3455	
Flt Permitted	0.50		1.00	0.95	1.00		0.17	1.00			1.00	
Satd. Flow (perm)	923		1583	1770	1743		322	3539			3455	
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)	55	0	107	801	198	149	46	350	0	0	537	101
RTOR Reduction (vph)	0	0	43	0	22	0	0	0	0	0	13	0
Lane Group Flow (vph)	55	0	64	801	325	0	46	350	0	0	625	0
Turn Type	custom		custom	Perm			pm+pt					
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2					
Actuated Green, G (s)	72.0		72.0	72.0	72.0		40.0	40.0			31.2	
Effective Green, g (s)	72.0		72.0	72.0	72.0		40.0	40.0			31.2	
Actuated g/C Ratio	0.60		0.60	0.60	0.60		0.33	0.33			0.26	
Clearance Time (s)	4.0		4.0	4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	554		950	1062	1046		165	1180			898	
v/s Ratio Prot					0.19		0.01	c0.10			c0.18	
v/s Ratio Perm	0.06		0.04	c0.45			0.08					
v/c Ratio	0.10		0.07	0.75	0.31		0.28	0.30			0.70	
Uniform Delay, d1	10.2		10.0	17.5	11.8		29.2	29.6			40.1	
Progression Factor	1.00		1.00	0.87	0.73		1.00	1.00			0.31	
Incremental Delay, d2	0.1		0.0	2.9	0.4		0.9	0.6			3.4	
Delay (s)	10.3		10.0	18.2	9.0		30.1	30.2			15.8	
Level of Service	B		B	B	A		C	C			B	
Approach Delay (s)		10.1			15.4			30.2			15.8	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM Average Control Delay	17.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

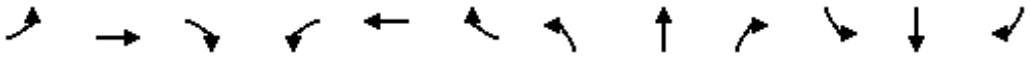
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	154	150	458	896	420	320
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.44	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	828	3539	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	167	163	498	974	457	348
RTOR Reduction (vph)	0	140	0	0	0	82
Lane Group Flow (vph)	167	23	498	974	457	266
Turn Type		Perm	pm+pt			pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases		4	2			6
Actuated Green, G (s)	16.9	16.9	95.1	95.1	74.1	91.0
Effective Green, g (s)	16.9	16.9	95.1	95.1	74.1	91.0
Actuated g/C Ratio	0.14	0.14	0.79	0.79	0.62	0.76
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	249	223	790	2805	2185	1253
v/s Ratio Prot	c0.09		c0.09	0.28	0.13	0.03
v/s Ratio Perm		0.01	c0.41			0.14
v/c Ratio	0.67	0.10	0.63	0.35	0.21	0.21
Uniform Delay, d1	48.9	44.9	4.1	3.6	10.1	4.2
Progression Factor	0.80	1.31	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.7	0.2	1.6	0.3	0.2	0.1
Delay (s)	46.0	59.2	5.7	3.9	10.3	4.3
Level of Service	D	E	A	A	B	A
Approach Delay (s)	52.5			4.5	7.7	
Approach LOS	D			A	A	

Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



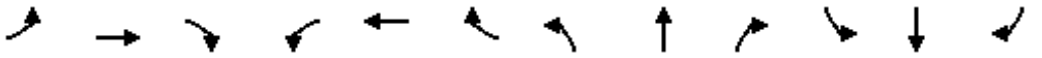
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	221	21	23	668	92	302	413	38	34	215	137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1838		1770	1829		1770	1839		1770	1863	1583
Flt Permitted	0.07	1.00		0.54	1.00		0.26	1.00		0.29	1.00	1.00
Satd. Flow (perm)	128	1838		1009	1829		479	1839		547	1863	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)	43	240	23	25	726	100	328	449	41	37	234	149
RTOR Reduction (vph)	0	3	0	0	4	0	0	3	0	0	0	53
Lane Group Flow (vph)	43	260	0	25	822	0	328	487	0	37	234	96
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	63.2	60.0		61.6	59.2		45.6	39.2		23.8	21.4	21.4
Effective Green, g (s)	63.2	60.0		61.6	59.2		45.6	39.2		23.8	21.4	21.4
Actuated g/C Ratio	0.53	0.50		0.51	0.49		0.38	0.33		0.20	0.18	0.18
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	111	919		533	902		399	601		133	332	282
v/s Ratio Prot	c0.01	0.14		0.00	c0.45		c0.14	0.26		0.01	0.13	
v/s Ratio Perm	0.19			0.02			c0.17			0.05		0.06
v/c Ratio	0.39	0.28		0.05	0.91		0.82	0.81		0.28	0.70	0.34
Uniform Delay, d1	24.2	17.5		14.5	28.0		29.6	37.0		39.7	46.3	43.1
Progression Factor	0.79	0.87		0.73	0.90		0.96	0.97		1.00	1.00	1.00
Incremental Delay, d2	2.2	0.8		0.0	14.2		12.8	11.3		1.1	11.9	3.3
Delay (s)	21.2	16.0		10.6	39.4		41.3	47.1		40.8	58.2	46.4
Level of Service	C	B		B	D		D	D		D	E	D
Approach Delay (s)		16.7			38.6			44.8			52.5	
Approach LOS		B			D			D			D	

Intersection Summary			
HCM Average Control Delay	40.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



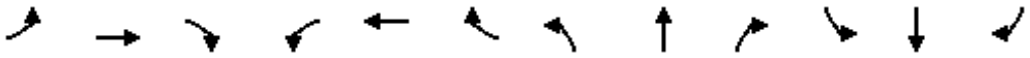
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	65	7	12	614	190	103	307	13	38	148	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0			4.0	
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	
Frt		0.99			1.00	0.85		1.00			0.97	
Flt Protected		0.99			1.00	1.00		0.99			0.99	
Satd. Flow (prot)		1828			1861	1583		1833			1791	
Flt Permitted		0.91			1.00	1.00		0.82			0.89	
Satd. Flow (perm)		1672			1854	1583		1527			1603	
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	71	8	13	667	207	112	334	14	41	161	60
RTOR Reduction (vph)	0	3	0	0	0	102	0	1	0	0	9	0
Lane Group Flow (vph)	0	89	0	0	680	105	0	459	0	0	253	0
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)		61.0			61.0	61.0		51.0			51.0	
Effective Green, g (s)		61.0			61.0	61.0		51.0			51.0	
Actuated g/C Ratio		0.51			0.51	0.51		0.42			0.42	
Clearance Time (s)		4.0			4.0	4.0		4.0			4.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		850			942	805		649			681	
v/s Ratio Prot												
v/s Ratio Perm		0.05			c0.37	0.07		c0.30			0.16	
v/c Ratio		0.10			0.72	0.13		0.71			0.37	
Uniform Delay, d1		15.3			22.9	15.5		28.4			23.6	
Progression Factor		1.00			0.71	0.32		1.00			0.68	
Incremental Delay, d2		0.2			4.7	0.3		6.4			1.5	
Delay (s)		15.6			21.0	5.2		34.7			17.5	
Level of Service		B			C	A		C			B	
Approach Delay (s)		15.6			17.3			34.7			17.5	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM Average Control Delay	22.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



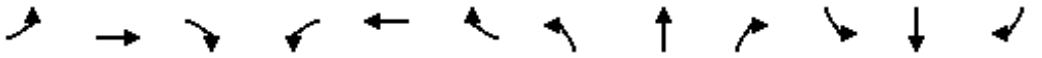
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	368	493	96	57	1090	45	366	675	59	30	222	982
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.98		1.00	0.99		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1593	3108		1593	3166		1593	3147		1593	3185	1425
Flt Permitted	0.95	1.00		0.18	1.00		0.52	1.00		0.23	1.00	1.00
Satd. Flow (perm)	1593	3108		303	3166		878	3147		391	3185	1425
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)	400	536	104	62	1185	49	398	734	64	33	241	1067
RTOR Reduction (vph)	0	13	0	0	3	0	0	5	0	0	0	259
Lane Group Flow (vph)	400	627	0	62	1231	0	398	793	0	33	241	808
Turn Type	Prot			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6			8			4		4
Actuated Green, G (s)	20.8	49.8		34.6	34.6		52.6	46.2		44.0	41.6	41.6
Effective Green, g (s)	20.8	49.8		34.6	34.6		52.6	46.2		44.0	41.6	41.6
Actuated g/C Ratio	0.17	0.42		0.29	0.29		0.44	0.38		0.37	0.35	0.35
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	276	1290		148	913		427	1212		167	1104	494
v/s Ratio Prot	c0.25	0.20		0.02	c0.39		c0.05	0.25		0.00	0.08	
v/s Ratio Perm				0.10			0.35			0.07		c0.57
v/c Ratio	1.45	0.49		0.42	1.35		0.93	0.65		0.20	0.22	1.64
Uniform Delay, d1	49.6	25.7		32.8	42.7		32.1	30.3		25.4	27.7	39.2
Progression Factor	1.00	1.00		0.80	0.82		0.70	0.70		0.82	0.84	0.72
Incremental Delay, d2	221.4	1.3		1.4	162.2		20.2	0.8		0.6	0.1	295.1
Delay (s)	271.0	27.0		27.6	197.1		42.9	22.2		21.4	23.5	323.3
Level of Service	F	C		C	F		D	C		C	C	F
Approach Delay (s)		120.9			189.0			29.1			262.0	
Approach LOS		F			F			C			F	

Intersection Summary			
HCM Average Control Delay	155.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.46		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	135.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



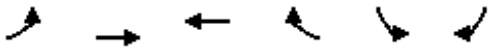
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	57	30	26	388	92	321	960	49	67	305	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		0.95			0.97			0.99			0.99	
Flt Protected		0.99			1.00			0.99			0.99	
Satd. Flow (prot)		3357			3434			3478			3484	
Flt Permitted		0.82			0.93			0.72			0.61	
Satd. Flow (perm)		2781			3218			2545			2145	
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	62	33	28	422	100	349	1043	53	73	332	20
RTOR Reduction (vph)	0	26	0	0	16	0	0	2	0	0	3	0
Lane Group Flow (vph)	0	82	0	0	534	0	0	1443	0	0	422	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		24.1			24.1			87.9			87.9	
Effective Green, g (s)		24.1			24.1			87.9			87.9	
Actuated g/C Ratio		0.20			0.20			0.73			0.73	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		559			646			1864			1571	
v/s Ratio Prot												
v/s Ratio Perm		0.03			c0.17			c0.57			0.20	
v/c Ratio		0.15			0.83			0.77			0.27	
Uniform Delay, d1		39.5			45.9			9.9			5.3	
Progression Factor		1.00			1.00			0.59			0.95	
Incremental Delay, d2		0.1			8.5			2.8			0.4	
Delay (s)		39.6			54.5			8.6			5.5	
Level of Service		D			D			A			A	
Approach Delay (s)		39.6			54.5			8.6			5.5	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	19.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



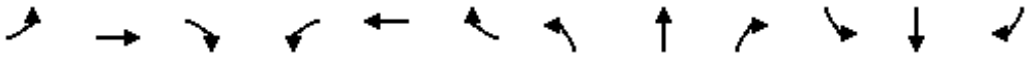
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	74	13	22	304	37	21	1141	47	12	216	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00			0.95			1.00	1.00
Frt	1.00	1.00	0.85		0.99			0.99			1.00	0.85
Flt Protected	0.95	1.00	1.00		1.00			1.00			1.00	1.00
Satd. Flow (prot)	1770	1863	1583		1832			3516			1858	1583
Flt Permitted	0.25	1.00	1.00		0.98			0.95			0.92	1.00
Satd. Flow (perm)	469	1863	1583		1802			3330			1707	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)	24	80	14	24	330	40	23	1240	51	13	235	61
RTOR Reduction (vph)	0	0	10	0	4	0	0	2	0	0	0	20
Lane Group Flow (vph)	24	80	4	0	390	0	0	1312	0	0	248	41
Turn Type	Perm		Perm	Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		6
Actuated Green, G (s)	31.4	31.4	31.4		31.4			80.6			80.6	80.6
Effective Green, g (s)	31.4	31.4	31.4		31.4			80.6			80.6	80.6
Actuated g/C Ratio	0.26	0.26	0.26		0.26			0.67			0.67	0.67
Clearance Time (s)	4.0	4.0	4.0		4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	123	487	414		472			2237			1147	1063
v/s Ratio Prot		0.04										
v/s Ratio Perm	0.05		0.00		c0.22			c0.39			0.15	0.03
v/c Ratio	0.20	0.16	0.01		0.83			0.59			0.22	0.04
Uniform Delay, d1	34.5	34.2	32.8		41.7			10.7			7.6	6.6
Progression Factor	1.00	1.00	1.00		1.00			1.00			0.31	0.07
Incremental Delay, d2	0.8	0.2	0.0		11.3			1.1			0.4	0.1
Delay (s)	35.2	34.3	32.8		53.1			11.8			2.7	0.6
Level of Service	D	C	C		D			B			A	A
Approach Delay (s)		34.3			53.1			11.8			2.3	
Approach LOS		C			D			B			A	

Intersection Summary			
HCM Average Control Delay	19.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



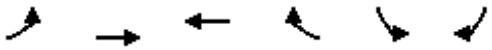
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	43	250	1222	126	72	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frt		1.00	0.99		1.00	0.85
Flt Protected		0.99	1.00		0.95	1.00
Satd. Flow (prot)		3513	3490		1770	1583
Flt Permitted		0.69	1.00		0.95	1.00
Satd. Flow (perm)		2428	3490		1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	47	272	1328	137	78	120
RTOR Reduction (vph)	0	0	4	0	0	98
Lane Group Flow (vph)	0	319	1461	0	78	22
Turn Type	Perm					Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		101.4	101.4		10.6	10.6
Effective Green, g (s)		101.4	101.4		10.6	10.6
Actuated g/C Ratio		0.85	0.85		0.09	0.09
Clearance Time (s)		4.0	4.0		4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2052	2949		156	140
v/s Ratio Prot			c0.42		c0.04	
v/s Ratio Perm		0.13				0.01
v/c Ratio		0.16	0.50		0.50	0.16
Uniform Delay, d1		1.7	2.5		52.2	50.6
Progression Factor		1.00	0.50		0.82	0.58
Incremental Delay, d2		0.2	0.5		2.5	0.5
Delay (s)		1.8	1.8		45.3	29.6
Level of Service		A	A		D	C
Approach Delay (s)		1.8	1.8		35.8	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	5.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



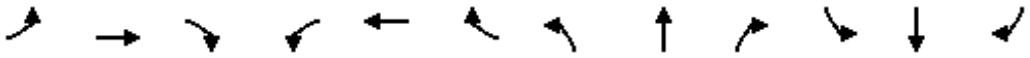
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	197	28	18	1275	37	129	383	55	16	63	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			0.95			1.00			1.00	
Frt		0.98			1.00			0.99			0.98	
Flt Protected		1.00			1.00			0.99			0.99	
Satd. Flow (prot)		1830			3522			1818			1812	
Flt Permitted		0.94			0.95			0.90			0.91	
Satd. Flow (perm)		1731			3347			1650			1661	
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	214	30	20	1386	40	140	416	60	17	68	14
RTOR Reduction (vph)	0	5	0	0	2	0	0	4	0	0	6	0
Lane Group Flow (vph)	0	248	0	0	1444	0	0	612	0	0	93	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		38.0			38.0			28.0			28.0	
Effective Green, g (s)		38.0			38.0			28.0			28.0	
Actuated g/C Ratio		0.51			0.51			0.38			0.38	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		889			1719			624			628	
v/s Ratio Prot												
v/s Ratio Perm		0.14			c0.43			c0.37			0.06	
v/c Ratio		0.28			0.84			0.98			0.15	
Uniform Delay, d1		10.2			15.4			22.7			15.1	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.2			3.9			30.9			0.1	
Delay (s)		10.4			19.3			53.6			15.3	
Level of Service		B			B			D			B	
Approach Delay (s)		10.4			19.3			53.6			15.3	
Approach LOS		B			B			D			B	

Intersection Summary			
HCM Average Control Delay	27.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	74.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



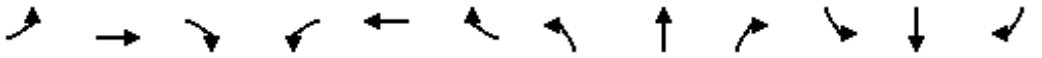
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	24	319	1281	90	31	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.18	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	339	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	26	347	1392	98	34	75
RTOR Reduction (vph)	0	0	0	12	0	71
Lane Group Flow (vph)	26	347	1392	86	34	4
Turn Type	Perm			Perm		Perm
Protected Phases		2	6		4	
Permitted Phases	2			6		4
Actuated Green, G (s)	105.3	105.3	105.3	105.3	6.7	6.7
Effective Green, g (s)	105.3	105.3	105.3	105.3	6.7	6.7
Actuated g/C Ratio	0.88	0.88	0.88	0.88	0.06	0.06
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	297	3105	3105	1389	99	88
v/s Ratio Prot		0.10	c0.39		c0.02	
v/s Ratio Perm	0.08			0.05		0.00
v/c Ratio	0.09	0.11	0.45	0.06	0.34	0.05
Uniform Delay, d1	1.0	1.0	1.5	1.0	54.5	53.6
Progression Factor	1.32	1.36	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	0.1	0.5	0.1	2.1	0.2
Delay (s)	1.9	1.4	2.0	1.0	56.6	53.9
Level of Service	A	A	A	A	E	D
Approach Delay (s)		1.5	1.9		54.7	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	4.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



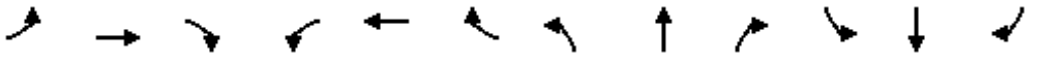
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	106	663	70	79	319	55	92	585	115	54	576	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95			0.95	
Frt	1.00	0.99		1.00	0.98		1.00	0.98			1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770	1836		1770	1822		1770	3452			3515	
Flt Permitted	0.34	1.00		0.10	1.00		0.25	1.00			0.73	
Satd. Flow (perm)	628	1836		179	1822		465	3452			2589	
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)	115	721	76	86	347	60	100	636	125	59	626	12
RTOR Reduction (vph)	0	4	0	0	6	0	0	16	0	0	1	0
Lane Group Flow (vph)	115	793	0	86	401	0	100	745	0	0	696	0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	50.5	44.5		44.9	41.7		40.3	40.3			33.1	
Effective Green, g (s)	50.5	44.5		44.9	41.7		40.3	40.3			33.1	
Actuated g/C Ratio	0.50	0.44		0.45	0.42		0.40	0.40			0.33	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	386	817		131	760		229	1391			857	
v/s Ratio Prot	c0.02	c0.43		c0.02	0.22		0.01	c0.22				
v/s Ratio Perm	0.13			0.27			0.16				c0.27	
v/c Ratio	0.30	0.97		0.66	0.53		0.44	0.54			0.81	
Uniform Delay, d1	14.5	27.1		23.3	21.8		30.8	22.7			30.6	
Progression Factor	1.00	1.00		1.00	1.00		0.73	0.76			1.00	
Incremental Delay, d2	0.4	24.4		11.3	0.7		1.3	1.5			8.3	
Delay (s)	15.0	51.5		34.5	22.4		23.8	18.7			38.9	
Level of Service	B	D		C	C		C	B			D	
Approach Delay (s)		46.9			24.6			19.3			38.9	
Approach LOS		D			C			B			D	

Intersection Summary			
HCM Average Control Delay	33.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	94.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	112	0	187	382	68	58	65	560	0	0	635	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95			0.95	
Frt	1.00		0.85	1.00	0.93		1.00	1.00			0.98	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770		1583	1770	1734		1770	3539			3486	
Flt Permitted	0.63		1.00	0.95	1.00		0.27	1.00			1.00	
Satd. Flow (perm)	1173		1583	1770	1734		506	3539			3486	
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)	122	0	203	415	74	63	71	609	0	0	690	77
RTOR Reduction (vph)	0	0	142	0	38	0	0	0	0	0	7	0
Lane Group Flow (vph)	122	0	61	415	99	0	71	609	0	0	760	0
Turn Type	custom		custom	Perm			pm+pt					
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2					
Actuated Green, G (s)	29.9		29.9	29.9	29.9		62.1	62.1			52.0	
Effective Green, g (s)	29.9		29.9	29.9	29.9		62.1	62.1			52.0	
Actuated g/C Ratio	0.30		0.30	0.30	0.30		0.62	0.62			0.52	
Clearance Time (s)	4.0		4.0	4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	351		473	529	518		391	2198			1813	
v/s Ratio Prot					0.06		0.01	c0.17			c0.22	
v/s Ratio Perm	0.10		0.04	c0.23			0.10					
v/c Ratio	0.35		0.13	0.78	0.19		0.18	0.28			0.42	
Uniform Delay, d1	27.4		25.6	32.1	26.1		8.6	8.7			14.7	
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00			0.26	
Incremental Delay, d2	0.6		0.1	7.5	0.2		0.2	0.3			0.4	
Delay (s)	28.0		25.7	39.6	26.2		8.8	9.0			4.3	
Level of Service	C		C	D	C		A	A			A	
Approach Delay (s)		26.6			36.3			9.0			4.3	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM Average Control Delay	16.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



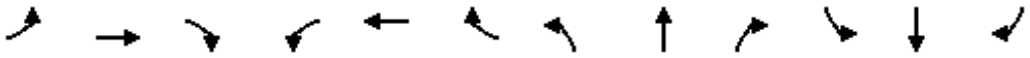
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	154	793	170	122	318	43	52	145	40	54	275	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	10	10	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.98		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4951		1770	3476		1652	1683		1770	1817	
Flt Permitted	0.50	1.00		0.19	1.00		0.29	1.00		0.56	1.00	
Satd. Flow (perm)	928	4951		359	3476		499	1683		1047	1817	
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)	167	862	185	133	346	47	57	158	43	59	299	58
RTOR Reduction (vph)	0	51	0	0	16	0	0	17	0	0	12	0
Lane Group Flow (vph)	167	996	0	133	377	0	57	184	0	59	345	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	26.7	22.8		26.5	22.7		17.4	15.0		17.4	15.0	
Effective Green, g (s)	26.7	22.8		26.5	22.7		17.4	15.0		17.4	15.0	
Actuated g/C Ratio	0.44	0.38		0.44	0.38		0.29	0.25		0.29	0.25	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	468	1881		248	1315		191	421		333	454	
v/s Ratio Prot	0.02	0.20		c0.03	0.11		c0.01	0.11		0.01	c0.19	
v/s Ratio Perm	0.14			c0.20			0.07			0.04		
v/c Ratio	0.36	0.53		0.54	0.29		0.30	0.44		0.18	0.76	
Uniform Delay, d1	10.2	14.4		10.5	13.0		16.1	18.9		15.7	20.8	
Progression Factor	0.22	0.29		1.00	1.00		0.64	0.75		1.00	1.00	
Incremental Delay, d2	0.3	0.7		2.2	0.5		0.8	0.7		0.3	7.2	
Delay (s)	2.6	4.9		12.7	13.6		11.1	15.0		15.9	28.0	
Level of Service	A	A		B	B		B	B		B	C	
Approach Delay (s)		4.6			13.3			14.1			26.3	
Approach LOS		A			B			B			C	

Intersection Summary			
HCM Average Control Delay	11.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

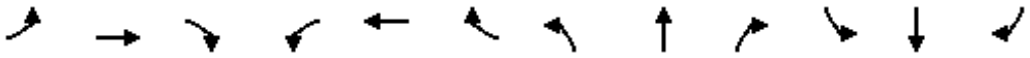
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1916	150	183	966	89	216
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.91		1.00	0.91	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	5030		1770	5085	1770	1583
Flt Permitted	1.00		0.05	1.00	0.95	1.00
Satd. Flow (perm)	5030		87	5085	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2083	163	199	1050	97	235
RTOR Reduction (vph)	6	0	0	0	0	197
Lane Group Flow (vph)	2240	0	199	1050	97	38
Turn Type			pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Actuated Green, G (s)	82.0		101.0	101.0	21.0	21.0
Effective Green, g (s)	82.0		101.0	101.0	21.0	21.0
Actuated g/C Ratio	0.63		0.78	0.78	0.16	0.16
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3173		262	3951	286	256
v/s Ratio Prot	0.45		c0.09	0.21	c0.05	
v/s Ratio Perm			c0.50			0.02
v/c Ratio	0.71		0.76	0.27	0.34	0.15
Uniform Delay, d1	16.0		38.9	4.1	48.3	46.8
Progression Factor	0.25		0.65	2.02	1.00	1.00
Incremental Delay, d2	0.4		11.0	0.2	3.2	1.2
Delay (s)	4.5		36.3	8.4	51.5	48.0
Level of Service	A		D	A	D	D
Approach Delay (s)	4.5			12.8	49.1	
Approach LOS	A			B	D	

Intersection Summary			
HCM Average Control Delay	11.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	354	155	9	122	27	14	184	52	50	497	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	4.0
Lane Util. Factor		1.00			0.95			1.00			1.00	1.00
Frt		0.96			0.97			0.97			1.00	0.85
Flt Protected		1.00			1.00			1.00			1.00	1.00
Satd. Flow (prot)		1786			3440			1805			1854	1583
Flt Permitted		0.98			0.93			0.97			0.95	1.00
Satd. Flow (perm)		1758			3192			1749			1773	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)	27	385	168	10	133	29	15	200	57	54	540	87
RTOR Reduction (vph)	0	26	0	0	18	0	0	15	0	0	0	43
Lane Group Flow (vph)	0	554	0	0	154	0	0	257	0	0	594	44
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		21.9			21.9			30.1			30.1	30.1
Effective Green, g (s)		21.9			21.9			30.1			30.1	30.1
Actuated g/C Ratio		0.36			0.36			0.50			0.50	0.50
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		642			1165			877			889	794
v/s Ratio Prot												
v/s Ratio Perm		c0.32			0.05			0.15			c0.33	0.03
v/c Ratio		0.86			0.13			0.29			0.67	0.05
Uniform Delay, d1		17.7			12.7			8.7			11.2	7.7
Progression Factor		0.63			1.00			0.80			0.90	0.82
Incremental Delay, d2		9.8			0.1			0.8			3.4	0.1
Delay (s)		20.8			12.8			7.9			13.5	6.4
Level of Service		C			B			A			B	A
Approach Delay (s)		20.8			12.8			7.9			12.6	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM Average Control Delay	14.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	86.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

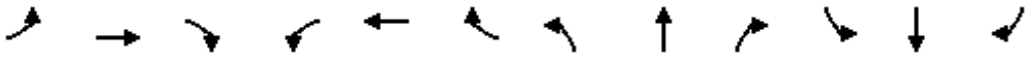


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	119	1041	185	23	373	54	84	381	25	40	654	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	
Lane Util. Factor		0.91			0.91		1.00	0.95			0.95	
Frt		0.98			0.98		1.00	0.99			0.99	
Flt Protected		1.00			1.00		0.95	1.00			1.00	
Satd. Flow (prot)		4959			4981		1770	3507			3484	
Flt Permitted		0.83			0.85		0.23	1.00			0.91	
Satd. Flow (perm)		4155			4242		437	3507			3191	
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)	129	1132	201	25	405	59	91	414	27	43	711	72
RTOR Reduction (vph)	0	36	0	0	29	0	0	8	0	0	12	0
Lane Group Flow (vph)	0	1426	0	0	460	0	91	433	0	0	814	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		28.0			28.0		24.0	24.0			24.0	
Effective Green, g (s)		28.0			28.0		24.0	24.0			24.0	
Actuated g/C Ratio		0.47			0.47		0.40	0.40			0.40	
Clearance Time (s)		4.0			4.0		4.0	4.0			4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1939			1980		175	1403			1276	
v/s Ratio Prot								0.12				
v/s Ratio Perm		c0.34			0.11		0.21				c0.26	
v/c Ratio		0.74			0.23		0.52	0.31			0.64	
Uniform Delay, d1		13.0			9.6		13.6	12.3			14.5	
Progression Factor		1.00			0.69		1.10	1.08			1.00	
Incremental Delay, d2		2.5			0.3		10.0	0.5			2.4	
Delay (s)		15.5			6.9		25.1	13.8			16.9	
Level of Service		B			A		C	B			B	
Approach Delay (s)		15.5			6.9			15.8			16.9	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	14.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

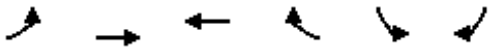
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	153	1680	103	142	722	177	118	335	151	327	507	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00		0.95	
Frt	1.00	0.99		1.00	0.97		1.00	1.00	0.85		0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00		0.98	
Satd. Flow (prot)	1770	5041		1770	4935		1770	1863	1583		3436	
Flt Permitted	0.24	1.00		0.11	1.00		0.13	1.00	1.00		0.67	
Satd. Flow (perm)	446	5041		207	4935		239	1863	1583		2348	
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)	166	1826	112	154	785	192	128	364	164	355	551	76
RTOR Reduction (vph)	0	5	0	0	32	0	0	0	88	0	5	0
Lane Group Flow (vph)	166	1933	0	154	945	0	128	364	76	0	977	0
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	50.0	50.0		44.0	44.0		60.0	60.0	60.0		52.0	
Effective Green, g (s)	50.0	50.0		44.0	44.0		60.0	60.0	60.0		52.0	
Actuated g/C Ratio	0.38	0.38		0.34	0.34		0.46	0.46	0.46		0.40	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	314	1939		166	1670		157	860	731		939	
v/s Ratio Prot	0.06	c0.38		c0.06	0.19		c0.03	0.20				
v/s Ratio Perm	0.15			0.26			0.35		0.05		c0.42	
v/c Ratio	0.53	1.00		0.93	0.57		0.82	0.42	0.10		1.04	
Uniform Delay, d1	38.3	39.9		36.0	35.2		31.5	23.4	19.8		39.0	
Progression Factor	1.00	1.00		0.91	0.48		1.00	1.00	1.00		1.00	
Incremental Delay, d2	1.6	19.7		47.9	1.4		26.7	1.5	0.3		40.5	
Delay (s)	40.0	59.7		80.6	18.2		58.2	24.9	20.1		79.5	
Level of Service	D	E		F	B		E	C	C		E	
Approach Delay (s)		58.1			26.7			30.2			79.5	
Approach LOS		E			C			C			E	

Intersection Summary			
HCM Average Control Delay	51.4	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	99.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



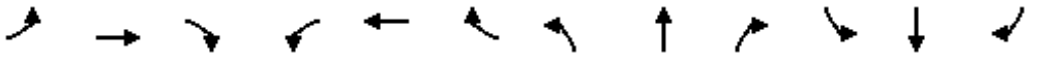
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	54	339	217	59	134	36	125	541	134	49	959	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95		1.00	0.95		1.00	0.95	
Frt		0.95			0.98		1.00	0.97		1.00	0.99	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3335			3412		1770	3434		1770	3500	
Flt Permitted		0.90			0.64		0.20	1.00		0.35	1.00	
Satd. Flow (perm)		3011			2208		381	3434		653	3500	
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)	59	368	236	64	146	39	136	588	146	53	1042	82
RTOR Reduction (vph)	0	82	0	0	26	0	0	35	0	0	9	0
Lane Group Flow (vph)	0	581	0	0	223	0	136	699	0	53	1115	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		14.8			14.8		37.2	37.2		37.2	37.2	
Effective Green, g (s)		14.8			14.8		37.2	37.2		37.2	37.2	
Actuated g/C Ratio		0.25			0.25		0.62	0.62		0.62	0.62	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		743			545		236	2129		405	2170	
v/s Ratio Prot								0.20			0.32	
v/s Ratio Perm		c0.19			0.10		c0.36			0.08		
v/c Ratio		0.78			0.41		0.58	0.33		0.13	0.51	
Uniform Delay, d1		21.1			18.9		6.7	5.4		4.7	6.4	
Progression Factor		1.00			0.77		1.00	1.00		0.57	0.55	
Incremental Delay, d2		5.4			0.5		9.9	0.4		0.6	0.8	
Delay (s)		26.5			15.1		16.6	5.9		3.2	4.2	
Level of Service		C			B		B	A		A	A	
Approach Delay (s)		26.5			15.1			7.5			4.2	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	11.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	245	1784	905	197	242	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91	0.95		0.97	
Frt	1.00	1.00	0.97		0.98	
Flt Protected	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1770	5085	3444		3397	
Flt Permitted	0.17	1.00	1.00		0.96	
Satd. Flow (perm)	313	5085	3444		3397	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	266	1939	984	214	263	38
RTOR Reduction (vph)	0	0	11	0	9	0
Lane Group Flow (vph)	266	1939	1187	0	292	0
Turn Type	pm+pt					
Protected Phases	5	2	6		4	
Permitted Phases	2					
Actuated Green, G (s)	101.0	101.0	83.7		21.0	
Effective Green, g (s)	101.0	101.0	83.7		21.0	
Actuated g/C Ratio	0.78	0.78	0.64		0.16	
Clearance Time (s)	4.0	4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	392	3951	2217		549	
v/s Ratio Prot	c0.07	0.38	0.34		c0.09	
v/s Ratio Perm	c0.46					
v/c Ratio	0.68	0.49	0.54		0.53	
Uniform Delay, d1	9.9	5.2	12.6		50.0	
Progression Factor	2.18	1.03	0.19		1.00	
Incremental Delay, d2	3.3	0.3	0.8		3.7	
Delay (s)	25.0	5.7	3.1		53.6	
Level of Service	C	A	A		D	
Approach Delay (s)		8.0	3.1		53.6	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	10.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

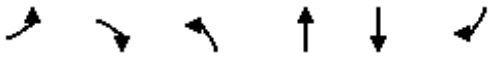


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	180	1718	74	31	911	98	62	36	63	173	40	172
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.97	1.00		0.96	1.00
Satd. Flow (prot)	1770	5085	1583	1770	3487			1806	1583		1790	1583
Flt Permitted	0.15	1.00	1.00	0.08	1.00			0.64	1.00		0.67	1.00
Satd. Flow (perm)	275	5085	1583	140	3487			1200	1583		1242	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)	196	1867	80	34	990	107	67	39	68	188	43	187
RTOR Reduction (vph)	0	0	8	0	6	0	0	0	47	0	0	83
Lane Group Flow (vph)	196	1867	72	34	1091	0	0	106	21	0	231	104
Turn Type	pm+pt		Perm	pm+pt			Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6			8		8	4		4
Actuated Green, G (s)	82.0	75.0	75.0	69.0	66.0			40.0	40.0		40.0	40.0
Effective Green, g (s)	82.0	75.0	75.0	69.0	66.0			40.0	40.0		40.0	40.0
Actuated g/C Ratio	0.63	0.58	0.58	0.53	0.51			0.31	0.31		0.31	0.31
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	311	2934	913	112	1770			369	487		382	487
v/s Ratio Prot	c0.06	c0.37		0.01	0.31							
v/s Ratio Perm	0.34		0.05	0.15				0.09	0.01		c0.19	0.07
v/c Ratio	0.63	0.64	0.08	0.30	0.62			0.29	0.04		0.60	0.21
Uniform Delay, d1	15.9	18.4	12.2	16.6	22.9			34.2	31.6		38.3	33.3
Progression Factor	2.14	0.17	0.12	0.77	0.67			1.00	1.00		1.00	1.00
Incremental Delay, d2	3.6	0.9	0.1	1.4	1.5			2.0	0.2		6.9	1.0
Delay (s)	37.5	4.0	1.6	14.2	16.9			36.1	31.7		45.2	34.3
Level of Service	D	A	A	B	B			D	C		D	C
Approach Delay (s)		7.0			16.9			34.4			40.4	
Approach LOS		A			B			C			D	

Intersection Summary			
HCM Average Control Delay	14.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

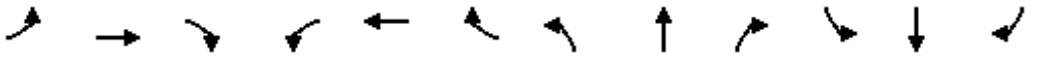
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1523	345	327	711	270	516
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	1.00	0.95	1.00	0.88
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	1770	3539	1770	2787
Flt Permitted	1.00	1.00	0.07	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	133	3539	1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1655	375	355	773	293	561
RTOR Reduction (vph)	0	82	0	0	0	419
Lane Group Flow (vph)	1655	293	355	773	293	142
Turn Type		Perm	pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases		2	6			8
Actuated Green, G (s)	52.0	52.0	89.0	89.0	33.0	33.0
Effective Green, g (s)	52.0	52.0	89.0	89.0	33.0	33.0
Actuated g/C Ratio	0.40	0.40	0.68	0.68	0.25	0.25
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2034	633	507	2423	449	707
v/s Ratio Prot	c0.33		c0.18	0.22	c0.17	
v/s Ratio Perm		0.18	0.30			0.05
v/c Ratio	0.81	0.46	0.70	0.32	0.65	0.20
Uniform Delay, d1	34.7	28.7	34.2	8.3	43.4	38.1
Progression Factor	0.37	0.12	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.0	1.9	4.3	0.3	7.2	0.6
Delay (s)	16.0	5.3	38.6	8.6	50.6	38.8
Level of Service	B	A	D	A	D	D
Approach Delay (s)	14.0			18.0	42.8	
Approach LOS	B			B	D	

Intersection Summary			
HCM Average Control Delay	21.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	329	504	227	651	1095	225
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.14	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	265	3539	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	358	548	247	708	1190	245
RTOR Reduction (vph)	0	168	0	0	0	50
Lane Group Flow (vph)	358	380	247	708	1190	195
Turn Type		Perm	pm+pt			pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases		4	2			6
Actuated Green, G (s)	16.4	16.4	34.1	34.1	24.1	40.5
Effective Green, g (s)	16.4	16.4	34.1	34.1	24.1	40.5
Actuated g/C Ratio	0.28	0.28	0.58	0.58	0.41	0.69
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	496	444	309	2063	1458	1204
v/s Ratio Prot	0.20		c0.08	0.20	0.34	0.05
v/s Ratio Perm		c0.24	c0.38			0.08
v/c Ratio	0.72	0.86	0.80	0.34	0.82	0.16
Uniform Delay, d1	19.0	19.9	10.2	6.4	15.2	3.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.1	14.9	13.5	0.5	5.2	0.1
Delay (s)	24.1	34.9	23.6	6.8	20.4	3.2
Level of Service	C	C	C	A	C	A
Approach Delay (s)	30.6			11.2	17.5	
Approach LOS	C			B	B	

Intersection Summary			
HCM Average Control Delay	19.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	58.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

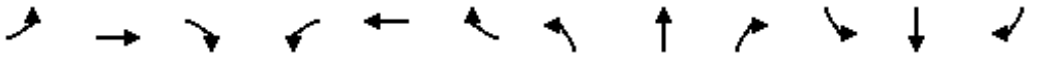


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	146	609	107	27	316	73	94	311	128	70	377	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	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	0.97		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1821		1770	1810		1770	1781		1770	1863	1583
Flt Permitted	0.24	1.00		0.15	1.00		0.27	1.00		0.19	1.00	1.00
Satd. Flow (perm)	455	1821		279	1810		502	1781		346	1863	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)	159	662	116	29	343	79	102	338	139	76	410	123
RTOR Reduction (vph)	0	7	0	0	10	0	0	14	0	0	0	29
Lane Group Flow (vph)	159	771	0	29	412	0	102	463	0	76	410	94
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	47.6	41.4		28.9	26.7		32.9	29.9		32.9	29.9	29.9
Effective Green, g (s)	47.6	41.4		28.9	26.7		32.9	29.9		32.9	29.9	29.9
Actuated g/C Ratio	0.51	0.45		0.31	0.29		0.36	0.32		0.36	0.32	0.32
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	474	815		123	522		220	576		169	602	512
v/s Ratio Prot	c0.06	c0.42		0.01	0.23		c0.02	c0.26		0.01	0.22	
v/s Ratio Perm	0.11			0.07			0.15			0.15		0.06
v/c Ratio	0.34	0.95		0.24	0.79		0.46	0.80		0.45	0.68	0.18
Uniform Delay, d1	24.1	24.5		40.9	30.3		23.5	28.6		22.1	27.2	22.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.4	19.5		1.0	7.8		1.5	11.3		1.9	6.1	0.8
Delay (s)	24.6	44.0		41.9	38.1		25.1	39.9		24.0	33.3	23.3
Level of Service	C	D		D	D		C	D		C	C	C
Approach Delay (s)		40.7			38.3			37.3			30.1	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM Average Control Delay	37.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	92.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

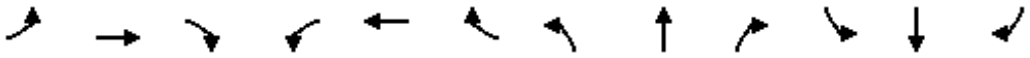
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	21	301	62	22	132	60	15	142	23	183	486	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0			4.0	
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	
Frt		0.98			1.00	0.85		0.98			0.99	
Flt Protected		1.00			0.99	1.00		1.00			0.99	
Satd. Flow (prot)		1817			1849	1583		1823			1820	
Flt Permitted		0.98			0.90	1.00		0.94			0.86	
Satd. Flow (perm)		1784			1682	1583		1719			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)	23	327	67	24	143	65	16	154	25	199	528	61
RTOR Reduction (vph)	0	12	0	0	0	47	0	8	0	0	5	0
Lane Group Flow (vph)	0	405	0	0	167	18	0	187	0	0	783	0
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		16.6			16.6	16.6		35.4			35.4	
Effective Green, g (s)		16.6			16.6	16.6		35.4			35.4	
Actuated g/C Ratio		0.28			0.28	0.28		0.59			0.59	
Clearance Time (s)		4.0			4.0	4.0		4.0			4.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		494			465	438		1014			934	
v/s Ratio Prot												
v/s Ratio Perm		c0.23			0.10	0.01		0.11			c0.49	
v/c Ratio		0.82			0.36	0.04		0.18			0.84	
Uniform Delay, d1		20.3			17.4	15.9		5.7			10.0	
Progression Factor		1.00			1.00	1.00		1.00			0.68	
Incremental Delay, d2		10.5			0.5	0.0		0.4			7.1	
Delay (s)		30.8			17.9	15.9		6.1			13.9	
Level of Service		C			B	B		A			B	
Approach Delay (s)		30.8			17.3			6.1			13.9	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM Average Control Delay	17.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	91.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



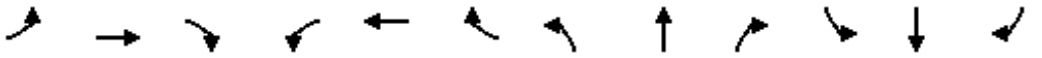
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	614	978	93	151	760	30	159	431	55	28	859	514
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1593	3144		1593	3167		1593	3131		1593	3185	1425
Flt Permitted	0.95	1.00		0.23	1.00		0.15	1.00		0.31	1.00	1.00
Satd. Flow (perm)	1593	3144		380	3167		247	3131		526	3185	1425
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)	667	1063	101	164	826	33	173	468	60	30	934	559
RTOR Reduction (vph)	0	7	0	0	3	0	0	10	0	0	0	176
Lane Group Flow (vph)	667	1157	0	164	856	0	173	518	0	30	934	383
Turn Type	Prot			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6			8			4		4
Actuated Green, G (s)	32.0	46.7		33.3	24.0		31.2	27.2		28.0	25.6	25.6
Effective Green, g (s)	32.0	46.7		33.3	24.0		31.2	27.2		28.0	25.6	25.6
Actuated g/C Ratio	0.31	0.46		0.33	0.24		0.31	0.27		0.28	0.25	0.25
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	502	1445		236	748		129	838		170	803	359
v/s Ratio Prot	c0.42	0.37		0.06	c0.27		c0.05	0.17		0.00	0.29	
v/s Ratio Perm				0.16			c0.36			0.04		0.27
v/c Ratio	1.33	0.80		0.69	1.14		1.34	0.62		0.18	1.16	1.07
Uniform Delay, d1	34.8	23.5		25.6	38.8		35.6	32.6		27.5	38.0	38.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	161.2	4.8		8.6	80.4		196.4	1.4		0.5	86.9	66.5
Delay (s)	196.0	28.2		34.2	119.2		232.0	34.0		28.0	124.9	104.5
Level of Service	F	C		C	F		F	C		C	F	F
Approach Delay (s)		89.3			105.5			82.9			115.5	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	99.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.31		
Actuated Cycle Length (s)	101.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	111.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



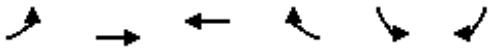
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	227	98	20	59	54	29	490	38	136	914	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		0.96			0.94			0.99			1.00	
Flt Protected		0.99			0.99			1.00			0.99	
Satd. Flow (prot)		3378			3298			3494			3507	
Flt Permitted		0.91			0.87			0.87			0.78	
Satd. Flow (perm)		3088			2879			3051			2770	
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)	40	247	107	22	64	59	32	533	41	148	993	21
RTOR Reduction (vph)	0	71	0	0	48	0	0	7	0	0	2	0
Lane Group Flow (vph)	0	323	0	0	97	0	0	599	0	0	1160	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		11.3			11.3			40.7			40.7	
Effective Green, g (s)		11.3			11.3			40.7			40.7	
Actuated g/C Ratio		0.19			0.19			0.68			0.68	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		582			542			2070			1879	
v/s Ratio Prot												
v/s Ratio Perm		c0.10			0.03			0.20			c0.42	
v/c Ratio		0.55			0.18			0.29			0.62	
Uniform Delay, d1		22.1			20.5			3.9			5.3	
Progression Factor		1.00			1.00			1.32			1.00	
Incremental Delay, d2		1.1			0.2			0.3			1.5	
Delay (s)		23.2			20.6			5.4			6.9	
Level of Service		C			C			A			A	
Approach Delay (s)		23.2			20.6			5.4			6.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	10.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



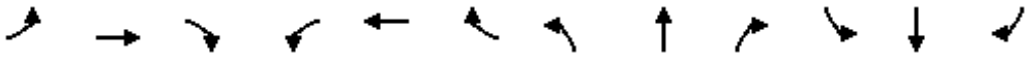
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	71	283	127	47	177	34	0	485	37	0	891	131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00			0.95			1.00	1.00
Frt	1.00	1.00	0.85		0.98			0.99			1.00	0.85
Flt Protected	0.95	1.00	1.00		0.99			1.00			1.00	1.00
Satd. Flow (prot)	1770	1863	1583		1813			3502			1863	1583
Flt Permitted	0.45	1.00	1.00		0.72			1.00			1.00	1.00
Satd. Flow (perm)	831	1863	1583		1315			3502			1863	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)	77	308	138	51	192	37	0	527	40	0	968	142
RTOR Reduction (vph)	0	0	99	0	9	0	0	9	0	0	0	53
Lane Group Flow (vph)	77	308	39	0	271	0	0	558	0	0	968	89
Turn Type	Perm		Perm	Perm								Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8								6
Actuated Green, G (s)	14.4	14.4	14.4		14.4			37.6			37.6	37.6
Effective Green, g (s)	14.4	14.4	14.4		14.4			37.6			37.6	37.6
Actuated g/C Ratio	0.24	0.24	0.24		0.24			0.63			0.63	0.63
Clearance Time (s)	4.0	4.0	4.0		4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	199	447	380		316			2195			1167	992
v/s Ratio Prot		0.17						0.16			c0.52	
v/s Ratio Perm	0.09		0.02		c0.21							0.06
v/c Ratio	0.39	0.69	0.10		0.86			0.25			0.83	0.09
Uniform Delay, d1	19.1	20.8	17.8		21.8			5.0			8.7	4.4
Progression Factor	1.00	1.00	1.00		1.00			1.00			0.61	0.08
Incremental Delay, d2	1.3	4.4	0.1		19.9			0.3			5.7	0.1
Delay (s)	20.4	25.2	17.9		41.7			5.3			11.0	0.5
Level of Service	C	C	B		D			A			B	A
Approach Delay (s)		22.5			41.7			5.3			9.6	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM Average Control Delay	15.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	85.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



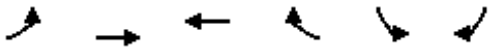
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	110	1004	354	130	203	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frt		1.00	0.96		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3522	3397		1770	1583
Flt Permitted		0.84	1.00		0.95	1.00
Satd. Flow (perm)		2960	3397		1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	120	1091	385	141	221	67
RTOR Reduction (vph)	0	0	48	0	0	53
Lane Group Flow (vph)	0	1211	478	0	221	14
Turn Type	Perm					Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		39.7	39.7		12.3	12.3
Effective Green, g (s)		39.7	39.7		12.3	12.3
Actuated g/C Ratio		0.66	0.66		0.20	0.20
Clearance Time (s)		4.0	4.0		4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1959	2248		363	325
v/s Ratio Prot			0.14		c0.12	
v/s Ratio Perm		c0.41				0.01
v/c Ratio		0.62	0.21		0.61	0.04
Uniform Delay, d1		5.8	4.0		21.7	19.1
Progression Factor		1.00	0.41		1.00	1.00
Incremental Delay, d2		1.5	0.2		2.9	0.1
Delay (s)		7.3	1.8		24.5	19.2
Level of Service		A	A		C	B
Approach Delay (s)		7.3	1.8		23.3	
Approach LOS		A	A		C	

Intersection Summary			
HCM Average Control Delay	8.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



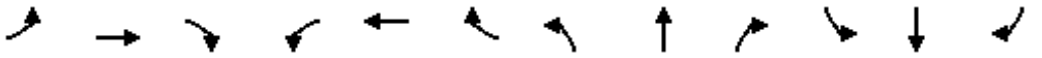
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	21	896	118	51	343	13	35	139	53	100	384	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			1.00			1.00			1.00	
Frt		0.98			1.00			0.97			1.00	
Flt Protected		1.00			0.99			0.99			0.99	
Satd. Flow (prot)		3475			1843			1790			1839	
Flt Permitted		0.94			0.71			0.90			0.89	
Satd. Flow (perm)		3281			1324			1632			1658	
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	974	128	55	373	14	38	151	58	109	417	10
RTOR Reduction (vph)	0	13	0	0	2	0	0	15	0	0	1	0
Lane Group Flow (vph)	0	1112	0	0	440	0	0	232	0	0	535	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		24.0			24.0			20.6			20.6	
Effective Green, g (s)		24.0			24.0			20.6			20.6	
Actuated g/C Ratio		0.46			0.46			0.39			0.39	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1497			604			639			649	
v/s Ratio Prot												
v/s Ratio Perm		c0.34			0.33			0.14			c0.32	
v/c Ratio		0.74			0.73			0.36			0.82	
Uniform Delay, d1		11.8			11.7			11.3			14.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		2.0			4.4			0.4			8.4	
Delay (s)		13.8			16.0			11.7			22.7	
Level of Service		B			B			B			C	
Approach Delay (s)		13.8			16.0			11.7			22.7	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM Average Control Delay	16.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	52.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	99.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	47	1156	436	68	84	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.48	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	895	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	51	1257	474	74	91	46
RTOR Reduction (vph)	0	0	0	19	0	40
Lane Group Flow (vph)	51	1257	474	55	91	6
Turn Type	Perm			Perm		Perm
Protected Phases		2	6		4	
Permitted Phases	2			6		4
Actuated Green, G (s)	44.7	44.7	44.7	44.7	7.3	7.3
Effective Green, g (s)	44.7	44.7	44.7	44.7	7.3	7.3
Actuated g/C Ratio	0.74	0.74	0.74	0.74	0.12	0.12
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	667	2637	2637	1179	215	193
v/s Ratio Prot		c0.36	0.13		c0.05	
v/s Ratio Perm	0.06			0.03		0.00
v/c Ratio	0.08	0.48	0.18	0.05	0.42	0.03
Uniform Delay, d1	2.1	3.0	2.3	2.0	24.4	23.2
Progression Factor	0.51	0.42	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.5	0.1	0.1	1.3	0.1
Delay (s)	1.2	1.8	2.4	2.1	25.7	23.3
Level of Service	A	A	A	A	C	C
Approach Delay (s)		1.8	2.4		24.9	
Approach LOS		A	A		C	

Intersection Summary			
HCM Average Control Delay	3.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

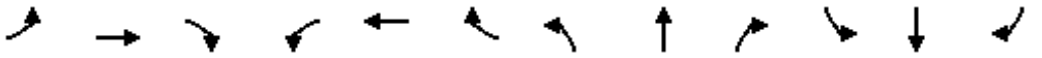


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	168	31	98	785	66	118	399	30	18	514	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95			0.95	
Frt	1.00	0.98		1.00	0.99		1.00	0.99			0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770	1819		1770	1841		1770	3502			3473	
Flt Permitted	0.07	1.00		0.58	1.00		0.18	1.00			0.93	
Satd. Flow (perm)	133	1819		1087	1841		334	3502			3234	
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)	65	183	34	107	853	72	128	434	33	20	559	75
RTOR Reduction (vph)	0	5	0	0	3	0	0	5	0	0	8	0
Lane Group Flow (vph)	65	212	0	107	922	0	128	462	0	0	646	0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	69.2	66.0		70.8	66.8		38.0	38.0			28.0	
Effective Green, g (s)	69.2	66.0		70.8	66.8		38.0	38.0			28.0	
Actuated g/C Ratio	0.58	0.55		0.59	0.56		0.32	0.32			0.23	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	120	1000		664	1025		178	1109			755	
v/s Ratio Prot	c0.01	0.12		0.01	c0.50		c0.04	0.13				
v/s Ratio Perm	0.30			0.09			0.19				c0.20	
v/c Ratio	0.54	0.21		0.16	0.90		0.72	0.42			0.86	
Uniform Delay, d1	23.5	13.8		10.8	23.6		47.7	32.3			44.1	
Progression Factor	2.31	0.82		1.00	1.00		0.71	0.77			0.73	
Incremental Delay, d2	4.9	0.5		0.1	12.4		12.6	1.1			9.8	
Delay (s)	59.1	11.8		10.9	36.0		46.7	26.1			42.0	
Level of Service	E	B		B	D		D	C			D	
Approach Delay (s)		22.7			33.4			30.5			42.0	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM Average Control Delay	33.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	90.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↱	↰	↑↑	↰	↱↱
Volume (vph)	760	99	530	1558	221	349
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	1.00	0.95	1.00	0.88
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	1770	3539	1770	2787
Flt Permitted	1.00	1.00	0.23	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	420	3539	1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	826	108	576	1693	240	379
RTOR Reduction (vph)	0	43	0	0	0	291
Lane Group Flow (vph)	826	65	576	1693	240	88
Turn Type		Perm	pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases		2	6			8
Actuated Green, G (s)	44.6	44.6	84.0	84.0	28.0	28.0
Effective Green, g (s)	44.6	44.6	84.0	84.0	28.0	28.0
Actuated g/C Ratio	0.37	0.37	0.70	0.70	0.23	0.23
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1890	588	692	2477	413	650
v/s Ratio Prot	0.16		c0.25	0.48	c0.14	
v/s Ratio Perm		0.04	c0.34			0.03
v/c Ratio	0.44	0.11	0.83	0.68	0.58	0.14
Uniform Delay, d1	28.3	24.7	19.1	10.4	40.8	36.4
Progression Factor	0.63	0.49	1.00	1.00	0.51	0.66
Incremental Delay, d2	0.7	0.4	8.5	1.6	5.3	0.4
Delay (s)	18.6	12.5	27.6	11.9	26.3	24.5
Level of Service	B	B	C	B	C	C
Approach Delay (s)	17.9			15.9	25.2	
Approach LOS	B			B	C	

Intersection Summary			
HCM Average Control Delay	17.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



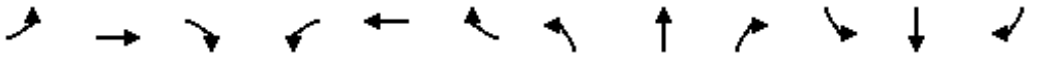
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	104	248	26	43	898	65	166	256	52	36	149	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	10	10	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5014		1770	3503		1652	1694		1770	1781	
Flt Permitted	0.21	1.00		0.52	1.00		0.48	1.00		0.24	1.00	
Satd. Flow (perm)	392	5014		973	3503		838	1694		446	1781	
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)	113	270	28	47	976	71	180	278	57	39	162	67
RTOR Reduction (vph)	0	9	0	0	4	0	0	7	0	0	13	0
Lane Group Flow (vph)	113	289	0	47	1043	0	180	328	0	39	216	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	66.8	66.8		61.1	61.1		29.2	29.2		19.7	19.7	
Effective Green, g (s)	66.8	66.8		61.1	61.1		29.2	29.2		19.7	19.7	
Actuated g/C Ratio	0.56	0.56		0.51	0.51		0.24	0.24		0.16	0.16	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	341	2791		529	1784		289	412		106	292	
v/s Ratio Prot	c0.03	0.06		0.00	c0.30		0.06	c0.19		0.01	c0.12	
v/s Ratio Perm	0.16			0.04			0.09			0.05		
v/c Ratio	0.33	0.10		0.09	0.58		0.62	0.80		0.37	0.74	
Uniform Delay, d1	23.5	12.5		14.9	20.6		42.8	42.6		43.5	47.7	
Progression Factor	0.59	0.69		0.59	0.63		0.70	0.69		0.56	0.55	
Incremental Delay, d2	0.5	0.1		0.0	0.7		3.7	9.3		2.1	9.1	
Delay (s)	14.4	8.7		8.9	13.7		33.9	38.8		26.3	35.4	
Level of Service	B	A		A	B		C	D		C	D	
Approach Delay (s)		10.3			13.5			37.0			34.0	
Approach LOS		B			B			D			C	

Intersection Summary			
HCM Average Control Delay	20.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

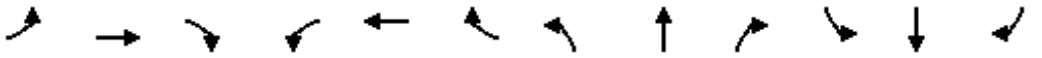
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	675	114	135	1864	177	176
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.91		1.00	0.91	1.00	1.00
Frt	0.98		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	4975		1770	5085	1770	1583
Flt Permitted	1.00		0.27	1.00	0.95	1.00
Satd. Flow (perm)	4975		505	5085	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	734	124	147	2026	192	191
RTOR Reduction (vph)	18	0	0	0	0	143
Lane Group Flow (vph)	840	0	147	2026	192	48
Turn Type			pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Actuated Green, G (s)	69.1		82.0	82.0	30.0	30.0
Effective Green, g (s)	69.1		82.0	82.0	30.0	30.0
Actuated g/C Ratio	0.58		0.68	0.68	0.25	0.25
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2865		439	3475	443	396
v/s Ratio Prot	0.17		0.02	c0.40	c0.11	
v/s Ratio Perm			0.20			0.03
v/c Ratio	0.29		0.33	0.58	0.43	0.12
Uniform Delay, d1	13.0		7.2	10.0	37.9	34.8
Progression Factor	0.70		0.57	0.89	0.59	0.21
Incremental Delay, d2	0.2		0.2	0.3	2.6	0.5
Delay (s)	9.3		4.3	9.3	25.1	8.0
Level of Service	A		A	A	C	A
Approach Delay (s)	9.3			9.0	16.6	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	9.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



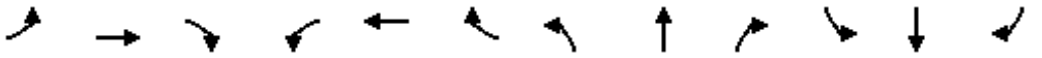
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	60	19	33	375	41	85	447	10	8	190	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	4.0
Lane Util. Factor		1.00			0.95			1.00			1.00	1.00
Frt		0.97			0.99			1.00			1.00	0.85
Flt Protected		0.99			1.00			0.99			1.00	1.00
Satd. Flow (prot)		1795			3478			1844			1859	1583
Flt Permitted		0.67			0.93			0.91			0.98	1.00
Satd. Flow (perm)		1222			3231			1693			1821	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)	24	65	21	36	408	45	92	486	11	9	207	45
RTOR Reduction (vph)	0	8	0	0	7	0	0	1	0	0	0	12
Lane Group Flow (vph)	0	102	0	0	482	0	0	588	0	0	216	33
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		23.3			23.3			88.7			88.7	88.7
Effective Green, g (s)		23.3			23.3			88.7			88.7	88.7
Actuated g/C Ratio		0.19			0.19			0.74			0.74	0.74
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		237			627			1251			1346	1170
v/s Ratio Prot												
v/s Ratio Perm		0.08			c0.15			c0.35			0.12	0.02
v/c Ratio		0.43			0.77			0.47			0.16	0.03
Uniform Delay, d1		42.5			45.8			6.3			4.6	4.2
Progression Factor		1.17			1.00			0.35			0.38	0.02
Incremental Delay, d2		1.2			5.6			1.0			0.2	0.0
Delay (s)		51.1			51.4			3.2			2.0	0.1
Level of Service		D			D			A			A	A
Approach Delay (s)		51.1			51.4			3.2			1.7	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	22.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	72	410	68	60	1012	96	122	575	23	10	617	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	
Lane Util. Factor		0.91			0.91		1.00	0.95			0.95	
Frt		0.98			0.99		1.00	0.99			0.98	
Flt Protected		0.99			1.00		0.95	1.00			1.00	
Satd. Flow (prot)		4959			5010		1770	3519			3461	
Flt Permitted		0.67			0.86		0.27	1.00			0.94	
Satd. Flow (perm)		3369			4305		504	3519			3270	
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	446	74	65	1100	104	133	625	25	11	671	114
RTOR Reduction (vph)	0	16	0	0	9	0	0	2	0	0	11	0
Lane Group Flow (vph)	0	582	0	0	1260	0	133	648	0	0	785	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		51.0			51.0		61.0	61.0			61.0	
Effective Green, g (s)		51.0			51.0		61.0	61.0			61.0	
Actuated g/C Ratio		0.42			0.42		0.51	0.51			0.51	
Clearance Time (s)		4.0			4.0		4.0	4.0			4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1432			1830		256	1789			1662	
v/s Ratio Prot								0.18				
v/s Ratio Perm		0.17			c0.29		c0.26				0.24	
v/c Ratio		0.41			0.69		0.52	0.36			0.47	
Uniform Delay, d1		24.0			28.0		19.7	17.8			19.1	
Progression Factor		1.00			0.46		0.53	0.51			0.94	
Incremental Delay, d2		0.9			1.8		6.9	0.5			0.3	
Delay (s)		24.8			14.6		17.5	9.6			18.1	
Level of Service		C			B		B	A			B	
Approach Delay (s)		24.8			14.6			11.0			18.1	
Approach LOS		C			B			B			B	

Intersection Summary			
HCM Average Control Delay	16.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

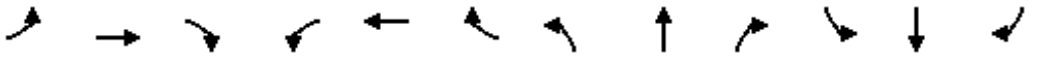


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	79	508	56	175	1591	273	153	540	124	236	530	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00		0.95	
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85		0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00		0.99	
Satd. Flow (prot)	1770	5009		1770	4973		1770	1863	1583		3419	
Flt Permitted	0.11	1.00		0.29	1.00		0.17	1.00	1.00		0.54	
Satd. Flow (perm)	201	5009		542	4973		318	1863	1583		1884	
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	552	61	190	1729	297	166	587	135	257	576	136
RTOR Reduction (vph)	0	11	0	0	20	0	0	0	67	0	11	0
Lane Group Flow (vph)	86	602	0	190	2006	0	166	587	68	0	958	0
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	41.0	37.0		53.0	45.0		59.0	59.0	59.0		51.0	
Effective Green, g (s)	41.0	37.0		53.0	45.0		59.0	59.0	59.0		51.0	
Actuated g/C Ratio	0.34	0.31		0.44	0.38		0.49	0.49	0.49		0.42	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	121	1544		362	1865		205	916	778		801	
v/s Ratio Prot	0.02	0.12		c0.05	c0.40		0.03	c0.32				
v/s Ratio Perm	0.22			0.18			0.37		0.04		c0.51	
v/c Ratio	0.71	0.39		0.52	1.08		0.81	0.64	0.09		1.38dl	
Uniform Delay, d1	32.3	32.6		21.7	37.5		40.9	22.6	16.2		34.5	
Progression Factor	1.00	1.00		0.43	0.45		0.63	0.50	0.11		1.00	
Incremental Delay, d2	17.8	0.7		1.1	43.0		19.5	3.2	0.2		100.3	
Delay (s)	50.1	33.4		10.5	59.8		45.5	14.5	1.9		134.8	
Level of Service	D	C		B	E		D	B	A		F	
Approach Delay (s)		35.4			55.6			18.4			134.8	
Approach LOS		D			E			B			F	

Intersection Summary			
HCM Average Control Delay	61.8	HCM Level of Service	E
HCM Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	108.5%	ICU Level of Service	G
Analysis Period (min)	15		

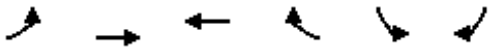
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group



