

Village of Long Grove, Illinois

IL Rt. 83 Business District Development Plan

February 2008

Prepared by:



**** 03-11-08 DRAFT ****

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I. INTRODUCTION

This document, entitled *Village of Long Grove, IL Rt. 83 Business District Development Plan* (the "Business District Plan"), is to serve as a business district development plan for property that borders IL Rt. 83 from Aptakisic Road going south to the south side of Parcel Number 1530200027 in the Village of Long Grove (the "Village") in Lake County, Illinois. The strip includes most of the property one parcel deep within these borders. There are currently commercial and agricultural uses in the strip. The Village has determined that this area would benefit from designation as a business district as specifically provided for in the Illinois Business District Development and Redevelopment Act (the "Business District Act"), 65 ILCS 5/11-74.3-1 *et seq.*, as amended. This area is approximately 44 acres and is subsequently referred to in this Business District Plan as the "IL Rt. 83 Business District."

Ehlers & Associates, Inc. ("Ehlers") was retained to assist the Village in assessing the qualifications of the IL Rt. 83 Business District for business district designation under the Business District Act and in preparing this Business District Plan. In accordance with the Business District Act, this Business District Plan includes: formal findings of the Village regarding IL Rt. 83 Business District qualifications; a map, general description and legal description of the boundaries of the IL Rt. 83 Business District; a general description of known projects, including the approximate location, proposed to be undertaken in the IL Rt. 83 Business District; the anticipated sources of funds to pay for IL Rt. 83 Business District project costs; the anticipated type and terms of any obligations to be issued; and the rate and term of any taxes to be imposed on the businesses within the IL Rt. 83 Business District. The IL Rt. 83 Business District boundaries are generally described in Section II, depicted in a map presented as Exhibit A and legally described in Exhibit B.

The Village of Long Grove

Development of the village of Long Grove started with German immigrants to the area in the mid 1840's. A post office was established in 1847 in, what was then called, Muttersholz. Illinois Routes 53 and 83 bypassed the village at this development, which provided some isolation for the development of the community. In the 1950's, area property owners formed an association to oppose a major development plan with the aim of preserving the area's historical character. Following litigation related to development, residents passed a referendum to create the Village of Long Grove.

This desire to preserve the character of the community remains evident in the Village's description of itself on its own web page, "The Village of Long Grove is unique among suburban communities—an oasis that the rapid advance of urban sprawl has not penetrated and where residents can enjoy a relaxed and rural lifestyle."

The village is approximately twenty-eight miles northwest of Chicago, located in Lake County. It benefits from easy access to the nearby towns and cities in the Chicago metropolitan area. State Routes 53 and 83 converge at the southeast border of the village.

Chicago O'Hare and Midway Airports serve as air carrier airports providing international services. Campbell Airport and Chicago Executive Airport (formerly known as Palwaukee Airport) serve as general aviation airports for the community. There is a municipal Helistop in the Village of Schaumburg.

The village had a population of 6,735 in the 2000 Census with 1,962 households. The estimated 2005 population was 7,833, showing a growth of 16.3 percent.

Long Grove's median household income in 2000 was \$148,150 and the median family income was \$153,966. The median home value in 2000 was \$555,400.

The village is served by three elementary and middle school districts: Fremont School District #79, Diamond Lake School District #76, and School District #96. Montessori World of Discovery, Montessori School of Long Grove and Long Grove Country School are the community's private schools. The two high school districts that serve the village are Adlai E. Stevenson High School District #125 and Mundelein High School District #120.

William Rainey Harper College, College of Lake County, Trinity International University, Oak Community College and DeVry Institute of Technology are within twenty miles of the village. Residents of Long Grove also have easy access to major universities within the Chicago metropolitan region.

Condell Memorial Hospital and Northwest Community Hospital are within ten miles of the village. Lake Forest Hospital is a close eleven miles. World class research hospitals in the metropolitan Chicago area also provide health care service options for residents.

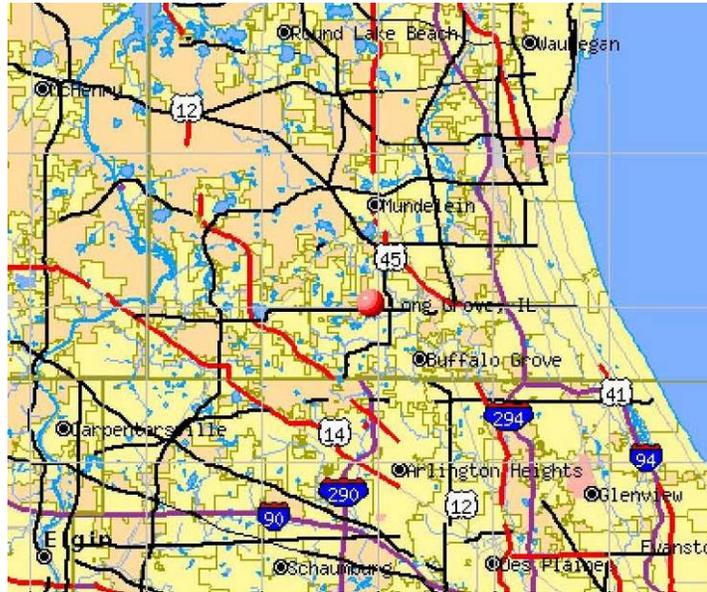
Library services are provided by the Vernon Area Public Library District, Indian Trails Public Library District, and Ela Area Public Library District.

Long Grove Park District provides park and open space services to the Village. Unique among these are the Covered Bridge Trail and the Stockbridge Farm Nature Preserve, which had been donated to the Village. Due to its lack of a tax levy, the park district has limited recreational services.

Fire protection is provided by Long Grove Rural Fire Protection District and the Countryside Fire Protection District.

Long Grove is governed by a president and six trustees, all of whom are elected at-large and serve four-year terms. The Village Board establishes policy and appoints a Village Manager to direct the day-to-day operations of the Village. The Village is also served by a Village Clerk, who is an elected official and also serves a four-year term.

As detailed above, the village is an independent community serving the needs of its residents. It is known for its country atmosphere with no traditional sidewalks, street lights or curbs throughout the village. Likewise, it is known for its special shops and dining. Visitors travel long distances to spend a day in the Historic Downtown. This area was the first historic district in Illinois, created by ordinance in 1960.



Village of Long Grove

IL Rt. 83 Business District

As noted, Long Grove has several strip areas that have mixed land uses. The IL Rt. 83 Business District has both agricultural and commercial uses. Most of the land is vacant. The only developed portion of the land is the Executive House office complex. The village has seen no development activity on the land in over ten years. The Village desires that these land uses be modified and has plans to redevelop the area. This redevelopment will include a retail development.

The Village of Long Grove is currently developing a new comprehensive plan. The new comprehensive plan will be reflective of this plan as well as a Tax Increment Financing Plan also being developed by the Village.

As part of its strategy to redevelop the IL Rt. 83 corridor and stimulate private investment in new development, the Village engaged Ehlers to investigate whether the IL Rt. 83 Business District qualifies as a business district under the Business District Act.

Business District Development and Redevelopment Act

The Business District Act authorizes Illinois municipalities to designate a contiguous area within their corporate limits as a business district. The Business District Act is found in Illinois Compiled Statutes, Chapter 65, Section 5/11-74.3-1 *et seq.*, as amended. The Business District Act states that it may be considered essential to the economic and social welfare of a municipality to maintain and revitalize business districts by assuring opportunities for development and redevelopment and attracting sound and stable commercial growth. A business district must be established in conformance with a comprehensive plan and a specific plan for the business district must be officially approved by the corporate authorities of the municipality after public hearings. This plan will serve as the specific plan for the business district.

In accordance with the Business District Act, the Village may exercise the following powers in carrying out a business district plan:

- Approve all development and redevelopment proposals for a business district;
- Exercise the use of eminent domain for the acquisition of real and personal property for the purpose of a development or redevelopment project;
- Acquire, manage, convey or otherwise dispose of real and personal property acquired pursuant to the provisions of a development or redevelopment plan;
- Apply for and accept capital grants and loans from the United States and the State of Illinois, or any instrumentality of the United States or the State, for business district development and redevelopment;
- Borrow funds as it may be deemed necessary for the purpose of business district development and redevelopment, and in this connection issue such obligations or revenue bonds as it shall be deemed necessary, subject to applicable statutory limitations;
- Enter into contracts with any public or private agency or person;
- Sell, lease, trade or improve such real property as may be acquired in connection with business district development and redevelopment plans;
- Employ all such persons as may be necessary for the planning, administration and implementation of business district plans;
- Expend such public funds as may be necessary for the planning, execution and implementation of the business district plans;
- Establish by ordinance or resolution procedures for the planning, execution and implementation of business district plans;
- Create a Business District Development and Redevelopment Commission to act as agent for the municipality for the purposes of business district development and redevelopment;

- Impose a retailers' occupation tax and a service occupation tax ("Sales Tax") in the business district for the planning, execution, and implementation of business district plans and to pay for business district project costs as set forth in the business district plan approved by the municipality;
- Impose a hotel operators' occupation tax in the business district for the planning, execution and implementation of business district plans and to pay for the business district project costs as set forth in the business district plan approved by the municipality; and
- Issue obligations in one or more series bearing interest at rates determined by the corporate authorities of the municipality by ordinance and secured by the business district tax allocation fund set forth in Section 11-74.3-6 [65 ILCS 5/11-74.3-6] for the business district project costs.

The retailers' occupation and service occupation taxes ("Sales Taxes") may be imposed in quarter percent (.25%) increments at a total rate not to exceed one percent (1%). The Sales Taxes may not be imposed for more than 23 years and may not be imposed on "food for human consumption that is to be consumed off the premises where it is sold (other than alcoholic beverages, soft drinks, and food that has been prepared for immediate consumption), prescription and nonprescription medicines, drugs, medical appliances, modifications to a motor vehicle for the purposes of rendering it usable by a disabled person, and insulin, urine testing materials, syringes, and needles used by diabetics, for human use." Sales Taxes, if imposed, shall be collected by the Illinois Department of Revenue and then disbursed to the Village. The hotel operators' occupation tax ("Hotel Taxes") may be imposed at a rate not to exceed one percent (1%), must be imposed in quarter percent (.25%) increments, must not be imposed for more than 23 years and must be collected by the issuing Village.

II. DESCRIPTION OF BUSINESS DISTRICT BOUNDARIES

The boundaries of the IL Rt. 83 Business District have been carefully drawn to include only real property directly and substantially benefited by the proposed project to be undertaken as part of this Business District Plan. The IL Rt. 83 Business District encompasses approximately 44 acres.

The IL Rt. 83 Business District runs along the east side of IL Rt. 83 from the north side of Aptakisic Road to the south side of Parcel Number 1530200027. The District will be one Parcel deep, due east of IL Rt. 83.

The IL Rt. 83 Business District is depicted in a map presented as Exhibit A and is legally described in Exhibit B.

III. BUSINESS DISTRICT QUALIFICATIONS & ANALYSIS

Ehlers surveyed the study area identified by the Village and reviewed various documents related to the proposed development of the area to identify any business district factors that may be present.

Business district development and redevelopment is specifically provided for in 65 ILCS 5/11-74.3-1 *et seq.* Pursuant to 65 ILCS 5/11-74.3-2 and 65 ILCS 5/11-74.3-5, the Village Board may designate a specific area of the Village as a business district, with the authority to levy additional retailers' occupation and service occupation taxes therein, but only after conducting at least two public hearings and making a formal finding as to the following:

- (i) the business district is a blighted area that by reason of any one or combination of the following:
 - the predominance of defective or inadequate street layout,
 - unsanitary or unsafe conditions,
 - deterioration of site improvements,
 - improper subdivision or obsolete platting,
 - the existence of conditions which endanger life or property by fire or other causes, or any combination of those factors,
 - retards the provision of housing accommodations or constitutes an economic or social liability,
 - a menace to the public health, safety, morals, or welfare in its present condition and use; and
- (ii) the business district on the whole has not been subject to growth and development through investment by private enterprises or would not be reasonably anticipated to be developed or redeveloped without the adoption of the business district development or redevelopment plan.

Blighted Area Analysis

The IL Rt. 83 Business District is a “blighted area” as defined in the Business District Act due to the predominance of the following:

- improper subdivision or obsolete platting
- defective or inadequate street layout

These constitute an economic liability and a menace to the public health safety, morals or welfare in its present condition and use.

Improper Subdivision or Obsolete Platting

Platting of the vacant land is obsolete. In the case of all vacant parcels, platting failed to create rights-of-way for streets, alleys or other rights of way.

Defective or Inadequate Street Layout

The site already experiences delays and queuing. It is rated at the limit of acceptable delay with high delays resulting from poor progression, high cycle lengths and high volume-to-capacity (V/C) ratios. Without investment in infrastructure to address the inadequate street layout, development will not be possible. The development of a retail center on the southeast corner of IL Rt. 83 and Aptakisic Road and the development of the parcel to the south of this site requires significant investment in both on-site and off-site improvements and infrastructure. Exhibit C, Memorandum to Michael Nortman, Mid America Development Partners by Luay R. Aboona, PE Principal, Kenig, Lindgren, O'Hara, Aboona, Inc. (KLOA), dated June 5, 2007, revised August 6, 2007, Subject: Traffic Impact Study Proposed Retail Center, Long Grove, Illinois presents:

- (i) detailed findings and data on the existing conditions of the street and access infrastructure serving IL Rt. 83, Aptakisic Road, and Robert Parker Coffin Road,
- (ii) findings related to the level of street and traffic control infrastructure that would be required to service a retail development containing a grocery store, drive through pharmacy, drive through bank, and retail building, and
- (iii) an examination of the development of the site south of this with an expectation of a mixed use (retail and office) development.

The KLOA Study identifies the need for the following improvements for safe street access opposite Robert Parker Coffin Road. This will provide the site with signalized access off IL Rt. 83. The following intersection improvements will be needed at a minimum to accommodate site traffic:

- Provide a southbound left turn lane on the north approach.
- Provide a third northbound shared through and right turn lane.
- Provide an inbound lane and three outbound lanes on the east approach (proposed access drive). The outbound lanes should be striped to indicate an exclusive left turn lane, an exclusive through lane and an exclusive right turn lane.
- Restripe the exclusive right turn lane on Robert Parker Coffin Road to a shared through and right turn lane.
- Provide a southbound right turn lane on IL Rt. 83.

Lack of Growth and Development in the District

The business district, on the whole, has not been subject to growth and development through investment by private enterprises or would not be reasonably anticipated to be developed or redeveloped without the adoption of the business district development or redevelopment plan.

Development of the north end of the proposed business district has also been hampered by the existence of flood plain.

Flooding documented by inclusion in FEMA maps for 100 year flooding requires that extra measures be taken for the development of the vacant land and redevelopment of structures, not only according to municipal regulatory standards, but also to meet bank requirements. Extraordinary expenses will be needed for land preparation.

The map below illustrates these flooding conditions.



Lake County Assessor FEMA Flood Map Overlay, Vacant Land North (at) of Robert Parker Coffin Road and East of State Highway 83

There have been no building permits issued for construction in the vacant portions of the Redevelopment Project Area.

The Redevelopment Project Area also lacks the infrastructure necessary for development and redevelopment. Water, sewer and stormwater improvements are needed for the entire area.

As previously documented, access to the land is difficult because of the presence of IL Rt. 83 and its existing traffic volumes. Exhibit F documents these findings.

The proposed business district's existing land usage, physical condition, and obsolescence substantiate that the district would not be reasonably anticipated to be developed or redeveloped without the adoption of a business development plan. The costs associated with the redevelopment of these areas, including land preparation, utilities and infrastructure, constitute an impediment to private investment. The IL Rt. 83 Business District area would not reasonably be anticipated to be developed without the leadership of the Village and the designation of the area as a business district to establish a mechanism for paying for such extraordinary improvements primarily through the imposition of additional retailers' and service occupation taxes.

IV. BUSINESS DISTRICT DEVELOPMENT GOALS & PROJECTS

This Business District Plan has been prepared in accordance with the provisions of the Business District Act and is intended to guide improvements, activities and projects within the IL Rt. 83 Business District in order to stimulate private investment. The goal of the Village, through the implementation of this Business District Plan, is that the IL Rt. 83 Business District be developed on a comprehensive and planned development basis in order to ensure that private investment in new development occurs: (i) on a coordinated rather than piecemeal basis to ensure that the land use, pedestrian access, vehicular circulation, parking, service and urban design systems are functionally integrated and meet present-day principles and standards; and (ii), within a reasonable and defined time period so that the IL Rt. 83 Business District may contribute productively to the economic vitality of the Village.

During the implementation of this Business District Plan, the Village may:

- Approve all development and redevelopment proposals for a business district;
- Exercise the use of eminent domain for the acquisition of real and personal property for the purpose of a development or redevelopment project;
- Acquire, manage, convey or otherwise dispose of real and personal property acquired pursuant to the provisions of a development or redevelopment plan;
- Apply for and accept capital grants and loans from the United States and the State of Illinois, or any instrumentality of the United States or the State, for business district development and redevelopment;
- Borrow funds as it may be deemed necessary for the purpose of business district development and redevelopment, and in this connection issue such obligations or revenue bonds as it shall be deemed necessary, subject to applicable statutory limitations;
- Enter into contracts with any public or private agency or person;
- Sell, lease, trade or improve such real property as may be acquired in connection with business district development and redevelopment plans;
- Employ all such persons as may be necessary for the planning, administration and implementation of business district plans;
- Expend such public funds as may be necessary for the planning, execution and implementation of the business district plans;
- Establish by ordinance or resolution procedures for the planning, execution and implementation of business district plans;
- Create a Business District Development and Redevelopment Commission to act as agent for the municipality for the purposes of business district development and redevelopment;

- Impose a retailers' occupation tax and a service occupation tax ("Sales Tax") in the business district for the planning, execution, and implementation of business district plans and to pay for business district project costs as set forth in the business district plan approved by the municipality; and
- Issue obligations in one or more series bearing interest at rates determined by the corporate authorities of the municipality by ordinance and secured by the business district tax allocation fund set forth in Section 11-74.3-6 [65 ILCS 5/11-74.3-6] for the business district project costs.

In addition, the Village may:

- (i) undertake or cause to be undertaken public improvements and activities; and
- (ii) enter into redevelopment agreements with private entities to achieve goals, implement projects and construct public or private improvements (redevelopment agreements may contain terms and provisions, which are more specific than the general principles set forth in this Business District Plan).

Successful implementation of this Business District Plan requires that the Village utilize powers and financing resources in accordance with the Business District Act to stimulate the comprehensive and coordinated development of the IL Rt. 83 Business District. This development will benefit the Village, its residents, and all taxing districts having jurisdiction over the IL Rt. 83 Business District. Listed below are the general goals and anticipated projects for the development of the IL Rt. 83 Business District.

A. IL Rt. 83 Business District Goals

General goals for the IL Rt. 83 Business District include:

- An environment that will contribute more positively to the health, safety and general welfare of the Village and surrounding communities;
- Improved infrastructure including roads that will provide safe and efficient access to the parcels within the IL Rt. 83 Business District, stormwater detention to address flooding problems, and utilities to address water and sewer problems.;
- New investment and development that will increase the value of properties within and adjacent to the IL Rt. 83 Business District, improving the real estate and sales tax base;
- An increase in construction, part-time, and full-time employment opportunities for residents and non residents of the Village;
- Elimination of the factors that qualified the IL Rt. 83 Business District as a blighted area; and
- A strong, positive visual image of the IL Rt. 83 Business District through attractive and high-quality building design, site improvements, and landscaping.

B. IL Rt. 83 Business District Projects

The Village proposes to achieve its development goals for the IL Rt. 83 Business District through the use of public financing techniques authorized under the Business District Act to undertake the activities, improvements and projects described below. The Village also maintains the flexibility to undertake additional activities, improvements and projects authorized under the Business District Act and other applicable laws, if the need for activities, improvements and projects changes as development occurs in the IL Rt. 83 Business District.

- creation of infrastructure to serve the development;
- new infrastructure as dictated by the needs of the projects;
- access improvements to provide safe, convenient, efficient and effective access to and circulation within the IL Rt. 83 Business District for automobiles, trucks, buses, pedestrians and bicycles, as appropriate;
- construction of and improvements to utility and stormwater management infrastructure;
- site planning and construction methods that are characterized by cohesive urban design features that organize and provide focus to the streetscape and building in the Redevelopment Area, including use of quality building materials and installation of pedestrian amenities, distinctive lighting, signage and landscaping, and other appropriate site amenities; and
- platting that creates streets, rights of way and easements according to modern standards.

The projects, improvements and activities presented in this Business District Plan conform to the land-use development policies and standards for the Village as set forth in the existing and proposed comprehensive and proposed Redevelopment Project Area Plans for Tax Increment Financing Districts.

V. COMPARISON OF BUSINESS DISTRICT WITH COMPREHENSIVE PLAN

The projects, improvements and activities presented in this Business District Plan conform to the land-use development policies and standards for the Village as set forth in the existing and proposed comprehensive and proposed Redevelopment Project Area Plans for Tax Increment Financing Districts.

The Village's current Comprehensive Plan is entitled *Comprehensive Plan, The Village of Long Grove*.

The following goals and objectives in the comprehensive plan reflect goals in this Redevelopment Plan:

Community Character

Goal: To protect residents on the fringes of the Village from adverse impacts of greatly differing land use patterns occurring in areas outside the Village's jurisdiction by furthering the intensities and enhancing the quality of development, thus, also protecting the inner areas of the Village.

1. To annex out to the planned boundaries of the Village and, under certain conditions, annex beyond the planned boundaries, in order to promote the characteristics of Long Grove or to ensure that adjoining development does not have adverse impacts on the residents of Long Grove located on the outer edge of the Village
2. To provide a commercial zoning classification that upgrades the quality of area on the edge of the Village which would otherwise develop as typical commercial "strip" development which could potentially destroy the character Long Grove seeks to maintain and protect.

Goal: To safeguard and supervise the general appearance of the Village

1. Create distinctive entrances to the Village through proper development and landscaped areas.
2. Eliminate overhead wires in existing areas and promote underground utilities in new developments where human and natural resources might be harmed.

The Environment

Goal: To protect and manage water resources in order to provide high quality surface and sub surface waters to serve the community's needs.

Transportation and Circulation

Goal: Reduce traffic circulation and congestion and provide suitable solutions to transportation requirements in a sensitive fashion to ensure no adverse impacts on the existing environment.

2. Prevent traffic accidents through the elimination of poorly designed and, therefore, dangerous intersections.

4. Encourage upgrading to the existing highway system as set forth in the Village Comprehensive Plan.

VI. ESTIMATED DEVELOPMENT PROJECT COSTS

A wide range of development projects, activities and improvements may be required to implement this Business District Plan as discussed in Section IV. In undertaking these activities and improvements, the Village may incur and expend funds related to the projects described in this Business District Plan. The range of activities and improvements that may be required and their estimated costs (based on 2008 dollars) are set forth in Table 1 of this Business District Plan. Funds may be moved from one line item to another or to another project cost category described in this Business District Plan at the Village’s discretion.

Projects described in Table 1 of this Business District Plan are intended to provide an upper estimate of expenditures (“Total Maximum Project Costs”). Within the Total Maximum Project Costs, adjustments increasing or decreasing line items may be made without amending this Business District Plan. Total Maximum Project Costs exclude any additional financing costs, including any interest expense, reasonably required reserves, issuing costs, capitalized interest and costs associated with optional redemptions. These financing costs may be substantial, are subject to prevailing market conditions and are in addition to Total Maximum Project Costs.

TABLE 1: ESTIMATED DEVELOPMENT PROJECT COSTS

(1) The costs to acquire, manage, convey or otherwise dispose of real and personal property acquired pursuant to the provisions of a development or redevelopment plan.....	\$20,000,00
(2) The cost of borrowing funds (interest cost are separate and are determined by market rates) as it may be deemed necessary for the purpose of business district development and redevelopment, and in this connection issue such obligations or revenue bonds as it shall be deemed necessary, subject to applicable statutory limitations.....	\$3,000,000
(3) Employ all such persons as may be necessary for the planning, administration and implementation of business district plans.....	\$1,000,000
(4) Public Improvements.....	\$18,000,000
TOTAL MAXIMUM PROJECT COSTS:	
	\$42,000.000

The above costs may be affected by reimbursing developers who incur Redevelopment Project costs authorized by a redevelopment agreement.

VII. SOURCES OF FUNDS TO PAY DEVELOPMENT PROJECT COSTS

Upon designation of the IL Rt. 83 Business District by Village ordinance, the Village intends to impose the retailers' occupation and service occupation taxes provided for by the Business District Act within the IL Rt. 83 Business District, at a rate of one percent (1%) of gross sales ("IL Rt. 83 Business District Sales Taxes" or "IL Rt. 83 Business District Sales Tax"). The IL Rt. 83 Business District Sales Taxes will be imposed for the term of the IL Rt. 83 Business District (not to exceed 23 years from the date of adoption of this Business District Plan) to pay for business district project costs within the IL Rt. 83 Business District and obligations issued to pay those costs.

A separate Village ordinance shall also be adopted by the Village Board to create a separate fund entitled the "IL Rt. 83 Business District Tax Allocation Fund" in order to receive the IL Rt. 83 Business District Sales Tax revenues from the Illinois Department of Revenue. Pursuant to the Business District Act, all funds received from the IL Rt. 83 Business District Sales Taxes must be deposited into this special fund.

Funds necessary to pay for business district project costs and secure municipal obligations issued for such costs are to be derived primarily from IL Rt. 83 Business District Sales. Other sources of funds which may be used to pay for business district project costs or to secure municipal obligations are state and federal grants, investment income, private financing and other legally permissible funds the Village may deem appropriate. All such funds shall be deposited in the IL Rt. 83 Business District Tax Allocation Fund.

In addition, the Village may issue special service area and/or ad valorem tax bonds payable from ad valorem taxes levied against all taxable real property within the IL Rt. 83 Business District to pay certain business district project costs.

VIII. ISSUANCE OF OBLIGATIONS

The Village may issue obligations pursuant to the Business District Act and other authorities in order to pay for business district project costs. The obligations may be secured by the IL Rt. 83 Business District Sales Taxes, a portion of the Village's local retailers' occupation and service occupation tax revenues generated by businesses within the IL Rt. 83 Business District and other sources that the Village may deem appropriate. Additionally, the Village may provide other legally permissible credit enhancements to any obligations issued pursuant to the Business District Act.

All obligations issued by the Village pursuant to this Business District Plan and the Business District Act shall be retired within twenty-three (23) years from the date of adoption of the ordinance approving this Business District Plan. One or more series of obligations may be issued from time to time in order to implement this Business District Plan.

Obligations may be issued on either a taxable or tax-exempt basis, as general obligation bonds, general obligation debt certificates, alternate bonds or revenue bonds, or other debt instruments, with either fixed rate or floating interest rates; with or without capitalized interest; with or without deferred principal retirement; with or without interest rate limits except as limited by law; with or without redemption provisions, and on such other terms, all as the Village may determine and deem appropriate.

IX. ESTABLISHMENT AND TERM OF THE IL RT. 83 BUSINESS DISTRICT

The establishment of the IL Rt. 83 Business District shall become effective upon adoption of an ordinance by the Village Board adopting this Business District Plan and designating the IL Rt. 83 Business District. Development agreements between the Village and any developers or other private parties shall be consistent with the provisions of the Business District Act and this Business District Plan.

Pursuant to the Business District Act, the IL Rt. 83 Business District Sales Taxes described in Section VI may not be imposed for more than twenty three (23) years pursuant to the provisions of the Business District Act. The Business District shall expire upon the termination of the imposition of the IL Rt. 83 Business District Sales Taxes and the final payout of the same from the IL Rt. 83 Business District Tax Allocation Fund, which shall be no later than 23 years from the date of adoption of the ordinance approving this Business District Plan.

X. FORMAL FINDINGS

Based upon the information described in Section III and the attached Exhibit C, the Village Board of the Village of Long Grove finds and determines the following:

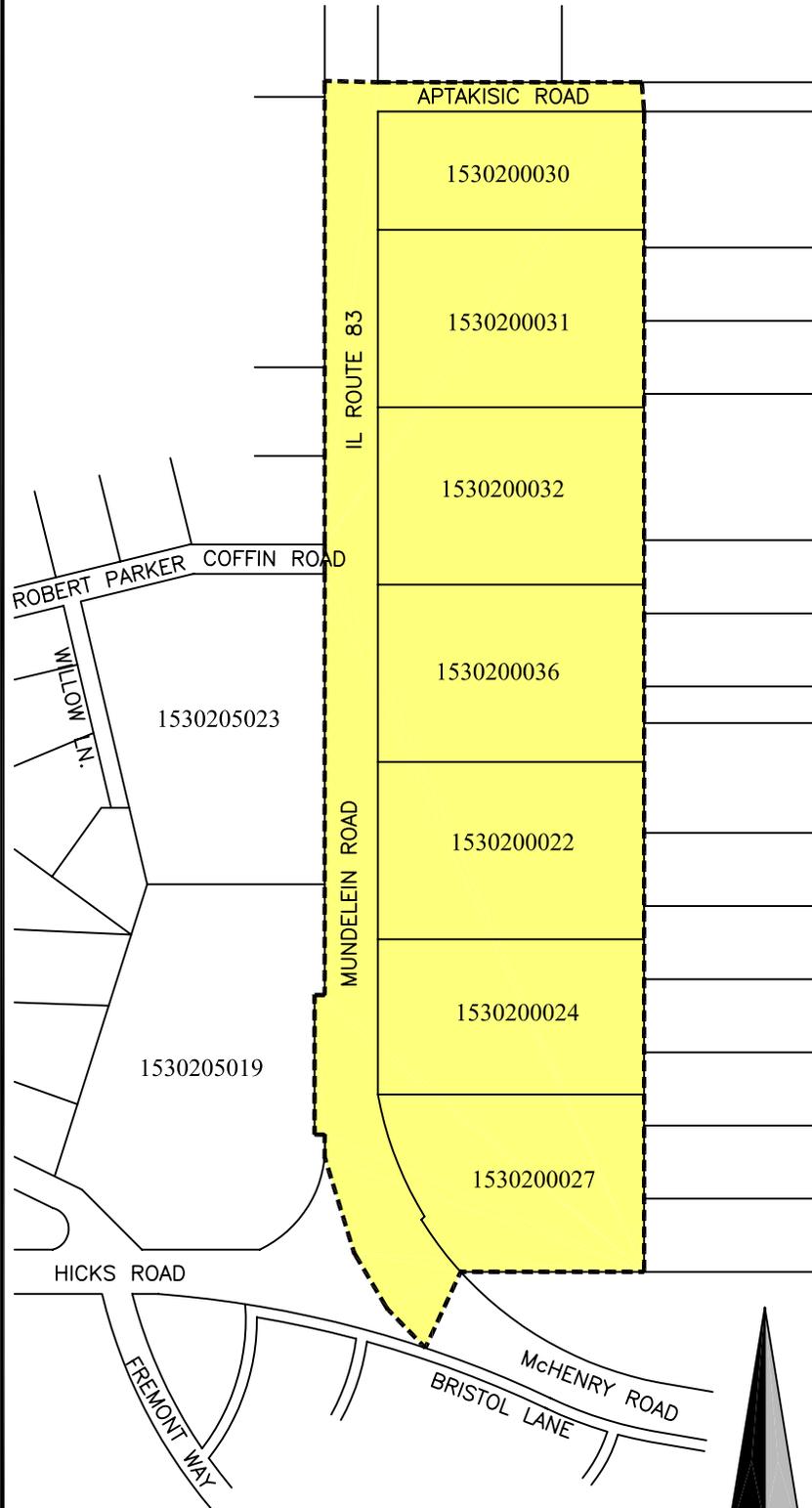
- (a) The IL Rt. 83 Business District is a contiguous area and includes only parcels of real property directly and substantially benefited by the proposed business district development or redevelopment plan;
- (b) The IL Rt. 83 Business District Plan will be consistent with the Village of Long Grove's Comprehensive Plan for the development of the Village as a whole when such plan is amended and is consistent with all other plans of the Village;
- (c) The IL Rt. 83 Business District is a blighted area as defined in the Business District Act by reason of:
 - improper subdivision or obsolete platting;
 - defective or inadequate street layout.
- (d) The IL Rt. 83 Business District constitutes an economic liability to the Village in its present condition and use; and
- (e) The IL Rt. 83 Business District, on the whole, has not been subject to growth and development by private enterprises or would not reasonably be anticipated to be developed or redeveloped without the adoption of the business district development or redevelopment plan. The costs of public improvements and road improvements are prohibitive for private development without the assistance of the Village.

