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TRAFFIC IMPACT ANALYSIS

FOR

TFH PUBLICATIONS

PROPOSED BUILDING EXPANSION

BLOCK 67, LOTS 16 & 17
NEPTUNE CITY
MONMOUTH COUNTY, NEW JERSEY

JUNE 24, 2010

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TRAFFIC ENGINEERING
PARKING STUDIES
HIGHWAY DESIGN
MUNICIPAL CONSULTING
DOT ACCESS PERMITS

INTRODUCTION

TFH Publications, Inc. is filing an application for a warehouse addition and office renovation at the Nylabone facility located at Route 35 and West Sylvania Avenue in Neptune City, Monmouth County, New Jersey. The existing facility is located on Block 67, Lot 16. The applicant proposes a building expansion and new parking areas on adjoining Lot 17.

The new warehouse space will consist of two floors, totaling 44,880 SF. Within the existing building, 20,000 SF of warehouse space will be converted to office space, for employees who are currently located off site.

Dolan & Dean Consulting Engineers, LLC (D&D) has been retained by the applicant to prepare a Traffic Impact Analysis for the site renovation, and to evaluate the adequacy of the roadway system to accommodate the new traffic generated by the project. This summary of findings has been prepared to address the traffic impacts associated with the proposed development of a new two-story warehouse building and office space.

EXISTING CONDITIONS

The subject property is comprised of Lots 16 and 17, Block 67, with frontage along West Sylvania Avenue, southbound Route 35, Myron Avenue, and Windsor Avenue. The existing Nylabone building is located on Lot 16, with frontage and access on Windsor Avenue, Myron Avenue, and West Sylvania Avenue. Lot 17 is developed with the former Casey's Restaurant building and parking lot, with driveways on Route 35 and Myron Avenue.

The site location is shown on appended Figure 1.

EXISTING ROADWAY CONDITIONS

Route 35 is under NJDOT jurisdiction, and classified as an urban principal arterial with a north/south orientation. The roadway is divided in the site vicinity, with a school speed limit of 35 MPH.

Across the site frontage, West Sylvania Avenue merges with southbound Route 35, at a YIELD controlled intersection. Left turns from northbound Route 35 to West Sylvania Avenue are made at a YIELD controlled median break.

Windsor Avenue intersects West Sylvania Avenue north of the Route 35 intersection. The Windsor Avenue approach to the intersection is posted with a STOP sign.

Myron Avenue parallels Windsor Avenue, and intersects Route 35 at a STOP controlled intersection. Due to the divided highway, only right turn movements are permitted at the Myron Avenue intersection with Route 35.

EXISTING TRAFFIC VOLUMES

D&D performed manual turning movement traffic counts at the following locations:

- Route 35 southbound and Myron Avenue
- West Sylvania Avenue and Windsor Avenue
- Site driveways on West Sylvania Avenue and Windsor Avenue

The counts were performed from 7:00 to 9:00 a.m. and from 4:00 to 6:00 p.m. on the following days:

- Wednesday, June 23, 2010
- Thursday, June 24, 2010
- Friday, June 25, 2010

The existing traffic volumes are shown in appended Figures 2 and 3, for the morning and evening peak hours, respectively.

TRAFFIC CHARACTERISTICS OF THE PROPOSED OFFICE DEVELOPMENT

PROJECTED TRIP GENERATION

The next step in this analysis is to estimate the future traffic that could be generated by the proposed warehouse and office uses. Estimates were prepared using "warehouse" and "general office" trip rates as compiled by the Institute of Transportation Engineers (ITE) and published in the 8th edition of Trip Generation. The following table summarizes the projected peak hour driveway movements associated with the new office and warehouse space:

TABLE I
PROJECTED TRIP GENERATION

Land Use	Morning Peak Hour			Evening Peak Hour		
	Enter	Exit	Total	Enter	Exit	Total
44,880 SF Warehouse	10	3	13	4	11	15
20,000 SF Office	27	4	31	5	25	30
Total	37	7	44	9	36	45

The above trip generation takes no credit for the existing restaurant on Lot 17. Although the restaurant did not likely generate morning activity, a 4,000 SF restaurant is estimated to generate 75 trips during the evening peak hour.

TRIP DISTRIBUTION

New site traffic has been assigned to the driveways and streets as illustrated in Figures 4 and 5. The distribution is based on existing site driveway activity, existing roadway volumes and patterns, and the driveway locations as related to the adjacent roadway network.

FUTURE TRAFFIC CONDITIONS

FUTURE TRAFFIC VOLUMES

To establish future base traffic volumes, the existing peak hour traffic volumes were increased by 2% compounded over the two-year build-out. The resultant 2012 "no-build" volumes which are shown in Figures 6 and 7. Site generated traffic was added to the "no-build" volumes to create the 2012 "build" volumes shown on appended Figures 8 and 9.

FUTURE "BUILD" TRAFFIC ANALYSIS

A volume/capacity Level of Service analysis[1] was conducted for the following intersections:

- Route 35 and Myron Avenue
- West Sylvania Avenue and Windsor Avenue
- Site driveway intersection on Myron Avenue
- Site driveway intersection on West Sylvania

The levels of service are illustrated on Figures 10 and 11, for the respective "no build" and "build" conditions.

No changes in Levels of Service will result at the adjacent intersections due to additional site traffic. The site driveways will operate at Level of Service "C" or better during both peak hours, with the exception of the West Sylvania Avenue Driveway which operates at acceptable Level of Service "E" during the evening peak hour.

[1] See Technical Appendix for volume/capacity analysis and Level of Service descriptions.

CONCLUSIONS

This analysis has shown that the proposed building addition will generate modest traffic volumes during the weekday morning and evening peak hours. Adequate capacity will be available to accommodate site generated traffic. The traffic characteristics of the office and warehouse use will be minimal and will not result in any significant impacts.