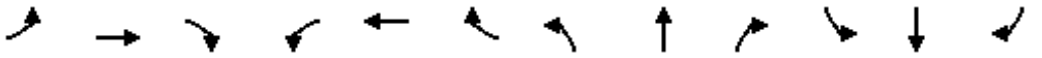
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	59	71	176	144	356	39	188	756	11	11	699	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95		1.00	0.95		1.00	0.95	
Frt		0.91			0.99		1.00	1.00		1.00	0.98	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3203			3455		1770	3532		1770	3469	
Flt Permitted		0.64			0.69		0.28	1.00		0.30	1.00	
Satd. Flow (perm)		2082			2431		530	3532		558	3469	
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)	64	77	191	157	387	42	204	822	12	12	760	115
RTOR Reduction (vph)	0	140	0	0	5	0	0	1	0	0	9	0
Lane Group Flow (vph)	0	192	0	0	581	0	204	833	0	12	866	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		32.3			32.3		79.7	79.7		79.7	79.7	
Effective Green, g (s)		32.3			32.3		79.7	79.7		79.7	79.7	
Actuated g/C Ratio		0.27			0.27		0.66	0.66		0.66	0.66	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		560			654		352	2346		371	2304	
v/s Ratio Prot								0.24			0.25	
v/s Ratio Perm		0.09			c0.24		c0.39			0.02		
v/c Ratio		0.34			0.89		0.58	0.36		0.03	0.38	
Uniform Delay, d1		35.3			42.1		11.0	8.9		6.9	9.0	
Progression Factor		1.00			0.34		0.18	0.13		0.41	0.41	
Incremental Delay, d2		0.4			12.8		0.6	0.0		0.1	0.4	
Delay (s)		35.7			27.0		2.7	1.2		3.0	4.1	
Level of Service		D			C		A	A		A	A	
Approach Delay (s)		35.7			27.0			1.5			4.1	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	164	709	1856	163	71	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91	0.95		0.97	
Frt	1.00	1.00	0.99		0.97	
Flt Protected	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1770	5085	3496		3381	
Flt Permitted	0.05	1.00	1.00		0.96	
Satd. Flow (perm)	87	5085	3496		3381	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	178	771	2017	177	77	16
RTOR Reduction (vph)	0	0	5	0	14	0
Lane Group Flow (vph)	178	771	2189	0	79	0
Turn Type	pm+pt					
Protected Phases	5	2	6		4	
Permitted Phases	2					
Actuated Green, G (s)	96.0	96.0	81.2		16.0	
Effective Green, g (s)	96.0	96.0	81.2		16.0	
Actuated g/C Ratio	0.80	0.80	0.68		0.13	
Clearance Time (s)	4.0	4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	221	4068	2366		451	
v/s Ratio Prot	c0.07	0.15	c0.63		c0.02	
v/s Ratio Perm	0.57					
v/c Ratio	0.81	0.19	0.93		0.18	
Uniform Delay, d1	40.7	2.8	16.8		46.1	
Progression Factor	0.56	1.01	0.35		1.00	
Incremental Delay, d2	18.4	0.1	4.4		0.8	
Delay (s)	41.1	2.9	10.2		47.0	
Level of Service	D	A	B		D	
Approach Delay (s)		10.1	10.2		47.0	
Approach LOS		B	B		D	

Intersection Summary			
HCM Average Control Delay	11.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	96	734	17	13	1749	123	23	18	21	109	14	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.97	1.00		0.96	1.00
Satd. Flow (prot)	1770	5085	1583	1770	3504			1812	1583		1784	1583
Flt Permitted	0.05	1.00	1.00	0.31	1.00			0.82	1.00		0.72	1.00
Satd. Flow (perm)	97	5085	1583	578	3504			1522	1583		1337	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)	104	798	18	14	1901	134	25	20	23	118	15	250
RTOR Reduction (vph)	0	0	4	0	4	0	0	0	19	0	0	104
Lane Group Flow (vph)	104	798	14	14	2031	0	0	45	4	0	133	146
Turn Type	pm+pt		Perm	pm+pt			Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6			8		8	4		4
Actuated Green, G (s)	87.4	87.4	87.4	78.6	78.6			19.0	19.0		19.0	19.0
Effective Green, g (s)	87.4	87.4	87.4	78.6	78.6			19.0	19.0		19.0	19.0
Actuated g/C Ratio	0.73	0.73	0.73	0.65	0.65			0.16	0.16		0.16	0.16
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	216	3704	1153	394	2295			241	251		212	251
v/s Ratio Prot	c0.04	0.16		0.00	c0.58							
v/s Ratio Perm	0.31		0.01	0.02				0.03	0.00		c0.10	0.09
v/c Ratio	0.48	0.22	0.01	0.04	0.88			0.19	0.01		0.63	0.58
Uniform Delay, d1	38.8	5.3	4.5	7.4	17.0			43.8	42.6		47.2	46.8
Progression Factor	0.90	0.52	0.28	0.51	0.74			1.00	1.00		1.00	1.00
Incremental Delay, d2	1.7	0.1	0.0	0.0	4.3			1.7	0.1		13.2	9.4
Delay (s)	36.6	2.9	1.3	3.8	16.9			45.5	42.7		60.4	56.2
Level of Service	D	A	A	A	B			D	D		E	E
Approach Delay (s)		6.7			16.8			44.6			57.7	
Approach LOS		A			B			D			E	

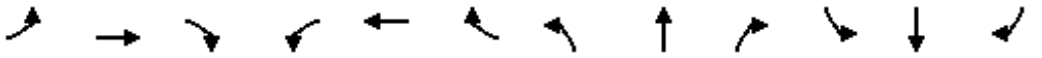
Intersection Summary			
HCM Average Control Delay	19.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	57	0	109	822	203	153	47	359	0	0	551	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95			0.95	
Frt	1.00		0.85	1.00	0.94		1.00	1.00			0.98	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770		1583	1770	1743		1770	3539			3455	
Flt Permitted	0.47		1.00	0.95	1.00		0.13	1.00			1.00	
Satd. Flow (perm)	872		1583	1770	1743		250	3539			3455	
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)	62	0	118	893	221	166	51	390	0	0	599	113
RTOR Reduction (vph)	0	0	46	0	23	0	0	0	0	0	12	0
Lane Group Flow (vph)	62	0	72	893	364	0	51	390	0	0	700	0
Turn Type	custom		custom	Perm			pm+pt					
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2					
Actuated Green, G (s)	73.0		73.0	73.0	73.0		39.0	39.0			31.8	
Effective Green, g (s)	73.0		73.0	73.0	73.0		39.0	39.0			31.8	
Actuated g/C Ratio	0.61		0.61	0.61	0.61		0.32	0.32			0.26	
Clearance Time (s)	4.0		4.0	4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	530		963	1077	1060		122	1150			916	
v/s Ratio Prot					0.21		0.01	c0.11			c0.20	
v/s Ratio Perm	0.07		0.05	c0.50			0.12					
v/c Ratio	0.12		0.07	0.83	0.34		0.42	0.34			0.76	
Uniform Delay, d1	9.9		9.6	18.6	11.6		30.6	30.7			40.6	
Progression Factor	1.00		1.00	0.72	0.54		1.00	1.00			0.38	
Incremental Delay, d2	0.1		0.0	3.3	0.4		2.3	0.8			4.2	
Delay (s)	10.0		9.7	16.6	6.6		32.9	31.5			19.8	
Level of Service	B		A	B	A		C	C			B	
Approach Delay (s)		9.8			13.6			31.7			19.8	
Approach LOS		A			B			C			B	

Intersection Summary			
HCM Average Control Delay	18.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

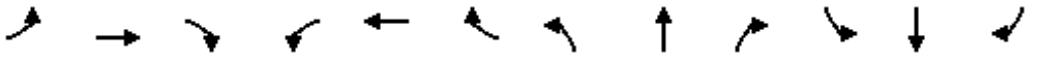
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	172	167	511	999	468	357
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.40	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	751	3539	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	187	182	555	1086	509	388
RTOR Reduction (vph)	0	154	0	0	0	86
Lane Group Flow (vph)	187	28	555	1086	509	302
Turn Type		Perm	pm+pt			pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases		4	2			6
Actuated Green, G (s)	18.4	18.4	93.6	93.6	66.6	85.0
Effective Green, g (s)	18.4	18.4	93.6	93.6	66.6	85.0
Actuated g/C Ratio	0.15	0.15	0.78	0.78	0.55	0.71
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	271	243	781	2760	1964	1174
v/s Ratio Prot	c0.11		c0.14	0.31	0.14	0.04
v/s Ratio Perm		0.02	c0.42			0.15
v/c Ratio	0.69	0.11	0.71	0.39	0.26	0.26
Uniform Delay, d1	48.1	43.8	5.2	4.2	13.9	6.2
Progression Factor	0.76	1.22	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.0	0.2	3.1	0.4	0.3	0.1
Delay (s)	43.4	53.6	8.3	4.6	14.2	6.4
Level of Service	D	D	A	A	B	A
Approach Delay (s)	48.4			5.9	10.8	
Approach LOS	D			A	B	

Intersection Summary			
HCM Average Control Delay	12.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	45	246	23	26	745	103	337	460	42	38	240	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1839		1770	1829		1770	1839		1770	1863	1583
Flt Permitted	0.07	1.00		0.52	1.00		0.20	1.00		0.23	1.00	1.00
Satd. Flow (perm)	123	1839		963	1829		380	1839		425	1863	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)	49	267	25	28	810	112	366	500	46	41	261	166
RTOR Reduction (vph)	0	3	0	0	4	0	0	3	0	0	0	53
Lane Group Flow (vph)	49	289	0	28	918	0	366	543	0	41	261	113
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	64.0	60.8		62.4	60.0		37.6	37.6		22.8	22.8	22.8
Effective Green, g (s)	64.0	60.8		62.4	60.0		37.6	37.6		22.8	22.8	22.8
Actuated g/C Ratio	0.53	0.51		0.52	0.50		0.31	0.31		0.19	0.19	0.19
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	110	932		517	915		328	576		117	354	301
v/s Ratio Prot	c0.01	0.16		0.00	c0.50		c0.17	0.30		0.01	c0.14	
v/s Ratio Perm	0.23			0.03			c0.18			0.06		0.07
v/c Ratio	0.45	0.31		0.05	1.00		1.12	0.94		0.35	0.74	0.38
Uniform Delay, d1	27.2	17.3		14.2	30.0		36.5	40.2		50.2	45.8	42.4
Progression Factor	0.85	0.88		0.67	0.87		0.99	0.95		1.00	1.00	1.00
Incremental Delay, d2	2.8	0.8		0.0	29.3		84.7	25.8		1.8	12.9	3.6
Delay (s)	25.8	16.1		9.5	55.4		120.6	64.1		52.0	58.6	46.0
Level of Service	C	B		A	E		F	E		D	E	D
Approach Delay (s)		17.5			54.1			86.8			53.6	
Approach LOS		B			D			F			D	

Intersection Summary			
HCM Average Control Delay	60.5	HCM Level of Service	E
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

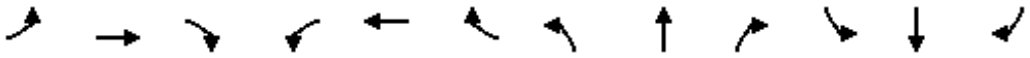


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	13	72	8	13	685	212	115	342	14	42	165	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0			4.0	
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	
Frt		0.99			1.00	0.85		1.00			0.97	
Flt Protected		0.99			1.00	1.00		0.99			0.99	
Satd. Flow (prot)		1828			1861	1583		1833			1792	
Flt Permitted		0.80			1.00	1.00		0.80			0.86	
Satd. Flow (perm)		1481			1854	1583		1477			1562	
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)	14	78	9	14	745	230	125	372	15	46	179	66
RTOR Reduction (vph)	0	3	0	0	0	113	0	1	0	0	9	0
Lane Group Flow (vph)	0	98	0	0	759	117	0	511	0	0	282	0
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)		61.0			61.0	61.0		51.0			51.0	
Effective Green, g (s)		61.0			61.0	61.0		51.0			51.0	
Actuated g/C Ratio		0.51			0.51	0.51		0.42			0.42	
Clearance Time (s)		4.0			4.0	4.0		4.0			4.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		753			942	805		628			664	
v/s Ratio Prot												
v/s Ratio Perm		0.07			c0.41	0.07		c0.35			0.18	
v/c Ratio		0.13			0.81	0.15		0.81			0.43	
Uniform Delay, d1		15.5			24.6	15.7		30.3			24.2	
Progression Factor		1.00			0.69	0.28		1.00			0.60	
Incremental Delay, d2		0.4			7.2	0.4		11.0			2.0	
Delay (s)		15.9			24.2	4.8		41.4			16.4	
Level of Service		B			C	A		D			B	
Approach Delay (s)		15.9			19.6			41.4			16.4	
Approach LOS		B			B			D			B	

Intersection Summary			
HCM Average Control Delay	24.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

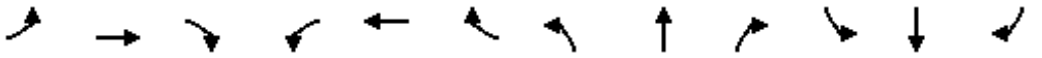
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	410	550	107	64	1215	50	408	756	66	33	248	1095
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.98		1.00	0.99		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1593	3108		1593	3167		1593	3147		1593	3185	1425
Flt Permitted	0.95	1.00		0.14	1.00		0.51	1.00		0.18	1.00	1.00
Satd. Flow (perm)	1593	3108		231	3167		849	3147		302	3185	1425
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)	446	598	116	70	1321	54	443	822	72	36	270	1190
RTOR Reduction (vph)	0	13	0	0	2	0	0	5	0	0	0	252
Lane Group Flow (vph)	446	701	0	70	1373	0	443	889	0	36	270	938
Turn Type	Prot			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6			8			4		4
Actuated Green, G (s)	20.8	49.8		34.6	34.6		52.2	46.2		45.0	42.6	42.6
Effective Green, g (s)	20.8	49.8		34.6	34.6		52.2	46.2		45.0	42.6	42.6
Actuated g/C Ratio	0.17	0.42		0.29	0.29		0.44	0.38		0.38	0.36	0.36
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	276	1290		130	913		407	1212		139	1131	506
v/s Ratio Prot	c0.28	0.23		0.03	c0.43		c0.05	0.28		0.01	0.08	
v/s Ratio Perm				0.13			0.42			0.09		c0.66
v/c Ratio	1.62	0.54		0.54	1.50		1.09	0.73		0.26	0.24	1.85
Uniform Delay, d1	49.6	26.5		33.4	42.7		34.3	31.6		25.5	27.3	38.7
Progression Factor	1.00	1.00		0.89	0.89		0.69	0.70		0.86	0.85	0.71
Incremental Delay, d2	293.3	1.6		3.1	230.9		58.2	1.2		1.0	0.1	391.3
Delay (s)	342.9	28.2		32.7	269.0		81.8	23.2		22.8	23.3	418.6
Level of Service	F	C		C	F		F	C		C	C	F
Approach Delay (s)		149.2			257.6			42.6			337.8	
Approach LOS		F			F			D			F	

Intersection Summary			
HCM Average Control Delay	203.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	149.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



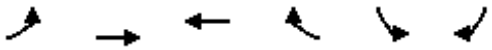
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	13	64	33	29	433	103	358	1070	55	75	340	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		0.96			0.97			0.99			0.99	
Flt Protected		0.99			1.00			0.99			0.99	
Satd. Flow (prot)		3360			3434			3477			3484	
Flt Permitted		0.78			0.93			0.71			0.57	
Satd. Flow (perm)		2633			3209			2483			2010	
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)	14	70	36	32	471	112	389	1163	60	82	370	22
RTOR Reduction (vph)	0	29	0	0	16	0	0	2	0	0	3	0
Lane Group Flow (vph)	0	91	0	0	599	0	0	1610	0	0	471	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		24.5			24.5			87.5			87.5	
Effective Green, g (s)		24.5			24.5			87.5			87.5	
Actuated g/C Ratio		0.20			0.20			0.73			0.73	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		538			655			1811			1466	
v/s Ratio Prot												
v/s Ratio Perm		0.03			c0.19			c0.65			0.23	
v/c Ratio		0.17			0.91			0.89			0.32	
Uniform Delay, d1		39.4			46.7			12.5			5.7	
Progression Factor		1.00			1.00			0.64			1.00	
Incremental Delay, d2		0.2			17.4			5.7			0.6	
Delay (s)		39.5			64.1			13.8			6.3	
Level of Service		D			E			B			A	
Approach Delay (s)		39.5			64.1			13.8			6.3	
Approach LOS		D			E			B			A	

Intersection Summary			
HCM Average Control Delay	24.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



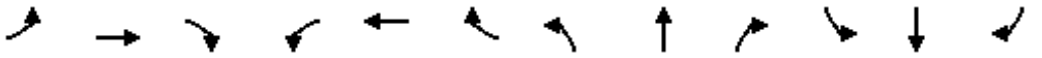
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	83	14	25	339	41	23	1272	52	13	241	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00			0.95			1.00	1.00
Frt	1.00	1.00	0.85		0.99			0.99			1.00	0.85
Flt Protected	0.95	1.00	1.00		1.00			1.00			1.00	1.00
Satd. Flow (prot)	1770	1863	1583		1831			3516			1858	1583
Flt Permitted	0.25	1.00	1.00		0.98			0.95			0.90	1.00
Satd. Flow (perm)	456	1863	1583		1799			3328			1681	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)	27	90	15	27	368	45	25	1383	57	14	262	67
RTOR Reduction (vph)	0	0	11	0	4	0	0	2	0	0	0	23
Lane Group Flow (vph)	27	90	4	0	436	0	0	1463	0	0	276	44
Turn Type	Perm		Perm	Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		6
Actuated Green, G (s)	33.9	33.9	33.9		33.9			78.1			78.1	78.1
Effective Green, g (s)	33.9	33.9	33.9		33.9			78.1			78.1	78.1
Actuated g/C Ratio	0.28	0.28	0.28		0.28			0.65			0.65	0.65
Clearance Time (s)	4.0	4.0	4.0		4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	129	526	447		508			2166			1094	1030
v/s Ratio Prot		0.05										
v/s Ratio Perm	0.06		0.00		c0.24			c0.44			0.16	0.03
v/c Ratio	0.21	0.17	0.01		0.86			0.68			0.25	0.04
Uniform Delay, d1	32.8	32.5	31.0		40.8			13.1			8.8	7.5
Progression Factor	1.00	1.00	1.00		1.00			1.00			0.35	0.13
Incremental Delay, d2	0.8	0.2	0.0		13.5			1.7			0.5	0.1
Delay (s)	33.6	32.6	31.0		54.3			14.8			3.6	1.1
Level of Service	C	C	C		D			B			A	A
Approach Delay (s)		32.6			54.3			14.8			3.1	
Approach LOS		C			D			B			A	

Intersection Summary			
HCM Average Control Delay	21.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	88.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



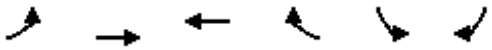
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	48	279	1363	140	80	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frt		1.00	0.99		1.00	0.85
Flt Protected		0.99	1.00		0.95	1.00
Satd. Flow (prot)		3513	3490		1770	1583
Flt Permitted		0.66	1.00		0.95	1.00
Satd. Flow (perm)		2327	3490		1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	52	303	1482	152	87	134
RTOR Reduction (vph)	0	0	5	0	0	78
Lane Group Flow (vph)	0	355	1629	0	87	56
Turn Type	Perm					Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		100.8	100.8		11.2	11.2
Effective Green, g (s)		100.8	100.8		11.2	11.2
Actuated g/C Ratio		0.84	0.84		0.09	0.09
Clearance Time (s)		4.0	4.0		4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1955	2932		165	148
v/s Ratio Prot			c0.47		c0.05	
v/s Ratio Perm		0.15				0.04
v/c Ratio		0.18	0.56		0.53	0.38
Uniform Delay, d1		1.8	2.9		51.9	51.1
Progression Factor		1.00	0.53		0.80	0.58
Incremental Delay, d2		0.2	0.7		3.0	1.6
Delay (s)		2.0	2.2		44.2	31.1
Level of Service		A	A		D	C
Approach Delay (s)		2.0	2.2		36.3	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	5.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



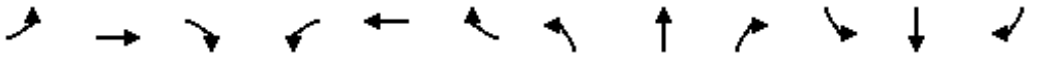
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	9	220	31	20	1422	41	144	399	61	18	70	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			0.95			1.00			1.00	
Frt		0.98			1.00			0.99			0.98	
Flt Protected		1.00			1.00			0.99			0.99	
Satd. Flow (prot)		1829			3522			1816			1812	
Flt Permitted		0.83			0.95			0.89			0.88	
Satd. Flow (perm)		1520			3342			1633			1609	
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	239	34	22	1546	45	157	434	66	20	76	15
RTOR Reduction (vph)	0	4	0	0	1	0	0	3	0	0	5	0
Lane Group Flow (vph)	0	279	0	0	1612	0	0	654	0	0	106	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		55.0			55.0			41.0			41.0	
Effective Green, g (s)		55.0			55.0			41.0			41.0	
Actuated g/C Ratio		0.53			0.53			0.39			0.39	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		804			1767			644			634	
v/s Ratio Prot												
v/s Ratio Perm		0.18			c0.48			c0.40			0.07	
v/c Ratio		0.35			0.91			1.02			0.17	
Uniform Delay, d1		14.1			22.3			31.5			20.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.3			7.6			39.4			0.1	
Delay (s)		14.4			29.9			70.9			20.6	
Level of Service		B			C			E			C	
Approach Delay (s)		14.4			29.9			70.9			20.6	
Approach LOS		B			C			E			C	

Intersection Summary			
HCM Average Control Delay	38.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	92.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	27	356	1428	100	35	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.15	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	282	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	387	1552	109	38	84
RTOR Reduction (vph)	0	0	0	14	0	72
Lane Group Flow (vph)	29	387	1552	95	38	12
Turn Type	Perm			Perm		Perm
Protected Phases		2	6		4	
Permitted Phases	2			6		4
Actuated Green, G (s)	105.0	105.0	105.0	105.0	7.0	7.0
Effective Green, g (s)	105.0	105.0	105.0	105.0	7.0	7.0
Actuated g/C Ratio	0.88	0.88	0.88	0.88	0.06	0.06
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	247	3097	3097	1385	103	92
v/s Ratio Prot		0.11	c0.44		c0.02	
v/s Ratio Perm	0.10			0.06		0.01
v/c Ratio	0.12	0.12	0.50	0.07	0.37	0.14
Uniform Delay, d1	1.0	1.1	1.7	1.0	54.4	53.6
Progression Factor	1.25	1.25	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	0.1	0.6	0.1	2.2	0.7
Delay (s)	2.3	1.4	2.3	1.1	56.6	54.3
Level of Service	A	A	A	A	E	D
Approach Delay (s)		1.5	2.2		55.0	
Approach LOS		A	A		E	

Intersection Summary			
HCM Average Control Delay	5.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

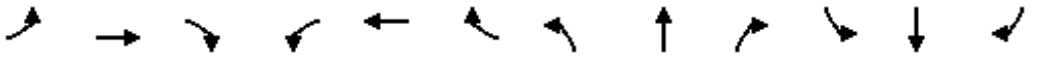


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	118	739	78	88	356	61	103	652	128	60	642	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95			0.95	
Frt	1.00	0.99		1.00	0.98		1.00	0.98			1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770	1836		1770	1822		1770	3452			3516	
Flt Permitted	0.31	1.00		0.08	1.00		0.20	1.00			0.67	
Satd. Flow (perm)	582	1836		155	1822		371	3452			2353	
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)	128	803	85	96	387	66	112	709	139	65	698	13
RTOR Reduction (vph)	0	3	0	0	6	0	0	15	0	0	1	0
Lane Group Flow (vph)	128	885	0	96	447	0	112	833	0	0	775	0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	56.0	50.0		52.0	48.0		44.0	44.0			36.0	
Effective Green, g (s)	56.0	50.0		52.0	48.0		44.0	44.0			36.0	
Actuated g/C Ratio	0.51	0.45		0.47	0.44		0.40	0.40			0.33	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	361	835		132	795		199	1381			770	
v/s Ratio Prot	c0.02	c0.48		c0.03	0.25		0.02	c0.24				
v/s Ratio Perm	0.16			0.32			0.20				c0.33	
v/c Ratio	0.35	1.06		0.73	0.56		0.56	0.60			1.01	
Uniform Delay, d1	16.2	30.0		25.4	23.2		38.3	26.1			37.0	
Progression Factor	1.00	1.00		1.00	1.00		0.74	0.75			0.60	
Incremental Delay, d2	0.6	48.1		18.0	0.9		3.5	1.9			29.1	
Delay (s)	16.8	78.1		43.5	24.1		31.7	21.4			51.2	
Level of Service	B	E		D	C		C	C			D	
Approach Delay (s)		70.4			27.5			22.6			51.2	
Approach LOS		E			C			C			D	

Intersection Summary			
HCM Average Control Delay	44.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	103.8%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	125	0	209	426	76	65	76	624	0	0	708	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95			0.95	
Frt	1.00		0.85	1.00	0.93		1.00	1.00			0.98	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770		1583	1770	1734		1770	3539			3486	
Flt Permitted	0.60		1.00	0.95	1.00		0.23	1.00			1.00	
Satd. Flow (perm)	1126		1583	1770	1734		431	3539			3486	
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)	136	0	227	463	83	71	83	678	0	0	770	86
RTOR Reduction (vph)	0	0	150	0	33	0	0	0	0	0	6	0
Lane Group Flow (vph)	136	0	77	463	121	0	83	678	0	0	850	0
Turn Type	custom		custom	Perm			pm+pt					
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2					
Actuated Green, G (s)	35.6		35.6	35.6	35.6		66.4	66.4			56.1	
Effective Green, g (s)	35.6		35.6	35.6	35.6		66.4	66.4			56.1	
Actuated g/C Ratio	0.32		0.32	0.32	0.32		0.60	0.60			0.51	
Clearance Time (s)	4.0		4.0	4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	364		512	573	561		337	2136			1778	
v/s Ratio Prot					0.07		0.01	c0.19			c0.24	
v/s Ratio Perm	0.12		0.05	c0.26			0.13					
v/c Ratio	0.37		0.15	0.81	0.22		0.25	0.32			0.48	
Uniform Delay, d1	28.6		26.4	34.1	27.0		10.8	10.7			17.5	
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00			0.25	
Incremental Delay, d2	0.6		0.1	8.2	0.2		0.4	0.4			0.2	
Delay (s)	29.3		26.6	42.3	27.2		11.2	11.1			4.5	
Level of Service	C		C	D	C		B	B			A	
Approach Delay (s)		27.6			38.5			11.1			4.5	
Approach LOS		C			D			B			A	

Intersection Summary			
HCM Average Control Delay	17.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



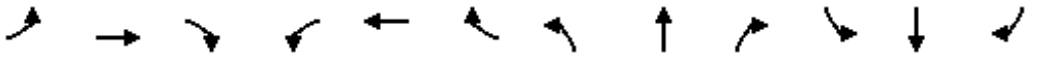
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	172	884	190	136	355	48	58	162	45	60	307	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	10	10	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.98		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4950		1770	3476		1652	1682		1770	1818	
Flt Permitted	0.30	1.00		0.26	1.00		0.25	1.00		0.53	1.00	
Satd. Flow (perm)	568	4950		484	3476		443	1682		980	1818	
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)	187	961	207	148	386	52	63	176	49	65	334	64
RTOR Reduction (vph)	0	51	0	0	16	0	0	17	0	0	12	0
Lane Group Flow (vph)	187	1117	0	148	422	0	63	208	0	65	386	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	21.9	21.9		19.4	19.4		18.1	15.7		18.1	15.7	
Effective Green, g (s)	21.9	21.9		19.4	19.4		18.1	15.7		18.1	15.7	
Actuated g/C Ratio	0.36	0.36		0.32	0.32		0.30	0.26		0.30	0.26	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	338	1807		242	1124		182	440		327	476	
v/s Ratio Prot	0.06	c0.23		c0.04	0.12		c0.01	0.12		0.01	c0.21	
v/s Ratio Perm	0.14			0.16			0.09			0.05		
v/c Ratio	0.55	0.62		0.61	0.38		0.35	0.47		0.20	0.81	
Uniform Delay, d1	13.9	15.6		19.1	15.6		15.9	18.7		15.2	20.8	
Progression Factor	0.27	0.25		1.00	1.00		0.56	0.48		1.00	1.00	
Incremental Delay, d2	1.0	0.8		4.5	1.0		1.1	0.8		0.3	10.1	
Delay (s)	4.7	4.7		23.6	16.6		10.0	9.7		15.5	30.9	
Level of Service	A	A		C	B		A	A		B	C	
Approach Delay (s)		4.7			18.4			9.7			28.7	
Approach LOS		A			B			A			C	

Intersection Summary			
HCM Average Control Delay	12.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

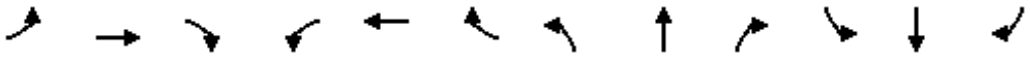
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	2136	167	204	1077	99	241
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.91		1.00	0.91	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	5030		1770	5085	1770	1583
Flt Permitted	1.00		0.06	1.00	0.95	1.00
Satd. Flow (perm)	5030		104	5085	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2322	182	222	1171	108	262
RTOR Reduction (vph)	7	0	0	0	0	196
Lane Group Flow (vph)	2497	0	222	1171	108	66
Turn Type			pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Actuated Green, G (s)	67.6		85.0	85.0	17.0	17.0
Effective Green, g (s)	67.6		85.0	85.0	17.0	17.0
Actuated g/C Ratio	0.61		0.77	0.77	0.15	0.15
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3091		283	3929	274	245
v/s Ratio Prot	0.50		c0.10	0.23	c0.06	
v/s Ratio Perm			c0.51			0.04
v/c Ratio	0.81		0.78	0.30	0.39	0.27
Uniform Delay, d1	16.2		33.2	3.7	41.9	41.0
Progression Factor	1.00		0.71	1.87	1.00	1.00
Incremental Delay, d2	2.4		11.5	0.2	4.2	2.7
Delay (s)	18.6		35.0	7.1	46.1	43.7
Level of Service	B		D	A	D	D
Approach Delay (s)	18.6			11.5	44.4	
Approach LOS	B			B	D	

Intersection Summary			
HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	110.0	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			



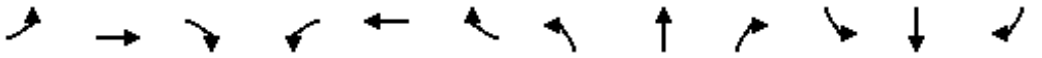
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	395	173	10	136	30	16	205	58	56	554	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	4.0
Lane Util. Factor		1.00			0.95			1.00			1.00	1.00
Frt		0.96			0.97			0.97			1.00	0.85
Flt Protected		1.00			1.00			1.00			1.00	1.00
Satd. Flow (prot)		1786			3438			1805			1854	1583
Flt Permitted		0.98			0.92			0.96			0.95	1.00
Satd. Flow (perm)		1756			3180			1738			1761	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)	30	429	188	11	148	33	17	223	63	61	602	97
RTOR Reduction (vph)	0	25	0	0	20	0	0	15	0	0	0	51
Lane Group Flow (vph)	0	622	0	0	172	0	0	288	0	0	663	46
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		23.6			23.6			28.4			28.4	28.4
Effective Green, g (s)		23.6			23.6			28.4			28.4	28.4
Actuated g/C Ratio		0.39			0.39			0.47			0.47	0.47
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		691			1251			823			834	749
v/s Ratio Prot												
v/s Ratio Perm		c0.35			0.05			0.17			c0.38	0.03
v/c Ratio		0.90			0.14			0.35			0.79	0.06
Uniform Delay, d1		17.1			11.7			10.0			13.3	8.6
Progression Factor		0.63			1.00			1.61			1.03	1.71
Incremental Delay, d2		11.4			0.1			1.2			6.3	0.1
Delay (s)		22.2			11.7			17.2			20.1	14.8
Level of Service		C			B			B			C	B
Approach Delay (s)		22.2			11.7			17.2			19.4	
Approach LOS		C			B			B			B	

Intersection Summary			
HCM Average Control Delay	19.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



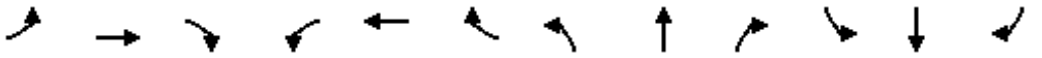
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	133	1161	206	26	416	60	94	425	28	45	729	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	
Lane Util. Factor		0.91			0.91		1.00	0.95			0.95	
Frt		0.98			0.98		1.00	0.99			0.99	
Flt Protected		1.00			1.00		0.95	1.00			1.00	
Satd. Flow (prot)		4958			4982		1770	3507			3484	
Flt Permitted		0.82			0.83		0.20	1.00			0.91	
Satd. Flow (perm)		4079			4157		372	3507			3166	
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)	145	1262	224	28	452	65	102	462	30	49	792	80
RTOR Reduction (vph)	0	36	0	0	29	0	0	8	0	0	12	0
Lane Group Flow (vph)	0	1595	0	0	516	0	102	484	0	0	909	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		27.0			27.0		25.0	25.0			25.0	
Effective Green, g (s)		27.0			27.0		25.0	25.0			25.0	
Actuated g/C Ratio		0.45			0.45		0.42	0.42			0.42	
Clearance Time (s)		4.0			4.0		4.0	4.0			4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1836			1871		155	1461			1319	
v/s Ratio Prot								0.14				
v/s Ratio Perm		c0.39			0.12		0.27				c0.29	
v/c Ratio		0.87			0.28		0.66	0.33			0.69	
Uniform Delay, d1		14.9			10.4		14.1	11.8			14.3	
Progression Factor		1.00			0.53		1.08	1.05			1.38	
Incremental Delay, d2		5.9			0.3		18.3	0.6			0.3	
Delay (s)		20.8			5.9		33.6	12.9			20.0	
Level of Service		C			A		C	B			C	
Approach Delay (s)		20.8			5.9			16.5			20.0	
Approach LOS		C			A			B			C	

Intersection Summary			
HCM Average Control Delay	17.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	60.0	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			



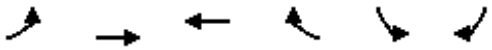
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	171	1873	115	158	805	197	132	374	168	365	565	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00		0.95	
Frt	1.00	0.99		1.00	0.97		1.00	1.00	0.85		0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00		0.98	
Satd. Flow (prot)	1770	5041		1770	4935		1770	1863	1583		3436	
Flt Permitted	0.13	1.00		0.11	1.00		0.09	1.00	1.00		0.65	
Satd. Flow (perm)	251	5041		196	4935		168	1863	1583		2278	
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)	186	2036	125	172	875	214	143	407	183	397	614	85
RTOR Reduction (vph)	0	5	0	0	35	0	0	0	53	0	5	0
Lane Group Flow (vph)	186	2156	0	172	1054	0	143	407	130	0	1091	0
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	56.0	48.0		42.0	38.0		56.0	56.0	56.0		48.0	
Effective Green, g (s)	56.0	48.0		42.0	38.0		56.0	56.0	56.0		48.0	
Actuated g/C Ratio	0.47	0.40		0.35	0.32		0.47	0.47	0.47		0.40	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	294	2016		121	1563		132	869	739		911	
v/s Ratio Prot	0.07	c0.43		c0.05	0.21		c0.04	0.22				
v/s Ratio Perm	0.22			c0.45			0.47		0.08		c0.48	
v/c Ratio	0.63	1.07		1.42	0.67		1.08	0.47	0.18		1.20	
Uniform Delay, d1	38.1	36.0		55.1	35.6		30.9	21.8	18.6		36.0	
Progression Factor	1.00	1.00		1.00	1.00		1.01	0.98	1.07		1.00	
Incremental Delay, d2	4.4	41.5		230.9	2.3		99.6	1.7	0.5		99.4	
Delay (s)	42.5	77.5		285.9	38.0		130.7	23.0	20.4		135.4	
Level of Service	D	E		F	D		F	C	C		F	
Approach Delay (s)		74.7			71.8			43.4			135.4	
Approach LOS		E			E			D			F	

Intersection Summary			
HCM Average Control Delay	82.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.26		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	109.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



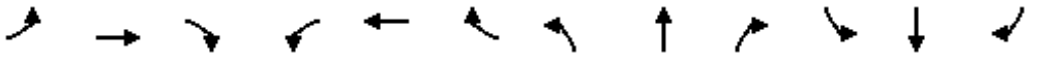
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	378	242	66	153	40	139	603	149	55	1069	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95		1.00	0.95		1.00	0.95	
Frt		0.95			0.98		1.00	0.97		1.00	0.99	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3336			3414		1770	3434		1770	3501	
Flt Permitted		0.89			0.61		0.16	1.00		0.31	1.00	
Satd. Flow (perm)		2994			2092		305	3434		580	3501	
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)	65	411	263	72	166	43	151	655	162	60	1162	91
RTOR Reduction (vph)	0	61	0	0	25	0	0	36	0	0	9	0
Lane Group Flow (vph)	0	678	0	0	256	0	151	781	0	60	1244	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		15.6			15.6		36.4	36.4		36.4	36.4	
Effective Green, g (s)		15.6			15.6		36.4	36.4		36.4	36.4	
Actuated g/C Ratio		0.26			0.26		0.61	0.61		0.61	0.61	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		778			544		185	2083		352	2124	
v/s Ratio Prot								0.23			0.36	
v/s Ratio Perm		c0.23			0.12		c0.50			0.10		
v/c Ratio		0.87			0.47		0.82	0.38		0.17	0.59	
Uniform Delay, d1		21.2			18.7		9.2	6.0		5.2	7.2	
Progression Factor		1.00			0.88		1.00	1.00		1.16	1.00	
Incremental Delay, d2		10.5			0.6		31.3	0.5		0.9	1.0	
Delay (s)		31.7			17.1		40.5	6.5		6.8	8.2	
Level of Service		C			B		D	A		A	A	
Approach Delay (s)		31.7			17.1			11.8			8.1	
Approach LOS		C			B			B			A	

Intersection Summary			
HCM Average Control Delay	15.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	273	1989	1009	220	270	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91	0.95		0.97	
Frt	1.00	1.00	0.97		0.98	
Flt Protected	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1770	5085	3444		3397	
Flt Permitted	0.12	1.00	1.00		0.96	
Satd. Flow (perm)	220	5085	3444		3397	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	297	2162	1097	239	293	42
RTOR Reduction (vph)	0	0	14	0	10	0
Lane Group Flow (vph)	297	2162	1322	0	325	0
Turn Type	pm+pt					
Protected Phases	5	2	6		4	
Permitted Phases	2					
Actuated Green, G (s)	85.0	85.0	64.6		17.0	
Effective Green, g (s)	85.0	85.0	64.6		17.0	
Actuated g/C Ratio	0.77	0.77	0.59		0.15	
Clearance Time (s)	4.0	4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	401	3929	2023		525	
v/s Ratio Prot	c0.11	0.43	0.38		c0.10	
v/s Ratio Perm	c0.46					
v/c Ratio	0.74	0.55	0.65		0.62	
Uniform Delay, d1	20.9	4.9	15.2		43.5	
Progression Factor	0.94	1.37	0.34		1.00	
Incremental Delay, d2	4.4	0.3	1.2		5.4	
Delay (s)	24.1	7.1	6.5		48.9	
Level of Service	C	A	A		D	
Approach Delay (s)		9.2	6.5		48.9	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

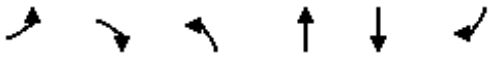


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	201	1916	83	35	1016	109	69	40	70	193	45	192
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.97	1.00		0.96	1.00
Satd. Flow (prot)	1770	5085	1583	1770	3488			1805	1583		1790	1583
Flt Permitted	0.08	1.00	1.00	0.08	1.00			0.61	1.00		0.66	1.00
Satd. Flow (perm)	153	5085	1583	153	3488			1133	1583		1232	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)	218	2083	90	38	1104	118	75	43	76	210	49	209
RTOR Reduction (vph)	0	0	9	0	7	0	0	0	53	0	0	98
Lane Group Flow (vph)	218	2083	81	38	1215	0	0	118	23	0	259	111
Turn Type	pm+pt		Perm	pm+pt			Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6			8		8	4		4
Actuated Green, G (s)	61.0	61.0	61.0	51.7	51.7			34.0	34.0		34.0	34.0
Effective Green, g (s)	61.0	61.0	61.0	51.7	51.7			34.0	34.0		34.0	34.0
Actuated g/C Ratio	0.55	0.55	0.55	0.47	0.47			0.31	0.31		0.31	0.31
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	266	2820	878	116	1639			350	489		381	489
v/s Ratio Prot	c0.09	0.41		0.01	c0.35							
v/s Ratio Perm	c0.36		0.05	0.15				0.10	0.01		c0.21	0.07
v/c Ratio	0.82	0.74	0.09	0.33	0.74			0.34	0.05		0.68	0.23
Uniform Delay, d1	28.2	18.5	11.5	30.0	23.7			29.3	26.7		33.2	28.2
Progression Factor	1.36	0.30	0.17	0.70	0.68			1.00	1.00		1.00	1.00
Incremental Delay, d2	15.1	1.5	0.2	1.5	2.8			2.6	0.2		9.4	1.1
Delay (s)	53.4	7.0	2.1	22.5	18.9			31.9	26.8		42.7	29.3
Level of Service	D	A	A	C	B			C	C		D	C
Approach Delay (s)		11.1			19.0			29.9			36.7	
Approach LOS		B			B			C			D	

Intersection Summary			
HCM Average Control Delay	17.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

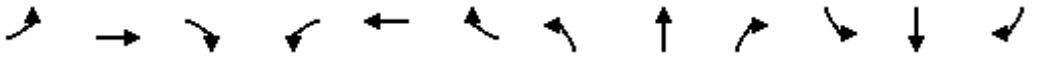
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1698	385	365	793	301	575
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	1.00	0.95	1.00	0.88
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	1770	3539	1770	2787
Flt Permitted	1.00	1.00	0.08	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	149	3539	1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1846	418	397	862	327	625
RTOR Reduction (vph)	0	97	0	0	0	477
Lane Group Flow (vph)	1846	321	397	862	327	148
Turn Type		Perm	pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases		2	6			8
Actuated Green, G (s)	46.0	46.0	76.0	76.0	26.0	26.0
Effective Green, g (s)	46.0	46.0	76.0	76.0	26.0	26.0
Actuated g/C Ratio	0.42	0.42	0.69	0.69	0.24	0.24
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2126	662	486	2445	418	659
v/s Ratio Prot	c0.36		c0.19	0.24	c0.18	
v/s Ratio Perm		0.20	0.37			0.05
v/c Ratio	0.87	0.48	0.82	0.35	0.78	0.22
Uniform Delay, d1	29.2	23.4	31.8	6.9	39.3	33.9
Progression Factor	0.37	0.05	1.00	1.00	0.64	0.70
Incremental Delay, d2	3.7	1.8	10.2	0.4	11.8	0.7
Delay (s)	14.5	3.1	42.1	7.3	37.0	24.4
Level of Service	B	A	D	A	D	C
Approach Delay (s)	12.4			18.3	28.8	
Approach LOS	B			B	C	

Intersection Summary			
HCM Average Control Delay	17.5	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	79.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	367	562	253	726	1221	251
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.13	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	248	3539	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	399	611	275	789	1327	273
RTOR Reduction (vph)	0	160	0	0	0	39
Lane Group Flow (vph)	399	451	275	789	1327	234
Turn Type		Perm	pm+pt			pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases		4	2			6
Actuated Green, G (s)	16.0	16.0	36.0	36.0	26.0	42.0
Effective Green, g (s)	16.0	16.0	36.0	36.0	26.0	42.0
Actuated g/C Ratio	0.27	0.27	0.60	0.60	0.43	0.70
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	472	422	301	2123	1534	1214
v/s Ratio Prot	0.23		c0.09	0.22	0.37	0.05
v/s Ratio Perm		c0.28	c0.46			0.10
v/c Ratio	0.85	1.07	0.91	0.37	0.87	0.19
Uniform Delay, d1	20.8	22.0	12.7	6.2	15.4	3.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.1	63.4	30.4	0.5	6.8	0.1
Delay (s)	33.9	85.4	43.1	6.7	22.2	3.2
Level of Service	C	F	D	A	C	A
Approach Delay (s)	65.1			16.1	18.9	
Approach LOS	E			B	B	

Intersection Summary			
HCM Average Control Delay	30.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

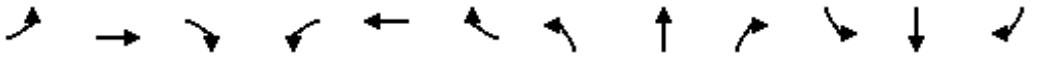


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	163	679	119	30	352	81	105	347	143	78	420	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	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	0.97		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1821		1770	1811		1770	1781		1770	1863	1583
Flt Permitted	0.19	1.00		0.12	1.00		0.24	1.00		0.14	1.00	1.00
Satd. Flow (perm)	362	1821		224	1811		454	1781		257	1863	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)	177	738	129	33	383	88	114	377	155	85	457	137
RTOR Reduction (vph)	0	6	0	0	9	0	0	13	0	0	0	27
Lane Group Flow (vph)	177	861	0	33	462	0	114	519	0	85	457	110
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	58.5	52.2		35.6	33.3		34.8	34.8		32.1	32.1	32.1
Effective Green, g (s)	58.5	52.2		35.6	33.3		34.8	34.8		32.1	32.1	32.1
Actuated g/C Ratio	0.54	0.48		0.33	0.31		0.32	0.32		0.30	0.30	0.30
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	471	877		106	556		216	572		119	552	469
v/s Ratio Prot	c0.07	c0.47		0.01	0.26		0.03	c0.29		0.02	c0.25	
v/s Ratio Perm	0.13			0.10			0.14			0.19		0.07
v/c Ratio	0.38	0.98		0.31	0.83		0.53	0.91		0.71	0.83	0.23
Uniform Delay, d1	29.3	27.6		49.0	34.9		41.1	35.3		34.8	35.6	28.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.5	25.9		1.7	10.2		2.3	20.6		18.3	13.4	1.2
Delay (s)	29.8	53.5		50.6	45.1		43.5	55.9		53.2	49.0	30.0
Level of Service	C	D		D	D		D	E		D	D	C
Approach Delay (s)		49.5			45.5			53.7			45.7	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM Average Control Delay	48.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	108.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	90.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

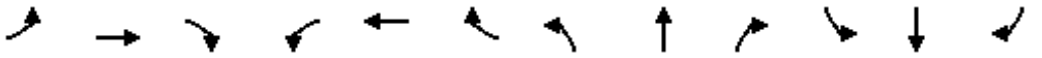
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	336	70	225	147	67	17	158	26	204	542	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0			4.0	
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	
Frt		0.98			1.00	0.85		0.98			0.99	
Flt Protected		1.00			0.97	1.00		1.00			0.99	
Satd. Flow (prot)		1817			1808	1583		1823			1821	
Flt Permitted		0.97			0.46	1.00		0.92			0.85	
Satd. Flow (perm)		1765			861	1583		1692			1573	
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	365	76	245	160	73	18	172	28	222	589	67
RTOR Reduction (vph)	0	12	0	0	0	45	0	9	0	0	5	0
Lane Group Flow (vph)	0	454	0	0	405	28	0	209	0	0	873	0
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		23.0			23.0	23.0		29.0			29.0	
Effective Green, g (s)		23.0			23.0	23.0		29.0			29.0	
Actuated g/C Ratio		0.38			0.38	0.38		0.48			0.48	
Clearance Time (s)		4.0			4.0	4.0		4.0			4.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		677			330	607		818			760	
v/s Ratio Prot												
v/s Ratio Perm		0.26			c0.47	0.02		0.12			c0.55	
v/c Ratio		0.67			1.23	0.05		0.26			1.15	
Uniform Delay, d1		15.4			18.5	11.6		9.1			15.5	
Progression Factor		1.00			1.00	1.00		1.00			0.55	
Incremental Delay, d2		2.6			126.2	0.0		0.8			77.3	
Delay (s)		18.0			144.7	11.6		9.9			85.8	
Level of Service		B			F	B		A			F	
Approach Delay (s)		18.0			124.3			9.9			85.8	
Approach LOS		B			F			A			F	

Intersection Summary			
HCM Average Control Delay	71.2	HCM Level of Service	E
HCM Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	111.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



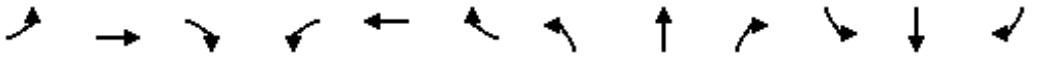
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	685	1090	104	168	847	33	177	481	61	31	958	573
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1593	3144		1593	3167		1593	3132		1593	3185	1425
Flt Permitted	0.95	1.00		0.14	1.00		0.12	1.00		0.30	1.00	1.00
Satd. Flow (perm)	1593	3144		239	3167		208	3132		496	3185	1425
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)	745	1185	113	183	921	36	192	523	66	34	1041	623
RTOR Reduction (vph)	0	6	0	0	2	0	0	9	0	0	0	160
Lane Group Flow (vph)	745	1292	0	183	955	0	192	580	0	34	1041	463
Turn Type	Prot			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6			8			4		4
Actuated Green, G (s)	33.0	52.0		37.0	28.0		38.2	32.2		31.0	28.6	28.6
Effective Green, g (s)	33.0	52.0		37.0	28.0		38.2	32.2		31.0	28.6	28.6
Actuated g/C Ratio	0.30	0.47		0.33	0.25		0.34	0.29		0.28	0.26	0.26
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
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)	471	1465		188	795		146	904		161	816	365
v/s Ratio Prot	c0.47	0.41		0.08	c0.30		c0.07	0.19		0.00	0.33	
v/s Ratio Perm				0.24			c0.38			0.05		0.32
v/c Ratio	1.58	0.88		0.97	1.20		1.32	0.64		0.21	1.28	1.27
Uniform Delay, d1	39.3	27.0		47.9	41.8		34.3	34.7		30.1	41.5	41.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	271.8	8.0		57.5	102.4		181.9	1.6		0.7	133.6	140.9
Delay (s)	311.1	35.0		105.4	144.2		216.2	36.2		30.8	175.1	182.4
Level of Service	F	C		F	F		F	D		C	F	F
Approach Delay (s)		135.7			137.9			80.5			174.9	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	140.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.41		
Actuated Cycle Length (s)	111.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	123.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



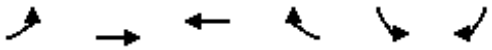
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	41	253	109	22	66	60	32	546	42	152	1019	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		0.96			0.94			0.99			1.00	
Flt Protected		0.99			0.99			1.00			0.99	
Satd. Flow (prot)		3379			3300			3494			3507	
Flt Permitted		0.91			0.86			0.86			0.76	
Satd. Flow (perm)		3078			2865			3000			2691	
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)	45	275	118	24	72	65	35	593	46	165	1108	23
RTOR Reduction (vph)	0	68	0	0	52	0	0	7	0	0	2	0
Lane Group Flow (vph)	0	370	0	0	109	0	0	667	0	0	1294	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		12.2			12.2			39.8			39.8	
Effective Green, g (s)		12.2			12.2			39.8			39.8	
Actuated g/C Ratio		0.20			0.20			0.66			0.66	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		626			583			1990			1785	
v/s Ratio Prot												
v/s Ratio Perm		c0.12			0.04			0.22			c0.48	
v/c Ratio		0.59			0.19			0.33			0.73	
Uniform Delay, d1		21.6			19.8			4.4			6.6	
Progression Factor		1.00			1.00			1.30			1.00	
Incremental Delay, d2		1.5			0.2			0.4			2.6	
Delay (s)		23.1			20.0			6.1			9.2	
Level of Service		C			B			A			A	
Approach Delay (s)		23.1			20.0			6.1			9.2	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



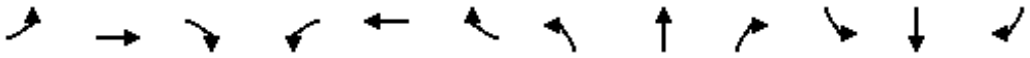
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	79	314	142	52	197	52	0	541	41	0	993	146
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00			0.95			1.00	1.00
Frt	1.00	1.00	0.85		0.98			0.99			1.00	0.85
Flt Protected	0.95	1.00	1.00		0.99			1.00			1.00	1.00
Satd. Flow (prot)	1770	1863	1583		1803			3501			1863	1583
Flt Permitted	0.41	1.00	1.00		0.70			1.00			1.00	1.00
Satd. Flow (perm)	772	1863	1583		1274			3501			1863	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)	86	341	154	57	214	57	0	588	45	0	1079	159
RTOR Reduction (vph)	0	0	74	0	12	0	0	9	0	0	0	63
Lane Group Flow (vph)	86	341	80	0	316	0	0	624	0	0	1079	96
Turn Type	Perm		Perm	Perm								Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8								6
Actuated Green, G (s)	15.9	15.9	15.9		15.9			36.1			36.1	36.1
Effective Green, g (s)	15.9	15.9	15.9		15.9			36.1			36.1	36.1
Actuated g/C Ratio	0.26	0.26	0.26		0.26			0.60			0.60	0.60
Clearance Time (s)	4.0	4.0	4.0		4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	205	494	419		338			2106			1121	952
v/s Ratio Prot		0.18						0.18			c0.58	
v/s Ratio Perm	0.11		0.05		c0.25							0.06
v/c Ratio	0.42	0.69	0.19		0.93			0.30			0.96	0.10
Uniform Delay, d1	18.2	19.8	17.1		21.5			5.8			11.3	5.1
Progression Factor	1.00	1.00	1.00		1.00			1.00			0.56	0.04
Incremental Delay, d2	1.4	4.1	0.2		32.0			0.4			15.3	0.1
Delay (s)	19.6	24.0	17.3		53.6			6.2			21.7	0.4
Level of Service	B	C	B		D			A			C	A
Approach Delay (s)		21.6			53.6			6.2			18.9	
Approach LOS		C			D			A			B	

Intersection Summary			
HCM Average Control Delay	20.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



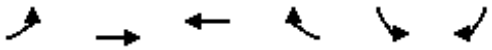
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	123	1119	395	145	226	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frt		1.00	0.96		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3522	3396		1770	1583
Flt Permitted		0.82	1.00		0.95	1.00
Satd. Flow (perm)		2899	3396		1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	134	1216	429	158	246	75
RTOR Reduction (vph)	0	0	55	0	0	59
Lane Group Flow (vph)	0	1350	532	0	246	16
Turn Type	Perm					Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		39.1	39.1		12.9	12.9
Effective Green, g (s)		39.1	39.1		12.9	12.9
Actuated g/C Ratio		0.65	0.65		0.22	0.22
Clearance Time (s)		4.0	4.0		4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1889	2213		381	340
v/s Ratio Prot			0.16		c0.14	
v/s Ratio Perm		c0.47				0.01
v/c Ratio		0.71	0.24		0.65	0.05
Uniform Delay, d1		6.8	4.3		21.5	18.7
Progression Factor		1.00	0.40		1.00	1.00
Incremental Delay, d2		2.3	0.3		3.7	0.1
Delay (s)		9.2	2.0		25.2	18.7
Level of Service		A	A		C	B
Approach Delay (s)		9.2	2.0		23.7	
Approach LOS		A	A		C	

Intersection Summary			
HCM Average Control Delay	9.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



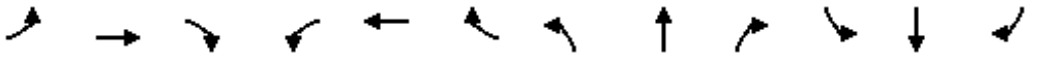
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	999	132	57	382	14	39	155	59	112	428	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			1.00			1.00			1.00	
Frt		0.98			1.00			0.97			1.00	
Flt Protected		1.00			0.99			0.99			0.99	
Satd. Flow (prot)		3475			1843			1790			1839	
Flt Permitted		0.94			0.61			0.88			0.87	
Satd. Flow (perm)		3275			1134			1584			1618	
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	1086	143	62	415	15	42	168	64	122	465	11
RTOR Reduction (vph)	0	11	0	0	2	0	0	13	0	0	1	0
Lane Group Flow (vph)	0	1243	0	0	490	0	0	261	0	0	597	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		31.0			31.0			25.0			25.0	
Effective Green, g (s)		31.0			31.0			25.0			25.0	
Actuated g/C Ratio		0.48			0.48			0.39			0.39	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1586			549			619			632	
v/s Ratio Prot												
v/s Ratio Perm		0.38			c0.43			0.16			c0.37	
v/c Ratio		0.78			0.89			0.42			0.95	
Uniform Delay, d1		13.7			15.0			14.2			18.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		2.6			16.8			0.5			23.0	
Delay (s)		16.3			31.8			14.7			41.8	
Level of Service		B			C			B			D	
Approach Delay (s)		16.3			31.8			14.7			41.8	
Approach LOS		B			C			B			D	

Intersection Summary			
HCM Average Control Delay	24.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	64.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	109.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	52	1289	486	76	94	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.46	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	849	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	1401	528	83	102	51
RTOR Reduction (vph)	0	0	0	22	0	44
Lane Group Flow (vph)	57	1401	528	61	102	7
Turn Type	Perm			Perm		Perm
Protected Phases		2	6		4	
Permitted Phases	2			6		4
Actuated Green, G (s)	44.3	44.3	44.3	44.3	7.7	7.7
Effective Green, g (s)	44.3	44.3	44.3	44.3	7.7	7.7
Actuated g/C Ratio	0.74	0.74	0.74	0.74	0.13	0.13
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	627	2613	2613	1169	227	203
v/s Ratio Prot		c0.40	0.15		c0.06	
v/s Ratio Perm	0.07			0.04		0.00
v/c Ratio	0.09	0.54	0.20	0.05	0.45	0.03
Uniform Delay, d1	2.2	3.4	2.4	2.1	24.2	22.9
Progression Factor	0.48	0.38	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.6	0.2	0.1	1.4	0.1
Delay (s)	1.3	1.9	2.6	2.2	25.6	23.0
Level of Service	A	A	A	A	C	C
Approach Delay (s)		1.8	2.5		24.7	
Approach LOS		A	A		C	

Intersection Summary			
HCM Average Control Delay	3.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

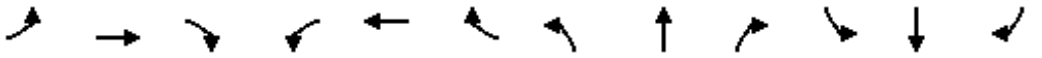


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	62	173	32	98	807	66	118	399	32	21	514	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95			0.95	
Frt	1.00	0.98		1.00	0.99		1.00	0.99			0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770	1819		1770	1842		1770	3500			3473	
Flt Permitted	0.08	1.00		0.59	1.00		0.17	1.00			0.93	
Satd. Flow (perm)	156	1819		1106	1842		324	3500			3220	
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)	67	188	35	107	877	72	128	434	35	23	559	75
RTOR Reduction (vph)	0	8	0	0	3	0	0	6	0	0	11	0
Lane Group Flow (vph)	67	215	0	107	946	0	128	463	0	0	646	0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	51.0	47.8		51.0	47.8		27.0	27.0			19.0	
Effective Green, g (s)	51.0	47.8		51.0	47.8		27.0	27.0			19.0	
Actuated g/C Ratio	0.57	0.53		0.57	0.53		0.30	0.30			0.21	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	146	966		650	978		161	1050			680	
v/s Ratio Prot	c0.02	0.12		0.01	c0.51		c0.04	0.13				
v/s Ratio Perm	0.24			0.09			0.20				c0.20	
v/c Ratio	0.46	0.22		0.16	0.97		0.80	0.44			0.95	
Uniform Delay, d1	19.5	11.2		9.0	20.3		28.0	25.4			35.0	
Progression Factor	2.73	0.07		1.00	1.00		0.94	0.93			0.74	
Incremental Delay, d2	2.3	0.5		0.1	21.8		22.4	1.3			20.5	
Delay (s)	55.7	1.3		9.1	42.2		48.8	25.0			46.6	
Level of Service	E	A		A	D		D	C			D	
Approach Delay (s)		13.8			38.8			30.1			46.6	
Approach LOS		B			D			C			D	

Intersection Summary			
HCM Average Control Delay	36.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	92.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	760	99	530	1558	221	349
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	1.00	0.95	1.00	0.88
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	1770	3539	1770	2787
Flt Permitted	1.00	1.00	0.21	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	391	3539	1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	826	108	576	1693	240	379
RTOR Reduction (vph)	0	60	0	0	0	291
Lane Group Flow (vph)	826	48	576	1693	240	88
Turn Type		Perm	pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases		2	6			8
Actuated Green, G (s)	29.7	29.7	61.0	61.0	21.0	21.0
Effective Green, g (s)	29.7	29.7	61.0	61.0	21.0	21.0
Actuated g/C Ratio	0.33	0.33	0.68	0.68	0.23	0.23
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1678	522	683	2399	413	650
v/s Ratio Prot	0.16		c0.26	0.48	c0.14	
v/s Ratio Perm		0.03	c0.32			0.03
v/c Ratio	0.49	0.09	0.84	0.71	0.58	0.14
Uniform Delay, d1	24.1	20.8	16.0	9.0	30.6	27.3
Progression Factor	1.19	1.51	1.00	1.00	0.51	0.38
Incremental Delay, d2	1.0	0.3	9.3	1.8	5.3	0.4
Delay (s)	29.7	31.8	25.3	10.7	20.9	10.7
Level of Service	C	C	C	B	C	B
Approach Delay (s)	30.0			14.4	14.7	
Approach LOS	C			B	B	

Intersection Summary			
HCM Average Control Delay	18.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



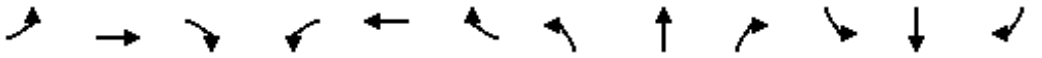
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	107	252	27	45	907	65	187	293	60	38	157	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	10	10	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5012		1770	3504		1652	1694		1770	1782	
Flt Permitted	0.11	1.00		0.56	1.00		0.38	1.00		0.25	1.00	
Satd. Flow (perm)	214	5012		1043	3504		659	1694		472	1782	
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)	116	274	29	49	986	71	203	318	65	41	171	70
RTOR Reduction (vph)	0	12	0	0	5	0	0	9	0	0	17	0
Lane Group Flow (vph)	116	291	0	49	1052	0	203	374	0	41	224	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	44.1	44.1		40.7	40.7		31.5	24.8		18.5	15.8	
Effective Green, g (s)	44.1	44.1		40.7	40.7		31.5	24.8		18.5	15.8	
Actuated g/C Ratio	0.49	0.49		0.45	0.45		0.35	0.28		0.21	0.18	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	205	2456		491	1585		360	467		136	313	
v/s Ratio Prot	c0.04	0.06		0.00	c0.30		c0.07	c0.22		0.01	0.13	
v/s Ratio Perm	0.24			0.04			0.12			0.05		
v/c Ratio	0.57	0.12		0.10	0.66		0.56	0.80		0.30	0.71	
Uniform Delay, d1	16.0	12.4		14.2	19.3		28.9	30.3		39.4	35.0	
Progression Factor	0.80	0.68		0.20	0.22		1.13	1.06		1.52	1.33	
Incremental Delay, d2	3.3	0.1		0.1	2.1		1.7	8.2		1.2	7.3	
Delay (s)	16.1	8.5		2.9	6.4		34.5	40.5		61.2	53.8	
Level of Service	B	A		A	A		C	D		E	D	
Approach Delay (s)		10.6			6.2			38.4			54.9	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM Average Control Delay	20.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

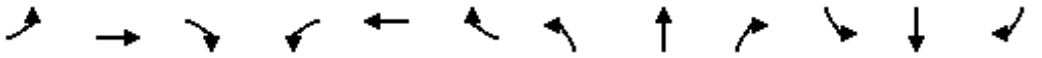
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	678	114	135	1870	182	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.91		1.00	0.91	1.00	1.00
Frt	0.98		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	4975		1770	5085	1770	1583
Flt Permitted	1.00		0.28	1.00	0.95	1.00
Satd. Flow (perm)	4975		519	5085	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	737	124	147	2033	198	197
RTOR Reduction (vph)	26	0	0	0	0	147
Lane Group Flow (vph)	835	0	147	2033	198	50
Turn Type			pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Actuated Green, G (s)	44.0		59.0	59.0	23.0	23.0
Effective Green, g (s)	44.0		59.0	59.0	23.0	23.0
Actuated g/C Ratio	0.49		0.66	0.66	0.26	0.26
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2432		493	3334	452	405
v/s Ratio Prot	0.17		0.04	c0.40	c0.11	
v/s Ratio Perm			0.16			0.03
v/c Ratio	0.34		0.30	0.61	0.44	0.12
Uniform Delay, d1	14.1		10.0	8.9	28.1	25.8
Progression Factor	1.07		0.15	0.13	1.36	3.61
Incremental Delay, d2	0.3		0.3	0.7	2.3	0.5
Delay (s)	15.4		1.8	1.9	40.4	93.5
Level of Service	B		A	A	D	F
Approach Delay (s)	15.4			1.9	66.9	
Approach LOS	B			A	E	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	66	23	39	429	50	85	485	11	11	246	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	4.0
Lane Util. Factor		1.00			0.95			1.00			1.00	1.00
Frt		0.97			0.99			1.00			1.00	0.85
Flt Protected		0.99			1.00			0.99			1.00	1.00
Satd. Flow (prot)		1792			3475			1845			1859	1583
Flt Permitted		0.67			0.93			0.91			0.97	1.00
Satd. Flow (perm)		1220			3228			1689			1815	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)	32	72	25	42	466	54	92	527	12	12	267	54
RTOR Reduction (vph)	0	11	0	0	10	0	0	1	0	0	0	17
Lane Group Flow (vph)	0	118	0	0	552	0	0	630	0	0	279	37
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		20.8			20.8			61.2			61.2	61.2
Effective Green, g (s)		20.8			20.8			61.2			61.2	61.2
Actuated g/C Ratio		0.23			0.23			0.68			0.68	0.68
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		282			746			1149			1234	1076
v/s Ratio Prot												
v/s Ratio Perm		0.10			c0.17			c0.37			0.15	0.02
v/c Ratio		0.42			0.74			0.55			0.23	0.03
Uniform Delay, d1		29.5			32.1			7.3			5.4	4.7
Progression Factor		1.05			1.00			0.31			0.94	0.57
Incremental Delay, d2		1.0			3.9			1.5			0.4	0.1
Delay (s)		32.0			36.0			3.8			5.5	2.7
Level of Service		C			D			A			A	A
Approach Delay (s)		32.0			36.0			3.8			5.1	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM Average Control Delay	17.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

