Final Traffic Impact Study

Main Street Parking Garage

Village of Lake Placid, New York

CME Project No. 05-064d

Prepared for:

Village of Lake Placid
2693 Main Street
Lake Placid, NY 12946

Prepared by:

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CHAPTER I
INTRODUCTION

This report summarizes the results of a Traffic Impact Study for the proposed 325-space parking garage located on Main Street in the Village of Lake Placid, New York. The project location is shown on Figure 1.1.

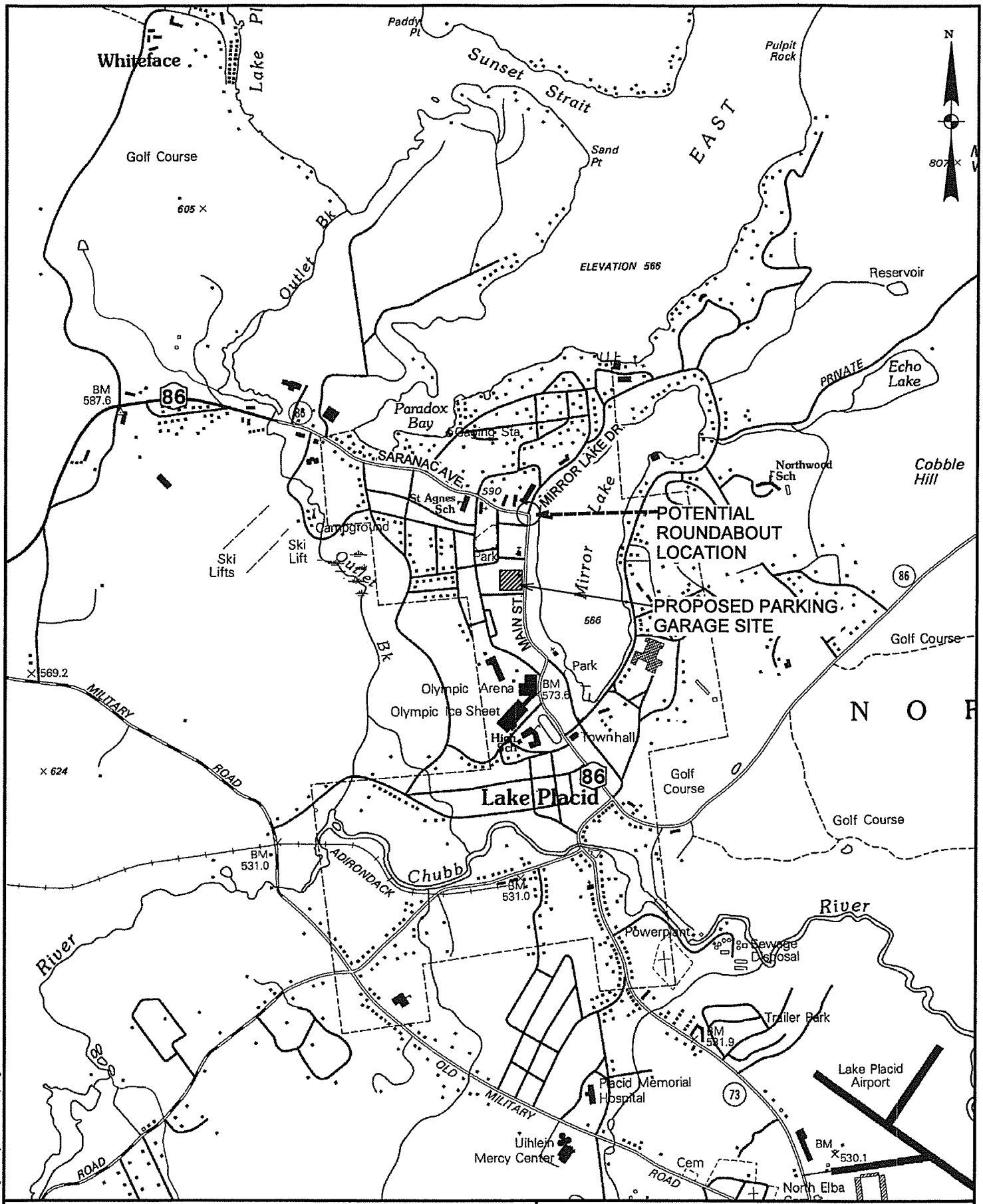
A. Planned Project

The proposed project consists of the construction of a 325-space parking garage on the west side of Main Street (New York State Route 86). The site is currently occupied by a 118-space, two-tier surface parking lot. Access to the parking garage is proposed via a single driveway on Main Street. A conceptual site plan is included under Appendix A. It is anticipated that full build-out of the project will be completed by 2007. In addition to the traffic analysis at the proposed parking garage driveway, the feasibility of a roundabout at the Main Street/Saranac Avenue/Mirror Lake Drive intersection (north of the parking garage site) was investigated.