TECHNICAL APPENDIX

LEVEL OF SERVICE ANALYSIS

While traffic volumes provide a measure of activity on the area roadway system, it is also important to evaluate how well that system can accommodate those volumes – i.e., a comparison of peak hour traffic volumes with available roadway capacity. By definition capacity represents the maximum number of vehicles that can be accommodated given the constraints of roadway geometry, environment, traffic characteristics, and controls. Intersections are usually the critical point in any road network since it is at such points that conflicts exist between through, crossing, and turning traffic. It is at these locations where congestion is most likely to occur.

Unsignalized Intersections

An unsignalized (i.e., "YIELD" or "STOP" sign controlled) driveway or side street along a through route is seldom critical from an overall capacity standpoint, however, it may be of great significance to the capacity of the minor cross-route, and it may influence the quality of traffic flow on both. In analyzing unsignalized intersections, it is assumed that both the through traffic movements and right turn movements on the major street approaches are unimpeded and have the right-of-way over the minor street approaches and left turns from the major street. All other turning movements at the intersection cross, merge with, or are otherwise impeded by the major street movements.

The concept in determining traffic delays at an unsignalized intersection is to process these impeded movements in a sequential manner. For each impeded movement, all conflicting flows are summed, and an initial critical 'gap' in traffic is determined with a "follow-up" gap determined for subsequent vehicles waiting in a queue. Based upon the number of available gaps in the passing traffic stream, the potential capacity of that movement can be calculated. The time waiting for an acceptable gap is known as delay.

However, since operation at capacity with long delays is usually unsatisfactory to most drivers, a descriptive mechanism (Level of Service) has been developed to describe traffic operations as a function of average total delay. Unsignalized Levels of Service range from 'A' (delays less than ten seconds) to 'F' (delays greater than 50 seconds). Table I summarizes the relationship between vehicular delay and Level of Service for unsignalized intersections:

TABLE I
Levels of Service and Expected Delay
For Unsignalized Intersections

Level of Service	Control Delay (Seconds/Vehicle)
A	<0-10
B	>10 to ≤15
C	>15 to ≤25
D	> 25 to ≤35
E	> 35 to ≤50
F	>50

Source: Highway Capacity Manual 2000, published by the Transportation Research Board, Washington, D.C.

Signalized Intersections

At signalized intersections, numerous other factors regulate the various approach capacities, including width of the approach, the number of lanes, signal "green" time, turning percentages, truck volumes, etc. As with unsignalized intersections, operation at capacity is far from satisfactory since substantial delays or reduced operating speeds are likely.

Therefore, a similar description mechanism has been developed (also called Level of Service) which is defined on the basis of delay. Signalized intersection delay is measure of driver discomfort, frustration, fuel consumption, and lost travel time. The Levels of Service for signalized intersections do not directly relate to the parameters for unsignalized intersections, however both mechanisms use the same scale of "A" (indicating average delays of 10 seconds or less) to "F" (indicating average delays greater than 80 seconds). The various levels of signalized intersection level of service are summarized below in Table II.

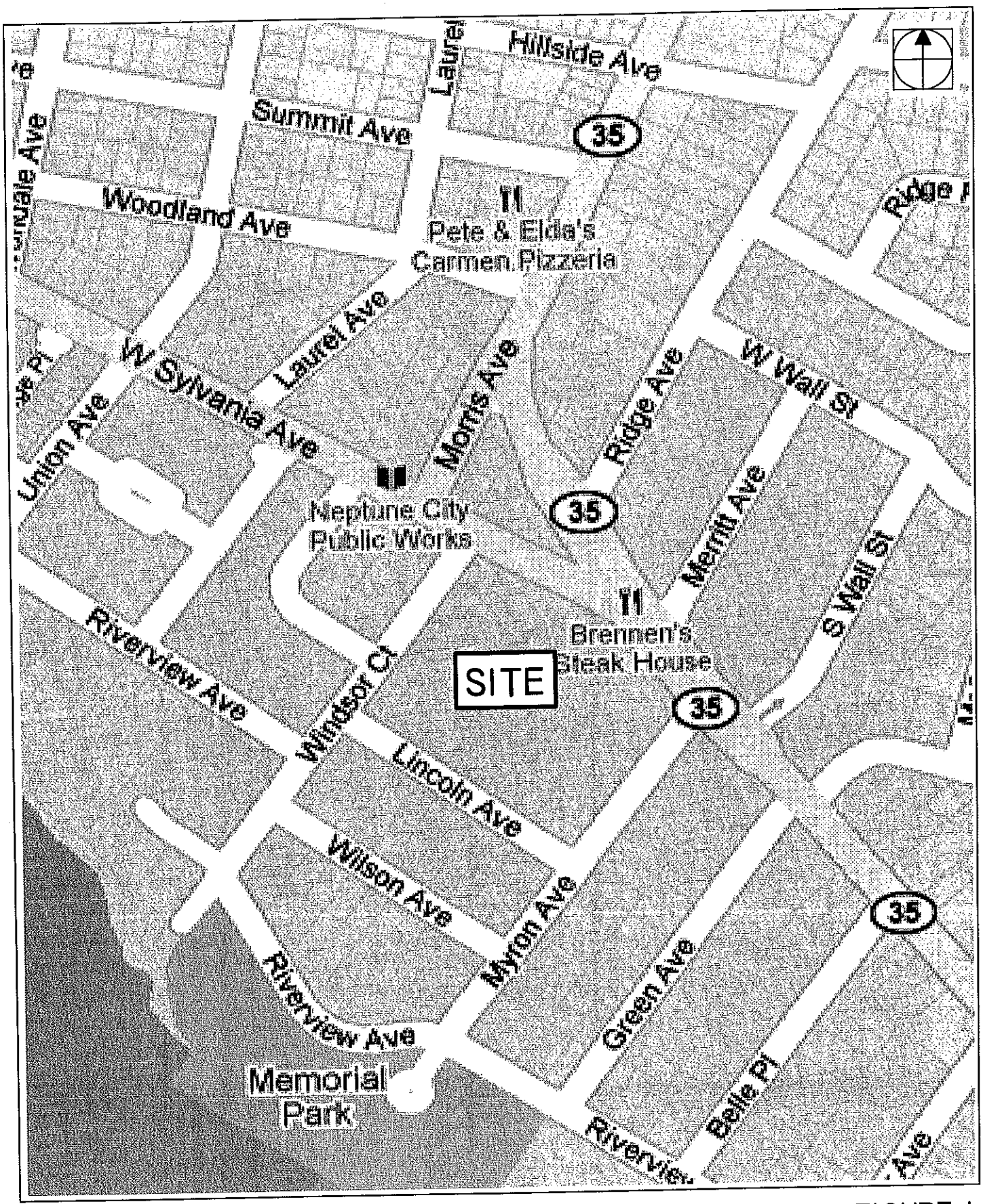
Delays cannot be related to overall roadway capacity in a simple one to one fashion. It is possible to have delays in the Level of Service "F" range, without exceeding the physical roadway capacity. Such delays can exist if one or more of the following conditions occur:

