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**TRAFFIC IMPACT STUDY**

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**LEGACY RIDGE**

**PROPOSED RESIDENTIAL DEVELOPMENT**

**TOWN OF WOODBURY, NEW YORK**

JOB NO. 885

REVISED DECEMBER, 2005

REVISED APRIL 2006

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A. INTRODUCTION

This study was prepared to evaluate the potential traffic impacts of the proposed residential development on the surrounding roadway network. The following sections provide a description of the proposed Project and the tasks undertaken in completing this evaluation.

B. PROJECT DESCRIPTION AND LOCATION (Figure No. 1)

The Project, herein referred to as “Legacy Ridge” is proposed to build 287 single family homes. These homes will be built on a site totaling some 740 acres located on either side of Trout Brook Road in the Town of Woodbury. As shown on Figure No. 1, primary access to the proposed development will be via two (2) driveways to Trout Brook Road. Some 17 of the proposed lots will be served by a separate un-gated driveway to Smith Clove Road.

C. EXISTING ROADWAY NETWORK

As shown on Figure No. 1, the site will be served by NYS Route 32, which is a two lane roadway running effectively parallel to the NYS Thruway. Several miles south of the proposed site there is a connection between Route 32, Route 17 and the NYS Thruway (I-87). In addition, access will also be provided to the site via Smith Clove Road, a two lane County roadway that effectively parallels Route 32. Section J provides a description of the existing geometrics, traffic control and a summary of the existing and future traffic Levels of Service for each of the individual intersections studied.

D. YEAR 2005 EXISTING TRAFFIC VOLUMES (Figures No. 2 and 3)

In order to identify traffic conditions in the vicinity of the site, representatives of John Collins Engineers, P.C. conducted turning movement counts at key locations. These counts were conducted for various time periods and dates including a typical Friday. The morning peak hour counts were conducted between 7:00 AM and 9:30 AM and for the PM counts between the hours of 3:00 PM and 6:30 PM. Locations evaluated as part of this study:

1. Smith Clove Road and Angola Road
2. Smith Clove Road and Trout Brook Road
3. Smith Clove Road and Hamilton Avenue
4. Smith Clove Road and Thayer Road
5. Smith Clove Road and Pine Hill Road
6. Smith Clove Road and Falkirk Avenue
7. Smith Clove Road and Route 32
8. Route 32 and Park Avenue
9. Route 32 and Trout Brook Road
10. Smith Clove Road and Proposed Site Access
11. Trout Brook Road and Propose Site Access (2 locations)

The resulting 2005 Existing Traffic Volumes are shown on Figures No. 2 and 3 for a typical peak weekday AM and PM hours, respectively.

E. YEAR 2011 NO-BUILD TRAFFIC VOLUMES (Figures No. 4 through 9)

For the purpose of analysis, the Design Year of 2011 has been utilized to complete the traffic analysis. In order to account for normal background growth in the area, the 2005 Existing Traffic Volumes were increased by a growth factor of 10% to the Design Year 2011 (Figures No 4 and 5). In addition, traffic associated with other projects in the area including WP3, Brigadoon, Light Industrial Subdivision Route 32, and Highland Glen have been included for the No-Build Traffic Volumes (Figures No. 6 and 7). The combinations of the above represent the 2011 No-Build Traffic Volumes conditions and are shown on Figures No. 8 and 9.

F. SITE GENERATED TRAFFIC VOLUMES (Table No. 1)

Estimates were made of the anticipated project (site) generated traffic volumes for the peak AM and peak PM hours. The resulting traffic volumes are listed in Table No. 1. In total the project will generate during the AM peak hour 51 vehicles entering, with 155 vehicles exiting the site. During the PM peak hour there will be 169 vehicles entering and 98 vehicles exiting the site.

G. ARRIVAL AND DEPARTURE DISTRIBUTION (Figures No. 10 and 11)

In order to assign the site generated traffic volumes to the roadway network, it was necessary to establish an arrival/departure distribution. Based on the review of the existing traffic volumes and expected travel patterns for this development, the arrival and departure distributions were established and are shown on Figures No. 10 and 11.

#### H. YEAR 2011 BUILD TRAFFIC VOLUMES (Figures No. 12, 13, 14 and 15)

The site generated traffic volumes for the proposed 287 unit development were assigned to the roadway network based on the arrival/departure distribution patterns referenced above. The resulting site generated traffic volumes are shown on Figures No. 12 and 13 for each of the peak hours, respectively. The traffic volumes were then added to the 2011 No-Build Traffic Volumes to obtain the 2011 Build Traffic Volumes. The resulting 2011 Build Traffic Volumes are shown on Figures No. 14 and 15 for typical peak weekday AM and PM peak hours, respectively.

#### I. DESCRIPTION OF ANALYSIS

In order to determine existing and future traffic operating conditions at the study area locations, capacity analysis were performed based on the 2000 Highway Capacity Manual. The following is a description of the analysis method utilized in this report.

- Signalized Intersection Capacity Analysis

The capacity analysis for the signalized intersections were performed in accordance with the procedures described in the 2000 Highway Capacity Manual, published by the Transportation Research Board. The terminology used in identifying traffic flow conditions is Levels of Service. A Level of Service "A" represents the best condition and a Level of Service "F" represents the worst condition. A Level of Service "C" is generally used as a design standard while a Level of Service "D" is acceptable during peak periods. A Level of Service "E" represents an operation near capacity. In order to identify an intersection's Level of Service

the average amount of vehicle delay is computed for each approach to the intersection as well as for the overall intersection.