XI. PROVISIONS FOR AMENDING THE BUSINESS DISTRICT PLAN

The Village of Long Grove's Village Board may amend this Business District Plan according to the Act from time to time by adopting an ordinance providing for such amendment.

EXHIBIT A: MAP OF IL RT. 83 BUSINESS DISTRICT

LONG GROVE IL RT. 83 BUSINESS DISTRICT



NORTH



SCALE IN FEET



EHLERS
& ASSOCIATES INC

EXHIBIT B: LEGAL DESCRIPTION

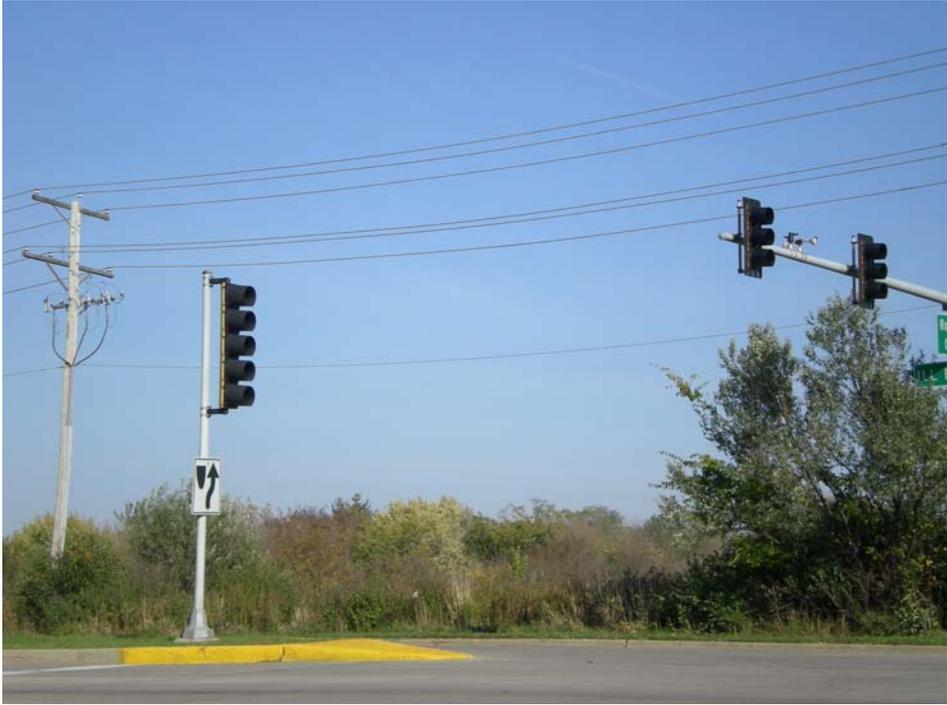
EXHIBIT C: SURVEY OF PARCELS

Parcel	Obsolete Platting
153020030	X
153020031	X
153020032	X
153020036	
153020022	X
153020024	X
153020027	X

EXHIBIT D: PARCEL NUMBERS AND ADDRESSES

PARCEL NO.	SITE ADDRESS	CITY	STATE	ZIP
15-30-200-030	0 MUNDELEIN RD	LONG GROVE	IL	60047
15-30-200-031	0 MUNDELEIN RD	LONG GROVE	IL	60047
15-30-200-032	0 MUNDELEIN RD	LONG GROVE	IL	60047
15-30-200-036	4180 HWY 83	LONG GROVE	IL	60047
15-30-200-022	0 MUNDELEIN RD	LONG GROVE	IL	60047
15-30-200-024	0 MUNDELEIN RD	LONG GROVE	IL	60047
15-30-200-027	0 MUNDELEIN RD	LONG GROVE	IL	60047

EXHIBIT E: PHOTOGRAPHS



Vacant Land and Road Access

EXHIBIT F: TRAFFIC IMPACT STUDY



9775 West Higgins Road, Suite 100 • Rosemont, Illinois 60018
p 847-518-9900 • f 847-518-9907

MEMORANDUM TO: Michael Nortman
Mid-America Development Partners, LLC

FROM: Luay R. Aboona, PE
Principal

DATE: June 5, 2007 - **Revised August 6, 2007**

SUBJECT: Traffic Impact Study
Proposed Retail Center
Long Grove, Illinois

This memorandum summarizes the results of a traffic evaluation conducted by Kenig, Lindgren, O'Hara, Aboona, Inc. (KLOA, Inc.) for a proposed retail development to be located in Long Grove, Illinois. The development, which is to be located in the southeast quadrant of the intersection of IL 83 and Aptakisic Road, is proposed to contain approximately 78,500 square feet of retail that will contain a grocery store, a drive-through pharmacy store, a drive-through bank, and retail. Access to the development is proposed to be provided via two access drives along IL 83 and potentially two additional access drives along Aptakisic Road.

Existing Conditions

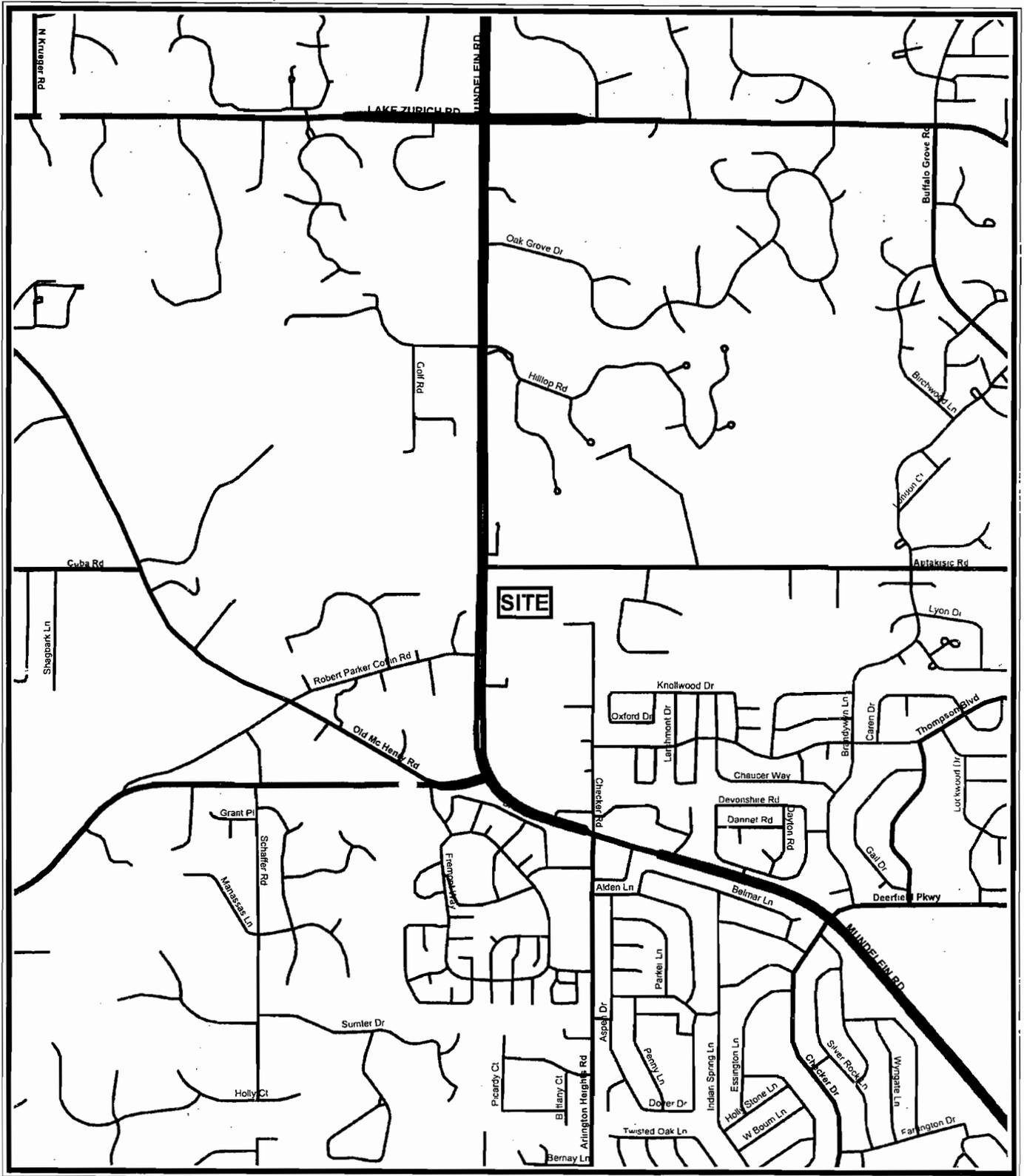
Site Accessibility

The principal roadways in the vicinity of the site are illustrated in Figures 1 and 2 and described in the following paragraphs.

IL 83 is generally a north-south major arterial roadway. In the vicinity of the site, IL 83 has two lanes in each direction separated by a raised median. Separate left-turn lanes are provided at most intersections and access drives, including its signalized intersections with Aptakisic Road (dual right and left-turn lanes and a westbound right-turn lane) and Robert Parker Coffin Road. IL 83 has a posted speed limit of 45 mph and is under the jurisdiction of IDOT.

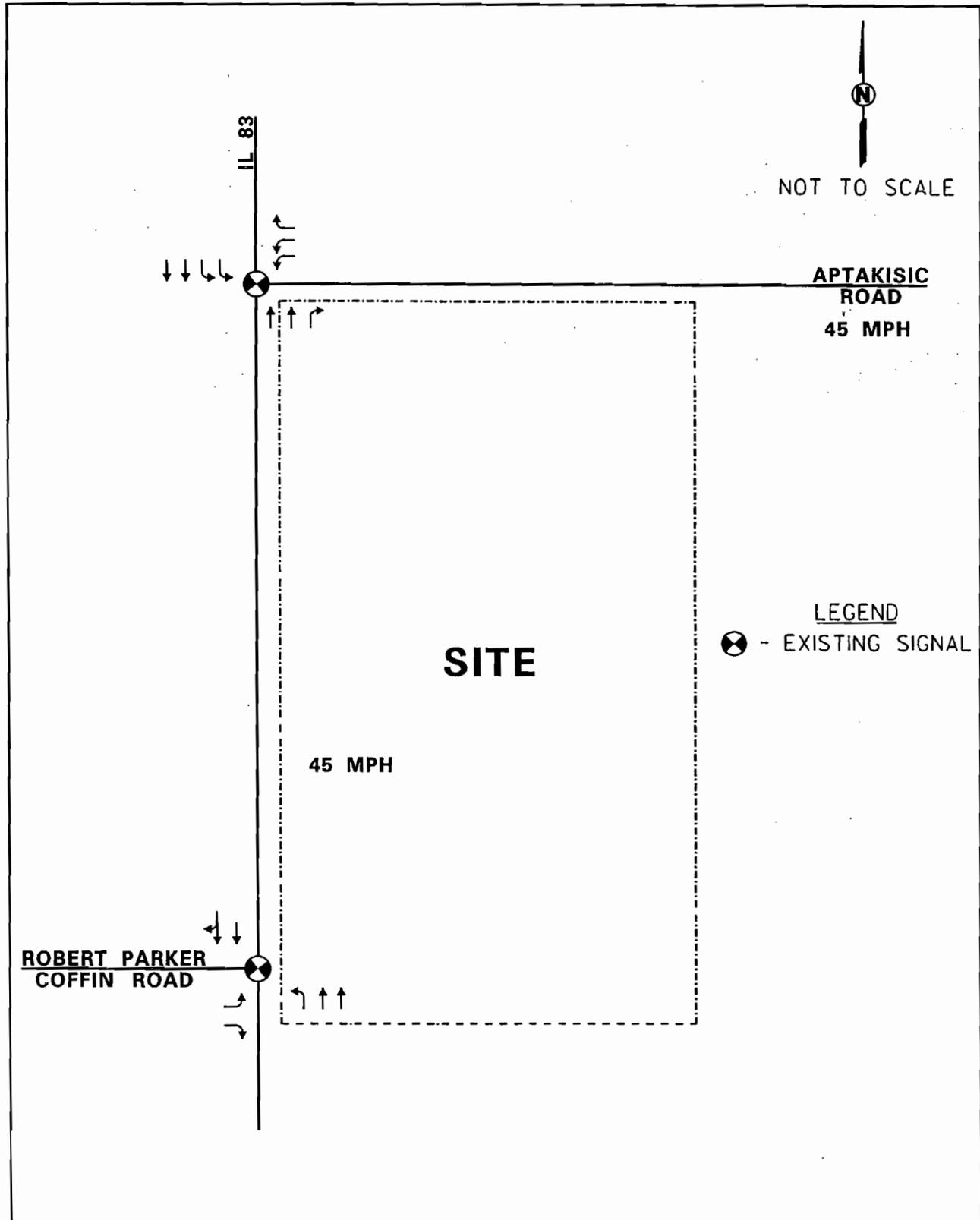
Aptakisic Road is an east-west arterial roadway that extends between IL 83 and Milwaukee Avenue. The roadway in the site vicinity has a two-lane cross section that is widened at its signalized intersection with IL 83 to provide dual left-turn lanes and an exclusive right-turn lane. The roadway has a 45 mph speed limit and is under the jurisdiction of Lake County Division of Transportation (LCDOT).

Robert Parker Coffin Road is an east-west collector road that extends between IL 53 and IL 83. It generally has a two-lane cross section and provides a separate left-turn lane and a separate right-turn lane at its signalized intersection with IL 83. Robert Parker Coffin Road has a posted speed limit of 25 mph.



SITE LOCATION

Figure 1.



PROJECT:
 PROPOSED RETAIL
 DEVELOPMENT
 LONG GROVE, ILLINOIS

TITLE:
 EXISTING INTERSECTION GEOMETRICS

PROJECT NO: 06-358

 FIGURE NO: 2

Existing Traffic Volumes

In order to determine current traffic conditions on the existing roadways, peak period traffic counts were conducted by KLOA, Inc. at the intersections of IL 83 with Robert Parker Coffin Road and Aptakistic Road. The traffic counts were conducted on Wednesday, November 15, 2006 during the weekday morning (7:00 to 9:00 A.M.), weekday evening (4:00 to 6:00 P.M.), and on Saturday, November 18, 2006 midday (11:30 A.M. to 1:30 P.M.) peak periods. Based on the results of the traffic counts, it was determined that the weekday morning peak hour of traffic occurs from 7:00 to 8:00 A.M., the weekday evening peak hour of traffic occurs from 4:30 to 5:30 P.M., and the Saturday midday peak hour occurs from 12:15 to 1:15 P.M. The existing peak hour traffic volumes are illustrated in Figure 3.

Development Traffic Characteristics

Directional Distribution

The directional distribution of future development-generated trips on the external roadways is a function of several variables, including the operational characteristics of the roadway system and the ease with which drivers can travel over various sections of the road system without encountering congestion. The directional distribution for the proposed development was based on the existing travel patterns, as determined from the traffic counts. Table 1 and Figure 4 show the results of the directional distribution analysis.

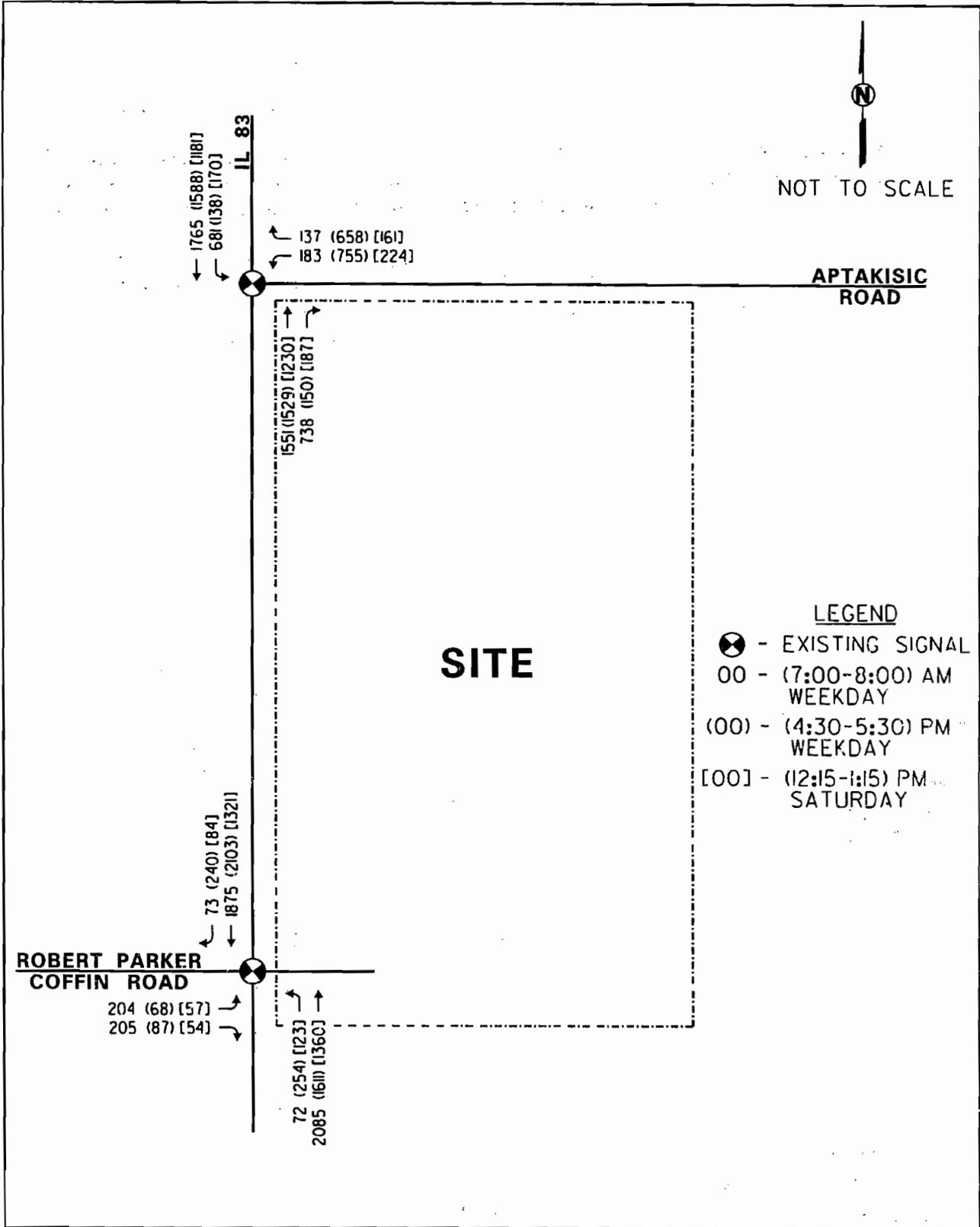
Table 1
ESTIMATED DIRECTIONAL DISTRIBUTION

Direction	Percent
To and from the north on IL 83	40%
To and from the east on Aptakistic Road	15%
To and from the south on IL 83	40%
To and from the west on Robert Parker Coffin Road	5%
	100%

Peak Hour Traffic Volumes

The traffic generation characteristics of any development are based on the magnitude and character of its land use. As proposed, the development is to consist of approximately 78,500 square feet of retail space that will contain the following uses.

- A grocery store with 47,000 square feet
- A drive-through pharmacy store with 14,820 square feet
- A drive-through bank with 4,133 square feet and five drive-through lanes
- A 12,500 square-foot retail building

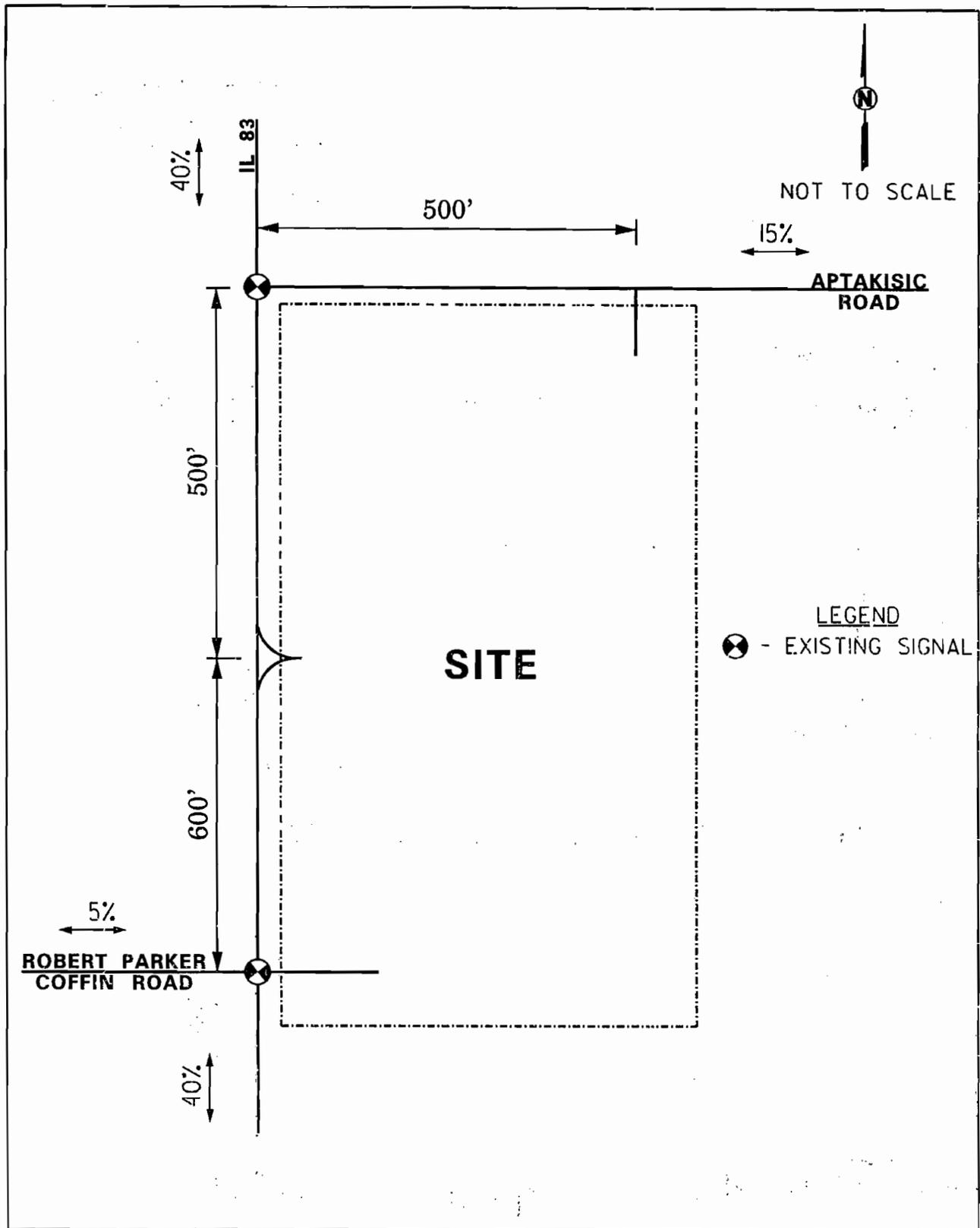


PROJECT:
 PROPOSED RETAIL
 DEVELOPMENT
 LONG GROVE, ILLINOIS

TITLE:
 EXISTING TRAFFIC VOLUMES

PROJECT NO: 06-358

 FIGURE NO: 3



PROJECT:
 PROPOSED RETAIL
 DEVELOPMENT
 LONG GROVE, ILLINOIS

TITLE:
 ESTIMATED DIRECTIONAL DISTRIBUTION

PROJECT NO: 06-358
KLOAN
 FIGURE NO: 4

The peak hour traffic estimated to be generated by the proposed development was based on the rates published in the ITE *Trip Generation Manual*, 7th Edition. For the drive-through bank, trip rates based on KLOA, Inc. surveys at similar facilities were utilized. Table 2 and Table 3 show the estimate of the peak hour traffic that will be generated by the development.

Table 2
ESTIMATED WEEKDAY PEAK HOUR TRAFFIC VOLUMES

ITE Land-Use Code	Type/Size	Weekday A.M. Peak Hour			Weekday P.M. Peak Hour			Daily Two-Way Traffic
		In	Out	Total	In	Out	Total	
850	Grocery Store – 47,000 s.f.	100	70	170	260	250	510	4,535
881	Pharmacy – 14,820 s.f.	20	20	40	60	65	125	1,305
814	Retail - 12,500 s.f.	5	5	10	15	20	35	555
912	Bank – 4,133 s.f. (5 drive-through lanes)	<u>30</u>	<u>20</u>	<u>50</u>	<u>95</u>	<u>95</u>	<u>190</u>	<u>1,020</u>
Total Trips:		155	115	270	430	430	860	7,415

Table 3
ESTIMATED SATURDAY PEAK HOUR TRAFFIC VOLUMES

ITE Land-Use Code	Type/Size	Saturday Peak Hour			Daily Two-Way Traffic
		In	Out	Total	
850	Grocery Store – 47,000 s.f.	280	270	550	8,345
881	Pharmacy – 14,820 s.f.	60	60	120	NA
814	Retail - 12,500 s.f.	30	30	60	530
912	Bank – 4,133 s.f. (5 drive-through lanes)	<u>80</u>	<u>70</u>	<u>150</u>	<u>295</u>
Total Trips:		450	430	880	NA

NA = ITE does not supply Daily Two-Way Traffic for Saturday, therefore Daily Total can not be calculated

Given the mix of uses being proposed, interaction or internal trips will occur between the different uses on site. Furthermore, surveys conducted by ITE have shown that many trips made to retail developments are diverted from the existing traffic on the roadway system. This is particularly true during the weekday morning and evening peak hours when traffic is diverted from the home-to-work and work-to-home trips. Such diverted trips are referred to as pass-by traffic. For the purposes of this study, to provide a conservative analysis, the number of trips generated by the proposed development was *NOT* reduced to account for internal interaction or pass-by trips.

Future Growth

Based on IDOT's requirements, the study examined the roadway conditions five years after the development is complete, which is assumed to be one year, or the year 2013. An ambient growth factor of 3 percent per year was considered appropriate for this traffic analysis. Therefore, the existing traffic volumes were increased by a total of eighteen percent to reflect the ambient or background growth in traffic between 2006 and 2013. In addition, the traffic that will be generated by the future development of the vacant parcel to the south of the IL 83/IL 53 intersection was included. A mixed-use (office and retail) was assumed for this parcel with direct right-in/right-out on IL 83 and cross access through the site. Table 4 summarizes the traffic that will be generated by this parcel. Figure 5 illustrates the year 2013 background traffic volumes.