B. Study Area and Methodology

The study area for this analysis includes the section of Main Street adjacent to the existing 118-space parking lot and the intersection of Main Street/Saranac Avenue/Mirror Lake Drive.

The potential traffic impact of the proposed project was determined by documenting the existing traffic conditions in the area, projecting future traffic volumes, including the peak hour trip generation of the proposed parking garage, and determining the operating condition of the Main Street/parking garage driveway after completion of the project. The roundabout feasibility analysis included an examination of the geometric constraints and the traffic volumes at the Main Street/Saranac Avenue/Mirror Lake Drive intersection.



PROJECT LOCATION MAP

MAIN STREET PARKING GARAGE
VILLAGE OF LAKE PLACID, NEW YORK

CREIGHTON MANNING ENGINEERING, LLP
17 COMPUTER DRIVE WEST, ALBANY, NY 12205

PROJECT: 05-064D	DATE: 6/05	FIGURE: 1.1

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CHAPTER II

EXISTING CONDITIONS

A. Roadways Serving the Site

- Main Street – Main Street is designated as New York State (NYS) Route 86. The road has a north-south orientation and consists of a single travel lane in each direction. Main Street is the commercial center of Lake Placid, but also carries through traffic. On-street parking is generally permitted on both sides of Main Street. There are numerous cross-walks on Main Street within the project area and sidewalks on both sides of the street.

- Saranac Avenue – Saranac Avenue is also designated as NYS Route 86. This road has an east-west orientation and consists of a single travel lane in each direction. There are sidewalks along both sides of Saranac Avenue near the Main Street/Saranac Avenue/Mirror Lake Drive intersection.

- Mirror Lake Drive – Mirror Lake Drive is a local road providing access to hotels and residential areas.

B. Study Area Intersections

Intersection traffic control and geometry in the study area are as follows:

- Main Street/Saranac Avenue/Mirror Lake Drive – This is a three-leg intersection with a stop sign on the southbound Mirror Lake Drive approach. The northbound Main Street approach (NYS Route 86) and the eastbound Saranac Avenue approach (NYS Route 86) are free movements. The eastbound Saranac Avenue approach has a -8.3% grade. The northbound Main Street approach and the southbound Mirror Lake Drive approach each consist of a single lane for shared turning movements. Separate left- and right-turn lanes are delineated on the eastbound Saranac Avenue approach. There are crosswalks on the northbound and southbound approaches to this intersection.

- Existing parking lot driveways – The existing 118-space parking lot has two curb cuts for the lower level and one curb cut for the ramp to the upper level. The ramp to the upper level is located along the northern edge of the lower level lot. There is a crosswalk at the northern end of the lower level lot. On-street parking is prohibited along the entire length of the parking lot on the west side of Main Street; however, on-street parking is allowed in metered spaces along a portion of the east side of Main Street directly across from the parking lot. At this location, Main Street consists of an 11-foot northbound travel lane and a 12-foot southbound travel lane. There is a 1.5-foot paved shoulder and a 7.5-foot brick sidewalk on the west side of Main Street. On the east side of Main Street, there is an 8-foot parking lane and an 11-foot

sidewalk. There is granite curbing along both sides of the street.

C. Background Conditions

Turning movement counts were conducted by Creighton Manning Engineering (CME) at the Main Street/Saranac Avenue/Mirror Lake Drive intersection and at the existing 118-space parking lot on Tuesday, May 17, 2005, from 12:00 PM to 1:00 PM. These turning movement counts were used only to estimate the travel patterns of vehicles in the study area since they do not represent the peak traffic demand expected later in the summer and fall. CME received hourly traffic volume count data from the New York State Department of Transportation (NYSDOT) for Route 86 (Main Street). The most recent data available from NYSDOT for this location are from October 12-18, 2004. Based on information provided by the Lake Placid/Essex County Convention and Visitors Bureau, this time period in October is generally a peak time for tourists to visit the Lake Placid area to view fall foliage and is comparable to summer visitation. Therefore, the peak hour traffic volumes from the October 2004 NYSDOT data were used as the background condition for future traffic forecasts. As shown on Figure 2.1, the NYSDOT data indicate that the peak hour occurs on Friday from 4:00 p.m. to 5:00 p.m. with a two-way volume of 1011 vehicles per hour (469 vehicles northbound and 542 vehicles southbound). Using this data would also provide a reasonable estimate of conditions for a peak Saturday. As shown on Figure 2.1, Saturday peak volume occurs in the middle of the day and the magnitude is similar to the Friday peak hour. The raw turning movement count and hourly traffic volume data are included in Appendix B.