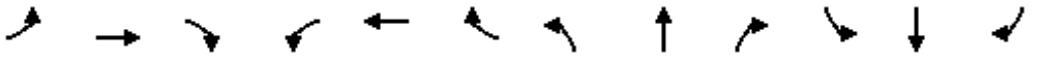


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	74	419	70	62	1037	99	123	592	24	11	638	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	
Lane Util. Factor		0.91			0.91		1.00	0.95			0.95	
Frt		0.98			0.99		1.00	0.99			0.98	
Flt Protected		0.99			1.00		0.95	1.00			1.00	
Satd. Flow (prot)		4958			5009		1770	3519			3461	
Flt Permitted		0.69			0.86		0.26	1.00			0.94	
Satd. Flow (perm)		3431			4332		492	3519			3270	
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)	80	455	76	67	1127	108	134	643	26	12	693	117
RTOR Reduction (vph)	0	21	0	0	12	0	0	3	0	0	14	0
Lane Group Flow (vph)	0	590	0	0	1290	0	134	666	0	0	809	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		37.0			37.0		45.0	45.0			45.0	
Effective Green, g (s)		37.0			37.0		45.0	45.0			45.0	
Actuated g/C Ratio		0.41			0.41		0.50	0.50			0.50	
Clearance Time (s)		4.0			4.0		4.0	4.0			4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1411			1781		246	1760			1635	
v/s Ratio Prot								0.19				
v/s Ratio Perm		0.17			c0.30		c0.27				0.25	
v/c Ratio		0.42			0.72		0.54	0.38			0.49	
Uniform Delay, d1		18.8			22.2		15.5	13.9			14.9	
Progression Factor		1.00			0.57		0.18	0.18			0.54	
Incremental Delay, d2		0.9			2.1		7.9	0.6			0.1	
Delay (s)		19.8			14.8		10.6	3.0			8.1	
Level of Service		B			B		B	A			A	
Approach Delay (s)		19.8			14.8			4.3			8.1	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	86.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

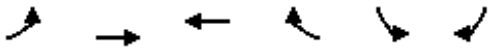
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	514	56	176	1607	274	156	550	127	237	530	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00		0.95	
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85		0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00		0.99	
Satd. Flow (prot)	1770	5010		1770	4974		1770	1863	1583		3419	
Flt Permitted	0.15	1.00		0.28	1.00		0.12	1.00	1.00		0.59	
Satd. Flow (perm)	281	5010		529	4974		229	1863	1583		2032	
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)	87	559	61	191	1747	298	170	598	138	258	576	136
RTOR Reduction (vph)	0	15	0	0	26	0	0	0	74	0	16	0
Lane Group Flow (vph)	87	605	0	191	2019	0	170	598	64	0	954	0
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	29.7	26.5		40.0	32.8		42.0	42.0	42.0		34.0	
Effective Green, g (s)	29.7	26.5		40.0	32.8		42.0	42.0	42.0		34.0	
Actuated g/C Ratio	0.33	0.29		0.44	0.36		0.47	0.47	0.47		0.38	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	146	1475		366	1813		175	869	739		768	
v/s Ratio Prot	0.02	0.12		c0.06	c0.41		c0.04	0.32				
v/s Ratio Perm	0.18			0.18			0.41		0.04		c0.47	
v/c Ratio	0.60	0.41		0.52	1.11		0.97	0.69	0.09		1.24	
Uniform Delay, d1	24.2	25.5		16.2	28.6		22.0	18.9	13.3		28.0	
Progression Factor	1.00	1.00		0.49	0.63		1.42	1.34	2.97		1.00	
Incremental Delay, d2	6.4	0.8		1.1	58.0		57.2	4.2	0.2		120.2	
Delay (s)	30.6	26.3		9.0	75.9		88.5	29.4	39.9		148.2	
Level of Service	C	C		A	E		F	C	D		F	
Approach Delay (s)		26.9			70.2			42.1			148.2	
Approach LOS		C			E			D			F	

Intersection Summary			
HCM Average Control Delay	74.3	HCM Level of Service	E
HCM Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	109.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



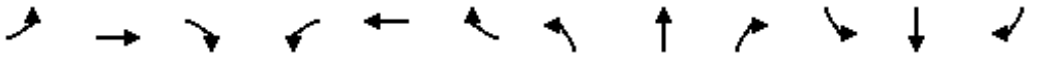
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	73	176	149	368	41	192	774	11	11	711	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95		1.00	0.95		1.00	0.95	
Frt		0.91			0.99		1.00	1.00		1.00	0.98	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3205			3454		1770	3532		1770	3469	
Flt Permitted		0.67			0.71		0.28	1.00		0.29	1.00	
Satd. Flow (perm)		2182			2500		516	3532		542	3469	
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)	65	79	191	162	400	45	209	841	12	12	773	117
RTOR Reduction (vph)	0	138	0	0	7	0	0	1	0	0	12	0
Lane Group Flow (vph)	0	197	0	0	601	0	209	852	0	12	878	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		25.0			25.0		57.0	57.0		57.0	57.0	
Effective Green, g (s)		25.0			25.0		57.0	57.0		57.0	57.0	
Actuated g/C Ratio		0.28			0.28		0.63	0.63		0.63	0.63	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		606			694		327	2237		343	2197	
v/s Ratio Prot								0.24			0.25	
v/s Ratio Perm		0.09			c0.24		c0.41			0.02		
v/c Ratio		0.33			0.87		0.64	0.38		0.03	0.40	
Uniform Delay, d1		25.8			30.9		10.2	8.0		6.2	8.1	
Progression Factor		1.00			0.33		0.52	0.28		0.52	0.44	
Incremental Delay, d2		0.3			9.5		0.9	0.0		0.2	0.5	
Delay (s)		26.1			19.7		6.1	2.3		3.4	4.1	
Level of Service		C			B		A	A		A	A	
Approach Delay (s)		26.1			19.7			3.0			4.1	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



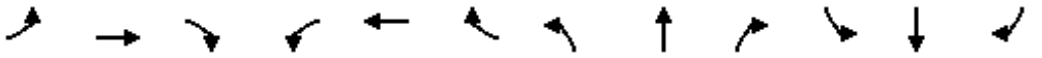
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	164	709	1856	163	71	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91	0.95		0.97	
Frt	1.00	1.00	0.99		0.97	
Flt Protected	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1770	5085	3496		3381	
Flt Permitted	0.07	1.00	1.00		0.96	
Satd. Flow (perm)	124	5085	3496		3381	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	178	771	2017	177	77	16
RTOR Reduction (vph)	0	0	7	0	13	0
Lane Group Flow (vph)	178	771	2187	0	80	0
Turn Type	pm+pt					
Protected Phases	5	2	6		4	
Permitted Phases	2					
Actuated Green, G (s)	66.0	66.0	56.0		16.0	
Effective Green, g (s)	66.0	66.0	56.0		16.0	
Actuated g/C Ratio	0.73	0.73	0.62		0.18	
Clearance Time (s)	4.0	4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	201	3729	2175		601	
v/s Ratio Prot	c0.06	0.15	c0.63		c0.02	
v/s Ratio Perm	0.59					
v/c Ratio	0.89	0.21	1.01		0.13	
Uniform Delay, d1	38.5	3.8	17.0		31.2	
Progression Factor	0.75	0.12	0.48		1.00	
Incremental Delay, d2	33.3	0.1	14.9		0.5	
Delay (s)	62.2	0.6	23.1		31.6	
Level of Service	E	A	C		C	
Approach Delay (s)		12.1	23.1		31.6	
Approach LOS		B	C		C	

Intersection Summary			
HCM Average Control Delay	20.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	96	734	17	13	1749	123	49	37	44	109	14	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.97	1.00		0.96	1.00
Satd. Flow (prot)	1770	5085	1583	1770	3504			1811	1583		1784	1583
Flt Permitted	0.07	1.00	1.00	0.30	1.00			0.77	1.00		0.68	1.00
Satd. Flow (perm)	136	5085	1583	566	3504			1433	1583		1273	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)	104	798	18	14	1901	134	53	40	48	118	15	250
RTOR Reduction (vph)	0	0	5	0	6	0	0	0	39	0	0	91
Lane Group Flow (vph)	104	798	13	14	2029	0	0	93	9	0	133	159
Turn Type	pm+pt		Perm	pm+pt			Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6			8		8	4		4
Actuated Green, G (s)	61.2	61.2	61.2	55.6	55.6			16.0	16.0		16.0	16.0
Effective Green, g (s)	61.2	61.2	61.2	55.6	55.6			16.0	16.0		16.0	16.0
Actuated g/C Ratio	0.68	0.68	0.68	0.62	0.62			0.18	0.18		0.18	0.18
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	209	3458	1076	360	2165			255	281		226	281
v/s Ratio Prot	c0.04	0.16		0.00	c0.58							
v/s Ratio Perm	0.30		0.01	0.02				0.06	0.01		c0.10	0.10
v/c Ratio	0.50	0.23	0.01	0.04	0.94			0.36	0.03		0.59	0.56
Uniform Delay, d1	32.9	5.5	4.6	6.8	15.6			32.5	30.6		34.0	33.8
Progression Factor	0.73	0.61	0.42	0.82	0.58			1.00	1.00		1.00	1.00
Incremental Delay, d2	1.8	0.2	0.0	0.0	7.4			4.0	0.2		10.8	8.0
Delay (s)	25.9	3.5	2.0	5.6	16.5			36.5	30.8		44.7	41.8
Level of Service	C	A	A	A	B			D	C		D	D
Approach Delay (s)		6.0			16.5			34.6			42.8	
Approach LOS		A			B			C			D	

Intersection Summary			
HCM Average Control Delay	17.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

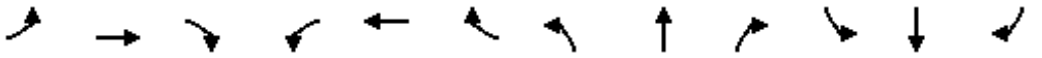


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	58	0	110	823	204	155	47	360	0	0	557	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95			0.95	
Frt	1.00		0.85	1.00	0.94		1.00	1.00			0.98	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770		1583	1770	1742		1770	3539			3454	
Flt Permitted	0.46		1.00	0.95	1.00		0.19	1.00			1.00	
Satd. Flow (perm)	866		1583	1770	1742		354	3539			3454	
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)	63	0	120	895	222	168	51	391	0	0	605	115
RTOR Reduction (vph)	0	0	51	0	30	0	0	0	0	0	17	0
Lane Group Flow (vph)	63	0	69	895	360	0	51	391	0	0	703	0
Turn Type	custom		custom	Perm			pm+pt					
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2					
Actuated Green, G (s)	52.0		52.0	52.0	52.0		30.0	30.0			23.6	
Effective Green, g (s)	52.0		52.0	52.0	52.0		30.0	30.0			23.6	
Actuated g/C Ratio	0.58		0.58	0.58	0.58		0.33	0.33			0.26	
Clearance Time (s)	4.0		4.0	4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	500		915	1023	1006		156	1180			906	
v/s Ratio Prot					0.21		0.01	c0.11			c0.20	
v/s Ratio Perm	0.07		0.04	c0.51			0.10					
v/c Ratio	0.13		0.08	0.87	0.36		0.33	0.33			0.78	
Uniform Delay, d1	8.7		8.4	16.2	10.1		32.5	22.5			30.8	
Progression Factor	1.00		1.00	0.65	0.64		1.00	1.00			0.55	
Incremental Delay, d2	0.1		0.0	4.6	0.4		1.2	0.8			4.0	
Delay (s)	8.8		8.4	15.2	6.9		33.8	23.2			20.9	
Level of Service	A		A	B	A		C	C			C	
Approach Delay (s)		8.5			12.7			24.5			20.9	
Approach LOS		A			B			C			C	

Intersection Summary			
HCM Average Control Delay	16.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

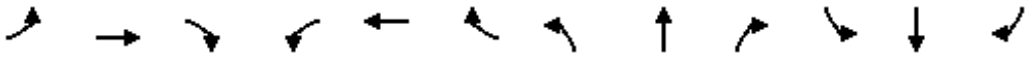
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	175	170	515	1009	470	357
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.38	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	711	3539	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	190	185	560	1097	511	388
RTOR Reduction (vph)	0	155	0	0	0	100
Lane Group Flow (vph)	190	30	560	1097	511	288
Turn Type		Perm	pm+pt			pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases		4	2			6
Actuated Green, G (s)	14.7	14.7	67.3	67.3	42.8	57.5
Effective Green, g (s)	14.7	14.7	67.3	67.3	42.8	57.5
Actuated g/C Ratio	0.16	0.16	0.75	0.75	0.48	0.64
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	289	259	773	2646	1683	1082
v/s Ratio Prot	c0.11		c0.17	0.31	0.14	0.04
v/s Ratio Perm		0.02	c0.38			0.14
v/c Ratio	0.66	0.12	0.72	0.41	0.30	0.27
Uniform Delay, d1	35.3	32.1	5.3	4.1	14.5	7.1
Progression Factor	0.75	0.49	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.0	0.2	3.4	0.5	0.5	0.1
Delay (s)	31.3	15.8	8.7	4.6	14.9	7.2
Level of Service	C	B	A	A	B	A
Approach Delay (s)	23.7			6.0	11.6	
Approach LOS	C			A	B	

Intersection Summary			
HCM Average Control Delay	10.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



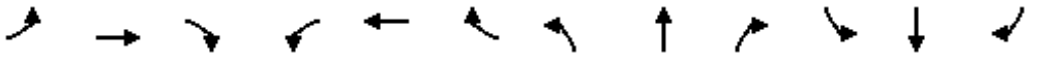
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	46	247	24	27	746	104	358	490	45	40	242	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1838		1770	1829		1770	1839		1770	1863	1583
Flt Permitted	0.11	1.00		0.43	1.00		0.25	1.00		0.23	1.00	1.00
Satd. Flow (perm)	198	1838		800	1829		474	1839		423	1863	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)	50	268	26	29	811	113	389	533	49	43	263	166
RTOR Reduction (vph)	0	4	0	0	6	0	0	3	0	0	0	69
Lane Group Flow (vph)	50	290	0	29	918	0	389	579	0	43	263	97
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	40.0	40.0		40.0	40.0		35.6	29.2		20.0	17.6	17.6
Effective Green, g (s)	40.0	40.0		40.0	40.0		35.6	29.2		20.0	17.6	17.6
Actuated g/C Ratio	0.44	0.44		0.44	0.44		0.40	0.32		0.22	0.20	0.20
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	130	817		381	813		389	597		130	364	310
v/s Ratio Prot	0.01	c0.16		0.00	c0.50		c0.16	0.31		0.01	0.14	
v/s Ratio Perm	0.16			0.03			c0.24			0.06		0.06
v/c Ratio	0.38	0.36		0.08	1.13		1.00	0.97		0.33	0.72	0.31
Uniform Delay, d1	39.9	16.5		14.7	25.0		23.4	30.0		28.9	33.9	31.0
Progression Factor	1.10	1.16		0.72	0.88		0.98	0.98		1.00	1.00	1.00
Incremental Delay, d2	1.8	1.2		0.1	72.3		45.6	30.0		1.5	11.8	2.6
Delay (s)	45.6	20.3		10.6	94.3		68.5	59.4		30.4	45.7	33.6
Level of Service	D	C		B	F		E	E		C	D	C
Approach Delay (s)		23.9			91.7			63.1			40.1	
Approach LOS		C			F			E			D	

Intersection Summary			
HCM Average Control Delay	64.2	HCM Level of Service	E
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	90.0	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			



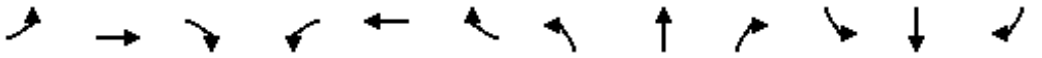
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	13	99	8	14	728	225	130	342	15	45	166	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0			4.0	
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	
Frt		0.99			1.00	0.85		1.00			0.97	
Flt Protected		0.99			1.00	1.00		0.99			0.99	
Satd. Flow (prot)		1836			1861	1583		1831			1792	
Flt Permitted		0.78			1.00	1.00		0.79			0.87	
Satd. Flow (perm)		1438			1854	1583		1463			1563	
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)	14	108	9	15	791	245	141	372	16	49	180	66
RTOR Reduction (vph)	0	3	0	0	0	123	0	1	0	0	12	0
Lane Group Flow (vph)	0	128	0	0	806	123	0	528	0	0	283	0
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)		45.0			45.0	45.0		37.0			37.0	
Effective Green, g (s)		45.0			45.0	45.0		37.0			37.0	
Actuated g/C Ratio		0.50			0.50	0.50		0.41			0.41	
Clearance Time (s)		4.0			4.0	4.0		4.0			4.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		719			927	792		601			643	
v/s Ratio Prot												
v/s Ratio Perm		0.09			c0.43	0.08		c0.36			0.18	
v/c Ratio		0.18			0.87	0.15		0.88			0.44	
Uniform Delay, d1		12.3			19.9	12.2		24.4			19.1	
Progression Factor		1.00			0.67	0.24		1.00			0.45	
Incremental Delay, d2		0.5			10.8	0.4		16.6			2.1	
Delay (s)		12.9			24.2	3.4		41.0			10.7	
Level of Service		B			C	A		D			B	
Approach Delay (s)		12.9			19.3			41.0			10.7	
Approach LOS		B			B			D			B	

Intersection Summary			
HCM Average Control Delay	23.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	90.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



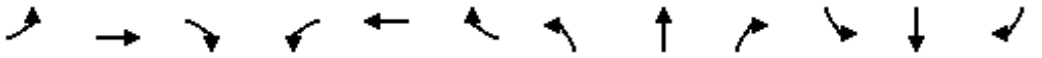
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	412	550	108	68	1215	53	413	773	67	34	256	1113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.98		1.00	0.99		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1593	3107		1593	3165		1593	3147		1593	3185	1425
Flt Permitted	0.95	1.00		0.38	1.00		0.58	1.00		0.14	1.00	1.00
Satd. Flow (perm)	1593	3107		637	3165		974	3147		243	3185	1425
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)	448	598	117	74	1321	58	449	840	73	37	278	1210
RTOR Reduction (vph)	0	18	0	0	4	0	0	7	0	0	0	242
Lane Group Flow (vph)	448	697	0	74	1375	0	449	906	0	37	278	968
Turn Type	Prot			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6			8			4		4
Actuated Green, G (s)	13.0	33.6		25.4	25.4		33.2	33.2		30.0	30.0	30.0
Effective Green, g (s)	13.0	33.6		25.4	25.4		33.2	33.2		30.0	30.0	30.0
Actuated g/C Ratio	0.14	0.37		0.28	0.28		0.37	0.37		0.33	0.33	0.33
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	230	1160		231	893		398	1161		117	1062	475
v/s Ratio Prot	c0.28	0.22		0.02	c0.43		c0.07	0.29		0.01	0.09	
v/s Ratio Perm				0.07			0.35			0.10		c0.68
v/c Ratio	1.95	0.60		0.32	1.54		1.13	0.78		0.32	0.26	2.04
Uniform Delay, d1	38.5	22.8		26.2	32.3		27.3	25.2		22.9	21.9	30.0
Progression Factor	1.00	1.00		0.78	0.83		0.72	0.70		0.88	0.90	0.95
Incremental Delay, d2	442.0	2.3		0.6	247.2		72.3	1.6		1.5	0.1	474.1
Delay (s)	480.5	25.1		21.0	274.1		91.9	19.2		21.8	19.9	502.6
Level of Service	F	C		C	F		F	B		C	B	F
Approach Delay (s)		200.5			261.2			43.2			402.9	
Approach LOS		F			F			D			F	

Intersection Summary			
HCM Average Control Delay	233.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.71		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	151.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



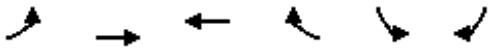
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	65	35	31	444	106	360	1085	56	78	355	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		0.95			0.97			0.99			0.99	
Flt Protected		0.99			1.00			0.99			0.99	
Satd. Flow (prot)		3356			3433			3478			3484	
Flt Permitted		0.75			0.93			0.71			0.60	
Satd. Flow (perm)		2529			3208			2486			2104	
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	71	38	34	483	115	391	1179	61	85	386	24
RTOR Reduction (vph)	0	31	0	0	21	0	0	3	0	0	4	0
Lane Group Flow (vph)	0	93	0	0	611	0	0	1628	0	0	491	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		17.0			17.0			65.0			65.0	
Effective Green, g (s)		17.0			17.0			65.0			65.0	
Actuated g/C Ratio		0.19			0.19			0.72			0.72	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		478			606			1795			1520	
v/s Ratio Prot												
v/s Ratio Perm		0.04			c0.19			c0.65			0.23	
v/c Ratio		0.19			1.01			0.91			0.32	
Uniform Delay, d1		30.7			36.5			10.1			4.5	
Progression Factor		1.00			1.00			0.63			0.88	
Incremental Delay, d2		0.2			38.6			6.2			0.5	
Delay (s)		30.9			75.1			12.5			4.5	
Level of Service		C			E			B			A	
Approach Delay (s)		30.9			75.1			12.5			4.5	
Approach LOS		C			E			B			A	

Intersection Summary			
HCM Average Control Delay	25.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



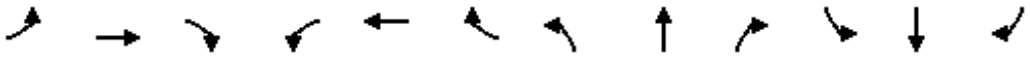
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	27	92	16	27	381	45	25	1305	56	15	244	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00			0.95			1.00	1.00
Frt	1.00	1.00	0.85		0.99			0.99			1.00	0.85
Flt Protected	0.95	1.00	1.00		1.00			1.00			1.00	1.00
Satd. Flow (prot)	1770	1863	1583		1832			3515			1857	1583
Flt Permitted	0.25	1.00	1.00		0.98			0.95			0.89	1.00
Satd. Flow (perm)	471	1863	1583		1802			3327			1660	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)	29	100	17	29	414	49	27	1418	61	16	265	71
RTOR Reduction (vph)	0	0	12	0	5	0	0	3	0	0	0	28
Lane Group Flow (vph)	29	100	5	0	487	0	0	1503	0	0	281	43
Turn Type	Perm		Perm	Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		6
Actuated Green, G (s)	27.9	27.9	27.9		27.9			54.1			54.1	54.1
Effective Green, g (s)	27.9	27.9	27.9		27.9			54.1			54.1	54.1
Actuated g/C Ratio	0.31	0.31	0.31		0.31			0.60			0.60	0.60
Clearance Time (s)	4.0	4.0	4.0		4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	146	578	491		559			2000			998	952
v/s Ratio Prot		0.05										
v/s Ratio Perm	0.06		0.00		c0.27			c0.45			0.17	0.03
v/c Ratio	0.20	0.17	0.01		0.87			0.75			0.28	0.04
Uniform Delay, d1	22.8	22.6	21.5		29.4			13.1			8.6	7.4
Progression Factor	1.00	1.00	1.00		1.00			1.00			0.83	0.62
Incremental Delay, d2	0.7	0.1	0.0		13.9			2.7			0.7	0.1
Delay (s)	23.5	22.8	21.5		43.3			15.7			7.8	4.6
Level of Service	C	C	C		D			B			A	A
Approach Delay (s)		22.8			43.3			15.7			7.1	
Approach LOS		C			D			B			A	

Intersection Summary			
HCM Average Control Delay	20.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	49	287	1389	141	81	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frt		1.00	0.99		1.00	0.85
Flt Protected		0.99	1.00		0.95	1.00
Satd. Flow (prot)		3514	3490		1770	1583
Flt Permitted		0.68	1.00		0.95	1.00
Satd. Flow (perm)		2419	3490		1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	53	312	1510	153	88	136
RTOR Reduction (vph)	0	0	6	0	0	59
Lane Group Flow (vph)	0	365	1657	0	88	77
Turn Type	Perm					Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		71.9	71.9		10.1	10.1
Effective Green, g (s)		71.9	71.9		10.1	10.1
Actuated g/C Ratio		0.80	0.80		0.11	0.11
Clearance Time (s)		4.0	4.0		4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1933	2788		199	178
v/s Ratio Prot			c0.47		c0.05	
v/s Ratio Perm		0.15				0.05
v/c Ratio		0.19	0.59		0.44	0.43
Uniform Delay, d1		2.1	3.5		37.3	37.3
Progression Factor		1.00	0.51		0.67	0.47
Incremental Delay, d2		0.2	0.8		1.5	1.6
Delay (s)		2.4	2.6		26.6	19.0
Level of Service		A	A		C	B
Approach Delay (s)		2.4	2.6		21.9	
Approach LOS		A	A		C	

Intersection Summary			
HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

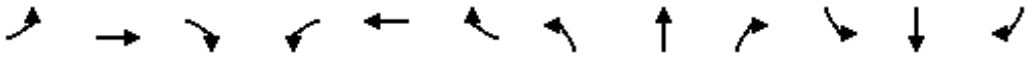


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	16	232	36	21	1494	53	144	434	62	23	100	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			0.95			1.00			1.00	
Frt		0.98			0.99			0.99			0.98	
Flt Protected		1.00			1.00			0.99			0.99	
Satd. Flow (prot)		1826			3519			1818			1805	
Flt Permitted		0.62			0.95			0.86			0.86	
Satd. Flow (perm)		1127			3335			1574			1565	
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	252	39	23	1624	58	157	472	67	25	109	28
RTOR Reduction (vph)	0	3	0	0	2	0	0	2	0	0	5	0
Lane Group Flow (vph)	0	305	0	0	1703	0	0	694	0	0	157	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		66.0			66.0			50.0			50.0	
Effective Green, g (s)		66.0			66.0			50.0			50.0	
Actuated g/C Ratio		0.53			0.53			0.40			0.40	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		600			1775			635			631	
v/s Ratio Prot												
v/s Ratio Perm		0.27			c0.51			c0.44			0.10	
v/c Ratio		0.51			0.96			1.09			0.25	
Uniform Delay, d1		18.6			27.7			37.0			24.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.7			12.9			63.5			0.2	
Delay (s)		19.3			40.7			100.5			24.7	
Level of Service		B			D			F			C	
Approach Delay (s)		19.3			40.7			100.5			24.7	
Approach LOS		B			D			F			C	

Intersection Summary			
HCM Average Control Delay	52.0	HCM Level of Service	D
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	124.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	99.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

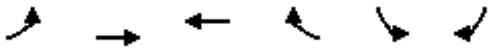
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	845	28	65	1950	52	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.91		1.00	0.91	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	5061		1770	5085	1770	1583
Flt Permitted	1.00		0.28	1.00	0.95	1.00
Satd. Flow (perm)	5061		523	5085	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	918	30	71	2120	57	26
RTOR Reduction (vph)	4	0	0	0	0	21
Lane Group Flow (vph)	944	0	71	2120	57	5
Turn Type			Perm			Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Actuated Green, G (s)	65.0		65.0	65.0	17.0	17.0
Effective Green, g (s)	65.0		65.0	65.0	17.0	17.0
Actuated g/C Ratio	0.72		0.72	0.72	0.19	0.19
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3655		378	3673	334	299
v/s Ratio Prot	0.19			c0.42	c0.03	
v/s Ratio Perm			0.14			0.00
v/c Ratio	0.26		0.19	0.58	0.17	0.02
Uniform Delay, d1	4.3		4.0	6.0	30.6	29.7
Progression Factor	0.28		0.07	0.05	0.73	0.58
Incremental Delay, d2	0.2		0.4	0.2	1.1	0.1
Delay (s)	1.4		0.7	0.6	23.5	17.2
Level of Service	A		A	A	C	B
Approach Delay (s)	1.4			0.6	21.5	
Approach LOS	A			A	C	

Intersection Summary			
HCM Average Control Delay	1.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



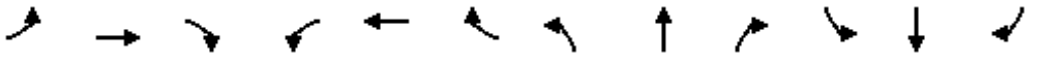
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	328	7	0	963	71	40	60	13	24	11	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95			0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00			0.99		1.00	0.97		1.00	0.88	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3528			5033		1770	1813		1770	1639	
Flt Permitted	0.14	1.00			1.00		0.72	1.00		0.71	1.00	
Satd. Flow (perm)	256	3528			5033		1337	1813		1314	1639	
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	357	8	0	1047	77	43	65	14	26	12	48
RTOR Reduction (vph)	0	3	0	0	16	0	0	5	0	0	20	0
Lane Group Flow (vph)	26	362	0	0	1108	0	43	74	0	26	40	0
Turn Type	Perm						Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4						2			6		
Actuated Green, G (s)	29.1	29.1			29.1		52.9	52.9		52.9	52.9	
Effective Green, g (s)	29.1	29.1			29.1		52.9	52.9		52.9	52.9	
Actuated g/C Ratio	0.32	0.32			0.32		0.59	0.59		0.59	0.59	
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	83	1141			1627		786	1066		772	963	
v/s Ratio Prot		0.10			c0.22			c0.04			0.02	
v/s Ratio Perm	0.10						0.03			0.02		
v/c Ratio	0.31	0.32			0.68		0.05	0.07		0.03	0.04	
Uniform Delay, d1	22.9	23.0			26.4		7.9	8.0		7.8	7.8	
Progression Factor	0.44	0.46			0.66		1.00	1.00		1.83	2.81	
Incremental Delay, d2	2.1	0.2			0.5		0.1	0.1		0.1	0.1	
Delay (s)	12.2	10.8			17.9		8.0	8.1		14.4	22.1	
Level of Service	B	B			B		A	A		B	C	
Approach Delay (s)		10.9			17.9			8.1			19.7	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM Average Control Delay	15.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	35.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



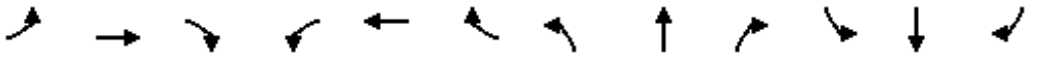
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	27	356	1428	100	35	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.15	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	273	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	387	1552	109	38	84
RTOR Reduction (vph)	0	0	0	18	0	55
Lane Group Flow (vph)	29	387	1552	91	38	29
Turn Type	Perm			Perm		Perm
Protected Phases		2	6		4	
Permitted Phases	2			6		4
Actuated Green, G (s)	75.3	75.3	75.3	75.3	6.7	6.7
Effective Green, g (s)	75.3	75.3	75.3	75.3	6.7	6.7
Actuated g/C Ratio	0.84	0.84	0.84	0.84	0.07	0.07
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	228	2961	2961	1324	132	118
v/s Ratio Prot		0.11	c0.44		c0.02	
v/s Ratio Perm	0.11			0.06		0.02
v/c Ratio	0.13	0.13	0.52	0.07	0.29	0.25
Uniform Delay, d1	1.3	1.3	2.1	1.3	39.4	39.3
Progression Factor	1.24	1.27	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1	0.1	0.7	0.1	1.2	1.1
Delay (s)	2.8	1.8	2.8	1.4	40.6	40.4
Level of Service	A	A	A	A	D	D
Approach Delay (s)		1.9	2.7		40.5	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	4.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	125	13	17	325	11	12	2	8	7	4	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.88		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1837		1770	3522		1770	1634		1770	1642	
Flt Permitted	0.53	1.00		0.66	1.00		0.75	1.00		0.75	1.00	
Satd. Flow (perm)	995	1837		1232	3522		1388	1634		1398	1642	
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	136	14	18	353	12	13	2	9	8	4	15
RTOR Reduction (vph)	0	9	0	0	7	0	0	6	0	0	10	0
Lane Group Flow (vph)	12	141	0	18	358	0	13	5	0	8	9	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	7.8	7.8		7.8	7.8		7.4	7.4		7.4	7.4	
Effective Green, g (s)	7.8	7.8		7.8	7.8		7.4	7.4		7.4	7.4	
Actuated g/C Ratio	0.34	0.34		0.34	0.34		0.32	0.32		0.32	0.32	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	335	618		414	1184		443	521		446	524	
v/s Ratio Prot		0.08			c0.10			0.00			0.01	
v/s Ratio Perm	0.01			0.01			c0.01			0.01		
v/c Ratio	0.04	0.23		0.04	0.30		0.03	0.01		0.02	0.02	
Uniform Delay, d1	5.2	5.5		5.2	5.7		5.4	5.4		5.4	5.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.2		0.0	0.1		0.0	0.0		0.0	0.0	
Delay (s)	5.2	5.7		5.2	5.8		5.5	5.4		5.4	5.4	
Level of Service	A	A		A	A		A	A		A	A	
Approach Delay (s)		5.7			5.8			5.4			5.4	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	5.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.17		
Actuated Cycle Length (s)	23.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	28.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

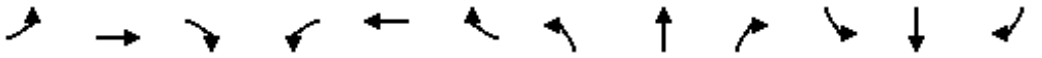


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	121	754	80	88	366	62	103	652	129	63	647	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95			0.95	
Frt	1.00	0.99		1.00	0.98		1.00	0.98			1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770	1836		1770	1822		1770	3452			3515	
Flt Permitted	0.29	1.00		0.09	1.00		0.14	1.00			0.73	
Satd. Flow (perm)	548	1836		173	1822		255	3452			2580	
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)	132	820	87	96	398	67	112	709	140	68	703	14
RTOR Reduction (vph)	0	4	0	0	6	0	0	16	0	0	1	0
Lane Group Flow (vph)	132	903	0	96	459	0	112	833	0	0	784	0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	52.9	46.0		47.1	43.1		38.0	38.0			30.0	
Effective Green, g (s)	52.9	46.0		47.1	43.1		38.0	38.0			30.0	
Actuated g/C Ratio	0.53	0.46		0.47	0.43		0.38	0.38			0.30	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	374	845		145	785		158	1312			774	
v/s Ratio Prot	c0.02	c0.49		c0.03	0.25		0.03	c0.24				
v/s Ratio Perm	0.16			0.28			0.24				c0.30	
v/c Ratio	0.35	1.07		0.66	0.58		0.71	0.63			1.01	
Uniform Delay, d1	14.0	27.0		22.9	21.6		23.8	25.3			35.0	
Progression Factor	0.27	0.89		1.00	1.00		1.28	1.25			0.72	
Incremental Delay, d2	0.5	49.8		10.8	3.2		13.1	2.3			30.5	
Delay (s)	4.4	73.8		33.7	24.8		43.5	34.0			55.6	
Level of Service	A	E		C	C		D	C			E	
Approach Delay (s)		65.0			26.3			35.1			55.6	
Approach LOS		E			C			D			E	

Intersection Summary			
HCM Average Control Delay	47.7	HCM Level of Service	D
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	105.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↱	↰	↑↑	↰	↱↱
Volume (vph)	1698	385	365	793	301	575
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	1.00	0.95	1.00	0.88
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	1770	3539	1770	2787
Flt Permitted	1.00	1.00	0.08	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	153	3539	1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1846	418	397	862	327	625
RTOR Reduction (vph)	0	104	0	0	0	481
Lane Group Flow (vph)	1846	314	397	862	327	144
Turn Type		Perm	pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases		2	6			8
Actuated Green, G (s)	44.6	44.6	69.0	69.0	23.0	23.0
Effective Green, g (s)	44.6	44.6	69.0	69.0	23.0	23.0
Actuated g/C Ratio	0.45	0.45	0.69	0.69	0.23	0.23
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2268	706	435	2442	407	641
v/s Ratio Prot	0.36		c0.19	0.24	c0.18	
v/s Ratio Perm		0.20	c0.44			0.05
v/c Ratio	0.81	0.45	0.91	0.35	0.80	0.22
Uniform Delay, d1	24.1	19.1	29.8	6.4	36.4	31.3
Progression Factor	0.38	0.10	1.00	1.00	0.70	1.90
Incremental Delay, d2	2.2	1.4	23.3	0.4	13.1	0.7
Delay (s)	11.4	3.3	53.0	6.8	38.5	59.9
Level of Service	B	A	D	A	D	E
Approach Delay (s)	9.9			21.3	52.6	
Approach LOS	A			C	D	

Intersection Summary			
HCM Average Control Delay	22.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



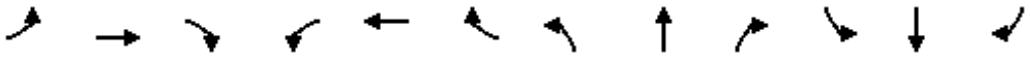
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	184	892	192	138	358	63	61	174	48	62	335	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	10	10	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.98		1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4950		1770	3460		1652	1682		1770	1811	
Flt Permitted	0.30	1.00		0.23	1.00		0.27	1.00		0.34	1.00	
Satd. Flow (perm)	558	4950		424	3460		475	1682		636	1811	
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)	200	970	209	150	389	68	66	189	52	67	364	82
RTOR Reduction (vph)	0	30	0	0	12	0	0	11	0	0	9	0
Lane Group Flow (vph)	200	1149	0	150	445	0	66	230	0	67	437	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	37.8	37.8		37.8	37.8		29.2	29.2		28.9	28.9	
Effective Green, g (s)	37.8	37.8		37.8	37.8		29.2	29.2		28.9	28.9	
Actuated g/C Ratio	0.38	0.38		0.38	0.38		0.29	0.29		0.29	0.29	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	368	1871		335	1308		189	491		229	523	
v/s Ratio Prot	0.07	c0.23		c0.06	0.13		0.01	c0.14		0.01	c0.24	
v/s Ratio Perm	0.13			0.11			0.09			0.07		
v/c Ratio	0.54	0.61		0.45	0.34		0.35	0.47		0.29	0.84	
Uniform Delay, d1	22.4	25.2		27.3	22.2		36.5	29.0		26.9	33.3	
Progression Factor	0.34	0.36		0.67	0.57		0.79	0.77		0.89	0.93	
Incremental Delay, d2	0.8	0.8		1.0	0.7		1.1	0.7		0.6	9.3	
Delay (s)	8.5	9.9		19.3	13.4		29.8	23.0		24.4	40.3	
Level of Service	A	A		B	B		C	C		C	D	
Approach Delay (s)		9.7			14.8			24.4			38.2	
Approach LOS		A			B			C			D	

Intersection Summary			
HCM Average Control Delay	17.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

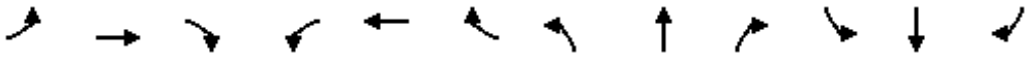
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	2143	168	204	1080	101	244
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.91		1.00	0.91	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	5030		1770	5085	1770	1583
Flt Permitted	1.00		0.06	1.00	0.95	1.00
Satd. Flow (perm)	5030		117	5085	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2329	183	222	1174	110	265
RTOR Reduction (vph)	8	0	0	0	0	193
Lane Group Flow (vph)	2504	0	222	1174	110	72
Turn Type			pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Actuated Green, G (s)	59.9		76.0	76.0	16.0	16.0
Effective Green, g (s)	59.9		76.0	76.0	16.0	16.0
Actuated g/C Ratio	0.60		0.76	0.76	0.16	0.16
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3013		289	3865	283	253
v/s Ratio Prot	c0.50		c0.09	0.23	c0.06	
v/s Ratio Perm			0.49			0.05
v/c Ratio	0.83		0.77	0.30	0.39	0.28
Uniform Delay, d1	16.0		29.0	3.7	37.6	37.0
Progression Factor	0.30		0.94	1.53	0.82	0.88
Incremental Delay, d2	0.3		11.3	0.2	3.7	2.6
Delay (s)	5.1		38.5	5.9	34.4	35.1
Level of Service	A		D	A	C	D
Approach Delay (s)	5.1			11.1	34.9	
Approach LOS	A			B	C	

Intersection Summary			
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



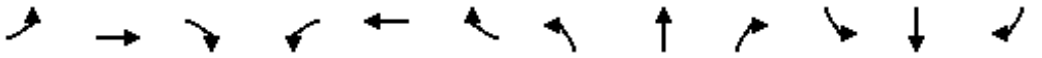
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	400	178	12	143	31	16	220	60	59	587	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	4.0
Lane Util. Factor		1.00			0.95			1.00			1.00	1.00
Frt		0.96			0.97			0.97			1.00	0.85
Flt Protected		1.00			1.00			1.00			1.00	1.00
Satd. Flow (prot)		1785			3439			1807			1854	1583
Flt Permitted		0.98			0.91			0.96			0.94	1.00
Satd. Flow (perm)		1753			3153			1734			1749	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)	30	435	193	13	155	34	17	239	65	64	638	102
RTOR Reduction (vph)	0	16	0	0	18	0	0	9	0	0	0	49
Lane Group Flow (vph)	0	642	0	0	184	0	0	312	0	0	702	53
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		39.6			39.6			52.4			52.4	52.4
Effective Green, g (s)		39.6			39.6			52.4			52.4	52.4
Actuated g/C Ratio		0.40			0.40			0.52			0.52	0.52
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		694			1249			909			916	829
v/s Ratio Prot												
v/s Ratio Perm		c0.37			0.06			0.18			c0.40	0.03
v/c Ratio		0.93			0.15			0.34			0.77	0.06
Uniform Delay, d1		28.8			19.4			13.8			18.9	11.7
Progression Factor		0.56			1.21			0.69			0.67	0.56
Incremental Delay, d2		14.7			0.1			1.0			5.2	0.1
Delay (s)		30.7			23.6			10.6			17.9	6.7
Level of Service		C			C			B			B	A
Approach Delay (s)		30.7			23.6			10.6			16.5	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	21.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	99.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	134	1168	209	28	422	62	106	434	28	46	747	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	
Lane Util. Factor		0.91			0.91		1.00	0.95			0.95	
Frt		0.98			0.98		1.00	0.99			0.99	
Flt Protected		1.00			1.00		0.95	1.00			1.00	
Satd. Flow (prot)		4958			4980		1770	3507			3483	
Flt Permitted		0.79			0.79		0.19	1.00			0.90	
Satd. Flow (perm)		3927			3964		351	3507			3130	
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)	146	1270	227	30	459	67	115	472	30	50	812	83
RTOR Reduction (vph)	0	22	0	0	17	0	0	4	0	0	7	0
Lane Group Flow (vph)	0	1621	0	0	539	0	115	498	0	0	938	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		47.0			47.0		45.0	45.0			45.0	
Effective Green, g (s)		47.0			47.0		45.0	45.0			45.0	
Actuated g/C Ratio		0.47			0.47		0.45	0.45			0.45	
Clearance Time (s)		4.0			4.0		4.0	4.0			4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1846			1863		158	1578			1409	
v/s Ratio Prot								0.14				
v/s Ratio Perm		c0.41			0.14		c0.33				0.30	
v/c Ratio		0.88			0.29		0.73	0.32			0.67	
Uniform Delay, d1		23.9			16.3		22.5	17.6			21.6	
Progression Factor		1.00			0.70		0.90	0.74			0.43	
Incremental Delay, d2		6.3			0.4		23.7	0.5			0.2	
Delay (s)		30.2			11.8		44.0	13.5			9.5	
Level of Service		C			B		D	B			A	
Approach Delay (s)		30.2			11.8			19.2			9.5	
Approach LOS		C			B			B			A	

Intersection Summary			
HCM Average Control Delay	20.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	90.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

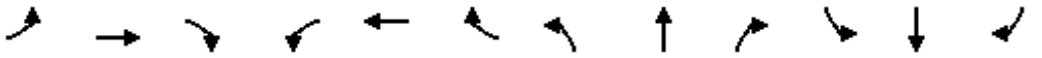


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	174	1881	115	159	811	200	141	379	171	365	575	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00		0.95	
Frt	1.00	0.99		1.00	0.97		1.00	1.00	0.85		0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00		0.98	
Satd. Flow (prot)	1770	5041		1770	4935		1770	1863	1583		3436	
Flt Permitted	0.14	1.00		0.13	1.00		0.10	1.00	1.00		0.60	
Satd. Flow (perm)	252	5041		240	4935		185	1863	1583		2110	
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)	189	2045	125	173	882	217	153	412	186	397	625	87
RTOR Reduction (vph)	0	7	0	0	42	0	0	0	65	0	7	0
Lane Group Flow (vph)	189	2163	0	173	1057	0	153	412	121	0	1102	0
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	46.0	38.0		35.0	31.0		46.0	46.0	46.0		38.0	
Effective Green, g (s)	46.0	38.0		35.0	31.0		46.0	46.0	46.0		38.0	
Actuated g/C Ratio	0.46	0.38		0.35	0.31		0.46	0.46	0.46		0.38	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	283	1916		145	1530		149	857	728		802	
v/s Ratio Prot	0.07	c0.43		c0.05	0.21		c0.04	0.22				
v/s Ratio Perm	0.23			c0.37			0.43		0.08		c0.52	
v/c Ratio	0.67	1.13		1.19	0.69		1.03	0.48	0.17		1.53dl	
Uniform Delay, d1	32.3	31.0		45.1	30.3		39.2	18.7	15.8		31.0	
Progression Factor	1.00	1.00		1.07	0.74		0.59	0.62	0.34		1.00	
Incremental Delay, d2	5.9	65.4		134.7	2.5		78.5	1.8	0.5		176.3	
Delay (s)	38.1	96.4		183.1	25.0		101.5	13.3	5.9		207.3	
Level of Service	D	F		F	C		F	B	A		F	
Approach Delay (s)		91.7			46.5			29.4			207.3	
Approach LOS		F			D			C			F	

Intersection Summary			
HCM Average Control Delay	96.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	110.0%	ICU Level of Service	H
Analysis Period (min)	15		

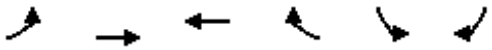
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group



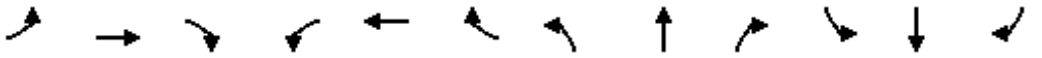
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	61	378	242	67	155	44	141	613	151	55	1087	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95		1.00	0.95		1.00	0.95	
Frt		0.95			0.98		1.00	0.97		1.00	0.99	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3336			3408		1770	3434		1770	3500	
Flt Permitted		0.87			0.55		0.17	1.00		0.31	1.00	
Satd. Flow (perm)		2931			1886		310	3434		570	3500	
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)	66	411	263	73	168	48	153	666	164	60	1182	95
RTOR Reduction (vph)	0	77	0	0	17	0	0	21	0	0	6	0
Lane Group Flow (vph)	0	664	0	0	273	0	153	809	0	60	1271	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		25.0			25.0		67.0	67.0		67.0	67.0	
Effective Green, g (s)		25.0			25.0		67.0	67.0		67.0	67.0	
Actuated g/C Ratio		0.25			0.25		0.67	0.67		0.67	0.67	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		733			472		208	2301		382	2345	
v/s Ratio Prot								0.24			0.36	
v/s Ratio Perm		c0.23			0.14		c0.49			0.11		
v/c Ratio		0.91			0.58		0.74	0.35		0.16	0.54	
Uniform Delay, d1		36.4			32.9		10.7	7.1		6.1	8.6	
Progression Factor		1.00			1.32		0.89	0.58		0.56	0.49	
Incremental Delay, d2		14.7			1.7		2.1	0.0		0.7	0.8	
Delay (s)		51.0			45.2		11.7	4.2		4.1	5.0	
Level of Service		D			D		B	A		A	A	
Approach Delay (s)		51.0			45.2			5.4			4.9	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	18.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



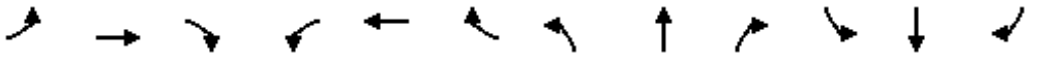
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	273	1989	1009	220	270	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91	0.95		0.97	
Frt	1.00	1.00	0.97		0.98	
Flt Protected	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1770	5085	3444		3397	
Flt Permitted	0.10	1.00	1.00		0.96	
Satd. Flow (perm)	183	5085	3444		3397	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	297	2162	1097	239	293	42
RTOR Reduction (vph)	0	0	19	0	12	0
Lane Group Flow (vph)	297	2162	1318	0	323	0
Turn Type	pm+pt					
Protected Phases	5	2	6		4	
Permitted Phases	2					
Actuated Green, G (s)	76.0	76.0	50.0		16.0	
Effective Green, g (s)	76.0	76.0	50.0		16.0	
Actuated g/C Ratio	0.76	0.76	0.50		0.16	
Clearance Time (s)	4.0	4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	488	3865	1722		544	
v/s Ratio Prot	0.13	c0.43	c0.38		c0.10	
v/s Ratio Perm	0.33					
v/c Ratio	0.61	0.56	0.77		0.59	
Uniform Delay, d1	22.4	5.0	20.2		39.0	
Progression Factor	1.20	0.62	0.25		1.00	
Incremental Delay, d2	1.6	0.4	2.1		4.7	
Delay (s)	28.6	3.5	7.2		43.7	
Level of Service	C	A	A		D	
Approach Delay (s)		6.5	7.2		43.7	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	222	1916	83	35	1016	159	115	67	116	193	72	242
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.97	1.00		0.96	1.00
Satd. Flow (prot)	1770	5085	1583	1770	3467			1806	1583		1797	1583
Flt Permitted	0.09	1.00	1.00	0.10	1.00			0.51	1.00		0.58	1.00
Satd. Flow (perm)	164	5085	1583	180	3467			943	1583		1075	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)	241	2083	90	38	1104	173	125	73	126	210	78	263
RTOR Reduction (vph)	0	0	10	0	13	0	0	0	59	0	0	121
Lane Group Flow (vph)	241	2083	80	38	1264	0	0	198	67	0	288	142
Turn Type	pm+pt		Perm	pm+pt			Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6			8		8	4		4
Actuated Green, G (s)	59.1	52.7	52.7	43.8	41.4			32.9	32.9		32.9	32.9
Effective Green, g (s)	59.1	52.7	52.7	43.8	41.4			32.9	32.9		32.9	32.9
Actuated g/C Ratio	0.59	0.53	0.53	0.44	0.41			0.33	0.33		0.33	0.33
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	317	2680	834	117	1435			310	521		354	521
v/s Ratio Prot	c0.10	c0.41		0.01	c0.36							
v/s Ratio Perm	0.34		0.05	0.13				0.21	0.04		c0.27	0.09
v/c Ratio	0.76	0.78	0.10	0.32	0.88			0.64	0.13		0.81	0.27
Uniform Delay, d1	33.5	18.9	11.8	40.0	27.0			28.5	23.5		30.7	24.7
Progression Factor	0.49	0.39	0.55	0.68	0.70			1.00	1.00		1.00	1.00
Incremental Delay, d2	8.7	1.9	0.2	1.5	7.5			9.7	0.5		18.2	1.3
Delay (s)	25.1	9.4	6.7	28.7	26.4			38.2	24.0		49.0	26.0
Level of Service	C	A	A	C	C			D	C		D	C
Approach Delay (s)		10.8			26.4			32.7			38.0	
Approach LOS		B			C			C			D	

Intersection Summary			
HCM Average Control Delay	20.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

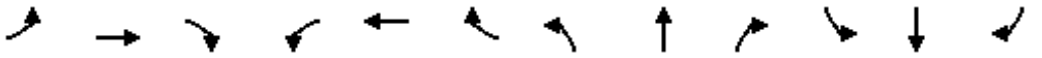


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	125	0	209	426	76	65	76	624	0	0	712	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95			0.95	
Frt	1.00		0.85	1.00	0.93		1.00	1.00			0.98	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770		1583	1770	1734		1770	3539			3486	
Flt Permitted	0.64		1.00	0.95	1.00		0.21	1.00			1.00	
Satd. Flow (perm)	1190		1583	1770	1734		389	3539			3486	
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)	136	0	227	463	83	71	83	678	0	0	774	87
RTOR Reduction (vph)	0	0	121	0	31	0	0	0	0	0	8	0
Lane Group Flow (vph)	136	0	106	463	123	0	83	678	0	0	853	0
Turn Type	custom		custom	Perm			pm+pt					
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2					
Actuated Green, G (s)	43.0		43.0	43.0	43.0		49.0	49.0			40.2	
Effective Green, g (s)	43.0		43.0	43.0	43.0		49.0	49.0			40.2	
Actuated g/C Ratio	0.43		0.43	0.43	0.43		0.49	0.49			0.40	
Clearance Time (s)	4.0		4.0	4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	512		681	761	746		257	1734			1401	
v/s Ratio Prot					0.07		0.02	c0.19			c0.24	
v/s Ratio Perm	0.11		0.07	c0.26			0.14					
v/c Ratio	0.27		0.16	0.61	0.17		0.32	0.39			0.61	
Uniform Delay, d1	18.3		17.4	22.0	17.5		26.1	16.1			23.7	
Progression Factor	0.33		0.19	0.82	0.87		1.00	1.00			0.46	
Incremental Delay, d2	0.3		0.1	3.0	0.4		0.7	0.7			0.5	
Delay (s)	6.3		3.3	21.0	15.6		26.8	16.8			11.3	
Level of Service	A		A	C	B		C	B			B	
Approach Delay (s)		4.5			19.7			17.8			11.3	
Approach LOS		A			B			B			B	

Intersection Summary			
HCM Average Control Delay	14.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
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			

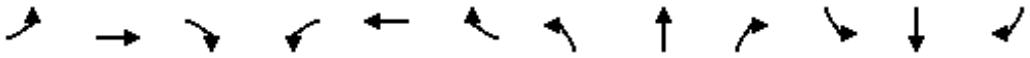
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	367	562	254	727	1223	251
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.08	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	150	3539	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	399	611	276	790	1329	273
RTOR Reduction (vph)	0	188	0	0	0	32
Lane Group Flow (vph)	399	423	276	790	1329	241
Turn Type		Perm	pm+pt			pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases		4	2			6
Actuated Green, G (s)	29.3	29.3	62.7	62.7	45.7	75.0
Effective Green, g (s)	29.3	29.3	62.7	62.7	45.7	75.0
Actuated g/C Ratio	0.29	0.29	0.63	0.63	0.46	0.75
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	519	464	305	2219	1617	1251
v/s Ratio Prot	0.23		c0.12	0.22	0.38	0.06
v/s Ratio Perm		c0.27	c0.45			0.10
v/c Ratio	0.77	0.91	0.90	0.36	0.82	0.19
Uniform Delay, d1	32.3	34.1	29.1	9.0	23.6	3.7
Progression Factor	0.66	0.41	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.5	9.8	28.4	0.4	4.8	0.1
Delay (s)	23.7	23.9	57.4	9.4	28.5	3.7
Level of Service	C	C	E	A	C	A
Approach Delay (s)	23.8			21.8	24.2	
Approach LOS	C			C	C	

Intersection Summary			
HCM Average Control Delay	23.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



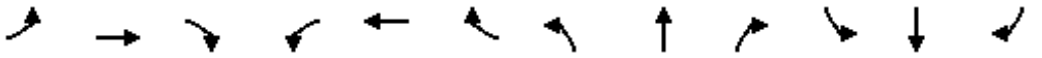
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	166	679	119	30	352	92	115	381	157	78	459	137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	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	0.97		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1821		1770	1805		1770	1781		1770	1863	1583
Flt Permitted	0.24	1.00		0.10	1.00		0.14	1.00		0.13	1.00	1.00
Satd. Flow (perm)	445	1821		189	1805		265	1781		234	1863	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)	180	738	129	33	383	100	125	414	171	85	499	149
RTOR Reduction (vph)	0	6	0	0	10	0	0	15	0	0	0	30
Lane Group Flow (vph)	180	861	0	33	473	0	125	570	0	85	499	119
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	52.2	45.8		41.9	39.5		36.6	32.6		35.0	31.8	31.8
Effective Green, g (s)	52.2	45.8		41.9	39.5		36.6	32.6		35.0	31.8	31.8
Actuated g/C Ratio	0.52	0.46		0.42	0.40		0.37	0.33		0.35	0.32	0.32
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	348	834		117	713		157	581		131	592	503
v/s Ratio Prot	c0.05	c0.47		0.01	0.26		c0.03	c0.32		0.02	0.27	
v/s Ratio Perm	0.23			0.11			0.26			0.21		0.08
v/c Ratio	0.52	1.03		0.28	0.66		0.80	0.98		0.65	0.84	0.24
Uniform Delay, d1	15.8	27.1		23.6	24.8		27.6	33.4		26.7	31.8	25.1
Progression Factor	0.71	0.64		0.79	0.83		0.91	0.95		1.00	1.00	1.00
Incremental Delay, d2	1.2	38.8		1.1	4.1		16.6	26.0		10.6	13.7	1.1
Delay (s)	12.4	56.2		19.8	24.7		41.7	57.6		37.2	45.4	26.3
Level of Service	B	E		B	C		D	E		D	D	C
Approach Delay (s)		48.7			24.3			54.8			40.6	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM Average Control Delay	44.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



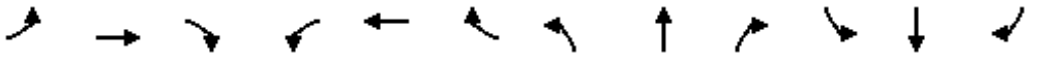
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	336	70	30	181	82	72	158	26	204	542	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0			4.0	
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	
Frt		0.98			1.00	0.85		0.99			0.99	
Flt Protected		1.00			0.99	1.00		0.99			0.99	
Satd. Flow (prot)		1817			1849	1583		1812			1821	
Flt Permitted		0.98			0.84	1.00		0.69			0.82	
Satd. Flow (perm)		1778			1568	1583		1268			1520	
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	365	76	33	197	89	78	172	28	222	589	67
RTOR Reduction (vph)	0	7	0	0	0	61	0	4	0	0	3	0
Lane Group Flow (vph)	0	459	0	0	230	28	0	274	0	0	875	0
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)		31.0			31.0	31.0		61.0			61.0	
Effective Green, g (s)		31.0			31.0	31.0		61.0			61.0	
Actuated g/C Ratio		0.31			0.31	0.31		0.61			0.61	
Clearance Time (s)		4.0			4.0	4.0		4.0			4.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		551			486	491		773			927	
v/s Ratio Prot												
v/s Ratio Perm		c0.26			0.15	0.02		0.22			c0.58	
v/c Ratio		0.83			0.47	0.06		0.35			0.94	
Uniform Delay, d1		32.1			27.9	24.2		9.7			17.9	
Progression Factor		1.00			0.58	0.41		1.00			0.46	
Incremental Delay, d2		13.8			1.6	0.1		1.3			13.6	
Delay (s)		45.9			17.9	10.1		11.0			21.8	
Level of Service		D			B	B		B			C	
Approach Delay (s)		45.9			15.7			11.0			21.8	
Approach LOS		D			B			B			C	

Intersection Summary			
HCM Average Control Delay	25.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	100.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



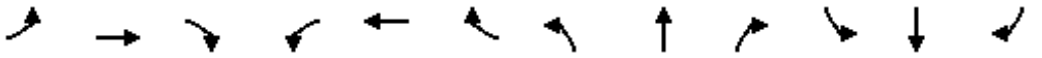
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	686	1090	104	176	847	34	179	490	62	31	974	579
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1593	3144		1593	3167		1593	3132		1593	3185	1425
Flt Permitted	0.95	1.00		0.28	1.00		0.14	1.00		0.29	1.00	1.00
Satd. Flow (perm)	1593	3144		466	3167		230	3132		486	3185	1425
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)	746	1185	113	191	921	37	195	533	67	34	1059	629
RTOR Reduction (vph)	0	7	0	0	3	0	0	9	0	0	0	173
Lane Group Flow (vph)	746	1291	0	191	955	0	195	591	0	34	1059	456
Turn Type	Prot			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6			8			4		4
Actuated Green, G (s)	29.0	43.4		23.4	23.4		34.2	29.2		29.0	26.6	26.6
Effective Green, g (s)	29.0	43.4		23.4	23.4		34.2	29.2		29.0	26.6	26.6
Actuated g/C Ratio	0.29	0.43		0.23	0.23		0.34	0.29		0.29	0.27	0.27
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
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)	462	1364		210	741		147	915		168	847	379
v/s Ratio Prot	c0.47	0.41		0.08	c0.30		c0.07	0.19		0.00	0.33	
v/s Ratio Perm				0.13			c0.39			0.05		0.32
v/c Ratio	1.61	0.95		0.91	1.29		1.33	0.65		0.20	1.25	1.20
Uniform Delay, d1	35.5	27.2		37.1	38.3		31.9	30.9		26.1	36.7	36.7
Progression Factor	1.00	1.00		0.78	0.77		0.95	0.84		0.79	0.88	0.77
Incremental Delay, d2	286.5	14.5		35.9	139.3		185.0	1.5		0.5	121.1	111.0
Delay (s)	322.0	41.7		64.6	169.0		215.4	27.4		21.3	153.4	139.3
Level of Service	F	D		E	F		F	C		C	F	F
Approach Delay (s)		144.0			151.6			73.5			145.6	
Approach LOS		F			F			E			F	

Intersection Summary			
HCM Average Control Delay	136.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.46		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	123.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



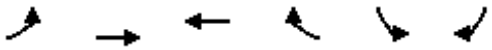
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	42	256	112	23	68	62	42	553	43	153	1031	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		0.96			0.94			0.99			1.00	
Flt Protected		0.99			0.99			1.00			0.99	
Satd. Flow (prot)		3377			3300			3492			3507	
Flt Permitted		0.90			0.78			0.79			0.73	
Satd. Flow (perm)		3055			2601			2767			2573	
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)	46	278	122	25	74	67	46	601	47	166	1121	24
RTOR Reduction (vph)	0	40	0	0	55	0	0	5	0	0	1	0
Lane Group Flow (vph)	0	406	0	0	111	0	0	689	0	0	1310	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		17.8			17.8			74.2			74.2	
Effective Green, g (s)		17.8			17.8			74.2			74.2	
Actuated g/C Ratio		0.18			0.18			0.74			0.74	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		544			463			2053			1909	
v/s Ratio Prot												
v/s Ratio Perm		c0.13			0.04			0.25			c0.51	
v/c Ratio		0.75			0.24			0.34			0.69	
Uniform Delay, d1		39.0			35.3			4.4			6.8	
Progression Factor		1.00			1.00			0.77			1.02	
Incremental Delay, d2		5.5			0.3			0.4			0.2	
Delay (s)		44.5			35.6			3.8			7.1	
Level of Service		D			D			A			A	
Approach Delay (s)		44.5			35.6			3.8			7.1	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



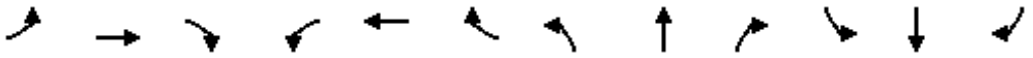
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	81	320	144	55	210	57	0	548	45	0	1012	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00			0.95			1.00	1.00
Frt	1.00	1.00	0.85		0.98			0.99			1.00	0.85
Flt Protected	0.95	1.00	1.00		0.99			1.00			1.00	1.00
Satd. Flow (prot)	1770	1863	1583		1803			3499			1863	1583
Flt Permitted	0.38	1.00	1.00		0.65			1.00			1.00	1.00
Satd. Flow (perm)	711	1863	1583		1186			3499			1863	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)	88	348	157	60	228	62	0	596	49	0	1100	162
RTOR Reduction (vph)	0	0	73	0	8	0	0	6	0	0	0	57
Lane Group Flow (vph)	88	348	84	0	342	0	0	639	0	0	1100	105
Turn Type	Perm		Perm	Perm								Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8								6
Actuated Green, G (s)	29.5	29.5	29.5		29.5			62.5			62.5	62.5
Effective Green, g (s)	29.5	29.5	29.5		29.5			62.5			62.5	62.5
Actuated g/C Ratio	0.30	0.30	0.30		0.30			0.62			0.62	0.62
Clearance Time (s)	4.0	4.0	4.0		4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	210	550	467		350			2187			1164	989
v/s Ratio Prot		0.19						0.18			c0.59	
v/s Ratio Perm	0.12		0.05		c0.29							0.07
v/c Ratio	0.42	0.63	0.18		0.98			0.29			0.95	0.11
Uniform Delay, d1	28.4	30.6	26.2		34.9			8.6			17.2	7.5
Progression Factor	1.00	1.00	1.00		1.00			1.00			0.40	0.18
Incremental Delay, d2	1.4	2.4	0.2		41.7			0.3			12.8	0.2
Delay (s)	29.7	32.9	26.4		76.6			8.9			19.6	1.5
Level of Service	C	C	C		E			A			B	A
Approach Delay (s)		30.7			76.6			8.9			17.3	
Approach LOS		C			E			A			B	