Table 4
ESTIMATED TRAFFIC GENERATION
FUTURE DEVELOPMENT OF VACANT PARCEL

Land Use	ITE Land-Use Code	Size (square feet)	Weekday A.M.		Weekday P.M.		Saturday	
			In	Out	In	Out	In	Out
Retail	820	50,000	60	40	190	200	280	270
Office	710	50,000	<u>95</u>	<u>10</u>	<u>25</u>	<u>110</u>	<u>10</u>	<u>10</u>
		Total	155	50	215	310	290	280
		10% Interaction (Office)	5	5	20	20	--	--
		20% Pass-By (Retail)	<u>15</u>	<u>15</u>	<u>40</u>	<u>40</u>	<u>60</u>	<u>60</u>
		New Trips	135	30	155	250	230	220



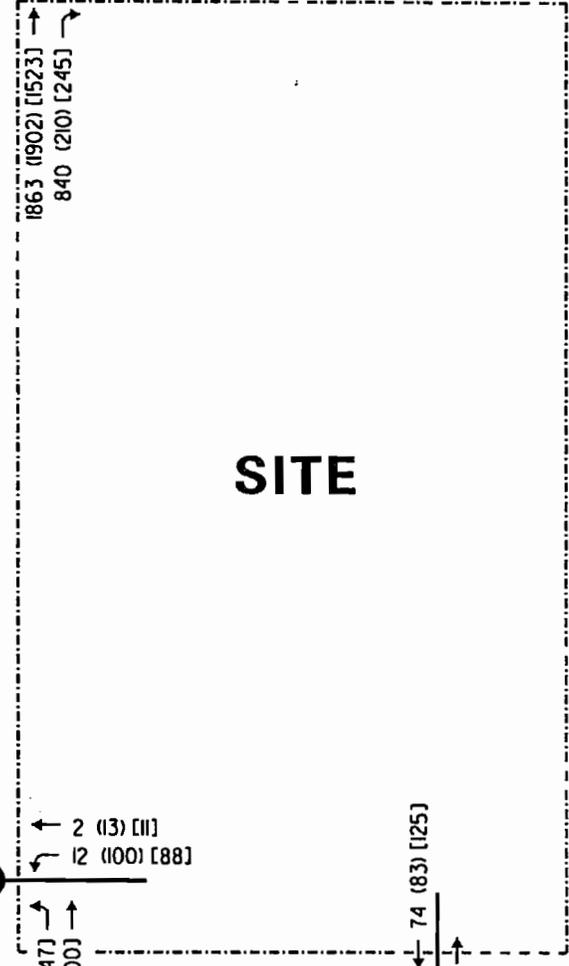
NOT TO SCALE

IL 83

2162 (1960) [1503]
814 (164) [203]

163 (786) [192]
238 (922) [301]

APTAKISIC ROAD



SITE

LEGEND

- ⊗ - EXISTING SIGNAL
- 00 - (7:00-8:00) AM WEEKDAY
- (00) - (4:30-5:30) PM WEEKDAY
- [00] - (12:15-1:15) PM SATURDAY

87 (286) [99]
2239 (2511) [580]
74 (85) [25]

ROBERT PARKER COFFIN ROAD

245 (81) [68]
246 (102) [65]

2 (13) [11]
12 (100) [88]

86 (302) [47]
2458 (2031) [1700]

74 (83) [25]
14 (113) [99]

PROJECT:
PROPOSED RETAIL DEVELOPMENT
LONG GROVE, ILLINOIS

TITLE:
YEAR 2013 BACKGROUND TRAFFIC VOLUMES

PROJECT NO: 06-358

KLOAN

FIGURE NO: 5

Traffic Assignments

The estimated peak hour traffic volumes that will be generated by the proposed development were assigned to the various roadways serving the site access in accordance with the previously described directional distribution (Figure 4). The assignment of site traffic was based on three different access scenarios, as follows:

- **Scenario 1**
 - Signalized Full-Access along IL 83 at Robert Parker Coffin Road
 - Right-In/Right-Out along IL 83
 - Illustrated in Figure 6
- **Scenario 2**
 - Signalized Full-Access along IL 83 at Robert Parker Coffin Road
 - Right-In/Right-Out along IL 83
 - Right-In/Right-Out along Aptakistic Road
 - Illustrated in Figure 7
- **Scenario 3**
 - Signalized Full-Access along IL 83 at Robert Parker Coffin Road
 - Right-In/Right-Out along IL 83
 - Full-Access along Aptakistic Road
 - Illustrated in Figure 8

The year 2013 background traffic volumes (Figure 5) were added to development-generated traffic, for each scenario, to obtain year 2013 total traffic volumes as illustrated in Figures 9, 10, and 11 respectively.

Evaluation and Recommendations

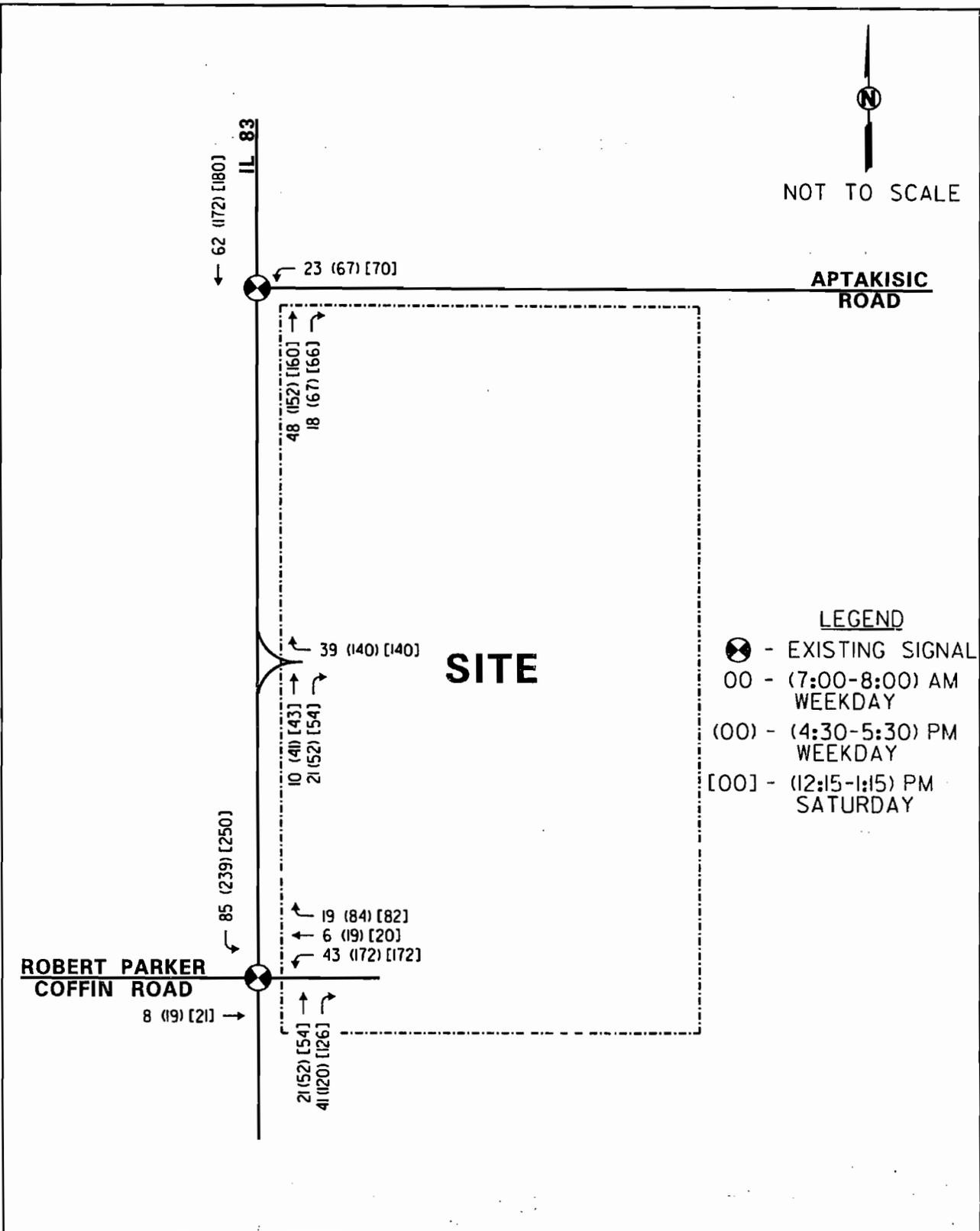
Site Access

Access to the proposed development off IL 83 for all scenarios is to be provided as follows.

- Opposite Robert Parker Coffin Road. This will provide the site with signalized access off IL 83. The intersection will need to be modified as follows to accommodate site traffic.
 - Provide a southbound left-turn lane on the north approach.
 - Provide a third northbound shared through and right-turn lane.
 - Provide one inbound lane and three outbound lanes on the east approach (proposed access drive). The outbound lanes should be striped to indicate an exclusive left-turn lane, an exclusive through lane and an exclusive right-turn lane



NOT TO SCALE



SITE

LEGEND

- ⊗ - EXISTING SIGNAL
- 00 - (7:00-8:00) AM WEEKDAY
- (00) - (4:30-5:30) PM WEEKDAY
- [00] - (12:15-1:15) PM SATURDAY

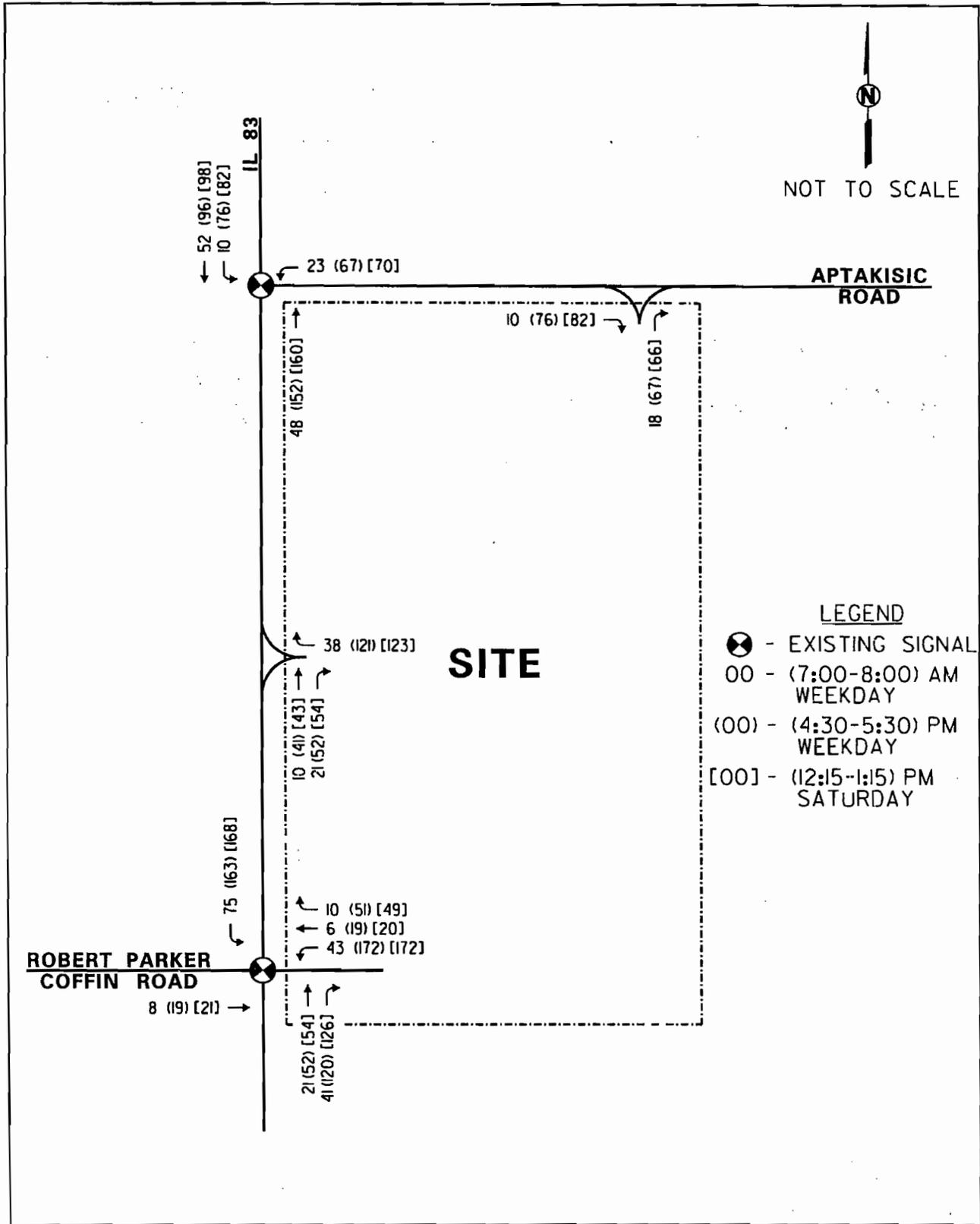
PROJECT:
 PROPOSED RETAIL DEVELOPMENT
 LONG GROVE, ILLINOIS

TITLE:
 ESTIMATED SCENARIO I
 SITE-GENERATED TRAFFIC VOLUMES

PROJECT NO: 06-358



FIGURE NO: 6

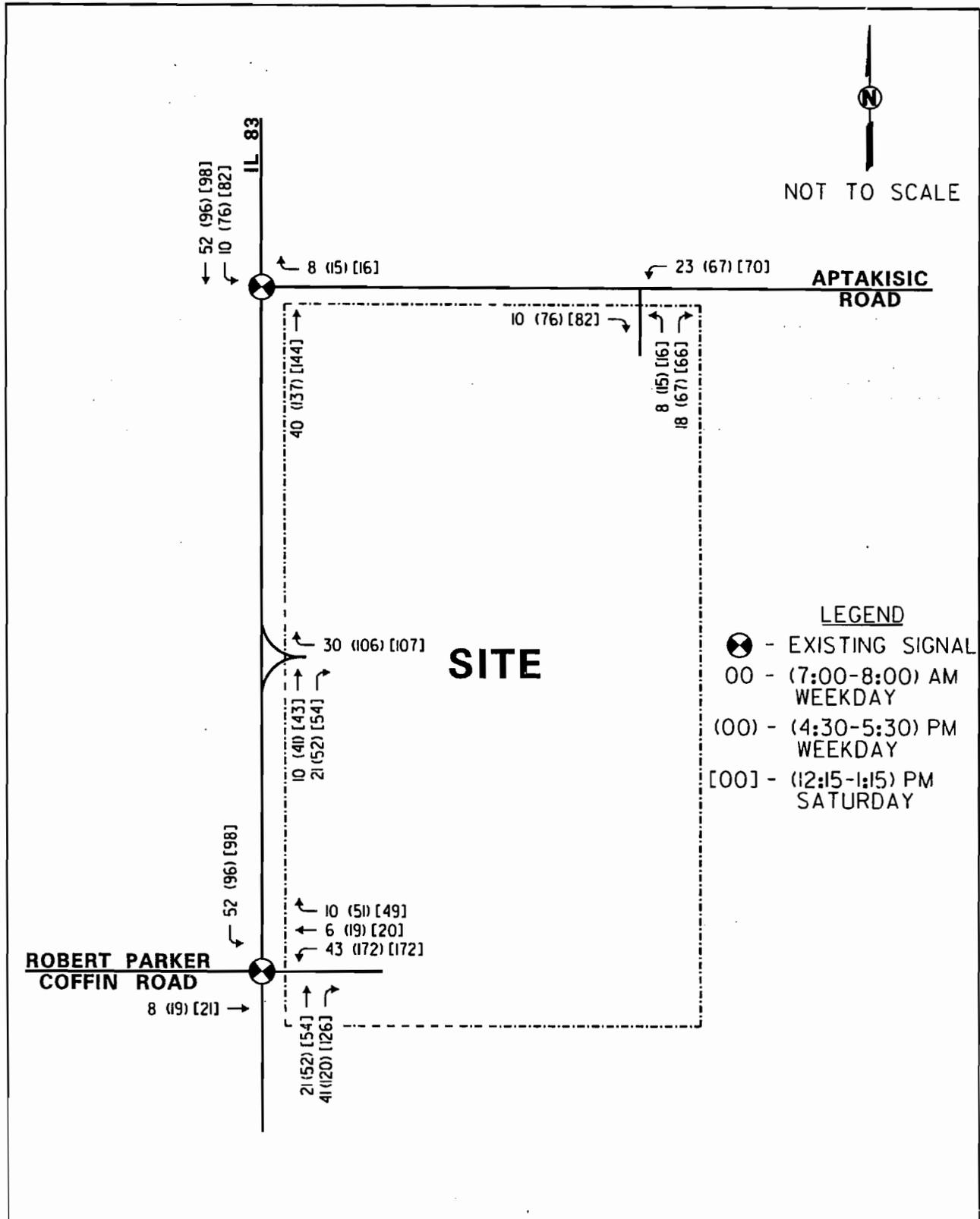


PROJECT:
 PROPOSED RETAIL
 DEVELOPMENT
 LONG GROVE, ILLINOIS

TITLE:
 ESTIMATED SCENARIO 2
 SITE-GENERATED TRAFFIC VOLUMES

PROJECT NO: 06-358

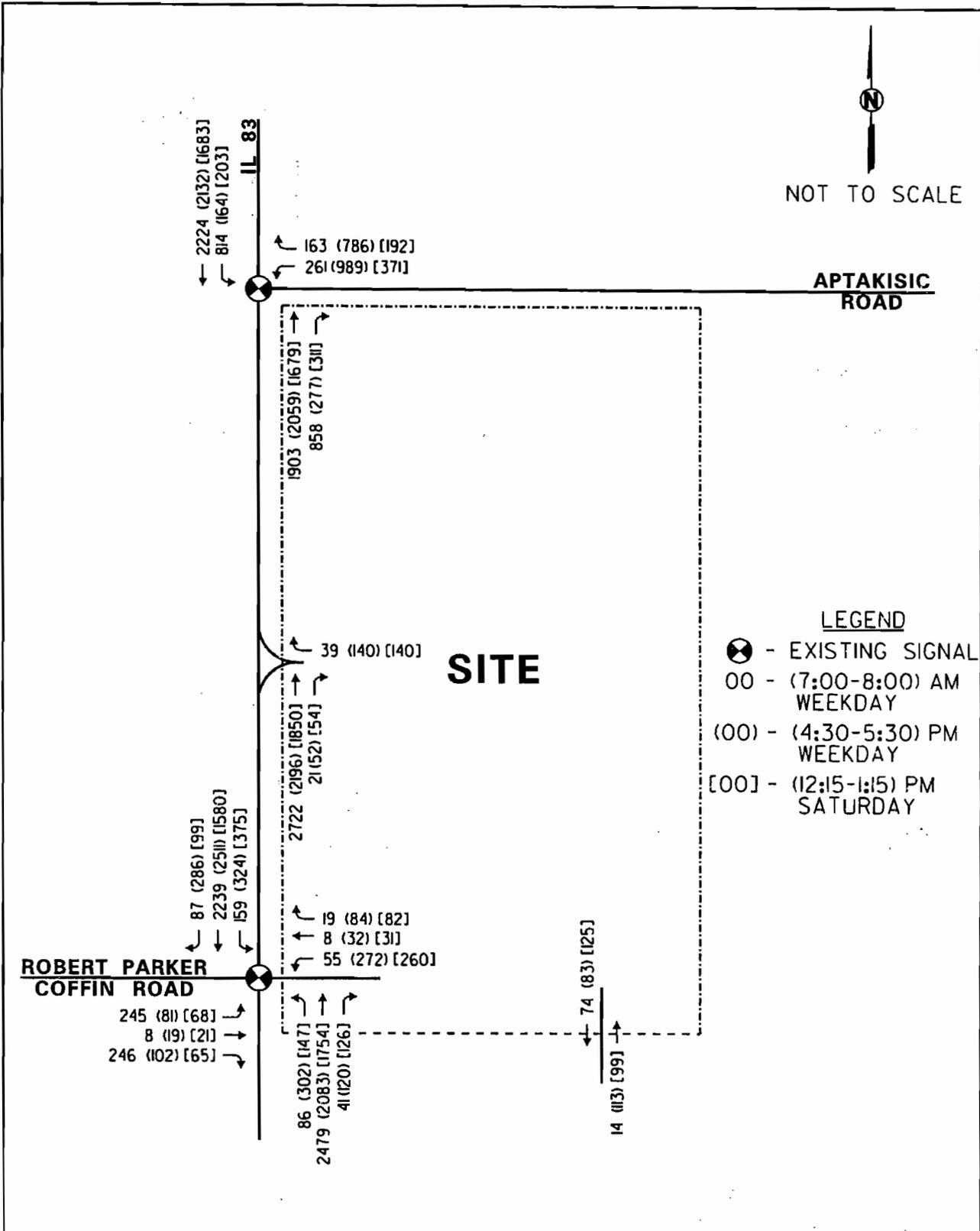
FIGURE NO: 7



PROJECT: PROPOSED RETAIL DEVELOPMENT LONG GROVE, ILLINOIS	TITLE: ESTIMATED SCENARIO 3 SITE-GENERATED TRAFFIC VOLUMES	PROJECT NO: 06-358
		FIGURE NO: 8



NOT TO SCALE



SITE

LEGEND

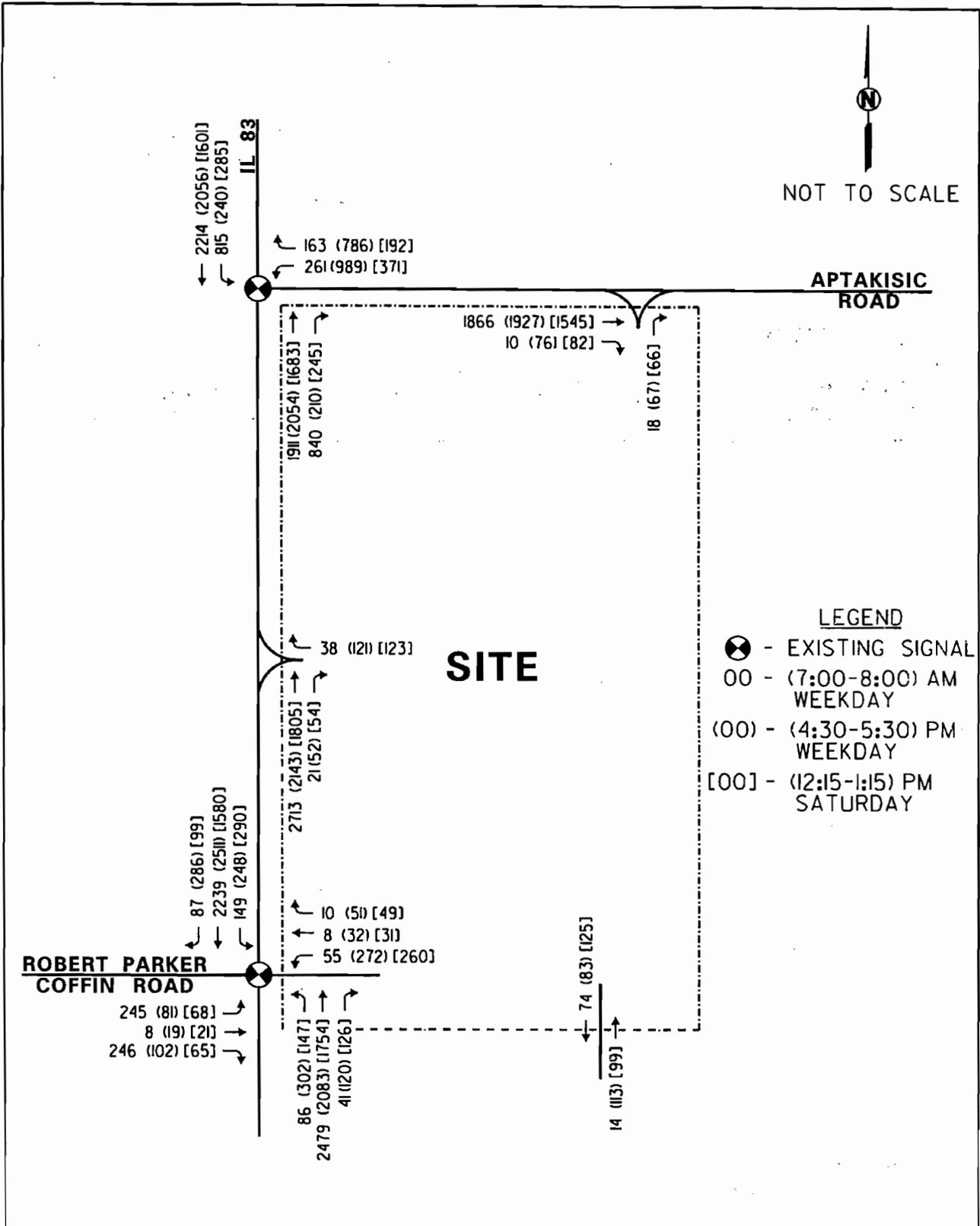
- ⊗ - EXISTING SIGNAL
- 00 - (7:00-8:00) AM WEEKDAY
- (00) - (4:30-5:30) PM WEEKDAY
- [00] - (12:15-1:15) PM SATURDAY

PROJECT:
**PROPOSED RETAIL DEVELOPMENT
 LONG GROVE, ILLINOIS**

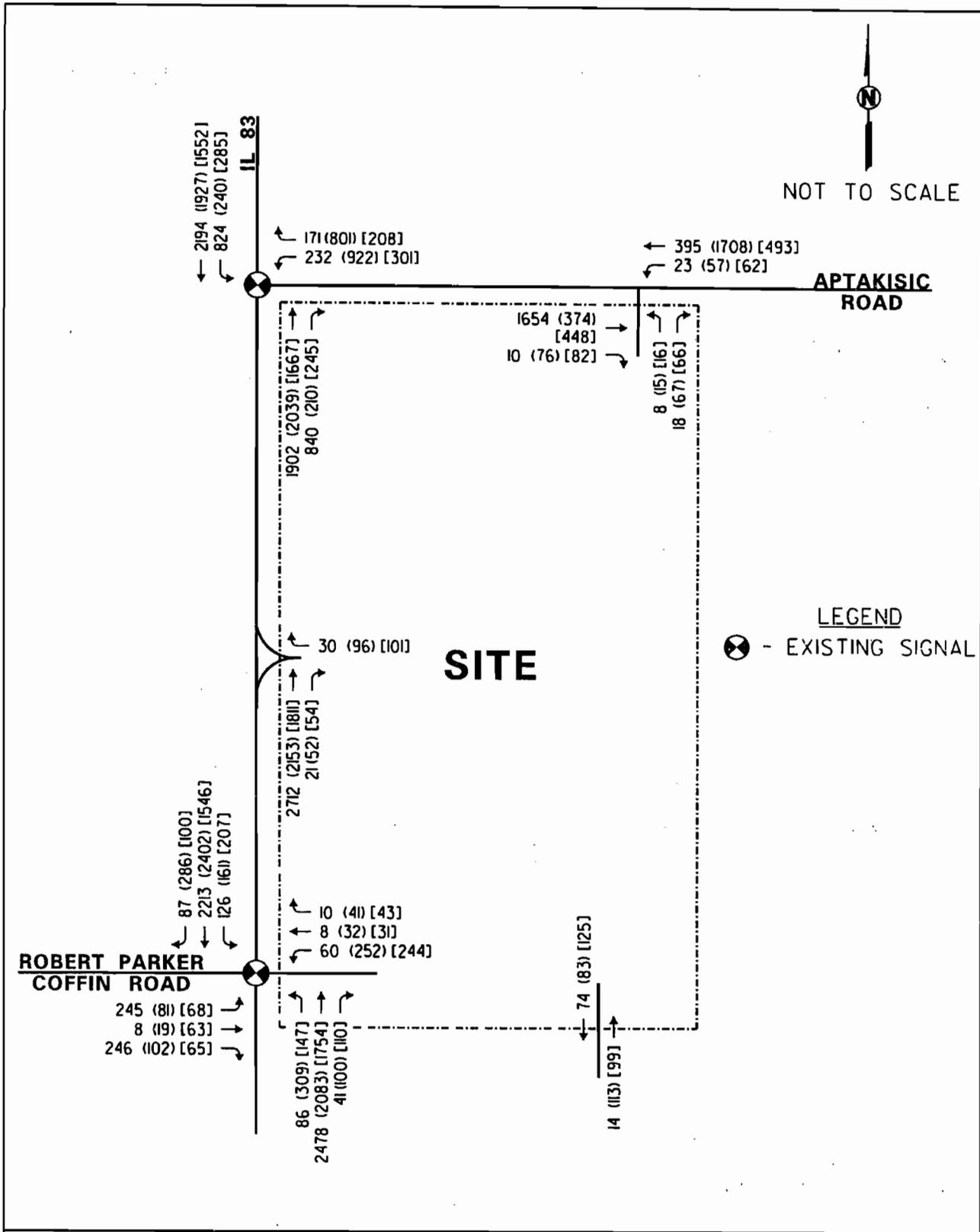
TITLE:
**YEAR 2013 SCENARIO I
 PROJECTED TRAFFIC VOLUMES**

PROJECT NO: 06-358

 FIGURE NO: 9



PROJECT: PROPOSED RETAIL DEVELOPMENT LONG GROVE, ILLINOIS	TITLE: YEAR 2013 SCENARIO 2 PROJECTED TRAFFIC VOLUMES	PROJECT NO: 06-358 <div style="text-align: center;">KLOAN</div> FIGURE NO: 10
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PROJECT:
 PROPOSED RETAIL
 DEVELOPMENT
 LONG GROVE, ILLINOIS

TITLE:
 YEAR 2013 SCENARIO 3
 PROJECTED TRAFFIC VOLUMES

PROJECT NO: 06-358
KLOAN
 FIGURE NO: II

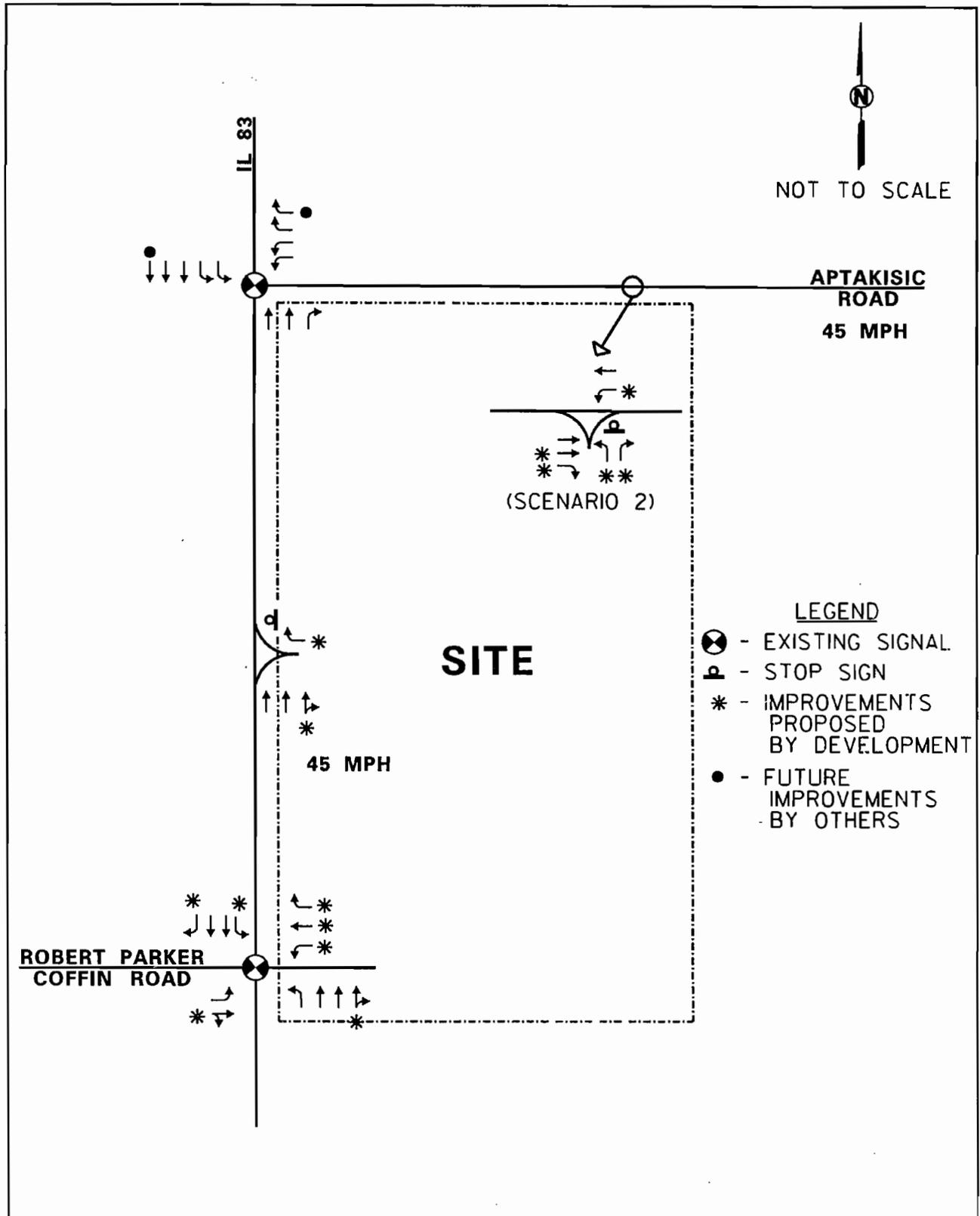
- Restripe the exclusive right-turn lane on Robert Parker Coffin Road to a shared through and right-turn lane.
 - Provide a southbound right-turn lane on IL 83.
- Approximately 500 feet south of Aptakisic Road. This access drive will be restricted to right turns in and out only. The third northbound shared through and right turn lane to be provided on IL 83 at Robert Parker Coffin Road should be extended past this access drive terminating at the existing right-turn lane at Aptakisic Road. Outbound movements should be under stop sign control.