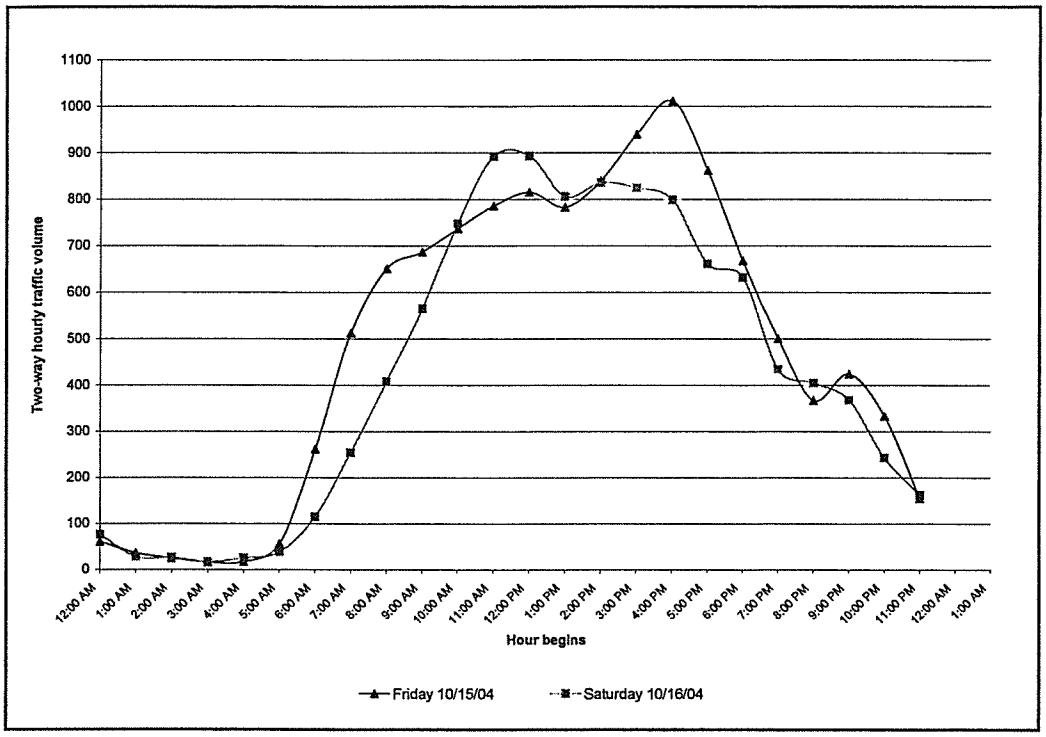


Figure 2.1 – Hourly traffic volume data for NYS Route 86 (Main Street)

CHAPTER III
TRAFFIC FORECASTS

To evaluate the impact of the proposed parking garage, traffic projections were prepared for the expected year of completion. For purposes of this analysis, it was assumed that the proposed project would be fully developed by the year 2007.

A. 2007 No-Build Traffic Volumes

The 2007 No-Build traffic volumes are based on an analysis of existing traffic growth trends and other local developments. These volumes represent traffic that would exist without the construction of the proposed parking garage. Based on data published by NYSDOT in the *2003 Traffic Volume Report*, traffic volumes on Route 86 in the vicinity of the project site have been decreasing over the past several years. However, a conservative positive growth rate of 2 percent per year was applied to the 2004 background traffic volumes. This is a reasonable assumption because there are a number of new lodging projects underway in the area. No other developments were included in the No-Build traffic volumes. The resulting 2007 No-Build traffic volumes are 498 vehicles per hour northbound and 575 vehicles per hour southbound in the peak hour on Main Street adjacent to the project site.

B. Trip Generation

Trip generation determines the quantity of traffic expected to travel to/from the site. Trip generation for the new parking garage is based on data from a July 1997 license plate survey at the existing surface parking lots and on-street parking spaces in the Greater Lake Placid area. For this survey, surveyors noted the license plate number of parked vehicles and the time at which the observation was made for a sample of the total parking spaces. At the existing 118-space parking lot, 30 parking spaces were surveyed (25 percent sample). This survey found that the parking lots and on-street parking spaces were generally at or near capacity (defined as 90 percent or more of the spaces occupied) by noon and remained full throughout the afternoon. With

the removal of some on-street parking spaces, there will be even more demand for the parking garage spaces. Based on the survey data, it is assumed that there is latent demand for the proposed parking garage and that it will be fully occupied at peak times. Therefore, a trip generation rate derived from the survey data at the existing parking lot was applied to the proposed parking garage. (See *A Mobility Plan for the Lake Placid Area*, prepared by CME, the LA Group, Konheim & Ketchem, and the Hudson Group, May 1999, for more details on the parking survey.)