Intersection Summary			
HCM Average Control Delay	25.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	97.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	125	1143	402	145	228	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frt		1.00	0.96		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3522	3398		1770	1583
Flt Permitted		0.80	1.00		0.95	1.00
Satd. Flow (perm)		2822	3398		1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	136	1242	437	158	248	76
RTOR Reduction (vph)	0	0	31	0	0	62
Lane Group Flow (vph)	0	1378	564	0	248	14
Turn Type	Perm					Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		73.2	73.2		18.8	18.8
Effective Green, g (s)		73.2	73.2		18.8	18.8
Actuated g/C Ratio		0.73	0.73		0.19	0.19
Clearance Time (s)		4.0	4.0		4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2066	2487		333	298
v/s Ratio Prot			0.17		c0.14	
v/s Ratio Perm		c0.49				0.01
v/c Ratio		0.67	0.23		0.74	0.05
Uniform Delay, d1		7.0	4.3		38.3	33.3
Progression Factor		1.00	0.62		0.73	0.39
Incremental Delay, d2		1.7	0.2		5.7	0.0
Delay (s)		8.7	2.9		33.7	13.0
Level of Service		A	A		C	B
Approach Delay (s)		8.7	2.9		28.9	
Approach LOS		A	A		C	

Intersection Summary			
HCM Average Control Delay	10.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

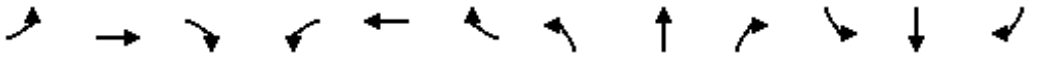


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	1014	135	60	400	15	39	166	59	120	458	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			1.00			1.00			1.00	
Frt		0.98			1.00			0.97			1.00	
Flt Protected		1.00			0.99			0.99			0.99	
Satd. Flow (prot)		3474			1843			1793			1839	
Flt Permitted		0.94			0.52			0.82			0.80	
Satd. Flow (perm)		3253			973			1487			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	1102	147	65	435	16	42	180	64	130	498	12
RTOR Reduction (vph)	0	6	0	0	1	0	0	7	0	0	1	0
Lane Group Flow (vph)	0	1269	0	0	515	0	0	279	0	0	639	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		72.0			72.0			54.0			54.0	
Effective Green, g (s)		72.0			72.0			54.0			54.0	
Actuated g/C Ratio		0.54			0.54			0.40			0.40	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1748			523			599			600	
v/s Ratio Prot												
v/s Ratio Perm		0.39			c0.53			0.19			c0.43	
v/c Ratio		0.73			0.98			0.47			1.07	
Uniform Delay, d1		23.5			30.5			29.4			40.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.5			35.2			0.6			55.5	
Delay (s)		25.0			65.6			30.0			95.5	
Level of Service		C			E			C			F	
Approach Delay (s)		25.0			65.6			30.0			95.5	
Approach LOS		C			E			C			F	

Intersection Summary			
HCM Average Control Delay	49.9	HCM Level of Service	D
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	134.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	115.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

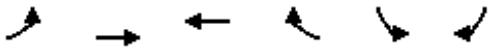
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	2380	75	40	1100	90	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.91		1.00	0.91	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	5062		1770	5085	1770	1583
Flt Permitted	1.00		0.05	1.00	0.95	1.00
Satd. Flow (perm)	5062		98	5085	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2587	82	43	1196	98	50
RTOR Reduction (vph)	3	0	0	0	0	8
Lane Group Flow (vph)	2666	0	43	1196	98	42
Turn Type			Perm			Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Actuated Green, G (s)	76.0		76.0	76.0	16.0	16.0
Effective Green, g (s)	76.0		76.0	76.0	16.0	16.0
Actuated g/C Ratio	0.76		0.76	0.76	0.16	0.16
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3847		74	3865	283	253
v/s Ratio Prot	c0.53			0.24	c0.06	
v/s Ratio Perm			0.44			0.03
v/c Ratio	0.69		0.58	0.31	0.35	0.16
Uniform Delay, d1	6.1		5.2	3.8	37.3	36.2
Progression Factor	0.10		1.14	0.08	0.75	0.71
Incremental Delay, d2	0.6		21.3	0.1	3.3	1.4
Delay (s)	1.3		27.1	0.5	31.4	27.0
Level of Service	A		C	A	C	C
Approach Delay (s)	1.3			1.4	29.9	
Approach LOS	A			A	C	

Intersection Summary			
HCM Average Control Delay	2.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	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			



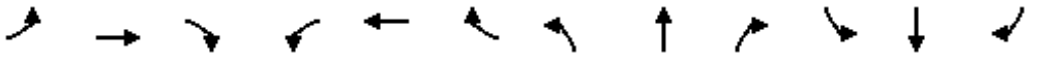
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	33	912	80	0	424	75	16	44	30	80	55	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95			0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.99			0.98		1.00	0.94		1.00	0.94	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3496			4970		1770	1749		1770	1746	
Flt Permitted	0.41	1.00			1.00		0.69	1.00		0.70	1.00	
Satd. Flow (perm)	757	3496			4970		1286	1749		1312	1746	
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)	36	991	87	0	461	82	17	48	33	87	60	43
RTOR Reduction (vph)	0	11	0	0	42	0	0	17	0	0	18	0
Lane Group Flow (vph)	36	1067	0	0	501	0	17	64	0	87	85	0
Turn Type	Perm						Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4						2			6		
Actuated Green, G (s)	42.3	42.3			42.3		49.7	49.7		49.7	49.7	
Effective Green, g (s)	42.3	42.3			42.3		49.7	49.7		49.7	49.7	
Actuated g/C Ratio	0.42	0.42			0.42		0.50	0.50		0.50	0.50	
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	320	1479			2102		639	869		652	868	
v/s Ratio Prot		c0.31			0.10			0.04			0.05	
v/s Ratio Perm	0.05						0.01			c0.07		
v/c Ratio	0.11	0.72			0.24		0.03	0.07		0.13	0.10	
Uniform Delay, d1	17.5	24.0			18.5		12.8	13.1		13.5	13.3	
Progression Factor	0.25	0.31			0.52		1.00	1.00		1.33	1.45	
Incremental Delay, d2	0.1	1.5			0.0		0.1	0.2		0.4	0.2	
Delay (s)	4.5	8.8			9.7		12.9	13.3		18.4	19.5	
Level of Service	A	A			A		B	B		B	B	
Approach Delay (s)		8.7			9.7			13.2			19.0	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	10.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



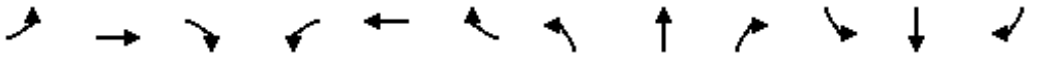
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	52	1289	486	76	94	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.46	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	849	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	1401	528	83	102	51
RTOR Reduction (vph)	0	0	0	15	0	46
Lane Group Flow (vph)	57	1401	528	68	102	5
Turn Type	Perm			Perm		Perm
Protected Phases		2	6		4	
Permitted Phases	2			6		4
Actuated Green, G (s)	82.3	82.3	82.3	82.3	9.7	9.7
Effective Green, g (s)	82.3	82.3	82.3	82.3	9.7	9.7
Actuated g/C Ratio	0.82	0.82	0.82	0.82	0.10	0.10
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	699	2913	2913	1303	172	154
v/s Ratio Prot		c0.40	0.15		c0.06	
v/s Ratio Perm	0.07			0.04		0.00
v/c Ratio	0.08	0.48	0.18	0.05	0.59	0.03
Uniform Delay, d1	1.7	2.6	1.8	1.6	43.3	40.9
Progression Factor	0.81	0.73	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.4	0.1	0.1	5.4	0.1
Delay (s)	1.5	2.3	2.0	1.7	48.7	41.0
Level of Service	A	A	A	A	D	D
Approach Delay (s)		2.3	1.9		46.1	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	5.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	9	494	8	5	325	8	2	2	4	10	3	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.90		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1858		1770	3526		1770	1676		1770	1723	
Flt Permitted	0.50	1.00		0.22	1.00		0.75	1.00		0.75	1.00	
Satd. Flow (perm)	925	1858		402	3526		1404	1676		1404	1723	
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	537	9	5	353	9	2	2	4	11	3	3
RTOR Reduction (vph)	0	1	0	0	4	0	0	2	0	0	1	0
Lane Group Flow (vph)	10	545	0	5	358	0	2	4	0	11	5	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	40.9	40.9		40.9	40.9		51.1	51.1		51.1	51.1	
Effective Green, g (s)	40.9	40.9		40.9	40.9		51.1	51.1		51.1	51.1	
Actuated g/C Ratio	0.41	0.41		0.41	0.41		0.51	0.51		0.51	0.51	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	378	760		164	1442		717	856		717	880	
v/s Ratio Prot		c0.29			0.10			0.00			0.00	
v/s Ratio Perm	0.01			0.01			0.00			c0.01		
v/c Ratio	0.03	0.72		0.03	0.25		0.00	0.00		0.02	0.01	
Uniform Delay, d1	17.7	24.7		17.7	19.4		12.0	12.0		12.1	12.0	
Progression Factor	0.51	0.49		0.75	0.82		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	2.0		0.1	0.1		0.0	0.0		0.0	0.0	
Delay (s)	9.1	14.0		13.3	16.1		12.0	12.0		12.1	12.0	
Level of Service	A	B		B	B		B	B		B	B	
Approach Delay (s)		13.9			16.0			12.0			12.1	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	14.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

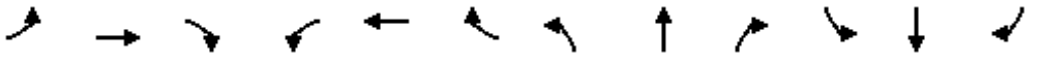


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	61	172	32	98	801	66	118	399	32	20	514	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95			0.95	
Frt	1.00	0.98		1.00	0.99		1.00	0.99			0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770	1819		1770	1841		1770	3500			3473	
Flt Permitted	0.08	1.00		0.59	1.00		0.16	1.00			0.93	
Satd. Flow (perm)	140	1819		1100	1841		298	3500			3224	
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)	66	187	35	107	871	72	128	434	35	22	559	75
RTOR Reduction (vph)	0	7	0	0	3	0	0	6	0	0	10	0
Lane Group Flow (vph)	66	215	0	107	940	0	128	463	0	0	646	0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	56.4	53.2		59.6	54.8		30.0	30.0			21.0	
Effective Green, g (s)	56.4	53.2		59.6	54.8		30.0	30.0			21.0	
Actuated g/C Ratio	0.56	0.53		0.60	0.55		0.30	0.30			0.21	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	131	968		688	1009		163	1050			677	
v/s Ratio Prot	c0.02	0.12		c0.01	c0.51		c0.04	0.13				
v/s Ratio Perm	0.27			0.09			0.20				c0.20	
v/c Ratio	0.50	0.22		0.16	0.93		0.79	0.44			0.95	
Uniform Delay, d1	42.7	12.4		10.2	20.9		29.6	28.2			39.0	
Progression Factor	1.39	0.57		1.00	1.00		0.88	0.87			0.77	
Incremental Delay, d2	3.0	0.5		0.1	16.0		20.9	1.3			21.3	
Delay (s)	62.5	7.6		10.3	36.9		46.9	26.0			51.3	
Level of Service	E	A		B	D		D	C			D	
Approach Delay (s)		20.2			34.2			30.5			51.3	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM Average Control Delay	36.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	760	99	530	1558	221	349
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	1.00	0.95	1.00	0.88
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	1770	3539	1770	2787
Flt Permitted	1.00	1.00	0.22	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	405	3539	1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	826	108	576	1693	240	379
RTOR Reduction (vph)	0	53	0	0	0	292
Lane Group Flow (vph)	826	55	576	1693	240	87
Turn Type		Perm	pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases		2	6			8
Actuated Green, G (s)	34.9	34.9	69.0	69.0	23.0	23.0
Effective Green, g (s)	34.9	34.9	69.0	69.0	23.0	23.0
Actuated g/C Ratio	0.35	0.35	0.69	0.69	0.23	0.23
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1775	552	690	2442	407	641
v/s Ratio Prot	0.16		c0.25	0.48	c0.14	
v/s Ratio Perm		0.03	c0.32			0.03
v/c Ratio	0.47	0.10	0.83	0.69	0.59	0.14
Uniform Delay, d1	25.3	21.9	16.8	9.2	34.3	30.6
Progression Factor	1.39	1.95	1.00	1.00	0.68	1.61
Incremental Delay, d2	0.9	0.3	8.6	1.6	5.5	0.4
Delay (s)	36.0	43.1	25.4	10.9	28.9	49.6
Level of Service	D	D	C	B	C	D
Approach Delay (s)	36.9			14.5	41.6	
Approach LOS	D			B	D	

Intersection Summary			
HCM Average Control Delay	24.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



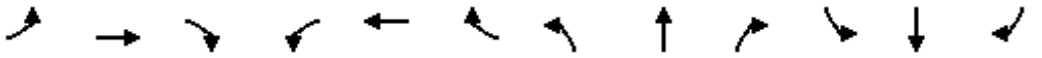
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	106	251	27	45	904	65	181	283	58	37	155	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	10	10	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5012		1770	3503		1652	1694		1770	1781	
Flt Permitted	0.11	1.00		0.56	1.00		0.24	1.00		0.54	1.00	
Satd. Flow (perm)	197	5012		1044	3503		416	1694		1007	1781	
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)	115	273	29	49	983	71	197	308	63	40	168	70
RTOR Reduction (vph)	0	12	0	0	5	0	0	8	0	0	15	0
Lane Group Flow (vph)	115	290	0	49	1049	0	197	363	0	40	223	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	48.7	48.7		44.0	44.0		29.1	29.1		19.7	19.7	
Effective Green, g (s)	48.7	48.7		44.0	44.0		29.1	29.1		19.7	19.7	
Actuated g/C Ratio	0.49	0.49		0.44	0.44		0.29	0.29		0.20	0.20	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	220	2441		483	1541		274	493		221	351	
v/s Ratio Prot	c0.04	0.06		0.00	c0.30		0.09	c0.21		0.01	c0.13	
v/s Ratio Perm	0.21			0.04			0.12			0.03		
v/c Ratio	0.52	0.12		0.10	0.68		0.72	0.74		0.18	0.63	
Uniform Delay, d1	18.1	14.0		16.5	22.4		29.4	32.0		33.6	36.8	
Progression Factor	0.79	0.69		0.12	0.18		1.12	1.06		1.07	1.08	
Incremental Delay, d2	2.0	0.1		0.1	2.4		7.6	4.9		0.4	3.6	
Delay (s)	16.3	9.8		2.1	6.5		40.6	39.0		36.4	43.4	
Level of Service	B	A		A	A		D	D		D	D	
Approach Delay (s)		11.6			6.3			39.5			42.4	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM Average Control Delay	19.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

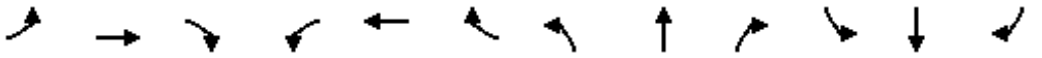
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	677	114	135	1869	181	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.91		1.00	0.91	1.00	1.00
Frt	0.98		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	4975		1770	5085	1770	1583
Flt Permitted	1.00		0.28	1.00	0.95	1.00
Satd. Flow (perm)	4975		519	5085	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	736	124	147	2032	197	196
RTOR Reduction (vph)	24	0	0	0	0	147
Lane Group Flow (vph)	837	0	147	2032	197	49
Turn Type			pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Actuated Green, G (s)	50.0		67.0	67.0	25.0	25.0
Effective Green, g (s)	50.0		67.0	67.0	25.0	25.0
Actuated g/C Ratio	0.50		0.67	0.67	0.25	0.25
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2488		510	3407	443	396
v/s Ratio Prot	0.17		0.04	c0.40	c0.11	
v/s Ratio Perm			0.16			0.03
v/c Ratio	0.34		0.29	0.60	0.44	0.12
Uniform Delay, d1	15.0		10.4	9.1	31.6	29.0
Progression Factor	0.85		0.16	0.17	0.65	0.59
Incremental Delay, d2	0.3		0.3	0.7	2.5	0.5
Delay (s)	13.1		1.9	2.2	23.1	17.7
Level of Service	B		A	A	C	B
Approach Delay (s)	13.1			2.2	20.4	
Approach LOS	B			A	C	

Intersection Summary			
HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



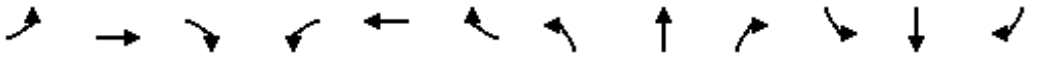
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	27	65	22	38	415	47	85	475	11	10	231	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	4.0
Lane Util. Factor		1.00			0.95			1.00			1.00	1.00
Frt		0.97			0.99			1.00			1.00	0.85
Flt Protected		0.99			1.00			0.99			1.00	1.00
Satd. Flow (prot)		1793			3476			1844			1859	1583
Flt Permitted		0.68			0.93			0.91			0.98	1.00
Satd. Flow (perm)		1225			3228			1689			1817	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)	29	71	24	41	451	51	92	516	12	11	251	51
RTOR Reduction (vph)	0	9	0	0	9	0	0	1	0	0	0	15
Lane Group Flow (vph)	0	115	0	0	534	0	0	619	0	0	262	36
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		22.1			22.1			69.9			69.9	69.9
Effective Green, g (s)		22.1			22.1			69.9			69.9	69.9
Actuated g/C Ratio		0.22			0.22			0.70			0.70	0.70
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		271			713			1181			1270	1107
v/s Ratio Prot												
v/s Ratio Perm		0.09			c0.17			c0.37			0.14	0.02
v/c Ratio		0.42			0.75			0.52			0.21	0.03
Uniform Delay, d1		33.5			36.4			7.2			5.3	4.6
Progression Factor		1.10			1.00			0.32			0.36	0.00
Incremental Delay, d2		1.0			4.3			1.3			0.4	0.1
Delay (s)		37.7			40.7			3.6			2.2	0.1
Level of Service		D			D			A			A	A
Approach Delay (s)		37.7			40.7			3.6			1.9	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	74	417	70	62	1030	98	123	588	24	11	633	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	
Lane Util. Factor		0.91			0.91		1.00	0.95			0.95	
Frt		0.98			0.99		1.00	0.99			0.98	
Flt Protected		0.99			1.00		0.95	1.00			1.00	
Satd. Flow (prot)		4958			5009		1770	3518			3461	
Flt Permitted		0.68			0.86		0.27	1.00			0.94	
Satd. Flow (perm)		3383			4316		505	3518			3269	
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)	80	453	76	67	1120	107	134	639	26	12	688	116
RTOR Reduction (vph)	0	19	0	0	10	0	0	3	0	0	12	0
Lane Group Flow (vph)	0	590	0	0	1284	0	134	662	0	0	804	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		40.0			40.0		52.0	52.0			52.0	
Effective Green, g (s)		40.0			40.0		52.0	52.0			52.0	
Actuated g/C Ratio		0.40			0.40		0.52	0.52			0.52	
Clearance Time (s)		4.0			4.0		4.0	4.0			4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1353			1726		263	1829			1700	
v/s Ratio Prot								0.19				
v/s Ratio Perm		0.17			c0.30		c0.27				0.25	
v/c Ratio		0.44			0.74		0.51	0.36			0.47	
Uniform Delay, d1		21.8			25.6		15.7	14.2			15.3	
Progression Factor		1.00			0.66		0.36	0.30			0.54	
Incremental Delay, d2		1.0			2.3		6.5	0.5			0.1	
Delay (s)		22.8			19.1		12.0	4.8			8.3	
Level of Service		C			B		B	A			A	
Approach Delay (s)		22.8			19.1			6.0			8.3	
Approach LOS		C			B			A			A	

Intersection Summary			
HCM Average Control Delay	14.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	86.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

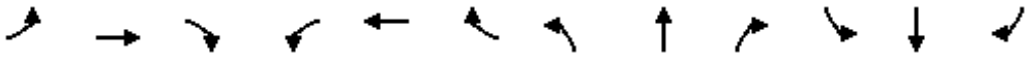


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	513	56	176	1603	274	155	547	126	237	530	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00		0.95	
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85		0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00		0.99	
Satd. Flow (prot)	1770	5010		1770	4974		1770	1863	1583		3419	
Flt Permitted	0.17	1.00		0.22	1.00		0.17	1.00	1.00		0.54	
Satd. Flow (perm)	316	5010		419	4974		313	1863	1583		1878	
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)	87	558	61	191	1742	298	168	595	137	258	576	136
RTOR Reduction (vph)	0	13	0	0	24	0	0	0	70	0	13	0
Lane Group Flow (vph)	87	606	0	191	2016	0	168	595	67	0	957	0
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	26.8	26.8		35.8	35.8		49.0	49.0	49.0		41.0	
Effective Green, g (s)	26.8	26.8		35.8	35.8		49.0	49.0	49.0		41.0	
Actuated g/C Ratio	0.27	0.27		0.36	0.36		0.49	0.49	0.49		0.41	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	131	1343		315	1781		212	913	776		770	
v/s Ratio Prot	0.02	c0.12		0.07	c0.41		0.03	c0.32				
v/s Ratio Perm	0.16			0.14			0.36		0.04		c0.51	
v/c Ratio	0.66	0.45		0.61	1.13		0.79	0.65	0.09		1.47dl	
Uniform Delay, d1	45.0	30.5		23.8	32.1		34.0	19.1	13.6		29.5	
Progression Factor	1.00	1.00		0.55	0.67		0.76	0.77	0.84		1.00	
Incremental Delay, d2	12.0	1.1		2.7	65.8		17.1	3.4	0.2		120.2	
Delay (s)	56.9	31.6		15.8	87.4		43.0	18.2	11.7		149.7	
Level of Service	E	C		B	F		D	B	B		F	
Approach Delay (s)		34.7			81.3			21.8			149.7	
Approach LOS		C			F			C			F	

Intersection Summary			
HCM Average Control Delay	77.1	HCM Level of Service	E
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	109.2%	ICU Level of Service	H
Analysis Period (min)	15		

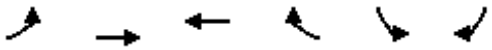
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group



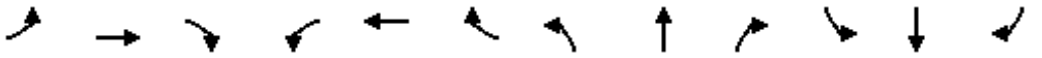
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	73	176	148	365	41	191	769	11	11	707	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95		1.00	0.95		1.00	0.95	
Frt		0.91			0.99		1.00	1.00		1.00	0.98	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3205			3453		1770	3532		1770	3470	
Flt Permitted		0.66			0.71		0.28	1.00		0.29	1.00	
Satd. Flow (perm)		2129			2468		523	3532		548	3470	
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)	65	79	191	161	397	45	208	836	12	12	768	116
RTOR Reduction (vph)	0	139	0	0	6	0	0	1	0	0	11	0
Lane Group Flow (vph)	0	196	0	0	597	0	208	847	0	12	873	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		27.2			27.2		64.8	64.8		64.8	64.8	
Effective Green, g (s)		27.2			27.2		64.8	64.8		64.8	64.8	
Actuated g/C Ratio		0.27			0.27		0.65	0.65		0.65	0.65	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		579			671		339	2289		355	2249	
v/s Ratio Prot								0.24			0.25	
v/s Ratio Perm		0.09			c0.24		c0.40			0.02		
v/c Ratio		0.34			0.89		0.61	0.37		0.03	0.39	
Uniform Delay, d1		29.2			35.0		10.3	8.1		6.3	8.3	
Progression Factor		1.00			0.32		0.51	0.27		0.55	0.46	
Incremental Delay, d2		0.3			12.2		0.8	0.0		0.2	0.5	
Delay (s)		29.5			23.4		6.0	2.3		3.6	4.3	
Level of Service		C			C		A	A		A	A	
Approach Delay (s)		29.5			23.4			3.0			4.3	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



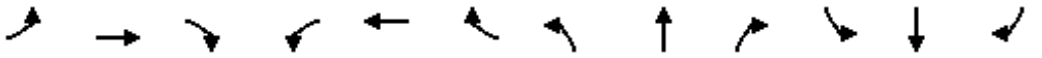
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	164	709	1856	163	71	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91	0.95		0.97	
Frt	1.00	1.00	0.99		0.97	
Flt Protected	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1770	5085	3496		3381	
Flt Permitted	0.06	1.00	1.00		0.96	
Satd. Flow (perm)	108	5085	3496		3381	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	178	771	2017	177	77	16
RTOR Reduction (vph)	0	0	7	0	13	0
Lane Group Flow (vph)	178	771	2187	0	80	0
Turn Type	pm+pt					
Protected Phases	5	2	6		4	
Permitted Phases	2					
Actuated Green, G (s)	76.0	76.0	65.0		16.0	
Effective Green, g (s)	76.0	76.0	65.0		16.0	
Actuated g/C Ratio	0.76	0.76	0.65		0.16	
Clearance Time (s)	4.0	4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	198	3865	2272		541	
v/s Ratio Prot	c0.06	0.15	c0.63		c0.02	
v/s Ratio Perm	0.62					
v/c Ratio	0.90	0.20	0.96		0.15	
Uniform Delay, d1	39.9	3.4	16.4		36.1	
Progression Factor	0.68	0.20	0.32		1.00	
Incremental Delay, d2	36.4	0.1	7.2		0.6	
Delay (s)	63.3	0.8	12.5		36.7	
Level of Service	E	A	B		D	
Approach Delay (s)		12.5	12.5		36.7	
Approach LOS		B	B		D	

Intersection Summary			
HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	96	734	17	13	1749	123	42	32	38	109	14	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.97	1.00		0.96	1.00
Satd. Flow (prot)	1770	5085	1583	1770	3504			1811	1583		1784	1583
Flt Permitted	0.06	1.00	1.00	0.31	1.00			0.74	1.00		0.69	1.00
Satd. Flow (perm)	120	5085	1583	572	3504			1380	1583		1291	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)	104	798	18	14	1901	134	46	35	41	118	15	250
RTOR Reduction (vph)	0	0	5	0	5	0	0	0	34	0	0	97
Lane Group Flow (vph)	104	798	13	14	2030	0	0	81	7	0	133	153
Turn Type	pm+pt		Perm	pm+pt			Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6			8		8	4		4
Actuated Green, G (s)	70.4	70.4	70.4	63.6	63.6			16.0	16.0		16.0	16.0
Effective Green, g (s)	70.4	70.4	70.4	63.6	63.6			16.0	16.0		16.0	16.0
Actuated g/C Ratio	0.70	0.70	0.70	0.64	0.64			0.16	0.16		0.16	0.16
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	223	3580	1114	383	2229			221	253		207	253
v/s Ratio Prot	c0.04	0.16		0.00	c0.58							
v/s Ratio Perm	0.29		0.01	0.02				0.06	0.00		c0.10	0.10
v/c Ratio	0.47	0.22	0.01	0.04	0.91			0.37	0.03		0.64	0.60
Uniform Delay, d1	33.9	5.2	4.4	6.8	15.7			37.5	35.4		39.3	39.0
Progression Factor	0.62	0.72	0.53	0.86	0.61			1.00	1.00		1.00	1.00
Incremental Delay, d2	1.5	0.1	0.0	0.0	5.5			4.6	0.2		14.3	10.2
Delay (s)	22.7	3.9	2.4	5.9	15.1			42.1	35.6		53.7	49.3
Level of Service	C	A	A	A	B			D	D		D	D
Approach Delay (s)		6.0			15.0			39.9			50.8	
Approach LOS		A			B			D			D	

Intersection Summary			
HCM Average Control Delay	17.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

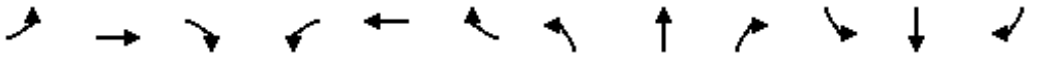


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	57	0	109	822	203	153	47	359	0	0	555	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95			0.95	
Frt	1.00		0.85	1.00	0.94		1.00	1.00			0.98	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770		1583	1770	1743		1770	3539			3455	
Flt Permitted	0.47		1.00	0.95	1.00		0.18	1.00			1.00	
Satd. Flow (perm)	871		1583	1770	1743		335	3539			3455	
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)	62	0	118	893	221	166	51	390	0	0	603	114
RTOR Reduction (vph)	0	0	48	0	27	0	0	0	0	0	16	0
Lane Group Flow (vph)	62	0	70	893	360	0	51	390	0	0	701	0
Turn Type	custom		custom	Perm			pm+pt					
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2					
Actuated Green, G (s)	59.0		59.0	59.0	59.0		33.0	33.0			25.8	
Effective Green, g (s)	59.0		59.0	59.0	59.0		33.0	33.0			25.8	
Actuated g/C Ratio	0.59		0.59	0.59	0.59		0.33	0.33			0.26	
Clearance Time (s)	4.0		4.0	4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	514		934	1044	1028		156	1168			891	
v/s Ratio Prot					0.21		0.01	c0.11			c0.20	
v/s Ratio Perm	0.07		0.04	c0.50			0.10					
v/c Ratio	0.12		0.07	0.86	0.35		0.33	0.33			0.79	
Uniform Delay, d1	9.0		8.8	17.0	10.6		36.8	25.2			34.5	
Progression Factor	1.00		1.00	0.67	0.67		1.00	1.00			0.67	
Incremental Delay, d2	0.1		0.0	3.9	0.4		1.2	0.8			4.3	
Delay (s)	9.2		8.8	15.2	7.4		38.1	26.0			27.3	
Level of Service	A		A	B	A		D	C			C	
Approach Delay (s)		8.9			12.9			27.4			27.3	
Approach LOS		A			B			C			C	

Intersection Summary			
HCM Average Control Delay	19.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

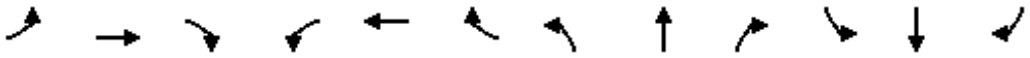
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	172	167	512	1001	468	357
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.39	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	732	3539	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	187	182	557	1088	509	388
RTOR Reduction (vph)	0	153	0	0	0	93
Lane Group Flow (vph)	187	29	557	1088	509	295
Turn Type		Perm	pm+pt			pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases		4	2			6
Actuated Green, G (s)	15.8	15.8	76.2	76.2	51.3	67.1
Effective Green, g (s)	15.8	15.8	76.2	76.2	51.3	67.1
Actuated g/C Ratio	0.16	0.16	0.76	0.76	0.51	0.67
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	280	250	775	2697	1816	1126
v/s Ratio Prot	c0.11		c0.15	0.31	0.14	0.04
v/s Ratio Perm		0.02	c0.40			0.14
v/c Ratio	0.67	0.12	0.72	0.40	0.28	0.26
Uniform Delay, d1	39.6	36.1	5.2	4.1	13.8	6.6
Progression Factor	0.71	0.35	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.6	0.2	3.2	0.5	0.4	0.1
Delay (s)	33.6	12.7	8.4	4.5	14.2	6.7
Level of Service	C	B	A	A	B	A
Approach Delay (s)	23.3			5.8	11.0	
Approach LOS	C			A	B	

Intersection Summary			
HCM Average Control Delay	9.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



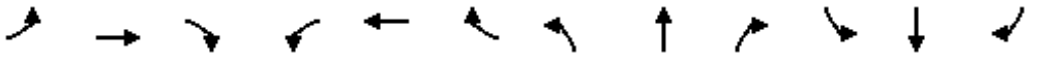
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	45	246	23	26	745	103	353	482	44	38	240	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1839		1770	1829		1770	1839		1770	1863	1583
Flt Permitted	0.09	1.00		0.44	1.00		0.23	1.00		0.22	1.00	1.00
Satd. Flow (perm)	173	1839		824	1829		433	1839		401	1863	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)	49	267	25	28	810	112	384	524	48	41	261	166
RTOR Reduction (vph)	0	3	0	0	5	0	0	3	0	0	0	63
Lane Group Flow (vph)	49	289	0	28	917	0	384	569	0	41	261	103
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	47.0	47.0		45.4	45.4		38.6	32.2		21.0	18.6	18.6
Effective Green, g (s)	47.0	47.0		45.4	45.4		38.6	32.2		21.0	18.6	18.6
Actuated g/C Ratio	0.47	0.47		0.45	0.45		0.39	0.32		0.21	0.19	0.19
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	145	864		397	830		381	592		117	347	294
v/s Ratio Prot	0.01	c0.16		0.00	c0.50		c0.16	0.31		0.01	0.14	
v/s Ratio Perm	0.14			0.03			c0.23			0.07		0.07
v/c Ratio	0.34	0.33		0.07	1.10		1.01	0.96		0.35	0.75	0.35
Uniform Delay, d1	43.5	16.7		15.7	27.3		26.1	33.3		32.9	38.5	35.4
Progression Factor	0.74	0.63		0.74	0.86		1.02	1.01		1.00	1.00	1.00
Incremental Delay, d2	1.4	1.0		0.1	62.8		48.1	28.4		1.8	14.0	3.3
Delay (s)	33.4	11.6		11.6	86.2		74.6	62.1		34.8	52.5	38.7
Level of Service	C	B		B	F		E	E		C	D	D
Approach Delay (s)		14.7			84.0			67.1			46.1	
Approach LOS		B			F			E			D	

Intersection Summary			
HCM Average Control Delay	62.8	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	87.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



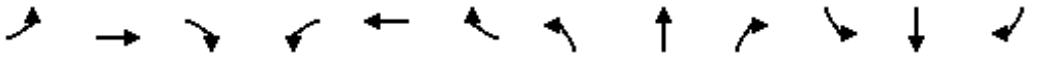
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	13	92	8	14	716	222	126	342	14	42	165	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0			4.0	
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	
Frt		0.99			1.00	0.85		1.00			0.97	
Flt Protected		0.99			1.00	1.00		0.99			0.99	
Satd. Flow (prot)		1834			1861	1583		1832			1792	
Flt Permitted		0.80			1.00	1.00		0.79			0.87	
Satd. Flow (perm)		1483			1853	1583		1458			1570	
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)	14	100	9	15	778	241	137	372	15	46	179	66
RTOR Reduction (vph)	0	3	0	0	0	118	0	1	0	0	11	0
Lane Group Flow (vph)	0	120	0	0	793	123	0	523	0	0	280	0
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)		51.0			51.0	51.0		41.0			41.0	
Effective Green, g (s)		51.0			51.0	51.0		41.0			41.0	
Actuated g/C Ratio		0.51			0.51	0.51		0.41			0.41	
Clearance Time (s)		4.0			4.0	4.0		4.0			4.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		756			945	807		598			644	
v/s Ratio Prot												
v/s Ratio Perm		0.08			c0.43	0.08		c0.36			0.18	
v/c Ratio		0.16			0.84	0.15		0.87			0.44	
Uniform Delay, d1		13.1			21.0	13.0		27.1			21.2	
Progression Factor		1.00			0.68	0.25		1.00			0.55	
Incremental Delay, d2		0.4			8.8	0.4		16.3			2.1	
Delay (s)		13.5			23.0	3.6		43.4			13.6	
Level of Service		B			C	A		D			B	
Approach Delay (s)		13.5			18.5			43.4			13.6	
Approach LOS		B			B			D			B	

Intersection Summary			
HCM Average Control Delay	24.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	100.0	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			



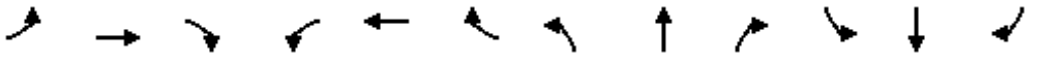
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	412	550	107	67	1215	53	412	768	66	34	256	1108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.98		1.00	0.99		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1593	3108		1593	3165		1593	3147		1593	3185	1425
Flt Permitted	0.95	1.00		0.38	1.00		0.53	1.00		0.16	1.00	1.00
Satd. Flow (perm)	1593	3108		637	3165		883	3147		262	3185	1425
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)	448	598	116	73	1321	58	448	835	72	37	278	1204
RTOR Reduction (vph)	0	16	0	0	4	0	0	6	0	0	0	248
Lane Group Flow (vph)	448	698	0	73	1375	0	448	901	0	37	278	956
Turn Type	Prot			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6			8			4		4
Actuated Green, G (s)	16.0	40.6		29.4	29.4		40.2	36.2		37.0	34.6	34.6
Effective Green, g (s)	16.0	40.6		29.4	29.4		40.2	36.2		37.0	34.6	34.6
Actuated g/C Ratio	0.16	0.41		0.29	0.29		0.40	0.36		0.37	0.35	0.35
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	255	1262		233	931		383	1139		129	1102	493
v/s Ratio Prot	c0.28	0.22		0.02	c0.43		c0.05	0.29		0.01	0.09	
v/s Ratio Perm				0.08			0.42			0.10		c0.67
v/c Ratio	1.76	0.55		0.31	1.48		1.17	0.79		0.29	0.25	1.94
Uniform Delay, d1	42.0	22.8		28.1	35.3		30.0	28.5		22.0	23.4	32.7
Progression Factor	1.00	1.00		0.78	0.83		0.73	0.75		1.02	1.03	1.08
Incremental Delay, d2	356.3	1.7		0.6	219.0		89.4	1.8		1.2	0.1	429.8
Delay (s)	398.3	24.5		22.5	248.4		111.2	23.3		23.5	24.3	465.2
Level of Service	F	C		C	F		F	C		C	C	F
Approach Delay (s)		168.6			237.0			52.4			373.8	
Approach LOS		F			F			D			F	

Intersection Summary			
HCM Average Control Delay	214.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.79		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	150.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



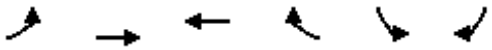
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	65	34	30	441	105	359	1080	55	77	350	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		0.95			0.97			0.99			0.99	
Flt Protected		0.99			1.00			0.99			0.99	
Satd. Flow (prot)		3359			3433			3478			3484	
Flt Permitted		0.77			0.93			0.71			0.59	
Satd. Flow (perm)		2602			3210			2483			2065	
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	71	37	33	479	114	390	1174	60	84	380	23
RTOR Reduction (vph)	0	30	0	0	19	0	0	3	0	0	4	0
Lane Group Flow (vph)	0	93	0	0	607	0	0	1621	0	0	483	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		20.0			20.0			72.0			72.0	
Effective Green, g (s)		20.0			20.0			72.0			72.0	
Actuated g/C Ratio		0.20			0.20			0.72			0.72	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		520			642			1788			1487	
v/s Ratio Prot												
v/s Ratio Perm		0.04			c0.19			c0.65			0.23	
v/c Ratio		0.18			0.95			0.91			0.33	
Uniform Delay, d1		33.2			39.5			11.3			5.1	
Progression Factor		1.00			1.00			0.58			0.74	
Incremental Delay, d2		0.2			22.7			6.4			0.6	
Delay (s)		33.4			62.2			12.9			4.4	
Level of Service		C			E			B			A	
Approach Delay (s)		33.4			62.2			12.9			4.4	
Approach LOS		C			E			B			A	

Intersection Summary			
HCM Average Control Delay	23.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	100.0	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			



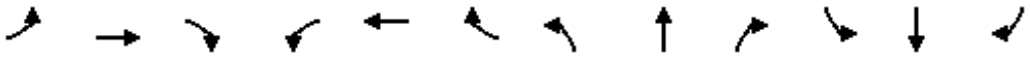
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	89	15	26	369	44	24	1296	55	14	243	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00			0.95			1.00	1.00
Frt	1.00	1.00	0.85		0.99			0.99			1.00	0.85
Flt Protected	0.95	1.00	1.00		1.00			1.00			1.00	1.00
Satd. Flow (prot)	1770	1863	1583		1832			3515			1858	1583
Flt Permitted	0.25	1.00	1.00		0.98			0.95			0.90	1.00
Satd. Flow (perm)	461	1863	1583		1802			3328			1671	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)	28	97	16	28	401	48	26	1409	60	15	264	68
RTOR Reduction (vph)	0	0	11	0	4	0	0	3	0	0	0	26
Lane Group Flow (vph)	28	97	5	0	473	0	0	1492	0	0	279	42
Turn Type	Perm		Perm	Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		6
Actuated Green, G (s)	30.1	30.1	30.1		30.1			61.9			61.9	61.9
Effective Green, g (s)	30.1	30.1	30.1		30.1			61.9			61.9	61.9
Actuated g/C Ratio	0.30	0.30	0.30		0.30			0.62			0.62	0.62
Clearance Time (s)	4.0	4.0	4.0		4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	139	561	476		542			2060			1034	980
v/s Ratio Prot		0.05										
v/s Ratio Perm	0.06		0.00		c0.26			c0.45			0.17	0.03
v/c Ratio	0.20	0.17	0.01		0.87			0.72			0.27	0.04
Uniform Delay, d1	26.0	25.8	24.5		33.1			13.2			8.7	7.5
Progression Factor	1.00	1.00	1.00		1.00			1.00			0.59	0.26
Incremental Delay, d2	0.7	0.1	0.0		14.4			2.3			0.6	0.1
Delay (s)	26.7	25.9	24.5		47.5			15.4			5.7	2.0
Level of Service	C	C	C		D			B			A	A
Approach Delay (s)		25.9			47.5			15.4			5.0	
Approach LOS		C			D			B			A	

Intersection Summary			
HCM Average Control Delay	20.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	91.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	49	285	1381	140	80	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frt		1.00	0.99		1.00	0.85
Flt Protected		0.99	1.00		0.95	1.00
Satd. Flow (prot)		3514	3490		1770	1583
Flt Permitted		0.67	1.00		0.95	1.00
Satd. Flow (perm)		2383	3490		1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	53	310	1501	152	87	134
RTOR Reduction (vph)	0	0	6	0	0	68
Lane Group Flow (vph)	0	363	1647	0	87	66
Turn Type	Perm					Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		81.6	81.6		10.4	10.4
Effective Green, g (s)		81.6	81.6		10.4	10.4
Actuated g/C Ratio		0.82	0.82		0.10	0.10
Clearance Time (s)		4.0	4.0		4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1945	2848		184	165
v/s Ratio Prot			c0.47		c0.05	
v/s Ratio Perm		0.15				0.04
v/c Ratio		0.19	0.58		0.47	0.40
Uniform Delay, d1		2.0	3.2		42.2	41.9
Progression Factor		1.00	0.51		0.74	0.52
Incremental Delay, d2		0.2	0.8		1.9	1.5
Delay (s)		2.2	2.4		33.1	23.3
Level of Service		A	A		C	C
Approach Delay (s)		2.2	2.4		27.2	
Approach LOS		A	A		C	

Intersection Summary			
HCM Average Control Delay	4.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

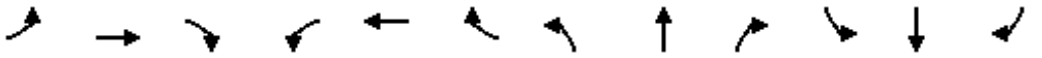


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	228	35	21	1474	50	144	425	62	21	92	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			0.95			1.00			1.00	
Frt		0.98			1.00			0.99			0.98	
Flt Protected		1.00			1.00			0.99			0.99	
Satd. Flow (prot)		1826			3520			1817			1806	
Flt Permitted		0.67			0.95			0.86			0.87	
Satd. Flow (perm)		1219			3336			1587			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)	15	248	38	23	1602	54	157	462	67	23	100	25
RTOR Reduction (vph)	0	3	0	0	1	0	0	3	0	0	5	0
Lane Group Flow (vph)	0	298	0	0	1678	0	0	683	0	0	143	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		66.0			66.0			50.0			50.0	
Effective Green, g (s)		66.0			66.0			50.0			50.0	
Actuated g/C Ratio		0.53			0.53			0.40			0.40	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		649			1776			640			638	
v/s Ratio Prot												
v/s Ratio Perm		0.24			c0.50			c0.43			0.09	
v/c Ratio		0.46			0.94			1.07			0.22	
Uniform Delay, d1		17.9			27.3			37.0			24.3	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.5			10.9			54.9			0.2	
Delay (s)		18.5			38.2			91.9			24.4	
Level of Service		B			D			F			C	
Approach Delay (s)		18.5			38.2			91.9			24.4	
Approach LOS		B			D			F			C	

Intersection Summary			
HCM Average Control Delay	48.4	HCM Level of Service	D
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	124.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	94.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

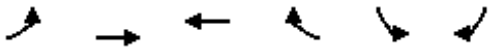
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	845	21	49	1950	40	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.91		1.00	0.91	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	5067		1770	5085	1770	1583
Flt Permitted	1.00		0.28	1.00	0.95	1.00
Satd. Flow (perm)	5067		527	5085	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	918	23	53	2120	43	20
RTOR Reduction (vph)	3	0	0	0	0	16
Lane Group Flow (vph)	938	0	53	2120	43	4
Turn Type			Perm			Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Actuated Green, G (s)	74.0		74.0	74.0	18.0	18.0
Effective Green, g (s)	74.0		74.0	74.0	18.0	18.0
Actuated g/C Ratio	0.74		0.74	0.74	0.18	0.18
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3750		390	3763	319	285
v/s Ratio Prot	0.19			c0.42	c0.02	
v/s Ratio Perm			0.10			0.00
v/c Ratio	0.25		0.14	0.56	0.13	0.01
Uniform Delay, d1	4.1		3.8	5.8	34.5	33.7
Progression Factor	0.19		0.07	0.05	0.74	0.71
Incremental Delay, d2	0.2		0.3	0.3	0.9	0.1
Delay (s)	0.9		0.6	0.5	26.4	24.1
Level of Service	A		A	A	C	C
Approach Delay (s)	0.9			0.5	25.7	
Approach LOS	A			A	C	

Intersection Summary			
HCM Average Control Delay	1.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	18	328	0	0	963	55	30	46	10	17	8	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95			0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00			0.99		1.00	0.97		1.00	0.88	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539			5044		1770	1812		1770	1639	
Flt Permitted	0.13	1.00			1.00		0.73	1.00		0.72	1.00	
Satd. Flow (perm)	237	3539			5044		1356	1812		1336	1639	
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	357	0	0	1047	60	33	50	11	18	9	36
RTOR Reduction (vph)	0	0	0	0	12	0	0	4	0	0	14	0
Lane Group Flow (vph)	20	357	0	0	1095	0	33	57	0	18	31	0
Turn Type	Perm						Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4						2			6		
Actuated Green, G (s)	31.4	31.4			31.4		60.6	60.6		60.6	60.6	
Effective Green, g (s)	31.4	31.4			31.4		60.6	60.6		60.6	60.6	
Actuated g/C Ratio	0.31	0.31			0.31		0.61	0.61		0.61	0.61	
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	74	1111			1584		822	1098		810	993	
v/s Ratio Prot		0.10			c0.22			c0.03			0.02	
v/s Ratio Perm	0.08						0.02			0.01		
v/c Ratio	0.27	0.32			0.69		0.04	0.05		0.02	0.03	
Uniform Delay, d1	25.7	26.2			30.1		8.0	8.0		7.9	7.9	
Progression Factor	0.38	0.41			0.63		1.00	1.00		1.00	1.16	
Incremental Delay, d2	1.9	0.2			0.6		0.1	0.1		0.1	0.1	
Delay (s)	11.7	10.8			19.7		8.0	8.1		7.9	9.2	
Level of Service	B	B			B		A	A		A	A	
Approach Delay (s)		10.9			19.7			8.1			8.9	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	16.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

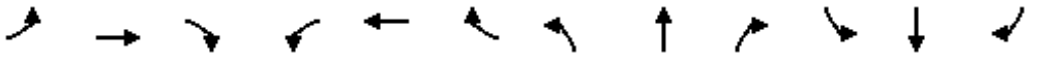


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	27	356	1428	100	35	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.15	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	277	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	387	1552	109	38	84
RTOR Reduction (vph)	0	0	0	16	0	62
Lane Group Flow (vph)	29	387	1552	93	38	22
Turn Type	Perm			Perm		Perm
Protected Phases		2	6		4	
Permitted Phases	2			6		4
Actuated Green, G (s)	85.3	85.3	85.3	85.3	6.7	6.7
Effective Green, g (s)	85.3	85.3	85.3	85.3	6.7	6.7
Actuated g/C Ratio	0.85	0.85	0.85	0.85	0.07	0.07
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	236	3019	3019	1350	119	106
v/s Ratio Prot		0.11	c0.44		c0.02	
v/s Ratio Perm	0.10			0.06		0.01
v/c Ratio	0.12	0.13	0.51	0.07	0.32	0.21
Uniform Delay, d1	1.2	1.2	1.9	1.1	44.5	44.2
Progression Factor	1.38	1.41	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1	0.1	0.6	0.1	1.6	1.0
Delay (s)	2.7	1.8	2.6	1.2	46.0	45.1
Level of Service	A	A	A	A	D	D
Approach Delay (s)		1.9	2.5		45.4	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	4.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	125	10	14	325	9	10	1	6	6	3	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.87		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1842		1770	3525		1770	1618		1770	1636	
Flt Permitted	0.54	1.00		0.66	1.00		0.75	1.00		0.75	1.00	
Satd. Flow (perm)	997	1842		1236	3525		1392	1618		1402	1636	
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	136	11	15	353	10	11	1	7	7	3	13
RTOR Reduction (vph)	0	7	0	0	5	0	0	5	0	0	9	0
Lane Group Flow (vph)	9	140	0	15	358	0	11	3	0	7	7	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	7.8	7.8		7.8	7.8		7.4	7.4		7.4	7.4	
Effective Green, g (s)	7.8	7.8		7.8	7.8		7.4	7.4		7.4	7.4	
Actuated g/C Ratio	0.34	0.34		0.34	0.34		0.32	0.32		0.32	0.32	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	335	619		416	1185		444	516		447	522	
v/s Ratio Prot		0.08			c0.10			0.00			0.00	
v/s Ratio Perm	0.01			0.01			c0.01			0.00		
v/c Ratio	0.03	0.23		0.04	0.30		0.02	0.01		0.02	0.01	
Uniform Delay, d1	5.2	5.5		5.2	5.7		5.4	5.4		5.4	5.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.2		0.0	0.1		0.0	0.0		0.0	0.0	
Delay (s)	5.2	5.7		5.2	5.8		5.4	5.4		5.4	5.4	
Level of Service	A	A		A	A		A	A		A	A	
Approach Delay (s)		5.7			5.8			5.4			5.4	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	5.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.17		
Actuated Cycle Length (s)	23.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	25.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

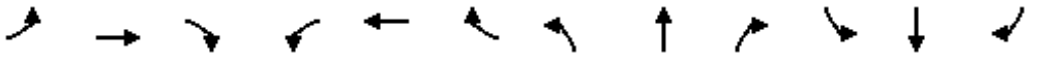


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	750	79	88	363	62	103	652	128	62	645	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95			0.95	
Frt	1.00	0.99		1.00	0.98		1.00	0.98			1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770	1836		1770	1822		1770	3452			3515	
Flt Permitted	0.22	1.00		0.11	1.00		0.19	1.00			0.66	
Satd. Flow (perm)	405	1836		204	1822		351	3452			2320	
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)	130	815	86	96	395	67	112	709	139	67	701	14
RTOR Reduction (vph)	0	4	0	0	6	0	0	16	0	0	1	0
Lane Group Flow (vph)	130	897	0	96	456	0	112	832	0	0	781	0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	45.0	45.0		40.5	40.5		39.0	39.0			31.0	
Effective Green, g (s)	45.0	45.0		40.5	40.5		39.0	39.0			31.0	
Actuated g/C Ratio	0.45	0.45		0.40	0.40		0.39	0.39			0.31	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	298	826		145	738		194	1346			719	
v/s Ratio Prot	0.04	c0.49		0.03	c0.25		0.02	c0.24				
v/s Ratio Perm	0.16			0.24			0.20				c0.34	
v/c Ratio	0.44	1.09		0.66	0.62		0.58	0.62			1.09	
Uniform Delay, d1	18.8	27.5		44.3	23.6		36.1	24.5			34.5	
Progression Factor	0.26	0.47		1.00	1.00		0.73	0.75			0.89	
Incremental Delay, d2	0.9	56.2		10.8	3.9		4.0	2.1			54.7	
Delay (s)	5.8	69.1		55.1	27.5		30.2	20.4			85.5	
Level of Service	A	E		E	C		C	C			F	
Approach Delay (s)		61.1			32.2			21.5			85.5	
Approach LOS		E			C			C			F	

Intersection Summary			
HCM Average Control Delay	50.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	104.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↱	↰	↑↑	↰	↱↱
Volume (vph)	1698	385	365	793	301	575
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	1.00	0.95	1.00	0.88
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	1770	3539	1770	2787
Flt Permitted	1.00	1.00	0.08	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	153	3539	1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1846	418	397	862	327	625
RTOR Reduction (vph)	0	104	0	0	0	481
Lane Group Flow (vph)	1846	314	397	862	327	144
Turn Type		Perm	pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases		2	6			8
Actuated Green, G (s)	44.6	44.6	69.0	69.0	23.0	23.0
Effective Green, g (s)	44.6	44.6	69.0	69.0	23.0	23.0
Actuated g/C Ratio	0.45	0.45	0.69	0.69	0.23	0.23
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2268	706	435	2442	407	641
v/s Ratio Prot	0.36		c0.19	0.24	c0.18	
v/s Ratio Perm		0.20	c0.44			0.05
v/c Ratio	0.81	0.45	0.91	0.35	0.80	0.22
Uniform Delay, d1	24.1	19.1	29.8	6.4	36.4	31.3
Progression Factor	0.45	0.13	1.00	1.00	0.80	2.99
Incremental Delay, d2	2.3	1.4	23.3	0.4	13.1	0.7
Delay (s)	13.1	3.9	53.0	6.8	42.3	94.1
Level of Service	B	A	D	A	D	F
Approach Delay (s)	11.4			21.3	76.3	
Approach LOS	B			C	E	

Intersection Summary			
HCM Average Control Delay	28.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



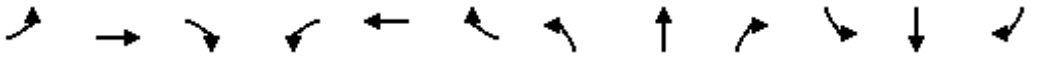
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	181	890	191	138	357	59	61	170	47	61	327	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	10	10	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.98		1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4950		1770	3464		1652	1682		1770	1813	
Flt Permitted	0.31	1.00		0.23	1.00		0.16	1.00		0.50	1.00	
Satd. Flow (perm)	577	4950		426	3464		275	1682		934	1813	
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)	197	967	208	150	388	64	66	185	51	66	355	77
RTOR Reduction (vph)	0	30	0	0	11	0	0	11	0	0	9	0
Lane Group Flow (vph)	197	1145	0	150	441	0	66	225	0	66	423	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	38.3	38.3		38.4	38.4		34.3	29.5		31.1	27.9	
Effective Green, g (s)	38.3	38.3		38.4	38.4		34.3	29.5		31.1	27.9	
Actuated g/C Ratio	0.38	0.38		0.38	0.38		0.34	0.30		0.31	0.28	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	375	1896		338	1330		160	496		317	506	
v/s Ratio Prot	0.07	c0.23		c0.06	0.13		c0.02	0.13		0.01	c0.23	
v/s Ratio Perm	0.13			0.11			0.12			0.06		
v/c Ratio	0.53	0.60		0.44	0.33		0.41	0.45		0.21	0.84	
Uniform Delay, d1	22.0	24.8		27.0	21.7		24.7	28.7		24.8	33.9	
Progression Factor	0.31	0.29		0.57	0.44		0.65	0.60		0.93	0.89	
Incremental Delay, d2	0.7	0.7		0.9	0.7		1.6	0.6		0.3	9.4	
Delay (s)	7.6	7.8		16.4	10.2		17.6	17.8		23.3	39.6	
Level of Service	A	A		B	B		B	B		C	D	
Approach Delay (s)		7.8			11.7			17.7			37.4	
Approach LOS		A			B			B			D	

Intersection Summary			
HCM Average Control Delay	15.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

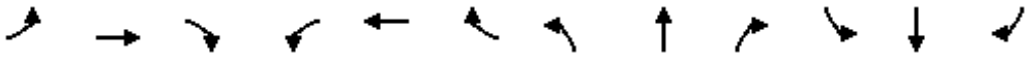
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	2141	168	204	1079	100	244
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.91		1.00	0.91	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	5030		1770	5085	1770	1583
Flt Permitted	1.00		0.06	1.00	0.95	1.00
Satd. Flow (perm)	5030		117	5085	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2327	183	222	1173	109	265
RTOR Reduction (vph)	8	0	0	0	0	193
Lane Group Flow (vph)	2502	0	222	1173	109	72
Turn Type			pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Actuated Green, G (s)	59.9		76.0	76.0	16.0	16.0
Effective Green, g (s)	59.9		76.0	76.0	16.0	16.0
Actuated g/C Ratio	0.60		0.76	0.76	0.16	0.16
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3013		289	3865	283	253
v/s Ratio Prot	c0.50		c0.09	0.23	c0.06	
v/s Ratio Perm			0.49			0.05
v/c Ratio	0.83		0.77	0.30	0.39	0.28
Uniform Delay, d1	16.0		29.0	3.7	37.6	37.0
Progression Factor	0.35		0.96	1.61	0.73	1.18
Incremental Delay, d2	0.3		11.3	0.2	3.6	2.6
Delay (s)	5.9		39.2	6.2	31.1	46.0
Level of Service	A		D	A	C	D
Approach Delay (s)	5.9			11.5	41.7	
Approach LOS	A			B	D	

Intersection Summary			
HCM Average Control Delay	10.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



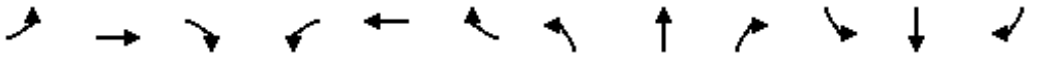
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	28	399	176	12	141	31	16	216	59	58	578	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	4.0
Lane Util. Factor		1.00			0.95			1.00			1.00	1.00
Frt		0.96			0.97			0.97			1.00	0.85
Flt Protected		1.00			1.00			1.00			1.00	1.00
Satd. Flow (prot)		1785			3438			1807			1854	1583
Flt Permitted		0.98			0.91			0.96			0.94	1.00
Satd. Flow (perm)		1753			3147			1734			1751	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)	30	434	191	13	153	34	17	235	64	63	628	101
RTOR Reduction (vph)	0	16	0	0	18	0	0	9	0	0	0	48
Lane Group Flow (vph)	0	639	0	0	182	0	0	307	0	0	691	53
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		39.9			39.9			52.1			52.1	52.1
Effective Green, g (s)		39.9			39.9			52.1			52.1	52.1
Actuated g/C Ratio		0.40			0.40			0.52			0.52	0.52
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		699			1256			903			912	825
v/s Ratio Prot												
v/s Ratio Perm		c0.36			0.06			0.18			c0.39	0.03
v/c Ratio		0.91			0.14			0.34			0.76	0.06
Uniform Delay, d1		28.4			19.2			13.9			19.0	11.9
Progression Factor		0.49			0.72			0.92			0.90	0.96
Incremental Delay, d2		13.2			0.1			1.0			5.0	0.1
Delay (s)		27.0			13.8			13.8			22.1	11.6
Level of Service		C			B			B			C	B
Approach Delay (s)		27.0			13.8			13.8			20.8	
Approach LOS		C			B			B			C	

Intersection Summary			
HCM Average Control Delay	21.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	98.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	133	1166	208	28	420	62	103	432	28	46	742	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	
Lane Util. Factor		0.91			0.91		1.00	0.95			0.95	
Frt		0.98			0.98		1.00	0.99			0.99	
Flt Protected		1.00			1.00		0.95	1.00			1.00	
Satd. Flow (prot)		4958			4980		1770	3507			3483	
Flt Permitted		0.79			0.79		0.19	1.00			0.90	
Satd. Flow (perm)		3934			3966		355	3507			3130	
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)	145	1267	226	30	457	67	112	470	30	50	807	83
RTOR Reduction (vph)	0	22	0	0	17	0	0	4	0	0	7	0
Lane Group Flow (vph)	0	1616	0	0	537	0	112	496	0	0	933	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		47.0			47.0		45.0	45.0			45.0	
Effective Green, g (s)		47.0			47.0		45.0	45.0			45.0	
Actuated g/C Ratio		0.47			0.47		0.45	0.45			0.45	
Clearance Time (s)		4.0			4.0		4.0	4.0			4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1849			1864		160	1578			1409	
v/s Ratio Prot								0.14				
v/s Ratio Perm		c0.41			0.14		c0.32				0.30	
v/c Ratio		0.87			0.29		0.70	0.31			0.66	
Uniform Delay, d1		23.8			16.2		22.1	17.6			21.5	
Progression Factor		1.00			0.96		1.07	0.93			0.49	
Incremental Delay, d2		6.1			0.4		21.0	0.5			0.2	
Delay (s)		29.9			16.0		44.7	16.9			10.8	
Level of Service		C			B		D	B			B	
Approach Delay (s)		29.9			16.0			22.0			10.8	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM Average Control Delay	21.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	90.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

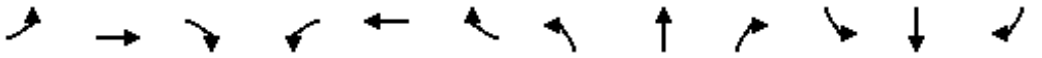


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	173	1879	115	159	810	199	138	378	171	365	572	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00		0.95	
Frt	1.00	0.99		1.00	0.97		1.00	1.00	0.85		0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00		0.98	
Satd. Flow (prot)	1770	5041		1770	4935		1770	1863	1583		3436	
Flt Permitted	0.18	1.00		0.15	1.00		0.10	1.00	1.00		0.60	
Satd. Flow (perm)	329	5041		276	4935		188	1863	1583		2111	
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)	188	2042	125	173	880	216	150	411	186	397	622	86
RTOR Reduction (vph)	0	7	0	0	42	0	0	0	65	0	7	0
Lane Group Flow (vph)	188	2160	0	173	1054	0	150	411	121	0	1098	0
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	38.0	38.0		31.0	31.0		46.0	46.0	46.0		38.0	
Effective Green, g (s)	38.0	38.0		31.0	31.0		46.0	46.0	46.0		38.0	
Actuated g/C Ratio	0.38	0.38		0.31	0.31		0.46	0.46	0.46		0.38	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	284	1916		145	1530		150	857	728		802	
v/s Ratio Prot	0.07	c0.43		c0.05	0.21		c0.04	0.22				
v/s Ratio Perm	0.18			c0.32			0.42		0.08		c0.52	
v/c Ratio	0.66	1.13		1.19	0.69		1.00	0.48	0.17		1.53dl	
Uniform Delay, d1	32.2	31.0		34.8	30.3		39.2	18.7	15.8		31.0	
Progression Factor	1.00	1.00		0.87	0.56		0.41	0.38	0.24		1.00	
Incremental Delay, d2	5.7	64.7		134.7	2.5		71.1	1.8	0.5		174.1	
Delay (s)	37.9	95.7		164.9	19.4		87.2	8.9	4.2		205.1	
Level of Service	D	F		F	B		F	A	A		F	
Approach Delay (s)		91.1			39.2			23.5			205.1	
Approach LOS		F			D			C			F	

Intersection Summary			
HCM Average Control Delay	92.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	109.8%	ICU Level of Service	H
Analysis Period (min)	15		

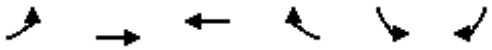
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group