For scenarios 2 and 3, access on Aptakisic Road will be located approximately 500 feet east of IL 83. Under Scenario 2, it is proposed to be restricted to right-turns only enforced with a triangular island median. An eastbound right-turn lane should be provided. Under Scenario 3, the access drive will allow full movements and should provide one inbound lane and two outbound lanes with outbound movements under stop control. A westbound left-turn lane and an eastbound right-turn lane should be provided on Aptakisic Road at this location.

Capacity analyses utilizing Synchro software (Version 6.0) were conducted at critical intersections in the study area. Based on the traffic assignment data cited previously, the following traffic assignments were evaluated:

1. Existing traffic volumes and existing roadway conditions
2. Year 2013 background traffic volumes and existing roadway conditions
3. Year 2013 total traffic volumes for Scenarios 1, 2, 3, and proposed roadway improvements

The results of the analyses in terms of level of service and average delays are summarized in Table 5. Copies of the Synchro output reports are provided in the Appendix. A summary of the levels of service and the corresponding vehicular delay range for signalized and unsignalized intersections is also provided in the Appendix. The following summarizes the results of the capacity analyses while Figure 12 and Figure 13 illustrate the recommended roadway improvements for the different scenarios.

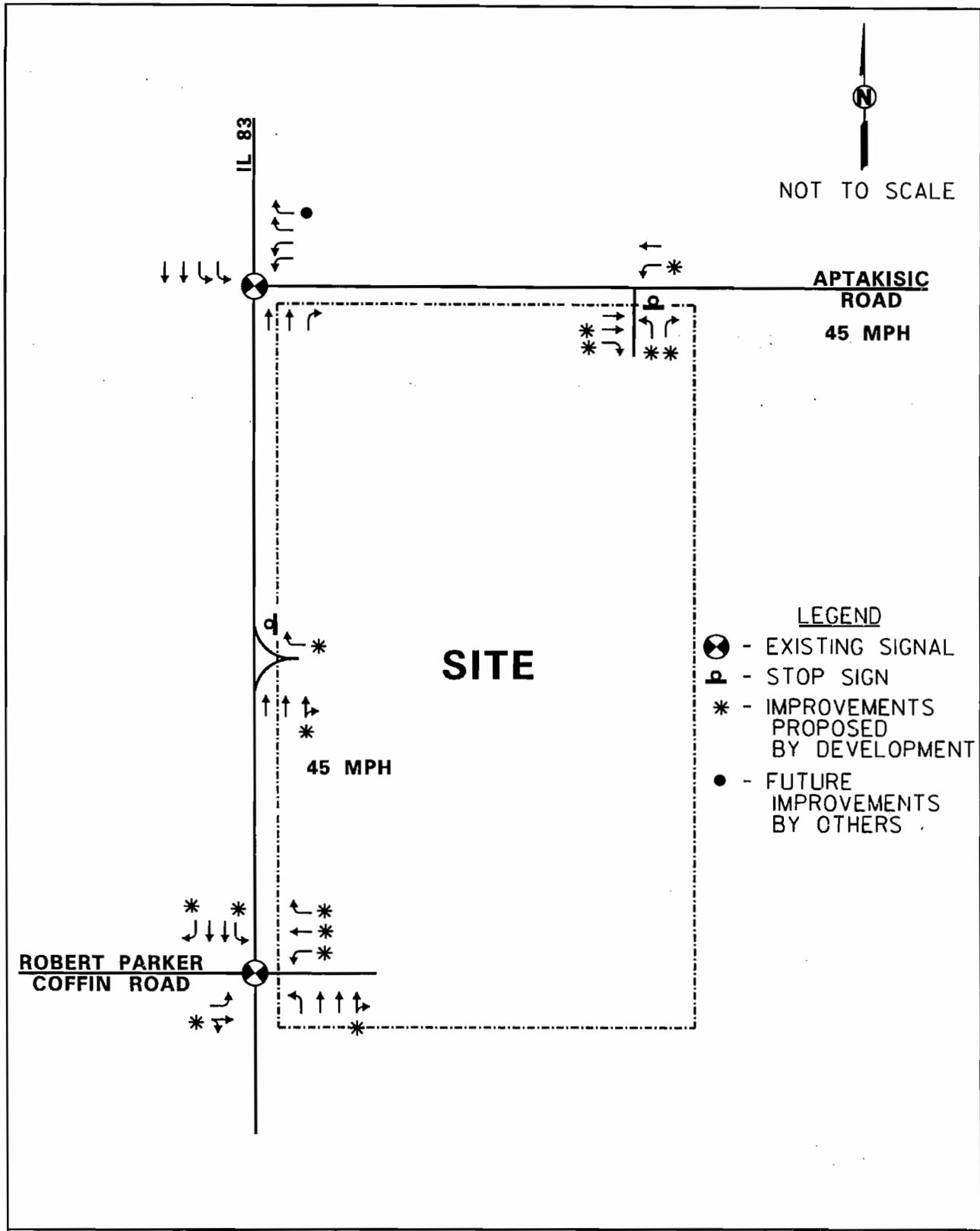


PROJECT: PROPOSED RETAIL DEVELOPMENT LONG GROVE, ILLINOIS

TITLE: FUTURE INTERSECTION GEOMETRICS SCENARIO 1 & SCENARIO 2

PROJECT NO: 06-358

 FIGURE NO: 12



PROJECT:
 PROPOSED RETAIL DEVELOPMENT
 LONG GROVE, ILLINOIS

TITLE:
 FUTURE INTERSECTION GEOMETRICS
 SCENARIO 3

PROJECT NO: 06-358
KLOAN
 FIGURE NO: 13

IL 83 with Robert Parker Coffin Road for Scenario 1, Scenario 2, and Scenario 3

This intersection currently operates at an acceptable level of service during the weekday morning and Saturday midday peak hours. However, the intersection operates at Level of Service E during the weekday P.M. peak hour. With the addition of the eighteen percent background growth and traffic from the future development of the vacant parcel to the south, this intersection is projected to operate at Level of Service E during the weekday A.M. peak hour and Level of Service F during the weekday P.M. peak hour. With the addition of the east leg and the associated roadway improvements previously recommended, the levels of service and average delays will be improved when compared to background traffic conditions.

IL 83 with Aptakistic Road for Scenario 1 and Scenario 2

The intersection, on an overall basis, is currently operating at adequate levels of service. With the assumed growth and access Scenarios 1 and 2, the level of service during the weekday P.M. peak hour will deteriorate to Level of Service E. With the addition of site traffic and growth, both dual westbound right turns on Aptakistic Road at IL 83 and an exclusive south bound through lane needs to be added through the intersection Aptakistic Road and IL 83. Both of these improvements are driven primarily by surrounding area background growth and are not needed in order to accommodate site generated traffic volumes. These improvements were assumed to be completed by others.

IL 83 with Aptakistic Road for Scenario 3

The intersection, on an overall basis, is currently operating at adequate levels of service. With the assumed growth and access Scenario 3, the level of service during the weekday P.M. peak hour will deteriorate to Level of Service E. With the addition of site traffic, in order to mitigate the impact of growth, dual westbound right turns will be needed on Aptakistic Road at IL 83. This improvement is driven primarily by surrounding area background growth and is not needed in order to accommodate site generated traffic volumes. This improvement was assumed to be completed by others.

Access Intersections for Scenario 1, Scenario 2, and Scenario 3

The results of the analyses indicate that all access drives under all three scenarios, with the exception of Aptakistic Road and Full Access (Scenario 3) will operate satisfactorily indicating that the proposed design is adequate in accommodating site traffic. Under Scenario 3, the full movement access drive's intersection will operate at Level of Service E. This is due to the delays that will be experienced by the exiting left turns which are expected due to the high volume of through traffic on Aptakistic Road.

Table 5
INTERSECTION LEVEL OF SERVICE AND DELAY

Intersection	Weekday Morning Peak Hour		Weekday Evening Peak Hour		Saturday Midday Peak Hour	
	LOS	Delay	LOS	Delay	LOS	Delay
IL 83 with Aptakisic Road¹						
Existing Conditions	C	26.2	D	49.1	B	13.7
2013 Background Volumes	D	43.6	E	75.0	B	12.0
2013 Scenario 1 Total Volumes	E	79.0	F	138.0	B	14.7
Dual WB LT & 3 rd SB T	D	44.5	E	79.6	B	13.9
2013 Scenario 2 Total Volumes	E	76.3	F	88.9	B	16.5
Dual WB LT & 3 rd SB T	D	43.7	E	56.9	B	16.0
2013 Scenario 3 Total Volumes	E	75.0	F	84.6	B	14.5
Dual WB LT	D	44.7	E	56.1	B	14.4
IL 83 with Robert Parker Coffin Road¹						
Existing Conditions	C	25.1	E	63.5	A	9.2
2013 Background Volumes	E	76.2	F	133.5	C	27.8
2013 Scenario 1 Total Volumes	E	69.2	F	125.5	D	38.2
2013 Scenario 2 Total Volumes	E	66.5	F	112.4	D	37.1
2013 Scenario 3 Total Volumes	E	59.6	F	107.9	C	34.9
IL 83 with Restricted Access Drive²						
2013 Scenario 1 Total Volumes	D	31.1	C	21.9	B	11.7
2013 Scenario 2 Total Volumes	D	29.8	C	15.9	B	11.5
2013 Scenario 3 Total Volumes	D	26.5	C	15.4	B	11.0
Aptakisic Road with Restricted Access Drive² (Scenario 2)						
2013 Scenario 2 Total Volumes	C	20.7	D	26.2	C	19.3
Aptakisic Road with Full Access Drive² (Scenario 3)						
2013 Scenario 3 Total Volumes	E	45.5	E	47.2	C	16.0

LOS - Level of Service

Delay is measured in seconds.

¹Signalized Intersection

²Unsignalized Intersection

Scenario 1 = Signalized Full-Access along IL 83 at Robert Parker Coffin Road & Right-In/Right-Out along IL 83

Scenario 2 = Signalized Full-Access along IL 83 at Robert Parker Coffin Road & Right-In/Right-Out along IL 83 and Right-In/Right-Out along Aptakisic Road

Scenario 3 = Signalized Full-Access along IL 83 at Robert Parker Coffin Road and Right-In/Right-Out along IL 83 and Full-Access along Aptakisic Road

Conclusion

Based on the results of the study it is concluded that the intersections of IL 83 with Aptakisic Road and Robert Parker Coffin Road can accommodate site traffic by incorporating the recommended roadway improvements. Current delays and queuing will continue to occur but will not be worsened with the addition of site traffic given the roadway improvements identified. The traffic study analyzed three access scenarios as requested by LCDOT and appropriate roadway improvements were identified for each scenario.

Appendix

- **Level of Service Summary**
- **Synchro Output Sheets**

Level of Service Summary

LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

Level of Service	Interpretation	Delay per Vehicle (seconds)
A	Very short delay, with extremely favorable progression. Most vehicles arrive during the green phase and do not stop at all	≤ 10.0
B	Good progression, with more vehicles stopping than for Level of Service A, causing higher levels of average delay.	>10 and ≤ 20.0
C	Light congestion, with individual cycle failures beginning to appear. Number of vehicles stopping is significant at this level though many still pass through the intersection without stopping.	>20 and ≤ 35
D	Congestion is more noticeable, with longer delays resulting from combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and the proportion of vehicles not stopping declines.	>35 and ≤ 55
E	Limit of acceptable delay. High delays result from poor progression, high cycle lengths and high V/C ratios.	>55 and ≤ 80
F	Unacceptable delay occurring, with oversaturation	>80.0

Source *Highway Capacity Manual, 2000*

LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

Level of Service	Average Total Delay (SEC/VEH)
A	≤ 10
B	>10 and ≤ 15
C	>15 and ≤ 25
D	>25 and ≤ 35
E	>35 and ≤ 50
F	>50

Source *Highway Capacity Manual, 2000*

Synchro Output Sheets

Existing Conditions

Lanes, Volumes, Timings
 6: Robert Parker Coffin Road & IL 83

Printed 12/15/2006

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	2000	1900	1900
Storage Length (ft)	145	0	200			0
Storage Lanes	1	1	1			0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	
Trailing Detector (ft)	0	0	0	0	0	
Turning Speed (mph)	15	9	15			9
Lane Util Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.994	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1641	3455	3262	0
Flt Permitted	0.950		0.036			
Satd Flow (perm)	1770	1583	62	3455	3262	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			45	45	
Link Distance (ft)	1567			1116	1030	
Travel Time (s)	35.6			16.9	15.6	
Volume (vph)	204	205	72	2085	1875	73
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	10%	10%	10%	10%
Adj. Flow (vph)	215	216	76	2195	1974	77
Lane Group Flow (vph)	215	216	76	2195	2051	0
Turn Type		pm+ov	pm+pt			
Protected Phases	4	5	5	2	6	
Permitted Phases		4	2			
Detector Phases	4	5	5	2	6	
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	22.5	8.0	8.0	22.0	22.5	
Total Split (s)	32.3	15.3	15.3	137.7	122.4	0.0
Total Split (%)	19.0%	9.0%	9.0%	81.0%	72.0%	0.0%
Yellow Time (s)	4.5	3.0	3.0	4.5	4.5	
All-Red Time (s)	1.5	0.0	0.0	1.5	1.5	
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Recall Mode	None	None	None	C-Max	C-Max	
Act Effct Green (s)	25.7	37.4	136.3	136.3	124.6	
Actuated g/C Ratio	0.15	0.22	0.80	0.80	0.73	
v/c Ratio	0.81	0.62	0.62	0.79	0.86	
Control Delay	91.7	67.3	48.1	12.4	25.9	
Queue Delay	0.0	0.0	0.0	0.0	0.5	
Total Delay	91.7	67.3	48.1	12.4	26.4	
LOS	F	E	D	B	C	
Approach Delay	79.5			13.6	26.4	
Approach LOS	E			B	C	
Queue Length 50th (ft)	231	217	29	658	959	
Queue Length 95th (ft)	331	302	90	757	1182	

Lanes, Volumes, Timings
 6 Robert Parker Coffin Road & IL 83

Printed 12/15/2006

Lane Group						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	1487			1036	950	
Turn Bay Length (ft)	145		200			
Base Capacity (vph)	295	381	155	2771	2391	
Starvation Cap Reductn	0	0	0	0	82	
Spillback Cap Reductn	0	0	0	19	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.73	0.57	0.49	0.80	0.89	

Intersection Summary

Area Type: Other
 Cycle Length 170
 Actuated Cycle Length: 170
 Offset 155 (91%), Referenced to phase 2.NBTL and 6 SBT, Start of 1st Green
 Natural Cycle 90
 Control Type Actuated-Coordinated
 Maximum v/c Ratio. 0.86
 Intersection Signal Delay: 25 1
 Intersection Capacity Utilization 77.8%
 Analysis Period (min) 15

Intersection LOS C
 ICU Level of Service D

Splits and Phases 6 Robert Parker Coffin Road & IL 83

 ø2	 ø4
1377	1235
 ø5	 ø6
1564	1224

Lanes, Volumes, Timings
6: Robert Parker Coffin Road & IL 83

Printed 12/15/2006

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				 	 	
Ideal Flow (vphpl)	1900	1900	1900	2000	1900	1900
Storage Length (ft)	145	0	200			0
Storage Lanes	1	1	1			0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	
Trailing Detector (ft)	0	0	0	0	0	
Turning Speed (mph)	15	9	15			9
Lane Util Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.850			0.985	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1641	3455	3233	0
Flt Permitted	0.950		0.035			
Satd Flow (perm)	1770	1583	60	3455	3233	0
Right Turn on Red		No				No
Satd Flow (RTOR)						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			45	45	
Link Distance (ft)	1567			1029	1020	
Travel Time (s)	35.6			15.6	15.5	
Volume (vph)	68	87	254	1611	2103	240
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	10%	10%	10%	10%
Adj. Flow (vph)	72	92	267	1696	2214	253
Lane Group Flow (vph)	72	92	267	1696	2467	0
Turn Type		pm+ov	pm+pt			
Protected Phases	4	5	5	2	6	
Permitted Phases		4	2			
Detector Phases	4	5	5	2	6	
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	22.4	8.0	8.0	22.0	22.5	
Total Split (s)	22.4	22.4	22.4	137.6	115.2	0.0
Total Split (%)	14.0%	14.0%	14.0%	86.0%	72.0%	0.0%
Yellow Time (s)	4.5	3.0	3.0	4.5	4.5	
All-Red Time (s)	1.5	0.0	0.0	1.5	1.5	
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Recall Mode	None	None	None	C-Max	C-Max	
Act Effct Green (s)	13.8	40.8	138.2	138.2	111.2	
Actuated g/C Ratio	0.09	0.26	0.86	0.86	0.70	
v/c Ratio	0.47	0.23	0.95	0.57	1.10	
Control Delay	79.0	49.0	95.0	4.0	84.6	
Queue Delay	0.0	0.0	0.0	0.0	16.5	
Total Delay	79.0	49.0	95.0	4.0	101.1	
LOS	E	D	F	A	F	
Approach Delay	62.2			15.4	101.1	
Approach LOS	E			B	F	
Queue Length 50th (ft)	73	77	232	192	~1569	
Queue Length 95th (ft)	126	130	#476	286	#1690	

Lanes, Volumes, Timings
 6 Robert Parker Coffin Road & IL 83

Printed 12/15/2006

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	1487			949	940	
Turn Bay Length (ft)	145		200			
Base Capacity (vph)	204	404	280	2985	2247	
Starvation Cap Reductn	0	0	0	0	75	
Spillback Cap Reductn	0	0	0	14	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.35	0.23	0.95	0.57	1.14	

Intersection Summary

Area Type: Other
 Cycle Length 160
 Actuated Cycle Length 160
 Offset 137.6 (86%), Referenced to phase 2 NBTL and 6 SBT, Start of 1st Green
 Natural Cycle: 150
 Control Type Actuated-Coordinated
 Maximum v/c Ratio: 1.10
 Intersection Signal Delay 63.5
 Intersection Capacity Utilization 93.6%
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite
 Queue shown is maximum after two cycles
 # 95th percentile volume exceeds capacity, queue may be longer
 Queue shown is maximum after two cycles

Splits and Phases 6 Robert Parker Coffin Road & IL 83

 φ2	 φ4
1376	2247
 φ5	 φ6
224	1752

Lanes, Volumes, Timings

6: Robert Parker Coffin Road & IL 83

Printed 12/15/2006

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	2000	1900	1900
Storage Length (ft)	145	0	200			0
Storage Lanes	1	1	1			0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	
Trailing Detector (ft)	0	0	0	0	0	
Turning Speed (mph)	15	9	15			9
Lane Util Factor	1.00	1.00	1.00	0.95	0.95	0.95
Frnt		0.850			0.991	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1641	3455	3252	0
Flt Permitted	0.950		0.066			
Satd. Flow (perm)	1770	1583	114	3455	3252	0
Right Turn on Red		No				No
Satd Flow (RTOR)						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			45	45	
Link Distance (ft)	1567			937	1020	
Travel Time (s)	35.6			14.2	15.5	
Volume (vph)	57	54	123	1360	1321	84
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	10%	10%	10%	10%
Adj Flow (vph)	60	57	129	1432	1391	88
Lane Group Flow (vph)	60	57	129	1432	1479	0
Turn Type		pm+ov	pm+pt			
Protected Phases	4	5	5	2	6	
Permitted Phases		4	2			
Detector Phases	4	5	5	2	6	
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	22.5	8.0	8.0	22.0	22.5	
Total Split (s)	28.6	20.9	20.9	81.4	60.5	0.0
Total Split (%)	26.0%	19.0%	19.0%	74.0%	55.0%	0.0%
Yellow Time (s)	4.5	3.0	3.0	4.5	4.5	
All-Red Time (s)	1.5	0.0	0.0	1.5	1.5	
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Recall Mode	None	None	None	C-Max	C-Max	
Act Effct Green (s)	10.9	20.4	93.4	94.2	81.6	
Actuated g/C Ratio	0.10	0.19	0.85	0.86	0.74	
v/c Ratio	0.34	0.19	0.63	0.48	0.61	
Control Delay	50.8	35.3	27.0	3.3	10.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	50.8	35.3	27.0	3.3	10.8	
LOS	D	D	C	A	B	
Approach Delay	43.3			5.3	10.8	
Approach LOS	D			A	B	
Queue Length 50th (ft)	40	34	22	115	328	
Queue Length 95th (ft)	80	63	86	178	481	

Lanes, Volumes, Timings
 6: Robert Parker Coffin Road & IL 83

Printed 12/15/2006

	↗	↘	↖	↑	↓	↙
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	1487			857	940	
Turn Bay Length (ft)	145		200			
Base Capacity (vph)	396	424	331	2960	2412	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.15	0.13	0.39	0.48	0.61	

Intersection Summary

Area Type Other
 Cycle Length 110
 Actuated Cycle Length 110
 Offset 89.1 (81%), Referenced to phase 2 NBTL and 6.SBT, Start of 1st Green
 Natural Cycle 70
 Control Type Actuated-Coordinated
 Maximum v/c Ratio 0.63
 Intersection Signal Delay 9.2
 Intersection Capacity Utilization 59.3%
 Analysis Period (min) 15

Intersection LOS: A
 ICU Level of Service B

Splits and Phases 6 Robert Parker Coffin Road & IL 83



Year 2013 Background Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	1900	1900
Storage Length (ft)	145		0	0		0	200		0	0		0
Storage Lanes	1		0	1		0	1		0	1		0
Total Lost Time (s)	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0
Leading Detector (ft)	50	50		50	50		50	50		50	50	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util Factor	1 00	1 00	1 00	1 00	1 00	1 00	1 00	0 95	0 95	1 00	0 95	0 95
Frt		0.850									0 994	
Flt Protected	0 950			0 950			0 950			0 950		
Satd Flow (prot)	1770	1583	0	1770	1863	0	1641	3455	0	1770	3262	0
Flt Permitted	0 619			0 222			0 033			0 034		
Satd Flow (perm)	1153	1583	0	414	1863	0	57	3455	0	63	3262	0
Right Turn on Red			No			No			No			No
Satd Flow (RTOR)												
Headway Factor	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1567			432			1116			1030	
Travel Time (s)		35 6			9 8			16 9			15 6	
Volume (vph)	245	0	246	12	2	0	86	2458	0	74	2239	87
Peak Hour Factor	0 95	0 95	0 95	0 95	0 95	0 95	0 95	0 95	0 95	0 95	0 95	0 95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	10%	10%	2%	2%	10%	10%
Adj Flow (vph)	258	0	259	13	2	0	91	2587	0	78	2357	92
Lane Group Flow (vph)	258	259	0	13	2	0	91	2587	0	78	2449	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phases	7	4		3	8		5	2		1	6	
Minimum Initial (s)	4 0	4 0		4 0	4 0		4 0	4 0		4 0	4 0	
Minimum Split (s)	8 0	22 5		8 0	20 0		8 0	22 0		8 0	22 5	
Total Split (s)	16 0	30 0	0 0	8 0	22 0	0 0	9 0	124 0	0 0	8 0	123 0	0 0
Total Split (%)	9 4%	17 6%	0 0%	4 7%	12 9%	0 0%	5 3%	72 9%	0 0%	4 7%	72 4%	0 0%
Maximum Green (s)	13 0	24 0		5 0	18 0		6 0	118 0		5 0	117 0	
Yellow Time (s)	3 0	4 5		3 0	3 5		3 0	4 5		3 0	4 5	
All-Red Time (s)	0 0	1 5		0 0	0 5		0 0	1 5		0 0	1 5	
Lead/Lag	Lead	Lag										
Lead-Lag Optimize?	Yes	Yes										
Vehicle Extension (s)	3 0	3 0		3 0	3 0		3 0	3 0		3 0	3 0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)		5 0			5 0			5 0			5 0	
Flash Dont Walk (s)		11 0			11 0			11 0			11 0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	34 0	30 8		7 6	8 1		125 0	120 0		123 0	119 0	
Actuated g/C Ratio	0 20	0 18		0 04	0 05		0 74	0 71		0 72	0 70	
v/c Ratio	0 76	0 90		0 25	0 02		1 02	1 06		0 91	1 07	
Control Delay	78 7	99 2		81 7	73 5		136 2	62 2		87 4	67 5	
Queue Delay	0 0	0 0		0 0	0 0		0 0	0 7		0 0	17 3	
Total Delay	78 7	99 2		81 7	73 5		136 2	62 9		87 4	84 9	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	E	F		F	E		F	E		F	F	
Approach Delay		89.0			80.6			65.4			85.0	
Approach LOS		F			F			E			F	

Intersection Summary

Area Type Other
 Cycle Length 170
 Actuated Cycle Length 170
 Offset 0.3 (0%), Referenced to phase 2 NBTL and 6 SBTL, Start of 1st Green
 Natural Cycle 150
 Control Type Actuated-Coordinated
 Maximum v/c Ratio 1.07
 Intersection Signal Delay 76.2
 Intersection LOS E
 Intersection Capacity Utilization 98.4%
 ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases 6 Robert Parker Coffin Road & IL 83

		ø2			ø4
		ø5			ø8

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 		 	 
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	2000
Storage Length (ft)	275	0		370	240	
Storage Lanes	2	1		1	2	
Total Lost Time (s)	4 0	4 0	4 0	4 0	4 0	4 0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)	15	9		9	15	
Lane Util Factor	0 97	1 00	0 95	1 00	0 97	0 95
Fr't		0 850		0 850		
Fit Protected	0 950				0 950	
Sat'd Flow (prot)	3335	1538	3455	1468	3273	3551
Fit Permitted	0 950				0 950	
Sat'd Flow (perm)	3335	1538	3455	1468	3273	3551
Right Turn on Red		No		No		
Sat'd Flow (RTOR)						
Headway Factor	1 00	1 00	1 00	1 00	1 00	1 00
Link Speed (mph)	45		45			45
Link Distance (ft)	455		1030			491
Travel Time (s)	6 9		15 6			7 4
Volume (vph)	238	163	1863	840	814	2162
Peak Hour Factor	0 95	0 95	0 95	0 95	0 95	0 95
Heavy Vehicles (%)	5%	5%	10%	10%	7%	7%
Adj Flow (vph)	251	172	1961	884	857	2276
Lane Group Flow (vph)	251	172	1961	884	857	2276
Turn Type		pm+ov		pm+ov	Prot	
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Detector Phases	8	1	2	8	1	6
Minimum Initial (s)	4 0	4 0	4 0	4 0	4 0	4 0
Minimum Split (s)	22 0	9 0	22 0	22 0	9 0	22 0
Total Split (s)	27 2	42 5	100 3	27 2	42 5	142 8
Total Split (%)	16 0%	25 0%	59 0%	16 0%	25 0%	84 0%
Maximum Green (s)	21 2	37 5	94 3	21 2	37 5	136 8
Yellow Time (s)	4 5	4 0	4 5	4 5	4 0	4 5
All-Red Time (s)	1 5	1 0	1 5	1 5	1 0	1 5
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3 0	3 0	3 0	3 0	3 0	3 0
Recall Mode	None	None	C-Max	None	None	C-Max
Walk Time (s)	5 0		5 0	5 0		5 0
Flash Dont Walk (s)	11 0		11 0	11 0		11 0
Pedestrian Calls (#/hr)	0		0	0		0
Act Effct Green (s)	21 7	65 7	96 3	122 0	40 0	140 3
Actuated g/C Ratio	0 13	0 39	0 57	0 72	0 24	0 83
v/c Ratio	0 59	0 29	1 00	0 84	1 11	0 78
Control Delay	75 7	37 7	37 5	8 9	125 7	9 8
Queue Delay	0 0	0 0	19 8	1 4	0 0	0 8
Total Delay	75 7	37 7	57 3	10 4	125 7	10 6

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
LOS	E	D	E	B	F	B
Approach Delay	60.3		42.7			42.1
Approach LOS	E		D			D

Intersection Summary

Area Type Other
 Cycle Length 170
 Actuated Cycle Length 170
 Offset 127.5 (75%), Referenced to phase 2 NBT and 6 SBT, Start of 1st Green
 Natural Cycle 130
 Control Type Actuated-Coordinated
 Maximum v/c Ratio 1.11
 Intersection Signal Delay 43.6
 Intersection Capacity Utilization 88.9%
 Analysis Period (min) 15