The license plate survey data show that 17 vehicles entered the parking lot and 20 vehicles exited the parking lot during the afternoon peak period from 2:00 p.m. to 4:30 p.m. for the sampled spaces. From these data, it was estimated that for the entire 118-space lot, 68 vehicles would have entered and 80 vehicles would have exited during the 2.5 hour period of observation. A peak hour trip generation rate of 0.55 trips per parking space (45 percent entering and 55 percent exiting) was then derived from the license plate survey data and applied to the proposed 325-space parking garage. This trip generation is summarized in Table 3.2.

Table 3.2 – Trip Generation Summary

Land Use	Size	Trip Generation Rate	PM Peak Hour		
			In	Out	Total
Parking Garage	325 spaces	0.55 trips/space (45% enter, 55% exit)	81	98	179

The proposed 325-space parking garage is estimated to generate a total of 179 trips (81 entering and 98 exiting) at the site driveway during the peak hour.

C. Trip Distribution

Trip distribution describes where traffic originates or where traffic is destined. Traffic at the proposed parking garage is expected to be evenly distributed between trips entering from Main Street southbound and trips entering from Main Street northbound. The exiting distribution is expected to be evenly distributed also. An examination of the locations of retail and lodging destinations in the area suggests that traffic will be evenly distributed north and south of the project site; this distribution is

also supported by the NYSDOT data, which show an approximately even split between northbound and southbound traffic on Main Street.

D. Trip Assignment

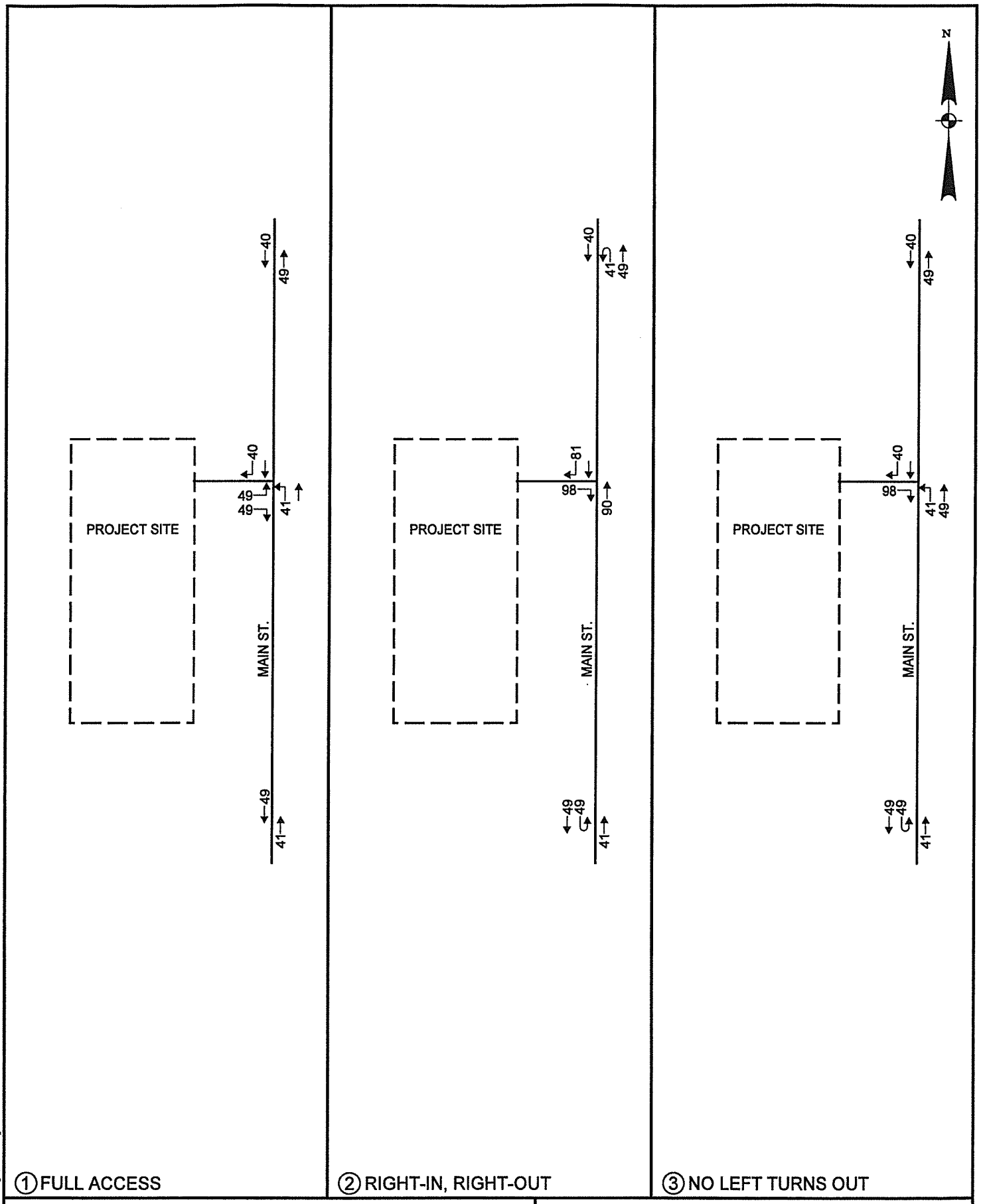
Trip assignment combines the results of the trip generation and trip distribution and determines the specific paths and roadways that will be used between various origin/destination pairs. During the trip assignment, three different access scenarios were considered for the parking garage. These access scenarios are:

- Full access (left turns allowed entering and exiting)
- Right-in, right-out only (all left turns prohibited)
- No left-turns exiting the site (left turns into the site are allowed)

The resulting trip assignment for each of the proposed access scenarios is shown on Figure 3.1.

E. 2007 Build Traffic Volumes

The results of the site generated traffic assignment were added to the 2007 No-Build traffic volumes to develop the 2007 Build traffic volumes at the site driveway for each of the access scenarios. The Build traffic volumes are shown on Figure 3.2.



① FULL ACCESS

② RIGHT-IN, RIGHT-OUT

③ NO LEFT TURNS OUT

TRIP ASSIGNMENT
PM PEAK HOUR

MAIN STREET PARKING GARAGE
VILLAGE OF LAKE PLACID, NEW YORK

CREIGHTON MANNING ENGINEERING, LLP
17 COMPUTER DRIVE WEST, ALBANY, NY 12205

PROJECT: 05-064D | DATE: 6/05 | FIGURE: 3.1

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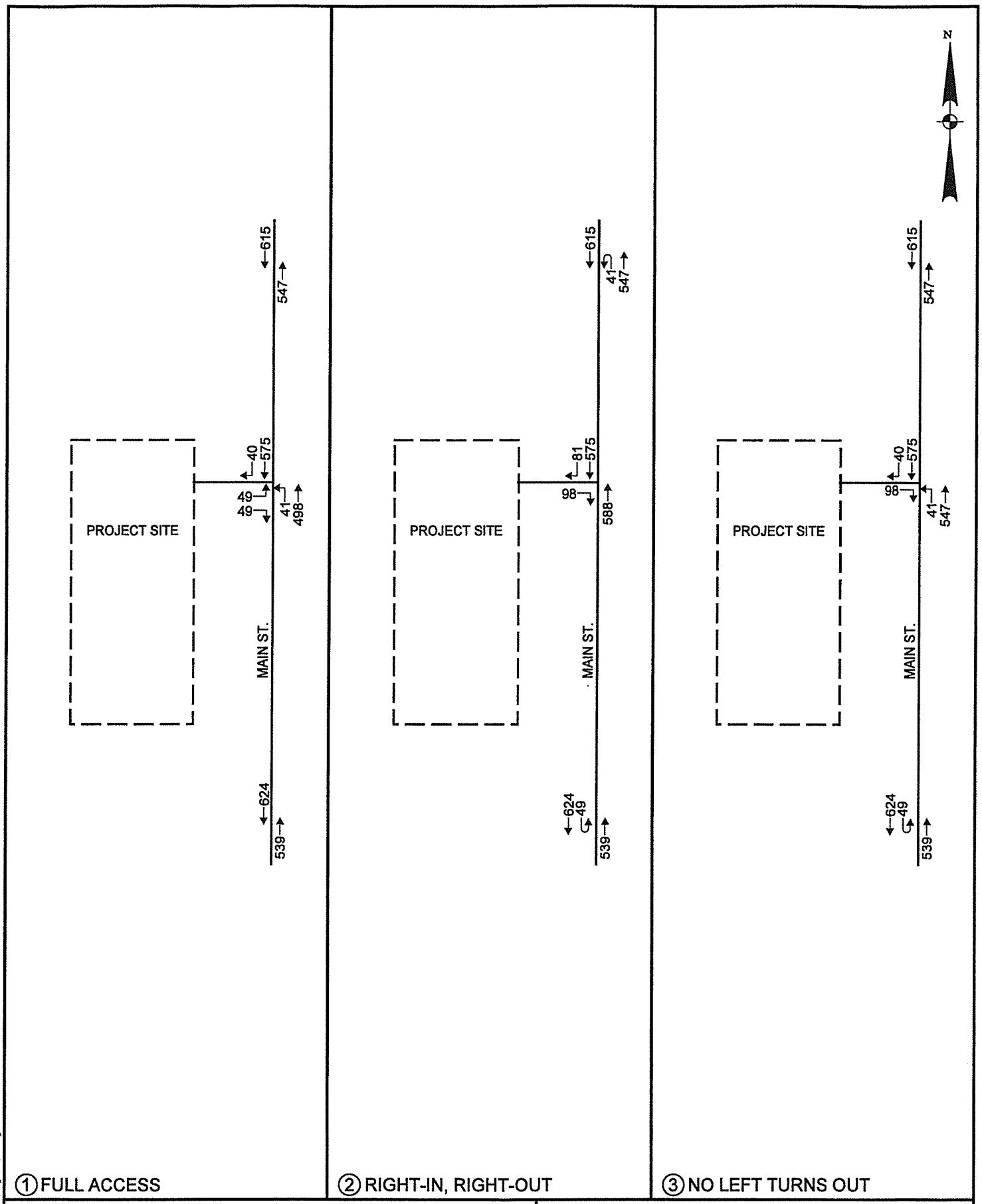