- Unsignalized Intersection Capacity Analysis

The capacity analysis for the unsignalized intersections were also performed in accordance with the procedures described in the 2000 Highway Capacity Manual. The procedure is based on total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the stop line. The average total delay for any particular critical movement is a function of the service rate or capacity of the approach and the degree of saturation. In order to identify the Level of Service, the average amount of vehicle delay is computed for each critical movement to the intersection as well as for the overall intersection.

Additional information concerning signalized and unsignalized Levels of Service can be found in Appendix "D" of this report.

#### J. RESULTS OF ANALYSIS (Table No. 2)

In order to evaluate current and future traffic operating conditions, capacity analyses were conducted at each of the study area intersections utilizing the procedures described above. Summarized below is a description of the existing geometrics, traffic control and a summary of the existing and future Levels of Service.

Table No. 2 summarizes the results of the capacity analysis by approach as well as for the overall intersection for the 2005 Existing, 2011 No-Build and 2011 Build Conditions. Copies of the capacity analysis which also indicate the existing geometry for each of the individual intersections studied are contained in Appendix "C".

1. Smith Clove Road and Angola Road

All approaches to this unsignalized intersection are one lane. The intersection is controlled by a "stop" sign on Angola Road.

Capacity analysis conducted utilizing the Year 2005 Existing, 2011 No-Build and the 2011 Build Traffic Volumes indicate that this intersection will operate at a Level of Service "A/B" for both the AM and PM peak hour.

2. Smith Clove Road and Trout Brook Road

All approaches to this unsignalized intersection are two lanes (one lane each direction). Trout Brook Road prior to entering Smith Clove Road is under "stop" sign control.

Capacity analysis conducted at this intersection utilizing the 2005 Existing Traffic Volumes and 2011 No-Build Traffic Volumes indicates that this intersection will operate at a Level of Service "A" during both the AM peak hour and the PM peak hour. For the 2011 Build Traffic Volumes the Level of Service will be "A/B" for both the AM and PM peak hours.



3. Smith Clove Road and Hamilton Avenue

This unsignalized intersection consists of one lane approaches in all directions. Prior to entering onto Smith Clove Road, Hamilton Avenue is under “stop” sign control.

Capacity analysis indicate that this intersection will for the 2005 Existing Traffic Volumes as well as the 2011 No-Build and Build conditions will operate at a Level of Service “A” for the AM peak hour. This intersection will operate at a Level of Service “A/B” during the No-Build condition and maintain the Level of Service “A/B” during the Build condition for the PM peak hour.

4. Smith Clove Road and Thayer Road

This unsignalized intersection consists of one lane approaches in all directions. Prior to entering onto Smith Clove Road, Thayer Road is under “stop” sign control.

Capacity analysis indicate that this intersection will for the 2005 Existing Traffic Volumes as well as the 2011 No-Build and Build conditions will operate at a Level of Service “A/B” for both the AM and PM peak hours.

5. Smith Clove Road and Pine Hill Road

This unsignalized intersection consists of one lane approaches in all directions. Prior to entering onto Smith Clove Road, Pine Hill Road is under “stop” sign control.

Capacity analysis indicate that this intersection will for the 2005 Existing Traffic Volumes as well as the 2011 No-Build and Build conditions will operate at a Level of Service "B" or better for both the AM and PM peak hours.

6. Smith Clove Road and Falkirk Avenue

This unsignalized intersection consists of one lane approaches in all directions. Prior to entering onto Smith Clove Road, Falkirk Avenue is under "stop" sign control.

Capacity analysis indicate that this intersection will for the 2005 Existing Traffic Volumes as well as the 2011 No-Build and Build conditions will operate at a Level of Service "B" or better for both the AM and PM peak hours.

7. Smith Clove Road and Route 32

This signalized intersection has wide one lane approaches on all legs. Utilizing the 2005 Existing Traffic Volumes, this intersection operates at a Level of Service "C" or better for both the AM and PM peak hours.

Using the 2011 No-Build Traffic Volumes, this intersection will operate at a Level of Service "B" during the AM peak hour and a Level of Service "C" during the PM peak hour. For the 2011 Build condition, a Level of Service "C" will occur during the AM peak hour with a Level of Service "D" for the PM peak hour. Improvements to the intersection in the form of a northbound right turn lane will improve the operation.

8. Route 32 and Park Avenue

This unsignalized intersections has one lane approaches on all legs. Results of the capacity analysis conducted utilizing the 2005 Existing Traffic Volumes indicate that the minor leg of this intersection (Park Avenue) will operate at a Level of Service "D" during both the AM and PM peak hours.

Utilizing the 2011 No-Build Traffic Volumes indicate that this intersection will operate at a Level of Service "C" for the AM peak hour and a Level of Service "D" for the PM peak hour. For the 2011 Build condition, the Level of Service would be "C" for the AM peak hour and a Level of Service "E" for the PM peak hour. To improve the operation, a signal would have to be installed, however, due to the close proximity of existing signalized intersection (CR 105 and Route 32) signalization of this location is impractical.

9. Route 32 and Trout Brook Road

This unsignalized intersection has a one lane approaches in all directions. Trout Brook Road prior to entering Route 32 is under "stop" sign control.