- Long signal cycle lengths (the time of a complete sequence of signal phases);
- The particular traffic movement experiences a long red time; or,
- A progressive movement for a particular lane group is poor.

TABLE II
Levels of Service
For Signalized Intersections

Level of Service	Description	Control Delay per Vehicle (seconds)
A	Very low control delay, favorable progression; most vehicles arrive at the green phase and do not stop at the intersection	$\leq$ 10.0
B	Generally good signal progression and/or short cycle length or both; more vehicles stopped at intersection than Level of Service A	>10.0 and $\leq$20.0
C	Fair progression and/or longer cycle lengths; significant number of vehicles stopped at intersection, though many still pass through without stopping	>20.0 and $\leq$ 35.0
D	Influence of congestion becomes noticeable; due to longer delays from unfavorable progression, long cycle lengths or high volume/capacity ratios; many vehicles stop at the intersection. Individual cycle failures occur	>35.0 and $\leq$ 55.0
E	Often considered the limit of acceptable delay indicative of poor progression, long cycle lengths, or high volume/capacity ratio; frequent individual cycle failures	>55.0 and $\leq$ 80.0
F	Could be considered excessive delay in some areas, frequently an indication of over-saturation (i.e., arrival flows exceed capacity), or very long cycle lengths with minimal side street green time. Capacity is not necessarily exceeded under this level of service.	> 80.0

Source: Highway Capacity Manual 2000, published by the Transportation Research Board, Washington, D.C.



PROPOSED BUILDING EXPANSION
NEPTUNE CITY
MONMOUTH COUNTY, NEW JERSEY

FIGURE 1

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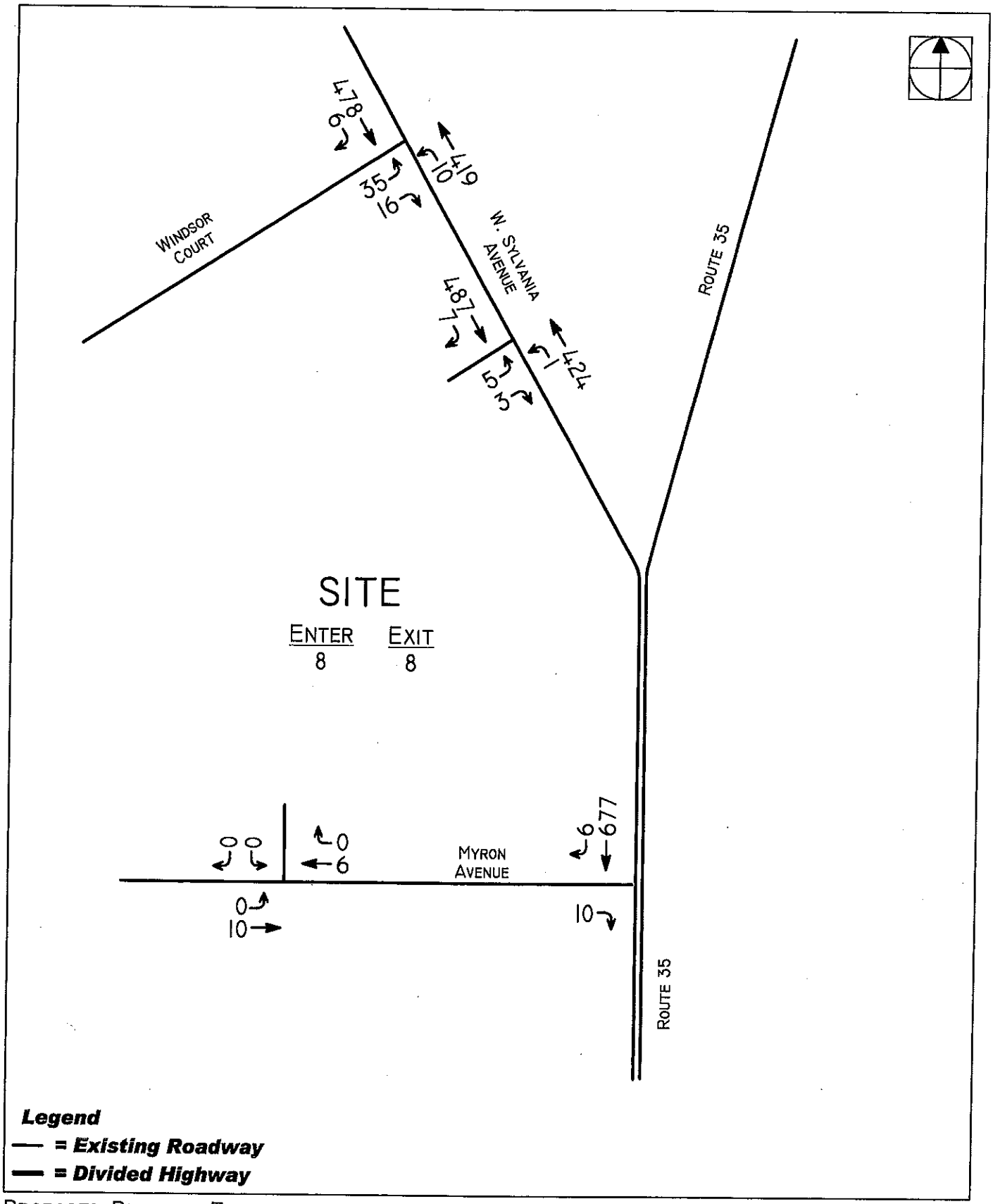
SITE LOCATION MAP