① FULL ACCESS

② RIGHT-IN, RIGHT-OUT

③ NO LEFT TURNS OUT

2007 BUILD TRAFFIC VOLUMES
PM PEAK HOUR

MAIN STREET PARKING GARAGE
VILLAGE OF LAKE PLACID, NEW YORK

CREIGHTON MANNING ENGINEERING, LLP
17 COMPUTER DRIVE WEST, ALBANY, NY 12205

PROJECT: 05-064D | DATE: 6/05 | FIGURE: 3.2

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CHAPTER IV
ANALYSIS

A. Capacity/Level of Service Analysis at Parking Garage Driveway

Intersection Level of Service (LOS) and capacity analysis relate traffic volumes to the physical characteristics of an intersection. Intersection evaluations were made using Synchro software, which automates the procedures contained in the *2000 Highway Capacity Manual* (HCM). Appendix C contains detailed descriptions of level of service criteria for unsignalized intersections and the detailed HCM Intersection Capacity Analysis reports from Synchro. Table 4.1 shows the results of the Level of Service calculations.

Table 4.1 – Level of Service Summary 2007 PM Peak Hour

Intersection Approach		Control	Access Scenario		
			Full access	Right-in, right-out	No left-turns out
Main Street/site driveway		U			
Main Street NB	L		A (1.3)	NA	A (1.3)
Garage access EB	LR		D (28.9)	C (15.2)	B (14.9)

Key: X (Y.Y) = Level of Service (Delay, seconds per vehicle).
U = Unsignalized intersection.
NB, SB, WB, EB = Northbound, Southbound, Westbound, Eastbound intersection approaches.
LTR = Left-turn, through, and/or right-turn movements.
NA = Not Applicable

The following observations are evident from this analysis:

- The northbound left turn movement into the parking garage is expected to operate at a high level of service with minimal delay.
- Under the most restrictive access scenario – the "right-in, right-out" access – the delay for vehicles exiting the garage is slightly greater than the delay under the "no left-turns out" scenario. This is due to a higher volume on Main Street under the "right-in, right-out" scenario because of the number of vehicles forced to make U-turns on Main Street. This illustrates that there is no real level of service benefit realized from the highest level of access restriction.
- The greatest amount of delay will be experienced by vehicles turning left out of the parking garage. The eastbound approach (exiting the garage) will operate at LOS D with less than 30 seconds of delay under the "full access" scenario. With left-turns out of the garage prohibited, this approach will operate at LOS C under the "right-in, right-out" scenario and LOS B under the "no left-turns out" scenario.

It should be noted that 30 seconds of delay is relatively minor in congested commercial areas and may not provide justification for eliminating the "full access" option. The other access scenarios will force drivers to make U-turns after exiting the garage, presumably at other driveways or side-streets off of Main Street, in order to reach their desired destination. These U-turn maneuvers may hinder through traffic flow on Main Street and cause additional delays on the major roadway, whereas allowing left-turns out of the parking garage will concentrate turns at a single location and cause delays only on the minor street approach.

The delay on Main Street is expected to be minimal. The Synchro analysis shows an expected 95th percentile queue of less than one vehicle for the northbound left turn movement, indicating that there will generally be no queuing on this approach. Based on this analysis, the parking garage entrance is not expected to impede traffic flow on Main Street.

B. Sensitivity Analysis

A sensitivity analysis was conducted to determine the impact of an additional level of parking spaces in the proposed parking garage. This additional level would add approximately 100 parking spaces. Using the trip generation rate developed in Chapter 3 of this report, 100 additional spaces would generate an additional 55 peak-hour trips (25 additional vehicles entering and 30 additional vehicles exiting) at the parking garage driveway. Table 4.2 summarizes the results of the level of service analysis with the additional parking spaces.