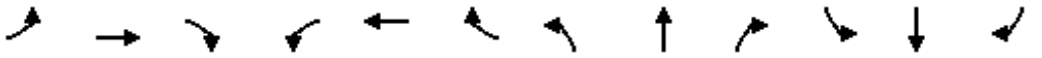
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	61	378	242	67	154	43	141	611	151	55	1082	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95		1.00	0.95		1.00	0.95	
Frt		0.95			0.98		1.00	0.97		1.00	0.99	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3336			3409		1770	3434		1770	3500	
Flt Permitted		0.88			0.55		0.17	1.00		0.31	1.00	
Satd. Flow (perm)		2935			1886		314	3434		571	3500	
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)	66	411	263	73	167	47	153	664	164	60	1176	93
RTOR Reduction (vph)	0	77	0	0	17	0	0	21	0	0	6	0
Lane Group Flow (vph)	0	664	0	0	271	0	153	807	0	60	1263	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		25.0			25.0		67.0	67.0		67.0	67.0	
Effective Green, g (s)		25.0			25.0		67.0	67.0		67.0	67.0	
Actuated g/C Ratio		0.25			0.25		0.67	0.67		0.67	0.67	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		734			472		210	2301		383	2345	
v/s Ratio Prot								0.23			0.36	
v/s Ratio Perm		c0.23			0.14		c0.49			0.11		
v/c Ratio		0.90			0.57		0.73	0.35		0.16	0.54	
Uniform Delay, d1		36.3			32.8		10.6	7.1		6.1	8.5	
Progression Factor		1.00			1.09		1.16	0.92		0.55	0.57	
Incremental Delay, d2		14.5			1.7		2.0	0.0		0.7	0.7	
Delay (s)		50.9			37.6		14.4	6.6		4.0	5.6	
Level of Service		D			D		B	A		A	A	
Approach Delay (s)		50.9			37.6			7.8			5.6	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	19.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	273	1989	1009	220	270	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91	0.95		0.97	
Frt	1.00	1.00	0.97		0.98	
Flt Protected	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1770	5085	3444		3397	
Flt Permitted	0.10	1.00	1.00		0.96	
Satd. Flow (perm)	183	5085	3444		3397	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	297	2162	1097	239	293	42
RTOR Reduction (vph)	0	0	19	0	12	0
Lane Group Flow (vph)	297	2162	1318	0	323	0
Turn Type	pm+pt					
Protected Phases	5	2	6		4	
Permitted Phases	2					
Actuated Green, G (s)	76.0	76.0	50.0		16.0	
Effective Green, g (s)	76.0	76.0	50.0		16.0	
Actuated g/C Ratio	0.76	0.76	0.50		0.16	
Clearance Time (s)	4.0	4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	488	3865	1722		544	
v/s Ratio Prot	0.13	c0.43	c0.38		c0.10	
v/s Ratio Perm	0.33					
v/c Ratio	0.61	0.56	0.77		0.59	
Uniform Delay, d1	22.4	5.0	20.2		39.0	
Progression Factor	1.15	0.46	0.24		1.00	
Incremental Delay, d2	1.6	0.4	2.2		4.7	
Delay (s)	27.5	2.7	6.9		43.7	
Level of Service	C	A	A		D	
Approach Delay (s)		5.7	6.9		43.7	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	9.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	216	1916	83	35	1016	147	103	60	105	193	65	229
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.97	1.00		0.96	1.00
Satd. Flow (prot)	1770	5085	1583	1770	3472			1806	1583		1796	1583
Flt Permitted	0.09	1.00	1.00	0.10	1.00			0.54	1.00		0.60	1.00
Satd. Flow (perm)	164	5085	1583	180	3472			1003	1583		1124	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)	235	2083	90	38	1104	160	112	65	114	210	71	249
RTOR Reduction (vph)	0	0	10	0	12	0	0	0	59	0	0	117
Lane Group Flow (vph)	235	2083	80	38	1252	0	0	177	55	0	281	132
Turn Type	pm+pt		Perm	pm+pt			Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6			8		8	4		4
Actuated Green, G (s)	58.9	52.5	52.5	43.8	41.4			33.1	33.1		33.1	33.1
Effective Green, g (s)	58.9	52.5	52.5	43.8	41.4			33.1	33.1		33.1	33.1
Actuated g/C Ratio	0.59	0.52	0.52	0.44	0.41			0.33	0.33		0.33	0.33
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	313	2670	831	117	1437			332	524		372	524
v/s Ratio Prot	c0.10	c0.41		0.01	c0.36							
v/s Ratio Perm	0.34		0.05	0.13				0.18	0.03		c0.25	0.08
v/c Ratio	0.75	0.78	0.10	0.32	0.87			0.53	0.11		0.76	0.25
Uniform Delay, d1	33.3	19.1	11.9	40.1	26.9			27.2	23.2		29.8	24.4
Progression Factor	0.52	0.43	0.61	0.70	0.72			1.00	1.00		1.00	1.00
Incremental Delay, d2	8.2	2.0	0.2	1.5	6.9			6.0	0.4		13.3	1.2
Delay (s)	25.6	10.2	7.4	29.7	26.3			33.2	23.6		43.2	25.6
Level of Service	C	B	A	C	C			C	C		D	C
Approach Delay (s)		11.6			26.4			29.4			34.9	
Approach LOS		B			C			C			C	

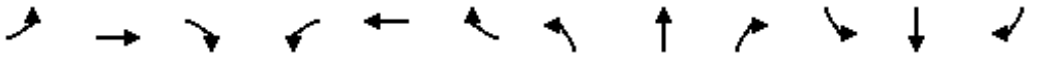
Intersection Summary			
HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	125	0	209	426	76	65	76	624	0	0	711	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95			0.95	
Frt	1.00		0.85	1.00	0.93		1.00	1.00			0.98	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770		1583	1770	1734		1770	3539			3486	
Flt Permitted	0.64		1.00	0.95	1.00		0.18	1.00			1.00	
Satd. Flow (perm)	1190		1583	1770	1734		335	3539			3486	
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)	136	0	227	463	83	71	83	678	0	0	773	87
RTOR Reduction (vph)	0	0	121	0	31	0	0	0	0	0	8	0
Lane Group Flow (vph)	136	0	106	463	123	0	83	678	0	0	852	0
Turn Type	custom		custom	Perm			pm+pt					
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2					
Actuated Green, G (s)	43.0		43.0	43.0	43.0		49.0	49.0			40.2	
Effective Green, g (s)	43.0		43.0	43.0	43.0		49.0	49.0			40.2	
Actuated g/C Ratio	0.43		0.43	0.43	0.43		0.49	0.49			0.40	
Clearance Time (s)	4.0		4.0	4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	512		681	761	746		233	1734			1401	
v/s Ratio Prot					0.07		0.02	c0.19			c0.24	
v/s Ratio Perm	0.11		0.07	c0.26			0.16					
v/c Ratio	0.27		0.16	0.61	0.17		0.36	0.39			0.61	
Uniform Delay, d1	18.3		17.4	22.0	17.5		16.0	16.1			23.7	
Progression Factor	0.15		0.36	0.73	0.71		1.00	1.00			0.20	
Incremental Delay, d2	0.3		0.1	3.1	0.4		0.9	0.7			0.2	
Delay (s)	3.0		6.3	19.2	12.9		16.9	16.8			4.9	
Level of Service	A		A	B	B		B	B			A	
Approach Delay (s)		5.1			17.6			16.8			4.9	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

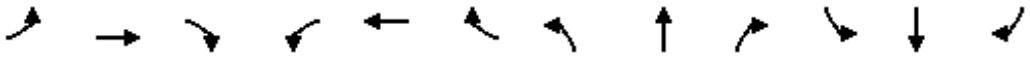
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	367	562	253	727	1223	251
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.08	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	150	3539	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	399	611	275	790	1329	273
RTOR Reduction (vph)	0	188	0	0	0	32
Lane Group Flow (vph)	399	423	275	790	1329	241
Turn Type		Perm	pm+pt			pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases		4	2			6
Actuated Green, G (s)	29.3	29.3	62.7	62.7	45.7	75.0
Effective Green, g (s)	29.3	29.3	62.7	62.7	45.7	75.0
Actuated g/C Ratio	0.29	0.29	0.63	0.63	0.46	0.75
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	519	464	305	2219	1617	1251
v/s Ratio Prot	0.23		c0.12	0.22	0.38	0.06
v/s Ratio Perm		c0.27	c0.45			0.10
v/c Ratio	0.77	0.91	0.90	0.36	0.82	0.19
Uniform Delay, d1	32.3	34.1	29.0	9.0	23.6	3.7
Progression Factor	0.68	0.43	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.7	10.5	27.9	0.4	4.8	0.1
Delay (s)	24.5	25.3	56.9	9.4	28.5	3.7
Level of Service	C	C	E	A	C	A
Approach Delay (s)	25.0			21.7	24.2	
Approach LOS	C			C	C	

Intersection Summary			
HCM Average Control Delay	23.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



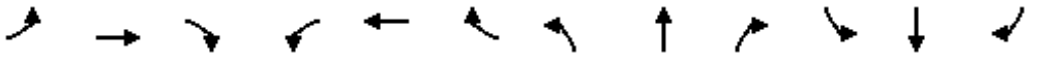
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	165	679	119	30	352	81	112	372	153	78	449	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	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	0.97		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1821		1770	1811		1770	1781		1770	1863	1583
Flt Permitted	0.33	1.00		0.11	1.00		0.14	1.00		0.13	1.00	1.00
Satd. Flow (perm)	613	1821		212	1811		259	1781		242	1863	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)	179	738	129	33	383	88	122	404	166	85	488	146
RTOR Reduction (vph)	0	6	0	0	9	0	0	14	0	0	0	30
Lane Group Flow (vph)	179	861	0	33	462	0	122	556	0	85	488	116
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	46.8	46.8		37.6	37.6		35.6	31.6		34.0	30.8	30.8
Effective Green, g (s)	46.8	46.8		37.6	37.6		35.6	31.6		34.0	30.8	30.8
Actuated g/C Ratio	0.47	0.47		0.38	0.38		0.36	0.32		0.34	0.31	0.31
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	421	852		117	681		153	563		131	574	488
v/s Ratio Prot	0.05	c0.47		0.01	c0.26		c0.03	c0.31		0.02	0.26	
v/s Ratio Perm	0.15			0.10			0.25			0.20		0.07
v/c Ratio	0.43	1.01		0.28	0.68		0.80	0.99		0.65	0.85	0.24
Uniform Delay, d1	26.2	26.6		24.8	26.1		28.0	34.0		27.4	32.4	25.8
Progression Factor	0.77	0.73		0.64	0.71		0.66	0.68		1.00	1.00	1.00
Incremental Delay, d2	0.7	32.4		1.1	4.6		16.6	27.2		10.6	14.6	1.1
Delay (s)	20.8	51.7		17.0	23.2		35.1	50.3		37.9	47.1	27.0
Level of Service	C	D		B	C		D	D		D	D	C
Approach Delay (s)		46.4			22.8			47.6			41.9	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM Average Control Delay	41.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	92.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



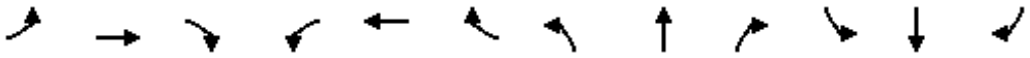
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	336	70	29	173	78	58	158	26	204	542	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0			4.0	
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	
Frt		0.98			1.00	0.85		0.99			0.99	
Flt Protected		1.00			0.99	1.00		0.99			0.99	
Satd. Flow (prot)		1817			1849	1583		1814			1821	
Flt Permitted		0.98			0.84	1.00		0.74			0.83	
Satd. Flow (perm)		1779			1573	1583		1354			1530	
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	365	76	32	188	85	63	172	28	222	589	67
RTOR Reduction (vph)	0	7	0	0	0	59	0	4	0	0	3	0
Lane Group Flow (vph)	0	459	0	0	220	26	0	259	0	0	875	0
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)		31.0			31.0	31.0		61.0			61.0	
Effective Green, g (s)		31.0			31.0	31.0		61.0			61.0	
Actuated g/C Ratio		0.31			0.31	0.31		0.61			0.61	
Clearance Time (s)		4.0			4.0	4.0		4.0			4.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		551			488	491		826			933	
v/s Ratio Prot												
v/s Ratio Perm		c0.26			0.14	0.02		0.19			c0.57	
v/c Ratio		0.83			0.45	0.05		0.31			0.94	
Uniform Delay, d1		32.1			27.7	24.2		9.4			17.8	
Progression Factor		1.00			0.74	0.89		1.00			0.56	
Incremental Delay, d2		13.8			1.5	0.1		1.0			13.2	
Delay (s)		45.9			21.9	21.6		10.4			23.2	
Level of Service		D			C	C		B			C	
Approach Delay (s)		45.9			21.8			10.4			23.2	
Approach LOS		D			C			B			C	

Intersection Summary			
HCM Average Control Delay	26.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	103.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



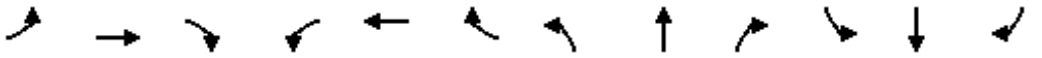
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	686	1090	104	174	847	34	178	487	62	31	970	578
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1593	3144		1593	3167		1593	3132		1593	3185	1425
Flt Permitted	0.95	1.00		0.26	1.00		0.14	1.00		0.23	1.00	1.00
Satd. Flow (perm)	1593	3144		435	3167		239	3132		382	3185	1425
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)	746	1185	113	189	921	37	193	529	67	34	1054	628
RTOR Reduction (vph)	0	7	0	0	3	0	0	9	0	0	0	178
Lane Group Flow (vph)	746	1291	0	189	955	0	193	587	0	34	1054	450
Turn Type	Prot			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6			8			4		4
Actuated Green, G (s)	29.0	44.4		24.4	24.4		34.6	28.1		26.5	24.0	24.0
Effective Green, g (s)	29.0	44.4		24.4	24.4		34.6	28.1		26.5	24.0	24.0
Actuated g/C Ratio	0.29	0.44		0.24	0.24		0.35	0.28		0.26	0.24	0.24
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	462	1396		210	773		172	880		132	764	342
v/s Ratio Prot	c0.47	0.41		0.08	c0.30		c0.07	0.19		0.01	c0.33	
v/s Ratio Perm				0.14			0.31			0.06		0.32
v/c Ratio	1.61	0.92		0.90	1.24		1.12	0.67		0.26	1.38	1.32
Uniform Delay, d1	35.5	26.2		36.6	37.8		43.6	31.8		37.6	38.0	38.0
Progression Factor	1.00	1.00		0.83	0.81		0.96	0.86		0.75	0.87	0.74
Incremental Delay, d2	286.5	11.7		34.3	116.3		104.0	1.9		0.9	177.9	159.1
Delay (s)	322.0	38.0		64.5	146.8		145.9	29.3		29.2	210.8	187.4
Level of Service	F	D		E	F		F	C		C	F	F
Approach Delay (s)		141.6			133.2			57.9			198.6	
Approach LOS		F			F			E			F	

Intersection Summary			
HCM Average Control Delay	145.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.34		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	123.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



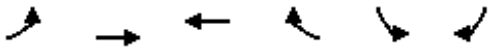
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	42	255	111	23	67	61	39	551	43	153	1028	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		0.96			0.94			0.99			1.00	
Flt Protected		0.99			0.99			1.00			0.99	
Satd. Flow (prot)		3377			3300			3492			3508	
Flt Permitted		0.90			0.78			0.81			0.73	
Satd. Flow (perm)		3056			2598			2820			2579	
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)	46	277	121	25	73	66	42	599	47	166	1117	23
RTOR Reduction (vph)	0	40	0	0	54	0	0	5	0	0	1	0
Lane Group Flow (vph)	0	404	0	0	110	0	0	683	0	0	1305	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		17.7			17.7			74.3			74.3	
Effective Green, g (s)		17.7			17.7			74.3			74.3	
Actuated g/C Ratio		0.18			0.18			0.74			0.74	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		541			460			2095			1916	
v/s Ratio Prot												
v/s Ratio Perm		c0.13			0.04			0.24			c0.51	
v/c Ratio		0.75			0.24			0.33			0.68	
Uniform Delay, d1		39.0			35.4			4.4			6.7	
Progression Factor		1.00			1.00			0.77			0.97	
Incremental Delay, d2		5.6			0.3			0.4			0.2	
Delay (s)		44.6			35.6			3.7			6.7	
Level of Service		D			D			A			A	
Approach Delay (s)		44.6			35.6			3.7			6.7	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



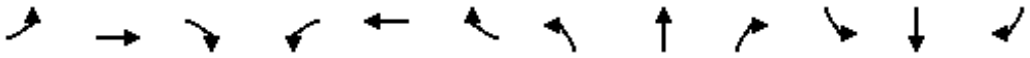
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	81	318	143	54	207	56	0	546	44	0	1008	148
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00			0.95			1.00	1.00
Frt	1.00	1.00	0.85		0.98			0.99			1.00	0.85
Flt Protected	0.95	1.00	1.00		0.99			1.00			1.00	1.00
Satd. Flow (prot)	1770	1863	1583		1803			3499			1863	1583
Flt Permitted	0.38	1.00	1.00		0.65			1.00			1.00	1.00
Satd. Flow (perm)	712	1863	1583		1182			3499			1863	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)	88	346	155	59	225	61	0	593	48	0	1096	161
RTOR Reduction (vph)	0	0	74	0	8	0	0	6	0	0	0	57
Lane Group Flow (vph)	88	346	81	0	337	0	0	635	0	0	1096	104
Turn Type	Perm		Perm	Perm								Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8								6
Actuated Green, G (s)	29.1	29.1	29.1		29.1			62.9			62.9	62.9
Effective Green, g (s)	29.1	29.1	29.1		29.1			62.9			62.9	62.9
Actuated g/C Ratio	0.29	0.29	0.29		0.29			0.63			0.63	0.63
Clearance Time (s)	4.0	4.0	4.0		4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	207	542	461		344			2201			1172	996
v/s Ratio Prot		0.19						0.18			c0.59	
v/s Ratio Perm	0.12		0.05		c0.29							0.07
v/c Ratio	0.43	0.64	0.17		0.98			0.29			0.94	0.10
Uniform Delay, d1	28.7	30.9	26.5		35.2			8.4			16.7	7.4
Progression Factor	1.00	1.00	1.00		1.00			1.00			0.35	0.13
Incremental Delay, d2	1.4	2.5	0.2		43.0			0.3			11.6	0.2
Delay (s)	30.1	33.3	26.7		78.2			8.7			17.5	1.1
Level of Service	C	C	C		E			A			B	A
Approach Delay (s)		31.1			78.2			8.7			15.4	
Approach LOS		C			E			A			B	

Intersection Summary			
HCM Average Control Delay	24.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	97.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	125	1137	400	145	227	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frt		1.00	0.96		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3522	3398		1770	1583
Flt Permitted		0.80	1.00		0.95	1.00
Satd. Flow (perm)		2822	3398		1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	136	1236	435	158	247	75
RTOR Reduction (vph)	0	0	31	0	0	61
Lane Group Flow (vph)	0	1372	562	0	247	14
Turn Type	Perm					Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		73.3	73.3		18.7	18.7
Effective Green, g (s)		73.3	73.3		18.7	18.7
Actuated g/C Ratio		0.73	0.73		0.19	0.19
Clearance Time (s)		4.0	4.0		4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2069	2491		331	296
v/s Ratio Prot			0.17		c0.14	
v/s Ratio Perm		c0.49				0.01
v/c Ratio		0.66	0.23		0.75	0.05
Uniform Delay, d1		6.9	4.3		38.4	33.3
Progression Factor		1.00	0.57		0.72	0.36
Incremental Delay, d2		1.7	0.2		5.8	0.0
Delay (s)		8.6	2.6		33.4	11.9
Level of Service		A	A		C	B
Approach Delay (s)		8.6	2.6		28.4	
Approach LOS		A	A		C	

Intersection Summary			
HCM Average Control Delay	9.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

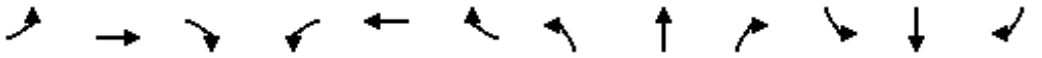


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	1010	134	59	396	15	39	163	59	118	451	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			1.00			1.00			1.00	
Frt		0.98			1.00			0.97			1.00	
Flt Protected		1.00			0.99			0.99			0.99	
Satd. Flow (prot)		3475			1843			1793			1839	
Flt Permitted		0.94			0.52			0.83			0.81	
Satd. Flow (perm)		3254			966			1496			1501	
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	1098	146	64	430	16	42	177	64	128	490	12
RTOR Reduction (vph)	0	6	0	0	1	0	0	7	0	0	1	0
Lane Group Flow (vph)	0	1264	0	0	509	0	0	276	0	0	629	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		71.0			71.0			55.0			55.0	
Effective Green, g (s)		71.0			71.0			55.0			55.0	
Actuated g/C Ratio		0.53			0.53			0.41			0.41	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1724			512			614			616	
v/s Ratio Prot												
v/s Ratio Perm		0.39			c0.53			0.18			c0.42	
v/c Ratio		0.73			0.99			0.45			1.02	
Uniform Delay, d1		24.2			31.3			28.6			39.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.6			38.1			0.5			41.9	
Delay (s)		25.9			69.4			29.1			81.4	
Level of Service		C			E			C			F	
Approach Delay (s)		25.9			69.4			29.1			81.4	
Approach LOS		C			E			C			F	

Intersection Summary			
HCM Average Control Delay	47.4	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	134.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	114.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

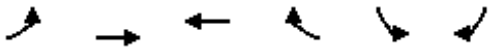
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	2380	57	30	1100	68	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.91		1.00	0.91	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	5067		1770	5085	1770	1583
Flt Permitted	1.00		0.05	1.00	0.95	1.00
Satd. Flow (perm)	5067		98	5085	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2587	62	33	1196	74	38
RTOR Reduction (vph)	2	0	0	0	0	8
Lane Group Flow (vph)	2647	0	33	1196	74	30
Turn Type			Perm			Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Actuated Green, G (s)	76.0		76.0	76.0	16.0	16.0
Effective Green, g (s)	76.0		76.0	76.0	16.0	16.0
Actuated g/C Ratio	0.76		0.76	0.76	0.16	0.16
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3851		74	3865	283	253
v/s Ratio Prot	c0.52			0.24	c0.04	
v/s Ratio Perm			0.34			0.02
v/c Ratio	0.69		0.45	0.31	0.26	0.12
Uniform Delay, d1	6.0		4.4	3.8	36.8	36.0
Progression Factor	0.09		0.95	0.08	0.83	0.80
Incremental Delay, d2	0.6		12.9	0.1	2.2	0.9
Delay (s)	1.1		17.1	0.4	32.7	29.6
Level of Service	A		B	A	C	C
Approach Delay (s)	1.1			0.9	31.6	
Approach LOS	A			A	C	

Intersection Summary			
HCM Average Control Delay	1.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	912	61	0	424	55	12	33	22	58	39	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95			0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.99			0.98		1.00	0.94		1.00	0.93	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3506			4997		1770	1751		1770	1738	
Flt Permitted	0.42	1.00			1.00		0.71	1.00		0.72	1.00	
Satd. Flow (perm)	778	3506			4997		1318	1751		1337	1738	
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	991	66	0	461	60	13	36	24	63	42	34
RTOR Reduction (vph)	0	8	0	0	28	0	0	12	0	0	17	0
Lane Group Flow (vph)	27	1049	0	0	493	0	13	48	0	63	59	0
Turn Type	Perm						Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4						2			6		
Actuated Green, G (s)	41.7	41.7			41.7		50.3	50.3		50.3	50.3	
Effective Green, g (s)	41.7	41.7			41.7		50.3	50.3		50.3	50.3	
Actuated g/C Ratio	0.42	0.42			0.42		0.50	0.50		0.50	0.50	
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	324	1462			2084		663	881		673	874	
v/s Ratio Prot		c0.30			0.10			0.03			0.03	
v/s Ratio Perm	0.03						0.01			c0.05		
v/c Ratio	0.08	0.72			0.24		0.02	0.05		0.09	0.07	
Uniform Delay, d1	17.6	24.2			18.9		12.5	12.7		13.0	12.8	
Progression Factor	0.21	0.27			0.56		1.00	1.00		1.34	1.51	
Incremental Delay, d2	0.1	1.4			0.0		0.1	0.1		0.3	0.1	
Delay (s)	3.7	8.0			10.6		12.5	12.8		17.7	19.4	
Level of Service	A	A			B		B	B		B	B	
Approach Delay (s)		7.9			10.6			12.8			18.6	
Approach LOS		A			B			B			B	

Intersection Summary			
HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

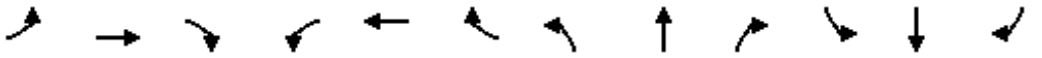


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	52	1289	486	76	94	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.46	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	849	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	1401	528	83	102	51
RTOR Reduction (vph)	0	0	0	15	0	46
Lane Group Flow (vph)	57	1401	528	68	102	5
Turn Type	Perm			Perm		Perm
Protected Phases		2	6		4	
Permitted Phases	2			6		4
Actuated Green, G (s)	82.3	82.3	82.3	82.3	9.7	9.7
Effective Green, g (s)	82.3	82.3	82.3	82.3	9.7	9.7
Actuated g/C Ratio	0.82	0.82	0.82	0.82	0.10	0.10
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	699	2913	2913	1303	172	154
v/s Ratio Prot		c0.40	0.15		c0.06	
v/s Ratio Perm	0.07			0.04		0.00
v/c Ratio	0.08	0.48	0.18	0.05	0.59	0.03
Uniform Delay, d1	1.7	2.6	1.8	1.6	43.3	40.9
Progression Factor	0.61	0.52	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.4	0.1	0.1	5.4	0.1
Delay (s)	1.2	1.8	2.0	1.7	48.7	41.0
Level of Service	A	A	A	A	D	D
Approach Delay (s)		1.8	1.9		46.1	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	4.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	484	4	3	325	4	0	0	2	7	2	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00			0.85		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1770	1861		1770	3533			1583		1770	1723	
Flt Permitted	0.50	1.00		0.22	1.00			1.00		0.76	1.00	
Satd. Flow (perm)	927	1861		410	3533			1583		1409	1723	
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)	5	526	4	3	353	4	0	0	2	8	2	2
RTOR Reduction (vph)	0	1	0	0	2	0	0	1	0	0	1	0
Lane Group Flow (vph)	5	529	0	3	355	0	0	1	0	8	3	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	39.9	39.9		39.9	39.9			52.1		52.1	52.1	
Effective Green, g (s)	39.9	39.9		39.9	39.9			52.1		52.1	52.1	
Actuated g/C Ratio	0.40	0.40		0.40	0.40			0.52		0.52	0.52	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	370	743		164	1410			825		734	898	
v/s Ratio Prot		c0.28			0.10			0.00			0.00	
v/s Ratio Perm	0.01			0.01						c0.01		
v/c Ratio	0.01	0.71		0.02	0.25			0.00		0.01	0.00	
Uniform Delay, d1	18.2	25.2		18.2	20.1			11.5		11.5	11.5	
Progression Factor	0.48	0.64		1.18	1.20			1.00		1.00	1.00	
Incremental Delay, d2	0.0	2.0		0.0	0.1			0.0		0.0	0.0	
Delay (s)	8.8	18.2		21.6	24.3			11.5		11.6	11.5	
Level of Service	A	B		C	C			B		B	B	
Approach Delay (s)		18.1			24.3			11.5			11.5	
Approach LOS		B			C			B			B	

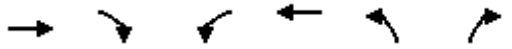
Intersection Summary			
HCM Average Control Delay	20.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	38.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	54	151	28	88	704	59	106	358	27	16	461	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95			0.95	
Frt	1.00	0.98		1.00	0.99		1.00	0.99			0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770	1819		1770	1841		1770	3502			3474	
Flt Permitted	0.06	1.00		0.57	1.00		0.13	1.00			0.91	
Satd. Flow (perm)	110	1819		1063	1841		248	3502			3169	
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
Growth Factor (vph)	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	71	199	37	116	926	78	139	471	36	21	606	80
RTOR Reduction (vph)	0	6	0	0	3	0	0	5	0	0	9	0
Lane Group Flow (vph)	71	230	0	116	1001	0	139	502	0	0	698	0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	71.2	68.0		72.8	68.8		36.0	36.0			27.0	
Effective Green, g (s)	71.2	68.0		72.8	68.8		36.0	36.0			27.0	
Actuated g/C Ratio	0.59	0.57		0.61	0.57		0.30	0.30			0.22	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	110	1031		668	1056		138	1051			713	
v/s Ratio Prot	c0.02	0.13		0.01	c0.54		c0.04	0.14				
v/s Ratio Perm	0.37			0.10			c0.26				0.22	
v/c Ratio	0.65	0.22		0.17	0.95		1.01	0.48			0.98	
Uniform Delay, d1	26.5	12.9		10.0	23.9		51.2	34.3			46.2	
Progression Factor	2.14	0.68		1.00	1.00		0.75	0.81			0.68	
Incremental Delay, d2	12.1	0.5		0.1	17.7		76.7	1.5			24.5	
Delay (s)	68.9	9.3		10.2	41.7		115.0	29.3			55.8	
Level of Service	E	A		B	D		F	C			E	
Approach Delay (s)		23.1			38.4			47.7			55.8	
Approach LOS		C			D			D			E	

Intersection Summary			
HCM Average Control Delay	43.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	97.5%	ICU Level of Service	F
Analysis Period (min)	15		

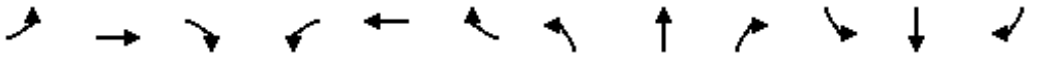
c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	682	89	475	1397	198	313
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	1.00	0.95	1.00	0.88
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	1770	3539	1770	2787
Flt Permitted	1.00	1.00	0.18	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	333	3539	1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	897	117	625	1837	260	412
RTOR Reduction (vph)	0	46	0	0	0	316
Lane Group Flow (vph)	897	71	625	1837	260	96
Turn Type		Perm	pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases		2	6			8
Actuated Green, G (s)	39.4	39.4	84.0	84.0	28.0	28.0
Effective Green, g (s)	39.4	39.4	84.0	84.0	28.0	28.0
Actuated g/C Ratio	0.33	0.33	0.70	0.70	0.23	0.23
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1670	520	719	2477	413	650
v/s Ratio Prot	0.18		c0.29	0.52	c0.15	
v/s Ratio Perm		0.05	c0.31			0.03
v/c Ratio	0.54	0.14	0.87	0.74	0.63	0.15
Uniform Delay, d1	32.9	28.3	24.1	11.2	41.3	36.5
Progression Factor	0.97	0.95	1.00	1.00	0.78	2.73
Incremental Delay, d2	1.2	0.5	10.9	2.0	6.2	0.4
Delay (s)	33.0	27.5	35.0	13.3	38.3	100.2
Level of Service	C	C	C	B	D	F
Approach Delay (s)	32.4			18.8	76.2	
Approach LOS	C			B	E	

Intersection Summary			
HCM Average Control Delay	31.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



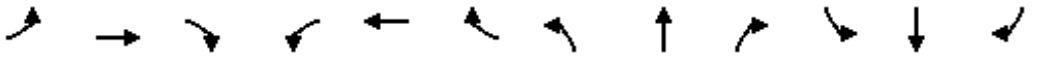
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	222	23	39	805	58	149	230	47	32	134	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	10	10	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5014		1770	3504		1652	1694		1770	1780	
Flt Permitted	0.16	1.00		0.51	1.00		0.31	1.00		0.19	1.00	
Satd. Flow (perm)	295	5014		944	3504		536	1694		362	1780	
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
Growth Factor (vph)	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	122	292	30	51	1059	76	196	302	62	42	176	74
RTOR Reduction (vph)	0	9	0	0	4	0	0	7	0	0	13	0
Lane Group Flow (vph)	122	313	0	51	1131	0	196	357	0	42	237	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	64.4	64.4		56.3	56.3		38.9	30.4		25.1	20.6	
Effective Green, g (s)	64.4	64.4		56.3	56.3		38.9	30.4		25.1	20.6	
Actuated g/C Ratio	0.54	0.54		0.47	0.47		0.32	0.25		0.21	0.17	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	316	2691		475	1644		307	429		129	306	
v/s Ratio Prot	c0.04	0.06		0.00	c0.32		c0.08	c0.21		0.01	0.13	
v/s Ratio Perm	0.17			0.05			0.13			0.06		
v/c Ratio	0.39	0.12		0.11	0.69		0.64	0.83		0.33	0.77	
Uniform Delay, d1	31.3	13.7		17.5	25.0		41.9	42.4		53.0	47.5	
Progression Factor	0.58	0.80		0.63	0.61		0.79	0.70		1.03	0.65	
Incremental Delay, d2	0.7	0.1		0.0	0.9		3.7	11.4		1.4	11.1	
Delay (s)	18.8	11.1		11.1	16.1		37.0	41.2		55.8	41.7	
Level of Service	B	B		B	B		D	D		E	D	
Approach Delay (s)		13.2			15.9			39.7			43.7	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM Average Control Delay	24.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	605	102	121	1672	159	158
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.91		1.00	0.91	1.00	1.00
Frt	0.98		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	4975		1770	5085	1770	1583
Flt Permitted	1.00		0.26	1.00	0.95	1.00
Satd. Flow (perm)	4975		476	5085	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	796	134	159	2199	209	208
RTOR Reduction (vph)	20	0	0	0	0	156
Lane Group Flow (vph)	910	0	159	2199	209	52
Turn Type			pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Actuated Green, G (s)	64.0		82.0	82.0	30.0	30.0
Effective Green, g (s)	64.0		82.0	82.0	30.0	30.0
Actuated g/C Ratio	0.53		0.68	0.68	0.25	0.25
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2653		476	3475	443	396
v/s Ratio Prot	0.18		0.04	c0.43	c0.12	
v/s Ratio Perm			0.19			0.03
v/c Ratio	0.34		0.33	0.63	0.47	0.13
Uniform Delay, d1	16.0		13.0	10.6	38.3	34.9
Progression Factor	0.35		0.17	0.17	0.52	0.18
Incremental Delay, d2	0.3		0.2	0.3	2.8	0.5
Delay (s)	5.8		2.3	2.1	22.8	6.7
Level of Service	A		A	A	C	A
Approach Delay (s)	5.8			2.1	14.8	
Approach LOS	A			A	B	

Intersection Summary			
HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.4%	ICU Level of Service	B
Analysis Period (min)	15		

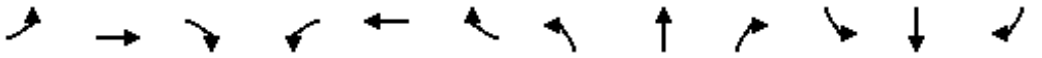
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	54	17	30	336	37	76	401	9	7	170	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	4.0
Lane Util. Factor		1.00			0.95			1.00			1.00	1.00
Frt		0.98			0.99			1.00			1.00	0.85
Flt Protected		0.99			1.00			0.99			1.00	1.00
Satd. Flow (prot)		1797			3477			1844			1859	1583
Flt Permitted		0.65			0.92			0.91			0.98	1.00
Satd. Flow (perm)		1172			3222			1684			1821	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
Growth Factor (vph)	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	26	71	22	39	442	49	100	527	12	9	224	49
RTOR Reduction (vph)	0	7	0	0	7	0	0	1	0	0	0	13
Lane Group Flow (vph)	0	112	0	0	523	0	0	638	0	0	233	36
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		24.9			24.9			87.1			87.1	87.1
Effective Green, g (s)		24.9			24.9			87.1			87.1	87.1
Actuated g/C Ratio		0.21			0.21			0.73			0.73	0.73
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		243			669			1222			1322	1149
v/s Ratio Prot												
v/s Ratio Perm		0.10			c0.16			c0.38			0.13	0.02
v/c Ratio		0.46			0.78			0.52			0.18	0.03
Uniform Delay, d1		41.7			45.0			7.3			5.2	4.6
Progression Factor		1.18			1.00			0.31			0.40	0.03
Incremental Delay, d2		1.3			5.9			1.2			0.3	0.0
Delay (s)		50.7			50.9			3.5			2.3	0.2
Level of Service		D			D			A			A	A
Approach Delay (s)		50.7			50.9			3.5			1.9	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	22.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		

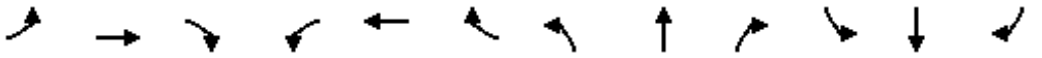
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	368	61	54	908	86	109	516	21	9	553	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	
Lane Util. Factor		0.91			0.91		1.00	0.95			0.95	
Frt		0.98			0.99		1.00	0.99			0.98	
Flt Protected		0.99			1.00		0.95	1.00			1.00	
Satd. Flow (prot)		4959			5010		1770	3518			3461	
Flt Permitted		0.66			0.84		0.25	1.00			0.94	
Satd. Flow (perm)		3272			4218		464	3518			3264	
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
Growth Factor (vph)	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	85	484	80	71	1194	113	143	679	28	12	727	124
RTOR Reduction (vph)	0	15	0	0	9	0	0	2	0	0	10	0
Lane Group Flow (vph)	0	634	0	0	1369	0	143	705	0	0	854	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		49.0			49.0		63.0	63.0			63.0	
Effective Green, g (s)		49.0			49.0		63.0	63.0			63.0	
Actuated g/C Ratio		0.41			0.41		0.52	0.52			0.52	
Clearance Time (s)		4.0			4.0		4.0	4.0			4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1336			1722		244	1847			1714	
v/s Ratio Prot								0.20				
v/s Ratio Perm		0.19			c0.32		c0.31				0.26	
v/c Ratio		0.97dl			0.80		0.59	0.38			0.50	
Uniform Delay, d1		26.0			31.1		19.6	16.9			18.3	
Progression Factor		1.00			0.50		0.56	0.45			0.74	
Incremental Delay, d2		1.2			3.0		9.2	0.6			0.1	
Delay (s)		27.3			18.5		20.2	8.2			13.6	
Level of Service		C			B		C	A			B	
Approach Delay (s)		27.3			18.5			10.2			13.6	
Approach LOS		C			B			B			B	

Intersection Summary			
HCM Average Control Delay	17.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	90.6%	ICU Level of Service	E
Analysis Period (min)	15		

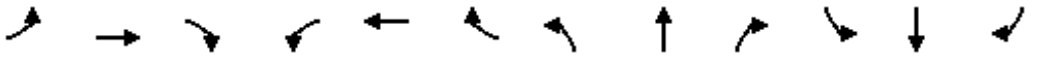
dl Defacto Left Lane. Recode with 1 though lane as a left lane.
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	71	456	50	157	1427	245	137	484	111	212	475	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00		0.95	
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85		0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00		0.99	
Satd. Flow (prot)	1770	5010		1770	4974		1770	1863	1583		3420	
Flt Permitted	0.14	1.00		0.36	1.00		0.15	1.00	1.00		0.53	
Satd. Flow (perm)	266	5010		675	4974		278	1863	1583		1835	
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
Growth Factor (vph)	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	93	600	66	206	1877	322	180	637	146	279	625	147
RTOR Reduction (vph)	0	11	0	0	20	0	0	0	66	0	12	0
Lane Group Flow (vph)	93	655	0	206	2179	0	180	637	80	0	1039	0
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	32.0	32.0		43.0	43.0		61.0	61.0	61.0		53.0	
Effective Green, g (s)	32.0	32.0		43.0	43.0		61.0	61.0	61.0		53.0	
Actuated g/C Ratio	0.27	0.27		0.36	0.36		0.51	0.51	0.51		0.44	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	121	1336		379	1782		191	947	805		810	
v/s Ratio Prot	c0.03	0.13		0.07	c0.44		0.03	c0.34				
v/s Ratio Perm	0.18			0.13			0.45		0.05		c0.57	
v/c Ratio	0.77	0.49		0.54	1.22		0.94	0.67	0.10		1.60dl	
Uniform Delay, d1	39.9	37.1		34.7	38.5		41.4	22.0	15.3		33.5	
Progression Factor	1.00	1.00		0.76	0.74		0.60	0.47	0.11		1.00	
Incremental Delay, d2	24.9	1.3		1.3	104.5		46.5	3.6	0.2		136.8	
Delay (s)	64.8	38.4		27.6	133.1		71.3	13.9	1.9		170.3	
Level of Service	E	D		C	F		E	B	A		F	
Approach Delay (s)		41.6			124.1			22.8			170.3	
Approach LOS		D			F			C			F	

Intersection Summary			
HCM Average Control Delay	102.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	116.5%	ICU Level of Service	H
Analysis Period (min)	15		

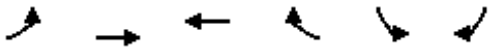
dl Defacto Left Lane. Recode with 1 though lane as a left lane.
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	53	64	158	129	319	35	169	678	10	10	627	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95		1.00	0.95		1.00	0.95	
Frt		0.91			0.99		1.00	1.00		1.00	0.98	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3203			3455		1770	3532		1770	3469	
Flt Permitted		0.62			0.68		0.25	1.00		0.27	1.00	
Satd. Flow (perm)		2012			2386		473	3532		502	3469	
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
Growth Factor (vph)	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	70	84	208	170	420	46	222	892	13	13	825	125
RTOR Reduction (vph)	0	142	0	0	5	0	0	1	0	0	9	0
Lane Group Flow (vph)	0	220	0	0	631	0	222	904	0	13	941	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		34.2			34.2		77.8	77.8		77.8	77.8	
Effective Green, g (s)		34.2			34.2		77.8	77.8		77.8	77.8	
Actuated g/C Ratio		0.29			0.29		0.65	0.65		0.65	0.65	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		573			680		307	2290		325	2249	
v/s Ratio Prot								0.26			0.27	
v/s Ratio Perm		0.11			c0.26		c0.47			0.03		
v/c Ratio		0.38			0.93		0.72	0.39		0.04	0.42	
Uniform Delay, d1		34.5			41.7		14.0	10.0		7.6	10.2	
Progression Factor		1.00			0.35		0.17	0.07		0.52	0.45	
Incremental Delay, d2		0.4			17.1		1.4	0.0		0.2	0.5	
Delay (s)		34.9			31.6		3.7	0.8		4.2	5.1	
Level of Service		C			C		A	A		A	A	
Approach Delay (s)		34.9			31.6			1.4			5.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	147	636	1665	146	64	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91	0.95		0.97	
Frt	1.00	1.00	0.99		0.97	
Flt Protected	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1770	5085	3496		3382	
Flt Permitted	0.05	1.00	1.00		0.96	
Satd. Flow (perm)	87	5085	3496		3382	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	193	836	2190	192	84	17
RTOR Reduction (vph)	0	0	5	0	15	0
Lane Group Flow (vph)	193	836	2377	0	86	0
Turn Type	pm+pt					
Protected Phases	5	2	6		4	
Permitted Phases	2					
Actuated Green, G (s)	96.0	96.0	82.0		16.0	
Effective Green, g (s)	96.0	96.0	82.0		16.0	
Actuated g/C Ratio	0.80	0.80	0.68		0.13	
Clearance Time (s)	4.0	4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	210	4068	2389		451	
v/s Ratio Prot	c0.08	0.16	c0.68		c0.03	
v/s Ratio Perm	0.66					
v/c Ratio	0.92	0.21	0.99		0.19	
Uniform Delay, d1	51.2	2.9	18.8		46.2	
Progression Factor	0.54	0.20	0.40		1.00	
Incremental Delay, d2	38.6	0.1	10.9		0.9	
Delay (s)	66.0	0.7	18.5		47.2	
Level of Service	E	A	B		D	
Approach Delay (s)		12.9	18.5		47.2	
Approach LOS		B	B		D	

Intersection Summary			
HCM Average Control Delay	17.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	86	658	15	12	1569	110	21	16	19	98	13	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.97	1.00		0.96	1.00
Satd. Flow (prot)	1770	5085	1583	1770	3504			1811	1583		1784	1583
Flt Permitted	0.05	1.00	1.00	0.29	1.00			0.78	1.00		0.72	1.00
Satd. Flow (perm)	96	5085	1583	535	3504			1451	1583		1333	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
Growth Factor (vph)	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	113	865	20	16	2064	145	28	21	25	129	17	271
RTOR Reduction (vph)	0	0	4	0	4	0	0	0	21	0	0	89
Lane Group Flow (vph)	113	865	16	16	2205	0	0	49	4	0	146	182
Turn Type	pm+pt		Perm	pm+pt			Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6			8		8	4		4
Actuated Green, G (s)	87.4	87.4	87.4	79.6	79.6			19.0	19.0		19.0	19.0
Effective Green, g (s)	87.4	87.4	87.4	79.6	79.6			19.0	19.0		19.0	19.0
Actuated g/C Ratio	0.73	0.73	0.73	0.66	0.66			0.16	0.16		0.16	0.16
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	201	3704	1153	371	2324			230	251		211	251
v/s Ratio Prot	c0.04	0.17		0.00	c0.63							
v/s Ratio Perm	0.37		0.01	0.03				0.03	0.00		0.11	c0.11
v/c Ratio	0.56	0.23	0.01	0.04	0.95			0.21	0.02		0.69	0.72
Uniform Delay, d1	45.2	5.3	4.5	7.1	18.3			44.0	42.6		47.7	48.0
Progression Factor	0.74	0.90	1.17	0.77	0.61			1.00	1.00		1.00	1.00
Incremental Delay, d2	3.5	0.1	0.0	0.0	7.7			2.1	0.1		17.1	16.6
Delay (s)	37.0	4.9	5.3	5.5	18.8			46.1	42.7		64.8	64.6
Level of Service	D	A	A	A	B			D	D		E	E
Approach Delay (s)		8.6			18.8			45.0			64.7	
Approach LOS		A			B			D			E	

Intersection Summary			
HCM Average Control Delay	21.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	86.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	0	98	737	182	137	42	322	0	0	494	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95			0.95	
Frt	1.00		0.85	1.00	0.94		1.00	1.00			0.98	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770		1583	1770	1743		1770	3539			3455	
Flt Permitted	0.44		1.00	0.95	1.00		0.11	1.00			1.00	
Satd. Flow (perm)	828		1583	1770	1743		208	3539			3455	
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
Growth Factor (vph)	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	67	0	129	969	239	180	55	424	0	0	650	122
RTOR Reduction (vph)	0	0	51	0	23	0	0	0	0	0	12	0
Lane Group Flow (vph)	67	0	78	969	396	0	55	424	0	0	760	0
Turn Type	custom		custom	Perm			pm+pt					
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2					
Actuated Green, G (s)	73.0		73.0	73.0	73.0		39.0	39.0			31.8	
Effective Green, g (s)	73.0		73.0	73.0	73.0		39.0	39.0			31.8	
Actuated g/C Ratio	0.61		0.61	0.61	0.61		0.32	0.32			0.26	
Clearance Time (s)	4.0		4.0	4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	504		963	1077	1060		109	1150			916	
v/s Ratio Prot					0.23		0.01	c0.12			c0.22	
v/s Ratio Perm	0.08		0.05	c0.55			0.15					
v/c Ratio	0.13		0.08	0.90	0.37		0.50	0.37			0.83	
Uniform Delay, d1	10.0		9.7	20.3	11.9		31.2	31.1			41.5	
Progression Factor	1.00		1.00	0.90	0.80		1.00	1.00			0.50	
Incremental Delay, d2	0.1		0.0	3.3	0.2		3.6	0.9			5.1	
Delay (s)	10.1		9.7	21.6	9.8		34.8	32.0			25.8	
Level of Service	B		A	C	A		C	C			C	
Approach Delay (s)		9.9			18.0			32.3			25.8	
Approach LOS		A			B			C			C	

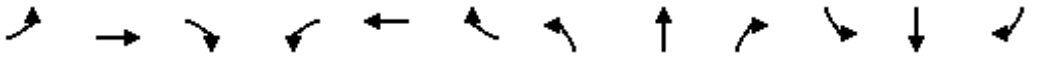
Intersection Summary			
HCM Average Control Delay	22.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	154	150	458	896	420	320
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.36	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	674	3539	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	203	197	602	1178	552	421
RTOR Reduction (vph)	0	165	0	0	0	91
Lane Group Flow (vph)	203	32	602	1178	552	330
Turn Type		Perm	pm+pt			pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases		4	2			6
Actuated Green, G (s)	19.2	19.2	92.8	92.8	58.7	77.9
Effective Green, g (s)	19.2	19.2	92.8	92.8	58.7	77.9
Actuated g/C Ratio	0.16	0.16	0.77	0.77	0.49	0.65
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	283	253	796	2737	1731	1080
v/s Ratio Prot	c0.11		c0.19	0.33	0.16	0.05
v/s Ratio Perm		0.02	c0.40			0.16
v/c Ratio	0.72	0.12	0.76	0.43	0.32	0.31
Uniform Delay, d1	47.8	43.2	6.8	4.6	18.6	9.2
Progression Factor	0.79	1.25	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.8	0.2	4.1	0.5	0.5	0.2
Delay (s)	45.5	54.3	10.9	5.1	19.0	9.4
Level of Service	D	D	B	A	B	A
Approach Delay (s)	49.8			7.1	14.9	
Approach LOS	D			A	B	

Intersection Summary			
HCM Average Control Delay	14.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	221	21	23	668	92	302	413	38	34	215	137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1838		1770	1829		1770	1839		1770	1863	1583
Flt Permitted	0.06	1.00		0.50	1.00		0.19	1.00		0.22	1.00	1.00
Satd. Flow (perm)	121	1838		922	1829		346	1839		414	1863	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
Growth Factor (vph)	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	53	291	28	30	879	121	397	543	50	45	283	180
RTOR Reduction (vph)	0	3	0	0	4	0	0	3	0	0	0	54
Lane Group Flow (vph)	53	316	0	30	996	0	397	590	0	45	283	126
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	65.0	61.8		63.4	61.0		43.8	36.6		21.2	18.0	18.0
Effective Green, g (s)	65.0	61.8		63.4	61.0		43.8	36.6		21.2	18.0	18.0
Actuated g/C Ratio	0.54	0.52		0.53	0.51		0.36	0.30		0.18	0.15	0.15
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	110	947		504	930		385	561		109	279	237
v/s Ratio Prot	c0.01	0.17		0.00	c0.54		c0.19	c0.32		0.01	0.15	
v/s Ratio Perm	0.25			0.03			0.19			0.06		0.08
v/c Ratio	0.48	0.33		0.06	1.07		1.03	1.05		0.41	1.01	0.53
Uniform Delay, d1	27.3	17.0		13.8	29.5		44.5	41.7		54.3	51.0	47.1
Progression Factor	0.96	0.78		0.62	0.84		0.98	0.97		1.00	1.00	1.00
Incremental Delay, d2	3.2	0.9		0.0	48.8		54.1	52.4		2.5	57.6	8.4
Delay (s)	29.5	14.2		8.6	73.7		97.9	92.8		56.9	108.6	55.5
Level of Service	C	B		A	E		F	F		E	F	E
Approach Delay (s)		16.4			71.8			94.9			85.2	
Approach LOS		B			E			F			F	

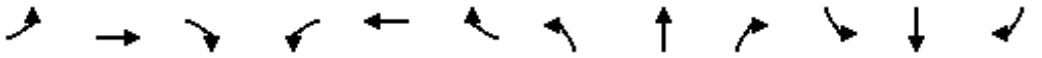
Intersection Summary			
HCM Average Control Delay	74.9	HCM Level of Service	E
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	65	7	12	614	190	103	307	13	38	148	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0			4.0	
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	
Frt		0.99			1.00	0.85		1.00			0.97	
Flt Protected		0.99			1.00	1.00		0.99			0.99	
Satd. Flow (prot)		1829			1861	1583		1833			1792	
Flt Permitted		0.66			0.99	1.00		0.78			0.85	
Satd. Flow (perm)		1222			1853	1583		1444			1533	
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
Growth Factor (vph)	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	16	85	9	16	808	250	135	404	17	50	195	72
RTOR Reduction (vph)	0	3	0	0	0	125	0	1	0	0	9	0
Lane Group Flow (vph)	0	108	0	0	824	125	0	555	0	0	308	0
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)		60.0			60.0	60.0		52.0			52.0	
Effective Green, g (s)		60.0			60.0	60.0		52.0			52.0	
Actuated g/C Ratio		0.50			0.50	0.50		0.43			0.43	
Clearance Time (s)		4.0			4.0	4.0		4.0			4.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		611			927	792		626			664	
v/s Ratio Prot												
v/s Ratio Perm		0.09			c0.44	0.08		c0.38			0.20	
v/c Ratio		0.18			0.89	0.16		0.89			0.46	
Uniform Delay, d1		16.4			27.0	16.3		31.3			24.1	
Progression Factor		1.00			0.68	0.16		1.00			0.53	
Incremental Delay, d2		0.6			12.2	0.4		16.9			2.3	
Delay (s)		17.1			30.6	3.1		48.1			15.0	
Level of Service		B			C	A		D			B	
Approach Delay (s)		17.1			24.2			48.1			15.0	
Approach LOS		B			C			D			B	

Intersection Summary			
HCM Average Control Delay	28.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	91.4%	ICU Level of Service	F
Analysis Period (min)	15		

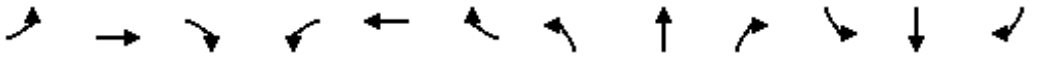
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	368	493	96	57	1090	45	366	675	59	30	222	982
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.98		1.00	0.99		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1593	3108		1593	3166		1593	3147		1593	3185	1425
Flt Permitted	0.95	1.00		0.14	1.00		0.53	1.00		0.12	1.00	1.00
Satd. Flow (perm)	1593	3108		230	3166		892	3147		201	3185	1425
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
Growth Factor (vph)	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	484	648	126	75	1434	59	481	888	78	39	292	1292
RTOR Reduction (vph)	0	14	0	0	3	0	0	5	0	0	0	241
Lane Group Flow (vph)	484	760	0	75	1490	0	481	961	0	39	292	1052
Turn Type	Prot			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6			8			4		4
Actuated Green, G (s)	19.8	49.0		35.6	35.6		52.6	46.2		44.4	42.0	42.0
Effective Green, g (s)	19.8	49.0		35.6	35.6		52.6	46.2		44.4	42.0	42.0
Actuated g/C Ratio	0.16	0.41		0.30	0.30		0.44	0.38		0.37	0.35	0.35
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	263	1269		141	939		430	1212		102	1115	499
v/s Ratio Prot	c0.30	0.24		0.03	c0.47		c0.06	0.31		0.01	0.09	
v/s Ratio Perm				0.13			0.43			0.13		c0.74
v/c Ratio	1.84	0.60		0.53	1.59		1.12	0.79		0.38	0.26	2.11
Uniform Delay, d1	50.1	27.8		33.1	42.2		34.1	32.7		45.8	27.9	39.0
Progression Factor	1.00	1.00		0.91	0.93		0.76	0.77		0.87	0.87	0.69
Incremental Delay, d2	392.6	2.1		2.1	267.0		64.5	1.3		2.3	0.1	504.7
Delay (s)	442.7	29.9		32.4	306.3		90.3	26.4		42.2	24.4	531.6
Level of Service	F	C		C	F		F	C		D	C	F
Approach Delay (s)		188.7			293.2			47.6			428.6	
Approach LOS		F			F			D			F	

Intersection Summary			
HCM Average Control Delay	247.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	161.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	57	30	26	388	92	321	960	49	67	305	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		0.96			0.97			0.99			0.99	
Flt Protected		0.99			1.00			0.99			0.99	
Satd. Flow (prot)		3359			3434			3478			3484	
Flt Permitted		0.72			0.93			0.69			0.55	
Satd. Flow (perm)		2437			3206			2436			1933	
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
Growth Factor (vph)	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	16	75	39	34	510	121	422	1263	64	88	401	24
RTOR Reduction (vph)	0	31	0	0	16	0	0	2	0	0	3	0
Lane Group Flow (vph)	0	99	0	0	649	0	0	1747	0	0	510	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		24.0			24.0			88.0			88.0	
Effective Green, g (s)		24.0			24.0			88.0			88.0	
Actuated g/C Ratio		0.20			0.20			0.73			0.73	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		487			641			1786			1418	
v/s Ratio Prot												
v/s Ratio Perm		0.04			c0.20			c0.72			0.26	
v/c Ratio		0.20			1.01			0.98			0.36	
Uniform Delay, d1		40.0			48.0			15.1			5.8	
Progression Factor		1.00			1.00			0.62			0.84	
Incremental Delay, d2		0.2			38.7			13.8			0.7	
Delay (s)		40.2			86.7			23.2			5.5	
Level of Service		D			F			C			A	
Approach Delay (s)		40.2			86.7			23.2			5.5	
Approach LOS		D			F			C			A	

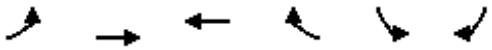
Intersection Summary			
HCM Average Control Delay	34.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	89.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	22	74	13	22	304	37	21	1141	47	12	216	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00			0.95			1.00	1.00
Frt	1.00	1.00	0.85		0.99			0.99			1.00	0.85
Flt Protected	0.95	1.00	1.00		1.00			1.00			1.00	1.00
Satd. Flow (prot)	1770	1863	1583		1831			3515			1858	1583
Flt Permitted	0.24	1.00	1.00		0.98			0.94			0.88	1.00
Satd. Flow (perm)	445	1863	1583		1798			3322			1639	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
Growth Factor (vph)	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	29	97	17	29	400	49	28	1501	62	16	284	74
RTOR Reduction (vph)	0	0	12	0	4	0	0	2	0	0	0	27
Lane Group Flow (vph)	29	97	5	0	474	0	0	1589	0	0	300	47
Turn Type	Perm		Perm	Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		6
Actuated Green, G (s)	35.8	35.8	35.8		35.8			76.2			76.2	76.2
Effective Green, g (s)	35.8	35.8	35.8		35.8			76.2			76.2	76.2
Actuated g/C Ratio	0.30	0.30	0.30		0.30			0.64			0.64	0.64
Clearance Time (s)	4.0	4.0	4.0		4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	133	556	472		536			2109			1041	1005
v/s Ratio Prot		0.05										
v/s Ratio Perm	0.07		0.00		c0.26			c0.48			0.18	0.03
v/c Ratio	0.22	0.17	0.01		0.89			0.75			0.29	0.05
Uniform Delay, d1	31.6	31.2	29.6		40.1			15.3			9.8	8.2
Progression Factor	1.00	1.00	1.00		1.00			1.00			0.68	0.48
Incremental Delay, d2	0.8	0.2	0.0		16.0			2.5			0.7	0.1
Delay (s)	32.4	31.3	29.6		56.1			17.9			7.3	4.1
Level of Service	C	C	C		E			B			A	A
Approach Delay (s)		31.3			56.1			17.9			6.7	
Approach LOS		C			E			B			A	

Intersection Summary			
HCM Average Control Delay	24.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	95.0%	ICU Level of Service	F
Analysis Period (min)	15		

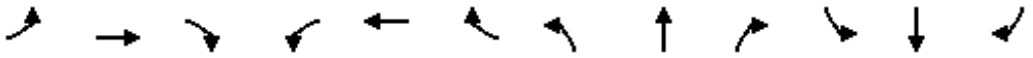
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	43	250	1222	126	72	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frt		1.00	0.99		1.00	0.85
Flt Protected		0.99	1.00		0.95	1.00
Satd. Flow (prot)		3513	3490		1770	1583
Flt Permitted		0.63	1.00		0.95	1.00
Satd. Flow (perm)		2241	3490		1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	57	329	1607	166	95	145
RTOR Reduction (vph)	0	0	5	0	0	59
Lane Group Flow (vph)	0	386	1768	0	95	86
Turn Type	Perm					Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		99.7	99.7		12.3	12.3
Effective Green, g (s)		99.7	99.7		12.3	12.3
Actuated g/C Ratio		0.83	0.83		0.10	0.10
Clearance Time (s)		4.0	4.0		4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1862	2900		181	162
v/s Ratio Prot			c0.51		0.05	
v/s Ratio Perm		0.17				c0.05
v/c Ratio		0.21	0.61		0.52	0.53
Uniform Delay, d1		2.1	3.5		51.1	51.1
Progression Factor		1.00	0.53		0.73	0.56
Incremental Delay, d2		0.3	0.8		2.6	3.0
Delay (s)		2.3	2.7		39.7	31.4
Level of Service		A	A		D	C
Approach Delay (s)		2.3	2.7		34.6	
Approach LOS		A	A		C	

Intersection Summary			
HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		

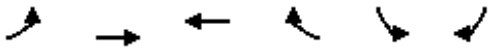
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	197	28	18	1275	37	129	383	55	16	63	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			0.95			1.00			1.00	
Frt		0.98			1.00			0.99			0.98	
Flt Protected		1.00			1.00			0.99			0.99	
Satd. Flow (prot)		1829			3522			1818			1812	
Flt Permitted		0.65			0.95			0.90			0.88	
Satd. Flow (perm)		1197			3342			1648			1605	
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
Growth Factor (vph)	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	11	259	37	24	1677	49	170	504	72	21	83	17
RTOR Reduction (vph)	0	5	0	0	2	0	0	4	0	0	4	0
Lane Group Flow (vph)	0	302	0	0	1748	0	0	742	0	0	117	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		37.0			37.0			29.0			29.0	
Effective Green, g (s)		37.0			37.0			29.0			29.0	
Actuated g/C Ratio		0.50			0.50			0.39			0.39	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		599			1671			646			629	
v/s Ratio Prot												
v/s Ratio Perm		0.25			c0.52			c0.45			0.07	
v/c Ratio		0.50			1.05			1.15			0.19	
Uniform Delay, d1		12.4			18.5			22.5			14.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.7			35.2			83.9			0.1	
Delay (s)		13.0			53.7			106.4			14.9	
Level of Service		B			D			F			B	
Approach Delay (s)		13.0			53.7			106.4			14.9	
Approach LOS		B			D			F			B	

Intersection Summary			
HCM Average Control Delay	61.2	HCM Level of Service	E
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	74.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	100.7%	ICU Level of Service	G
Analysis Period (min)	15		

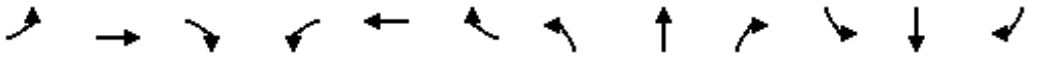
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	24	319	1281	90	31	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.13	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	236	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	32	420	1685	118	41	91
RTOR Reduction (vph)	0	0	0	16	0	56
Lane Group Flow (vph)	32	420	1685	102	41	35
Turn Type	Perm			Perm		Perm
Protected Phases		2	6		4	
Permitted Phases	2			6		4
Actuated Green, G (s)	103.3	103.3	103.3	103.3	8.7	8.7
Effective Green, g (s)	103.3	103.3	103.3	103.3	8.7	8.7
Actuated g/C Ratio	0.86	0.86	0.86	0.86	0.07	0.07
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	203	3046	3046	1363	128	115
v/s Ratio Prot		0.12	c0.48		c0.02	
v/s Ratio Perm	0.14			0.06		0.02
v/c Ratio	0.16	0.14	0.55	0.07	0.32	0.31
Uniform Delay, d1	1.3	1.3	2.2	1.2	52.8	52.8
Progression Factor	1.57	1.64	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.6	0.1	0.7	0.1	1.5	1.5
Delay (s)	3.7	2.2	2.9	1.3	54.3	54.3
Level of Service	A	A	A	A	D	D
Approach Delay (s)		2.4	2.8		54.3	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	5.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		

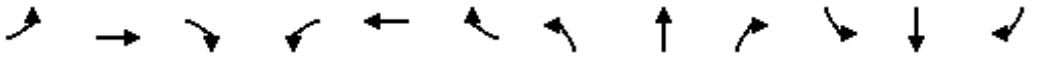
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	106	663	70	79	319	55	92	585	115	54	576	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95			0.95	
Frt	1.00	0.99		1.00	0.98		1.00	0.98			1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770	1836		1770	1822		1770	3452			3516	
Flt Permitted	0.20	1.00		0.09	1.00		0.18	1.00			0.63	
Satd. Flow (perm)	372	1836		164	1822		332	3452			2234	
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
Growth Factor (vph)	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	139	872	92	104	420	72	121	769	151	71	758	14
RTOR Reduction (vph)	0	3	0	0	5	0	0	13	0	0	1	0
Lane Group Flow (vph)	139	961	0	104	487	0	121	907	0	0	842	0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	54.0	54.0		49.3	49.3		50.0	50.0			42.0	
Effective Green, g (s)	54.0	54.0		49.3	49.3		50.0	50.0			42.0	
Actuated g/C Ratio	0.45	0.45		0.41	0.41		0.42	0.42			0.35	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	269	826		121	749		186	1438			782	
v/s Ratio Prot	0.04	c0.52		0.03	c0.27		0.02	c0.26				
v/s Ratio Perm	0.20			0.32			0.25				c0.38	
v/c Ratio	0.52	1.16		0.86	0.65		0.65	0.63			1.08	
Uniform Delay, d1	23.2	33.0		54.7	28.4		43.3	27.7			39.0	
Progression Factor	1.00	1.00		1.00	1.00		0.74	0.73			1.00	
Incremental Delay, d2	1.7	86.6		41.7	2.0		7.6	2.0			54.7	
Delay (s)	24.9	119.6		96.3	30.4		39.6	22.4			93.7	
Level of Service	C	F		F	C		D	C			F	
Approach Delay (s)		107.6			41.9			24.4			93.7	
Approach LOS		F			D			C			F	

Intersection Summary			
HCM Average Control Delay	69.2	HCM Level of Service	E
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	111.6%	ICU Level of Service	H
Analysis Period (min)	15		