PROPOSED BUILDING EXPANSION
NEPTUNE CITY
MONMOUTH COUNTY, NEW JERSEY

FIGURE 2

2010 EXISTING TRAFFIC VOLUMES
MORNING PEAK HOUR
8:00 A.M. TO 9:00 A.M.

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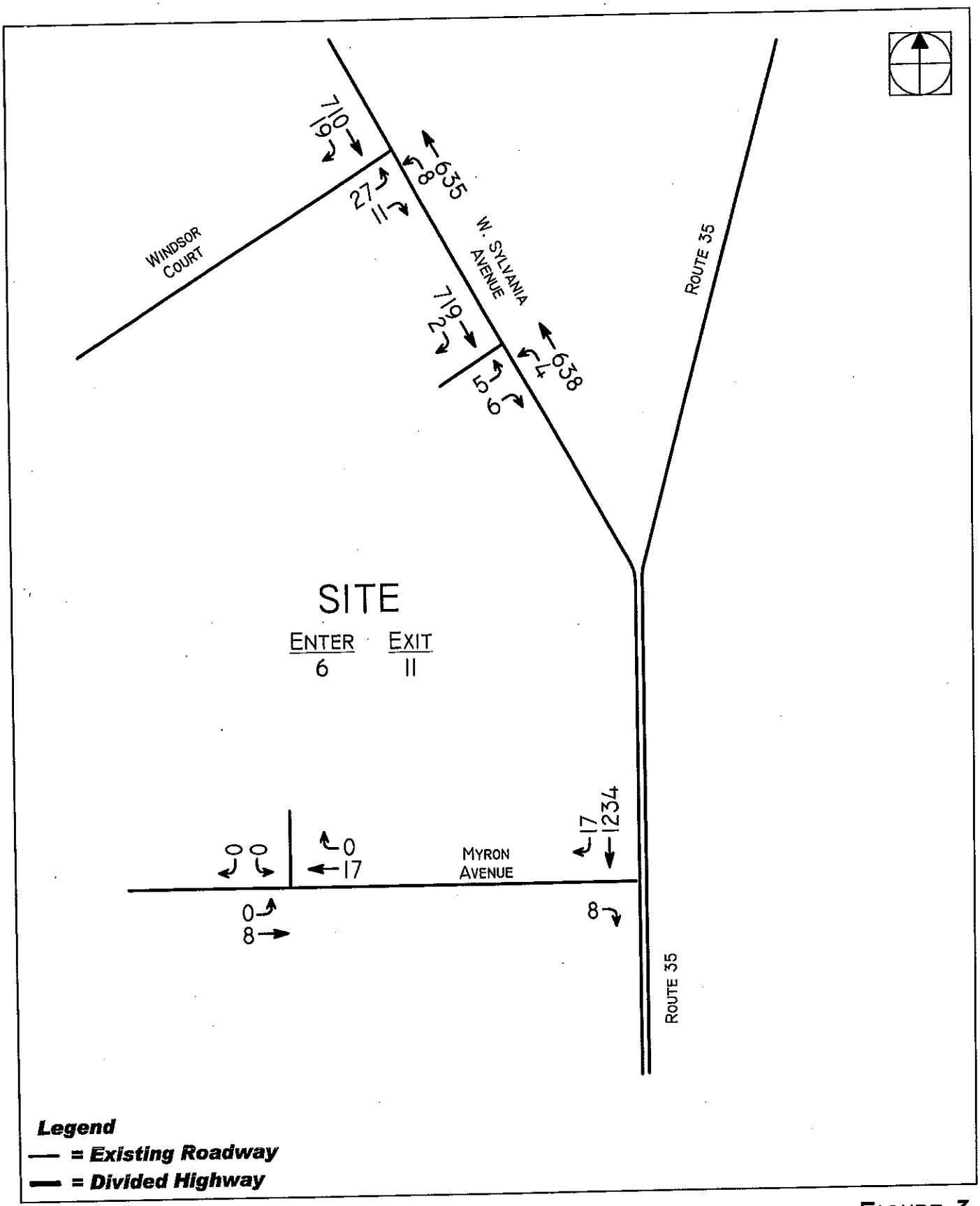