Capacity analysis utilizing the 2005 Existing Traffic Volumes indicates that this intersection will operate at a Level of Service "C" or better for both the AM and PM peak hours.

Capacity analysis for the 2011 No-Build and Build conditions indicate that this intersection will operate at a Level of Service "C" for the AM peak hour and a Level of Service "D" for the PM peak hour.

10. Proposed Access Drives/Smith Clove Road or Trout Brook Road

The proposed site driveways are proposed to be two exiting lanes and one entering lane. All vehicles will be required to stop prior to entering Smith Clove Road or Trout Brook Road.

Capacity analysis for the 2011 Build condition indicates that this intersection will operate at a Level of Service "A" for both the AM and PM peak hours.

K. AFTERNOON SCHOOL TRAFFIC

There are no schools in the immediate vicinity of Legacy Ridge. However, there is a school located on Smith Clove Road near its intersection with Route 32. Within the Route 32 corridor most of the school related traffic occurs in the vicinity of Route 32 and Nininger Road.

Based on previous studies the overall traffic occurring during the peak school exit hours is lower than the peak AM/PM periods. Thus the peak school exit hours would not be the "design hour." For example, at the intersection of Smith Clove Road and Route 32 there were some 1,322 vehicles passing through the intersection during the peak PM school hour. During the evening peak hour, there were some 1,910 vehicles. Thus, the peak school exit hour is not the critical hour.

L. SEASONAL PEAK SATURDAY

The primary shopping area in the Route 32 corridor is located in the vicinity of the Route 17/Route 32/I-87 interchange area. This area is several miles south of Legacy Ridge. Legacy Ridge will contribute some traffic to this interchange. However, based on the detailed analysis contained in the WP3 study for the interchange area, the Legacy Ridge development will only have a minimal impact on operating conditions in the vicinity of the interchange. Based on the WP-3 Study for the design year, there would be some 4,393 vehicles passing through the intersection of Route 32/I-87 off ramp/Nininger Road (interchange area). Of that total volume, some 227 vehicles are attributable to WP-3. Legacy Ridge is generating some 200 vehicles south of the intersection of Route 32 and Smith Clove Road. If 75% of these vehicles continue south towards the interchange area, there would be some 150 vehicles attributable to Legacy Ridge within the interchange area. This would be approximately 3.5% of the total intersection volume. This percentage would not significantly alter the operations at the intersection.

In addition, the mid-day Saturday traffic counts included in the "Southeastern Orange County Traffic and Land Use Study" for the intersection of Smith Clove Road/Route 32 were lower than the PM Peak hour which is analyzed in this report.

M. OTHER ASPECTS

Access to the site will be primarily from Trout Brook Road which will be gate controlled. As part of the access design there will be a loop road to accumulate school buses, etc. In addition, the interior roadways have been designed to accumulate emergency and transit vehicles.

During construction, access to the site will be controlled by flagmen with construction workers and deliveries parked/unload on-site. The contractor will be responsible to develop a maintenance and protection of traffic plan prior to construction.

N. SUMMARY AND CONCLUSION

At those intersections evaluated as part of this study, the traffic generated by the proposed development will not have a significant impact. Based on the analysis contained in this study, similar Levels of Service and delays will be experienced under Future No-Build and Build conditions.

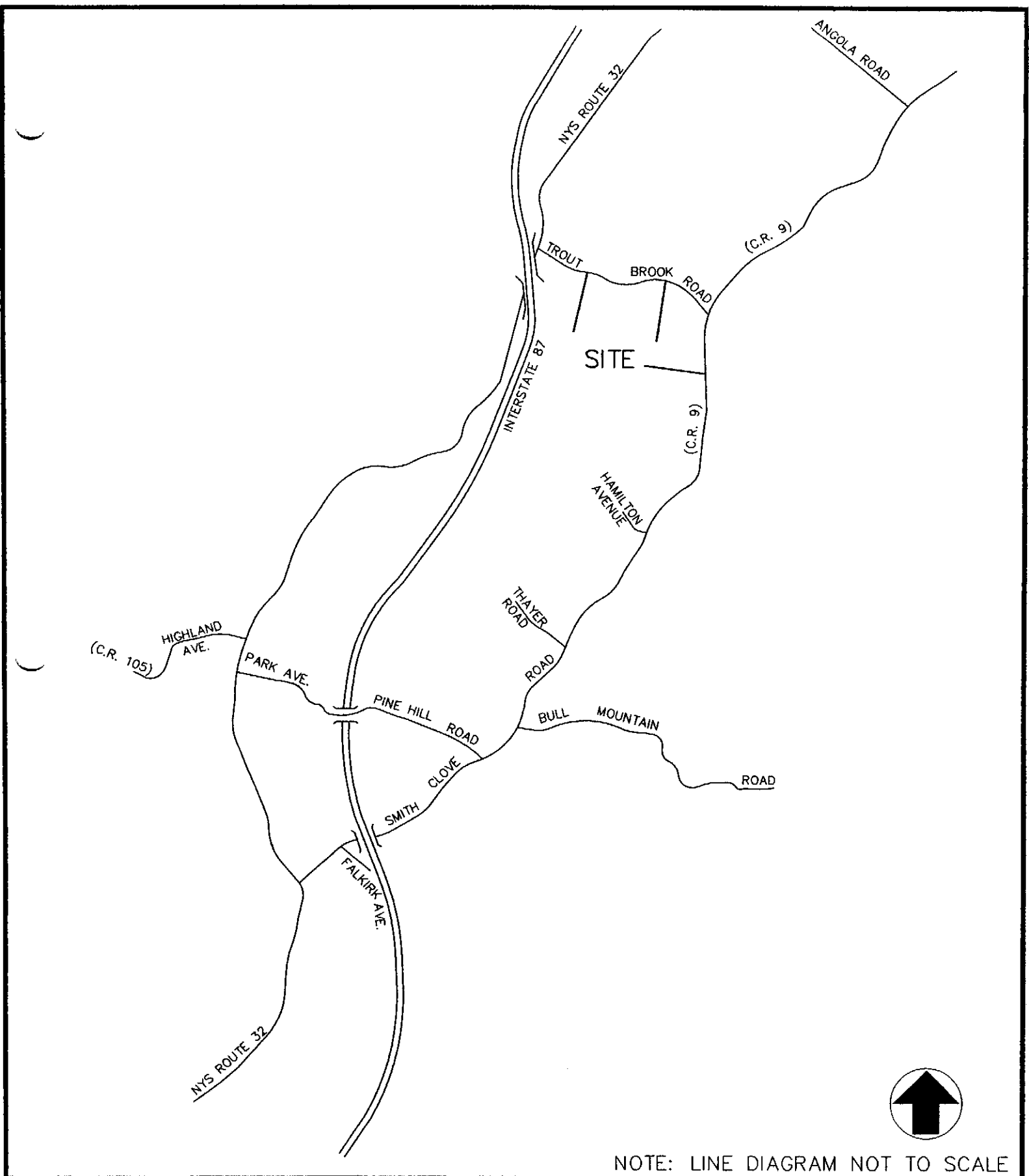
Respectfully submitted,  
JOHN COLLINS ENGINEERS, P.C.