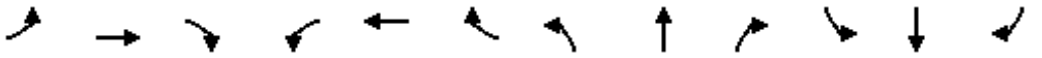
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	112	0	187	382	68	58	65	560	0	0	635	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95			0.95	
Frt	1.00		0.85	1.00	0.93		1.00	1.00			0.98	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770		1583	1770	1734		1770	3539			3486	
Flt Permitted	0.59		1.00	0.95	1.00		0.20	1.00			1.00	
Satd. Flow (perm)	1099		1583	1770	1734		376	3539			3486	
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
Growth Factor (vph)	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	147	0	246	502	89	76	85	737	0	0	835	93
RTOR Reduction (vph)	0	0	140	0	30	0	0	0	0	0	6	0
Lane Group Flow (vph)	147	0	106	502	135	0	85	737	0	0	922	0
Turn Type	custom		custom	Perm			pm+pt					
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2					
Actuated Green, G (s)	41.1		41.1	41.1	41.1		70.9	70.9			60.4	
Effective Green, g (s)	41.1		41.1	41.1	41.1		70.9	70.9			60.4	
Actuated g/C Ratio	0.34		0.34	0.34	0.34		0.59	0.59			0.50	
Clearance Time (s)	4.0		4.0	4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	376		542	606	594		298	2091			1755	
v/s Ratio Prot					0.08		0.02	c0.21			c0.26	
v/s Ratio Perm	0.13		0.07	c0.28			0.15					
v/c Ratio	0.39		0.20	0.83	0.23		0.29	0.35			0.53	
Uniform Delay, d1	29.9		27.8	36.2	28.1		13.0	12.7			20.1	
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00			0.17	
Incremental Delay, d2	0.7		0.2	9.1	0.2		0.5	0.5			0.1	
Delay (s)	30.6		28.0	45.3	28.3		13.5	13.2			3.5	
Level of Service	C		C	D	C		B	B			A	
Approach Delay (s)		29.0			41.1			13.2			3.5	
Approach LOS		C			D			B			A	

Intersection Summary			
HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



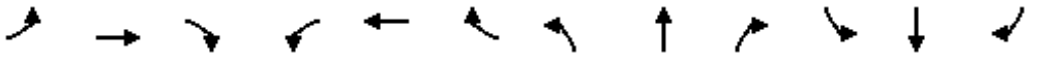
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	154	793	170	122	318	43	52	145	40	54	275	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	10	10	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.98		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4950		1770	3476		1652	1682		1770	1817	
Flt Permitted	0.40	1.00		0.13	1.00		0.29	1.00		0.33	1.00	
Satd. Flow (perm)	751	4950		237	3476		509	1682		607	1817	
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
Growth Factor (vph)	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	203	1043	224	160	418	57	68	191	53	71	362	70
RTOR Reduction (vph)	0	34	0	0	11	0	0	11	0	0	8	0
Lane Group Flow (vph)	203	1233	0	160	464	0	68	233	0	71	424	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	46.2	36.3		44.2	35.3		25.6	25.6		25.0	25.0	
Effective Green, g (s)	46.2	36.3		44.2	35.3		25.6	25.6		25.0	25.0	
Actuated g/C Ratio	0.51	0.40		0.49	0.39		0.28	0.28		0.28	0.28	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	498	1997		268	1363		193	478		210	505	
v/s Ratio Prot	0.04	c0.25		c0.06	0.13		0.01	c0.14		0.01	c0.23	
v/s Ratio Perm	0.16			0.23			0.09			0.08		
v/c Ratio	0.41	0.62		0.60	0.34		0.35	0.49		0.34	0.84	
Uniform Delay, d1	12.3	21.3		14.6	19.2		32.7	26.7		25.1	30.6	
Progression Factor	0.18	0.25		1.00	1.00		0.63	0.65		1.00	1.00	
Incremental Delay, d2	0.2	0.6		3.6	0.7		1.0	0.7		1.0	11.7	
Delay (s)	2.4	5.9		18.1	19.9		21.5	18.1		26.0	42.3	
Level of Service	A	A		B	B		C	B		C	D	
Approach Delay (s)		5.5			19.4			18.9			40.0	
Approach LOS		A			B			B			D	

Intersection Summary			
HCM Average Control Delay	15.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1916	150	183	966	89	216
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.91		1.00	0.91	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	5030		1770	5085	1770	1583
Flt Permitted	1.00		0.06	1.00	0.95	1.00
Satd. Flow (perm)	5030		120	5085	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	2520	197	241	1270	117	284
RTOR Reduction (vph)	9	0	0	0	0	180
Lane Group Flow (vph)	2708	0	241	1270	117	104
Turn Type			pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Actuated Green, G (s)	58.0		76.0	76.0	16.0	16.0
Effective Green, g (s)	58.0		76.0	76.0	16.0	16.0
Actuated g/C Ratio	0.58		0.76	0.76	0.16	0.16
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2917		322	3865	283	253
v/s Ratio Prot	c0.54		c0.10	0.25	c0.07	
v/s Ratio Perm			0.46			0.07
v/c Ratio	0.93		0.75	0.33	0.41	0.41
Uniform Delay, d1	19.1		33.4	3.8	37.8	37.8
Progression Factor	0.30		0.44	0.24	1.00	1.00
Incremental Delay, d2	0.7		6.9	0.2	4.4	4.9
Delay (s)	6.5		21.8	1.1	42.2	42.7
Level of Service	A		C	A	D	D
Approach Delay (s)	6.5			4.4	42.5	
Approach LOS	A			A	D	

Intersection Summary			
HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		

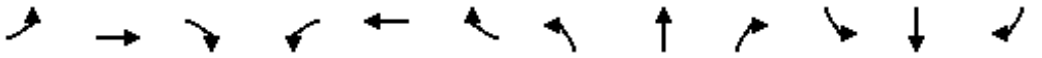
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	354	155	9	122	27	14	184	52	50	497	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	4.0
Lane Util. Factor		1.00			0.95			1.00			1.00	1.00
Frt		0.96			0.97			0.97			1.00	0.85
Flt Protected		1.00			1.00			1.00			1.00	1.00
Satd. Flow (prot)		1786			3437			1806			1854	1583
Flt Permitted		0.98			0.92			0.87			0.94	1.00
Satd. Flow (perm)		1752			3159			1579			1748	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
Growth Factor (vph)	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	33	466	204	12	160	36	18	242	68	66	654	105
RTOR Reduction (vph)	0	17	0	0	20	0	0	10	0	0	0	53
Lane Group Flow (vph)	0	686	0	0	188	0	0	318	0	0	720	52
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		37.6			37.6			44.4			44.4	44.4
Effective Green, g (s)		37.6			37.6			44.4			44.4	44.4
Actuated g/C Ratio		0.42			0.42			0.49			0.49	0.49
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		732			1320			779			862	781
v/s Ratio Prot												
v/s Ratio Perm		c0.39			0.06			0.20			c0.41	0.03
v/c Ratio		0.94			0.14			0.41			0.84	0.07
Uniform Delay, d1		25.1			16.2			14.5			19.6	11.9
Progression Factor		0.51			1.00			0.81			0.83	0.93
Incremental Delay, d2		13.6			0.0			1.6			7.8	0.1
Delay (s)		26.3			16.3			13.3			24.1	11.2
Level of Service		C			B			B			C	B
Approach Delay (s)		26.3			16.3			13.3			22.5	
Approach LOS		C			B			B			C	

Intersection Summary			
HCM Average Control Delay	21.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	102.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	119	1041	185	23	373	54	84	381	25	40	654	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	
Lane Util. Factor		0.91			0.91		1.00	0.95			0.95	
Frt		0.98			0.98		1.00	0.99			0.99	
Flt Protected		1.00			1.00		0.95	1.00			1.00	
Satd. Flow (prot)		4959			4981		1770	3506			3484	
Flt Permitted		0.78			0.79		0.16	1.00			0.89	
Satd. Flow (perm)		3896			3960		300	3506			3120	
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
Growth Factor (vph)	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	157	1369	243	30	491	71	110	501	33	53	860	87
RTOR Reduction (vph)	0	24	0	0	19	0	0	5	0	0	8	0
Lane Group Flow (vph)	0	1745	0	0	573	0	110	529	0	0	992	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		43.0			43.0		39.0	39.0			39.0	
Effective Green, g (s)		43.0			43.0		39.0	39.0			39.0	
Actuated g/C Ratio		0.48			0.48		0.43	0.43			0.43	
Clearance Time (s)		4.0			4.0		4.0	4.0			4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1861			1892		130	1519			1352	
v/s Ratio Prot								0.15				
v/s Ratio Perm		c0.45			0.14		c0.37				0.32	
v/c Ratio		0.94			0.30		0.85	0.35			0.73	
Uniform Delay, d1		22.2			14.3		22.8	17.0			21.2	
Progression Factor		1.00			1.26		0.89	0.82			1.00	
Incremental Delay, d2		10.6			0.4		42.7	0.6			3.6	
Delay (s)		32.8			18.4		62.9	14.5			24.8	
Level of Service		C			B		E	B			C	
Approach Delay (s)		32.8			18.4			22.8			24.8	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM Average Control Delay	27.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	95.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	153	1680	103	142	722	177	118	335	151	327	507	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00		0.95	
Frt	1.00	0.99		1.00	0.97		1.00	1.00	0.85		0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00		0.98	
Satd. Flow (prot)	1770	5041		1770	4935		1770	1863	1583		3436	
Flt Permitted	0.11	1.00		0.13	1.00		0.10	1.00	1.00		0.64	
Satd. Flow (perm)	213	5041		240	4935		177	1863	1583		2254	
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
Growth Factor (vph)	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	201	2210	135	187	950	233	155	441	199	430	667	92
RTOR Reduction (vph)	0	7	0	0	42	0	0	0	64	0	7	0
Lane Group Flow (vph)	201	2338	0	187	1141	0	155	441	135	0	1182	0
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	46.0	38.0		35.0	31.0		46.0	46.0	46.0		38.0	
Effective Green, g (s)	46.0	38.0		35.0	31.0		46.0	46.0	46.0		38.0	
Actuated g/C Ratio	0.46	0.38		0.35	0.31		0.46	0.46	0.46		0.38	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	269	1916		145	1530		145	857	728		857	
v/s Ratio Prot	0.08	c0.46		c0.05	0.23		c0.04	0.24				
v/s Ratio Perm	0.26			c0.40			0.45		0.09		c0.52	
v/c Ratio	0.75	1.22		1.29	0.75		1.07	0.51	0.19		1.38	
Uniform Delay, d1	33.8	31.0		45.1	31.0		26.2	19.1	15.9		31.0	
Progression Factor	1.00	1.00		1.29	0.99		1.00	1.00	1.00		1.00	
Incremental Delay, d2	10.8	104.1		170.8	3.2		94.3	2.2	0.6		178.1	
Delay (s)	44.6	135.1		228.9	33.7		120.6	21.3	16.5		209.1	
Level of Service	D	F		F	C		F	C	B		F	
Approach Delay (s)		128.0			60.4			39.5			209.1	
Approach LOS		F			E			D			F	

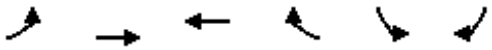
Intersection Summary			
HCM Average Control Delay	116.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.29		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	117.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	54	339	217	59	134	36	125	541	134	49	959	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95		1.00	0.95		1.00	0.95	
Frt		0.95			0.98		1.00	0.97		1.00	0.99	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3336			3412		1770	3434		1770	3501	
Flt Permitted		0.87			0.55		0.15	1.00		0.29	1.00	
Satd. Flow (perm)		2906			1896		274	3434		532	3501	
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
Growth Factor (vph)	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	71	446	285	78	176	47	164	712	176	64	1261	99
RTOR Reduction (vph)	0	66	0	0	17	0	0	24	0	0	6	0
Lane Group Flow (vph)	0	736	0	0	284	0	164	864	0	64	1354	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		22.0			22.0		60.0	60.0		60.0	60.0	
Effective Green, g (s)		22.0			22.0		60.0	60.0		60.0	60.0	
Actuated g/C Ratio		0.24			0.24		0.67	0.67		0.67	0.67	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		710			463		183	2289		355	2334	
v/s Ratio Prot								0.25			0.39	
v/s Ratio Perm		c0.25			0.15		c0.60			0.12		
v/c Ratio		1.04			0.61		0.90	0.38		0.18	0.58	
Uniform Delay, d1		34.0			30.2		12.4	6.7		5.7	8.2	
Progression Factor		1.00			1.09		1.00	1.00		0.55	0.48	
Incremental Delay, d2		43.4			2.4		43.8	0.5		0.9	0.8	
Delay (s)		77.4			35.2		56.2	7.2		4.0	4.8	
Level of Service		E			D		E	A		A	A	
Approach Delay (s)		77.4			35.2			14.8			4.7	
Approach LOS		E			D			B			A	

Intersection Summary			
HCM Average Control Delay	26.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	86.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	245	1784	905	197	242	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91	0.95		0.97	
Frt	1.00	1.00	0.97		0.98	
Flt Protected	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1770	5085	3444		3397	
Flt Permitted	0.08	1.00	1.00		0.96	
Satd. Flow (perm)	142	5085	3444		3397	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	322	2346	1190	259	318	46
RTOR Reduction (vph)	0	0	19	0	12	0
Lane Group Flow (vph)	322	2346	1430	0	352	0
Turn Type	pm+pt					
Protected Phases	5	2	6		4	
Permitted Phases	2					
Actuated Green, G (s)	76.0	76.0	51.0		16.0	
Effective Green, g (s)	76.0	76.0	51.0		16.0	
Actuated g/C Ratio	0.76	0.76	0.51		0.16	
Clearance Time (s)	4.0	4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	450	3865	1756		544	
v/s Ratio Prot	c0.15	0.46	c0.42		c0.10	
v/s Ratio Perm	0.39					
v/c Ratio	0.72	0.61	0.81		0.65	
Uniform Delay, d1	25.6	5.3	20.5		39.4	
Progression Factor	1.03	0.27	0.39		1.00	
Incremental Delay, d2	2.3	0.3	2.9		5.9	
Delay (s)	28.7	1.7	11.0		45.2	
Level of Service	C	A	B		D	
Approach Delay (s)		5.0	11.0		45.2	
Approach LOS		A	B		D	

Intersection Summary			
HCM Average Control Delay	10.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	100.0	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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	180	1718	74	31	911	98	62	36	63	173	40	172
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.97	1.00		0.96	1.00
Satd. Flow (prot)	1770	5085	1583	1770	3488			1805	1583		1790	1583
Flt Permitted	0.08	1.00	1.00	0.09	1.00			0.56	1.00		0.65	1.00
Satd. Flow (perm)	154	5085	1583	168	3488			1044	1583		1210	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
Growth Factor (vph)	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	237	2260	97	41	1198	129	82	47	83	228	53	226
RTOR Reduction (vph)	0	0	10	0	8	0	0	0	58	0	0	106
Lane Group Flow (vph)	237	2260	87	41	1319	0	0	129	25	0	281	120
Turn Type	pm+pt		Perm	pm+pt			Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6			8		8	4		4
Actuated Green, G (s)	61.9	55.5	55.5	46.8	44.4			30.1	30.1		30.1	30.1
Effective Green, g (s)	61.9	55.5	55.5	46.8	44.4			30.1	30.1		30.1	30.1
Actuated g/C Ratio	0.62	0.56	0.56	0.47	0.44			0.30	0.30		0.30	0.30
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	313	2822	879	117	1549			314	476		364	476
v/s Ratio Prot	c0.10	c0.44		0.01	c0.38							
v/s Ratio Perm	0.37		0.06	0.16				0.12	0.02		c0.23	0.08
v/c Ratio	0.76	0.80	0.10	0.35	0.85			0.41	0.05		0.77	0.25
Uniform Delay, d1	32.4	17.8	10.5	40.3	24.8			27.9	24.8		31.8	26.4
Progression Factor	0.53	0.36	0.49	1.08	1.14			1.00	1.00		1.00	1.00
Incremental Delay, d2	8.1	2.0	0.2	1.6	5.5			3.9	0.2		14.7	1.3
Delay (s)	25.1	8.5	5.3	44.9	33.9			31.8	25.0		46.5	27.7
Level of Service	C	A	A	D	C			C	C		D	C
Approach Delay (s)		9.9			34.2			29.2			38.1	
Approach LOS		A			C			C			D	

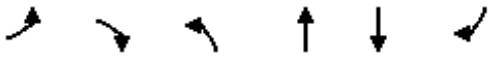
Intersection Summary			
HCM Average Control Delay	20.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1523	345	327	711	270	516
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	1.00	0.95	1.00	0.88
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	1770	3539	1770	2787
Flt Permitted	1.00	1.00	0.09	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	159	3539	1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	2003	454	430	935	355	679
RTOR Reduction (vph)	0	107	0	0	0	502
Lane Group Flow (vph)	2003	347	430	935	355	177
Turn Type		Perm	pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases		2	6			8
Actuated Green, G (s)	43.0	43.0	69.0	69.0	23.0	23.0
Effective Green, g (s)	43.0	43.0	69.0	69.0	23.0	23.0
Actuated g/C Ratio	0.43	0.43	0.69	0.69	0.23	0.23
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2187	681	464	2442	407	641
v/s Ratio Prot	0.39		c0.20	0.26	c0.20	
v/s Ratio Perm		0.22	c0.44			0.06
v/c Ratio	0.92	0.51	0.93	0.38	0.87	0.28
Uniform Delay, d1	26.8	20.8	31.8	6.5	37.1	31.7
Progression Factor	0.47	0.19	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.0	1.7	24.5	0.5	21.9	1.1
Delay (s)	17.6	5.7	56.3	7.0	59.0	32.7
Level of Service	B	A	E	A	E	C
Approach Delay (s)	15.4			22.5	41.7	
Approach LOS	B			C	D	

Intersection Summary			
HCM Average Control Delay	23.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		

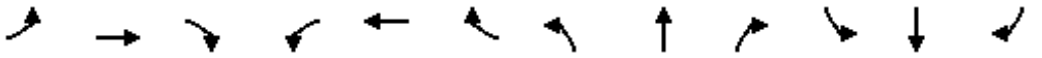
c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	329	504	227	651	1095	225
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.09	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	169	3539	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	433	663	299	856	1440	296
RTOR Reduction (vph)	0	157	0	0	0	22
Lane Group Flow (vph)	433	506	299	856	1440	274
Turn Type		Perm	pm+pt			pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases		4	2			6
Actuated Green, G (s)	28.0	28.0	54.0	54.0	40.0	68.0
Effective Green, g (s)	28.0	28.0	54.0	54.0	40.0	68.0
Actuated g/C Ratio	0.31	0.31	0.60	0.60	0.44	0.76
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	551	492	279	2123	1573	1266
v/s Ratio Prot	0.24		c0.12	0.24	0.41	0.07
v/s Ratio Perm		c0.32	c0.52			0.11
v/c Ratio	0.79	1.03	1.07	0.40	0.92	0.22
Uniform Delay, d1	28.3	31.0	26.7	9.5	23.4	3.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.3	48.0	74.2	0.6	9.8	0.1
Delay (s)	35.5	79.0	100.9	10.1	33.3	3.3
Level of Service	D	E	F	B	C	A
Approach Delay (s)	61.8			33.6	28.2	
Approach LOS	E			C	C	

Intersection Summary			
HCM Average Control Delay	39.0	HCM Level of Service	D
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		

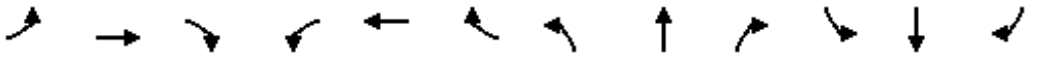
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	146	609	107	27	316	73	94	311	128	70	377	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	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	0.97		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1821		1770	1810		1770	1781		1770	1863	1583
Flt Permitted	0.17	1.00		0.10	1.00		0.21	1.00		0.12	1.00	1.00
Satd. Flow (perm)	311	1821		193	1810		382	1781		226	1863	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
Growth Factor (vph)	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	192	801	141	36	416	96	124	409	168	92	496	149
RTOR Reduction (vph)	0	5	0	0	8	0	0	12	0	0	0	25
Lane Group Flow (vph)	192	937	0	36	504	0	124	565	0	92	496	124
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	65.4	59.1		41.0	38.7		37.0	37.0		37.0	37.0	37.0
Effective Green, g (s)	65.4	59.1		41.0	38.7		37.0	37.0		37.0	37.0	37.0
Actuated g/C Ratio	0.55	0.50		0.35	0.33		0.31	0.31		0.31	0.31	0.31
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	452	909		97	592		166	557		123	582	495
v/s Ratio Prot	c0.08	c0.51		0.01	0.28		0.03	c0.32		0.03	c0.27	
v/s Ratio Perm	0.15			0.12			0.21			0.21		0.08
v/c Ratio	0.42	1.03		0.37	0.85		0.75	1.01		0.75	0.85	0.25
Uniform Delay, d1	33.0	29.6		54.1	37.2		48.6	40.7		35.4	38.1	30.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.6	38.0		2.4	11.3		16.6	41.6		21.7	14.6	1.2
Delay (s)	33.7	67.7		56.5	48.5		65.2	82.3		57.2	52.8	31.6
Level of Service	C	E		E	D		E	F		E	D	C
Approach Delay (s)		61.9			49.0			79.3			49.0	
Approach LOS		E			D			E			D	

Intersection Summary			
HCM Average Control Delay	60.5	HCM Level of Service	E
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	118.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	97.2%	ICU Level of Service	F
Analysis Period (min)	15		

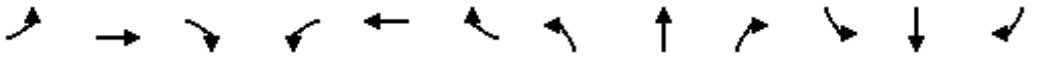
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	21	301	62	22	132	60	15	142	23	183	486	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0			4.0	
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	
Frt		0.98			1.00	0.85		0.98			0.99	
Flt Protected		1.00			0.99	1.00		1.00			0.99	
Satd. Flow (prot)		1817			1850	1583		1823			1820	
Flt Permitted		0.98			0.81	1.00		0.91			0.84	
Satd. Flow (perm)		1778			1516	1583		1668			1552	
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
Growth Factor (vph)	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	28	396	82	29	174	79	20	187	30	241	639	74
RTOR Reduction (vph)	0	8	0	0	0	56	0	6	0	0	3	0
Lane Group Flow (vph)	0	498	0	0	203	23	0	231	0	0	951	0
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		26.0			26.0	26.0		56.0			56.0	
Effective Green, g (s)		26.0			26.0	26.0		56.0			56.0	
Actuated g/C Ratio		0.29			0.29	0.29		0.62			0.62	
Clearance Time (s)		4.0			4.0	4.0		4.0			4.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		514			438	457		1038			966	
v/s Ratio Prot												
v/s Ratio Perm		c0.28			0.13	0.01		0.14			c0.61	
v/c Ratio		0.97			0.46	0.05		0.22			0.98	
Uniform Delay, d1		31.6			26.3	23.1		7.5			16.6	
Progression Factor		1.00			1.00	1.00		1.00			0.39	
Incremental Delay, d2		31.5			0.8	0.0		0.5			19.3	
Delay (s)		63.1			27.1	23.1		8.0			25.7	
Level of Service		E			C	C		A			C	
Approach Delay (s)		63.1			26.0			8.0			25.7	
Approach LOS		E			C			A			C	

Intersection Summary			
HCM Average Control Delay	33.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	107.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	614	978	93	151	760	30	159	431	55	28	859	514
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1593	3144		1593	3167		1593	3131		1593	3185	1425
Flt Permitted	0.95	1.00		0.14	1.00		0.11	1.00		0.27	1.00	1.00
Satd. Flow (perm)	1593	3144		231	3167		183	3131		459	3185	1425
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
Growth Factor (vph)	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	808	1286	122	199	1000	39	209	567	72	37	1130	676
RTOR Reduction (vph)	0	6	0	0	2	0	0	8	0	0	0	146
Lane Group Flow (vph)	808	1402	0	199	1037	0	209	631	0	37	1130	530
Turn Type	Prot			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6			8			4		4
Actuated Green, G (s)	37.0	55.0		40.0	29.0		43.6	37.2		35.0	32.6	32.6
Effective Green, g (s)	37.0	55.0		40.0	29.0		43.6	37.2		35.0	32.6	32.6
Actuated g/C Ratio	0.30	0.45		0.33	0.24		0.36	0.31		0.29	0.27	0.27
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
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)	485	1422		199	755		147	958		154	854	382
v/s Ratio Prot	c0.51	0.45		0.09	c0.33		c0.08	0.20		0.00	0.35	
v/s Ratio Perm				0.24			c0.43			0.06		0.37
v/c Ratio	1.67	0.99		1.00	1.37		1.42	0.66		0.24	1.32	1.39
Uniform Delay, d1	42.3	32.9		52.0	46.3		35.0	36.7		32.1	44.5	44.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	308.7	20.7		63.8	176.3		224.7	1.7		0.8	153.6	189.4
Delay (s)	351.0	53.7		115.8	222.6		259.7	38.3		32.9	198.1	233.9
Level of Service	F	D		F	F		F	D		C	F	F
Approach Delay (s)		162.1			205.4			92.9			207.9	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	175.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.48		
Actuated Cycle Length (s)	121.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	132.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	227	98	20	59	54	29	490	38	136	914	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		0.96			0.94			0.99			1.00	
Flt Protected		0.99			0.99			1.00			0.99	
Satd. Flow (prot)		3378			3299			3494			3507	
Flt Permitted		0.90			0.77			0.82			0.72	
Satd. Flow (perm)		3053			2569			2879			2528	
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
Growth Factor (vph)	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	49	299	129	26	78	71	38	644	50	179	1202	25
RTOR Reduction (vph)	0	43	0	0	58	0	0	6	0	0	1	0
Lane Group Flow (vph)	0	434	0	0	117	0	0	726	0	0	1405	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		16.4			16.4			65.6			65.6	
Effective Green, g (s)		16.4			16.4			65.6			65.6	
Actuated g/C Ratio		0.18			0.18			0.73			0.73	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		556			468			2098			1843	
v/s Ratio Prot												
v/s Ratio Perm		c0.14			0.05			0.25			c0.56	
v/c Ratio		0.78			0.25			0.35			0.76	
Uniform Delay, d1		35.1			31.5			4.4			7.4	
Progression Factor		1.00			1.00			0.90			1.00	
Incremental Delay, d2		6.8			0.3			0.4			3.0	
Delay (s)		41.9			31.8			4.4			10.5	
Level of Service		D			C			A			B	
Approach Delay (s)		41.9			31.8			4.4			10.5	
Approach LOS		D			C			A			B	

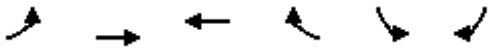
Intersection Summary			
HCM Average Control Delay	15.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	85.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	71	283	127	47	177	34	0	485	37	0	891	131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00			0.95			1.00	1.00
Frt	1.00	1.00	0.85		0.98			0.99			1.00	0.85
Flt Protected	0.95	1.00	1.00		0.99			1.00			1.00	1.00
Satd. Flow (prot)	1770	1863	1583		1813			3501			1863	1583
Flt Permitted	0.39	1.00	1.00		0.60			1.00			1.00	1.00
Satd. Flow (perm)	733	1863	1583		1098			3501			1863	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
Growth Factor (vph)	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	93	372	167	62	233	45	0	638	49	0	1172	172
RTOR Reduction (vph)	0	0	63	0	6	0	0	6	0	0	0	65
Lane Group Flow (vph)	93	372	104	0	334	0	0	681	0	0	1172	107
Turn Type	Perm		Perm	Perm								Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8								6
Actuated Green, G (s)	26.0	26.0	26.0		26.0			56.0			56.0	56.0
Effective Green, g (s)	26.0	26.0	26.0		26.0			56.0			56.0	56.0
Actuated g/C Ratio	0.29	0.29	0.29		0.29			0.62			0.62	0.62
Clearance Time (s)	4.0	4.0	4.0		4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	212	538	457		317			2178			1159	985
v/s Ratio Prot		0.20						0.19			c0.63	
v/s Ratio Perm	0.13		0.07		c0.30							0.07
v/c Ratio	0.44	0.69	0.23		1.05			0.31			1.01	0.11
Uniform Delay, d1	26.1	28.4	24.4		32.0			8.0			17.0	6.9
Progression Factor	1.00	1.00	1.00		1.00			1.00			0.73	0.13
Incremental Delay, d2	1.5	3.8	0.3		65.0			0.4			23.9	0.1
Delay (s)	27.5	32.3	24.6		97.0			8.3			36.4	1.1
Level of Service	C	C	C		F			A			D	A
Approach Delay (s)		29.5			97.0			8.3			31.9	
Approach LOS		C			F			A			C	

Intersection Summary			
HCM Average Control Delay	33.4	HCM Level of Service	C
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	101.7%	ICU Level of Service	G
Analysis Period (min)	15		

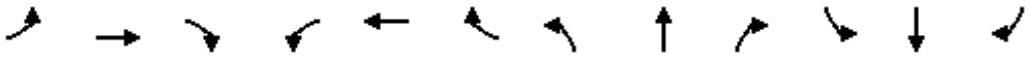
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	110	1004	354	130	203	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frt		1.00	0.96		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3522	3397		1770	1583
Flt Permitted		0.79	1.00		0.95	1.00
Satd. Flow (perm)		2790	3397		1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	145	1320	466	171	267	82
RTOR Reduction (vph)	0	0	37	0	0	66
Lane Group Flow (vph)	0	1465	600	0	267	16
Turn Type	Perm					Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		64.3	64.3		17.7	17.7
Effective Green, g (s)		64.3	64.3		17.7	17.7
Actuated g/C Ratio		0.71	0.71		0.20	0.20
Clearance Time (s)		4.0	4.0		4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1993	2427		348	311
v/s Ratio Prot			0.18		c0.15	
v/s Ratio Perm		c0.53				0.01
v/c Ratio		0.74	0.25		0.77	0.05
Uniform Delay, d1		7.7	4.5		34.2	29.3
Progression Factor		1.00	0.51		1.00	1.00
Incremental Delay, d2		2.5	0.2		9.7	0.1
Delay (s)		10.2	2.5		43.9	29.4
Level of Service		B	A		D	C
Approach Delay (s)		10.2	2.5		40.5	
Approach LOS		B	A		D	

Intersection Summary			
HCM Average Control Delay	12.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	77.9%	ICU Level of Service	D
Analysis Period (min)	15		

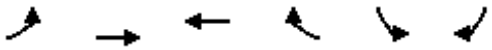
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	21	896	118	51	343	13	35	139	53	100	384	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			1.00			1.00			1.00	
Frt		0.98			1.00			0.97			1.00	
Flt Protected		1.00			0.99			0.99			0.99	
Satd. Flow (prot)		3475			1843			1790			1839	
Flt Permitted		0.94			0.55			0.86			0.86	
Satd. Flow (perm)		3269			1017			1547			1593	
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
Growth Factor (vph)	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	28	1178	155	67	451	17	46	183	70	132	505	12
RTOR Reduction (vph)	0	13	0	0	2	0	0	15	0	0	1	0
Lane Group Flow (vph)	0	1348	0	0	533	0	0	284	0	0	648	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		26.0			26.0			20.0			20.0	
Effective Green, g (s)		26.0			26.0			20.0			20.0	
Actuated g/C Ratio		0.48			0.48			0.37			0.37	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1574			490			573			590	
v/s Ratio Prot												
v/s Ratio Perm		0.41			c0.52			0.18			c0.41	
v/c Ratio		0.86			1.09			0.50			1.10	
Uniform Delay, d1		12.4			14.0			13.1			17.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		4.8			66.8			0.7			67.0	
Delay (s)		17.2			80.8			13.8			84.0	
Level of Service		B			F			B			F	
Approach Delay (s)		17.2			80.8			13.8			84.0	
Approach LOS		B			F			B			F	

Intersection Summary			
HCM Average Control Delay	44.0	HCM Level of Service	D
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	54.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	118.4%	ICU Level of Service	H
Analysis Period (min)	15		

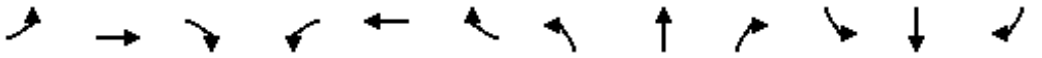
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	47	1156	436	68	84	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.44	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	813	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	121%	121%	121%	121%	121%	121%
Adj. Flow (vph)	62	1520	573	89	110	55
RTOR Reduction (vph)	0	0	0	17	0	49
Lane Group Flow (vph)	62	1520	573	72	110	6
Turn Type	Perm			Perm		Perm
Protected Phases		2	6		4	
Permitted Phases	2			6		4
Actuated Green, G (s)	72.4	72.4	72.4	72.4	9.6	9.6
Effective Green, g (s)	72.4	72.4	72.4	72.4	9.6	9.6
Actuated g/C Ratio	0.80	0.80	0.80	0.80	0.11	0.11
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	654	2847	2847	1273	189	169
v/s Ratio Prot		c0.43	0.16		c0.06	
v/s Ratio Perm	0.08			0.05		0.00
v/c Ratio	0.09	0.53	0.20	0.06	0.58	0.03
Uniform Delay, d1	1.9	3.0	2.1	1.8	38.3	36.0
Progression Factor	0.56	0.46	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.5	0.2	0.1	4.5	0.1
Delay (s)	1.2	1.9	2.2	1.9	42.8	36.1
Level of Service	A	A	A	A	D	D
Approach Delay (s)		1.9	2.2		40.6	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	4.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

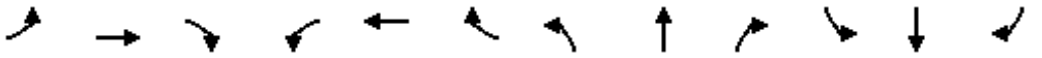


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	69	192	36	107	900	72	128	434	37	26	560	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95			0.95	
Frt	1.00	0.98		1.00	0.99		1.00	0.99			0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770	1819		1770	1842		1770	3498			3472	
Flt Permitted	0.05	1.00		0.61	1.00		0.12	1.00			0.85	
Satd. Flow (perm)	90	1819		1127	1842		224	3498			2943	
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)	75	209	39	116	978	78	139	472	40	28	609	82
RTOR Reduction (vph)	0	5	0	0	2	0	0	4	0	0	7	0
Lane Group Flow (vph)	75	243	0	116	1054	0	139	508	0	0	712	0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	87.0	87.0		87.0	87.0		47.0	47.0			35.0	
Effective Green, g (s)	87.0	87.0		87.0	87.0		47.0	47.0			35.0	
Actuated g/C Ratio	0.58	0.58		0.58	0.58		0.31	0.31			0.23	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	97	1055		671	1068		153	1096			687	
v/s Ratio Prot	c0.02	0.13		0.00	c0.57		c0.05	0.15				
v/s Ratio Perm	0.43			0.10			0.24				c0.24	
v/c Ratio	0.77	0.23		0.17	0.99		0.91	0.46			1.04	
Uniform Delay, d1	35.5	15.3		14.7	30.9		63.2	41.4			57.5	
Progression Factor	1.15	0.83		1.00	1.00		0.64	0.65			0.70	
Incremental Delay, d2	30.6	0.5		0.1	24.5		44.8	1.3			39.6	
Delay (s)	71.3	13.1		14.9	55.5		85.0	28.3			80.1	
Level of Service	E	B		B	E		F	C			F	
Approach Delay (s)		26.6			51.5			40.4			80.1	
Approach LOS		C			D			D			F	

Intersection Summary			
HCM Average Control Delay	53.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	100.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	830	110	580	1700	240	380
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	1.00	0.95	1.00	0.88
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	1770	3539	1770	2787
Flt Permitted	1.00	1.00	0.19	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	345	3539	1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	902	120	630	1848	261	413
RTOR Reduction (vph)	0	37	0	0	0	317
Lane Group Flow (vph)	902	83	630	1848	261	96
Turn Type		Perm	pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases		2	6			8
Actuated Green, G (s)	52.3	52.3	107.0	107.0	35.0	35.0
Effective Green, g (s)	52.3	52.3	107.0	107.0	35.0	35.0
Actuated g/C Ratio	0.35	0.35	0.71	0.71	0.23	0.23
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1773	552	728	2524	413	650
v/s Ratio Prot	0.18		c0.29	0.52	c0.15	
v/s Ratio Perm		0.05	c0.32			0.03
v/c Ratio	0.51	0.15	0.87	0.73	0.63	0.15
Uniform Delay, d1	38.7	33.6	29.1	12.9	51.7	45.7
Progression Factor	1.10	1.21	1.00	1.00	0.86	3.94
Incremental Delay, d2	1.0	0.6	10.5	1.9	6.2	0.4
Delay (s)	43.4	41.0	39.7	14.8	50.8	180.4
Level of Service	D	D	D	B	D	F
Approach Delay (s)	43.2			21.1	130.2	
Approach LOS	D			C	F	

Intersection Summary			
HCM Average Control Delay	44.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



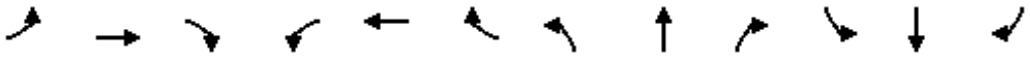
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	279	31	50	994	72	223	352	72	44	177	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	10	10	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5008		1770	3503		1652	1694		1770	1782	
Flt Permitted	0.12	1.00		0.53	1.00		0.21	1.00		0.25	1.00	
Satd. Flow (perm)	231	5008		992	3503		364	1694		471	1782	
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)	130	303	34	54	1080	78	242	383	78	48	192	78
RTOR Reduction (vph)	0	8	0	0	3	0	0	6	0	0	10	0
Lane Group Flow (vph)	130	329	0	54	1155	0	242	455	0	48	260	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	87.6	80.4		73.6	70.4		54.4	46.4		33.0	29.0	
Effective Green, g (s)	87.6	80.4		73.6	70.4		54.4	46.4		33.0	29.0	
Actuated g/C Ratio	0.58	0.54		0.49	0.47		0.36	0.31		0.22	0.19	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	270	2684		503	1644		316	524		138	345	
v/s Ratio Prot	c0.04	0.07		0.00	c0.33		c0.11	c0.27		0.01	0.15	
v/s Ratio Perm	0.24			0.05			0.17			0.07		
v/c Ratio	0.48	0.12		0.11	0.70		0.77	0.87		0.35	0.75	
Uniform Delay, d1	45.3	17.3		21.2	31.5		37.7	48.9		47.6	57.1	
Progression Factor	0.50	0.68		0.54	0.40		0.76	0.67		0.60	0.69	
Incremental Delay, d2	1.2	0.1		0.1	2.4		8.2	11.4		1.5	8.6	
Delay (s)	23.6	11.9		11.6	15.1		36.7	43.9		29.9	48.0	
Level of Service	C	B		B	B		D	D		C	D	
Approach Delay (s)		15.1			14.9			41.4			45.3	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM Average Control Delay	25.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

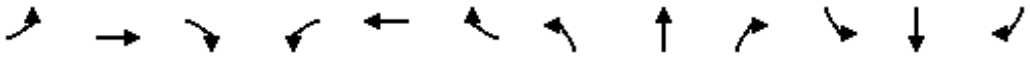
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	741	130	148	2038	202	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.91		1.00	0.91	1.00	1.00
Frt	0.98		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	4972		1770	5085	1770	1583
Flt Permitted	1.00		0.24	1.00	0.95	1.00
Satd. Flow (perm)	4972		456	5085	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	805	141	161	2215	220	217
RTOR Reduction (vph)	15	0	0	0	0	161
Lane Group Flow (vph)	931	0	161	2215	220	56
Turn Type			pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Actuated Green, G (s)	88.8		103.0	103.0	39.0	39.0
Effective Green, g (s)	88.8		103.0	103.0	39.0	39.0
Actuated g/C Ratio	0.59		0.69	0.69	0.26	0.26
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2943		402	3492	460	412
v/s Ratio Prot	0.19		0.03	c0.44	c0.12	
v/s Ratio Perm			0.25			0.04
v/c Ratio	0.32		0.40	0.63	0.48	0.14
Uniform Delay, d1	15.4		9.1	13.0	46.9	42.6
Progression Factor	0.77		0.26	0.23	0.64	0.55
Incremental Delay, d2	0.2		0.6	0.8	2.6	0.5
Delay (s)	12.1		2.9	3.8	32.7	24.0
Level of Service	B		A	A	C	C
Approach Delay (s)	12.1			3.7	28.4	
Approach LOS	B			A	C	

Intersection Summary			
HCM Average Control Delay	8.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	38	78	29	48	515	61	93	561	13	14	319	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	4.0
Lane Util. Factor		1.00			0.95			1.00			1.00	1.00
Frt		0.97			0.99			1.00			1.00	0.85
Flt Protected		0.99			1.00			0.99			1.00	1.00
Satd. Flow (prot)		1789			3474			1845			1859	1583
Flt Permitted		0.45			0.90			0.89			0.96	1.00
Satd. Flow (perm)		811			3123			1649			1794	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)	41	85	32	52	560	66	101	610	14	15	347	66
RTOR Reduction (vph)	0	7	0	0	6	0	0	0	0	0	0	20
Lane Group Flow (vph)	0	151	0	0	672	0	0	725	0	0	362	46
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		37.9			37.9			104.1			104.1	104.1
Effective Green, g (s)		37.9			37.9			104.1			104.1	104.1
Actuated g/C Ratio		0.25			0.25			0.69			0.69	0.69
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		205			789			1144			1245	1099
v/s Ratio Prot												
v/s Ratio Perm		0.19			c0.22			c0.44			0.20	0.03
v/c Ratio		0.74			0.85			0.63			0.29	0.04
Uniform Delay, d1		51.5			53.4			12.5			8.8	7.2
Progression Factor		1.17			1.00			0.40			0.55	0.07
Incremental Delay, d2		12.5			8.8			1.9			0.6	0.1
Delay (s)		72.9			62.2			7.0			5.5	0.6
Level of Service		E			E			A			A	A
Approach Delay (s)		72.9			62.2			7.0			4.7	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM Average Control Delay	30.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	82	464	80	70	1149	110	136	660	28	13	714	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	
Lane Util. Factor		0.91			0.91		1.00	0.95			0.95	
Frt		0.98			0.99		1.00	0.99			0.98	
Flt Protected		0.99			1.00		0.95	1.00			1.00	
Satd. Flow (prot)		4955			5009		1770	3518			3462	
Flt Permitted		0.64			0.81		0.22	1.00			0.94	
Satd. Flow (perm)		3179			4056		416	3518			3248	
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	504	87	76	1249	120	148	717	30	14	776	130
RTOR Reduction (vph)	0	13	0	0	7	0	0	2	0	0	9	0
Lane Group Flow (vph)	0	667	0	0	1438	0	148	745	0	0	911	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		63.0			63.0		79.0	79.0			79.0	
Effective Green, g (s)		63.0			63.0		79.0	79.0			79.0	
Actuated g/C Ratio		0.42			0.42		0.53	0.53			0.53	
Clearance Time (s)		4.0			4.0		4.0	4.0			4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1335			1704		219	1853			1711	
v/s Ratio Prot								0.21				
v/s Ratio Perm		0.21			c0.35		c0.36				0.28	
v/c Ratio		1.14dl			0.84		0.68	0.40			0.53	
Uniform Delay, d1		31.9			39.1		26.1	21.3			23.4	
Progression Factor		1.00			0.42		0.73	0.81			1.08	
Incremental Delay, d2		1.3			4.0		14.2	0.6			0.1	
Delay (s)		33.3			20.5		33.3	17.9			25.4	
Level of Service		C			C		C	B			C	
Approach Delay (s)		33.3			20.5			20.4			25.4	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	23.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	94.9%	ICU Level of Service	F
Analysis Period (min)	15		

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

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	87	565	62	192	1761	299	173	606	140	259	576	136
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00		0.95	
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85		0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00		0.99	
Satd. Flow (prot)	1770	5010		1770	4975		1770	1863	1583		3419	
Flt Permitted	0.09	1.00		0.25	1.00		0.15	1.00	1.00		0.52	
Satd. Flow (perm)	167	5010		463	4975		282	1863	1583		1802	
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	614	67	209	1914	325	188	659	152	282	626	148
RTOR Reduction (vph)	0	8	0	0	16	0	0	0	61	0	9	0
Lane Group Flow (vph)	95	673	0	209	2224	0	188	659	91	0	1047	0
Turn Type	pm+pt			pm+pt			pm+pt		Perm	Perm		
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	48.6	44.6		65.0	57.0		77.0	77.0	77.0		69.0	
Effective Green, g (s)	48.6	44.6		65.0	57.0		77.0	77.0	77.0		69.0	
Actuated g/C Ratio	0.32	0.30		0.43	0.38		0.51	0.51	0.51		0.46	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	97	1490		344	1891		184	956	813		829	
v/s Ratio Prot	c0.03	0.13		0.07	c0.45		c0.03	0.35				
v/s Ratio Perm	0.29			0.20			0.50		0.06		c0.58	
v/c Ratio	0.98	0.45		0.61	1.18		1.02	0.69	0.11		1.69dl	
Uniform Delay, d1	50.8	42.8		28.7	46.5		51.8	27.5	18.8		40.5	
Progression Factor	1.00	1.00		0.91	0.87		0.71	0.62	0.10		1.00	
Incremental Delay, d2	83.7	1.0		2.4	83.9		69.3	3.7	0.3		128.2	
Delay (s)	134.5	43.8		28.4	124.5		106.1	20.9	2.1		168.7	
Level of Service	F	D		C	F		F	C	A		F	
Approach Delay (s)		54.9			116.3			34.0			168.7	
Approach LOS		D			F			C			F	

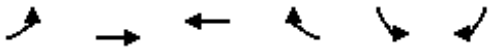
Intersection Summary			
HCM Average Control Delay	102.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	118.5%	ICU Level of Service	H
Analysis Period (min)	15		

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

c Critical Lane Group

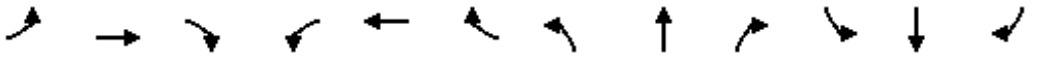
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	66	81	195	165	411	47	212	858	13	12	784	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95		1.00	0.95		1.00	0.95	
Frt		0.91			0.99		1.00	1.00		1.00	0.98	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3206			3454		1770	3531		1770	3469	
Flt Permitted		0.59			0.67		0.24	1.00		0.25	1.00	
Satd. Flow (perm)		1909			2350		446	3531		467	3469	
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)	72	88	212	179	447	51	230	933	14	13	852	129
RTOR Reduction (vph)	0	131	0	0	4	0	0	1	0	0	8	0
Lane Group Flow (vph)	0	241	0	0	673	0	230	946	0	13	973	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		45.3			45.3		96.7	96.7		96.7	96.7	
Effective Green, g (s)		45.3			45.3		96.7	96.7		96.7	96.7	
Actuated g/C Ratio		0.30			0.30		0.64	0.64		0.64	0.64	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		577			710		288	2276		301	2236	
v/s Ratio Prot								0.27			0.28	
v/s Ratio Perm		0.13			c0.29		c0.52			0.03		
v/c Ratio		0.42			0.95		0.80	0.42		0.04	0.44	
Uniform Delay, d1		41.8			51.2		19.5	12.9		9.7	13.2	
Progression Factor		1.00			0.50		0.35	0.14		1.28	1.14	
Incremental Delay, d2		0.5			18.1		2.2	0.1		0.2	0.5	
Delay (s)		42.3			43.7		9.1	1.8		12.7	15.5	
Level of Service		D			D		A	A		B	B	
Approach Delay (s)		42.3			43.7			3.2			15.5	
Approach LOS		D			D			A			B	

Intersection Summary			
HCM Average Control Delay	20.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



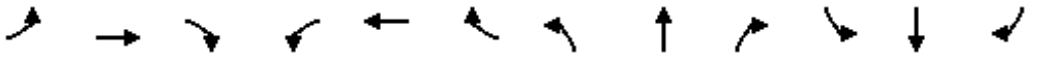
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	180	775	2020	180	80	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91	0.95		0.97	
Frt	1.00	1.00	0.99		0.97	
Flt Protected	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1770	5085	3496		3370	
Flt Permitted	0.04	1.00	1.00		0.96	
Satd. Flow (perm)	67	5085	3496		3370	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	196	842	2196	196	87	22
RTOR Reduction (vph)	0	0	4	0	15	0
Lane Group Flow (vph)	196	842	2388	0	94	0
Turn Type	pm+pt					
Protected Phases	5	2	6		4	
Permitted Phases	2					
Actuated Green, G (s)	126.0	126.0	107.6		16.0	
Effective Green, g (s)	126.0	126.0	107.6		16.0	
Actuated g/C Ratio	0.84	0.84	0.72		0.11	
Clearance Time (s)	4.0	4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	220	4271	2508		359	
v/s Ratio Prot	c0.09	0.17	c0.68		c0.03	
v/s Ratio Perm	0.67					
v/c Ratio	0.89	0.20	0.95		0.26	
Uniform Delay, d1	57.5	2.3	18.9		61.6	
Progression Factor	1.13	0.65	0.29		1.00	
Incremental Delay, d2	32.4	0.1	4.6		1.8	
Delay (s)	97.5	1.6	10.0		63.3	
Level of Service	F	A	B		E	
Approach Delay (s)		19.7	10.0		63.3	
Approach LOS		B	B		E	

Intersection Summary			
HCM Average Control Delay	14.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	105	800	20	15	1910	133	76	60	69	119	16	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.97	1.00		0.96	1.00
Satd. Flow (prot)	1770	5085	1583	1770	3505			1812	1583		1784	1583
Flt Permitted	0.04	1.00	1.00	0.28	1.00			0.59	1.00		0.50	1.00
Satd. Flow (perm)	78	5085	1583	529	3505			1098	1583		925	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)	114	870	22	16	2076	145	83	65	75	129	17	277
RTOR Reduction (vph)	0	0	4	0	3	0	0	0	61	0	0	87
Lane Group Flow (vph)	114	870	18	16	2218	0	0	148	15	0	146	190
Turn Type	pm+pt		Perm	pm+pt			Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6			8		8	4		4
Actuated Green, G (s)	107.4	107.4	107.4	97.6	97.6			29.0	29.0		29.0	29.0
Effective Green, g (s)	107.4	107.4	107.4	97.6	97.6			29.0	29.0		29.0	29.0
Actuated g/C Ratio	0.72	0.72	0.72	0.65	0.65			0.19	0.19		0.19	0.19
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	184	3641	1133	357	2281			212	306		179	306
v/s Ratio Prot	c0.05	0.17		0.00	c0.63							
v/s Ratio Perm	0.40		0.01	0.03				0.13	0.01		c0.16	0.12
v/c Ratio	0.62	0.24	0.02	0.04	0.97			0.70	0.05		0.82	0.62
Uniform Delay, d1	61.3	7.3	6.1	9.5	24.9			56.4	49.3		57.9	55.5
Progression Factor	0.72	0.77	0.86	0.55	0.81			1.00	1.00		1.00	1.00
Incremental Delay, d2	6.0	0.2	0.0	0.0	10.8			17.4	0.3		32.1	9.1
Delay (s)	49.9	5.8	5.3	5.3	31.0			73.8	49.5		90.0	64.6
Level of Service	D	A	A	A	C			E	D		F	E
Approach Delay (s)		10.8			30.8			65.7			73.4	
Approach LOS		B			C			E			E	

Intersection Summary			
HCM Average Control Delay	32.2	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	90.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

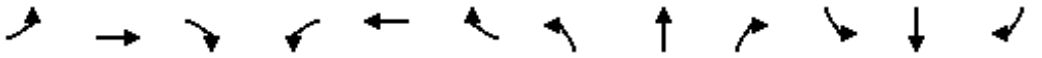


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	0	120	900	221	166	51	390	0	0	611	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95			0.95	
Frt	1.00		0.85	1.00	0.94		1.00	1.00			0.98	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770		1583	1770	1743		1770	3539			3455	
Flt Permitted	0.44		1.00	0.95	1.00		0.10	1.00			1.00	
Satd. Flow (perm)	825		1583	1770	1743		192	3539			3455	
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)	71	0	130	978	240	180	55	424	0	0	664	125
RTOR Reduction (vph)	0	0	49	0	18	0	0	0	0	0	10	0
Lane Group Flow (vph)	71	0	81	978	402	0	55	424	0	0	779	0
Turn Type	custom		custom	Perm			pm+pt					
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2					
Actuated Green, G (s)	93.0		93.0	93.0	93.0		49.0	49.0			41.8	
Effective Green, g (s)	93.0		93.0	93.0	93.0		49.0	49.0			41.8	
Actuated g/C Ratio	0.62		0.62	0.62	0.62		0.33	0.33			0.28	
Clearance Time (s)	4.0		4.0	4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	512		981	1097	1081		96	1156			963	
v/s Ratio Prot					0.23		c0.01	0.12			c0.23	
v/s Ratio Perm	0.09		0.05	c0.55			0.17					
v/c Ratio	0.14		0.08	0.89	0.37		0.57	0.37			0.81	
Uniform Delay, d1	11.8		11.4	24.2	14.1		39.2	38.6			50.4	
Progression Factor	1.00		1.00	0.74	0.67		1.00	1.00			0.29	
Incremental Delay, d2	0.1		0.0	5.6	0.5		8.0	0.9			3.9	
Delay (s)	12.0		11.4	23.6	9.8		47.2	39.5			18.7	
Level of Service	B		B	C	A		D	D			B	
Approach Delay (s)		11.6			19.5			40.4			18.7	
Approach LOS		B			B			D			B	

Intersection Summary			
HCM Average Control Delay	22.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

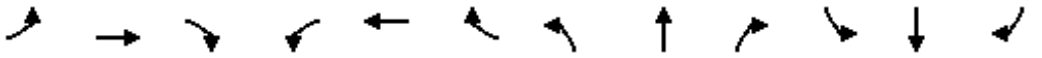
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	187	182	558	1092	509	388
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.37	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	693	3539	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	203	198	607	1187	553	422
RTOR Reduction (vph)	0	168	0	0	0	85
Lane Group Flow (vph)	203	30	607	1187	553	337
Turn Type		Perm	pm+pt			pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases		4	2			6
Actuated Green, G (s)	23.0	23.0	119.0	119.0	79.1	102.1
Effective Green, g (s)	23.0	23.0	119.0	119.0	79.1	102.1
Actuated g/C Ratio	0.15	0.15	0.79	0.79	0.53	0.68
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	271	243	808	2808	1866	1120
v/s Ratio Prot	c0.11		c0.18	0.34	0.16	0.05
v/s Ratio Perm		0.02	c0.42			0.17
v/c Ratio	0.75	0.12	0.75	0.42	0.30	0.30
Uniform Delay, d1	60.7	54.8	7.2	4.8	19.9	9.6
Progression Factor	0.85	1.81	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.9	0.2	4.0	0.5	0.4	0.2
Delay (s)	61.5	99.7	11.2	5.3	20.3	9.8
Level of Service	E	F	B	A	C	A
Approach Delay (s)	80.4			7.3	15.7	
Approach LOS	F			A	B	

Intersection Summary			
HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



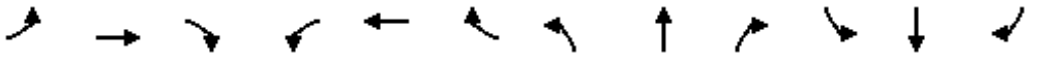
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	270	25	28	815	112	409	560	51	41	261	166
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1839		1770	1829		1770	1840		1770	1863	1583
Flt Permitted	0.05	1.00		0.48	1.00		0.14	1.00		0.17	1.00	1.00
Satd. Flow (perm)	97	1839		902	1829		268	1840		313	1863	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)	54	293	27	30	886	122	445	609	55	45	284	180
RTOR Reduction (vph)	0	2	0	0	3	0	0	2	0	0	0	42
Lane Group Flow (vph)	54	318	0	30	1005	0	445	662	0	45	284	138
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	80.0	76.8		78.4	76.0		58.8	51.6		27.0	23.8	23.8
Effective Green, g (s)	80.0	76.8		78.4	76.0		58.8	51.6		27.0	23.8	23.8
Actuated g/C Ratio	0.53	0.51		0.52	0.51		0.39	0.34		0.18	0.16	0.16
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	87	942		485	927		415	633		87	296	251
v/s Ratio Prot	c0.01	0.17		0.00	c0.55		c0.22	0.36		0.01	0.15	
v/s Ratio Perm	0.32			0.03			c0.20			0.08		0.09
v/c Ratio	0.62	0.34		0.06	1.08		1.07	1.05		0.52	0.96	0.55
Uniform Delay, d1	35.0	21.6		17.8	37.0		46.5	49.2		53.1	62.6	58.2
Progression Factor	1.00	1.08		0.69	0.89		0.98	1.00		1.00	1.00	1.00
Incremental Delay, d2	12.7	1.0		0.0	53.4		64.8	48.3		5.1	42.9	8.4
Delay (s)	47.9	24.3		12.3	86.2		110.4	97.7		58.2	105.5	66.6
Level of Service	D	C		B	F		F	F		E	F	E
Approach Delay (s)		27.7			84.1			102.8			87.6	
Approach LOS		C			F			F			F	

Intersection Summary			
HCM Average Control Delay	84.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	96.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



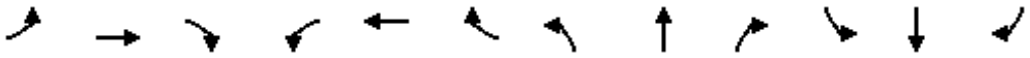
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	131	8	16	830	257	155	372	16	46	179	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0			4.0	
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	
Frt		0.99			1.00	0.85		1.00			0.97	
Flt Protected		1.00			1.00	1.00		0.99			0.99	
Satd. Flow (prot)		1840			1861	1583		1829			1791	
Flt Permitted		0.51			0.99	1.00		0.72			0.83	
Satd. Flow (perm)		948			1851	1583		1338			1500	
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	142	9	17	902	279	168	404	17	50	195	73
RTOR Reduction (vph)	0	1	0	0	0	136	0	1	0	0	7	0
Lane Group Flow (vph)	0	166	0	0	919	143	0	588	0	0	311	0
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)		77.0			77.0	77.0		65.0			65.0	
Effective Green, g (s)		77.0			77.0	77.0		65.0			65.0	
Actuated g/C Ratio		0.51			0.51	0.51		0.43			0.43	
Clearance Time (s)		4.0			4.0	4.0		4.0			4.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		487			950	813		580			650	
v/s Ratio Prot												
v/s Ratio Perm		0.17			c0.50	0.09		c0.44			0.21	
v/c Ratio		0.34			0.97	0.18		1.01			0.48	
Uniform Delay, d1		21.5			35.3	19.5		42.5			30.4	
Progression Factor		1.00			0.67	0.19		1.00			0.52	
Incremental Delay, d2		1.9			22.1	0.5		41.1			2.4	
Delay (s)		23.4			45.8	4.2		83.6			18.2	
Level of Service		C			D	A		F			B	
Approach Delay (s)		23.4			36.1			83.6			18.2	
Approach LOS		C			D			F			B	

Intersection Summary			
HCM Average Control Delay	45.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	102.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



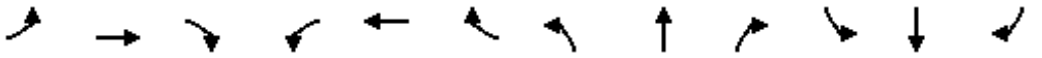
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	450	600	119	78	1321	61	454	856	75	37	291	1227
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.98		1.00	0.99		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1593	3106		1593	3164		1593	3147		1593	3185	1425
Flt Permitted	0.95	1.00		0.12	1.00		0.51	1.00		0.10	1.00	1.00
Satd. Flow (perm)	1593	3106		200	3164		847	3147		176	3185	1425
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)	489	652	129	85	1436	66	493	930	82	40	316	1334
RTOR Reduction (vph)	0	11	0	0	2	0	0	4	0	0	0	253
Lane Group Flow (vph)	489	770	0	85	1500	0	493	1008	0	40	316	1081
Turn Type	Prot			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6			8			4		4
Actuated Green, G (s)	26.0	64.2		45.2	45.2		65.8	58.0		59.8	55.0	55.0
Effective Green, g (s)	26.0	64.2		45.2	45.2		65.8	58.0		59.8	55.0	55.0
Actuated g/C Ratio	0.17	0.43		0.30	0.30		0.44	0.39		0.40	0.37	0.37
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	276	1329		125	953		410	1217		116	1168	523
v/s Ratio Prot	c0.31	0.25		0.03	c0.47		c0.06	0.32		0.01	0.10	
v/s Ratio Perm				0.17			0.46			0.13		c0.76
v/c Ratio	1.77	0.58		0.68	1.57		1.20	0.83		0.34	0.27	2.07
Uniform Delay, d1	62.0	32.6		41.2	52.4		43.4	41.5		56.8	33.4	47.5
Progression Factor	1.00	1.00		0.98	0.96		0.89	0.77		0.76	0.75	0.54
Incremental Delay, d2	361.7	1.8		10.9	262.1		98.5	1.5		1.7	0.1	486.6
Delay (s)	423.7	34.5		51.3	312.4		137.1	33.3		44.6	25.1	512.1
Level of Service	F	C		D	F		F	C		D	C	F
Approach Delay (s)		184.3			298.4			67.3			410.0	
Approach LOS		F			F			E			F	

Intersection Summary			
HCM Average Control Delay	248.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.80		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	165.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



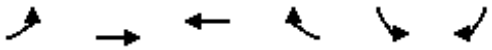
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	16	72	39	33	493	120	393	1190	60	87	398	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		0.95			0.97			0.99			0.99	
Flt Protected		0.99			1.00			0.99			0.99	
Satd. Flow (prot)		3356			3432			3478			3484	
Flt Permitted		0.67			0.93			0.68			0.52	
Satd. Flow (perm)		2260			3195			2379			1821	
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	78	42	36	536	130	427	1293	65	95	433	26
RTOR Reduction (vph)	0	34	0	0	13	0	0	2	0	0	2	0
Lane Group Flow (vph)	0	103	0	0	689	0	0	1783	0	0	552	0
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			112.0			112.0	
Effective Green, g (s)		30.0			30.0			112.0			112.0	
Actuated g/C Ratio		0.20			0.20			0.75			0.75	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		452			639			1776			1360	
v/s Ratio Prot												
v/s Ratio Perm		0.05			c0.22			c0.75			0.30	
v/c Ratio		0.23			1.08			1.00			0.41	
Uniform Delay, d1		50.3			60.0			19.0			6.9	
Progression Factor		1.00			1.00			0.70			0.97	
Incremental Delay, d2		0.3			58.7			17.7			0.8	
Delay (s)		50.6			118.7			31.1			7.6	
Level of Service		D			F			C			A	
Approach Delay (s)		50.6			118.7			31.1			7.6	
Approach LOS		D			F			C			A	

Intersection Summary			
HCM Average Control Delay	47.2	HCM Level of Service	D
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	92.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



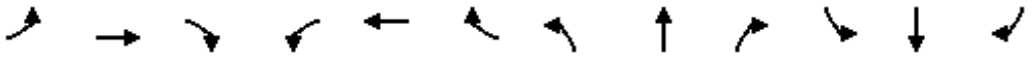
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	108	17	31	451	53	28	1448	63	16	268	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00			0.95			1.00	1.00
Frt	1.00	1.00	0.85		0.99			0.99			1.00	0.85
Flt Protected	0.95	1.00	1.00		1.00			1.00			1.00	1.00
Satd. Flow (prot)	1770	1863	1583		1832			3514			1858	1583
Flt Permitted	0.23	1.00	1.00		0.98			0.94			0.76	1.00
Satd. Flow (perm)	426	1863	1583		1795			3315			1413	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)	32	117	18	34	490	58	30	1574	68	17	291	75
RTOR Reduction (vph)	0	0	12	0	3	0	0	2	0	0	0	30
Lane Group Flow (vph)	32	117	6	0	579	0	0	1670	0	0	308	45
Turn Type	Perm		Perm	Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		6
Actuated Green, G (s)	51.6	51.6	51.6		51.6			90.4			90.4	90.4
Effective Green, g (s)	51.6	51.6	51.6		51.6			90.4			90.4	90.4
Actuated g/C Ratio	0.34	0.34	0.34		0.34			0.60			0.60	0.60
Clearance Time (s)	4.0	4.0	4.0		4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	147	641	545		617			1998			852	954
v/s Ratio Prot		0.06										
v/s Ratio Perm	0.08		0.00		c0.32			c0.50			0.22	0.03
v/c Ratio	0.22	0.18	0.01		0.94			0.84			0.36	0.05
Uniform Delay, d1	34.9	34.4	32.4		47.7			23.9			15.1	12.2
Progression Factor	1.00	1.00	1.00		1.00			1.00			0.66	0.85
Incremental Delay, d2	0.7	0.1	0.0		22.1			4.3			1.1	0.1
Delay (s)	35.6	34.6	32.4		69.8			28.2			11.0	10.5
Level of Service	D	C	C		E			C			B	B
Approach Delay (s)		34.5			69.8			28.2			10.9	
Approach LOS		C			E			C			B	