Intersection LOS D
 ICU Level of Service E

Splits and Phases 9 Aptakisic Road & IL 83

 ø1	 ø2	
42.5	101.3	
 ø5		 ø8
142.8		27.2

6. Robert Parker Coffin Road & IL 83

7/30/2007

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	1900	1900
Storage Length (ft)	145		0	0		0	200		0	0		0
Storage Lanes	1		0	1		0	1		0	1		0
Total Lost Time (s)	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0
Leading Detector (ft)	50	50		50	50		50	50		50	50	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util Factor	1 00	1 00	1 00	1 00	1 00	1 00	1 00	0 95	0 95	1 00	0 95	0 95
Frnt		0 850									0 985	
Flt Protected	0 950			0 950			0 950			0 950		
Satd Flow (prot)	1770	1583	0	1770	1863	0	1641	3455	0	1770	3233	0
Flt Permitted	0 667			0 564			0 037			0 039		
Satd Flow (perm)	1242	1583	0	1051	1863	0	64	3455	0	73	3233	0
Right Turn on Red			No			No			No			No
Satd Flow (RTOR)												
Headway Factor	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1567			428			1029			1020	
Travel Time (s)		35 6			9 7			15 6			15 5	
Volume (vph)	81	0	102	100	13	0	302	2031	0	85	2511	286
Peak Hour Factor	0 95	0 95	0 95	0 95	0 95	0 95	0 95	0 95	0 95	0 95	0 95	0 95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	10%	10%	2%	2%	10%	10%
Adj Flow (vph)	85	0	107	105	14	0	318	2138	0	89	2643	301
Lane Group Flow (vph)	85	107	0	105	14	0	318	2138	0	89	2944	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phases	7	4		3	8		5	2		1	6	
Minimum Initial (s)	4 0	4 0		4 0	4 0		4 0	4 0		4 0	4 0	
Minimum Split (s)	8 0	22 4		8 0	20 0		8 0	22 0		8 0	22 5	
Total Split (s)	10 0	22 4	0 0	8 0	20 4	0 0	22 0	115 6	0 0	14 0	107 6	0 0
Total Split (%)	6 3%	14 0%	0 0%	5 0%	12 8%	0 0%	13 8%	72 3%	0 0%	8 8%	67 3%	0 0%
Maximum Green (s)	7 0	16 4		5 0	16 4		19 0	109 6		11 0	101 6	
Yellow Time (s)	3 0	4 5		3 0	3 5		3 0	4 5		3 0	4 5	
All-Red Time (s)	0 0	1 5		0 0	0 5		0 0	1 5		0 0	1 5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3 0	3 0		3 0	3 0		3 0	3 0		3 0	3 0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)		5 0			5 0			5 0			5 0	
Flash Dont Walk (s)		11 0			11 0			11 0			11 0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	23 6	16 4		10 6	10 1		127 6	115 9		111 3	103 6	
Actuated g/C Ratio	0 15	0 10		0 07	0 06		0 80	0 72		0 70	0 65	
v/c Ratio	0 36	0 66		1 21	0 12		1 28	0 85		0 67	1 41	
Control Delay	65 0	88 3		217 6	69 7		195 0	21 3		44 3	210 5	
Queue Delay	0 0	0 0		0 0	0 0		0 0	0 0		0 0	0 0	
Total Delay	65 0	88 3		217 6	69 7		195 0	21 3		44 3	210 5	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	E	F		F	E		F	C		D	F	
Approach Delay		78.0			200.2			43.8			205.6	
Approach LOS		E			F			D			F	

Intersection Summary

Area Type Other
 Cycle Length 160
 Actuated Cycle Length 160
 Offset 137.6 (86%), Referenced to phase 2 NBTL and 6 SBTL, Start of 1st Green
 Natural Cycle 150
 Control Type Actuated-Coordinated
 Maximum v/c Ratio 1.41
 Intersection Signal Delay 132.8
 Intersection Capacity Utilization 117.5%
 Analysis Period (min) 15

Intersection LOS F
 ICU Level of Service H

Splits and Phases 6 Robert Parker Coffin Road & IL 83

 ø1	 ø2		 ø4
74.3%	11.5%		22.2%
 ø5	 ø6		 ø8
22.2%	11.5%	11.5%	20.8%

	↙	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙↙	↖	↑↑	↗	↘↘	↑↑
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	2000
Storage Length (ft)	240	0		370	240	
Storage Lanes	2	1		1	2	
Total Lost Time (s)	4 0	4 0	4 0	4 0	4 0	4 0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)	15	9		9	15	
Lane Util Factor	0 97	1 00	0 95	1 00	0 97	0 95
Fr t		0 850		0 850		
Flt Protected	0 950				0 950	
Satd. Flow (prot)	3335	1538	3455	1468	3273	3551
Flt Permitted	0 950				0 950	
Satd Flow (perm)	3335	1538	3455	1468	3273	3551
Right Turn on Red		No		No		
Satd Flow (RTOR)						
Headway Factor	1 00	1 00	1 00	1 00	1 00	1 00
Link Speed (mph)	45		45			45
Link Distance (ft)	460		1020			449
Travel Time (s)	7 0		15 5			6 8
Volume (vph)	922	786	1902	210	164	1960
Peak Hour Factor	0 95	0 95	0 95	0 95	0 95	0 95
Heavy Vehicles (%)	5%	5%	10%	10%	7%	7%
Adj Flow (vph)	971	827	2002	221	173	2063
Lane Group Flow (vph)	971	827	2002	221	173	2063
Turn Type		pm+ov		pm+ov	Prot	
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Detector Phases	8	1	2	8	1	6
Minimum Initial (s)	4 0	4 0	4 0	4 0	4 0	4 0
Minimum Split (s)	22 0	9 0	22 0	22 0	9 0	22 0
Total Split (s)	44 8	19 2	96 0	44 8	19 2	115 2
Total Split (%)	28 0%	12 0%	60 0%	28 0%	12 0%	72 0%
Maximum Green (s)	38 8	14 2	90 0	38 8	14 2	109 2
Yellow Time (s)	4 5	4 0	4 5	4 5	4 0	4 5
All-Red Time (s)	1 5	1 0	1 5	1 5	1 0	1 5
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3 0	3 0	3 0	3 0	3 0	3 0
Recall Mode	None	None	C-Max	None	None	C-Max
Walk Time (s)	5 0		5 0	5 0		5 0
Flash Dont Walk (s)	11 0		11 0	11 0		11 0
Pedestrian Calls (#/hr)	0		0	0		0
Act Effct Green (s)	40 8	60 0	92 0	136 8	15 2	111 2
Actuated g/C Ratio	0 26	0 38	0 58	0 86	0 10	0 70
v/c Ratio	1 14	1 43	1 01	0 18	0 56	0 84
Control Delay	130 0	241 8	37 5	0 9	76 6	21 8
Queue Delay	0 0	0 0	4 8	0 0	0 0	0 0
Total Delay	130 0	241 8	42 3	0 9	76 6	21 8

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
LOS	F	F	D	A	E	C
Approach Delay	181.4		38.2			26.0
Approach LOS	F		D			C

Intersection Summary

Area Type Other
 Cycle Length 160
 Actuated Cycle Length 160
 Offset 140.8 (88%), Referenced to phase 2 NBT and 6 SBT, Start of 1st Green
 Natural Cycle 100
 Control Type Actuated-Coordinated
 Maximum v/c Ratio 1.43
 Intersection Signal Delay 75.0 Intersection LOS E
 Intersection Capacity Utilization 105.3% ICU Level of Service G
 Analysis Period (min) 15

Splits and Phases 2 Aptakisisc Road & IL 83

 ø1	 ø2	
 ø6		 ø8

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	1900	1900
Storage Length (ft)	145		0	0		0	200		0	0		0
Storage Lanes	1		0	1		0	1		0	1		0
Total Lost Time (s)	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0
Leading Detector (ft)	50	50		50	50		50	50		50	50	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util Factor	1 00	1 00	1 00	1 00	1 00	1 00	1 00	0 95	0 95	1 00	0 95	0 95
Fr		0 850									0 991	
Flt Protected	0 950			0 950			0 950			0 950		
Satd Flow (prot)	1770	1583	0	1770	1863	0	1641	3455	0	1770	3252	0
Flt Permitted	0 600			0 713			0 072			0 073		
Satd Flow (perm)	1118	1583	0	1328	1863	0	124	3455	0	136	3252	0
Right Turn on Red			No			No			No			No
Satd Flow (RTOR)												
Headway Factor	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1567			510			937			1020	
Travel Time (s)		35 6			11 6			14 2			15 5	
Volume (vph)	68	0	65	88	11	0	147	1700	0	125	1580	99
Peak Hour Factor	0 95	0 95	0 95	0 95	0 95	0 95	0 95	0 95	0 95	0 95	0 95	0 95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	10%	10%	2%	2%	10%	10%
Adj Flow (vph)	72	0	68	93	12	0	155	1789	0	132	1663	104
Lane Group Flow (vph)	72	68	0	93	12	0	155	1789	0	132	1767	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phases	7	4		3	8		5	2		1	6	
Minimum Initial (s)	4 0	4 0		4 0	4 0		4 0	4 0		4 0	4 0	
Minimum Split (s)	22 5	22 5		8 0	20 0		8 0	22 0		8 0	22 5	
Total Split (s)	22 5	34 5	0 0	8 0	20 0	0 0	9 0	59 5	0 0	8 0	58 5	0 0
Total Split (%)	20 5%	31 4%	0 0%	7 3%	18 2%	0 0%	8 2%	54 1%	0 0%	7 3%	53 2%	0 0%
Maximum Green (s)	19 5	28 5		5 0	16 0		6 0	53 5		5 0	52 5	
Yellow Time (s)	3 0	4 5		3 0	3 5		3 0	4 5		3 0	4 5	
All-Red Time (s)	0 0	1 5		0 0	0 5		0 0	1 5		0 0	1 5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3 0	3 0		3 0	3 0		3 0	3 0		3 0	3 0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)	5 0	5 0			5 0			5 0			5 0	
Flash Dont Walk (s)	11 0	11 0			11 0			11 0			11 0	
Pedestrian Calls (#/hr)	0	0			0			0			0	
Act Effct Green (s)	17 5	11 7		5 6	6 2		8 5 6	7 0 7		7 8 6	6 7 0	
Actuated g/C Ratio	0 16	0 11		0 05	0 06		0 78	0 64		0 71	0 61	
v/c Ratio	0 27	0 40		1 12	0 11		0 50	0 81		0 49	0 89	
Control Delay	40 6	52 3		179 0	51 0		21 5	21 1		22 0	25 0	
Queue Delay	0 0	0 0		0 0	0 0		0 0	0 0		0 0	0 0	
Total Delay	40 6	52 3		179 0	51 0		21 5	21 1		22 0	25 0	

6 Robert Parker Coffin Road & IL 83

7/30/2007

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	D	D		F	D		C	C		C	C	
Approach Delay		46.3			164.4			21.1			24.8	
Approach LOS		D			F			C			C	

Intersection Summary

Area Type Other
 Cycle Length 110
 Actuated Cycle Length 110
 Offset 89.1 (81%), Referenced to phase 2 NBTL and 6 SBTL, Start of 1st Green
 Natural Cycle 130
 Control Type Actuated-Coordinated
 Maximum v/c Ratio 1.12
 Intersection Signal Delay 27.4
 Intersection Capacity Utilization 76.5%
 Analysis Period (min) 15
 Intersection LOS C
 ICU Level of Service D

Splits and Phases 6 Robert Parker Coffin Road & IL 83

 ø1	 ø2	 ø3	 ø4
8.5%	59.5%	8.5%	23.5%
 ø5	 ø6	 ø7	 ø8
9.5%	58.5%	20.5%	11.5%

	↙	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙↖	↖	↑↑	↗	↙↖	↑↑
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	2000
Total Lost Time (s)	4 0	4 0	4 0	4 0	4 0	4 0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)	15	9		9	15	
Lane Util Factor	0 97	1 00	0 95	1 00	0 97	0 95
Fr t		0 850		0 850		
Flt Protected	0 950				0 950	
Satd Flow (prot)	3335	1538	3455	1468	3273	3551
Flt Permitted	0 950				0 950	
Satd Flow (perm)	3335	1538	3455	1468	3273	3551
Right Turn on Red		No		No		
Satd Flow (RTOR)						
Headway Factor	1 00	1 00	1 00	1 00	1 00	1 00
Link Speed (mph)	45		45			45
Link Distance (ft)	1674		1020			645
Travel Time (s)	25 4		15 5			9 8
Volume (vph)	301	192	1523	245	203	1503
Peak Hour Factor	0 95	0 95	0 95	0 95	0 95	0 95
Heavy Vehicles (%)	5%	5%	10%	10%	7%	7%
Adj Flow (vph)	317	202	1603	258	214	1582
Lane Group Flow (vph)	317	202	1603	258	214	1582
Turn Type		pm+ov		pm+ov	Prot	
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Detector Phases	8	1	2	8	1	6
Minimum Initial (s)	4 0	4 0	4 0	4 0	4 0	4 0
Minimum Split (s)	22 0	9 0	22 0	22 0	9 0	22 0
Total Split (s)	33 0	24 2	52 8	33 0	24 2	77 0
Total Split (%)	30 0%	22 0%	48 0%	30 0%	22 0%	70 0%
Maximum Green (s)	27 0	19 2	46 8	27 0	19 2	71 0
Yellow Time (s)	4 5	4 0	4 5	4 5	4 0	4 5
All-Red Time (s)	1 5	1 0	1 5	1 5	1 0	1 5
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3 0	3 0	3 0	3 0	3 0	3 0
Recall Mode	None	None	C-Max	None	None	C-Max
Walk Time (s)	5 0		5 0	5 0		5 0
Flash Dont Walk (s)	11 0		11 0	11 0		11 0
Pedestrian Calls (#/hr)	0		0	0		0
Act Effct Green (s)	16 5	33 7	68 3	88 8	13 2	85 5
Actuated g/C Ratio	0 15	0 31	0 62	0 81	0 12	0 78
v/c Ratio	0 63	0 43	0 75	0 22	0 54	0 57
Control Delay	49 5	32 4	4 5	0 6	50 5	6 2
Queue Delay	0 0	0 0	0 0	0 0	0 0	0 0
Total Delay	49 5	32 4	4 5	0 6	50 5	6 2
LOS	D	C	A	A	D	A
Approach Delay	42 8		4 0			11 5

	↙	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Approach LOS	D		A			B

Intersection Summary

Area Type Other
 Cycle Length 110
 Actuated Cycle Length 110
 Offset 0 (0%), Referenced to phase 2 NBT and 6 SBT, Start of Green
 Natural Cycle 75
 Control Type Actuated-Coordinated
 Maximum v/c Ratio 0.75
 Intersection Signal Delay 12.0
 Intersection Capacity Utilization 64.4%
 Analysis Period (min) 15

Intersection LOS B
 ICU Level of Service C

Splits and Phases 2 Aptakasic Road & IL 83

↙ ø1	↑ ø2	
↓ ø6		↗ ø8

Year 2013 Condition 1

06-358 Long Grove, IL
6 Robert Parker Coffin Road & IL 83

8/6/2007

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Storage Length (ft)	145		145	0		0	200		200	200		200
Storage Lanes	1		0	1		1	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	1.00
Frt		0.854				0.850		0.998				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1591	0	1770	1961	1583	1641	4960	0	1770	3455	1468
Flt Permitted	0.752			0.333			0.040			0.040		
Satd Flow (perm)	1401	1591	0	620	1961	1583	69	4960	0	75	3455	1468
Right Turn on Red			No			No			No			No
Satd Flow (RTOR)												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1567			428			1029			730	
Travel Time (s)		35.6			9.7			15.6			11.1	
Volume (vph)	245	8	246	55	8	19	86	2479	41	159	2239	87
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	10%	10%	2%	2%	10%	10%
Adj. Flow (vph)	258	8	259	58	8	20	91	2609	43	167	2357	92
Lane Group Flow (vph)	258	267	0	58	8	20	91	2652	0	167	2357	92
Turn Type	pm+pt			pm+pt		pm+ov	pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Detector Phases	7	4		3	8	1	5	2		1	6	6
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	21.0	22.4		8.0	20.0	8.0	8.0	22.0		8.0	22.5	22.5
Total Split (s)	21.0	33.0	0.0	8.0	20.0	20.0	9.0	109.0	0.0	20.0	120.0	120.0
Total Split (%)	12.4%	19.4%	0.0%	4.7%	11.8%	11.8%	5.3%	64.1%	0.0%	11.8%	70.6%	70.6%
Maximum Green (s)	18.0	27.0		5.0	16.0	17.0	6.0	103.0		17.0	114.0	114.0
Yellow Time (s)	3.0	4.5		3.0	3.5	3.0	3.0	4.5		3.0	4.5	4.5
All-Red Time (s)	0.0	1.5		0.0	0.5	0.0	0.0	1.5		0.0	1.5	1.5
Lead/Lag	Lag	Lag		Lead	Lead	Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)	5.0	5.0			5.0			5.0			5.0	5.0
Flash Dont Walk (s)	11.0	11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)	0	0			0			0			0	0
Act Effct Green (s)	35.4	29.0		4.7	6.2	18.3	105.0	105.0		116.0	116.0	116.0
Actuated g/C Ratio	0.21	0.17		0.03	0.04	0.11	0.62	0.62		0.68	0.68	0.68
v/c Ratio	0.70	0.99		1.32	0.11	0.12	1.02	0.87		0.79	1.00	0.09
Control Delay	73.5	119.4		295.1	82.1	68.2	132.1	30.7		85.4	45.1	9.4
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	12.2		0.0	40.9	0.0
Total Delay	73.5	119.4		295.1	82.1	68.2	132.1	42.8		85.4	85.9	9.4

06-358 Long Grove, IL
 6. Robert Parker Coffin Road & IL 83

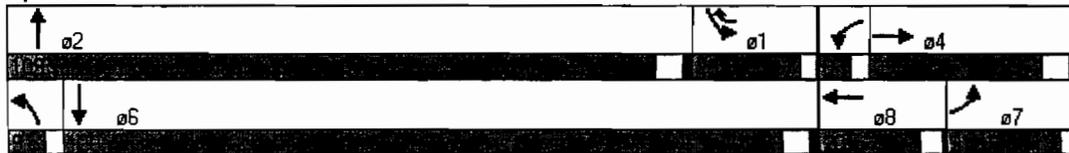
8/6/2007

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	E	F		F	F	E	F	D		F	F	A
Approach Delay		96.9			222.5			45.8			83.2	
Approach LOS		F			F			D			F	

Intersection Summary

Area Type: Other
 Cycle Length: 170
 Actuated Cycle Length: 170
 Offset: 152 (89%), Referenced to phase 2 NBTL and 6 SBTL, Start of 1st Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.32
 Intersection Signal Delay: 69.2
 Intersection Capacity Utilization: 95.9%
 Analysis Period (min): 15
 Intersection LOS: E
 ICU Level of Service: F

Splits and Phases 6 Robert Parker Coffin Road & IL 83



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↖	↗	↑↑	↗	↖↖	↑↑
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	2000
Storage Length (ft)	240	0		370	240	
Storage Lanes	2	1		1	2	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)	15	9		9	15	
Lane Util Factor	0.97	1.00	0.95	1.00	0.97	0.95
Frnt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd Flow (prot)	3335	1538	3455	1468	3273	3551
Flt Permitted	0.950				0.950	
Satd Flow (perm)	3335	1538	3455	1468	3273	3551
Right Turn on Red		No		No		
Satd Flow (RTOR)						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45		45		45	45
Link Distance (ft)	124		290		449	
Travel Time (s)	1.9		4.4		6.8	
Volume (vph)	261	163	1903	858	814	2225
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	10%	10%	7%	7%
Adj Flow (vph)	275	172	2003	903	857	2342
Lane Group Flow (vph)	275	172	2003	903	857	2342
Turn Type		pm+ov		pm+ov	Prot	
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Detector Phases	8	1	2	8	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	9.0	22.0	22.0	9.0	22.0
Total Split (s)	27.0	43.0	100.0	27.0	43.0	143.0
Total Split (%)	15.9%	25.3%	58.8%	15.9%	25.3%	84.1%
Maximum Green (s)	21.0	38.0	94.0	21.0	38.0	137.0
Yellow Time (s)	4.5	4.0	4.5	4.5	4.0	4.5
All-Red Time (s)	1.5	1.0	1.5	1.5	1.0	1.5
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	None	None	C-Max
Walk Time (s)	5.0		5.0	5.0		5.0
Flash Dont Walk (s)	11.0		11.0	11.0		11.0
Pedestrian Calls (#/hr)	0		0	0		0
Act Effct Green (s)	22.6	66.0	96.0	122.6	39.4	139.4
Actuated g/C Ratio	0.13	0.39	0.56	0.72	0.23	0.82
v/c Ratio	0.62	0.29	1.03	0.85	1.13	0.80
Control Delay	76.3	37.5	79.4	37.2	131.1	11.0
Queue Delay	0.0	0.0	78.6	2.4	0.0	0.0
Total Delay	76.3	37.5	158.0	39.6	131.1	11.0

	↙	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
LOS	E	D	F	D	F	B
Approach Delay	61.4		121.2			43.2
Approach LOS	E		F			D

Intersection Summary

Area Type Other
 Cycle Length 170
 Actuated Cycle Length 170
 Offset 12 (7%), Referenced to phase 2 NBT and 6 SBT, Start of 1st Green
 Natural Cycle 140
 Control Type Actuated-Coordinated
 Maximum v/c Ratio 1.13
 Intersection Signal Delay 79.0
 Intersection Capacity Utilization 90.6%
 Analysis Period (min) 15

Intersection LOS E
 ICU Level of Service E

Splits and Phases 2 Aptakisisc Road & IL 83



	↙	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↖	↖↖	↑↑	↗	↖↖	↑↑↑
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	2000
Storage Length (ft)	240	0		370	240	
Storage Lanes	2	2		1	2	
Total Lost Time (s)	4 0	4 0	4 0	4 0	4 0	4 0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)	15	9		9	15	
Lane Util Factor	0 97	0 88	0 95	1 00	0 97	0 91
Frt		0 850		0 850		
Flt Protected	0 950				0 950	
Satd Flow (prot)	3335	2707	3455	1468	3273	5103
Flt Permitted	0 950				0 950	
Satd Flow (perm)	3335	2707	3455	1468	3273	5103
Right Turn on Red		No		No		
Satd Flow (RTOR)						
Headway Factor	1 00	1 00	1 00	1 00	1 00	1 00
Link Speed (mph)	45		45			45
Link Distance (ft)	705		290			449
Travel Time (s)	10 7		4 4			6 8
Volume (vph)	261	163	1903	858	814	2224
Peak Hour Factor	0 95	0 95	0 95	0 95	0 95	0 95
Heavy Vehicles (%)	5%	5%	10%	10%	7%	7%
Adj Flow (vph)	275	172	2003	903	857	2341
Lane Group Flow (vph)	275	172	2003	903	857	2341
Turn Type		pm+ov		pm+ov	Prot	
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Detector Phases	8	1	2	8	1	6
Minimum Initial (s)	4 0	4 0	4 0	4 0	4 0	4 0
Minimum Split (s)	22 0	9 0	22 0	22 0	9 0	22 0
Total Split (s)	35 0	43 0	92 0	35 0	43 0	135 0
Total Split (%)	20 6%	25 3%	54 1%	20 6%	25 3%	79 4%
Maximum Green (s)	29 0	38 0	86 0	29 0	38 0	129 0
Yellow Time (s)	4 5	4 0	4 5	4 5	4 0	4 5
All-Red Time (s)	1 5	1 0	1 5	1 5	1 0	1 5
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3 0	3 0	3 0	3 0	3 0	3 0
Recall Mode	None	None	C-Max	None	None	C-Max
Walk Time (s)	5 0		5 0	5 0		5 0
Flash Dont Walk (s)	11 0		11 0	11 0		11 0
Pedestrian Calls (#/hr)	0		0	0		0
Act Effct Green (s)	24 2	74 0	88 0	116 2	45 8	137 8
Actuated g/C Ratio	0 14	0 44	0 52	0 68	0 27	0 81
v/c Ratio	0 58	0 15	1 12	0 90	0 97	0 57
Control Delay	72 3	29 4	82 3	12 6	83 9	6 8
Queue Delay	0 0	0 0	1 4	0 2	0 0	0 0
Total Delay	72 3	29 4	83 6	12 8	83 9	6 8

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
LOS	E	C	F	B	F	A
Approach Delay	55.8		61.6			27.4
Approach LOS	E		E			C

Intersection Summary

Area Type: Other
 Cycle Length: 170
 Actuated Cycle Length: 170
 Offset: 111 (65%), Referenced to phase 2 NBT and 6 SBT, Start of 1st Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.12
 Intersection Signal Delay: 44.5
 Intersection Capacity Utilization: 90.6%
 Analysis Period (min): 15
 Intersection LOS: D
 ICU Level of Service: E

Splits and Phases 2 Aptakisic Road & IL 83



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑	↑↑	↑		↑↑
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	39	2722	21	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	41	2865	22	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)			730			290
pX, platoon unblocked	0.41	0.41			0.41	
vC, conflicting volume	2865	1433			2887	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	4122	609			4176	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	77			100	
cM capacity (veh/h)	1	179			15	

Direction, Lane #	WB-1	NB-1	NB-2	NB-3	SB-1	SB-2
Volume Total	41	1433	1433	22	0	0
Volume Left	0	0	0	0	0	0
Volume Right	41	0	0	22	0	0
cSH	179	1700	1700	1700	1700	1700
Volume to Capacity	0.23	0.84	0.84	0.01	0.00	0.00
Queue Length 95th (ft)	21	0	0	0	0	0
Control Delay (s)	31.1	0.0	0.0	0.0	0.0	0.0
Lane LOS	D					
Approach Delay (s)	31.1	0.0			0.0	
Approach LOS	D					

Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			85.2%	ICU Level of Service		E
Analysis Period (min)			15			

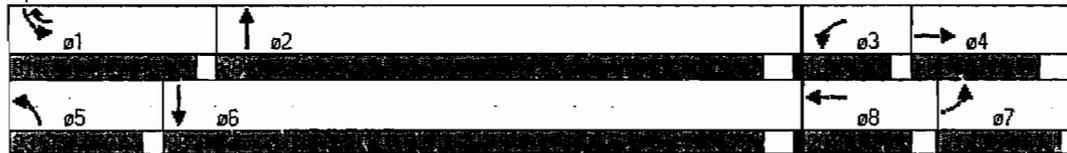
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↗	↖	↖↖↖		↖	↖↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Storage Length (ft)	145		145	0		0	200		200	200		200
Storage Lanes	1		0	1		1	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	1.00
Frt		0.874				0.850		0.992				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd Flow (prot)	1770	1628	0	1770	1961	1583	1641	4943	0	1770	3455	1468
Flt Permitted							0.048			0.045		
Satd Flow (perm)	1863	1628	0	1863	1961	1583	83	4943	0	84	3455	1468
Right Turn on Red			No			No			No			No
Satd Flow (RTOR)												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1567			428			1029			730	
Travel Time (s)		35.6			9.7			15.6			11.1	
Volume (vph)	81	19	102	272	32	84	302	2083	120	324	2511	286
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	10%	10%	2%	2%	10%	10%
Adj Flow (vph)	85	20	107	286	34	88	318	2193	126	341	2643	301
Lane Group Flow (vph)	85	127	0	286	34	88	318	2319	0	341	2643	301
Turn Type	pm+pt			pm+pt		pm+ov	pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Detector Phases	7	4		3	8	1	5	2		1	6	6
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	21.0	22.4		8.0	20.0	8.0	8.0	22.0		8.0	22.5	22.5
Total Split (s)	21.0	25.0	0.0	16.0	20.0	31.0	23.0	88.0	0.0	31.0	96.0	96.0
Total Split (%)	13.1%	15.6%	0.0%	10.0%	12.5%	19.4%	14.4%	55.0%	0.0%	19.4%	60.0%	60.0%
Maximum Green (s)	18.0	19.0		13.0	16.0	28.0	20.0	82.0		28.0	90.0	90.0
Yellow Time (s)	3.0	4.5		3.0	3.5	3.0	3.0	4.5		3.0	4.5	4.5
All-Red Time (s)	0.0	1.5		0.0	0.5	0.0	0.0	1.5		0.0	1.5	1.5
Lead/Lag	Lag	Lag		Lead	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)	5.0	5.0			5.0			5.0			5.0	5.0
Flash Dont Walk (s)	11.0	11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)	0	0			0			0			0	0
Act Effect Green (s)	24.0	18.3		12.0	8.1	35.6	106.9	85.2		117.4	92.0	92.0
Actuated g/C Ratio	0.15	0.11		0.08	0.05	0.22	0.67	0.53		0.73	0.58	0.58
v/c Ratio	0.31	0.68		2.09	0.34	0.25	1.19	0.88		0.94	1.33	0.36
Control Delay	64.8	86.3		546.7	81.7	34.9	161.8	38.3		83.7	177.6	14.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	121.4		0.0	0.0	0.0
Total Delay	64.8	86.3		546.7	81.7	34.9	161.8	159.7		83.7	177.6	14.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	E	F		F	F	C	F	F		F	F	B
Approach Delay		777			397.6			159.9			152.9	
Approach LOS		E			F			F			F	

Intersection Summary

Area Type: Other
 Cycle Length: 160
 Actuated Cycle Length: 160
 Offset: 136 (85%), Referenced to phase 2 NBTL and 6 SBTL, Start of 1st Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 2.09
 Intersection Signal Delay: 168.5
 Intersection Capacity Utilization: 118.4%
 Analysis Period (min): 15
 Intersection LOS: F
 ICU Level of Service: H

Splits and Phases 6 Robert Parker Coffin Road & IL 83



						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	2000
Storage Length (ft)	240	0		370	240	
Storage Lanes	2	1		1	2	
Total Lost Time (s)	4 0	4 0	4 0	4 0	4 0	4 0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)	15	9		9	15	
Lane Util Factor	0 97	1 00	0 95	1 00	0 97	0 95
Frt		0-850		0-850		
Flt Protected	0 950				0 950	
Satd Flow (prot)	3335	1538	3455	1468	3273	3551
Flt Permitted	0 950				0 950	
Satd. Flow (perm)	3335	1538	3455	1468	3273	3551
Right Turn on Red		No		No		
Satd Flow (RTOR)						
Headway Factor	1 00	1 00	1 00	1 00	1 00	1 00
Link Speed (mph)	45		45			45
Link Distance (ft)	565		290			449
Travel Time (s)	8 6		4 4			6 8
Volume (vph)	989	786	2059	277	164	2132
Peak Hour Factor	0 95	0 95	0 95	0 95	0 95	0 95
Heavy Vehicles (%)	5%	5%	10%	10%	7%	7%
Adj. Flow (vph)	1041	827	2167	292	173	2244
Lane Group Flow (vph)	1041	827	2167	292	173	2244
Turn Type		pm+ov		pm+ov	Prot	
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Detector Phases	8	1	2	8	1	6
Minimum Initial (s)	4 0	4 0	4 0	4 0	4 0	4 0
Minimum Split (s)	22 0	9 0	22 0	22 0	9 0	22 0
Total Split (s)	44 0	33 0	83 0	44 0	33 0	116 0
Total Split (%)	27 5%	20 6%	51 9%	27 5%	20 6%	72 5%
Maximum Green (s)	38 0	28 0	77 0	38 0	28 0	110 0
Yellow Time (s)	4 5	4 0	4 5	4 5	4 0	4 5
All-Red Time (s)	1 5	1 0	1 5	1 5	1 0	1 5
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3 0	3 0	3 0	3 0	3 0	3 0
Recall Mode	None	None	C-Max	None	None	C-Max
Walk Time (s)	5 0		5 0	5 0		5 0
Flash Dont Waik (s)	11 0		11 0	11 0		11 0
Pedestrian Calls (#/hr)	0		0	0		0
Act Effct Green (s)	40 0	73 0	79 0	123 0	29 0	112 0
Actuated g/C Ratio	0 25	0 46	0 49	0 77	0 18	0 70
v/c Ratio	1 25	1 18	1 27	0 26	0 29	0 90
Control Delay	169 7	133 4	165 5	13 4	58 2	26 1
Queue Delay	239 4	0 0	11 6	0 0	0 0	13 8
Total Delay	409 1	133 4	177 0	13 4	58 2	39 9