Table 4.2 – Level of Service Summary
2007 PM Peak Hour (Sensitivity Analysis)

Intersection Approach		Control	Access Scenario		
			Full access	Right-in, right-out	No left-turns out
Main Street/site driveway		U			
Main Street NB	L		A (1.7)	NA	A (1.6)
Garage access EB	LR		E (37.9)	C (16.6)	C (16.0)

Key: X (Y.Y) = Level of Service (Delay, seconds per vehicle).
U = Unsignalized intersection.
NB, SB, WB, EB = Northbound, Southbound, Westbound, Eastbound intersection approaches.
LTR = Left-turn, through, and/or right-turn movements.
NA = Not Applicable

The level of service analysis indicates that the northbound Main Street approach will still operate at LOS A with minimal delays and queuing with the additional trips. Under the "full access" scenario, the eastbound approach (exiting the garage) is expected to operate at LOS E with approximately 38 seconds of average delay. This is an increase in delay of 9 seconds as compared to the previous analysis. Under the "right-in, right-out" and "no left-turns out" scenarios, the eastbound approach is expected to operate at LOS C with less than 17 seconds of average delay, which represents an increase of less than two seconds as compared to the previous analysis.

C. Roundabout Feasibility Analysis

The Federal Highway Administration (FHWA) publication *Roundabouts: An Informational Guide* was consulted to determine the geometric and operational feasibility of a roundabout at the Main Street/Saranac Avenue/Mirror Lake Drive intersection. This guide categorizes roundabouts according to their basic design characteristics, such as the typical inscribed diameter and the typical daily service volume for the roundabout. Table 4.3 summarizes selected FHWA guidelines for mini, urban compact, and urban single-lane roundabouts.

Table 4.3 – Selected Design Characteristics for Roundabouts

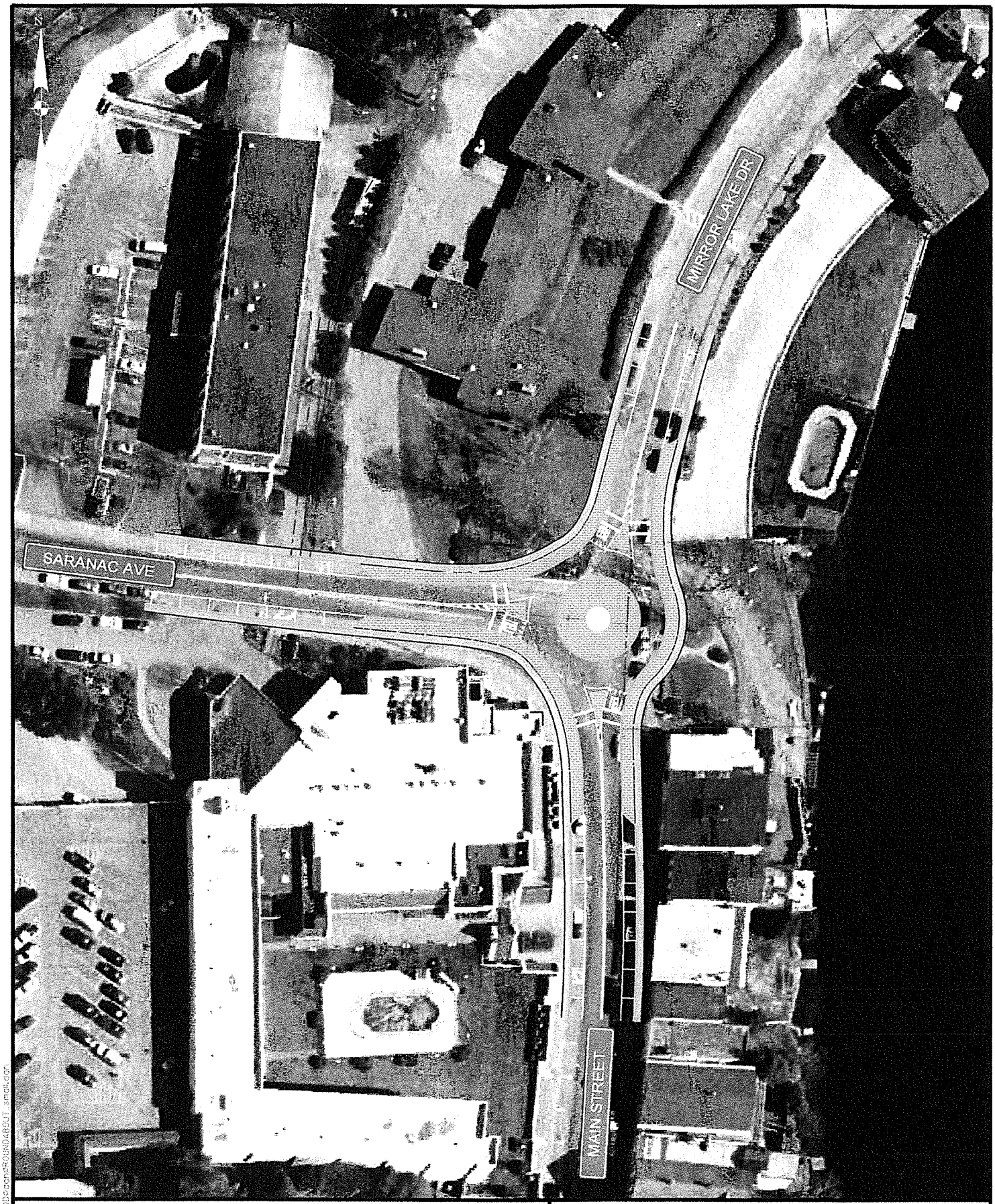
	Mini-roundabout	Urban compact	Urban single-lane
Typical daily service volume on 4-leg roundabout (veh./day)	10,000	15,000	20,000
Typical inscribed circle diameter	13 m to 25 m (45 ft to 80 ft)	25 m to 30 m (80 ft to 100 ft)	30 m to 40 m (100 ft to 130 ft)