Intersection Summary			
HCM Average Control Delay	34.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	103.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	55	319	1534	153	88	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frt		1.00	0.99		1.00	0.85
Flt Protected		0.99	1.00		0.95	1.00
Satd. Flow (prot)		3513	3491		1770	1583
Flt Permitted		0.60	1.00		0.95	1.00
Satd. Flow (perm)		2107	3491		1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	60	347	1667	166	96	146
RTOR Reduction (vph)	0	0	4	0	0	60
Lane Group Flow (vph)	0	407	1829	0	96	86
Turn Type	Perm					Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		128.0	128.0		14.0	14.0
Effective Green, g (s)		128.0	128.0		14.0	14.0
Actuated g/C Ratio		0.85	0.85		0.09	0.09
Clearance Time (s)		4.0	4.0		4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1798	2979		165	148
v/s Ratio Prot			c0.52		0.05	
v/s Ratio Perm		0.19				c0.05
v/c Ratio		0.23	0.61		0.58	0.58
Uniform Delay, d1		2.0	3.4		65.2	65.2
Progression Factor		1.00	0.65		0.81	0.70
Incremental Delay, d2		0.3	0.8		5.0	5.6
Delay (s)		2.3	3.0		58.1	51.2
Level of Service		A	A		E	D
Approach Delay (s)		2.3	3.0		53.9	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	7.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	264	43	25	1690	68	157	504	67	29	135	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			0.95			1.00			1.00	
Frt		0.98			0.99			0.99			0.97	
Flt Protected		1.00			1.00			0.99			0.99	
Satd. Flow (prot)		1823			3516			1820			1802	
Flt Permitted		0.38			0.94			0.82			0.82	
Satd. Flow (perm)		701			3325			1508			1489	
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	287	47	27	1837	74	171	548	73	32	147	42
RTOR Reduction (vph)	0	3	0	0	2	0	0	2	0	0	4	0
Lane Group Flow (vph)	0	356	0	0	1936	0	0	790	0	0	217	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		71.0			71.0			55.0			55.0	
Effective Green, g (s)		71.0			71.0			55.0			55.0	
Actuated g/C Ratio		0.53			0.53			0.41			0.41	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		371			1762			619			611	
v/s Ratio Prot												
v/s Ratio Perm		0.51			c0.58			c0.52			0.15	
v/c Ratio		0.96			1.10			1.28			0.35	
Uniform Delay, d1		30.1			31.5			39.5			27.3	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		35.6			53.8			136.3			0.4	
Delay (s)		65.7			85.3			175.8			27.6	
Level of Service		E			F			F			C	
Approach Delay (s)		65.7			85.3			175.8			27.6	
Approach LOS		E			F			F			C	

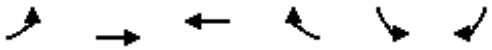
Intersection Summary			
HCM Average Control Delay	101.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	134.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	112.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	937	52	130	2050	110	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.91		1.00	0.91	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	5045		1770	5085	1770	1583
Flt Permitted	1.00		0.24	1.00	0.95	1.00
Satd. Flow (perm)	5045		450	5085	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1018	57	141	2228	120	54
RTOR Reduction (vph)	4	0	0	0	0	45
Lane Group Flow (vph)	1071	0	141	2228	120	9
Turn Type			Perm			Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Actuated Green, G (s)	116.0		116.0	116.0	26.0	26.0
Effective Green, g (s)	116.0		116.0	116.0	26.0	26.0
Actuated g/C Ratio	0.77		0.77	0.77	0.17	0.17
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3901		348	3932	307	274
v/s Ratio Prot	0.21			c0.44	c0.07	
v/s Ratio Perm			0.31			0.01
v/c Ratio	0.27		0.41	0.57	0.39	0.03
Uniform Delay, d1	4.9		5.6	6.9	55.0	51.6
Progression Factor	0.53		0.05	0.05	1.30	2.93
Incremental Delay, d2	0.2		1.6	0.3	3.2	0.2
Delay (s)	2.8		1.8	0.6	74.8	151.5
Level of Service	A		A	A	E	F
Approach Delay (s)	2.8			0.7	98.6	
Approach LOS	A			A	F	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	91	395	131	0	1105	120	182	16	28	55	36	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95			0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.96			0.99		1.00	0.90		1.00	0.88	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3407			5011		1770	1684		1770	1634	
Flt Permitted	0.11	1.00			1.00		0.58	1.00		0.73	1.00	
Satd. Flow (perm)	214	3407			5011		1072	1684		1353	1634	
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)	99	429	142	0	1201	130	198	17	30	60	39	174
RTOR Reduction (vph)	0	31	0	0	13	0	0	15	0	0	40	0
Lane Group Flow (vph)	99	540	0	0	1318	0	198	32	0	60	173	0
Turn Type	Perm						Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4						2			6		
Actuated Green, G (s)	66.4	66.4			66.4		75.6	75.6		75.6	75.6	
Effective Green, g (s)	66.4	66.4			66.4		75.6	75.6		75.6	75.6	
Actuated g/C Ratio	0.44	0.44			0.44		0.50	0.50		0.50	0.50	
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	95	1508			2218		540	849		682	824	
v/s Ratio Prot		0.16			0.26			0.02			0.11	
v/s Ratio Perm	c0.46						c0.18			0.04		
v/c Ratio	1.04	0.36			0.59		0.37	0.04		0.09	0.21	
Uniform Delay, d1	41.8	27.7			31.6		22.6	18.8		19.3	20.6	
Progression Factor	0.93	1.13			0.91		1.00	1.00		0.80	0.75	
Incremental Delay, d2	103.9	0.1			0.2		1.9	0.1		0.2	0.6	
Delay (s)	143.0	31.3			29.0		24.6	18.9		15.6	16.0	
Level of Service	F	C			C		C	B		B	B	
Approach Delay (s)		47.8			29.0			23.5			15.9	
Approach LOS		D			C			C			B	

Intersection Summary			
HCM Average Control Delay	32.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

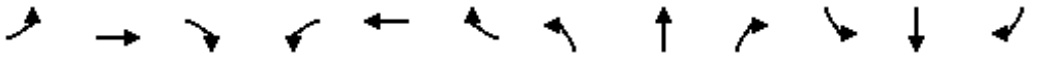


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	29	387	1553	109	38	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.13	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	241	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	32	421	1688	118	41	95
RTOR Reduction (vph)	0	0	0	14	0	63
Lane Group Flow (vph)	32	421	1688	104	41	32
Turn Type	Perm			Perm		Perm
Protected Phases		2	6		4	
Permitted Phases	2			6		4
Actuated Green, G (s)	132.7	132.7	132.7	132.7	9.3	9.3
Effective Green, g (s)	132.7	132.7	132.7	132.7	9.3	9.3
Actuated g/C Ratio	0.88	0.88	0.88	0.88	0.06	0.06
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	213	3131	3131	1400	110	98
v/s Ratio Prot		0.12	c0.48		c0.02	
v/s Ratio Perm	0.13			0.07		0.02
v/c Ratio	0.15	0.13	0.54	0.07	0.37	0.33
Uniform Delay, d1	1.2	1.1	1.9	1.1	67.5	67.4
Progression Factor	1.39	1.39	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.5	0.1	0.7	0.1	2.1	2.0
Delay (s)	3.1	1.7	2.6	1.2	69.7	69.3
Level of Service	A	A	A	A	E	E
Approach Delay (s)		1.8	2.5		69.4	
Approach LOS		A	A		E	

Intersection Summary			
HCM Average Control Delay	6.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	27	175	20	33	385	20	27	3	17	15	10	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.99		1.00	0.87		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1834		1770	3513		1770	1623		1770	1650	
Flt Permitted	0.50	1.00		0.63	1.00		0.73	1.00		0.74	1.00	
Satd. Flow (perm)	925	1834		1165	3513		1354	1623		1385	1650	
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)	29	190	22	36	418	22	29	3	18	16	11	35
RTOR Reduction (vph)	0	11	0	0	10	0	0	13	0	0	25	0
Lane Group Flow (vph)	29	201	0	36	430	0	29	8	0	16	21	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	8.2	8.2		8.2	8.2		6.5	6.5		6.5	6.5	
Effective Green, g (s)	8.2	8.2		8.2	8.2		6.5	6.5		6.5	6.5	
Actuated g/C Ratio	0.36	0.36		0.36	0.36		0.29	0.29		0.29	0.29	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	334	663		421	1269		388	465		397	472	
v/s Ratio Prot		0.11			c0.12			0.01			0.01	
v/s Ratio Perm	0.03			0.03			c0.02			0.01		
v/c Ratio	0.09	0.30		0.09	0.34		0.07	0.02		0.04	0.04	
Uniform Delay, d1	4.8	5.2		4.8	5.3		5.9	5.8		5.8	5.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.3		0.1	0.2		0.1	0.0		0.0	0.0	
Delay (s)	4.9	5.5		4.9	5.4		6.0	5.8		5.9	5.9	
Level of Service	A	A		A	A		A	A		A	A	
Approach Delay (s)		5.4			5.4			5.9			5.9	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	5.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	22.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	32.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

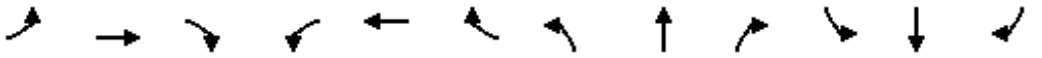


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	134	832	88	96	407	68	112	709	140	71	707	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95			0.95	
Frt	1.00	0.99		1.00	0.98		1.00	0.98			1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770	1836		1770	1823		1770	3452			3514	
Flt Permitted	0.22	1.00		0.10	1.00		0.16	1.00			0.61	
Satd. Flow (perm)	404	1836		185	1823		292	3452			2168	
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)	146	904	96	104	442	74	122	771	152	77	768	15
RTOR Reduction (vph)	0	4	0	0	6	0	0	16	0	0	1	0
Lane Group Flow (vph)	146	996	0	104	510	0	122	907	0	0	859	0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	51.8	44.0		44.2	40.2		40.0	40.0			32.0	
Effective Green, g (s)	51.8	44.0		44.2	40.2		40.0	40.0			32.0	
Actuated g/C Ratio	0.52	0.44		0.44	0.40		0.40	0.40			0.32	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	316	808		145	733		176	1381			694	
v/s Ratio Prot	0.04	c0.54		c0.03	0.28		0.03	c0.26				
v/s Ratio Perm	0.20			0.29			0.25				c0.40	
v/c Ratio	0.46	1.23		0.72	0.70		0.69	0.66			1.24	
Uniform Delay, d1	16.1	28.0		23.5	24.8		38.0	24.4			34.0	
Progression Factor	0.54	0.89		1.00	1.00		0.73	0.75			0.75	
Incremental Delay, d2	0.8	113.2		15.5	5.4		10.7	2.3			114.9	
Delay (s)	9.5	138.2		39.0	30.2		38.2	20.7			140.3	
Level of Service	A	F		D	C		D	C			F	
Approach Delay (s)		121.8			31.7			22.7			140.3	
Approach LOS		F			C			C			F	

Intersection Summary			
HCM Average Control Delay	82.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	113.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1846	418	396	862	327	625
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	1.00	0.95	1.00	0.88
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	1770	3539	1770	2787
Flt Permitted	1.00	1.00	0.08	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	157	3539	1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2007	454	430	937	355	679
RTOR Reduction (vph)	0	105	0	0	0	502
Lane Group Flow (vph)	2007	349	430	937	355	177
Turn Type		Perm	pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases		2	6			8
Actuated Green, G (s)	43.6	43.6	69.0	69.0	23.0	23.0
Effective Green, g (s)	43.6	43.6	69.0	69.0	23.0	23.0
Actuated g/C Ratio	0.44	0.44	0.69	0.69	0.23	0.23
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2217	690	454	2442	407	641
v/s Ratio Prot	0.39		c0.20	0.26	c0.20	
v/s Ratio Perm		0.22	c0.45			0.06
v/c Ratio	0.91	0.51	0.95	0.38	0.87	0.28
Uniform Delay, d1	26.3	20.4	30.8	6.5	37.1	31.7
Progression Factor	0.43	0.11	1.00	1.00	0.61	0.97
Incremental Delay, d2	3.7	1.4	29.0	0.5	18.2	0.9
Delay (s)	15.0	3.7	59.8	7.0	40.7	31.4
Level of Service	B	A	E	A	D	C
Approach Delay (s)	12.9			23.6	34.6	
Approach LOS	B			C	C	

Intersection Summary			
HCM Average Control Delay	20.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	85.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



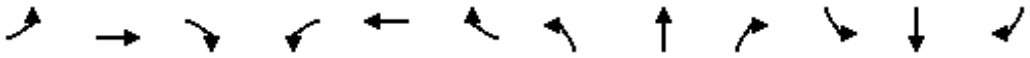
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	211	976	210	152	392	82	70	199	55	68	389	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	10	10	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.97		1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4950		1770	3447		1652	1682		1770	1808	
Flt Permitted	0.23	1.00		0.20	1.00		0.12	1.00		0.44	1.00	
Satd. Flow (perm)	420	4950		378	3447		215	1682		819	1808	
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)	229	1061	228	165	426	89	76	216	60	74	423	103
RTOR Reduction (vph)	0	31	0	0	16	0	0	11	0	0	9	0
Lane Group Flow (vph)	229	1258	0	165	499	0	76	265	0	74	517	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	37.4	37.4		33.9	33.9		35.6	32.4		35.6	32.4	
Effective Green, g (s)	37.4	37.4		33.9	33.9		35.6	32.4		35.6	32.4	
Actuated g/C Ratio	0.37	0.37		0.34	0.34		0.36	0.32		0.36	0.32	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	353	1851		281	1169		123	545		322	586	
v/s Ratio Prot	0.09	c0.25		c0.06	0.14		c0.02	0.16		0.01	c0.29	
v/s Ratio Perm	0.15			0.13			0.20			0.07		
v/c Ratio	0.65	0.68		0.59	0.43		0.62	0.49		0.23	0.88	
Uniform Delay, d1	23.4	26.3		30.2	25.5		24.9	27.1		22.0	32.0	
Progression Factor	0.42	0.26		0.68	0.58		1.09	0.81		0.95	0.95	
Incremental Delay, d2	1.3	0.6		3.1	1.1		8.0	0.6		0.3	12.0	
Delay (s)	11.2	7.4		23.6	15.9		35.2	22.7		21.1	42.3	
Level of Service	B	A		C	B		D	C		C	D	
Approach Delay (s)		8.0			17.8			25.4			39.7	
Approach LOS		A			B			C			D	

Intersection Summary			
HCM Average Control Delay	18.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

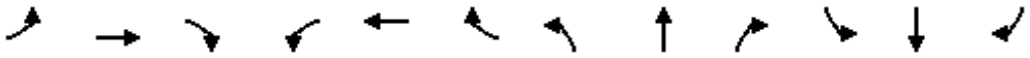
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	2336	183	222	1177	111	269
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.91		1.00	0.91	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	5030		1770	5085	1770	1583
Flt Permitted	1.00		0.06	1.00	0.95	1.00
Satd. Flow (perm)	5030		117	5085	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2539	199	241	1279	121	292
RTOR Reduction (vph)	8	0	0	0	0	180
Lane Group Flow (vph)	2730	0	241	1279	121	112
Turn Type			pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Actuated Green, G (s)	59.6		76.0	76.0	16.0	16.0
Effective Green, g (s)	59.6		76.0	76.0	16.0	16.0
Actuated g/C Ratio	0.60		0.76	0.76	0.16	0.16
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2998		294	3865	283	253
v/s Ratio Prot	c0.54		c0.10	0.25	0.07	
v/s Ratio Perm			0.52			c0.07
v/c Ratio	0.91		0.82	0.33	0.43	0.44
Uniform Delay, d1	17.8		31.5	3.8	37.9	38.0
Progression Factor	1.00		1.17	0.99	0.81	0.81
Incremental Delay, d2	5.4		15.8	0.2	4.1	4.9
Delay (s)	23.2		52.7	4.0	34.9	35.6
Level of Service	C		D	A	C	D
Approach Delay (s)	23.2			11.7	35.4	
Approach LOS	C			B	D	

Intersection Summary			
HCM Average Control Delay	20.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	437	195	14	157	34	17	245	65	66	651	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	4.0
Lane Util. Factor		1.00			0.95			1.00			1.00	1.00
Frt		0.96			0.98			0.97			1.00	0.85
Flt Protected		1.00			1.00			1.00			1.00	1.00
Satd. Flow (prot)		1785			3440			1808			1854	1583
Flt Permitted		0.98			0.91			0.79			0.93	1.00
Satd. Flow (perm)		1748			3132			1438			1736	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)	34	475	212	15	171	37	18	266	71	72	708	114
RTOR Reduction (vph)	0	15	0	0	17	0	0	9	0	0	0	56
Lane Group Flow (vph)	0	706	0	0	206	0	0	346	0	0	780	58
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		41.5			41.5			50.5			50.5	50.5
Effective Green, g (s)		41.5			41.5			50.5			50.5	50.5
Actuated g/C Ratio		0.42			0.42			0.50			0.50	0.50
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		725			1300			726			877	799
v/s Ratio Prot												
v/s Ratio Perm		c0.40			0.07			0.24			c0.45	0.04
v/c Ratio		0.97			0.16			0.48			0.89	0.07
Uniform Delay, d1		28.7			18.3			16.1			22.2	12.7
Progression Factor		0.86			0.71			0.81			0.93	0.77
Incremental Delay, d2		22.9			0.1			2.0			10.3	0.1
Delay (s)		47.4			13.0			15.1			31.0	10.0
Level of Service		D			B			B			C	A
Approach Delay (s)		47.4			13.0			15.1			28.3	
Approach LOS		D			B			B			C	

Intersection Summary			
HCM Average Control Delay	30.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	109.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

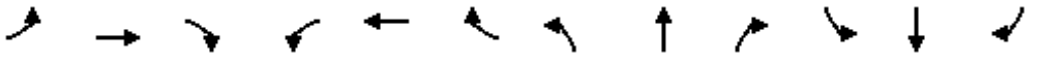


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	146	1277	229	33	464	70	126	480	31	51	827	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	
Lane Util. Factor		0.91			0.91		1.00	0.95			0.95	
Frt		0.98			0.98		1.00	0.99			0.99	
Flt Protected		1.00			1.00		0.95	1.00			1.00	
Satd. Flow (prot)		4958			4977		1770	3507			3483	
Flt Permitted		0.77			0.75		0.16	1.00			0.89	
Satd. Flow (perm)		3836			3761		290	3507			3101	
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)	159	1388	249	36	504	76	137	522	34	55	899	93
RTOR Reduction (vph)	0	22	0	0	18	0	0	5	0	0	8	0
Lane Group Flow (vph)	0	1774	0	0	598	0	137	551	0	0	1039	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		46.0			46.0		46.0	46.0			46.0	
Effective Green, g (s)		46.0			46.0		46.0	46.0			46.0	
Actuated g/C Ratio		0.46			0.46		0.46	0.46			0.46	
Clearance Time (s)		4.0			4.0		4.0	4.0			4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1765			1730		133	1613			1426	
v/s Ratio Prot								0.16				
v/s Ratio Perm		c0.46			0.16		c0.47				0.34	
v/c Ratio		1.01			0.35		1.03	0.34			0.73	
Uniform Delay, d1		27.0			17.3		27.0	17.3			21.9	
Progression Factor		1.00			0.86		0.57	0.37			1.00	
Incremental Delay, d2		22.6			0.5		82.3	0.5			3.3	
Delay (s)		49.6			15.5		97.6	6.9			25.2	
Level of Service		D			B		F	A			C	
Approach Delay (s)		49.6			15.5			24.8			25.2	
Approach LOS		D			B			C			C	

Intersection Summary			
HCM Average Control Delay	34.3	HCM Level of Service	C
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	98.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

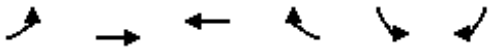
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	192	2052	126	173	887	219	161	418	189	398	633	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00		0.95	
Frt	1.00	0.99		1.00	0.97		1.00	1.00	0.85		0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00		0.98	
Satd. Flow (prot)	1770	5041		1770	4934		1770	1863	1583		3436	
Flt Permitted	0.11	1.00		0.10	1.00		0.11	1.00	1.00		0.64	
Satd. Flow (perm)	209	5041		181	4934		207	1863	1583		2249	
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)	209	2230	137	188	964	238	175	454	205	433	688	97
RTOR Reduction (vph)	0	6	0	0	38	0	0	0	66	0	7	0
Lane Group Flow (vph)	209	2361	0	188	1164	0	175	454	139	0	1211	0
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	57.0	49.0		45.1	41.1		45.0	45.0	45.0		32.0	
Effective Green, g (s)	57.0	49.0		45.1	41.1		45.0	45.0	45.0		32.0	
Actuated g/C Ratio	0.52	0.45		0.41	0.37		0.41	0.41	0.41		0.29	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	277	2246		132	1844		213	762	648		654	
v/s Ratio Prot	0.08	c0.47		c0.05	0.24		c0.07	0.24				
v/s Ratio Perm	0.31			c0.53			0.27		0.09		c0.54	
v/c Ratio	0.75	1.05		1.42	0.63		0.82	0.60	0.21		1.85	
Uniform Delay, d1	19.1	30.5		33.0	28.2		26.4	25.4	21.0		39.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	
Incremental Delay, d2	11.1	34.1		229.1	1.7		21.8	3.4	0.8		389.1	
Delay (s)	30.1	64.6		262.0	29.9		48.2	28.8	21.8		428.1	
Level of Service	C	E		F	C		D	C	C		F	
Approach Delay (s)		61.8			61.3			31.2			428.1	
Approach LOS		E			E			C			F	

Intersection Summary			
HCM Average Control Delay	131.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.52		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	119.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



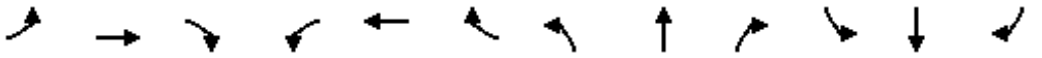
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	67	411	263	74	170	51	55	675	166	60	1198	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95		1.00	0.95		1.00	0.95	
Frt		0.95			0.97		1.00	0.97		1.00	0.99	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3336			3405		1770	3435		1770	3499	
Flt Permitted		0.87			0.56		0.12	1.00		0.26	1.00	
Satd. Flow (perm)		2921			1920		226	3435		490	3499	
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)	73	447	286	80	185	55	60	734	180	65	1302	107
RTOR Reduction (vph)	0	42	0	0	18	0	0	20	0	0	6	0
Lane Group Flow (vph)	0	764	0	0	302	0	60	894	0	65	1403	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		29.8			29.8		62.2	62.2		62.2	62.2	
Effective Green, g (s)		29.8			29.8		62.2	62.2		62.2	62.2	
Actuated g/C Ratio		0.30			0.30		0.62	0.62		0.62	0.62	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		870			572		141	2137		305	2176	
v/s Ratio Prot								0.26			c0.40	
v/s Ratio Perm		c0.26			0.16		0.27			0.13		
v/c Ratio		0.88			0.53		0.43	0.42		0.21	0.64	
Uniform Delay, d1		33.4			29.2		9.7	9.7		8.2	11.9	
Progression Factor		1.00			0.90		0.74	0.60		0.58	0.56	
Incremental Delay, d2		10.0			0.9		0.8	0.1		1.2	1.2	
Delay (s)		43.4			27.2		8.0	5.9		6.0	7.9	
Level of Service		D			C		A	A		A	A	
Approach Delay (s)		43.4			27.2			6.0			7.8	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	17.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



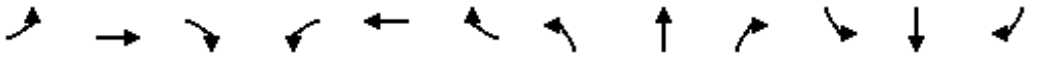
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	297	2162	1097	239	293	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91	0.95		0.97	
Frt	1.00	1.00	0.97		0.98	
Flt Protected	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1770	5085	3444		3397	
Flt Permitted	0.08	1.00	1.00		0.96	
Satd. Flow (perm)	145	5085	3444		3397	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	323	2350	1192	260	318	46
RTOR Reduction (vph)	0	0	17	0	12	0
Lane Group Flow (vph)	323	2350	1435	0	352	0
Turn Type	pm+pt					
Protected Phases	5	2	6		4	
Permitted Phases	2					
Actuated Green, G (s)	76.0	76.0	54.6		16.0	
Effective Green, g (s)	76.0	76.0	54.6		16.0	
Actuated g/C Ratio	0.76	0.76	0.55		0.16	
Clearance Time (s)	4.0	4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	393	3865	1880		544	
v/s Ratio Prot	c0.14	0.46	0.42		c0.10	
v/s Ratio Perm	c0.48					
v/c Ratio	0.82	0.61	0.76		0.65	
Uniform Delay, d1	28.0	5.4	17.7		39.4	
Progression Factor	1.41	0.77	0.31		1.00	
Incremental Delay, d2	8.3	0.4	1.2		5.9	
Delay (s)	47.7	4.6	6.7		45.2	
Level of Service	D	A	A		D	
Approach Delay (s)		9.8	6.7		45.2	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	260	2082	90	38	1104	219	166	96	169	210	103	309
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.97	1.00		0.97	1.00
Satd. Flow (prot)	1770	5085	1583	1770	3451			1806	1583		1802	1583
Flt Permitted	0.09	1.00	1.00	0.10	1.00			0.42	1.00		0.49	1.00
Satd. Flow (perm)	172	5085	1583	189	3451			790	1583		909	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)	283	2263	98	41	1200	238	180	104	184	228	112	336
RTOR Reduction (vph)	0	0	10	0	17	0	0	0	59	0	0	127
Lane Group Flow (vph)	283	2263	88	41	1421	0	0	284	125	0	340	209
Turn Type	pm+pt		Perm	pm+pt			Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6			8		8	4		4
Actuated Green, G (s)	57.0	50.6	50.6	41.8	39.4			35.0	35.0		35.0	35.0
Effective Green, g (s)	57.0	50.6	50.6	41.8	39.4			35.0	35.0		35.0	35.0
Actuated g/C Ratio	0.57	0.51	0.51	0.42	0.39			0.35	0.35		0.35	0.35
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	315	2573	801	117	1360			277	554		318	554
v/s Ratio Prot	c0.12	c0.45		0.01	c0.41							
v/s Ratio Perm	0.39		0.06	0.14				0.36	0.08		c0.37	0.13
v/c Ratio	0.90	0.88	0.11	0.35	1.04			1.03	0.23		1.07	0.38
Uniform Delay, d1	39.1	22.0	12.9	44.8	30.3			32.5	22.9		32.5	24.3
Progression Factor	0.83	0.82	0.93	0.70	0.72			1.00	1.00		1.00	1.00
Incremental Delay, d2	22.2	3.8	0.2	1.6	35.9			60.7	0.9		70.0	2.0
Delay (s)	54.5	21.9	12.2	33.0	57.6			93.2	23.9		102.5	26.3
Level of Service	D	C	B	C	E			F	C		F	C
Approach Delay (s)		25.0			56.9			66.0			64.6	
Approach LOS		C			E			E			E	

Intersection Summary			
HCM Average Control Delay	42.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

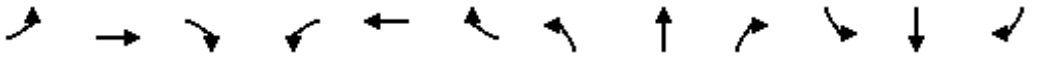


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	136	0	227	463	82	70	82	679	0	0	776	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95			0.95	
Frt	1.00		0.85	1.00	0.93		1.00	1.00			0.98	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770		1583	1770	1734		1770	3539			3485	
Flt Permitted	0.62		1.00	0.95	1.00		0.15	1.00			1.00	
Satd. Flow (perm)	1162		1583	1770	1734		280	3539			3485	
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)	148	0	247	503	89	76	89	738	0	0	843	95
RTOR Reduction (vph)	0	0	126	0	31	0	0	0	0	0	8	0
Lane Group Flow (vph)	148	0	121	503	134	0	89	738	0	0	930	0
Turn Type	custom		custom	Perm			pm+pt					
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2					
Actuated Green, G (s)	42.0		42.0	42.0	42.0		50.0	50.0			40.4	
Effective Green, g (s)	42.0		42.0	42.0	42.0		50.0	50.0			40.4	
Actuated g/C Ratio	0.42		0.42	0.42	0.42		0.50	0.50			0.40	
Clearance Time (s)	4.0		4.0	4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	488		665	743	728		223	1770			1408	
v/s Ratio Prot					0.08		0.02	c0.21			c0.27	
v/s Ratio Perm	0.13		0.08	c0.28			0.18					
v/c Ratio	0.30		0.18	0.68	0.18		0.40	0.42			0.66	
Uniform Delay, d1	19.3		18.2	23.5	18.2		16.2	15.8			24.2	
Progression Factor	0.28		0.09	0.94	0.85		1.00	1.00			0.25	
Incremental Delay, d2	0.3		0.1	4.0	0.5		1.2	0.7			0.2	
Delay (s)	5.7		1.7	26.2	16.0		17.3	16.5			6.2	
Level of Service	A		A	C	B		B	B			A	
Approach Delay (s)		3.2			23.6			16.6			6.2	
Approach LOS		A			C			B			A	

Intersection Summary			
HCM Average Control Delay	13.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	399	611	276	792	1332	273
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.08	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	152	3539	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	434	664	300	861	1448	297
RTOR Reduction (vph)	0	166	0	0	0	23
Lane Group Flow (vph)	434	498	300	861	1448	274
Turn Type		Perm	pm+pt			pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases		4	2			6
Actuated Green, G (s)	31.0	31.0	61.0	61.0	45.0	76.0
Effective Green, g (s)	31.0	31.0	61.0	61.0	45.0	76.0
Actuated g/C Ratio	0.31	0.31	0.61	0.61	0.45	0.76
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	549	491	287	2159	1593	1266
v/s Ratio Prot	0.25		c0.13	0.24	0.41	0.07
v/s Ratio Perm		c0.31	c0.51			0.11
v/c Ratio	0.79	1.02	1.05	0.40	0.91	0.22
Uniform Delay, d1	31.5	34.5	31.2	10.0	25.6	3.4
Progression Factor	0.65	0.48	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	16.1	65.5	0.6	9.2	0.1
Delay (s)	21.4	32.7	96.7	10.6	34.8	3.5
Level of Service	C	C	F	B	C	A
Approach Delay (s)	28.2			32.8	29.5	
Approach LOS	C			C	C	

Intersection Summary			
HCM Average Control Delay	30.1	HCM Level of Service	C
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

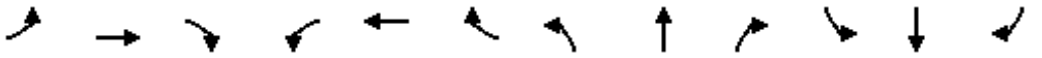


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	182	738	130	33	383	110	134	444	183	85	534	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	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	0.97		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1821		1770	1800		1770	1781		1770	1863	1583
Flt Permitted	0.18	1.00		0.10	1.00		0.12	1.00		0.13	1.00	1.00
Satd. Flow (perm)	332	1821		194	1800		222	1781		234	1863	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)	198	802	141	36	416	120	146	483	199	92	580	173
RTOR Reduction (vph)	0	6	0	0	10	0	0	15	0	0	0	30
Lane Group Flow (vph)	198	937	0	36	526	0	146	667	0	92	580	143
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	51.2	44.8		40.8	38.4		38.6	33.6		35.0	31.8	31.8
Effective Green, g (s)	51.2	44.8		40.8	38.4		38.6	33.6		35.0	31.8	31.8
Actuated g/C Ratio	0.51	0.45		0.41	0.38		0.39	0.34		0.35	0.32	0.32
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	297	816		117	691		163	598		131	592	503
v/s Ratio Prot	c0.06	c0.51		0.01	0.29		c0.04	c0.37		0.02	0.31	
v/s Ratio Perm	0.28			0.12			0.30			0.22		0.09
v/c Ratio	0.67	1.15		0.31	0.76		0.90	1.12		0.70	0.98	0.28
Uniform Delay, d1	17.8	27.6		23.9	26.8		27.2	33.2		28.3	33.8	25.6
Progression Factor	0.90	0.63		0.78	0.83		0.76	0.84		1.00	1.00	1.00
Incremental Delay, d2	5.2	80.0		1.1	6.0		28.8	65.8		15.7	32.3	1.4
Delay (s)	21.2	97.4		19.7	28.3		49.4	93.8		44.0	66.1	27.0
Level of Service	C	F		B	C		D	F		D	E	C
Approach Delay (s)		84.2			27.8			85.9			55.7	
Approach LOS		F			C			F			E	

Intersection Summary			
HCM Average Control Delay	68.0	HCM Level of Service	E
HCM Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	102.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

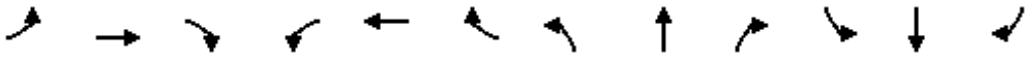
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	365	76	38	227	103	129	172	28	222	589	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0			4.0	
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	
Frt		0.98			1.00	0.85		0.99			0.99	
Flt Protected		1.00			0.99	1.00		0.98			0.99	
Satd. Flow (prot)		1817			1850	1583		1806			1820	
Flt Permitted		0.97			0.75	1.00		0.54			0.80	
Satd. Flow (perm)		1770			1400	1583		990			1475	
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	397	83	41	247	112	140	187	30	241	640	74
RTOR Reduction (vph)	0	7	0	0	0	80	0	3	0	0	3	0
Lane Group Flow (vph)	0	500	0	0	288	32	0	354	0	0	952	0
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)		29.0			29.0	29.0		63.0			63.0	
Effective Green, g (s)		29.0			29.0	29.0		63.0			63.0	
Actuated g/C Ratio		0.29			0.29	0.29		0.63			0.63	
Clearance Time (s)		4.0			4.0	4.0		4.0			4.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		513			406	459		624			929	
v/s Ratio Prot												
v/s Ratio Perm		c0.28			0.21	0.02		0.36			c0.65	
v/c Ratio		0.97			0.71	0.07		0.57			1.02	
Uniform Delay, d1		35.1			31.7	25.7		10.6			18.5	
Progression Factor		1.00			0.46	0.09		1.00			0.44	
Incremental Delay, d2		33.9			2.7	0.1		3.7			26.5	
Delay (s)		69.0			17.3	2.4		14.4			34.7	
Level of Service		E			B	A		B			C	
Approach Delay (s)		69.0			13.1			14.4			34.7	
Approach LOS		E			B			B			C	

Intersection Summary			
HCM Average Control Delay	35.4	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	103.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



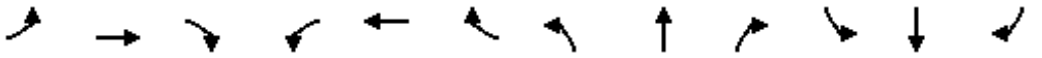
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	747	1185	113	193	921	38	196	536	68	34	1074	635
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1593	3144		1593	3166		1593	3131		1593	3185	1425
Flt Permitted	0.95	1.00		0.24	1.00		0.17	1.00		0.17	1.00	1.00
Satd. Flow (perm)	1593	3144		409	3166		284	3131		284	3185	1425
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)	812	1288	123	210	1001	41	213	583	74	37	1167	690
RTOR Reduction (vph)	0	7	0	0	3	0	0	10	0	0	0	176
Lane Group Flow (vph)	812	1404	0	210	1039	0	213	647	0	37	1167	514
Turn Type	Prot			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6			8			4		4
Actuated Green, G (s)	27.0	43.4		23.4	23.4		31.2	31.2		26.0	26.0	26.0
Effective Green, g (s)	27.0	43.4		23.4	23.4		31.2	31.2		26.0	26.0	26.0
Actuated g/C Ratio	0.27	0.43		0.23	0.23		0.31	0.31		0.26	0.26	0.26
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
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)	430	1364		179	741		188	977		105	828	371
v/s Ratio Prot	c0.51	0.45		0.08	c0.33		c0.09	0.21		0.01	c0.37	
v/s Ratio Perm				0.19			0.27			0.08		0.36
v/c Ratio	1.89	1.03		1.17	1.40		1.13	0.66		0.35	1.41	1.39
Uniform Delay, d1	36.5	28.3		39.8	38.3		43.0	29.8		29.4	37.0	37.0
Progression Factor	1.00	1.00		0.83	0.81		0.88	0.84		0.67	0.78	0.59
Incremental Delay, d2	408.5	32.1		119.3	188.5		104.0	1.6		1.7	190.1	186.5
Delay (s)	445.0	60.4		152.5	219.7		141.8	26.8		21.2	218.9	208.3
Level of Service	F	E		F	F		F	C		C	F	F
Approach Delay (s)		200.9			208.4			54.9			211.1	
Approach LOS		F			F			D			F	

Intersection Summary			
HCM Average Control Delay	185.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.47		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	134.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



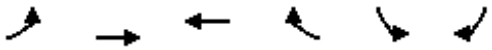
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	46	281	122	26	76	69	54	606	47	168	1131	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		0.96			0.94			0.99			1.00	
Flt Protected		0.99			0.99			1.00			0.99	
Satd. Flow (prot)		3377			3300			3491			3507	
Flt Permitted		0.90			0.74			0.74			0.70	
Satd. Flow (perm)		3041			2450			2577			2457	
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)	50	305	133	28	83	75	59	659	51	183	1229	26
RTOR Reduction (vph)	0	39	0	0	62	0	0	5	0	0	1	0
Lane Group Flow (vph)	0	449	0	0	124	0	0	764	0	0	1437	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		17.9			17.9			74.1			74.1	
Effective Green, g (s)		17.9			17.9			74.1			74.1	
Actuated g/C Ratio		0.18			0.18			0.74			0.74	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		544			439			1910			1821	
v/s Ratio Prot												
v/s Ratio Perm		c0.15			0.05			0.30			c0.58	
v/c Ratio		0.82			0.28			0.40			0.79	
Uniform Delay, d1		39.5			35.5			4.8			8.1	
Progression Factor		1.00			1.00			0.87			1.05	
Incremental Delay, d2		9.8			0.4			0.5			0.3	
Delay (s)		49.4			35.9			4.6			8.8	
Level of Service		D			D			A			A	
Approach Delay (s)		49.4			35.9			4.6			8.8	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	16.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	100.0	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			



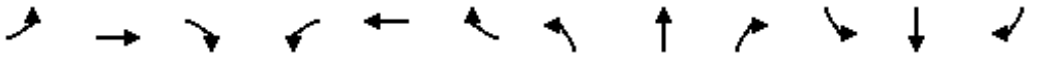
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	352	159	62	240	66	40	603	52	0	1117	164
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00			0.95			1.00	1.00
Frt	1.00	1.00	0.85		0.98			0.99			1.00	0.85
Flt Protected	0.95	1.00	1.00		0.99			1.00			1.00	1.00
Satd. Flow (prot)	1770	1863	1583		1802			3489			1863	1583
Flt Permitted	0.36	1.00	1.00		0.62			0.61			1.00	1.00
Satd. Flow (perm)	680	1863	1583		1134			2118			1863	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)	98	383	173	67	261	72	43	655	57	0	1214	178
RTOR Reduction (vph)	0	0	50	0	8	0	0	6	0	0	0	58
Lane Group Flow (vph)	98	383	123	0	392	0	0	749	0	0	1214	120
Turn Type	Perm		Perm	Perm			Perm					Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2					6
Actuated Green, G (s)	32.0	32.0	32.0		32.0			60.0			60.0	60.0
Effective Green, g (s)	32.0	32.0	32.0		32.0			60.0			60.0	60.0
Actuated g/C Ratio	0.32	0.32	0.32		0.32			0.60			0.60	0.60
Clearance Time (s)	4.0	4.0	4.0		4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	218	596	507		363			1271			1118	950
v/s Ratio Prot		0.21									c0.65	
v/s Ratio Perm	0.14		0.08		c0.35			0.35				0.08
v/c Ratio	0.45	0.64	0.24		1.08			0.59			1.09	0.13
Uniform Delay, d1	27.0	29.1	25.1		34.0			12.4			20.0	8.7
Progression Factor	1.00	1.00	1.00		1.00			1.00			0.43	0.36
Incremental Delay, d2	1.5	2.4	0.2		70.1			2.0			48.4	0.2
Delay (s)	28.5	31.5	25.3		104.1			14.4			57.1	3.3
Level of Service	C	C	C		F			B			E	A
Approach Delay (s)		29.4			104.1			14.4			50.2	
Approach LOS		C			F			B			D	

Intersection Summary			
HCM Average Control Delay	44.2	HCM Level of Service	D
HCM Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	107.4%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	138	1264	444	158	247	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frt		1.00	0.96		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3522	3400		1770	1583
Flt Permitted		0.78	1.00		0.95	1.00
Satd. Flow (perm)		2755	3400		1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	150	1374	483	172	268	82
RTOR Reduction (vph)	0	0	32	0	0	66
Lane Group Flow (vph)	0	1524	623	0	268	16
Turn Type	Perm					Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		73.0	73.0		19.0	19.0
Effective Green, g (s)		73.0	73.0		19.0	19.0
Actuated g/C Ratio		0.73	0.73		0.19	0.19
Clearance Time (s)		4.0	4.0		4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		2011	2482		336	301
v/s Ratio Prot			0.18		c0.15	
v/s Ratio Perm		c0.55				0.01
v/c Ratio		0.76	0.25		0.80	0.05
Uniform Delay, d1		8.2	4.5		38.7	33.1
Progression Factor		1.00	0.64		0.74	0.44
Incremental Delay, d2		2.7	0.2		7.9	0.0
Delay (s)		10.9	3.1		36.5	14.6
Level of Service		B	A		D	B
Approach Delay (s)		10.9	3.1		31.4	
Approach LOS		B	A		C	

Intersection Summary			
HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	1116	149	68	451	16	42	191	65	139	525	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			1.00			1.00			1.00	
Frt		0.98			1.00			0.97			1.00	
Flt Protected		1.00			0.99			0.99			0.99	
Satd. Flow (prot)		3474			1844			1795			1839	
Flt Permitted		0.93			0.46			0.79			0.75	
Satd. Flow (perm)		3243			846			1419			1393	
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)	28	1213	162	74	490	17	46	208	71	151	571	13
RTOR Reduction (vph)	0	6	0	0	1	0	0	7	0	0	1	0
Lane Group Flow (vph)	0	1397	0	0	580	0	0	318	0	0	734	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		75.0			75.0			51.0			51.0	
Effective Green, g (s)		75.0			75.0			51.0			51.0	
Actuated g/C Ratio		0.56			0.56			0.38			0.38	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1815			474			540			530	
v/s Ratio Prot												
v/s Ratio Perm		0.43			c0.69			0.22			c0.53	
v/c Ratio		0.77			1.22			0.59			1.39	
Uniform Delay, d1		22.8			29.5			33.1			41.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		2.0			118.4			1.6			185.0	
Delay (s)		24.8			147.9			34.8			226.5	
Level of Service		C			F			C			F	
Approach Delay (s)		24.8			147.9			34.8			226.5	
Approach LOS		C			F			C			F	

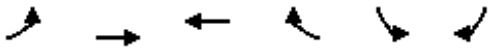
Intersection Summary			
HCM Average Control Delay	98.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.29		
Actuated Cycle Length (s)	134.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	130.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	2600	150	80	1140	100	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.91		1.00	0.91	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	5044		1770	5085	1770	1583
Flt Permitted	1.00		0.05	1.00	0.95	1.00
Satd. Flow (perm)	5044		98	5085	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2826	163	87	1239	109	185
RTOR Reduction (vph)	6	0	0	0	0	5
Lane Group Flow (vph)	2983	0	87	1239	109	180
Turn Type			Perm			Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Actuated Green, G (s)	76.0		76.0	76.0	16.0	16.0
Effective Green, g (s)	76.0		76.0	76.0	16.0	16.0
Actuated g/C Ratio	0.76		0.76	0.76	0.16	0.16
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3833		74	3865	283	253
v/s Ratio Prot	0.59			0.24	0.06	
v/s Ratio Perm			c0.89			c0.11
v/c Ratio	0.78		1.18	0.32	0.39	0.71
Uniform Delay, d1	7.0		12.0	3.8	37.6	39.8
Progression Factor	0.14		1.03	0.14	0.60	0.60
Incremental Delay, d2	0.8		141.7	0.2	3.8	15.0
Delay (s)	1.8		154.0	0.7	26.2	38.9
Level of Service	A		F	A	C	D
Approach Delay (s)	1.8			10.8	34.2	
Approach LOS	A			B	C	

Intersection Summary			
HCM Average Control Delay	6.5	HCM Level of Service	A
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	1200	130	0	524	90	32	27	80	182	60	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95			0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.99			0.98		1.00	0.89		1.00	0.91	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3487			4973		1770	1653		1770	1703	
Flt Permitted	0.36	1.00			1.00		0.63	1.00		0.68	1.00	
Satd. Flow (perm)	674	3487			4973		1179	1653		1264	1703	
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)	174	1304	141	0	570	98	35	29	87	198	65	87
RTOR Reduction (vph)	0	9	0	0	28	0	0	35	0	0	44	0
Lane Group Flow (vph)	174	1436	0	0	640	0	35	81	0	198	108	0
Turn Type	Perm						Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4						2			6		
Actuated Green, G (s)	53.0	53.0			53.0		39.0	39.0		39.0	39.0	
Effective Green, g (s)	53.0	53.0			53.0		39.0	39.0		39.0	39.0	
Actuated g/C Ratio	0.53	0.53			0.53		0.39	0.39		0.39	0.39	
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	357	1848			2636		460	645		493	664	
v/s Ratio Prot		c0.41			0.13			0.05			0.06	
v/s Ratio Perm	0.26						0.03			c0.16		
v/c Ratio	0.49	0.78			0.24		0.08	0.13		0.40	0.16	
Uniform Delay, d1	14.9	18.8			12.7		19.2	19.6		22.1	19.9	
Progression Factor	0.35	0.37			0.53		1.00	1.00		1.33	1.53	
Incremental Delay, d2	0.9	1.9			0.0		0.3	0.4		1.8	0.4	
Delay (s)	6.1	8.9			6.8		19.5	20.0		31.1	30.8	
Level of Service	A	A			A		B	B		C	C	
Approach Delay (s)		8.6			6.8			19.9			31.0	
Approach LOS		A			A			B			C	

Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

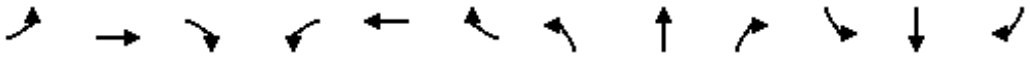


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	57	1401	528	82	102	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.44	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	812	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	62	1523	574	89	111	55
RTOR Reduction (vph)	0	0	0	17	0	49
Lane Group Flow (vph)	62	1523	574	72	111	6
Turn Type	Perm			Perm		Perm
Protected Phases		2	6		4	
Permitted Phases	2			6		4
Actuated Green, G (s)	80.4	80.4	80.4	80.4	11.6	11.6
Effective Green, g (s)	80.4	80.4	80.4	80.4	11.6	11.6
Actuated g/C Ratio	0.80	0.80	0.80	0.80	0.12	0.12
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	653	2845	2845	1273	205	184
v/s Ratio Prot		c0.43	0.16		c0.06	
v/s Ratio Perm	0.08			0.05		0.00
v/c Ratio	0.09	0.54	0.20	0.06	0.54	0.03
Uniform Delay, d1	2.1	3.4	2.3	2.0	41.7	39.2
Progression Factor	0.75	0.72	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.5	0.2	0.1	2.9	0.1
Delay (s)	1.8	2.9	2.5	2.1	44.6	39.3
Level of Service	A	A	A	A	D	D
Approach Delay (s)		2.9	2.4		42.8	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	5.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	570	20	28	350	20	5	5	8	20	8	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.90		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1853		1770	3510		1770	1683		1770	1723	
Flt Permitted	0.49	1.00		0.21	1.00		0.75	1.00		0.75	1.00	
Satd. Flow (perm)	904	1853		389	3510		1389	1683		1394	1723	
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	620	22	30	380	22	5	5	9	22	9	9
RTOR Reduction (vph)	0	3	0	0	8	0	0	5	0	0	5	0
Lane Group Flow (vph)	22	639	0	30	394	0	5	9	0	22	13	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	48.6	48.6		48.6	48.6		43.4	43.4		43.4	43.4	
Effective Green, g (s)	48.6	48.6		48.6	48.6		43.4	43.4		43.4	43.4	
Actuated g/C Ratio	0.49	0.49		0.49	0.49		0.43	0.43		0.43	0.43	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	439	901		189	1706		603	730		605	748	
v/s Ratio Prot		c0.35			0.11			0.01			0.01	
v/s Ratio Perm	0.02			0.08			0.00			c0.02		
v/c Ratio	0.05	0.71		0.16	0.23		0.01	0.01		0.04	0.02	
Uniform Delay, d1	13.5	20.2		14.3	14.9		16.1	16.1		16.3	16.1	
Progression Factor	0.58	0.76		1.14	1.15		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	1.5		0.4	0.1		0.0	0.0		0.1	0.0	
Delay (s)	7.9	16.7		16.7	17.2		16.1	16.1		16.4	16.2	
Level of Service	A	B		B	B		B	B		B	B	
Approach Delay (s)		16.4			17.1			16.1			16.3	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	16.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

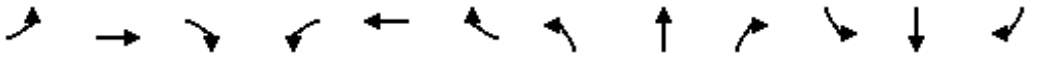


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	68	190	35	107	886	72	128	434	36	24	559	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95			0.95	
Frt	1.00	0.98		1.00	0.99		1.00	0.99			0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770	1819		1770	1842		1770	3499			3473	
Flt Permitted	0.05	1.00		0.57	1.00		0.12	1.00			0.86	
Satd. Flow (perm)	93	1819		1053	1842		226	3499			3005	
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	207	38	116	963	78	139	472	39	26	608	80
RTOR Reduction (vph)	0	5	0	0	2	0	0	4	0	0	7	0
Lane Group Flow (vph)	74	240	0	116	1039	0	139	507	0	0	707	0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	84.0	80.0		84.0	80.0		44.0	44.0			32.0	
Effective Green, g (s)	84.0	80.0		84.0	80.0		44.0	44.0			32.0	
Actuated g/C Ratio	0.60	0.57		0.60	0.57		0.31	0.31			0.23	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	104	1039		652	1053		159	1100			687	
v/s Ratio Prot	c0.02	0.13		0.01	c0.56		c0.05	0.14				
v/s Ratio Perm	0.41			0.10			0.22				c0.24	
v/c Ratio	0.71	0.23		0.18	0.99		0.87	0.46			1.03	
Uniform Delay, d1	64.3	14.8		15.0	29.5		58.5	38.5			54.0	
Progression Factor	1.70	1.70		1.00	1.00		0.67	0.71			0.81	
Incremental Delay, d2	20.2	0.5		0.1	24.7		36.2	1.3			37.1	
Delay (s)	129.9	25.7		15.2	54.2		75.3	28.6			80.7	
Level of Service	F	C		B	D		E	C			F	
Approach Delay (s)		49.9			50.3			38.6			80.7	
Approach LOS		D			D			D			F	

Intersection Summary			
HCM Average Control Delay	55.2	HCM Level of Service	E
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	99.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	827	108	576	1693	240	379
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	1.00	0.95	1.00	0.88
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	1770	3539	1770	2787
Flt Permitted	1.00	1.00	0.16	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	304	3539	1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	899	117	626	1840	261	412
RTOR Reduction (vph)	0	44	0	0	0	318
Lane Group Flow (vph)	899	73	626	1840	261	94
Turn Type		Perm	pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases		2	6			8
Actuated Green, G (s)	37.0	37.0	100.0	100.0	32.0	32.0
Effective Green, g (s)	37.0	37.0	100.0	100.0	32.0	32.0
Actuated g/C Ratio	0.26	0.26	0.71	0.71	0.23	0.23
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1344	418	835	2528	405	637
v/s Ratio Prot	0.18		0.32	c0.52	c0.15	
v/s Ratio Perm		0.05	c0.22			0.03
v/c Ratio	0.67	0.17	0.75	0.73	0.64	0.15
Uniform Delay, d1	46.0	39.7	24.5	11.9	48.9	43.1
Progression Factor	1.21	1.49	1.00	1.00	0.92	2.36
Incremental Delay, d2	2.6	0.9	3.7	1.9	6.7	0.4
Delay (s)	58.3	60.0	28.2	13.8	51.8	102.1
Level of Service	E	E	C	B	D	F
Approach Delay (s)	58.5			17.4	82.6	
Approach LOS	E			B	F	

Intersection Summary			
HCM Average Control Delay	38.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



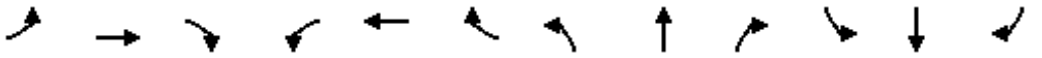
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	117	276	30	49	989	71	211	331	68	42	173	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	10	10	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5010		1770	3504		1652	1694		1770	1782	
Flt Permitted	0.15	1.00		0.50	1.00		0.19	1.00		0.29	1.00	
Satd. Flow (perm)	276	5010		934	3504		336	1694		539	1782	
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)	127	300	33	53	1075	77	229	360	74	46	188	77
RTOR Reduction (vph)	0	9	0	0	4	0	0	6	0	0	11	0
Lane Group Flow (vph)	127	324	0	53	1148	0	229	428	0	46	254	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	74.4	74.4		66.4	66.4		48.8	41.6		28.5	25.3	
Effective Green, g (s)	74.4	74.4		66.4	66.4		48.8	41.6		28.5	25.3	
Actuated g/C Ratio	0.53	0.53		0.47	0.47		0.35	0.30		0.20	0.18	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	283	2662		472	1662		300	503		138	322	
v/s Ratio Prot	c0.04	0.06		0.00	c0.33		c0.11	c0.25		0.01	0.14	
v/s Ratio Perm	0.20			0.05			0.16			0.06		
v/c Ratio	0.45	0.12		0.11	0.69		0.76	0.85		0.33	0.79	
Uniform Delay, d1	40.2	16.4		20.0	28.8		36.3	46.3		46.0	54.8	
Progression Factor	0.50	0.59		0.37	0.33		0.93	0.98		0.63	0.78	
Incremental Delay, d2	1.0	0.1		0.1	2.3		8.9	10.7		1.4	11.7	
Delay (s)	21.1	9.8		7.5	11.7		42.7	56.0		30.2	54.6	
Level of Service	C	A		A	B		D	E		C	D	
Approach Delay (s)		12.9			11.5			51.4			51.0	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM Average Control Delay	26.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

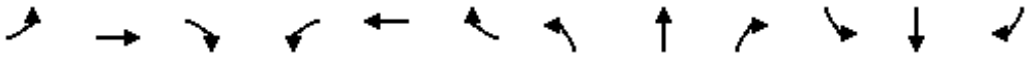
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	739	125	147	2035	199	198
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.91		1.00	0.91	1.00	1.00
Frt	0.98		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	4975		1770	5085	1770	1583
Flt Permitted	1.00		0.25	1.00	0.95	1.00
Satd. Flow (perm)	4975		471	5085	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	803	136	160	2212	216	215
RTOR Reduction (vph)	17	0	0	0	0	161
Lane Group Flow (vph)	922	0	160	2212	216	54
Turn Type			pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Actuated Green, G (s)	77.0		97.0	97.0	35.0	35.0
Effective Green, g (s)	77.0		97.0	97.0	35.0	35.0
Actuated g/C Ratio	0.55		0.69	0.69	0.25	0.25
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2736		475	3523	443	396
v/s Ratio Prot	0.19		0.04	c0.43	c0.12	
v/s Ratio Perm			0.19			0.03
v/c Ratio	0.34		0.34	0.63	0.49	0.14
Uniform Delay, d1	17.4		14.7	11.7	44.8	40.8
Progression Factor	1.10		0.48	0.43	0.87	1.75
Incremental Delay, d2	0.2		0.4	0.7	2.8	0.5
Delay (s)	19.4		7.3	5.8	42.0	71.8
Level of Service	B		A	A	D	E
Approach Delay (s)	19.4			5.9	56.9	
Approach LOS	B			A	E	

Intersection Summary			
HCM Average Control Delay	15.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	74	27	45	486	57	93	541	12	13	288	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	4.0
Lane Util. Factor		1.00			0.95			1.00			1.00	1.00
Frt		0.97			0.99			1.00			1.00	0.85
Flt Protected		0.99			1.00			0.99			1.00	1.00
Satd. Flow (prot)		1790			3474			1845			1859	1583
Flt Permitted		0.49			0.90			0.89			0.97	1.00
Satd. Flow (perm)		889			3151			1658			1798	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)	37	80	29	49	528	62	101	588	13	14	313	62
RTOR Reduction (vph)	0	7	0	0	6	0	0	0	0	0	0	18
Lane Group Flow (vph)	0	139	0	0	633	0	0	702	0	0	327	44
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		33.5			33.5			98.5			98.5	98.5
Effective Green, g (s)		33.5			33.5			98.5			98.5	98.5
Actuated g/C Ratio		0.24			0.24			0.70			0.70	0.70
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		213			754			1167			1265	1114
v/s Ratio Prot												
v/s Ratio Perm		0.16			c0.20			c0.42			0.18	0.03
v/c Ratio		0.65			0.84			0.60			0.26	0.04
Uniform Delay, d1		48.0			50.7			10.7			7.5	6.3
Progression Factor		1.24			1.00			0.22			0.65	0.21
Incremental Delay, d2		6.7			8.2			1.7			0.5	0.1
Delay (s)		66.4			58.9			4.0			5.4	1.4
Level of Service		E			E			A			A	A
Approach Delay (s)		66.4			58.9			4.0			4.8	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM Average Control Delay	27.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	87.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	81	458	77	69	1136	108	134	650	27	12	702	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	
Lane Util. Factor		0.91			0.91		1.00	0.95			0.95	
Frt		0.98			0.99		1.00	0.99			0.98	
Flt Protected		0.99			1.00		0.95	1.00			1.00	
Satd. Flow (prot)		4957			5010		1770	3518			3462	
Flt Permitted		0.64			0.82		0.23	1.00			0.94	
Satd. Flow (perm)		3202			4097		431	3518			3256	
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	498	84	75	1235	117	146	707	29	13	763	128
RTOR Reduction (vph)	0	13	0	0	8	0	0	2	0	0	9	0
Lane Group Flow (vph)	0	657	0	0	1419	0	146	734	0	0	895	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		58.0			58.0		74.0	74.0			74.0	
Effective Green, g (s)		58.0			58.0		74.0	74.0			74.0	
Actuated g/C Ratio		0.41			0.41		0.53	0.53			0.53	
Clearance Time (s)		4.0			4.0		4.0	4.0			4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1327			1697		228	1860			1721	
v/s Ratio Prot								0.21				
v/s Ratio Perm		0.21			c0.35		c0.34				0.27	
v/c Ratio		1.10dl			0.84		0.64	0.39			0.52	
Uniform Delay, d1		30.2			36.7		23.5	19.7			21.5	
Progression Factor		1.00			0.40		0.69	0.54			0.77	
Incremental Delay, d2		1.3			3.8		12.0	0.6			0.5	
Delay (s)		31.5			18.7		28.1	11.1			17.0	
Level of Service		C			B		C	B			B	
Approach Delay (s)		31.5			18.7			13.9			17.0	
Approach LOS		C			B			B			B	

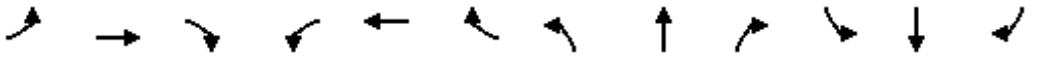
Intersection Summary			
HCM Average Control Delay	19.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	93.6%	ICU Level of Service	F
Analysis Period (min)	15		

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

c Critical Lane Group

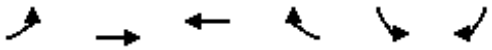
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	87	561	61	191	1753	299	171	601	139	258	576	136
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00		0.95	
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85		0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00		0.99	
Satd. Flow (prot)	1770	5011		1770	4974		1770	1863	1583		3419	
Flt Permitted	0.18	1.00		0.18	1.00		0.20	1.00	1.00		0.57	
Satd. Flow (perm)	337	5011		337	4974		365	1863	1583		1975	
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	610	66	208	1905	325	186	653	151	280	626	148
RTOR Reduction (vph)	0	9	0	0	17	0	0	0	57	0	10	0
Lane Group Flow (vph)	95	667	0	208	2213	0	186	653	94	0	1044	0
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	26.1	26.1		37.0	37.0		87.0	87.0	87.0		79.0	
Effective Green, g (s)	26.1	26.1		37.0	37.0		87.0	87.0	87.0		79.0	
Actuated g/C Ratio	0.19	0.19		0.26	0.26		0.62	0.62	0.62		0.56	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	104	934		242	1315		267	1158	984		1114	
v/s Ratio Prot	0.03	c0.13		0.09	c0.44		0.02	c0.35				
v/s Ratio Perm	0.14			0.14			0.41		0.06		c0.53	
v/c Ratio	0.91	0.71		0.86	1.68		0.70	0.56	0.10		0.94	
Uniform Delay, d1	64.8	53.4		44.3	51.5		32.8	15.4	10.7		28.2	
Progression Factor	1.00	1.00		0.76	0.80		0.88	1.09	1.36		1.00	
Incremental Delay, d2	61.0	4.6		20.6	310.0		7.1	1.8	0.2		14.2	
Delay (s)	125.8	58.1		54.4	351.3		35.9	18.7	14.7		42.4	
Level of Service	F	E		D	F		D	B	B		D	
Approach Delay (s)		66.4			326.0			21.3			42.4	
Approach LOS		E			F			C			D	

Intersection Summary			
HCM Average Control Delay	173.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	118.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



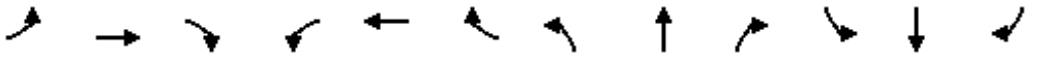
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	80	192	164	404	46	210	849	12	12	777	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95		1.00	0.95		1.00	0.95	
Frt		0.91			0.99		1.00	1.00		1.00	0.98	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3206			3453		1770	3532		1770	3469	
Flt Permitted		0.60			0.67		0.24	1.00		0.26	1.00	
Satd. Flow (perm)		1938			2361		453	3532		477	3469	
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)	71	87	209	178	439	50	228	923	13	13	845	128
RTOR Reduction (vph)	0	134	0	0	4	0	0	1	0	0	8	0
Lane Group Flow (vph)	0	233	0	0	663	0	228	935	0	13	965	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		41.5			41.5		90.5	90.5		90.5	90.5	
Effective Green, g (s)		41.5			41.5		90.5	90.5		90.5	90.5	
Actuated g/C Ratio		0.30			0.30		0.65	0.65		0.65	0.65	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		574			700		293	2283		308	2242	
v/s Ratio Prot								0.26			0.28	
v/s Ratio Perm		0.12			c0.28		c0.50			0.03		
v/c Ratio		0.41			0.95		0.78	0.41		0.04	0.43	
Uniform Delay, d1		39.4			48.2		17.6	11.9		9.0	12.1	
Progression Factor		1.00			0.28		0.17	0.09		0.43	0.55	
Incremental Delay, d2		0.5			18.6		1.9	0.0		0.2	0.5	
Delay (s)		39.9			32.2		4.8	1.1		4.1	7.2	
Level of Service		D			C		A	A		A	A	
Approach Delay (s)		39.9			32.2			1.9			7.1	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	77.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



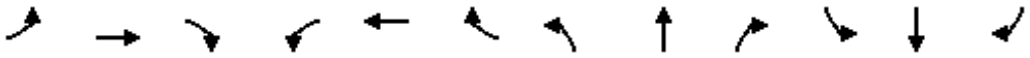
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	178	771	2018	177	78	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91	0.95		0.97	
Frt	1.00	1.00	0.99		0.98	
Flt Protected	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1770	5085	3496		3382	
Flt Permitted	0.04	1.00	1.00		0.96	
Satd. Flow (perm)	72	5085	3496		3382	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	193	838	2193	192	85	17
RTOR Reduction (vph)	0	0	5	0	12	0
Lane Group Flow (vph)	193	838	2380	0	90	0
Turn Type	pm+pt					
Protected Phases	5	2	6		4	
Permitted Phases	2					
Actuated Green, G (s)	116.0	116.0	99.0		16.0	
Effective Green, g (s)	116.0	116.0	99.0		16.0	
Actuated g/C Ratio	0.83	0.83	0.71		0.11	
Clearance Time (s)	4.0	4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	217	4213	2472		387	
v/s Ratio Prot	c0.08	0.16	c0.68		c0.03	
v/s Ratio Perm	0.65					
v/c Ratio	0.89	0.20	0.96		0.23	
Uniform Delay, d1	55.4	2.5	18.8		56.4	
Progression Factor	1.22	0.09	0.22		1.00	
Incremental Delay, d2	32.1	0.1	5.6		1.4	
Delay (s)	99.9	0.3	9.8		57.8	
Level of Service	F	A	A		E	
Approach Delay (s)		19.0	9.8		57.8	
Approach LOS		B	A		E	

Intersection Summary			
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	104	797	18	15	1902	133	63	57	119	16	250	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.97	1.00		1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	3504			1815	1583		1857	1583
Flt Permitted	0.05	1.00	1.00	0.28	1.00			0.37	1.00		0.98	1.00
Satd. Flow (perm)	85	5085	1583	525	3504			688	1583		1825	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)	113	866	20	16	2067	145	68	62	129	17	272	224
RTOR Reduction (vph)	0	0	4	0	4	0	0	0	101	0	0	65
Lane Group Flow (vph)	113	866	16	16	2208	0	0	130	28	0	289	159
Turn Type	pm+pt		Perm	pm+pt			Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6			8		8	4		4
Actuated Green, G (s)	96.4	96.4	96.4	89.6	89.6			30.0	30.0		30.0	30.0
Effective Green, g (s)	96.4	96.4	96.4	89.6	89.6			30.0	30.0		30.0	30.0
Actuated g/C Ratio	0.69	0.69	0.69	0.64	0.64			0.21	0.21		0.21	0.21
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
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)	160	3501	1090	350	2243			147	339		391	339
v/s Ratio Prot	c0.04	0.17		0.00	c0.63							
v/s Ratio Perm	0.45		0.01	0.03				c0.19	0.02		0.16	0.10
v/c Ratio	0.71	0.25	0.01	0.05	0.98			0.88	0.08		0.74	0.47
Uniform Delay, d1	60.4	8.2	6.9	9.5	24.5			53.3	44.0		51.3	48.0
Progression Factor	0.91	0.38	0.17	0.91	0.63			1.00	1.00		1.00	1.00
Incremental Delay, d2	13.2	0.2	0.0	0.0	13.0			48.5	0.5		11.8	4.6
Delay (s)	68.2	3.3	1.2	8.7	28.5			101.8	44.5		63.2	52.6
Level of Service	E	A	A	A	C			F	D		E	D
Approach Delay (s)		10.6			28.3			73.2			58.6	
Approach LOS		B			C			E			E	