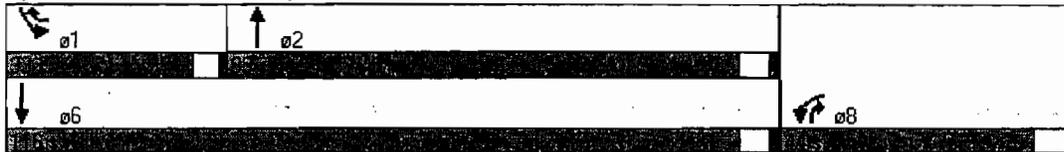
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
LOS	F	F	F	B	E	D
Approach Delay	287.0		157.6			41.2
Approach LOS	F		F			D

Intersection Summary

Area Type: Other
 Cycle Length: 160
 Actuated Cycle Length: 160
 Offset: 20 (13%), Referenced to phase 2 NBT and 6 SBT, Start of 1st Green
 Natural Cycle: 130
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.27
 Intersection Signal Delay: 151.7
 Intersection Capacity Utilization: 109.4%
 Analysis Period (min): 15

Intersection LOS: F
 ICU Level of Service: H

Splits and Phases 2 Aptakisisc Road & IL 83



	↙	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙↙	↖↖	↑↑	↗	↘↘	↓↓↓
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	2000
Storage Length (ft)	240	0		370	240	
Storage Lanes	2	2		1	2	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)	15	9		9	15	
Lane Util Factor	0.97	0.88	0.95	1.00	0.97	0.91
Frnt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd Flow (prot)	3335	2707	3455	1468	3273	5103
Flt Permitted	0.950				0.950	
Satd Flow (perm)	3335	2707	3455	1468	3273	5103
Right Turn on Red		No		No		
Satd Flow (RTOR)						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45		45			45
Link Distance (ft)	920		290			449
Travel Time (s)	13.9		4.4			6.8
Volume (vph)	989	786	2059	277	164	2132
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	10%	10%	7%	7%
Adj Flow (vph)	1041	827	2167	292	173	2244
Lane Group Flow (vph)	1041	827	2167	292	173	2244
Turn Type		pm+ov		pm+ov	Prot	
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Detector Phases	8	1	2	8	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	9.0	22.0	22.0	9.0	22.0
Total Split (s)	48.0	17.0	95.0	48.0	17.0	112.0
Total Split (%)	30.0%	10.6%	59.4%	30.0%	10.6%	70.0%
Maximum Green (s)	42.0	12.0	89.0	42.0	12.0	106.0
Yellow Time (s)	4.5	4.0	4.5	4.5	4.0	4.5
All-Red Time (s)	1.5	1.0	1.5	1.5	1.0	1.5
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	None	None	C-Max
Walk Time (s)	5.0		5.0	5.0		5.0
Flash Dont Walk (s)	11.0		11.0	11.0		11.0
Pedestrian Calls (#/hr)	0		0	0		0
Act Effct Green (s)	44.0	60.8	91.2	139.2	12.8	108.0
Actuated g/C Ratio	0.28	0.38	0.57	0.87	0.08	0.68
v/c Ratio	1.14	0.80	1.10	0.23	0.66	0.65
Control Delay	125.4	51.5	72.3	1.4	84.3	16.2
Queue Delay	0.0	0.0	71.9	0.0	0.0	0.0
Total Delay	125.4	51.5	144.3	1.4	84.3	16.2

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
LOS	F	D	F	A	F	B
Approach Delay	92.7		127.3			21.1
Approach LOS	F		F			C

Intersection Summary

Area Type: Other
 Cycle Length: 160
 Actuated Cycle Length: 160
 Offset: 152 (95%), Referenced to phase 2 NBT and 6 SBT, Start of 1st Green
 Natural Cycle: 130
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.14
 Intersection Signal Delay: 79.6
 Intersection Capacity Utilization: 97.0%
 Analysis Period (min): 15
 Intersection LOS: E
 ICU Level of Service: F

Splits and Phases 2 Aptakistic Road & IL 83



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕	↖		↕
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	140	2196	52	0	2665
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	147	2312	55	0	2805
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)			730			290
pX, platoon unblocked	0.63	0.49			0.49	
vC, conflicting volume	3714	1156			2366	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3350	261			2755	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	59			100	
cM capacity (veh/h)	4	358			69	

Direction, Lane #	WB.1	NB.1	NB.2	NB.3	SB.1	SB.2
Volume Total	147	1156	1156	55	1403	1403
Volume Left	0	0	0	0	0	0
Volume Right	147	0	0	55	0	0
cSH	358	1700	1700	1700	1700	1700
Volume to Capacity	0.41	0.68	0.68	0.03	0.83	0.83
Queue Length 95th (ft)	49	0	0	0	0	0
Control Delay (s)	21.9	0.0	0.0	0.0	0.0	0.0
Lane LOS	C					
Approach Delay (s)	21.9	0.0			0.0	
Approach LOS	C					

Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			77.0%	ICU Level of Service		D
Analysis Period (min)			15			

06-358 Long Grove, IL
6: Robert Parker Coffin Road & IL 83

8/6/2007

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Storage Length (ft)	145		145	0		0	200		200	200		200
Storage Lanes	1		0	1		1	1		0	1		1
Total Lost Time (s)	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0	4 0
Leading Detector (ft)	50	50		50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util Factor	1 00	1 00	1 00	1 00	1 00	1 00	1 00	0 91	0 91	1 00	0 95	1 00
Frt		0 887				0 850		0 990				0 850
Flt Protected	0 950			0 950			0 950			0 950		
Satd Flow (prot)	1770	1652	0	1770	1961	1583	1641	4938	0	1770	3455	1468
Flt Permitted	0 636			0 699			0 096			0 088		
Satd Flow (perm)	1185	1652	0	1302	1961	1583	166	4938	0	164	3455	1468
Right Turn on Red			No			No			No			No
Satd Flow (RTOR)												
Headway Factor	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1567			386			937			720	
Travel Time (s)		35 6			8 8			14 2			10 9	
Volume (vph)	68	21	65	260	31	82	147	1754	126	375	1580	99
Peak Hour Factor	0 95	0 95	0 95	0 95	0 95	0 95	0 95	0 95	0 95	0 95	0 95	0 95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	10%	10%	2%	2%	10%	10%
Adj Flow (vph)	72	22	68	274	33	86	155	1846	133	395	1663	104
Lane Group Flow (vph)	72	90	0	274	33	86	155	1979	0	395	1663	104
Turn Type	pm+pt			pm+pt		pm+ov	pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Detector Phases	7	4		3	8	1	5	2		1	6	6
Minimum Initial (s)	4 0	4 0		4 0	4 0	4 0	4 0	4 0		4 0	4 0	4 0
Minimum Split (s)	22 5	22 5		8 0	20 0	8 0	8 0	22 0		8 0	22 5	22 5
Total Split (s)	22 5	22 5	0 0	20 0	20 0	22 0	10 0	45 5	0 0	22 0	57 5	57 5
Total Split (%)	20 5%	20 5%	0 0%	18 2%	18 2%	20 0%	9 1%	41 4%	0 0%	20 0%	52 3%	52 3%
Maximum Green (s)	19 5	16 5		17 0	16 0	19 0	7 0	39 5		19 0	51 5	51 5
Yellow Time (s)	3 0	4 5		3 0	3 5	3 0	3 0	4 5		3 0	4 5	4 5
All-Red Time (s)	0 0	1 5		0 0	0 5	0 0	0 0	1 5		0 0	1 5	1 5
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lag	Lead		Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3 0	3 0		3 0	3 0	3 0	3 0	3 0		3 0	3 0	3 0
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)	5 0	5 0			5 0			5 0			5 0	5 0
Flash Dont Walk (s)	11 0	11 0			11 0			11 0			11 0	11 0
Pedestrian Calls (#/hr)	0	0			0			0			0	0
Act Effct Green (s)	21 7	13 0		27 0	17 2	34 8	55 9	49 9		71 9	61 9	61 9
Actuated g/C Ratio	0 20	0 12		0 25	0 16	0 32	0 51	0 45		0 65	0 56	0 56
v/c Ratio	0 24	0 46		0 71	0 11	0 17	0 94	0 88		1 07	0 86	0 13
Control Delay	30 0	51 9		46 0	37 8	19 5	90 3	34 9		101 4	25 4	11 8
Queue Delay	0 0	0 0		0 0	0 0	0 0	0 0	0 0		0 0	0 0	0 0
Total Delay	30 0	51 9		46 0	37 8	19 5	90 3	34 9		101 4	25 4	11 8

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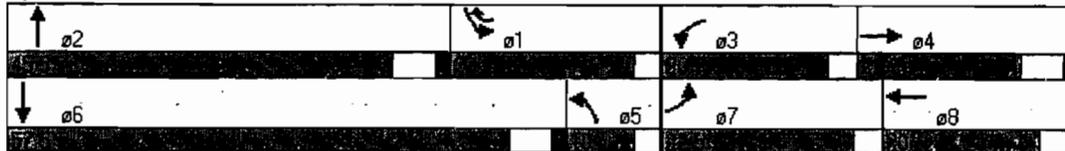
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	D		D	D	B	F	C		F	C	B
Approach Delay		42.2			39.5			38.9			38.6	
Approach LOS		D			D			D			D	

Intersection Summary

Area Type Other
 Cycle Length 110
 Actuated Cycle Length 110
 Offset 104 (95%), Referenced to phase 2 NBTL and 6 SBTL, Start of 1st Green
 Natural Cycle 120
 Control Type Actuated-Coordinated
 Maximum v/c Ratio 1.07
 Intersection Signal Delay 38.9
 Intersection Capacity Utilization 86.7%
 Analysis Period (min) 15

Intersection LOS D
 ICU Level of Service E

Splits and Phases 6 Robert Parker Coffin Road & IL 83



	↙	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙↙	↖↖	↑↑	↗	↘↘	↓↓
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	2000
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)	15	9		9	15	
Lane Util Factor	0.97	0.88	0.95	1.00	0.97	0.95
Frnt		0.850		0.850		
Fit-Protected	0.950				0.950	
Satd Flow (prot)	3335	2707	3455	1468	3273	3551
Fit Permitted	0.950				0.950	
Satd Flow (perm)	3335	2707	3455	1468	3273	3551
Right Turn on Red		No		No		
Satd Flow (RTOR)						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45		45			45
Link Distance (ft)	250		300			645
Travel Time (s)	3.8		4.5			9.8
Volume (vph)	371	192	1679	311	203	1683
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	10%	10%	7%	7%
Adj Flow (vph)	391	202	1767	327	214	1772
Lane Group Flow (vph)	391	202	1767	327	214	1772
Turn Type		pm+ov		pm+ov	Prot	
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Detector Phases	8	1	2	8	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	9.0	22.0	22.0	9.0	22.0
Total Split (s)	33.0	24.2	52.8	33.0	24.2	77.0
Total Split (%)	30.0%	22.0%	48.0%	30.0%	22.0%	70.0%
Maximum Green (s)	27.0	19.2	46.8	27.0	19.2	71.0
Yellow Time (s)	4.5	4.0	4.5	4.5	4.0	4.5
All-Red Time (s)	1.5	1.0	1.5	1.5	1.0	1.5
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	None	None	C-Max
Walk Time (s)	5.0		5.0	5.0		5.0
Flash Dont Walk (s)	11.0		11.0	11.0		11.0
Pedestrian Calls (#/hr)	0		0	0		0
Act Effct Green (s)	19.1	36.3	65.7	88.8	13.2	82.9
Actuated g/C Ratio	0.17	0.33	0.60	0.81	0.12	0.75
v/c Ratio	0.67	0.23	0.86	0.28	0.54	0.66
Control Delay	48.2	26.1	10.3	0.7	50.5	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.2	26.1	10.3	0.7	50.5	8.7
LOS	D	C	B	A	D	A
Approach Delay	40.7		8.8			13.2



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Approach LOS	D		A			B

Intersection Summary

Area Type Other
Cycle Length 110
Actuated Cycle Length 110
Offset 0 (0%), Referenced to phase 2 NBT and 6 SBT, Start of Green
Natural Cycle 80
Control Type Actuated-Coordinated
Maximum v/c Ratio 0.86
Intersection Signal Delay 14.7
Intersection Capacity Utilization 70.5%
Analysis Period (min) 15
Intersection LOS B
ICU Level of Service C

Splits and Phases 2 Aptakisic Road & IL 83



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↖	↗↗	↑↑	↖	↗↗	↑↑↑
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	2000
Total Lost Time (s)	40	40	40	40	40	40
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)	15	9		9	15	
Lane Util Factor	0.97	0.88	0.95	1.00	0.97	0.91
Friction		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3335	2707	3455	1468	3273	5103
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3335	2707	3455	1468	3273	5103
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45		45			45
Link Distance (ft)	250		300			645
Travel Time (s)	3.8		4.5			9.8
Volume (vph)	371	192	1679	311	203	1683
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	10%	10%	7%	7%
Adj Flow (vph)	391	202	1767	327	214	1772
Lane Group Flow (vph)	391	202	1767	327	214	1772
Turn Type		pm+ov		pm+ov	Prot	
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Detector Phases	8	1	2	8	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	9.0	22.0	22.0	9.0	22.0
Total Split (s)	22.0	15.0	73.0	22.0	15.0	88.0
Total Split (%)	20.0%	13.6%	66.4%	20.0%	13.6%	80.0%
Maximum Green (s)	16.0	10.0	67.0	16.0	10.0	82.0
Yellow Time (s)	4.5	4.0	4.5	4.5	4.0	4.5
All-Red Time (s)	1.5	1.0	1.5	1.5	1.0	1.5
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	None	None	C-Max
Walk Time (s)	5.0		5.0	5.0		5.0
Flash Dont Walk (s)	11.0		11.0	11.0		11.0
Pedestrian Calls (#/hr)	0		0	0		0
Act Effct Green (s)	17.4	32.2	69.8	91.2	10.8	84.6
Actuated g/C Ratio	0.16	0.29	0.63	0.83	0.10	0.77
v/c Ratio	0.74	0.26	0.81	0.27	0.67	0.45
Control Delay	53.3	30.5	9.1	0.9	58.7	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.3	30.5	9.1	0.9	58.7	5.0
LOS	D	C	A	A	E	A
Approach Delay	45.5		7.8			10.8

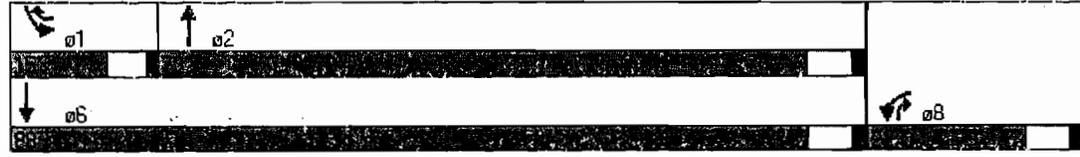
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Approach LOS	D		A		B	

Intersection Summary

Area Type Other
 Cycle Length 110
 Actuated Cycle Length 110
 Offset 0 (0%), Referenced to phase 2 NBT and 6 SBT, Start of Green
 Natural Cycle 80
 Control Type Actuated-Coordinated
 Maximum v/c Ratio 0.81
 Intersection Signal Delay 13.9
 Intersection Capacity Utilization 70.5%
 Analysis Period (min) 15

Intersection LOS B
 ICU Level of Service C

Splits and Phases 2 Aptakisic Road & IL 83



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕↕↕			↕↕
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	140	1850	54	0	1635
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	147	1947	57	0	1721
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)			720			300
pX, platoon unblocked	0.70	0.63			0.63	
vC, conflicting volume	2836	678			2004	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2082	0			1428	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	79			100	
cM capacity (veh/h)	32	687			299	
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	147	779	779	446	861	861
Volume Left	0	0	0	0	0	0
Volume Right	147	0	0	57	0	0
cSH	687	1700	1700	1700	1700	1700
Volume to Capacity	0.21	0.46	0.45	0.26	0.51	0.51
Queue Length 95th (ft)	20	0	0	0	0	0
Control Delay (s)	11.7	0.0	0.0	0.0	0.0	0.0
Lane LOS	B					
Approach Delay (s)	11.7	0.0			0.0	
Approach LOS	B					
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			50.4%		ICU Level of Service	A
Analysis Period (min)			15			

Year 2013 Condition 2

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↗	↘	↔	↖	↗	↔	↖	↗	↔	↖	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Storage Length (ft)	145		145	0		0	200		200	200		200
Storage Lanes	1		0	1		1	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	1.00
Frt		0.854				0.850		0.998				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd Flow (prot)	1770	1591	0	1770	1961	1583	1641	4960	0	1770	3455	1468
Flt Permitted	0.752			0.333			0.040			0.040		
Satd Flow (perm)	1401	1591	0	620	1961	1583	69	4960	0	75	3455	1468
Right Turn on Red			No			No			No			No
Satd Flow (RTOR)												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1567			428			1029			730	
Travel Time (s)		35.6			9.7			15.6			11.1	
Volume (vph)	245	8	246	55	8	10	86	2479	41	149	2239	87
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	10%	10%	2%	2%	10%	10%
Adj. Flow (vph)	258	8	259	58	8	11	91	2609	43	157	2357	92
Lane Group Flow (vph)	258	267	0	58	8	11	91	2652	0	157	2357	92
Turn Type	pm+pt			pm+pt		pm+ov	pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Detector Phases	7	4		3	8	1	5	2		1	6	6
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	21.0	22.4		8.0	20.0	8.0	8.0	22.0		8.0	22.5	22.5
Total Split (s)	21.0	33.0		8.0	20.0	19.0	9.0	110.0		19.0	120.0	120.0
Total Split (%)	12.4%	19.4%	0.0%	4.7%	11.8%	11.2%	5.3%	64.7%	0.0%	11.2%	70.6%	70.6%
Maximum Green (s)	18.0	27.0		5.0	16.0	16.0	6.0	104.0		16.0	114.0	114.0
Yellow Time (s)	3.0	4.5		3.0	3.5	3.0	3.0	4.5		3.0	4.5	4.5
All-Red Time (s)	0.0	1.5		0.0	0.5	0.0	0.0	1.5		0.0	1.5	1.5
Lead/Lag	Lag	Lag		Lead	Lead	Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)	5.0	5.0			5.0			5.0			5.0	5.0
Flash Dont Walk (s)	11.0	11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)	0	0			0			0			0	0
Act Effct Green (s)	35.4	29.0		4.7	6.2	17.3	106.0	106.0		116.0	116.0	116.0
Actuated g/C Ratio	0.21	0.17		0.03	0.04	0.10	0.62	0.62		0.68	0.68	0.68
v/c Ratio	0.70	0.99		1.32	0.11	0.07	1.02	0.86		0.78	1.09	0.09
Control Delay	73.5	119.4		295.1	82.1	67.5	131.8	29.6		84.8	45.1	9.4
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	7.3		0.0	40.9	0.0
Total Delay	73.5	119.4		295.1	82.1	67.5	131.8	36.9		84.8	85.9	9.4

06-358 Long Grove, IL
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	E	F		F	F	E	F	D		F	F	A
Approach Delay		96.9			240.4			40.1			83.2	
Approach LOS		F			F			D			F	

Intersection Summary

Area Type: Other
 Cycle Length: 170
 Actuated Cycle Length: 170
 Offset: 148 (87%), Referenced to phase 2 NBTL and 6 SBTL, Start of 1st Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.32
 Intersection Signal Delay: 66.5
 Intersection Capacity Utilization: 95.9%
 Analysis Period (min): 15
 Intersection LOS: E
 ICU Level of Service: F

Splits and Phases 6 Robert Parker Coffin Road & IL 83



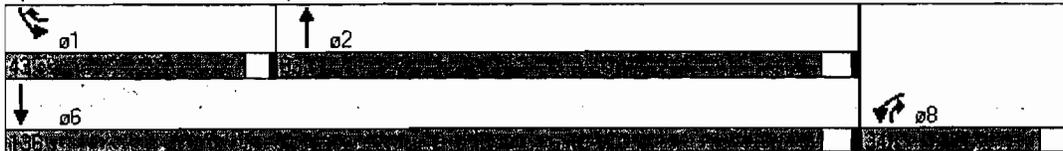
	↙	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙↙	↖	↑↑	↗	↘↘	↓↓
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	2000
Storage Length (ft)	240	0		370	240	
Storage Lanes	2	1		1	2	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)	15	9		9	15	
Lane Util Factor	0.97	1.00	0.95	1.00	0.97	0.95
Fr _t		0.850		0.850		
Fit Protected	0.950				0.950	
Satd Flow (prot)	3335	1538	3455	1468	3273	3551
Fit Permitted	0.950				0.950	
Satd Flow (perm)	3335	1538	3455	1468	3273	3551
Right Turn on Red		No		No		
Satd Flow (RTOR)						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45		45			45
Link Distance (ft)	578		290			449
Travel Time (s)	8.8		4.4			6.8
Volume (vph)	261	163	1911	840	815	2214
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	10%	10%	7%	7%
Adj Flow (vph)	275	172	2012	884	858	2331
Lane Group Flow (vph)	275	172	2012	884	858	2331
Turn Type		pm+ov		pm+ov	Prot	
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Detector Phases	8	1	2	8	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	9.0	22.0	22.0	9.0	22.0
Total Split (s)	34.0	43.0	93.0	34.0	43.0	136.0
Total Split (%)	20.0%	25.3%	54.7%	20.0%	25.3%	80.0%
Maximum Green (s)	28.0	38.0	87.0	28.0	38.0	130.0
Yellow Time (s)	4.5	4.0	4.5	4.5	4.0	4.5
All-Red Time (s)	1.5	1.0	1.5	1.5	1.0	1.5
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	None	None	C-Max
Walk Time (s)	5.0		5.0	5.0		5.0
Flash Dont Walk (s)	11.0		11.0	11.0		11.0
Pedestrian Calls (#/hr)	0		0	0		0
Act Effct Green (s)	25.5	73.0	89.0	118.5	43.5	136.5
Actuated g/C Ratio	0.15	0.43	0.52	0.70	0.26	0.80
v/c Ratio	0.55	0.26	1.11	0.86	1.02	0.82
Control Delay	70.5	32.5	106.4	41.9	97.1	13.6
Queue Delay	0.0	0.0	52.5	2.0	0.0	0.0
Total Delay	70.5	32.5	158.9	43.9	97.1	13.6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
LOS	E	C	F	D	F	B
Approach Delay	55.9		123.8			36.1
Approach LOS	E		F			D

Intersection Summary

Area Type: Other
 Cycle Length: 170
 Actuated Cycle Length: 170
 Offset: 12 (7%), Referenced to phase 2 NBT and 6 SBT, Start of 1st Green
 Natural Cycle: 130
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.11
 Intersection Signal Delay: 76.3
 Intersection Capacity Utilization: 90.9%
 Analysis Period (min): 15
 Intersection LOS: E
 ICU Level of Service: E

Splits and Phases 2 Aptakisisc Road & IL 83



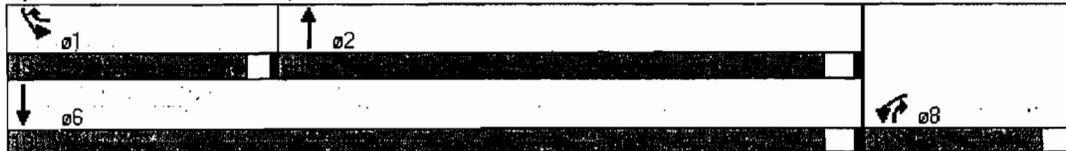
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↖	↖↖	↑↑	↗	↖↖	↑↑↑
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	2000
Storage Length (ft)	240	0		370	240	
Storage Lanes	2	2		1	2	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)	15	9		9	15	
Lane Util Factor	0.97	0.88	0.95	1.00	0.97	0.91
Frnt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd Flow (prot)	3335	2707	3455	1468	3273	5103
Flt Permitted	0.950				0.950	
Satd Flow (perm)	3335	2707	3455	1468	3273	5103
Right Turn on Red		No		No		
Satd Flow (RTOR)						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45		45		45	45
Link Distance (ft)	578		290		449	449
Travel Time (s)	8.8		4.4		6.8	6.8
Volume (vph)	261	163	1911	840	815	2214
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	10%	10%	7%	7%
Adj Flow (vph)	275	172	2012	884	858	2331
Lane Group Flow (vph)	275	172	2012	884	858	2331
Turn Type		pm+ov		pm+ov	Prot	
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Detector Phases	8	1	2	8	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	9.0	22.0	22.0	9.0	22.0
Total Split (s)	34.0	43.0	93.0	34.0	43.0	136.0
Total Split (%)	20.0%	25.3%	54.7%	20.0%	25.3%	80.0%
Maximum Green (s)	28.0	38.0	87.0	28.0	38.0	130.0
Yellow Time (s)	4.5	4.0	4.5	4.5	4.0	4.5
All-Red Time (s)	1.5	1.0	1.5	1.5	1.0	1.5
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	None	None	C-Max
Walk Time (s)	5.0		5.0	5.0		5.0
Flash Dont Walk (s)	11.0		11.0	11.0		11.0
Pedestrian Calls (#/hr)	0		0	0		0
Act Effct Green (s)	23.9	73.0	89.0	116.9	45.1	138.1
Actuated g/C Ratio	0.14	0.43	0.52	0.69	0.27	0.81
v/c Ratio	0.59	0.15	1.11	0.88	0.99	0.56
Control Delay	73.0	30.0	78.7	11.1	87.7	6.5
Queue Delay	0.0	0.0	0.8	0.1	0.0	0.0
Total Delay	73.0	30.0	79.5	11.2	87.7	6.5

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
LOS	E	C	E	B	F	A
Approach Delay	56.5		58.7			28.4
Approach LOS	E		E			C

Intersection Summary

Area Type: Other
 Cycle Length: 170
 Actuated Cycle Length: 170
 Offset: 105 (62%), Referenced to phase 2 NBT and 6 SBT, Start of 1st Green
 Natural Cycle: 130
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.11
 Intersection Signal Delay: 43.7
 Intersection Capacity Utilization: 90.9%
 Analysis Period (min): 15
 Intersection LOS: D
 ICU Level of Service: E

Splits and Phases 2 Aptakisic Road & IL 83



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕	↗		↕
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	38	2713	21	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	40	2856	22	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)			730			290
pX, platoon unblocked	0.40	0.40			0.40	
vC, conflicting volume	2856	1428			2878	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vcl	4129	577			4184	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	78			100	
cM capacity (veh/h)	1	185			15	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	40	1428	1428	22	0	0
Volume Left	0	0	0	0	0	0
Volume Right	40	0	0	22	0	0
cSH	185	1700	1700	1700	1700	1700
Volume to Capacity	0.22	0.84	0.84	0.01	0.00	0.00
Queue Length 95th (ft)	20	0	0	0	0	0
Control Delay (s)	29.8	0.0	0.0	0.0	0.0	0.0
Lane LOS	D					
Approach Delay (s)	29.8	0.0			0.0	
Approach LOS	D					

Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			85.0%		ICU Level of Service	E
Analysis Period (min)			15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑				↑
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	1866	10	0	0	0	18
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1964	11	0	0	0	19
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)	578					
pX, platoon unblocked						
vC, conflicting volume			1975		1964	982
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1975		1964	982
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	92
cM capacity (veh/h)			289		55	248
Direction, Lane #	EB-1	EB-2	EB-3	NB-1		
Volume Total	982	982	11	19		
Volume Left	0	0	0	0		
Volume Right	0	0	11	19		
cSH	1700	1700	1700	248		
Volume to Capacity	0.58	0.58	0.01	0.08		
Queue Length 95th (ft)	0	0	0	6		
Control Delay (s)	0.0	0.0	0.0	20.7		
Lane LOS				C		
Approach Delay (s)	0.0			20.7		
Approach LOS				C		
Intersection Summary:						
Average Delay			0.2			
Intersection Capacity Utilization			61.6%		ICU Level of Service	B
Analysis Period (min)			15			