John T. Collins, Ph.D., P.E.

APPENDIX "A"

FIGURES

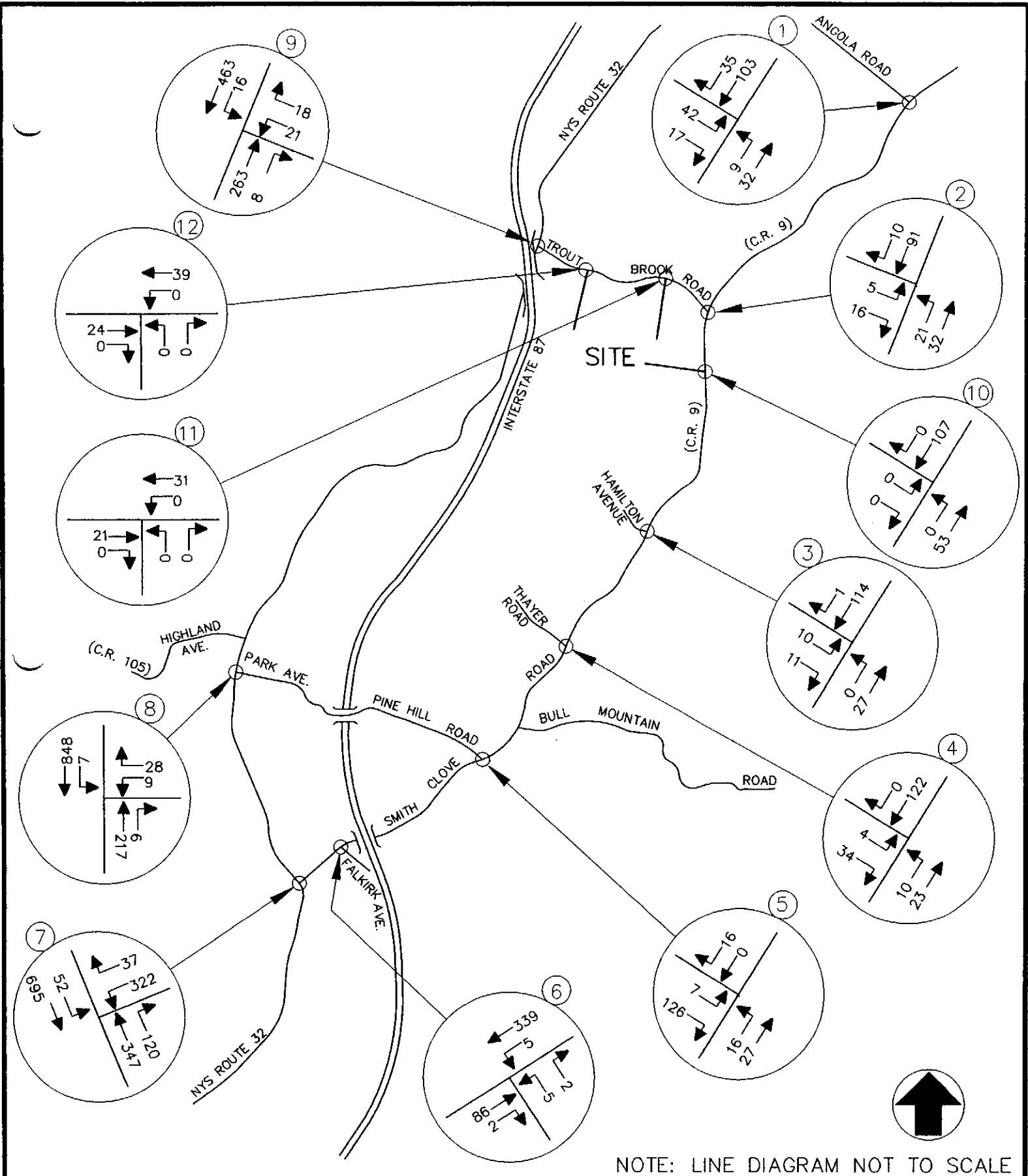


NOTE: LINE DIAGRAM NOT TO SCALE

# LEGACY RIDGE WOODBURY, NEW YORK

## SITE LOCATION MAP

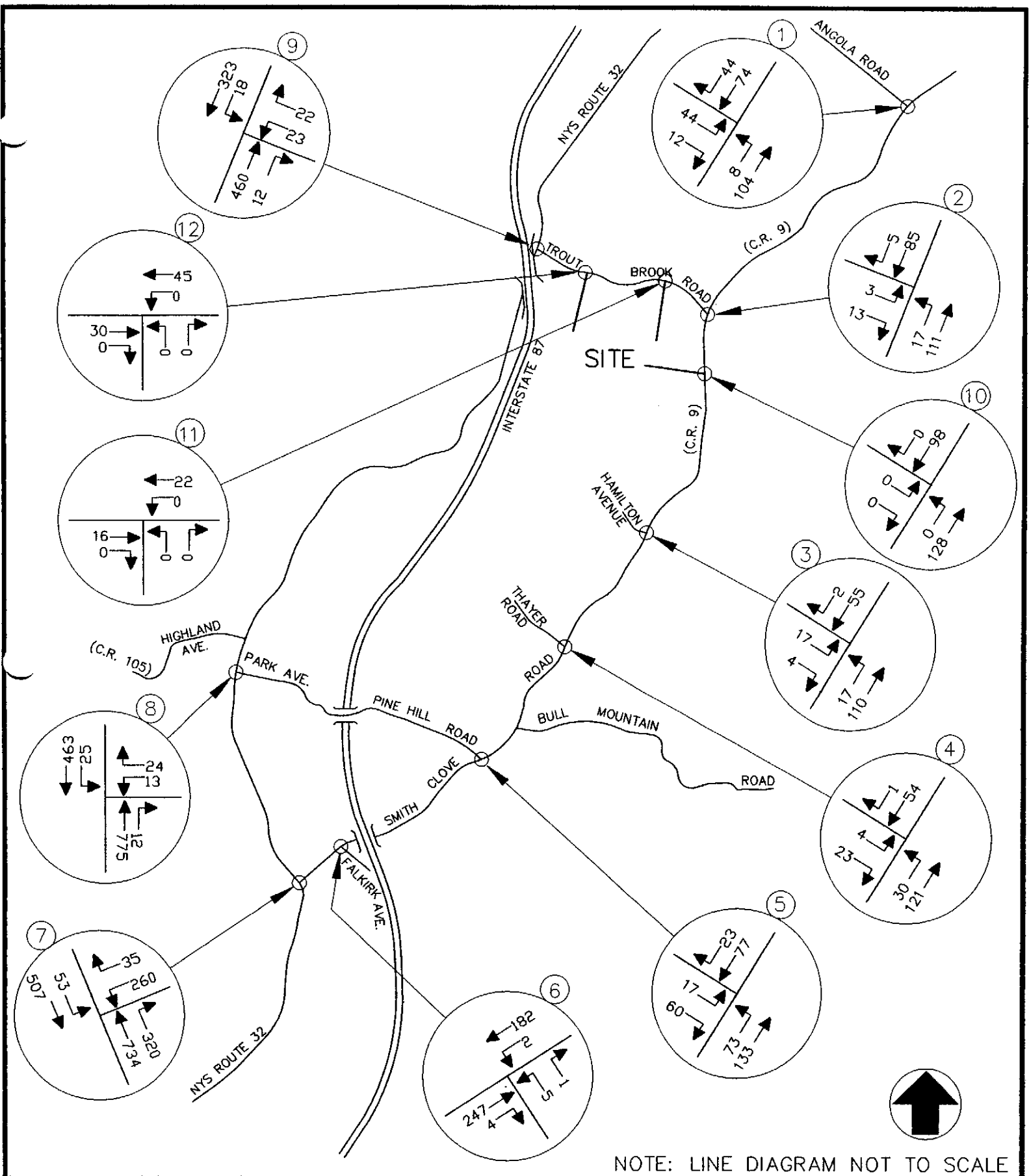




NOTE: LINE DIAGRAM NOT TO SCALE

LEGACY RIDGE  
 WOODBURY, NEW YORK