Intersection Summary			
HCM Average Control Delay	30.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	96.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

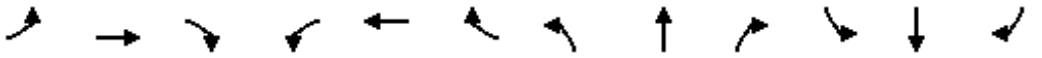


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	62	0	119	893	221	166	51	390	0	0	607	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95			0.95	
Frt	1.00		0.85	1.00	0.94		1.00	1.00			0.98	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770		1583	1770	1743		1770	3539			3455	
Flt Permitted	0.44		1.00	0.95	1.00		0.10	1.00			1.00	
Satd. Flow (perm)	829		1583	1770	1743		180	3539			3455	
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)	67	0	129	971	240	180	55	424	0	0	660	124
RTOR Reduction (vph)	0	0	49	0	19	0	0	0	0	0	11	0
Lane Group Flow (vph)	67	0	80	971	401	0	55	424	0	0	773	0
Turn Type	custom		custom	Perm			pm+pt					
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2					
Actuated Green, G (s)	87.0		87.0	87.0	87.0		45.0	45.0			37.8	
Effective Green, g (s)	87.0		87.0	87.0	87.0		45.0	45.0			37.8	
Actuated g/C Ratio	0.62		0.62	0.62	0.62		0.32	0.32			0.27	
Clearance Time (s)	4.0		4.0	4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	515		984	1100	1083		94	1138			933	
v/s Ratio Prot					0.23		c0.01	0.12			c0.22	
v/s Ratio Perm	0.08		0.05	c0.55			0.17					
v/c Ratio	0.13		0.08	0.88	0.37		0.59	0.37			0.83	
Uniform Delay, d1	10.9		10.6	22.2	13.0		36.9	36.6			48.1	
Progression Factor	1.00		1.00	0.92	0.96		1.00	1.00			0.30	
Incremental Delay, d2	0.1		0.0	5.2	0.5		9.0	0.9			4.6	
Delay (s)	11.0		10.6	25.7	13.0		45.8	37.6			19.2	
Level of Service	B		B	C	B		D	D			B	
Approach Delay (s)		10.7			21.8			38.5			19.2	
Approach LOS		B			C			D			B	

Intersection Summary			
HCM Average Control Delay	23.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	187	182	557	1090	509	388
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.37	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	688	3539	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	203	198	605	1185	553	422
RTOR Reduction (vph)	0	167	0	0	0	87
Lane Group Flow (vph)	203	31	605	1185	553	335
Turn Type		Perm	pm+pt			pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases		4	2			6
Actuated Green, G (s)	21.7	21.7	110.3	110.3	72.4	94.1
Effective Green, g (s)	21.7	21.7	110.3	110.3	72.4	94.1
Actuated g/C Ratio	0.16	0.16	0.79	0.79	0.52	0.67
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	274	245	804	2788	1830	1109
v/s Ratio Prot	c0.11		c0.18	0.33	0.16	0.05
v/s Ratio Perm		0.02	c0.41			0.16
v/c Ratio	0.74	0.13	0.75	0.43	0.30	0.30
Uniform Delay, d1	56.5	51.0	7.0	4.7	19.3	9.4
Progression Factor	0.82	1.22	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.5	0.2	4.0	0.5	0.4	0.2
Delay (s)	55.9	62.5	11.0	5.2	19.8	9.6
Level of Service	E	E	B	A	B	A
Approach Delay (s)	59.2			7.2	15.4	
Approach LOS	E			A	B	

Intersection Summary			
HCM Average Control Delay	16.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

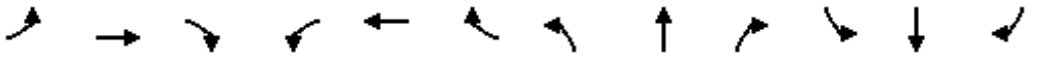


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	268	25	28	810	112	398	544	50	41	261	166
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1839		1770	1829		1770	1839		1770	1863	1583
Flt Permitted	0.06	1.00		0.49	1.00		0.18	1.00		0.18	1.00	1.00
Satd. Flow (perm)	104	1839		911	1829		331	1839		339	1863	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)	52	291	27	30	880	122	433	591	54	45	284	180
RTOR Reduction (vph)	0	2	0	0	3	0	0	2	0	0	0	46
Lane Group Flow (vph)	52	316	0	30	999	0	433	643	0	45	284	134
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	75.0	71.8		73.4	71.0		53.8	46.6		25.2	22.0	22.0
Effective Green, g (s)	75.0	71.8		73.4	71.0		53.8	46.6		25.2	22.0	22.0
Actuated g/C Ratio	0.54	0.51		0.52	0.51		0.38	0.33		0.18	0.16	0.16
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	94	943		492	928		413	612		94	293	249
v/s Ratio Prot	c0.01	0.17		0.00	c0.55		c0.21	c0.35		0.01	0.15	
v/s Ratio Perm	0.28			0.03			0.19			0.08		0.08
v/c Ratio	0.55	0.33		0.06	1.08		1.05	1.05		0.48	0.97	0.54
Uniform Delay, d1	32.4	20.1		16.5	34.5		50.9	46.7		64.5	58.7	54.3
Progression Factor	1.23	0.69		0.66	0.86		0.97	0.95		1.00	1.00	1.00
Incremental Delay, d2	6.7	0.9		0.0	50.7		57.5	50.4		3.8	45.3	8.2
Delay (s)	46.5	14.9		10.9	80.5		106.8	95.0		68.4	104.0	62.5
Level of Service	D	B		B	F		F	F		E	F	E
Approach Delay (s)		19.3			78.5			99.7			86.2	
Approach LOS		B			E			F			F	

Intersection Summary			
HCM Average Control Delay	80.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

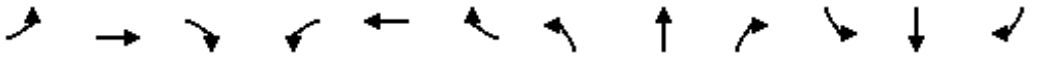
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	117	8	16	808	250	147	372	16	46	179	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0			4.0	
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	
Frt		0.99			1.00	0.85		1.00			0.97	
Flt Protected		0.99			1.00	1.00		0.99			0.99	
Satd. Flow (prot)		1838			1861	1583		1830			1791	
Flt Permitted		0.55			0.99	1.00		0.73			0.84	
Satd. Flow (perm)		1013			1851	1583		1357			1510	
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	127	9	17	878	272	160	404	17	50	195	73
RTOR Reduction (vph)	0	1	0	0	0	134	0	1	0	0	8	0
Lane Group Flow (vph)	0	151	0	0	895	138	0	580	0	0	310	0
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)		71.0			71.0	71.0		61.0			61.0	
Effective Green, g (s)		71.0			71.0	71.0		61.0			61.0	
Actuated g/C Ratio		0.51			0.51	0.51		0.44			0.44	
Clearance Time (s)		4.0			4.0	4.0		4.0			4.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		514			939	803		591			658	
v/s Ratio Prot												
v/s Ratio Perm		0.15			c0.48	0.09		c0.43			0.21	
v/c Ratio		0.29			0.95	0.17		0.98			0.47	
Uniform Delay, d1		20.0			32.9	18.6		39.0			28.0	
Progression Factor		1.00			1.06	1.47		1.00			1.36	
Incremental Delay, d2		1.4			19.8	0.5		32.9			2.3	
Delay (s)		21.4			54.8	27.8		71.8			40.3	
Level of Service		C			D	C		E			D	
Approach Delay (s)		21.4			48.5			71.8			40.3	
Approach LOS		C			D			E			D	

Intersection Summary			
HCM Average Control Delay	51.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	100.4%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



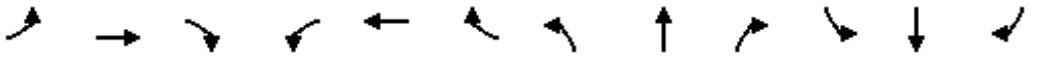
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	449	598	117	75	1321	59	451	846	73	37	285	1217
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.98		1.00	0.99		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1593	3107		1593	3165		1593	3148		1593	3185	1425
Flt Permitted	0.95	1.00		0.12	1.00		0.52	1.00		0.12	1.00	1.00
Satd. Flow (perm)	1593	3107		196	3165		864	3148		198	3185	1425
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)	488	650	127	82	1436	64	490	920	79	40	310	1323
RTOR Reduction (vph)	0	12	0	0	2	0	0	4	0	0	0	244
Lane Group Flow (vph)	488	765	0	82	1498	0	490	995	0	40	310	1079
Turn Type	Prot			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6			8			4		4
Actuated Green, G (s)	23.0	57.2		41.2	41.2		61.5	54.7		58.1	53.0	53.0
Effective Green, g (s)	23.0	57.2		41.2	41.2		61.5	54.7		58.1	53.0	53.0
Actuated g/C Ratio	0.16	0.41		0.29	0.29		0.44	0.39		0.42	0.38	0.38
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	262	1269		128	931		415	1230		133	1206	539
v/s Ratio Prot	c0.31	0.25		0.03	c0.47		c0.06	0.32		0.01	0.10	
v/s Ratio Perm				0.16			0.46			0.11		c0.76
v/c Ratio	1.86	0.60		0.64	1.61		1.18	0.81		0.30	0.26	2.00
Uniform Delay, d1	58.5	32.5		39.2	49.4		40.2	38.0		49.8	29.9	43.5
Progression Factor	1.00	1.00		0.96	0.99		0.80	0.76		0.69	0.71	0.47
Incremental Delay, d2	402.5	2.1		7.9	277.8		89.5	1.3		1.2	0.1	457.4
Delay (s)	461.0	34.6		45.7	326.5		121.5	30.4		35.6	21.4	478.0
Level of Service	F	C		D	F		F	C		D	C	F
Approach Delay (s)		199.1			312.0			60.4			382.8	
Approach LOS		F			F			E			F	

Intersection Summary			
HCM Average Control Delay	245.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.80		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	164.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



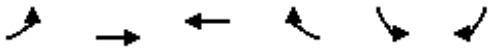
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	16	71	38	33	486	116	392	1182	60	85	389	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		0.95			0.97			0.99			0.99	
Flt Protected		0.99			1.00			0.99			0.99	
Satd. Flow (prot)		3357			3433			3478			3484	
Flt Permitted		0.68			0.93			0.68			0.53	
Satd. Flow (perm)		2308			3198			2396			1856	
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	77	41	36	528	126	426	1285	65	92	423	26
RTOR Reduction (vph)	0	33	0	0	14	0	0	2	0	0	3	0
Lane Group Flow (vph)	0	102	0	0	676	0	0	1774	0	0	538	0
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			104.0			104.0	
Effective Green, g (s)		28.0			28.0			104.0			104.0	
Actuated g/C Ratio		0.20			0.20			0.74			0.74	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		462			640			1780			1379	
v/s Ratio Prot												
v/s Ratio Perm		0.04			c0.21			c0.74			0.29	
v/c Ratio		0.22			1.06			1.00			0.39	
Uniform Delay, d1		46.9			56.0			17.8			6.5	
Progression Factor		1.00			1.00			0.69			0.93	
Incremental Delay, d2		0.2			51.5			16.4			0.8	
Delay (s)		47.1			107.5			28.7			6.9	
Level of Service		D			F			C			A	
Approach Delay (s)		47.1			107.5			28.7			6.9	
Approach LOS		D			F			C			A	

Intersection Summary			
HCM Average Control Delay	43.0	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	91.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	103	17	30	428	51	28	1431	61	16	266	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00			0.95			1.00	1.00
Frt	1.00	1.00	0.85		0.99			0.99			1.00	0.85
Flt Protected	0.95	1.00	1.00		1.00			1.00			1.00	1.00
Satd. Flow (prot)	1770	1863	1583		1832			3515			1858	1583
Flt Permitted	0.23	1.00	1.00		0.98			0.94			0.80	1.00
Satd. Flow (perm)	435	1863	1583		1796			3316			1486	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)	32	112	18	33	465	55	30	1555	66	17	289	74
RTOR Reduction (vph)	0	0	12	0	3	0	0	2	0	0	0	29
Lane Group Flow (vph)	32	112	6	0	550	0	0	1649	0	0	306	45
Turn Type	Perm		Perm	Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		6
Actuated Green, G (s)	46.7	46.7	46.7		46.7			85.3			85.3	85.3
Effective Green, g (s)	46.7	46.7	46.7		46.7			85.3			85.3	85.3
Actuated g/C Ratio	0.33	0.33	0.33		0.33			0.61			0.61	0.61
Clearance Time (s)	4.0	4.0	4.0		4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	145	621	528		599			2020			905	964
v/s Ratio Prot		0.06										
v/s Ratio Perm	0.07		0.00		c0.31			c0.50			0.21	0.03
v/c Ratio	0.22	0.18	0.01		0.92			0.82			0.34	0.05
Uniform Delay, d1	33.6	33.1	31.2		44.8			21.3			13.5	11.0
Progression Factor	1.00	1.00	1.00		1.00			1.00			0.69	0.99
Incremental Delay, d2	0.8	0.1	0.0		19.1			3.8			0.9	0.1
Delay (s)	34.3	33.2	31.2		63.9			25.0			10.2	11.0
Level of Service	C	C	C		E			C			B	B
Approach Delay (s)		33.2			63.9			25.0			10.3	
Approach LOS		C			E			C			B	

Intersection Summary			
HCM Average Control Delay	31.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	101.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	54	315	1519	153	88	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frt		1.00	0.99		1.00	0.85
Flt Protected		0.99	1.00		0.95	1.00
Satd. Flow (prot)		3513	3491		1770	1583
Flt Permitted		0.61	1.00		0.95	1.00
Satd. Flow (perm)		2151	3491		1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	59	342	1651	166	96	146
RTOR Reduction (vph)	0	0	4	0	0	60
Lane Group Flow (vph)	0	401	1813	0	96	86
Turn Type	Perm					Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		118.6	118.6		13.4	13.4
Effective Green, g (s)		118.6	118.6		13.4	13.4
Actuated g/C Ratio		0.85	0.85		0.10	0.10
Clearance Time (s)		4.0	4.0		4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1822	2957		169	152
v/s Ratio Prot			c0.52		0.05	
v/s Ratio Perm		0.19				c0.05
v/c Ratio		0.22	0.61		0.57	0.57
Uniform Delay, d1		2.0	3.4		60.5	60.5
Progression Factor		1.00	0.61		0.80	0.68
Incremental Delay, d2		0.3	0.8		4.2	4.7
Delay (s)		2.3	2.9		52.9	46.1
Level of Service		A	A		D	D
Approach Delay (s)		2.3	2.9		48.8	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	7.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	256	41	24	1649	61	157	485	61	26	120	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			0.95			1.00			1.00	
Frt		0.98			0.99			0.99			0.97	
Flt Protected		1.00			1.00			0.99			0.99	
Satd. Flow (prot)		1824			3518			1821			1803	
Flt Permitted		0.43			0.95			0.83			0.84	
Satd. Flow (perm)		778			3330			1535			1531	
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	278	45	26	1792	66	171	527	66	28	130	36
RTOR Reduction (vph)	0	4	0	0	2	0	0	2	0	0	5	0
Lane Group Flow (vph)	0	341	0	0	1882	0	0	762	0	0	189	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		66.0			66.0			50.0			50.0	
Effective Green, g (s)		66.0			66.0			50.0			50.0	
Actuated g/C Ratio		0.53			0.53			0.40			0.40	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		414			1772			619			617	
v/s Ratio Prot												
v/s Ratio Perm		0.44			c0.57			c0.50			0.12	
v/c Ratio		0.82			1.06			1.23			0.31	
Uniform Delay, d1		24.2			29.0			37.0			25.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		12.5			40.1			117.4			0.3	
Delay (s)		36.7			69.1			154.4			25.5	
Level of Service		D			E			F			C	
Approach Delay (s)		36.7			69.1			154.4			25.5	
Approach LOS		D			E			F			C	

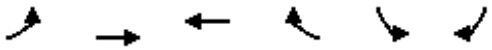
Intersection Summary			
HCM Average Control Delay	83.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	124.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	109.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	937	40	100	2050	84	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.91		1.00	0.91	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	5054		1770	5085	1770	1583
Flt Permitted	1.00		0.25	1.00	0.95	1.00
Satd. Flow (perm)	5054		460	5085	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1018	43	109	2228	91	39
RTOR Reduction (vph)	3	0	0	0	0	33
Lane Group Flow (vph)	1058	0	109	2228	91	6
Turn Type			Perm			Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Actuated Green, G (s)	109.0		109.0	109.0	23.0	23.0
Effective Green, g (s)	109.0		109.0	109.0	23.0	23.0
Actuated g/C Ratio	0.78		0.78	0.78	0.16	0.16
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3935		358	3959	291	260
v/s Ratio Prot	0.21			c0.44	c0.05	
v/s Ratio Perm			0.24			0.00
v/c Ratio	0.27		0.30	0.56	0.31	0.02
Uniform Delay, d1	4.3		4.5	6.1	51.5	49.1
Progression Factor	0.50		0.05	0.04	0.96	1.33
Incremental Delay, d2	0.2		0.9	0.2	2.5	0.2
Delay (s)	2.3		1.1	0.5	51.7	65.3
Level of Service	A		A	A	D	E
Approach Delay (s)	2.3			0.5	55.8	
Approach LOS	A			A	E	

Intersection Summary			
HCM Average Control Delay	3.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	69	385	101	0	1088	90	140	12	21	42	27	122
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95			0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.97			0.99		1.00	0.90		1.00	0.88	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3429			5027		1770	1684		1770	1633	
Flt Permitted	0.10	1.00			1.00		0.64	1.00		0.73	1.00	
Satd. Flow (perm)	186	3429			5027		1189	1684		1367	1633	
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)	75	418	110	0	1183	98	152	13	23	46	29	133
RTOR Reduction (vph)	0	28	0	0	11	0	0	10	0	0	38	0
Lane Group Flow (vph)	75	501	0	0	1270	0	152	26	0	46	124	0
Turn Type	Perm						Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4						2			6		
Actuated Green, G (s)	52.5	52.5			52.5		79.5	79.5		79.5	79.5	
Effective Green, g (s)	52.5	52.5			52.5		79.5	79.5		79.5	79.5	
Actuated g/C Ratio	0.38	0.38			0.38		0.57	0.57		0.57	0.57	
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	70	1286			1885		675	956		776	927	
v/s Ratio Prot		0.15			0.25			0.02			0.08	
v/s Ratio Perm	c0.40						c0.13			0.03		
v/c Ratio	1.07	0.39			0.67		0.23	0.03		0.06	0.13	
Uniform Delay, d1	43.8	32.0			36.6		15.0	13.3		13.5	14.2	
Progression Factor	1.26	1.33			0.70		1.00	1.00		0.90	0.83	
Incremental Delay, d2	128.2	0.2			0.4		0.8	0.1		0.1	0.3	
Delay (s)	183.2	42.7			26.1		15.8	13.3		12.3	12.0	
Level of Service	F	D			C		B	B		B	B	
Approach Delay (s)		60.2			26.1			15.3			12.1	
Approach LOS		E			C			B			B	

Intersection Summary			
HCM Average Control Delay	32.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

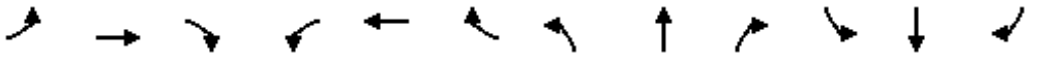


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	29	387	1553	109	38	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.13	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	239	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	32	421	1688	118	41	95
RTOR Reduction (vph)	0	0	0	14	0	61
Lane Group Flow (vph)	32	421	1688	104	41	34
Turn Type	Perm			Perm		Perm
Protected Phases		2	6		4	
Permitted Phases	2			6		4
Actuated Green, G (s)	122.8	122.8	122.8	122.8	9.2	9.2
Effective Green, g (s)	122.8	122.8	122.8	122.8	9.2	9.2
Actuated g/C Ratio	0.88	0.88	0.88	0.88	0.07	0.07
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	210	3104	3104	1389	116	104
v/s Ratio Prot		0.12	c0.48		c0.02	
v/s Ratio Perm	0.13			0.07		0.02
v/c Ratio	0.15	0.14	0.54	0.07	0.35	0.33
Uniform Delay, d1	1.2	1.2	2.0	1.1	62.6	62.5
Progression Factor	1.36	1.41	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.5	0.1	0.7	0.1	1.9	1.9
Delay (s)	3.2	1.8	2.7	1.2	64.4	64.3
Level of Service	A	A	A	A	E	E
Approach Delay (s)		1.9	2.6		64.3	
Approach LOS		A	A		E	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	19	165	15	25	365	15	20	2	13	12	7	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.87		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1840		1770	3519		1770	1618		1770	1649	
Flt Permitted	0.51	1.00		0.64	1.00		0.73	1.00		0.75	1.00	
Satd. Flow (perm)	950	1840		1183	3519		1369	1618		1392	1649	
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	179	16	27	397	16	22	2	14	13	8	26
RTOR Reduction (vph)	0	8	0	0	8	0	0	10	0	0	18	0
Lane Group Flow (vph)	21	187	0	27	405	0	22	6	0	13	16	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	7.9	7.9		7.9	7.9		6.7	6.7		6.7	6.7	
Effective Green, g (s)	7.9	7.9		7.9	7.9		6.7	6.7		6.7	6.7	
Actuated g/C Ratio	0.35	0.35		0.35	0.35		0.30	0.30		0.30	0.30	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	332	643		414	1230		406	480		413	489	
v/s Ratio Prot		0.10			c0.12			0.00			0.01	
v/s Ratio Perm	0.02			0.02			c0.02			0.01		
v/c Ratio	0.06	0.29		0.07	0.33		0.05	0.01		0.03	0.03	
Uniform Delay, d1	4.9	5.3		4.9	5.4		5.7	5.6		5.6	5.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.3		0.1	0.2		0.1	0.0		0.0	0.0	
Delay (s)	5.0	5.6		5.0	5.6		5.7	5.6		5.7	5.7	
Level of Service	A	A		A	A		A	A		A	A	
Approach Delay (s)		5.5			5.5			5.7			5.7	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	5.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.20		
Actuated Cycle Length (s)	22.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	31.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

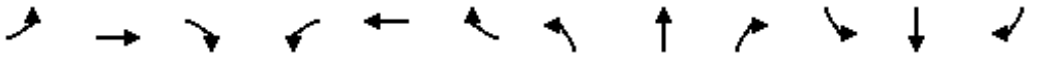


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	133	825	87	96	402	67	112	709	140	70	705	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95			0.95	
Frt	1.00	0.99		1.00	0.98		1.00	0.98			1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770	1836		1770	1823		1770	3452			3514	
Flt Permitted	0.25	1.00		0.11	1.00		0.16	1.00			0.62	
Satd. Flow (perm)	458	1836		201	1823		294	3452			2199	
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)	145	897	95	104	437	73	122	771	152	76	766	15
RTOR Reduction (vph)	0	4	0	0	6	0	0	18	0	0	1	0
Lane Group Flow (vph)	145	988	0	104	504	0	122	905	0	0	856	0
Turn Type	pm+pt			pm+pt			pm+pt			Perm		
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	43.8	38.8		40.2	37.0		36.0	36.0			28.0	
Effective Green, g (s)	43.8	38.8		40.2	37.0		36.0	36.0			28.0	
Actuated g/C Ratio	0.49	0.43		0.45	0.41		0.40	0.40			0.31	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	296	792		146	749		183	1381			684	
v/s Ratio Prot	c0.03	c0.54		0.03	0.28		0.03	c0.26				
v/s Ratio Perm	0.21			0.29			0.24				c0.39	
v/c Ratio	0.49	1.25		0.71	0.67		0.67	0.66			1.25	
Uniform Delay, d1	15.3	25.6		21.0	21.6		33.9	22.0			31.0	
Progression Factor	0.35	0.39		1.00	1.00		0.78	0.80			0.89	
Incremental Delay, d2	1.1	120.3		15.1	4.8		8.4	2.3			120.8	
Delay (s)	6.5	130.3		36.2	26.3		34.8	19.9			148.5	
Level of Service	A	F		D	C		C	B			F	
Approach Delay (s)		114.5			28.0			21.7			148.5	
Approach LOS		F			C			C			F	

Intersection Summary			
HCM Average Control Delay	81.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	113.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1846	418	396	862	327	625
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	1.00	1.00	0.95	1.00	0.88
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	1583	1770	3539	1770	2787
Flt Permitted	1.00	1.00	0.09	1.00	0.95	1.00
Satd. Flow (perm)	5085	1583	172	3539	1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2007	454	430	937	355	679
RTOR Reduction (vph)	0	118	0	0	0	491
Lane Group Flow (vph)	2007	336	430	937	355	188
Turn Type		Perm	pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases		2	6			8
Actuated Green, G (s)	39.2	39.2	62.0	62.0	20.0	20.0
Effective Green, g (s)	39.2	39.2	62.0	62.0	20.0	20.0
Actuated g/C Ratio	0.44	0.44	0.69	0.69	0.22	0.22
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2215	689	452	2438	393	619
v/s Ratio Prot	0.39		c0.20	0.26	c0.20	
v/s Ratio Perm		0.21	c0.46			0.07
v/c Ratio	0.91	0.49	0.95	0.38	0.90	0.30
Uniform Delay, d1	23.7	18.2	27.2	5.9	34.1	29.2
Progression Factor	0.43	0.08	1.00	1.00	0.68	1.21
Incremental Delay, d2	3.8	1.3	30.1	0.5	22.4	1.0
Delay (s)	14.0	2.8	57.3	6.4	45.5	36.4
Level of Service	B	A	E	A	D	D
Approach Delay (s)	12.0			22.4	39.5	
Approach LOS	B			C	D	

Intersection Summary			
HCM Average Control Delay	20.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	85.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



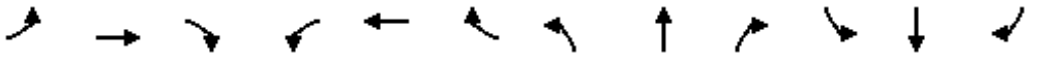
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	204	972	209	151	390	74	68	193	53	67	374	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	10	10	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.98		1.00	0.97		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4950		1770	3455		1652	1682		1770	1810	
Flt Permitted	0.21	1.00		0.21	1.00		0.24	1.00		0.32	1.00	
Satd. Flow (perm)	390	4950		390	3455		417	1682		604	1810	
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)	222	1057	227	164	424	80	74	210	58	73	407	95
RTOR Reduction (vph)	0	35	0	0	16	0	0	12	0	0	10	0
Lane Group Flow (vph)	222	1249	0	164	488	0	74	256	0	73	492	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	32.3	32.3		29.1	29.1		27.7	27.7		28.0	28.0	
Effective Green, g (s)	32.3	32.3		29.1	29.1		27.7	27.7		28.0	28.0	
Actuated g/C Ratio	0.36	0.36		0.32	0.32		0.31	0.31		0.31	0.31	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	342	1777		279	1117		179	518		240	563	
v/s Ratio Prot	0.10	c0.25		c0.07	0.14		0.02	c0.15		0.01	c0.27	
v/s Ratio Perm	0.14			0.12			0.11			0.08		
v/c Ratio	0.65	0.70		0.59	0.44		0.41	0.49		0.30	0.87	
Uniform Delay, d1	22.0	24.7		27.9	24.0		33.6	25.4		23.0	29.3	
Progression Factor	0.41	0.35		0.62	0.51		0.71	0.70		0.89	0.94	
Incremental Delay, d2	1.5	0.8		3.1	1.2		1.4	0.7		0.5	10.7	
Delay (s)	10.4	9.4		20.4	13.5		25.1	18.6		21.0	38.3	
Level of Service	B	A		C	B		C	B		C	D	
Approach Delay (s)		9.6			15.2			20.0			36.1	
Approach LOS		A			B			B			D	

Intersection Summary			
HCM Average Control Delay	16.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

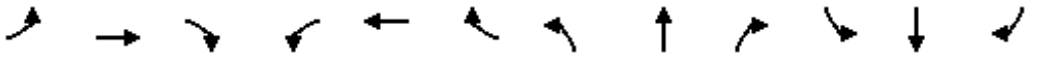
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	2332	183	222	1175	110	267
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.91		1.00	0.91	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	5030		1770	5085	1770	1583
Flt Permitted	1.00		0.07	1.00	0.95	1.00
Satd. Flow (perm)	5030		133	5085	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2535	199	241	1277	120	290
RTOR Reduction (vph)	10	0	0	0	0	146
Lane Group Flow (vph)	2724	0	241	1277	120	144
Turn Type			pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Actuated Green, G (s)	52.2		66.0	66.0	16.0	16.0
Effective Green, g (s)	52.2		66.0	66.0	16.0	16.0
Actuated g/C Ratio	0.58		0.73	0.73	0.18	0.18
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2917		276	3729	315	281
v/s Ratio Prot	c0.54		c0.10	0.25	0.07	
v/s Ratio Perm			0.55			c0.09
v/c Ratio	0.93		0.87	0.34	0.38	0.51
Uniform Delay, d1	17.3		28.1	4.3	32.6	33.5
Progression Factor	0.38		0.90	1.80	0.94	0.92
Incremental Delay, d2	0.8		24.3	0.2	3.0	5.7
Delay (s)	7.4		49.7	8.0	33.8	36.7
Level of Service	A		D	A	C	D
Approach Delay (s)	7.4			14.6	35.8	
Approach LOS	A			B	D	

Intersection Summary			
HCM Average Control Delay	12.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	437	195	14	157	34	17	245	65	66	651	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	4.0
Lane Util. Factor		1.00			0.95			1.00			1.00	1.00
Frt		0.96			0.98			0.97			1.00	0.85
Flt Protected		1.00			1.00			1.00			1.00	1.00
Satd. Flow (prot)		1785			3440			1808			1854	1583
Flt Permitted		0.98			0.91			0.80			0.93	1.00
Satd. Flow (perm)		1749			3140			1449			1738	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)	34	475	212	15	171	37	18	266	71	72	708	114
RTOR Reduction (vph)	0	16	0	0	18	0	0	10	0	0	0	57
Lane Group Flow (vph)	0	705	0	0	205	0	0	345	0	0	780	57
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		37.0			37.0			45.0			45.0	45.0
Effective Green, g (s)		37.0			37.0			45.0			45.0	45.0
Actuated g/C Ratio		0.41			0.41			0.50			0.50	0.50
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		719			1291			725			869	792
v/s Ratio Prot												
v/s Ratio Perm		c0.40			0.07			0.24			c0.45	0.04
v/c Ratio		0.98			0.16			0.48			0.90	0.07
Uniform Delay, d1		26.1			16.7			14.8			20.4	11.7
Progression Factor		0.79			0.30			0.77			0.69	0.53
Incremental Delay, d2		22.0			0.1			2.1			11.1	0.1
Delay (s)		42.7			5.1			13.5			25.3	6.3
Level of Service		D			A			B			C	A
Approach Delay (s)		42.7			5.1			13.5			22.9	
Approach LOS		D			A			B			C	

Intersection Summary			
HCM Average Control Delay	26.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	109.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	146	1273	228	32	461	68	119	475	31	50	818	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0			4.0	
Lane Util. Factor		0.91			0.91		1.00	0.95			0.95	
Frt		0.98			0.98		1.00	0.99			0.99	
Flt Protected		1.00			1.00		0.95	1.00			1.00	
Satd. Flow (prot)		4958			4978		1770	3506			3483	
Flt Permitted		0.78			0.77		0.15	1.00			0.89	
Satd. Flow (perm)		3864			3833		288	3506			3115	
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)	159	1384	248	35	501	74	129	516	34	54	889	91
RTOR Reduction (vph)	0	25	0	0	20	0	0	6	0	0	8	0
Lane Group Flow (vph)	0	1766	0	0	590	0	129	544	0	0	1026	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		42.0			42.0		40.0	40.0			40.0	
Effective Green, g (s)		42.0			42.0		40.0	40.0			40.0	
Actuated g/C Ratio		0.47			0.47		0.44	0.44			0.44	
Clearance Time (s)		4.0			4.0		4.0	4.0			4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1803			1789		128	1558			1384	
v/s Ratio Prot								0.16				
v/s Ratio Perm		c0.46			0.15		c0.45				0.33	
v/c Ratio		0.98			0.33		1.01	0.35			0.74	
Uniform Delay, d1		23.6			15.1		25.0	16.4			20.7	
Progression Factor		1.00			0.57		0.54	0.44			0.56	
Incremental Delay, d2		16.9			0.4		77.5	0.6			0.3	
Delay (s)		40.5			9.0		91.0	7.8			11.9	
Level of Service		D			A		F	A			B	
Approach Delay (s)		40.5			9.0			23.6			11.9	
Approach LOS		D			A			C			B	

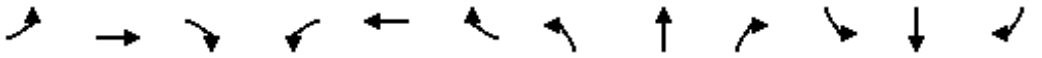
Intersection Summary			
HCM Average Control Delay	25.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	97.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	2048	126	173	884	218	156	415	187	397	628	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00	1.00		0.95	
Frt	1.00	0.99		1.00	0.97		1.00	1.00	0.85		0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00		0.98	
Satd. Flow (prot)	1770	5041		1770	4934		1770	1863	1583		3436	
Flt Permitted	0.12	1.00		0.14	1.00		0.11	1.00	1.00		0.58	
Satd. Flow (perm)	233	5041		266	4934		201	1863	1583		2037	
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)	207	2226	137	188	961	237	170	451	203	432	683	96
RTOR Reduction (vph)	0	8	0	0	47	0	0	0	70	0	7	0
Lane Group Flow (vph)	207	2355	0	188	1151	0	170	451	133	0	1204	0
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8		8	4		
Actuated Green, G (s)	41.0	33.0		32.0	28.0		41.0	41.0	41.0		33.0	
Effective Green, g (s)	41.0	33.0		32.0	28.0		41.0	41.0	41.0		33.0	
Actuated g/C Ratio	0.46	0.37		0.36	0.31		0.46	0.46	0.46		0.37	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	260	1848		161	1535		161	849	721		747	
v/s Ratio Prot	c0.08	c0.47		0.05	0.23		c0.05	0.24				
v/s Ratio Perm	0.28			0.36			0.43		0.08		c0.59	
v/c Ratio	0.80	1.27		1.17	0.75		1.06	0.53	0.18		1.95dl	
Uniform Delay, d1	30.8	28.5		40.1	27.9		37.4	17.6	14.6		28.5	
Progression Factor	1.00	1.00		0.74	0.56		0.96	1.08	1.33		1.00	
Incremental Delay, d2	15.4	127.9		121.6	3.3		83.4	2.2	0.5		281.5	
Delay (s)	46.2	156.4		151.4	18.9		119.1	21.2	19.9		310.0	
Level of Service	D	F		F	B		F	C	B		F	
Approach Delay (s)		147.5			36.9			41.1			310.0	
Approach LOS		F			D			D			F	

Intersection Summary			
HCM Average Control Delay	140.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.28		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	118.8%	ICU Level of Service	H
Analysis Period (min)	15		

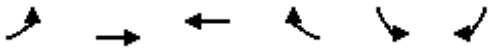
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group



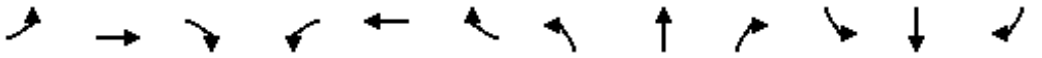
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	67	411	263	73	169	49	154	670	165	60	1188	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		0.95			0.95		1.00	0.95		1.00	0.95	
Frt		0.95			0.97		1.00	0.97		1.00	0.99	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3336			3408		1770	3434		1770	3500	
Flt Permitted		0.86			0.54		0.14	1.00		0.28	1.00	
Satd. Flow (perm)		2884			1870		254	3434		514	3500	
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)	73	447	286	79	184	53	167	728	179	65	1291	104
RTOR Reduction (vph)	0	59	0	0	19	0	0	24	0	0	7	0
Lane Group Flow (vph)	0	747	0	0	297	0	167	883	0	65	1388	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		23.0			23.0		59.0	59.0		59.0	59.0	
Effective Green, g (s)		23.0			23.0		59.0	59.0		59.0	59.0	
Actuated g/C Ratio		0.26			0.26		0.66	0.66		0.66	0.66	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		737			478		167	2251		337	2294	
v/s Ratio Prot								0.26			0.40	
v/s Ratio Perm		c0.26			0.16		c0.66			0.13		
v/c Ratio		1.01			0.62		1.00	0.39		0.19	0.61	
Uniform Delay, d1		33.5			29.7		15.5	7.2		6.1	8.9	
Progression Factor		1.00			0.95		0.36	0.02		0.47	0.39	
Incremental Delay, d2		36.6			2.5		20.9	0.0		1.0	0.9	
Delay (s)		70.1			30.7		26.5	0.2		3.9	4.4	
Level of Service		E			C		C	A		A	A	
Approach Delay (s)		70.1			30.7			4.3			4.4	
Approach LOS		E			C			A			A	

Intersection Summary			
HCM Average Control Delay	21.1	HCM Level of Service	C
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	87.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



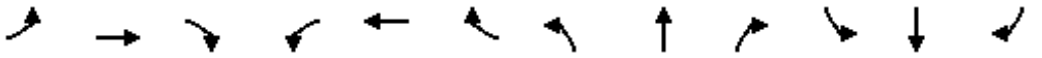
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	297	2162	1097	239	293	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	0.91	0.95		0.97	
Frt	1.00	1.00	0.97		0.98	
Flt Protected	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1770	5085	3444		3397	
Flt Permitted	0.08	1.00	1.00		0.96	
Satd. Flow (perm)	148	5085	3444		3397	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	323	2350	1192	260	318	46
RTOR Reduction (vph)	0	0	19	0	13	0
Lane Group Flow (vph)	323	2350	1433	0	351	0
Turn Type	pm+pt					
Protected Phases	5	2	6		4	
Permitted Phases	2					
Actuated Green, G (s)	66.0	66.0	46.5		16.0	
Effective Green, g (s)	66.0	66.0	46.5		16.0	
Actuated g/C Ratio	0.73	0.73	0.52		0.18	
Clearance Time (s)	4.0	4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	388	3729	1779		604	
v/s Ratio Prot	c0.14	0.46	0.42		c0.10	
v/s Ratio Perm	c0.47					
v/c Ratio	0.83	0.63	0.81		0.58	
Uniform Delay, d1	25.6	5.9	18.0		33.9	
Progression Factor	1.56	0.15	0.30		1.00	
Incremental Delay, d2	10.1	0.6	1.9		4.0	
Delay (s)	50.1	1.4	7.3		38.0	
Level of Service	D	A	A		D	
Approach Delay (s)		7.3	7.3		38.0	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	249	2082	90	38	1104	193	142	83	145	210	89	283
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.95			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.97	1.00		0.97	1.00
Satd. Flow (prot)	1770	5085	1583	1770	3460			1806	1583		1800	1583
Flt Permitted	0.10	1.00	1.00	0.11	1.00			0.44	1.00		0.53	1.00
Satd. Flow (perm)	189	5085	1583	210	3460			818	1583		990	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)	271	2263	98	41	1200	210	154	90	158	228	97	308
RTOR Reduction (vph)	0	0	11	0	16	0	0	0	67	0	0	127
Lane Group Flow (vph)	271	2263	87	41	1394	0	0	244	91	0	325	181
Turn Type	pm+pt		Perm	pm+pt			Perm		Perm	Perm		Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6			8		8	4		4
Actuated Green, G (s)	51.9	45.5	45.5	37.8	35.4			30.1	30.1		30.1	30.1
Effective Green, g (s)	51.9	45.5	45.5	37.8	35.4			30.1	30.1		30.1	30.1
Actuated g/C Ratio	0.58	0.51	0.51	0.42	0.39			0.33	0.33		0.33	0.33
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	329	2571	800	130	1361			274	529		331	529
v/s Ratio Prot	c0.11	c0.45		0.01	c0.40							
v/s Ratio Perm	0.36		0.06	0.12				0.30	0.06		c0.33	0.11
v/c Ratio	0.82	0.88	0.11	0.32	1.02			0.89	0.17		0.98	0.34
Uniform Delay, d1	33.7	19.8	11.6	39.7	27.3			28.4	21.1		29.7	22.5
Progression Factor	0.71	0.69	0.84	0.68	0.70			1.00	1.00		1.00	1.00
Incremental Delay, d2	12.3	3.7	0.2	1.3	29.4			32.3	0.7		45.1	1.8
Delay (s)	36.2	17.5	9.9	28.4	48.6			60.7	21.9		74.8	24.3
Level of Service	D	B	A	C	D			E	C		E	C
Approach Delay (s)		19.1			48.0			45.4			50.2	
Approach LOS		B			D			D			D	

Intersection Summary			
HCM Average Control Delay	33.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

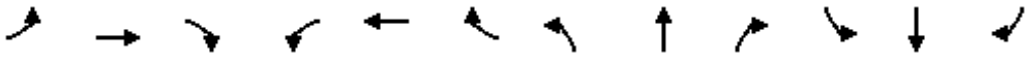


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	136	0	227	463	82	70	82	679	0	0	776	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95			0.95	
Frt	1.00		0.85	1.00	0.93		1.00	1.00			0.98	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770		1583	1770	1734		1770	3539			3485	
Flt Permitted	0.63		1.00	0.95	1.00		0.14	1.00			1.00	
Satd. Flow (perm)	1176		1583	1770	1734		257	3539			3485	
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)	148	0	247	503	89	76	89	738	0	0	843	95
RTOR Reduction (vph)	0	0	134	0	34	0	0	0	0	0	9	0
Lane Group Flow (vph)	148	0	113	503	131	0	89	738	0	0	929	0
Turn Type	custom		custom	Perm			pm+pt					
Protected Phases					8		5	2			6	
Permitted Phases	4		4	8			2					
Actuated Green, G (s)	38.0		38.0	38.0	38.0		44.0	44.0			34.4	
Effective Green, g (s)	38.0		38.0	38.0	38.0		44.0	44.0			34.4	
Actuated g/C Ratio	0.42		0.42	0.42	0.42		0.49	0.49			0.38	
Clearance Time (s)	4.0		4.0	4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	497		668	747	732		220	1730			1332	
v/s Ratio Prot					0.08		0.03	c0.21			c0.27	
v/s Ratio Perm	0.13		0.07	c0.28			0.17					
v/c Ratio	0.30		0.17	0.67	0.18		0.40	0.43			0.70	
Uniform Delay, d1	17.2		16.2	21.0	16.2		15.3	14.9			23.4	
Progression Factor	0.20		0.01	0.99	0.98		1.00	1.00			0.42	
Incremental Delay, d2	0.3		0.1	3.9	0.4		1.2	0.8			0.3	
Delay (s)	3.7		0.3	24.7	16.4		16.5	15.6			10.1	
Level of Service	A		A	C	B		B	B			B	
Approach Delay (s)		1.6			22.6			15.7			10.1	
Approach LOS		A			C			B			B	

Intersection Summary			
HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	399	611	276	791	1331	273
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.09	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	169	3539	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	434	664	300	860	1447	297
RTOR Reduction (vph)	0	157	0	0	0	22
Lane Group Flow (vph)	434	507	300	860	1447	275
Turn Type		Perm	pm+pt			pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases		4	2			6
Actuated Green, G (s)	28.0	28.0	54.0	54.0	40.0	68.0
Effective Green, g (s)	28.0	28.0	54.0	54.0	40.0	68.0
Actuated g/C Ratio	0.31	0.31	0.60	0.60	0.44	0.76
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	551	492	279	2123	1573	1266
v/s Ratio Prot	0.25		c0.12	0.24	0.41	0.07
v/s Ratio Perm		c0.32	c0.52			0.11
v/c Ratio	0.79	1.03	1.08	0.41	0.92	0.22
Uniform Delay, d1	28.3	31.0	26.7	9.5	23.5	3.2
Progression Factor	0.62	0.41	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	20.9	75.3	0.6	10.2	0.1
Delay (s)	18.1	33.7	102.1	10.1	33.7	3.3
Level of Service	B	C	F	B	C	A
Approach Delay (s)	27.5			33.9	28.5	
Approach LOS	C			C	C	

Intersection Summary			
HCM Average Control Delay	29.8	HCM Level of Service	C
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

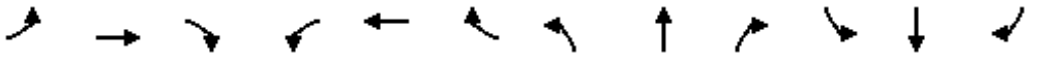


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	181	738	130	33	383	105	129	428	176	85	514	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	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	0.97		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1821		1770	1803		1770	1781		1770	1863	1583
Flt Permitted	0.13	1.00		0.13	1.00		0.17	1.00		0.17	1.00	1.00
Satd. Flow (perm)	247	1821		247	1803		313	1781		313	1863	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)	197	802	141	36	416	114	140	465	191	92	559	166
RTOR Reduction (vph)	0	7	0	0	11	0	0	16	0	0	0	34
Lane Group Flow (vph)	197	936	0	36	519	0	140	640	0	92	559	132
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	39.8	39.8		32.6	32.6		28.6	28.6		27.0	27.0	27.0
Effective Green, g (s)	39.8	39.8		32.6	32.6		28.6	28.6		27.0	27.0	27.0
Actuated g/C Ratio	0.44	0.44		0.36	0.36		0.32	0.32		0.30	0.30	0.30
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	272	805		130	653		177	566		146	559	475
v/s Ratio Prot	0.08	c0.51		0.01	c0.29		0.04	c0.36		0.02	c0.30	
v/s Ratio Perm	0.24			0.09			0.21			0.17		0.08
v/c Ratio	0.72	1.16		0.28	0.80		0.79	1.13		0.63	1.00	0.28
Uniform Delay, d1	19.6	25.1		39.6	25.7		37.7	30.7		26.6	31.5	24.1
Progression Factor	1.04	0.70		0.86	0.87		0.71	0.66		1.00	1.00	1.00
Incremental Delay, d2	8.6	86.1		0.9	7.4		12.5	71.6		8.6	38.1	1.5
Delay (s)	28.9	103.6		34.9	29.7		39.1	91.8		35.2	69.6	25.5
Level of Service	C	F		C	C		D	F		D	E	C
Approach Delay (s)		90.7			30.0			82.6			56.7	
Approach LOS		F			C			F			E	

Intersection Summary			
HCM Average Control Delay	70.0	HCM Level of Service	E
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	101.4%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

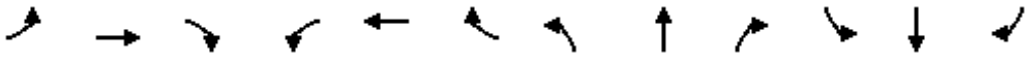
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	365	76	35	211	96	100	172	28	222	589	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0			4.0	
Lane Util. Factor		1.00			1.00	1.00		1.00			1.00	
Frt		0.98			1.00	0.85		0.99			0.99	
Flt Protected		1.00			0.99	1.00		0.98			0.99	
Satd. Flow (prot)		1817			1850	1583		1809			1820	
Flt Permitted		0.97			0.78	1.00		0.61			0.81	
Satd. Flow (perm)		1773			1445	1583		1120			1495	
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	397	83	38	229	104	109	187	30	241	640	74
RTOR Reduction (vph)	0	8	0	0	0	74	0	4	0	0	3	0
Lane Group Flow (vph)	0	499	0	0	267	30	0	322	0	0	952	0
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)		26.0			26.0	26.0		56.0			56.0	
Effective Green, g (s)		26.0			26.0	26.0		56.0			56.0	
Actuated g/C Ratio		0.29			0.29	0.29		0.62			0.62	
Clearance Time (s)		4.0			4.0	4.0		4.0			4.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		512			417	457		697			930	
v/s Ratio Prot												
v/s Ratio Perm		c0.28			0.18	0.02		0.29			c0.64	
v/c Ratio		0.97			0.64	0.07		0.46			1.02	
Uniform Delay, d1		31.7			27.9	23.2		9.0			17.0	
Progression Factor		1.00			0.34	0.02		1.00			0.38	
Incremental Delay, d2		34.0			2.0	0.1		2.2			25.7	
Delay (s)		65.7			11.6	0.4		11.2			32.2	
Level of Service		E			B	A		B			C	
Approach Delay (s)		65.7			8.5			11.2			32.2	
Approach LOS		E			A			B			C	

Intersection Summary			
HCM Average Control Delay	32.8	HCM Level of Service	C
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	105.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



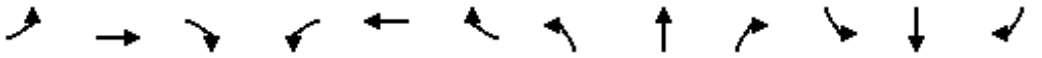
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	746	1185	113	193	921	38	195	536	67	34	1065	632
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1593	3144		1593	3166		1593	3132		1593	3185	1425
Flt Permitted	0.95	1.00		0.28	1.00		0.19	1.00		0.34	1.00	1.00
Satd. Flow (perm)	1593	3144		466	3166		316	3132		567	3185	1425
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)	811	1288	123	210	1001	41	212	583	73	37	1158	687
RTOR Reduction (vph)	0	8	0	0	3	0	0	10	0	0	0	192
Lane Group Flow (vph)	811	1403	0	210	1039	0	212	646	0	37	1158	495
Turn Type	Prot			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases				6			8			4		4
Actuated Green, G (s)	24.0	38.4		22.4	22.4		25.2	25.2		23.6	23.6	23.6
Effective Green, g (s)	24.0	38.4		22.4	22.4		25.2	25.2		23.6	23.6	23.6
Actuated g/C Ratio	0.27	0.43		0.25	0.25		0.28	0.28		0.26	0.26	0.26
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
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)	425	1341		216	788		145	877		176	835	374
v/s Ratio Prot	c0.51	0.45		0.09	c0.33		c0.06	0.21		0.01	c0.36	
v/s Ratio Perm				0.16			c0.34			0.05		0.35
v/c Ratio	1.91	1.05		0.97	1.32		1.46	0.74		0.21	1.39	1.32
Uniform Delay, d1	33.0	25.8		31.9	33.8		32.6	29.4		28.6	33.2	33.2
Progression Factor	1.00	1.00		0.87	0.90		0.95	0.94		1.03	0.99	1.01
Incremental Delay, d2	417.4	37.6		50.8	151.6		240.2	3.1		0.5	180.1	160.2
Delay (s)	450.4	63.4		78.6	182.0		271.0	30.8		29.8	213.0	193.8
Level of Service	F	E		E	F		F	C		C	F	F
Approach Delay (s)		204.7			164.7			89.5			202.4	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	179.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.50		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	133.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



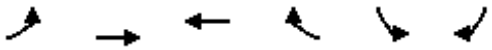
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	46	280	121	26	75	68	48	603	47	167	1125	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		0.96			0.94			0.99			1.00	
Flt Protected		0.99			0.99			1.00			0.99	
Satd. Flow (prot)		3378			3301			3492			3507	
Flt Permitted		0.90			0.75			0.77			0.71	
Satd. Flow (perm)		3045			2489			2694			2497	
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)	50	304	132	28	82	74	52	655	51	182	1223	26
RTOR Reduction (vph)	0	43	0	0	61	0	0	6	0	0	1	0
Lane Group Flow (vph)	0	443	0	0	123	0	0	752	0	0	1430	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		16.1			16.1			65.9			65.9	
Effective Green, g (s)		16.1			16.1			65.9			65.9	
Actuated g/C Ratio		0.18			0.18			0.73			0.73	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		545			445			1973			1828	
v/s Ratio Prot												
v/s Ratio Perm		c0.15			0.05			0.28			c0.57	
v/c Ratio		0.81			0.28			0.38			0.78	
Uniform Delay, d1		35.5			31.9			4.5			7.6	
Progression Factor		1.00			1.00			0.75			1.17	
Incremental Delay, d2		9.0			0.3			0.5			0.3	
Delay (s)		44.6			32.3			3.8			9.1	
Level of Service		D			C			A			A	
Approach Delay (s)		44.6			32.3			3.8			9.1	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	87.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



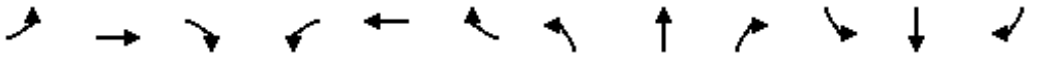
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	89	350	158	61	233	64	28	599	50	0	1108	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00			0.95			1.00	1.00
Frt	1.00	1.00	0.85		0.98			0.99			1.00	0.85
Flt Protected	0.95	1.00	1.00		0.99			1.00			1.00	1.00
Satd. Flow (prot)	1770	1863	1583		1802			3493			1863	1583
Flt Permitted	0.36	1.00	1.00		0.60			0.66			1.00	1.00
Satd. Flow (perm)	669	1863	1583		1099			2319			1863	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)	97	380	172	66	253	70	30	651	54	0	1204	177
RTOR Reduction (vph)	0	0	55	0	9	0	0	7	0	0	0	65
Lane Group Flow (vph)	97	380	117	0	380	0	0	728	0	0	1204	112
Turn Type	Perm		Perm	Perm			Perm					Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2					6
Actuated Green, G (s)	27.0	27.0	27.0		27.0			55.0			55.0	55.0
Effective Green, g (s)	27.0	27.0	27.0		27.0			55.0			55.0	55.0
Actuated g/C Ratio	0.30	0.30	0.30		0.30			0.61			0.61	0.61
Clearance Time (s)	4.0	4.0	4.0		4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	201	559	475		330			1417			1139	967
v/s Ratio Prot		0.20									c0.65	
v/s Ratio Perm	0.14		0.07		c0.35			0.31				0.07
v/c Ratio	0.48	0.68	0.25		1.15			0.51			1.06	0.12
Uniform Delay, d1	25.8	27.7	23.8		31.5			9.9			17.5	7.3
Progression Factor	1.00	1.00	1.00		1.00			1.00			0.37	0.52
Incremental Delay, d2	1.8	3.3	0.3		97.1			1.3			37.8	0.1
Delay (s)	27.6	31.0	24.1		128.6			11.3			44.3	3.9
Level of Service	C	C	C		F			B			D	A
Approach Delay (s)		28.7			128.6			11.3			39.1	
Approach LOS		C			F			B			D	

Intersection Summary			
HCM Average Control Delay	41.5	HCM Level of Service	D
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	106.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	137	1252	440	158	247	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frt		1.00	0.96		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3522	3399		1770	1583
Flt Permitted		0.78	1.00		0.95	1.00
Satd. Flow (perm)		2776	3399		1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	149	1361	478	172	268	82
RTOR Reduction (vph)	0	0	37	0	0	66
Lane Group Flow (vph)	0	1510	613	0	268	16
Turn Type	Perm					Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Actuated Green, G (s)		64.6	64.6		17.4	17.4
Effective Green, g (s)		64.6	64.6		17.4	17.4
Actuated g/C Ratio		0.72	0.72		0.19	0.19
Clearance Time (s)		4.0	4.0		4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1993	2440		342	306
v/s Ratio Prot			0.18		c0.15	
v/s Ratio Perm		c0.54				0.01
v/c Ratio		0.76	0.25		0.78	0.05
Uniform Delay, d1		7.9	4.4		34.5	29.6
Progression Factor		1.00	0.60		0.75	0.46
Incremental Delay, d2		2.8	0.2		6.9	0.0
Delay (s)		10.6	2.9		32.7	13.6
Level of Service		B	A		C	B
Approach Delay (s)		10.6	2.9		28.2	
Approach LOS		B	A		C	

Intersection Summary			
HCM Average Control Delay	11.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

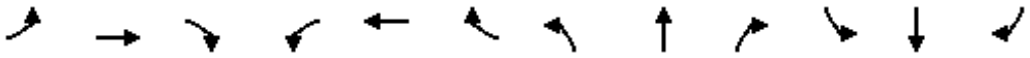


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	1109	148	66	442	16	42	185	65	134	510	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			1.00			1.00			1.00	
Frt		0.98			1.00			0.97			1.00	
Flt Protected		1.00			0.99			0.99			0.99	
Satd. Flow (prot)		3474			1844			1794			1839	
Flt Permitted		0.93			0.47			0.79			0.76	
Satd. Flow (perm)		3244			867			1421			1409	
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)	28	1205	161	72	480	17	46	201	71	146	554	13
RTOR Reduction (vph)	0	6	0	0	1	0	0	7	0	0	1	0
Lane Group Flow (vph)	0	1388	0	0	568	0	0	311	0	0	712	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)		75.0			75.0			51.0			51.0	
Effective Green, g (s)		75.0			75.0			51.0			51.0	
Actuated g/C Ratio		0.56			0.56			0.38			0.38	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1816			485			541			536	
v/s Ratio Prot												
v/s Ratio Perm		0.43			c0.66			0.22			c0.51	
v/c Ratio		0.76			1.17			0.58			1.33	
Uniform Delay, d1		22.7			29.5			32.9			41.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		2.0			97.2			1.5			160.6	
Delay (s)		24.7			126.7			34.4			202.1	
Level of Service		C			F			C			F	
Approach Delay (s)		24.7			126.7			34.4			202.1	
Approach LOS		C			F			C			F	

Intersection Summary			
HCM Average Control Delay	87.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	134.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	127.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

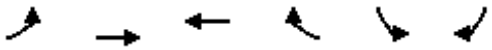
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	2380	110	60	1140	75	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.91		1.00	0.91	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	5051		1770	5085	1770	1583
Flt Permitted	1.00		0.06	1.00	0.95	1.00
Satd. Flow (perm)	5051		113	5085	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2587	120	65	1239	82	141
RTOR Reduction (vph)	6	0	0	0	0	7
Lane Group Flow (vph)	2701	0	65	1239	82	134
Turn Type			Perm			Perm
Protected Phases	2			6	8	
Permitted Phases			6			8
Actuated Green, G (s)	66.0		66.0	66.0	16.0	16.0
Effective Green, g (s)	66.0		66.0	66.0	16.0	16.0
Actuated g/C Ratio	0.73		0.73	0.73	0.18	0.18
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	3704		83	3729	315	281
v/s Ratio Prot	0.53			0.24	0.05	
v/s Ratio Perm			c0.58			c0.08
v/c Ratio	0.73		0.78	0.33	0.26	0.48
Uniform Delay, d1	6.9		7.5	4.2	31.9	33.2
Progression Factor	0.10		1.25	0.32	0.82	0.78
Incremental Delay, d2	0.5		36.0	0.2	2.0	5.6
Delay (s)	1.2		45.4	1.5	28.0	31.6
Level of Service	A		D	A	C	C
Approach Delay (s)	1.2			3.7	30.2	
Approach LOS	A			A	C	

Intersection Summary			
HCM Average Control Delay	3.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	1112	100	0	524	65	25	20	60	140	45	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95			0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.99			0.98		1.00	0.89		1.00	0.91	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3495			5001		1770	1654		1770	1703	
Flt Permitted	0.37	1.00			1.00		0.68	1.00		0.70	1.00	
Satd. Flow (perm)	697	3495			5001		1273	1654		1305	1703	
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)	130	1209	109	0	570	71	27	22	65	152	49	65
RTOR Reduction (vph)	0	9	0	0	22	0	0	39	0	0	39	0
Lane Group Flow (vph)	130	1309	0	0	619	0	27	48	0	152	75	0
Turn Type	Perm						Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4						2			6		
Actuated Green, G (s)	45.6	45.6			45.6		36.4	36.4		36.4	36.4	
Effective Green, g (s)	45.6	45.6			45.6		36.4	36.4		36.4	36.4	
Actuated g/C Ratio	0.51	0.51			0.51		0.40	0.40		0.40	0.40	
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	353	1771			2534		515	669		528	689	
v/s Ratio Prot		c0.37			0.12			0.03			0.04	
v/s Ratio Perm	0.19						0.02			c0.12		
v/c Ratio	0.37	0.74			0.24		0.05	0.07		0.29	0.11	
Uniform Delay, d1	13.5	17.5			12.5		16.3	16.4		18.1	16.7	
Progression Factor	0.38	0.44			0.78		1.00	1.00		1.16	1.35	
Incremental Delay, d2	0.6	1.4			0.0		0.2	0.2		1.2	0.3	
Delay (s)	5.7	9.1			9.8		16.5	16.7		22.2	22.8	
Level of Service	A	A			A		B	B		C	C	
Approach Delay (s)		8.8			9.8			16.6			22.4	
Approach LOS		A			A			B			C	

Intersection Summary			
HCM Average Control Delay	10.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	57	1401	528	82	102	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.44	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	812	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	62	1523	574	89	111	55
RTOR Reduction (vph)	0	0	0	17	0	49
Lane Group Flow (vph)	62	1523	574	72	111	6
Turn Type	Perm			Perm		Perm
Protected Phases		2	6		4	
Permitted Phases	2			6		4
Actuated Green, G (s)	72.4	72.4	72.4	72.4	9.6	9.6
Effective Green, g (s)	72.4	72.4	72.4	72.4	9.6	9.6
Actuated g/C Ratio	0.80	0.80	0.80	0.80	0.11	0.11
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	653	2847	2847	1273	189	169
v/s Ratio Prot		c0.43	0.16		c0.06	
v/s Ratio Perm	0.08			0.05		0.00
v/c Ratio	0.09	0.53	0.20	0.06	0.59	0.03
Uniform Delay, d1	1.9	3.0	2.1	1.8	38.3	36.0
Progression Factor	0.77	0.69	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.5	0.2	0.1	4.6	0.1
Delay (s)	1.6	2.6	2.2	1.9	42.9	36.1
Level of Service	A	A	A	A	D	D
Approach Delay (s)		2.5	2.2		40.7	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	5.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	494	15	20	325	15	3	3	5	15	5	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.91		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1855		1770	3516		1770	1688		1770	1723	
Flt Permitted	0.50	1.00		0.22	1.00		0.75	1.00		0.75	1.00	
Satd. Flow (perm)	927	1855		405	3516		1399	1688		1402	1723	
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	537	16	22	353	16	3	3	5	16	5	5
RTOR Reduction (vph)	0	2	0	0	7	0	0	3	0	0	3	0
Lane Group Flow (vph)	16	551	0	22	362	0	3	5	0	16	7	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	37.1	37.1		37.1	37.1		44.9	44.9		44.9	44.9	
Effective Green, g (s)	37.1	37.1		37.1	37.1		44.9	44.9		44.9	44.9	
Actuated g/C Ratio	0.41	0.41		0.41	0.41		0.50	0.50		0.50	0.50	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	382	765		167	1449		698	842		699	860	
v/s Ratio Prot		c0.30			0.10			0.00			0.00	
v/s Ratio Perm	0.02			0.05			0.00			c0.01		
v/c Ratio	0.04	0.72		0.13	0.25		0.00	0.01		0.02	0.01	
Uniform Delay, d1	15.8	22.1		16.4	17.3		11.3	11.3		11.4	11.3	
Progression Factor	0.62	0.80		1.20	1.24		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	1.4		0.4	0.1		0.0	0.0		0.1	0.0	
Delay (s)	9.9	19.1		20.1	21.5		11.3	11.4		11.5	11.4	
Level of Service	A	B		C	C		B	B		B	B	
Approach Delay (s)		18.8			21.4			11.3			11.4	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM Average Control Delay	19.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	90.0	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			

Trip Generation Backup

	Average Rate of Trips											
	Weekday						Saturday			Sunday		
	AM			PM								
Land Use Category	Rate	Enter	Exit	Rate	Enter	Exit	Rate	Enter	Exit	Rate	Enter	Exit
Low-Rise Apartment (221)	0.46	0.21	0.79	0.58	0.65	0.35	0.58	0.54	0.46	0.56	0.53	0.47
Mid-Rise Apartment (223)	0.30	0.31	0.69	0.39	0.58	0.42	n/d	n/d	n/d	n/d	n/d	n/d
High-Rise Apartment (222)	0.30	0.25	0.75	0.35	0.61	0.39	0.40	0.62	0.38	0.31	0.53	0.47
Single-Family Detached Housing (210)	0.75	0.25	0.75	1.02	0.64	0.36	0.94	0.54	0.46	0.86	0.53	0.47
Shopping Center (820)	1.03	0.61	0.39	3.75	0.48	0.52	4.97	0.52	0.48	3.12	0.49	0.51
General Office Building (710)	1.55	0.88	0.12	1.49	0.17	0.83	0.41	0.54	0.46	0.14	0.58	0.42

Notes:
Residential components trips per dwelling unit
Retail and Office components trips per 1,000 sf gross leasable area
n/d= No Data