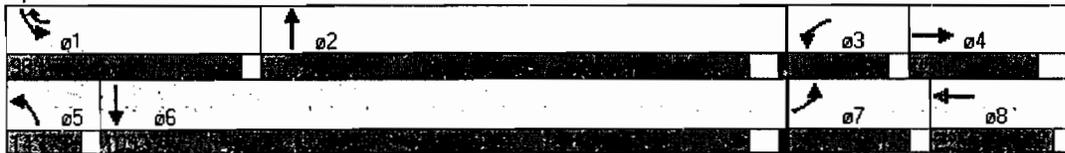
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↗	↖	↖↗↘		↖	↖↗	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Storage Length (ft)	145		145	0		0	200		200	200		200
Storage Lanes	1		0	1		1	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	1.00
Frt		0.874				0.850		0.992				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd Flow (prot)	1770	1628	0	1770	1961	1583	1641	4943	0	1770	3455	1468
Flt Permitted	0.630			0.542			0.053			0.051		
Satd Flow (perm)	1174	1628	0	1010	1961	1583	92	4943	0	95	3455	1468
Right Turn on Red			No			No			No			No
Satd Flow (RTOR)												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1567			428			1029			730	
Travel Time (s)		35.6			9.7			15.6			11.1	
Volume (vph)	81	19	102	272	32	51	302	2083	120	248	2511	286
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	10%	10%	2%	2%	10%	10%
Adj Flow (vph)	85	20	107	286	34	54	318	2193	126	261	2643	301
Lane Group Flow (vph)	85	127	0	286	34	54	318	2319	0	261	2643	301
Turn Type	pm+pt			pm+pt		pm+ov	pm+pt			pm+pt		Perm.
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Detector Phases	7	4		3	8	1	5	2		1	6	6
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	21.0	22.4		8.0	20.0	8.0	8.0	22.0		8.0	22.5	22.5
Total Split (s)	21.0	25.0	0.0	18.0	22.0	38.0	14.0	79.0	0.0	38.0	103.0	103.0
Total Split (%)	13.1%	15.6%	0.0%	11.3%	13.8%	23.8%	8.8%	49.4%	0.0%	23.8%	64.4%	64.4%
Maximum Green (s)	18.0	19.0		15.0	18.0	35.0	11.0	73.0		35.0	97.0	97.0
Yellow Time (s)	3.0	4.5		3.0	3.5	3.0	3.0	4.5		3.0	4.5	4.5
All-Red Time (s)	0.0	1.5		0.0	0.5	0.0	0.0	1.5		0.0	1.5	1.5
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)	5.0	5.0			5.0			5.0			5.0	5.0
Flash Dont Walk (s)	11.0	11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)	0	0			0			0			0	0
Act Effct Green (s)	31.2	18.3		31.3	18.6	42.8	102.1	89.7		113.8	99.0	99.0
Actuated g/C Ratio	0.20	0.11		0.20	0.12	0.27	0.64	0.56		0.71	0.62	0.62
v/c Ratio	0.30	0.68		1.08	0.15	0.13	1.75	0.84		0.88	1.24	0.33
Control Delay	52.4	86.3		134.0	62.8	39.9	388.4	33.9		73.8	139.8	15.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	26.0	0.0
Total Delay	52.4	86.3		134.0	62.8	39.9	388.4	33.9		73.8	165.8	15.9

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	D	F		F	E	D	F	C		E	F	B
Approach Delay		72.7			113.9			76.7			144.2	
Approach LOS		E			F			E			F	

Intersection Summary

Area Type: Other
 Cycle Length: 160
 Actuated Cycle Length: 160
 Offset: 140 (88%), Referenced to phase 2 NBTL and 6 SBTL, Start of 1st Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.75
 Intersection Signal Delay: 112.4
 Intersection Capacity Utilization: 118.4%
 Analysis Period (min): 15
 Intersection LOS: F
 ICU Level of Service: H

Splits and Phases 6 Robert Parker Coffin Road & IL 83



	↙	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙↖	↖	↑↑	↗	↙↖	↑↑
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	2000
Storage Length (ft)	240	0		370	240	
Storage Lanes	2	1		1	2	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)	15	9		9	15	
Lane Util Factor	0.97	1.00	0.95	1.00	0.97	0.95
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd Flow (prot)	3335	1538	3455	1468	3273	3551
Flt Permitted	0.950				0.950	
Satd Flow (perm)	3335	1538	3455	1468	3273	3551
Right Turn on Red		No		No		
Satd Flow (RTOR)						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45		45			45
Link Distance (ft)	438		290			449
Travel Time (s)	6.6		4.4			6.8
Volume (vph)	989	786	2054	210	240	2056
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	10%	10%	7%	7%
Adj Flow (vph)	1041	827	2162	221	253	2164
Lane Group Flow (vph)	1041	827	2162	221	253	2164
Turn Type		pm+ov		pm+ov	Prot	
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Detector Phases	8	1	2	8	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	9.0	22.0	22.0	9.0	22.0
Total Split (s)	44.8	19.2	96.0	44.8	19.2	115.2
Total Split (%)	28.0%	12.0%	60.0%	28.0%	12.0%	72.0%
Maximum Green (s)	38.8	14.2	90.0	38.8	14.2	109.2
Yellow Time (s)	4.5	4.0	4.5	4.5	4.0	4.5
All-Red Time (s)	1.5	1.0	1.5	1.5	1.0	1.5
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	None	None	C-Max
Walk Time (s)	5.0		5.0	5.0		5.0
Flash Dont Walk (s)	11.0		11.0	11.0		11.0
Pedestrian Calls (#/hr)	0		0	0		0
Act Effct Green (s)	40.8	60.0	92.0	136.8	15.2	111.2
Actuated g/C Ratio	0.26	0.38	0.58	0.86	0.10	0.70
v/c Ratio	1.22	1.43	1.09	0.18	0.81	0.88
Control Delay	160.3	241.8	69.2	0.8	91.1	24.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	160.3	241.8	69.2	0.8	91.1	24.5

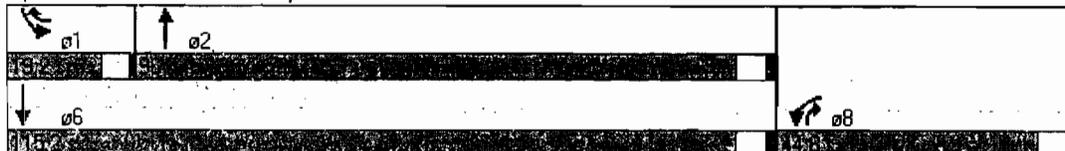
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
LOS	F	F	E	A	F	C
Approach Delay	196.4		62.8			31.4
Approach LOS	F		E			C

Intersection Summary

Area Type: Other
 Cycle Length: 160
 Actuated Cycle Length: 160
 Offset: 140.8 (88%), Referenced to phase 2 NBT and 6 SBT, Start of 1st Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.43
 Intersection Signal Delay: 88.9
 Intersection Capacity Utilization: 109.3%
 Analysis Period (min): 15

Intersection LOS: F
 ICU Level of Service: H

Splits and Phases 2 Aptakisisc Road & IL 83



	↙	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↖	↖↖	↑↑	↑	↖↖	↑↑↑
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	2000
Storage Length (ft)	240	0		370	240	
Storage Lanes	2	2		1	2	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)	15	9		9	15	
Lane Util Factor	0.97	0.88	0.95	1.00	0.97	0.91
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd Flow (prot)	3335	2707	3455	1468	3273	5103
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3335	2707	3455	1468	3273	5103
Right Turn on Red		No		No		
Satd Flow (RTOR)						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45		45			45
Link Distance (ft)	438		290			449
Travel Time (s)	6.6		4.4			6.8
Volume (vph)	989	786	2054	210	240	2056
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	10%	10%	7%	7%
Adj Flow (vph)	1041	827	2162	221	253	2164
Lane Group Flow (vph)	1041	827	2162	221	253	2164
Turn Type		pm+ov		pm+ov	Prot	
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Detector Phases	8	1	2	8	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	9.0	22.0	22.0	9.0	22.0
Total Split (s)	48.0	17.0	95.0	48.0	17.0	112.0
Total Split (%)	30.0%	10.6%	59.4%	30.0%	10.6%	70.0%
Maximum Green (s)	42.0	12.0	89.0	42.0	12.0	106.0
Yellow Time (s)	4.5	4.0	4.5	4.5	4.0	4.5
All-Red Time (s)	1.5	1.0	1.5	1.5	1.0	1.5
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	None	None	C-Max
Walk Time (s)	5.0		5.0	5.0		5.0
Flash Dont Walk (s)	11.0		11.0	11.0		11.0
Pedestrian Calls (#/hr)	0		0	0		0
Act Effct Green (s)	44.0	61.0	91.0	139.0	13.0	108.0
Actuated g/C Ratio	0.28	0.38	0.57	0.87	0.08	0.68
v/c Ratio	1.14	0.80	1.10	0.17	0.95	0.63
Control Delay	125.4	51.2	69.2	0.4	115.6	15.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	125.4	51.2	69.2	0.4	115.6	15.7



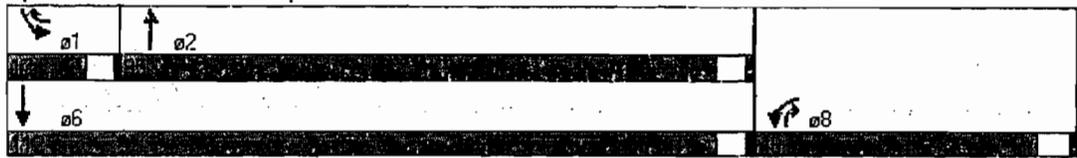
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
LOS	F	D	E	A	F	B
Approach Delay	92.6		62.8			26.2
Approach LOS	F		E			C

Intersection Summary

Area Type: Other
 Cycle Length: 160
 Actuated Cycle Length: 160
 Offset: 137 (86%), Referenced to phase 2 NBT and 6 SBT, Start of 1st Green
 Natural Cycle: 130
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.14
 Intersection Signal Delay: 57.9
 Intersection Capacity Utilization: 99.0%
 Analysis Period (min): 15

Intersection LOS: E
 ICU Level of Service: F

Splits and Phases 2 Aptakisic Road & IL 83



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕	↖		↕
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	121	2143	52	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	127	2256	55	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)			730			290
pX, platoon unblocked	0.46	0.46			0.46	
vC, conflicting volume	2256	1128			2311	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2558	96			2678	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	70			100	
cM capacity (veh/h)	10	431			70	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	127	1128	1128	55	0	0
Volume Left	0	0	0	0	0	0
Volume Right	127	0	0	55	0	0
cSH	431	1700	1700	1700	1700	1700
Volume to Capacity	0.30	0.66	0.66	0.03	0.00	0.00
Queue Length 95th (ft)	30	0	0	0	0	0
Control Delay (s)	16.8	0.0	0.0	0.0	0.0	0.0
Lane LOS	C					
Approach Delay (s)	16.8	0.0			0.0	
Approach LOS	C					

Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			73.4%	ICU Level of Service		D
Analysis Period (min)			15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑				↑
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	1927	76	0	0	0	67
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	2028	80	0	0	0	71
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)	438					
pX, platoon unblocked						
vC, conflicting volume			2108		2028	1014
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2108		2028	1014
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
IF (s)			2.2		3.5	3.3
p0 queue free %			100		100	70
cM capacity (veh/h)			256		50	236
Direction, Lane #	EB 1	EB 2	EB 3	NB 1		
Volume Total	1014	1014	80	71		
Volume Left	0	0	0	0		
Volume Right	0	0	80	71		
cSH	1700	1700	1700	236		
Volume to Capacity	0.60	0.60	0.05	0.30		
Queue Length 95th (ft)	0	0	0	30		
Control Delay (s)	0.0	0.0	0.0	26.6		
Lane LOS				D		
Approach Delay (s)	0.0			26.6		
Approach LOS				D		
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			64.1%		ICU Level of Service	C
Analysis Period (min)			15			

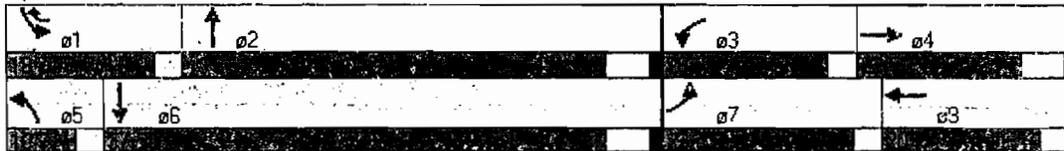
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Storage Length (ft)	145		145	0		0	200		200	200		200
Storage Lanes	1		0	1		1	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	1.00
Frt		0.887				0.850		0.990				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1652	0	1770	1961	1583	1641	4938	0	1770	3455	1468
Flt Permitted	0.636			0.699			0.088			0.081		
Satd Flow (perm)	1185	1652	0	1302	1961	1583	152	4938	0	151	3455	1463
Right Turn on Red			No			No			No			No
Satd Flow (RTOR)												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1567			386			937			720	
Travel Time (s)		35.6			8.8			14.2			10.9	
Volume (vph)	68	21	65	260	31	49	147	1754	126	290	1580	99
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	10%	10%	2%	2%	10%	10%
Adj. Flow (vph)	72	22	68	274	33	52	155	1846	133	305	1663	104
Lane Group Flow (vph)	72	90	0	274	33	52	155	1979	0	305	1663	104
Turn Type	pm+pt			pm+pt		pm+ov	pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Detector Phases	7	4		3	8	1	5	2		1	6	6
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	22.5	22.5		8.0	20.0	8.0	8.0	22.0		8.0	22.5	22.5
Total Split (s)	22.5	22.5	0.0	20.0	20.0	18.0	10.0	49.5	0.0	18.0	57.5	57.5
Total Split (%)	20.5%	20.5%	0.0%	18.2%	18.2%	16.4%	9.1%	45.0%	0.0%	16.4%	52.3%	52.3%
Maximum Green (s)	19.5	16.5		17.0	16.0	15.0	7.0	43.5		15.0	51.5	51.5
Yellow Time (s)	3.0	4.5		3.0	3.5	3.0	3.0	4.5		3.0	4.5	4.5
All-Red Time (s)	0.0	1.5		0.0	0.5	0.0	0.0	1.5		0.0	1.5	1.5
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)	5.0	5.0			5.0			5.0			5.0	5.0
Flash Dont Walk (s)	11.0	11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)	0	0			0			0			0	0
Act Effct Green (s)	21.7	13.0		27.0	17.2	38.3	59.5	48.8		71.9	57.2	57.2
Actuated g/C Ratio	0.20	0.12		0.25	0.16	0.35	0.54	0.44		0.65	0.52	0.52
v/c Ratio	0.24	0.46		0.71	0.11	0.09	0.68	0.90		0.80	0.92	0.14
Control Delay	30.0	51.9		46.0	37.8	23.5	39.4	36.5		44.6	36.0	15.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	30.0	51.9		46.0	37.8	23.5	39.4	36.5		44.6	36.0	15.8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	D		D	D	C	D	D		D	D	B
Approach Delay		42.2			42.0			36.7			36.3	
Approach LOS		D			D			D			D	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 104 (95%), Referenced to phase 2 NBTL and 6 SBTL, Start of 1st Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum V/c Ratio: 0.92
 Intersection Signal Delay: 37.1
 Intersection Capacity Utilization: 82.0%
 Analysis Period (min): 15
 Intersection LOS: D
 ICU Level of Service: D

Splits and Phases 6 Robert Parker Coffin Road & IL 83



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↖	↗↗	↑↑	↗	↖↖	↑↑
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	2000
Total Lost Time (s)	40	40	40	40	40	40
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)	15	9		9	15	
Lane Util Factor	0.97	0.88	0.95	1.00	0.97	0.95
Frnt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd Flow (prot)	3335	2707	3455	1468	3273	3551
Flt Permitted	0.950				0.950	
Satd Flow (perm)	3335	2707	3455	1468	3273	3551
Right Turn on Red		No		No		
Satd Flow (RTOR)						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45		45			45
Link Distance (ft)	410		300			645
Travel Time (s)	6.2		4.5			9.8
Volume (vph)	371	192	1683	245	285	1601
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	10%	10%	7%	7%
Adj Flow (vph)	391	202	1772	258	300	1685
Lane Group Flow (vph)	391	202	1772	258	300	1685
Turn Type		pm+ov		pm+ov	Prot	
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Detector Phases	8	1	2	8	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	9.0	22.0	22.0	9.0	22.0
Total Split (s)	33.0	24.2	52.8	33.0	24.2	77.0
Total Split (%)	30.0%	22.0%	48.0%	30.0%	22.0%	70.0%
Maximum Green (s)	27.0	19.2	46.8	27.0	19.2	71.0
Yellow Time (s)	4.5	4.0	4.5	4.5	4.0	4.5
All-Red Time (s)	1.5	1.0	1.5	1.5	1.0	1.5
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	None	None	C-Max
Walk Time (s)	5.0		5.0	5.0		5.0
Flash Dont Walk (s)	11.0		11.0	11.0		11.0
Pedestrian Calls (#/hr)	0		0	0		0
Act Effct Green (s)	19.1	39.4	62.6	85.7	16.3	82.9
Actuated g/C Ratio	0.17	0.36	0.57	0.78	0.15	0.75
v/c Ratio	0.67	0.21	0.99	0.23	0.62	0.63
Control Delay	48.2	23.7	13.5	0.7	49.2	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.2	23.7	13.5	0.7	49.2	8.2
LOS	D	C	B	A	D	A
Approach Delay	39.9		11.8			14.4

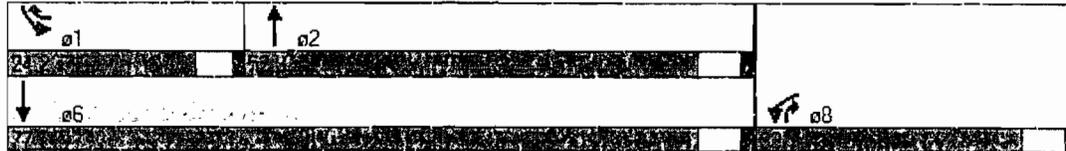
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Approach LOS	D		B			B

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 0 (0%), Referenced to phase 2 NBT and 6 SBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.90
 Intersection Signal Delay: 16.5
 Intersection Capacity Utilization: 72.9%
 Analysis Period (min): 15

Intersection LOS: B
 ICU Level of Service: C

Splits and Phases 2 Aptakisic Road & IL 83



	↙	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙↙	↖↖	↑↑	↗	↘↘	↓↓↓
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	2000
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)	15	9		9	15	
Lane Util Factor	0.97	0.88	0.95	1.00	0.97	0.91
Flt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd Flow (prot)	3335	2707	3455	1468	3273	5103
Flt Permitted	0.950				0.950	
Satd Flow (perm)	3335	2707	3455	1468	3273	5103
Right Turn on Red		No		No		
Satd Flow (RTOR)						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45		45			45
Link Distance (ft)	410		300			645
Travel Time (s)	6.2		4.5			9.8
Volume (vph)	371	192	1683	245	285	1601
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	10%	10%	7%	7%
Adj Flow (vph)	391	202	1772	258	300	1685
Lane Group Flow (vph)	391	202	1772	258	300	1685
Turn Type		pm+ov		pm+ov	Prot.	
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Detector Phases	8	1	2	8	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	9.0	22.0	22.0	9.0	22.0
Total Split (s)	22.0	18.0	70.0	22.0	18.0	88.0
Total Split (%)	20.0%	16.4%	63.6%	20.0%	16.4%	80.0%
Maximum Green (s)	16.0	13.0	64.0	16.0	13.0	82.0
Yellow Time (s)	4.5	4.0	4.5	4.5	4.0	4.5
All-Red Time (s)	1.5	1.0	1.5	1.5	1.0	1.5
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	None	None	C-Max
Walk Time (s)	5.0		5.0	5.0		5.0
Flash Dont Walk (s)	11.0		11.0	11.0		11.0
Pedestrian Calls (#/hr)	0		0	0		0
Act Effct Green (s)	17.4	35.0	67.0	83.4	13.6	84.6
Actuated g/C Ratio	0.16	0.32	0.61	0.80	0.12	0.77
v/c Ratio	0.74	0.23	0.84	0.22	0.74	0.43
Control Delay	53.3	28.1	12.1	0.5	58.2	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.3	28.1	12.1	0.5	58.2	4.8
LOS	D	C	B	A	E	A
Approach Delay	44.7		10.6			12.9



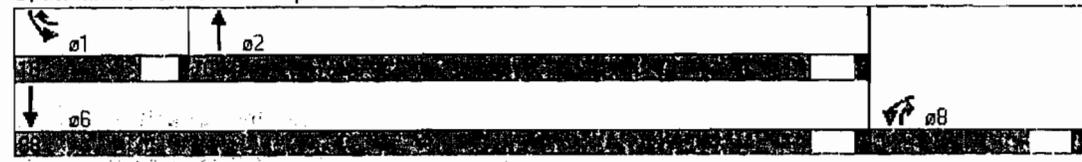
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Approach LOS	D		B			B

Intersection Summary

Area Type: Other
 Cycle Length 110
 Actuated Cycle Length 110
 Offset 0 (0%), Referenced to phase 2 NBT and 6 SBT, Start of Green
 Natural Cycle 90
 Control Type Actuated-Coordinated
 Maximum v/c Ratio 0.84
 Intersection Signal Delay 15.0
 Intersection Capacity Utilization 72.9%
 Analysis Period (min) 15

Intersection LOS B
 ICU Level of Service C

Splits and Phases 2 Aptakasic Road & IL 83



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Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑↑			↑↑
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	123	1805	54	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	129	1900	57	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)			720			300
pX, platoon unblocked	0.63	0.63			0.63	
vC, conflicting volume	1928	662			1957	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1293	0			1339	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	81			100	
cM capacity (veh/h)	97	681			321	
Direction, Lane #	WB-1	NB 1	NB-2	NB 3	SB 1	SB 2
Volume Total	129	760	760	437	0	0
Volume Left	0	0	0	0	0	0
Volume Right	129	0	0	57	0	0
cSH	681	1700	1700	1700	1700	1700
Volume to Capacity	0.19	0.45	0.45	0.26	0.00	0.00
Queue Length 95th (ft)	17	0	0	0	0	0
Control Delay (s)	11.5	0.0	0.0	0.0	0.0	0.0
Lane LOS	B					
Approach Delay (s)	11.5	0.0			0.0	
Approach LOS	B					
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			48.6%		ICU Level of Service	A
Analysis Period (min)			15			

06-358 Long Grove, IL
 8: Aptakisic Road & Right-In/Right-Out

8/6/2007

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑				↑
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	1545	82	0	0	0	66
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1626	86	0	0	0	69
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh						
Upstream signal (ft)	410					
pX, platoon unblocked						
vC, conflicting volume			1713		1626	813
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1713		1626	813
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	78
cM capacity (veh/h)			360		93	321
Direction, Lane #	EB 1	EB 2	EB 3	NB 1		
Volume Total	813	813	86	69		
Volume Left	0	0	0	0		
Volume Right	0	0	86	69		
cSH	1700	1700	1700	321		
Volume to Capacity	0.48	0.48	0.05	0.22		
Queue Length 95th (ft)	0	0	0	20		
Control Delay (s)	0.0	0.0	0.0	19.3		
Lane LOS				C		
Approach Delay (s)	0.0			19.3		
Approach LOS				C		
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			53.5%		ICU Level of Service	A
Analysis Period (min)			15			

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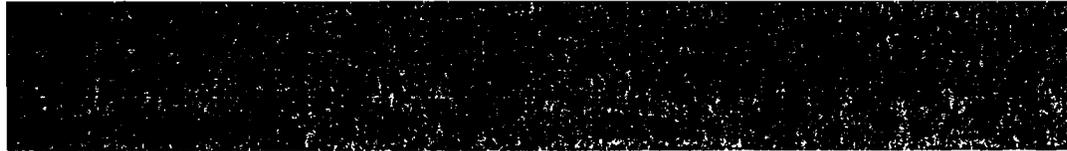
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SET	SBR
Lane Configurations	↔	↔	↔	↔	↕	↕	↔	↕↕↕	↔	↔	↕↕	↕
Ideal Flow (vphpl)	1900	1900	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Storage Length (ft)	145		145	0		0	200		200	200		200
Storage Lanes	1		0	1		1	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	1.00
Frt		0.854				0.850		0.998				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd Flow (prot)	1770	1591	0	1770	1961	1583	1641	4960	0	1770	3455	1468
Flt Permitted	0.602			0.314			0.037			0.036		
Satd Flow (perm)	1121	1591	0	585	1961	1583	64	4960	0	67	3455	1468
Right Turn on Red			No			No			No			No
Satd Flow (RTOR)												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1567			428			1029			730	
Travel Time (s)		35.6			9.7			15.6			11.1	
Volume (vph)	245	8	246	60	8	10	86	2478	41	128	2213	87
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	10%	10%	2%	2%	10%	10%
Adj Flow (vph)	258	8	259	63	8	11	91	2608	43	133	2329	92
Lane Group Flow (vph)	258	267	0	63	8	11	91	2651	0	133	2329	92
Turn Type	pm+pt			pm+pt		pm+ov	pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Detector Phases	7	4		3	8	1	5	2		1	6	6
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	21.0	22.4		8.0	20.0	8.0	8.0	22.0		8.0	22.5	22.5
Total Split (s)	21.0	33.0		8.0	20.0	17.0	9.0	112.0		17.0	120.0	120.0
Total Split (%)	12.4%	19.4%	0.0%	4.7%	11.8%	10.0%	5.3%	65.9%	0.0%	10.0%	70.6%	70.6%
Maximum Green (s)	18.0	27.0		5.0	16.0	14.0	6.0	106.0		14.0	114.0	114.0
Yellow Time (s)	3.0	4.5		3.0	3.5	3.0	3.0	4.5		3.0	4.5	4.5
All-Red Time (s)	0.0	1.5		0.0	0.5	0.0	0.0	1.5		0.0	1.5	1.5
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)	5.0	5.0			5.0			5.0			5.0	5.0
Flash Dont Walk (s)	11.0	11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)	0	0			0			0			0	0
Act Effct Green (s)	37.0	29.0		7.2	7.9	15.2	114.8	109.8		124.5	116.0	116.0
Actuated g/C Ratio	0.22	0.17		0.04	0.05	0.09	0.68	0.65		0.73	0.68	0.68
v/c Ratio	0.70	0.99		1.19	0.09	0.08	1.01	0.83		0.83	0.99	0.09
Control Delay	71.8	119.4		244.3	76.8	66.2	134.6	26.2		78.0	42.0	9.4
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	1.3		0.0	38.9	0.0
Total Delay	71.8	119.4		244.3	76.8	66.2	134.6	27.5		78.0	80.9	9.4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	E	F		F	E	E	F	C		E	F	A
Approach Delay		96.0			204.1			31.0			78.2	
Approach LOS		F			F			C			E	

Intersection Summary

Area Type: Other
 Cycle Length: 170
 Actuated Cycle Length: 170
 Offset: 143 (87%), Referenced to phase 2 NBTL and 6 SBTL, Start of 1st Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.19
 Intersection Signal Delay: 59.6
 Intersection Capacity Utilization: 95.2%
 Analysis Period (min): 15
 Intersection LOS: E
 ICU Level of Service: F

Splits and Phases 6 Robert Parker Coffin Road & IL 83



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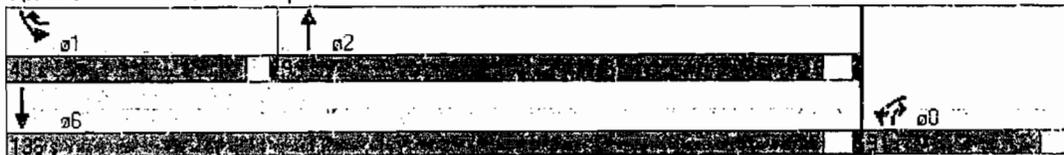
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↗	↖	↕	↗	↖↗	↕
Ideal Flow (vphp)	1900	1900	2000	1900	1900	2000
Storage Length (ft)	240	0		370	240	
Storage Lanes	2	1		1	2	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)	15	9		9	15	
Lane Util Factor	0.97	1.00	0.95	1.00	0.97	0.95
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd Flow (prot)	3335	1538	3455	1468	3273	3551
Flt Permitted	0.950				0.950	
Satd Flow (perm)	3335	1538	3455	1468	3273	3551
Right Turn on Red		No		No		
Satd Flow (RTOR)						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45		45		45	
Link Distance (ft)	578		290		449	
Travel Time (s)	8.2		4.4		6.8	
Volume (vph)	232	171	1902	840	824	2194
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	10%	10%	7%	7%
Adj Flow (vph)	214	180	2002	884	867	2309
Lane Group Flow (vph)	244	180	2002	884	867	2309
Turn Type		pm+ov		pm+ov	Prct	
Protected Phases	8	1	2	8	1	6
Permitted Phases		3		2		
Detector Phases	8	1	2	8	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	9.0	22.0	22.0	9.0	22.0
Total Split (s)	34.0	43.0	93.0	34.0	43.0	136.0
Total Split (%)	20.0%	25.3%	54.7%	20.0%	25.3%	80.0%
Maximum Green (s)	28.0	38.0	87.0	28.0	38.0	130.0
Yellow Time (s)	4.5	4.0	4.5	4.5	4.0	4.5
All-Red Time (s)	1.5	1.0	1.5	1.5	1.0	1.5
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	None	None	C-Max
Walk Time (s)	5.0		5.0	5.0		5.0
Flash Dont Walk (s)	11.0		11.0	11.0		11.0
Pedestrian Calls (#/hr)	0		0	0		0
Act Effct Green (s)	24.2	73.0	89.0	117.2	44.8	137.8
Actuated g/C Ratio	0.14	0.43	0.52	0.69	0.26	0.81
v/c Ratio	0.51	0.27	1.11	0.87	1.01	0.80
Control Delay	70.4	32.8	104.3	44.1	92.3	12.5
Queue Delay	0.0	0.0	52.5	2.0	0.0	0.0
Total Delay	70.4	32.8	156.8	46.1	92.3	12.5

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
LOS	E	C	F	D	F	B
Approach Delay	54.4		122.9			34.3
Approach LOS	D		F			C

Intersection Summary

Area Type: Other
 Cycle Length: 170
 Actuated Cycle Length: 170
 Offset: -12 (7%); Referenced to phase 2 NBT and 6 SBT, Start of 1st Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.11
 Intersection Signal Delay: 75.0
 Intersection Capacity Utilization: 90.1%
 Analysis Period (min): 15
 Intersection LOS: E
 ICU Level of Service: E

Splits and Phases 2 Aptakisisc Road & IL 83



Lane Group*	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔↔	↔↔	↑↑	↑	↔↔	↔↔
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	2000
Storage Length (ft)	240	0		370	240	
Storage Lanes	2	2		1	2	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	0.97	0.88	0.95	1.00	0.97	0.95
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd Flow (prot)	3335	2707	3455	1468	3273	3551
Flt Permitted	0.950				0.950	
Satd Flow (perm)	3335	2707	3455	1468	3273	3551
Right Turn on Red		No		No		
Satd Flow (RTOR)						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45		45		45	
Link Distance (ft)	1198		290		449	
Travel Time (s)	18.2		4.4		6.8	
Volume (vph)	232	171	1902	840	824	2194
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	10%	10%	7%	7%
Adj Flow (vph)	244	180	2002	884	867	2309
Lane Group Flow (vph)	244	180	2002	884	867	2309
Turn Type		pm+bv		pm+cv	Prot	
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Detector Phases	8	1	2	8	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	9.0	22.0	22.0	9.0	22.0
Total Split (s)	34.0	40.0	96.0	34.0	40.0	136.0
Total Split (%)	20.0%	23.5%	56.5%	20.0%	23.5%	60.0%
Maximum Green (s)	28.0	35.0	90.0	28.0	35.0	130.0
Yellow Time (s)	4.5	4.0	4.5	4.5	4.0	4.5
All-Red Time (s)	1.5	1.0	1.5	1.5	1.0	1.5
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	None	None	C-Max
Walk Time (s)	5.0		5.0	5.0		5.0
Flash Dont Walk (s)	11.0		11.0	11.0		11.0
Pedestrian Calls (#/hr)	0		0	0		0
Act.Effct.Green (s)	23.6	70.0	92.0	119.6	42.4	138.4
Activated g/C Ratio	0.14	0.41	0.54	0.70	0.25	0.81
v/c Ratio	0.53	0.16	1.07	0.88	1.06	0.80
Control Delay	71.3	32.0	65.4	14.1	107.4	12.2
Queue Delay	0.0	0.0	1.2	0.0	0.0	0.0
Total Delay	71.3	32.0	66.6	14.1	107.4	12.2