2005 EXISTING TRAFFIC VOLUMES  
 WEEKDAY PEAK AM HOUR



NOTE: LINE DIAGRAM NOT TO SCALE

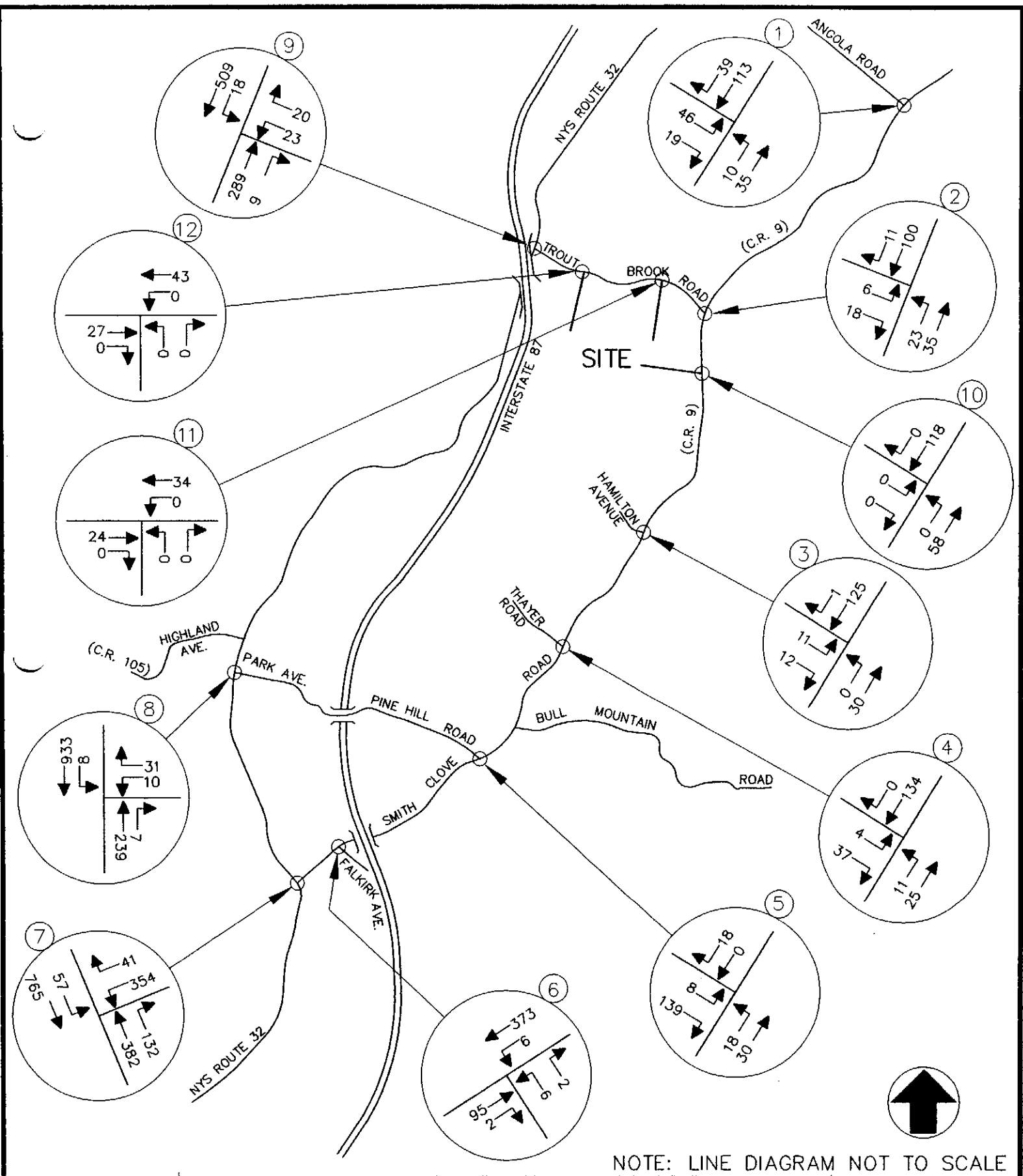
LEGACY RIDGE  
WOODBURY, NEW YORK

2005 EXISTING TRAFFIC VOLUMES  
WEEKDAY PEAK PM HOUR

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PROJECT NO. 885 DATE: APRIL 2006