PROPOSED BUILDING EXPANSION
NEPTUNE CITY
MONMOUTH COUNTY, NEW JERSEY

FIGURE 3

2010 EXISTING TRAFFIC VOLUMES
EVENING PEAK HOUR
5:00 P.M. TO 6:00 P.M.

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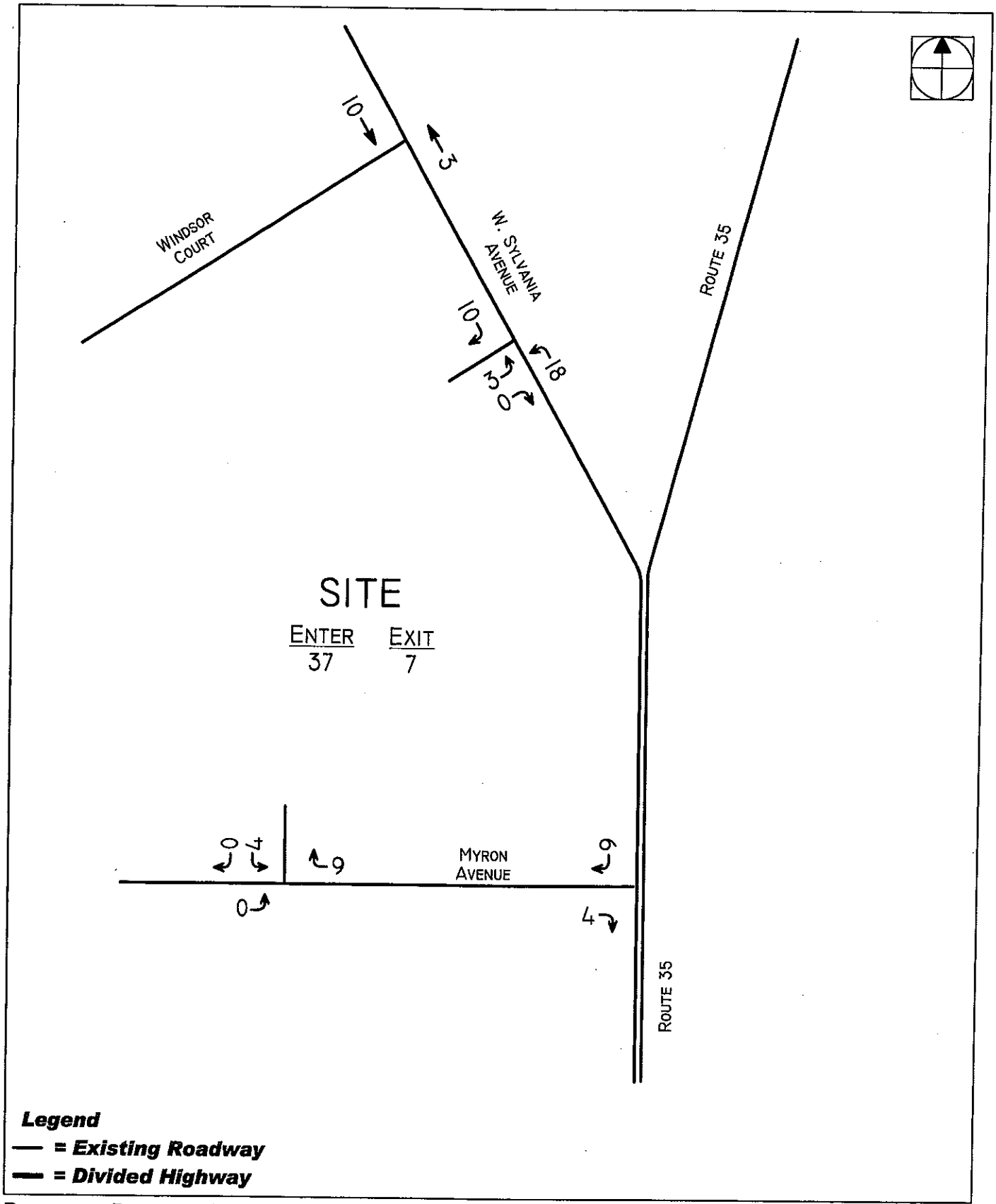

PROPOSED BUILDING EXPANSION
NEPTUNE CITY
MONMOUTH COUNTY, NEW JERSEY

FIGURE 4

SITE GENERATED TRAFFIC VOLUMES
MORNING PEAK HOUR
8:00 A.M. TO 9:00 A.M.

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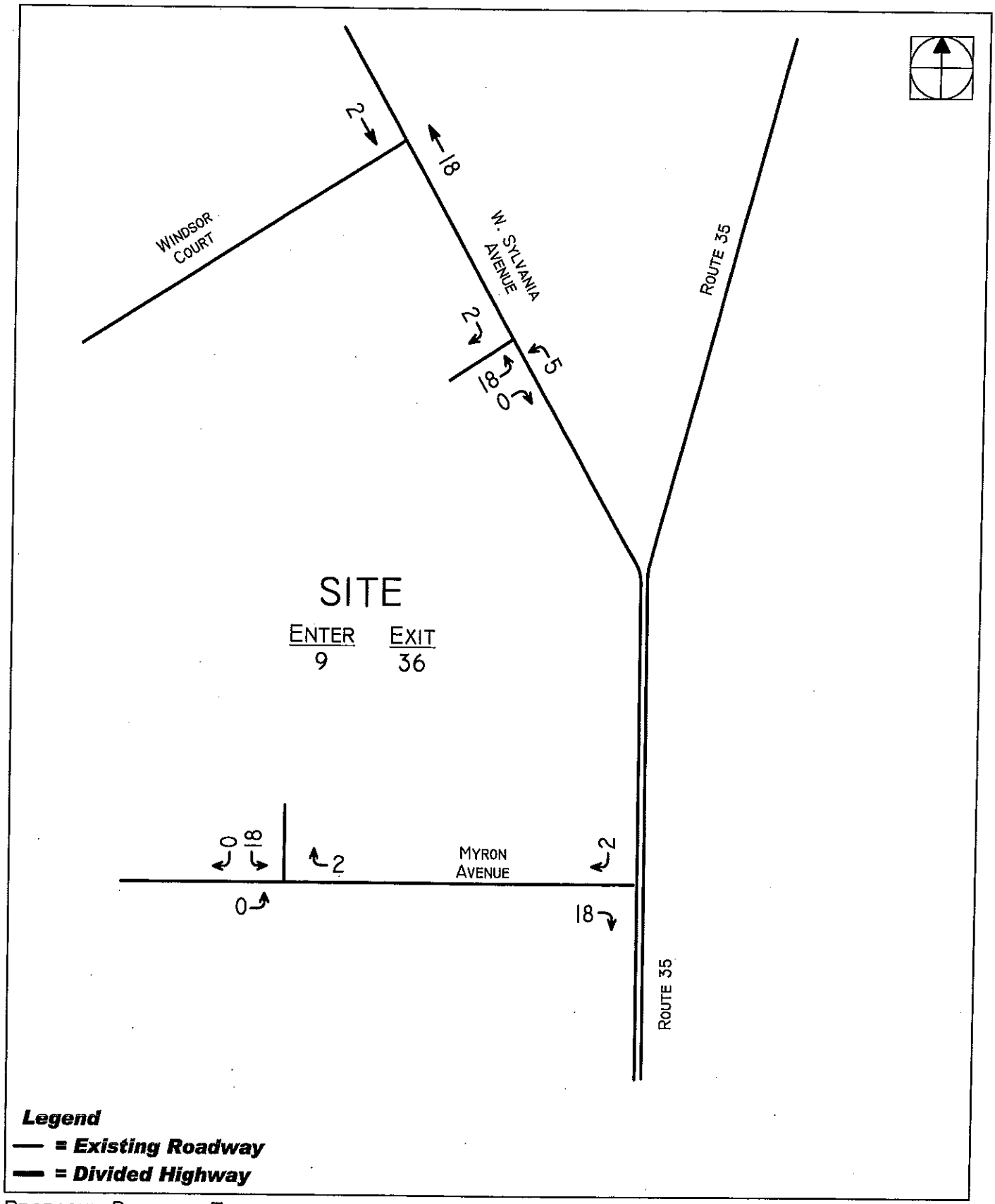