06-358 Long Grove, IL
 2 Aptaksic Road & IL 83

3/5/2007

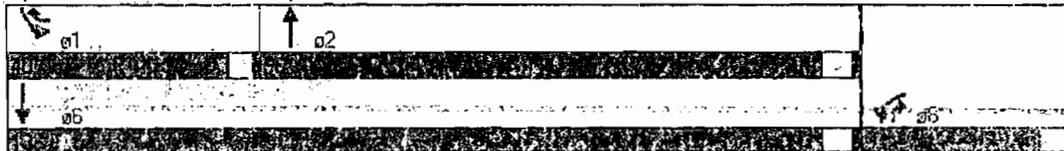
Lane Group	WBL	WBR	NBT	NER	SBL	SBT
LOS	E	C	E	B	F	B
Approach Delay	54.6		50.5			38.1
Approach LOS	D		D			D

Intersection Summary

Area Type Other
 Cycle Length 170
 Actuated Cycle Length 170
 Offset 104 (61%), Referenced to phase 2 NBT and 6 SBT, Start of 1st Green
 Natural Cycle 150
 Control Type Actuated-Coordinated
 Maximum v/c Ratio 1.07
 Intersection Signal Delay 44.7
 Intersection Capacity Utilization 90.1%
 Analysis Period (min) 15

Intersection LOS D
 ICU Level of Service E

Splits and Phases 2 Aptaksic Road & IL 83



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑	↑↑	↑		↑↑
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	30	2712	21	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	32	2855	22	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flar (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)			730			290
pX, platoon unblocked	0.33	0.33			0.33	
vC, conflicting volume	2855	1427			2877	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	4251	492			4309	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	84			100	
cM capacity (veh/h)	1	198			12	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	32	1427	1427	22	0	0
Volume Left	0	0	0	0	0	0
Volume Right	32	0	0	22	0	0
cSH	198	1700	1700	1700	1700	1700
Volume to Capacity	0.16	0.84	0.84	0.01	0.00	0.00
Queue Length 95th (ft)	14	0	0	0	0	0
Control Delay (s)	26.5	0.0	0.0	0.0	0.0	0.0
Lane LOS	D					
Approach Delay (s)	26.5	0.0			0.0	
Approach LOS	D					

Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			85.0%		ICU Level of Service	E
Analysis Period (min)			15			

06-358 Long Grove, IL
 15. Aptakis Road & Full Access

3/6/2007



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	1654	10	23	395	8	18
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1741	11	24	416	8	19
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLT		
Median storage veh				1		
Upstream signal (ft)	1198					
pX, platoon unblocked						
vC, conflicting volume			1752	2205	1741	
vC1, stage 1 conf vol				1741		
vC2, stage 2 conf vol				464		
vCu, unblocked vol			1752	2205	1741	
tC, single (s)			4.1	6.4	6.2	
tC, 2 stage (s)				5.4		
tF (s)			2.2	3.5	3.3	
p0 queue free %			93	93	82	
cM capacity (veh/h)			357	125	108	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2
Volume Total	1741	11	24	416	8	19
Volume Left	0	0	24	0	8	0
Volume Right	0	11	0	0	0	19
cSH	1700	1700	357	1700	125	108
Volume to Capacity	1.02	0.01	0.07	0.24	0.07	0.18
Queue Length 95th (ft)	0	0	5	0	5	15
Control Delay (s)	0.0	0.0	15.8	0.0	36.0	45.5
Lane LOS			C		E	E
Approach Delay (s)	0.0		0.9		42.5	
Approach LOS					E	

Intersection Summary

Average Delay	0.7		
Intersection Capacity Utilization	97.1%	ICU Level of Service	F
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Storage Length (ft)	145		145	0		0	200		200	200		200
Storage Lanes	1		0	1		1	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	1.00
Flt Protected	0.950			0.950			0.950			0.950		
Satd Flow (prot)	1770	1628	0	1770	1961	1583	1641	4945	0	1770	3455	1468
Flt Permitted	0.619			0.519			0.057			0.057		
Satd Flow (perm)	1153	1628	0	967	1961	1583	98	4945	0	106	3455	1468
Right Turn on Red			No			No			No			No
Satd Flow (RTOR)												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1567			428			1029			730	
Travel Time (s)		35.6			9.7			15.6			11.1	
Volume (vph)	81	19	102	252	32	41	309	2083	100	161	2402	286
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	10%	10%	2%	2%	10%	10%
Adj. Flow (vph)	85	20	107	265	34	43	325	2193	105	169	2528	301
Lane Group Flow (vph)	85	127	0	265	34	43	325	2293	0	169	2528	301
Turn Type	pm+pt			pm+pt		pm+ov	pm+pt			pm+pt		Perm
Protected Phases	7	4		3	3	1	5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Detector Phases	7	4		3	8	1	5	2		1	6	6
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	21.0	22.4		8.0	20.0	8.0	8.0	22.0		8.0	22.5	22.5
Total Split (s)	21.0	23.0	0.0	18.0	20.0	25.0	24.0	94.0	0.0	25.0	95.0	95.0
Total Split (%)	13.1%	14.4%	0.0%	11.3%	12.5%	15.6%	15.0%	58.8%	0.0%	15.6%	59.4%	59.4%
Maximum Green (s)	18.0	17.0		15.0	16.0	22.0	21.0	89.0		22.0	89.0	89.0
Yellow Time (s)	3.0	4.5		3.0	3.5	3.0	3.0	4.5		3.0	4.5	4.5
All-Red Time (s)	0.0	1.5		0.0	0.5	0.0	0.0	1.5		0.0	1.5	1.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)	5.0	5.0			5.0			5.0			5.0	5.0
Flash Dont Walk (s)	11.0	11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)	0	0			0			0			0	0
Act Effct Green (s)	30.4	17.4		30.3	17.6	37.5	91.6	91.6		91.0	91.0	91.0
Actuated g/C Ratio	0.19	0.11		0.19	0.11	0.23	0.57	0.57		0.57	0.57	0.57
v/c Ratio	0.30	0.72		1.04	0.16	0.12	1.23	0.81		0.61	1.29	0.36
Control Delay	53.7	91.1		126.0	64.4	33.8	172.9	30.6		63.9	164.1	20.3
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	21.6	0.0
Total Delay	53.7	91.1		126.0	64.4	33.8	172.9	30.6		63.9	185.7	20.3

06-358 Long Grove, IL
 6. Robert Parker Coffin Road & IL 83

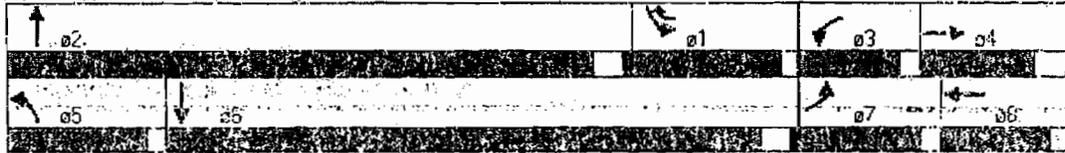
8/6/2007

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SER
LOS	D	F		F	E	C	F	C		E	F	C
Approach Delay		76.1			108.3			48.2			162.3	
Approach LOS		E			F			D			F	

Intersection Summary

Area Type: Other
 Cycle Length: 160
 Actuated Cycle Length: 160
 Offset: 140 (88%), Referenced to phase 2 NBTL and 6 SBT, Start of 1st Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.29
 Intersection Signal Delay: 107.9
 Intersection Capacity Utilization: 114.8%
 Analysis Period (min): 15
 Intersection LOS: F
 ICU Level of Service: H

Splits and Phases 6 Robert Parker Coffin Road & IL 83



06-358 Long Grove, IL
2. Aptakisisc Road & IL 83

8/1/2007

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↖	↖	↕↕	↖	↖↖	↕↕
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	2000
Storage Length (ft)	240	0		370	240	
Storage Lanes	2	1		1	2	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)	15	9		9	15	
Lane Util Factor	0.97	1.00	0.95	1.00	0.97	0.95
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3335	1538	3455	1468	3273	3551
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3335	1538	3455	1468	3273	3551
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45		45			45
Link Distance (ft)	438		290			449
Travel Time (s)	6.6		4.4			6.8
Volume (vph)	922	801	2039	210	240	1927
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	10%	10%	7%	7%
Adj. Flow (vph)	971	843	2146	221	253	2028
Lane Group Flow (vph)	971	843	2146	221	253	2028
Turn Type		pm+ov		pm+ov	Prot	
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Detector Phases	8	1	2	8	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	9.0	22.0	22.0	9.0	22.0
Total Split (s)	44.8	19.2	96.0	44.8	19.2	115.2
Total Split (%)	28.0%	12.0%	60.0%	28.0%	12.0%	72.0%
Maximum Green (s)	38.8	14.2	90.0	38.8	14.2	109.2
Yellow Time (s)	4.5	4.0	4.5	4.5	4.0	4.5
All-Red Time (s)	1.5	1.0	1.5	1.5	1.0	1.5
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	None	None	C-Max
Walk Time (s)	5.0		5.0	5.0		5.0
Flash Dont Walk (s)	11.0		11.0	11.0		11.0
Pedestrian Calls (#/hr)	0		0	0		0
Act Effct Green (s)	40.8	60.0	92.0	136.8	15.2	111.2
Actuated g/C Ratio	0.26	0.38	0.58	0.86	0.10	0.70
v/c Ratio	1.14	1.46	1.08	0.18	0.81	0.82
Control Delay	130.0	253.3	65.7	0.8	91.1	21.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	130.0	253.3	65.7	0.8	91.1	21.0

Year 2013 Total Scenario 3 Traffic - Weekday PM Peak Hour
Kenig, Lindgren, C'Hara, Aboona, Inc

Synchro 6 Report

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
LOS	F	F	E	A	F	C
Approach Delay	187.3		59.7			28.8
Approach LOS	F		E			C

Intersection Summary

Area Type: Other
 Cycle Length: 160
 Actuated Cycle Length: 160
 Offset: 140.8 (89%), Referenced to phase 2 NBT and 6 SBT, Start of 1st Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.46
 Intersection Signal Delay: 34.6
 Intersection Capacity Utilization: 109.8%
 Analysis Period (min): 15
 Intersection LOS: F
 ICU Level of Service: H

Splits and Phases 2 Aptakisisc Road & IL 83



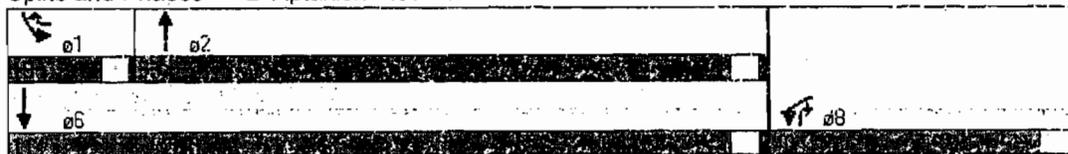
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↖	↗↗	↑↑	↗	↖↖	↑↑
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	2000
Storage Length (ft)	240	0		370	240	
Storage Lanes	2	2		1	2	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	0.97	0.88	0.95	1.00	0.97	0.95
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3335	2707	3455	1468	3273	3551
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3335	2707	3455	1468	3273	3551
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45		45			45
Link Distance (ft)	1098		290			449
Travel Time (s)	16.6		4.4			6.8
Volume (vph)	922	801	2039	210	240	1927
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	10%	10%	7%	7%
Adj. Flow (vph)	971	843	2146	221	253	2028
Lane Group Flow (vph)	971	843	2146	221	253	2028
Turn Type		pm+ov		pm+cv	Prot	
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Detector Phases	8	1	2	8	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	9.0	22.0	22.0	9.0	22.0
Total Split (s)	46.0	19.0	95.0	46.0	19.0	114.0
Total Split (%)	28.8%	11.9%	59.4%	28.8%	11.9%	71.3%
Maximum Green (s)	40.0	14.0	89.0	40.0	14.0	108.0
Yellow Time (s)	4.5	4.0	4.5	4.5	4.0	4.5
All-Red Time (s)	1.5	1.0	1.5	1.5	1.0	1.5
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	None	None	C-Max
Walk Time (s)	5.0		5.0	5.0		5.0
Flash Dont Walk (s)	11.0		11.0	11.0		11.0
Pedestrian Calls (#/hr)	0		0	0		0
Act Effct Green (s)	42.0	61.0	91.0	137.0	15.0	110.0
Actuated g/C Ratio	0.26	0.38	0.57	0.86	0.09	0.63
v/c Ratio	1.11	0.82	1.09	0.18	0.82	0.83
Control Delay	118.1	52.2	63.0	0.7	92.5	22.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	118.1	52.2	63.0	0.7	92.5	22.2

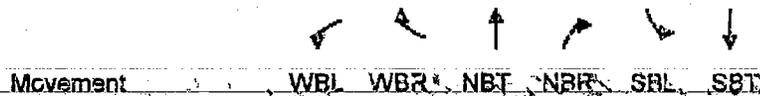
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
LOS	F	D	E	A	F	C
Approach Delay	87.5		57.1			30.0
Approach LOS	F		E			C

Intersection Summary

Area Type: Other
 Cycle Length: 160
 Actuated Cycle Length: 160
 Offset: 121 (76%), Referenced to phase 2 NBT and 6 SBT, Start of 1st Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.11
 Intersection Signal Delay: 56.1
 Intersection Capacity Utilization: 96.7%
 Analysis Period (min): 15
 Intersection LOS: E
 ICU Level of Service: F

Splits and Phases 2 Aptakisic Road & IL 83





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	96	2153	52	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95

Hourly flow rate (vph)	0	101	2266	55	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh						
Upstream signal (ft)			730			290
pX, platoon unblocked	0.44	0.44			0.44	
vC, conflicting volume	2266	1133			2321	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2599	52			2722	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	77			100	
cM capacity (veh/h)	9	447			65	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SE 2
Volume Total	101	1132	1133	55	0	0
Volume Left	0	0	0	0	0	0
Volume Right	101	0	0	55	0	0
cSH	447	1700	1700	1700	1700	1700
Volume to Capacity	0.23	0.67	0.67	0.03	0.00	0.00
Queue Length 95th (ft)	21	0	0	0	0	0
Control Delay (s)	15.4	0.0	0.0	0.0	0.0	0.0
Lane LOS	C					
Approach Delay (s)	15.4	0.0			0.0	
Approach LOS	C					

Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			72.1%		ICU Level of Service	C
Analysis Period (min)			15			

06-358 Long Grove, IL
 15. Aptakisic Road & Full Access

8/5/2007

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	374	76	57	1708	15	67
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	394	80	60	1798	16	71

Pedestrians

Lane Width (ft)

Walking Speed (ft/s)

Percent Blockage

Right turn flare (veh)

Median type

TWLTL

Median storage veh

1

Upstream signal (ft) 1098

pX, platoon unblocked

vC, conflicting volume

474

2312

394

vC1, stage 1 conf vol

394

vC2, stage 2 conf vol

1918

vCu, unblocked vol

474

2312

394

tC, single (s)

4.1

6.4

6.2

tC, 2 stage (s)

5.4

tF (s)

2.2

3.5

3.3

p0 queue free %

94

84

89

cM capacity (veh/h)

1088

101

655

Direction, Lane #

EB 1

EB 2

WB 1

WB 2

NB 1

NB 2

Volume Total

394

80

60

1798

16

71

Volume Left

0

0

60

0

16

0

Volume Right

0

80

0

0

0

71

cSH

1700

1700

1088

1700

101

655

Volume to Capacity

0.23

0.05

0.06

1.06

0.16

0.11

Queue Length 95th (ft)

0

0

4

0

13

9

Control Delay (s)

0.0

0.0

8.5

0.0

47.2

11.2

Lane LOS

A

E

B

Approach Delay (s)

0.0

0.3

17.8

Approach LOS

C

Intersection Summary

Average Delay

0.8

Intersection Capacity Utilization

99.9%

ICU Level of Service

F

Analysis Period (min)

15

Lane Group	EBL	EFT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↙	↕	↕	↖	↗	↘	↙	↕	↕
Ideal Flow (vphpl)	1900	1900	1900	1900	2000	1900	1900	2000	1900	1900	2000	1900
Storage Length (ft)	145		145	0		0	200		200	200		200
Storage Lanes	1		0	1		1	1		0	1		1
Total Lost Time (s)	40	40	40	40	40	40	40	40	40	40	40	40
Leading Detector (ft)	50	50		50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	1.00
Flt		0.924				0.850		0.991				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1721	0	1770	1961	1583	1641	4940	0	1770	3455	1468
Flt Permitted	0.589			0.671			0.081			0.075		
Satd. Flow (perm)	1097	1721	0	1250	1961	1583	140	4940	0	140	3455	1468
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		1567			386			937			720	
Travel Time (s)		33.6			8.8			14.2			10.9	
Volume (vph)	68	63	65	244	31	43	147	1754	110	207	1546	100
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	10%	10%	2%	2%	10%	10%
Adj. Flow (vph)	72	66	68	257	33	45	155	1848	116	216	1627	105
Lane Group Flow (vphi)	72	134	0	257	33	45	155	1962	0	213	1627	105
Turn Type	pm+pt			pm+pt		pm+ov	pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Detector Phases	7	4		3	8	1	5	2		1	6	6
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	22.5	22.5		8.0	20.0	8.0	8.0	22.0		8.0	22.5	22.5
Total Split (s)	22.5	25.5	0.0	17.0	20.0	14.0	10.0	53.5	0.0	14.0	57.5	57.5
Total Split (%)	20.5%	23.2%	0.0%	15.5%	18.2%	12.7%	9.1%	48.6%	0.0%	12.7%	52.3%	52.3%
Maximum Green (s)	19.5	19.5		14.0	16.0	11.0	7.0	47.5		11.0	51.5	51.5
Yellow Time (s)	3.0	4.5		3.0	3.5	3.0	3.0	4.5		3.0	4.5	4.5
All-Red Time (s)	0.0	1.5		0.0	0.5	0.0	0.0	1.5		0.0	1.5	1.5
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)	5.0	5.0			5.0			5.0			5.0	5.0
Flash Don't Walk (s)	11.0	11.0			11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)	0	0			0			0			0	0
Act. Effct Green (s)	25.3	15.6		28.6	19.7	34.9	63.2	52.5		68.2	50.0	55.0
Actuated g/C Ratio	0.23	0.14		0.26	0.18	0.32	0.57	0.48		0.62	0.50	0.50
v/c Ratio	0.22	0.55		0.67	0.09	0.09	0.68	0.32		0.77	0.94	0.14
Control Delay	29.1	51.8		43.2	37.6	26.2	38.6	29.7		43.1	38.8	16.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	29.1	51.8		43.2	37.6	26.2	38.6	29.7		43.1	38.8	16.1

06-358 Long Grove, IL

6 Robert Parker Coffin Road & IL 83

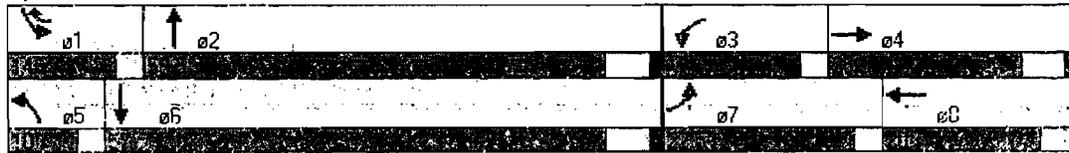
8/6/2007

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	D		D	D	C	D	C		D	D	B
Approach Delay		43.8			40.4			30.3			38.1	
Approach LOS		D			D			C			D	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 100 (91%), Referenced to phase 2 NBTL and 6 SBTL, Start of 1st Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.94
 Intersection Signal Delay: 34.9
 Intersection Capacity Utilization: 82.9%
 Analysis Period (min): 15
 Intersection LOS: C
 ICU Level of Service: E

Splits and Phases 6 Robert Parker Coffin Road & IL 83

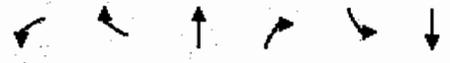


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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↑↑	↑↑	↑↑	↑	↑↑	↑↑
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	2000
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)	15	9		9	15	
Lane Util Factor	0.97	0.88	0.95	1.00	0.97	0.95
Frnt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3335	2707	3455	1468	3273	3551
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3335	2707	3455	1468	3273	3551
Right Turn on Red		No		No		
Satd Flow (RTOR)						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45		45			45
Link Distance (ft)	410		300			645
Travel Time (s)	6.2		4.5			9.8
Volume (vph)	301	203	1667	245	285	1552
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	5%	10%	10%	7%	7%
Adj Flow (vph)	317	219	1755	258	300	1634
Lane Group Flow (vph)	317	219	1755	258	300	1634
Turn Type		pm+ov		pm+ov	Prot	
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Detector Phases	8	1	2	8	1	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	22.0	9.0	22.0	22.0	9.0	22.0
Total Split (s)	33.0	24.2	52.8	33.0	24.2	77.0
Total Split (%)	30.0%	22.0%	48.0%	30.0%	22.0%	70.0%
Maximum Green (s)	27.0	19.2	46.8	27.0	19.2	71.0
Yellow Time (s)	4.5	4.0	4.5	4.5	4.0	4.5
All-Red Time (s)	1.5	1.0	1.5	1.5	1.0	1.5
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	None	None	C-Max
Walk Time (s)	5.0		5.0	5.0		5.0
Flash Don't Walk (s)	11.0		11.0	11.0		11.0
Pedestrian Calls (#/hr)	0		0	0		0
Act-Effct Green (s)	16.5	36.8	65.2	35.7	16.3	35.5
Actuated g/C Ratio	0.15	0.33	0.59	0.78	0.15	0.78
v/c Ratio	0.63	0.24	0.86	0.23	0.62	0.59
Control Delay	49.5	26.0	10.3	0.6	49.2	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.5	26.0	10.3	0.6	49.2	6.5
LOS	D	C	B	A	D	A
Approach Delay	39.9		9.0			13.1

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 2: Aptakisic Road & IL 83

8/1/2007



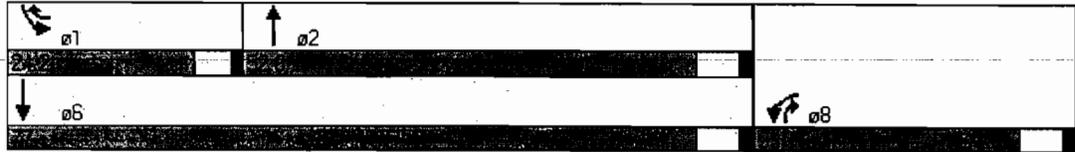
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Approach LOS	D		A		B	

Intersection Summary

Area Type Other
 Cycle Length 110
 Actuated Cycle Length 110
 Offset 0 (0%), Referenced to phase 2 NBT and 6 SBT, Start of Green
 Natural Cycle 90
 Control Type Actuated-Coordinated
 Maximum v/c Ratio 0.86
 Intersection Signal Delay 14.5
 Intersection Capacity Utilization 70.5%
 Analysis Period (min) 15

Intersection LOS B
 ICU Level of Service C

Splits and Phases 2 Aptakisic Road & IL 83



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↑↑	↑↑	↑↑	↑	↑↑	↑↑
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	2000
Total Lost Time (s)	4 0	4 0	4 0	4 0	4 0	4 0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)	15	9		9	15	
Lane Util Factor	0 97	0 88	0 95	1 00	0 97	0 95
Frt		0 850		0 850		
Flt Protected	0 950				0 950	
Satd. Flow (prot)	3335	2707	3455	1468	3273	3551
Flt Permitted	0 950				0 950	
Satd- Flow (perm)	3335	2707	3455	1468	3273	3551
Right Turn on Red		No		No		
Satd Flow (RTOR)						
Headway Factor	1 00	1 00	1 00	1 00	1 00	1 00
Link Speed (mph)	45		45		45	
Link Distance (ft)	910		300		645	
Travel Time (s)	13 8		4 5		9 8	
Volume (vph)	301	208	1667	245	285	1552
Peak Hour Factor	0 95	0 95	0 95	0 95	0 95	0 95
Heavy Vehicles (%)	5%	5%	10%	10%	7%	7%
Adj Flow (vph)	317	219	1755	258	300	1634
Lane Group Flow (vph)	317	219	1755	258	300	1634
Turn Type		pm+ov		pm+ov	Prot	
Protected Phases	8	1	2	8	1	6
Permitted Phases		8		2		
Detector Phases	8	1	2	8	1	6
Minimum Initial (s)	4.0	4.0	4 0	4 0	4.0	4 0
Minimum Split (s)	22 0	9 0	22 0	22 0	9 0	22 0
Total Split (s)	19 0	18 0	73 0	19 0	18 0	91 0
Total Split (%)	17 3%	16 4%	66 4%	17 3%	16 4%	82 7%
Maximum Green (s)	13 0	13 0	67 0	13 0	13 0	85 0
Yellow Time (s)	4 5	4 0	4 5	4 5	4 0	4 5
All-Red Time (s)	1 5	1 0	1 5	1 5	1 0	1 5
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3 0	3 0	3 0	3 0	3 0	3 0
Recall Mode	None	None	C-Max	None	None	C-Max
Walk Time (s)	5 0		5 0	5 0		5 0
Flash Dont Walk (s)	11 0		11 0	11 0		11 0
Pedestrian Calls (#/hr)	0		0	0		0
Act Effct Green (s)	14 7	32 3	69 7	88 4	13 6	87 3
Actuated g/C Ratio	0 13	0 29	0 63	0 80	0 12	0 79
v/c Ratio	0 71	0 28	0 80	0 22	0 74	0 58
Control Delay	55 3	30 8	7 5	0 5	58 2	5 3
Queue Delay	0 0	0 0	0 0	0 0	0 0	0 0
Total Delay	55 3	30 8	7 5	0 5	58 2	5 3
LOS	E	C	A	A	E	A
Approach Delay	45 3		6 6			13 5



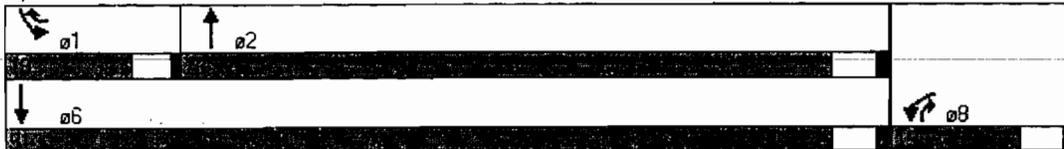
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Approach LOS	D		A		B	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 106 (96%), Referenced to phase 2 NBT and 6 SBT. Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay: 14.2
 Intersection Capacity Utilization: 70.5%
 Analysis Period (min): 15

Intersection LOS: B
 ICU Level of Service: C

Splits and Phases 2 Aptakasic Road & IL 83





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑	↑↑↑			↑↑
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	101	1811	54	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	106	1906	57	0	0

Pedestrians

Lane Width (ft)

Walking Speed (ft/s)

Percent Blockage

Right turn flare (veh)

Median type: None

Median storage (veh)

Upstream signal (ft): 720 (NBT), 300 (SBT)

pX, platoon unblocked: 0.65 (WBL), 0.65 (WBR), 0.65 (SBL)

vC, conflicting volume: 1935 (WBL), 664 (WBR), 1963 (SBL)

vC1, stage 1 conf vol

vC2, stage 2 conf vol

vCu, unblocked vol: 1368 (WBL), 0 (WBR), 1412 (SBL)

tC, single (s): 6.8 (WBL), 6.9 (WBR), 4.1 (SBL)

tC, 2 stage (s)

tF (s): 3.5 (WBL), 3.3 (WBR), 2.2 (SBL)

p0 queue free %: 100 (WBL), 85 (WBR), 100 (SBL)

cM capacity (veh/h): 90 (WBL), 708 (WBR), 313 (SBL)

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	106	763	763	438	0	0
Volume Left	0	0	0	0	0	0
Volume Right	106	0	0	57	0	0
cSH	708	1700	1700	1700	1700	1700
Volume to Capacity	0.15	0.45	0.45	0.26	0.00	0.00
Queue Length 95th (ft)	13	0	0	0	0	0
Control Delay (s)	11.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B					
Approach Delay (s)	11.0	0.0			0.0	
Approach LOS	B					

Intersection Summary

Average Delay: 0.6

Intersection Capacity Utilization: 47.3%

ICU Level of Service: A

Analysis Period (min): 15



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	448	82	62	493	16	66
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	472	86	65	519	17	69

Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLT		
Median storage veh					1	
Upstream signal (ft)	910					
pX, platoon unblocked						
vC, conflicting volume			558		1121	472
vC1, stage 1 conf vol					472	
vC2, stage 2 conf vol					649	
vCu, unblocked vol			558		1121	472
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			94		95	88
cM capacity (veh/h)			1013		345	592

Direction, Lane #	EB-1	EB-2	WB-1	WB-2	NB-1	NB-2
Volume Total	472	86	65	519	17	69
Volume Left	0	0	65	0	17	0
Volume Right	0	86	0	0	0	69
cSH	1700	1700	1013	1700	345	592
Volume to Capacity	0.28	0.05	0.06	0.31	0.05	0.12
Queue Length 95th (ft)	0	0	5	0	4	10
Control Delay (s)	0.0	0.0	8.8	0.0	16.0	11.9
Lane LOS			A		C	B
Approach Delay (s)	0.0		1.0		12.7	
Approach LOS					B	

Intersection Summary

Average Delay		1.4				
Intersection Capacity Utilization		40.3%		ICU Level of Service		A
Analysis Period (min)		15				