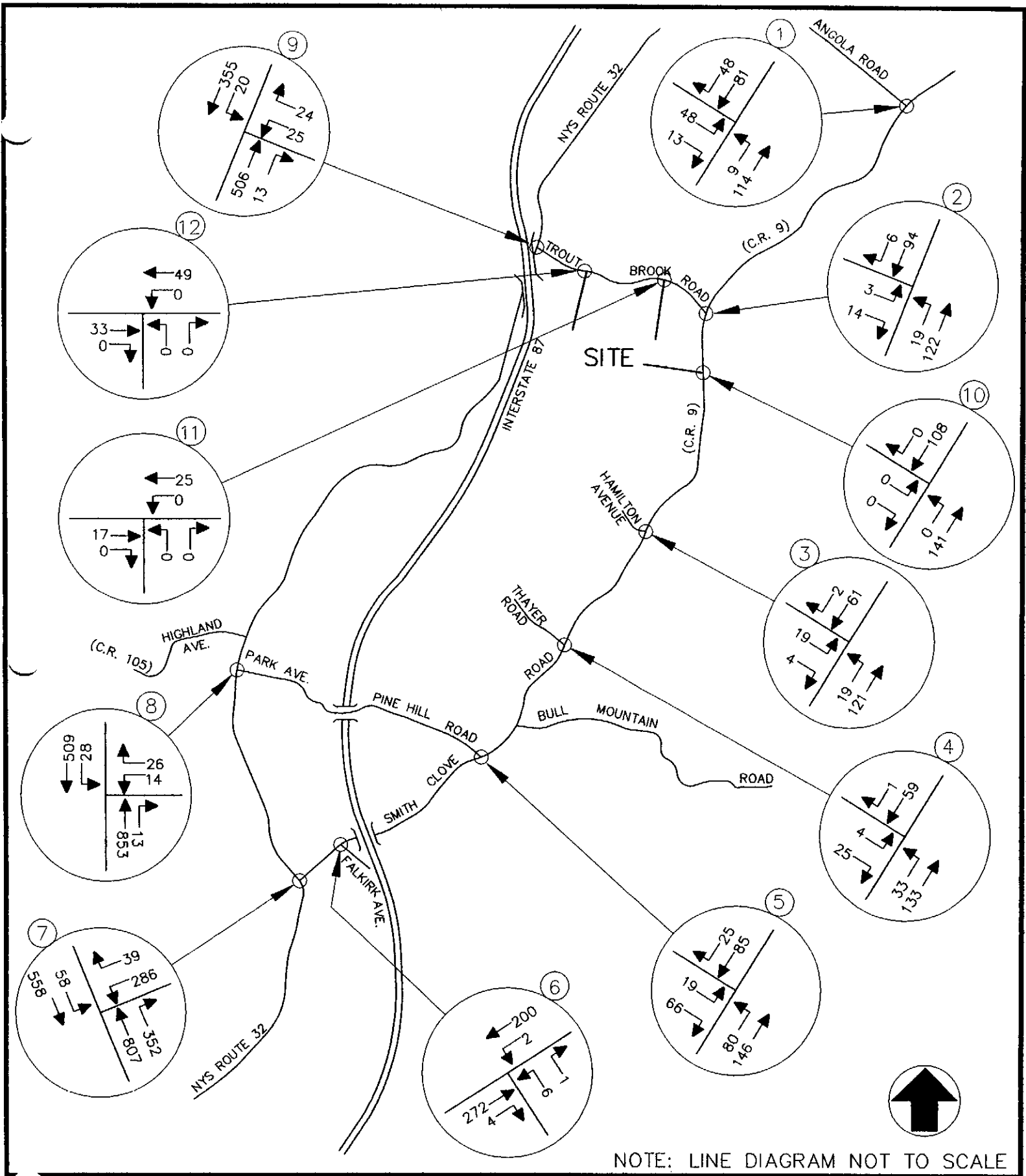
FIG. NO. 3.



NOTE: LINE DIAGRAM NOT TO SCALE

LEGACY RIDGE  