PROPOSED BUILDING EXPANSION
NEPTUNE CITY
MONMOUTH COUNTY, NEW JERSEY

FIGURE 5

SITE GENERATED TRAFFIC VOLUMES
EVENING PEAK HOUR
5:00 P.M. TO 6:00 P.M.

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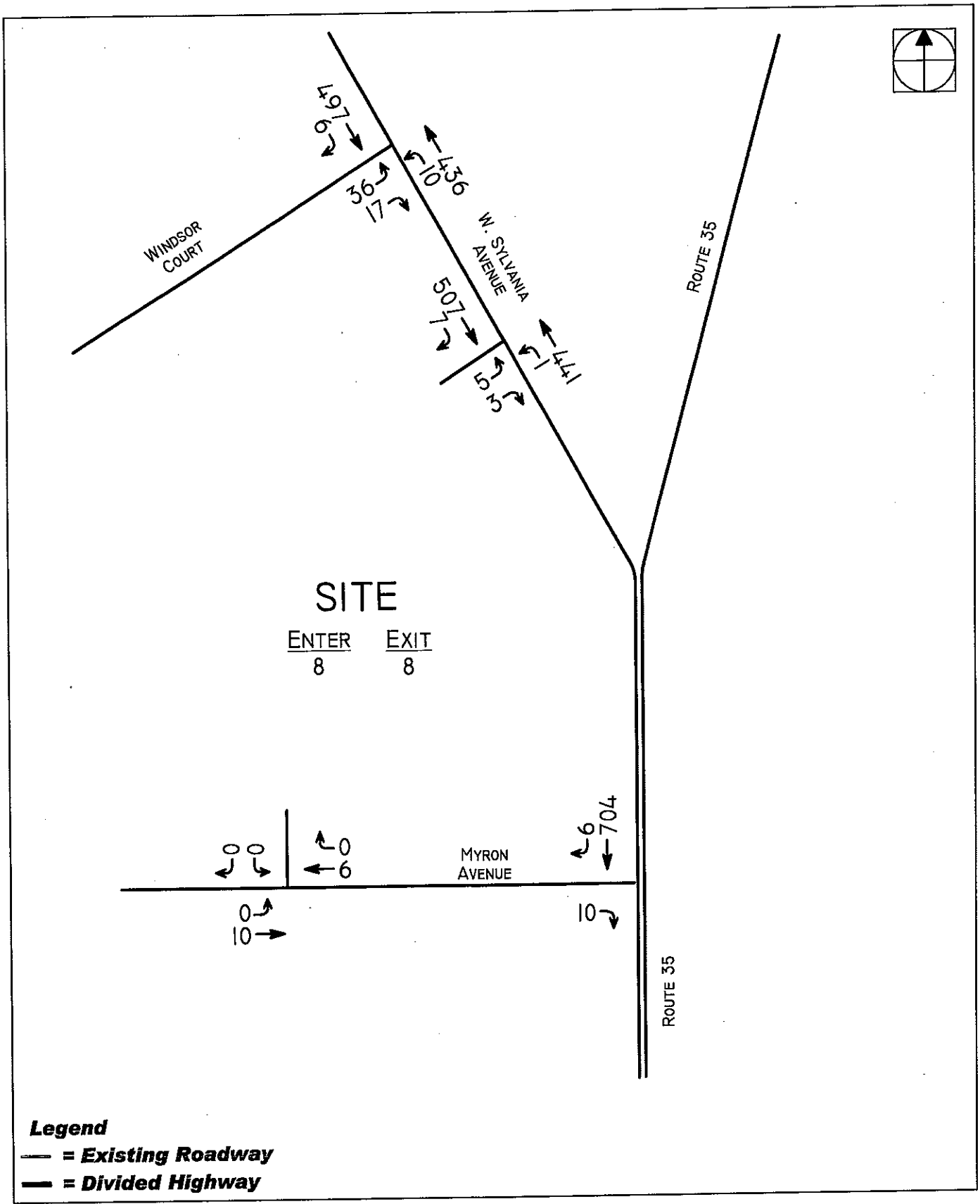