Source: *Roundabouts: An Informational Guide,* Federal Highway Administration

The estimated two-way average annual daily traffic (AADT) on Main Street based on the October 2004 NYSDOT data is 10,388 vehicles per day. Assuming 2 percent per year growth, the AADT would be expected to exceed 11,000 vehicles per day in 2007. Based on the information provided by FHWA, an urban compact or urban single-lane roundabout would be able to accommodate the traffic volume at the Main Street/Saranac Avenue/Mirror Lake Drive intersection.

Figure 4.1 shows a concept plan for a roundabout with a 30 meter inscribed

diameter at the Main Street/Saranac Avenue/Mirror Lake Drive intersection. A larger roundabout would encroach on the building in the southwest quadrant of this intersection. The 30-meter diameter roundabout appears geometrically feasible, although it will require some additional right-of-way on the east side of Main Street (this area is currently a small park). The intersection will also require some grading in order to construct a roundabout. FHWA advises that it is not desirable to construct roundabouts at locations where the grade through the intersection is greater than four percent. Also, FHWA notes that it is difficult for drivers to slow to an appropriate speed to enter a roundabout on approaches with grades steeper than -4 percent. The grade on the eastbound Saranac Avenue approach to this intersection is approximately -8 percent and the grades through the intersection vary. These conditions do not necessarily eliminate the possibility of a roundabout but will present challenges in the design and construction of a roundabout at the Main Street/Saranac Avenue/Mirror Lake Drive intersection.



ROUNDABOUT CONCEPT

MAIN STREET PARKING GARAGE
VILLAGE OF LAKE PLACID, NEW YORK

CREIGHTON MANNING ENGINEERING, LLP
17 COMPUTER DRIVE WEST, ALBANY, NY 12205

PROJECT: 05-064d	DATE: 5/27/05	FIGURE: 4.1

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of this Traffic Impact Study completed for the proposed 325-space parking garage on Main Street in the Village of Lake Placid, the following conclusions and recommendations are offered:

1. The proposed project is expected to generate approximately 179 trips at the parking garage access (81 entering and 98 exiting) during the 2007 Build PM peak hour.

2. The left-turn movement into the parking garage from Main Street northbound is expected to operate at a high level of service with minimal delay. No significant queuing is expected on Main Street due to traffic waiting to turn left into the parking garage.

3. The eastbound parking garage exit approach at Main Street is expected to operate at LOS D with less than 30 seconds of delay if left-turns out of the parking garage are allowed. If left-turns from this approach are prohibited, the right-turn movement is expected to operate at LOS C or better with less than 16 seconds of delay.

4. Prohibiting left turns at the garage access will likely force drivers to make U-turns along the Main Street corridor, which may negatively impact through traffic flow on Main Street.

5. An additional parking level (100 spaces) will add 55 peak hour trips at the parking garage access on Main Street. The left-turn movement into the garage will continue to operate at LOS A with minimal delays on Main Street. The delay experienced by vehicles exiting the garage will increase by less than 10 seconds with these additional trips.

6. An urban compact or urban single-lane roundabout would be able to accommodate the volume of traffic expected at the Main Street/Saranac Avenue/Mirror Lake Drive intersection.

7. A 30-meter diameter roundabout is geometrically feasible at the Main Street/Saranac Avenue/Mirror Lake Drive intersection, although this will likely require some additional right-of-way on the east side of the intersection. The existing grades at the intersection make this a difficult location for constructing a roundabout.

In conclusion, the proposed parking garage is not expected to negatively impact traffic flow on Main Street. Delays and queuing will be limited to vehicles exiting the

garage, which will not impede the through traffic flow on Main Street. A roundabout at the Main Street/Saranac Avenue/Mirror Lake Drive intersection appears to be operationally and geometrically feasible, although the existing geometry of this intersection is not ideal for constructing a roundabout.

Appendix A – Conceptual Site Plan

Traffic Impact Study
Main Street Parking Garage
Village of Lake Placid, New York