WOODBURY, NEW YORK

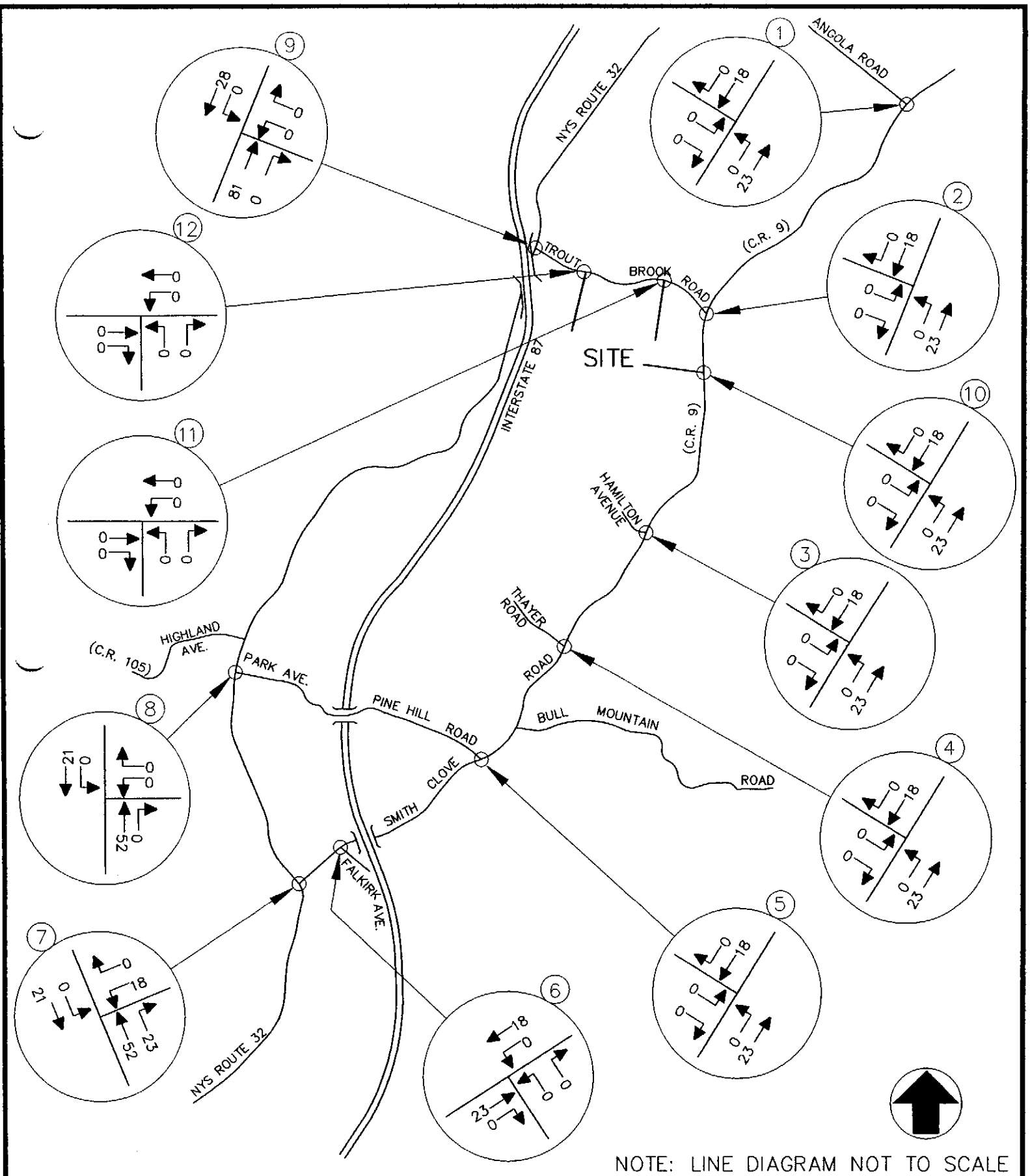
2011 PROJECTED TRAFFIC VOLUMES  
WEEKDAY PEAK AM HOUR