PROPOSED BUILDING EXPANSION
NEPTUNE CITY
MONMOUTH COUNTY, NEW JERSEY

FIGURE 6

2012 NO BUILD TRAFFIC VOLUMES
MORNING PEAK HOUR
8:00 A.M. TO 9:00 A.M.

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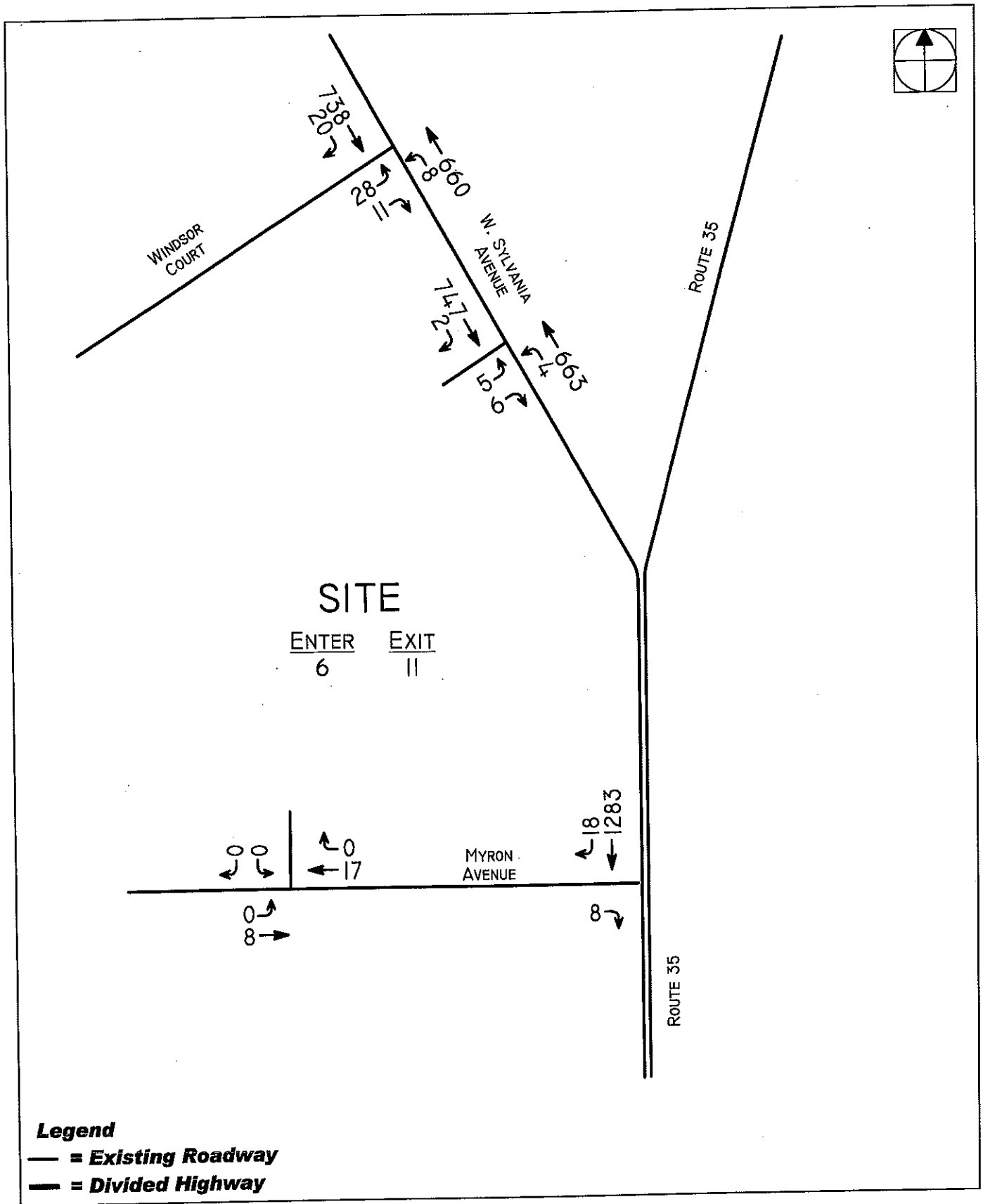

PROPOSED BUILDING EXPANSION
NEPTUNE CITY
MONMOUTH COUNTY, NEW JERSEY

FIGURE 7

2012 NO BUILD TRAFFIC VOLUMES
EVENING PEAK HOUR
5:00 P.M. TO 6:00 P.M.

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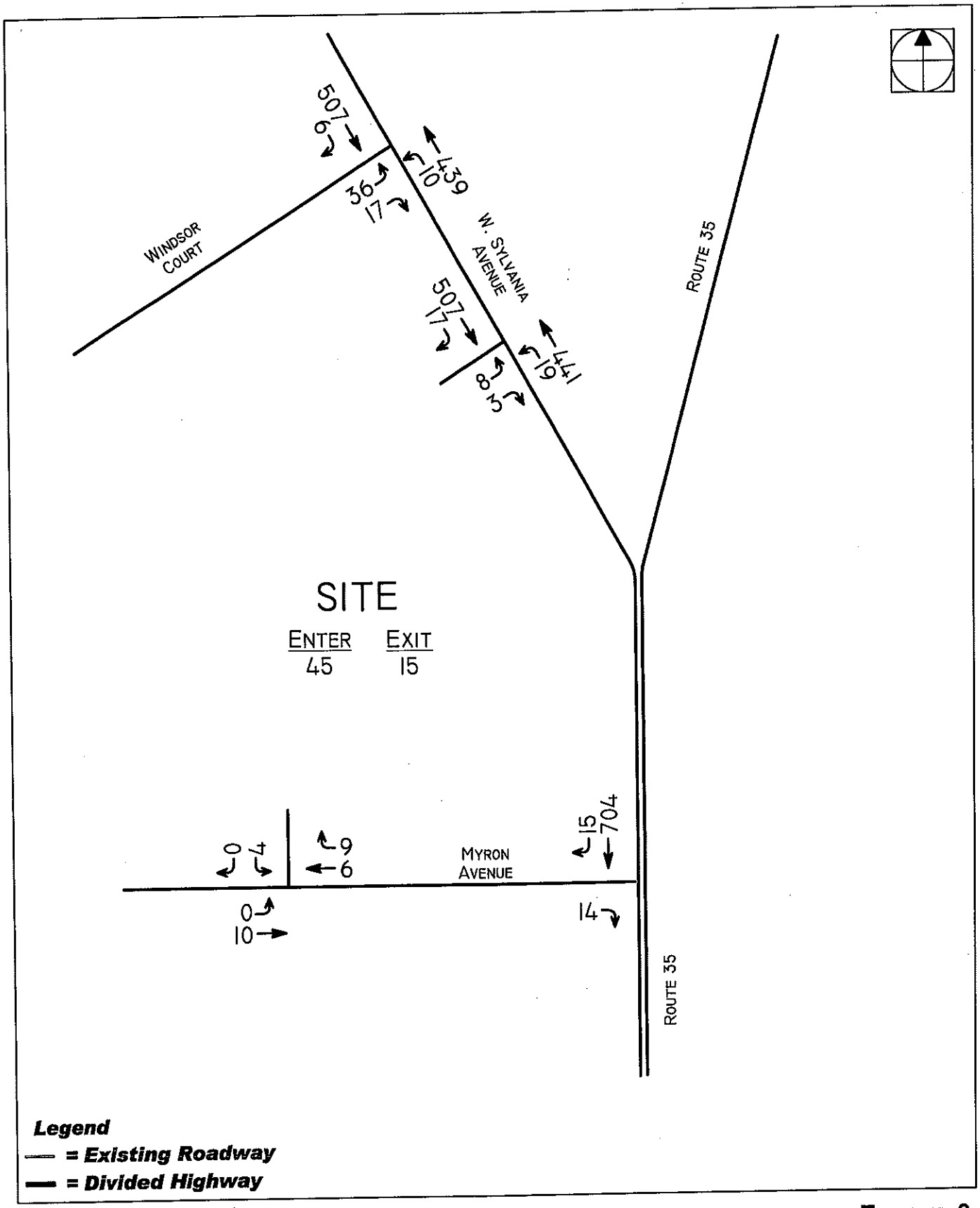