NOTE: LINE DIAGRAM NOT TO SCALE

LEGACY RIDGE  
WOODBURY, NEW YORK

2011 PROJECTED TRAFFIC VOLUMES  
WEEKDAY PEAK PM HOUR



NOTE: LINE DIAGRAM NOT TO SCALE

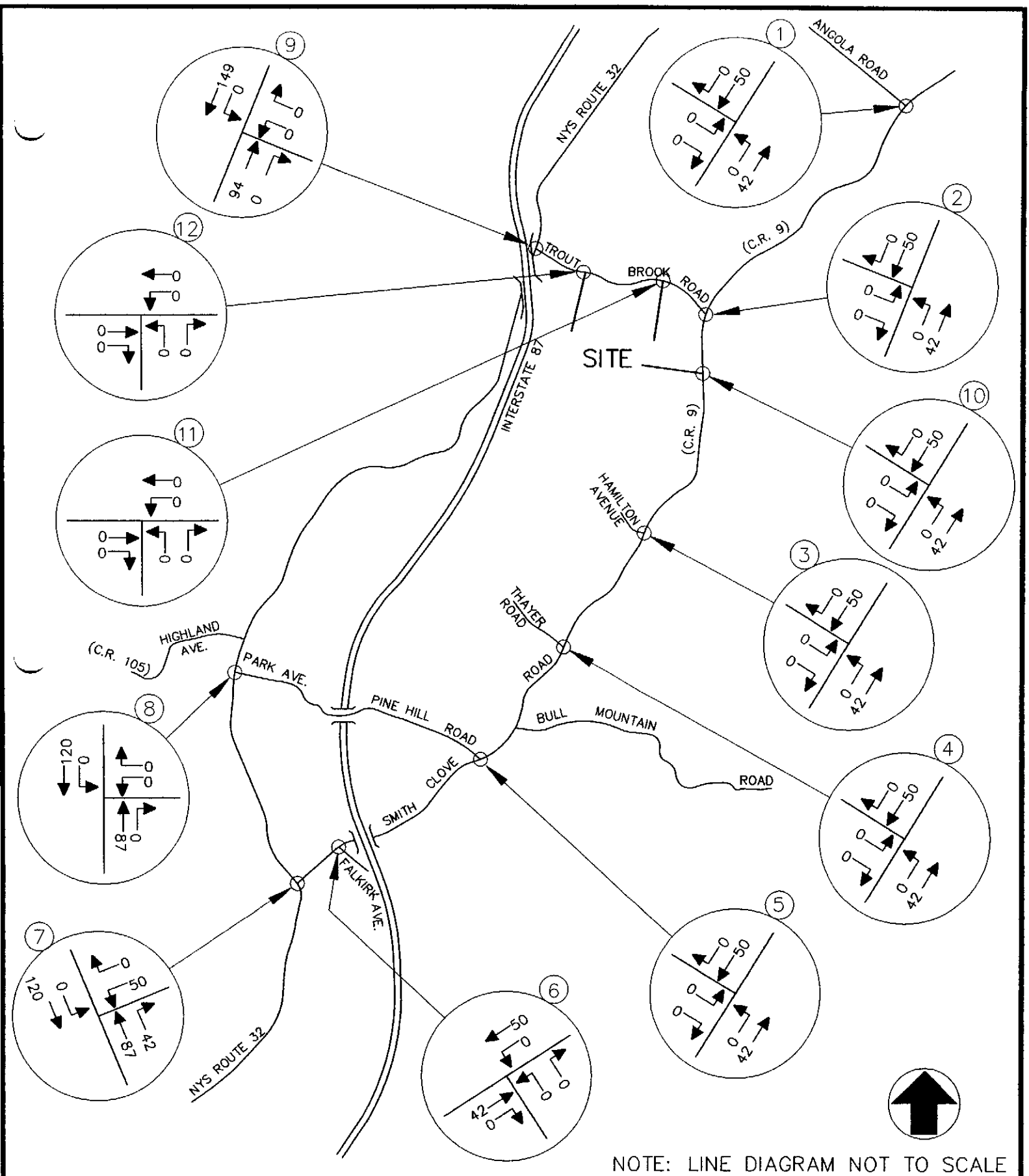
LEGACY RIDGE  
WOODBURY, NEW YORK

OTHER DEVELOPMENT TRAFFIC VOLUMES  
WEEKDAY PEAK AM HOUR

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FIG. NO. 6



NOTE: LINE DIAGRAM NOT TO SCALE

LEGACY RIDGE  
WOODBURY, NEW YORK

OTHER DEVELOPMENT TRAFFIC VOLUMES  
WEEKDAY PEAK PM HOUR

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FIG. NO. 7