PROPOSED BUILDING EXPANSION
NEPTUNE CITY
MONMOUTH COUNTY, NEW JERSEY

FIGURE 8

2012 BUILD TRAFFIC VOLUMES
MORNING PEAK HOUR
8:00 A.M. TO 9:00 A.M.

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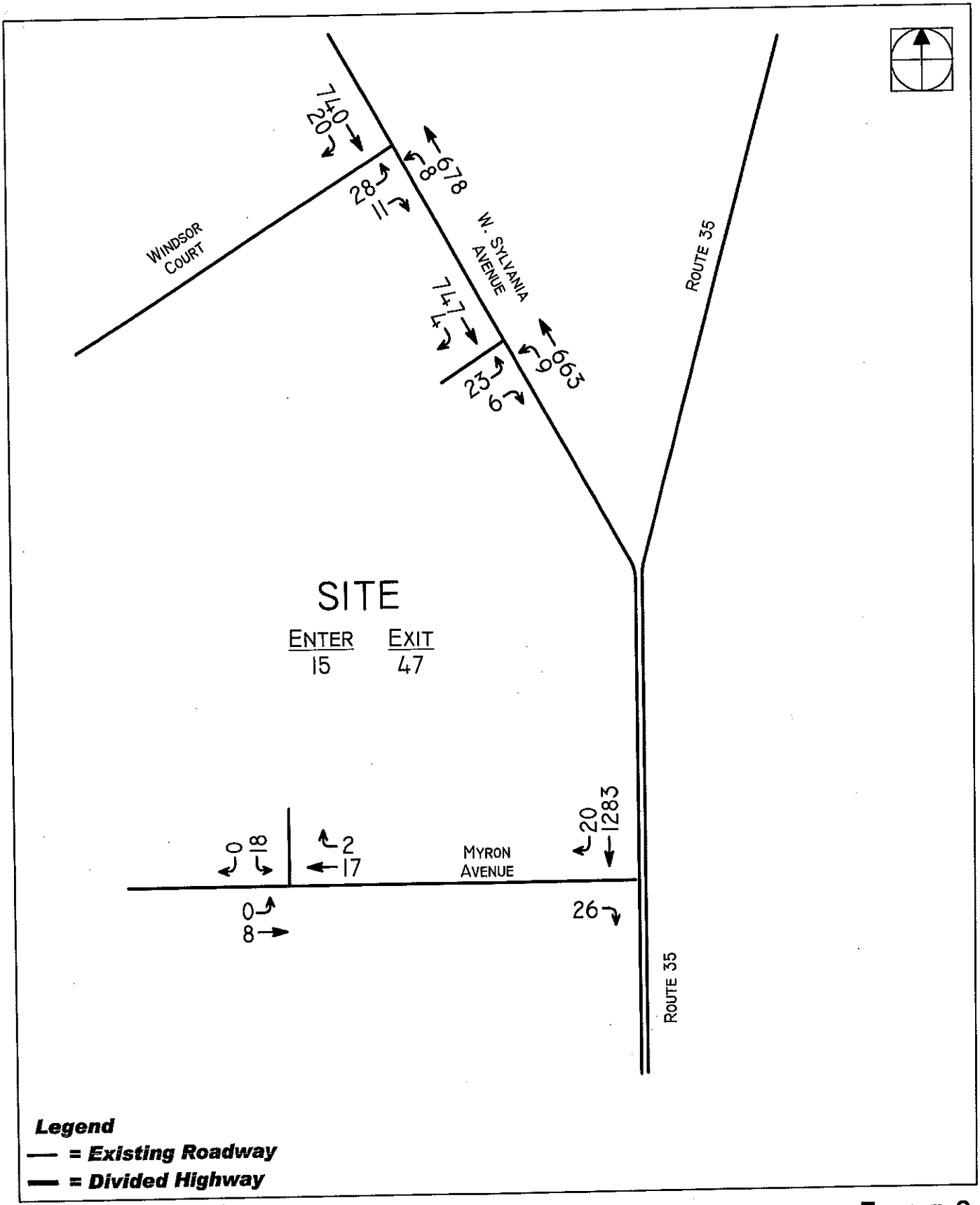

PROPOSED BUILDING EXPANSION
NEPTUNE CITY
MONMOUTH COUNTY, NEW JERSEY

FIGURE 9

2012 BUILD TRAFFIC VOLUMES
EVENING PEAK HOUR
5:00 P.M. TO 6:00 P.M.

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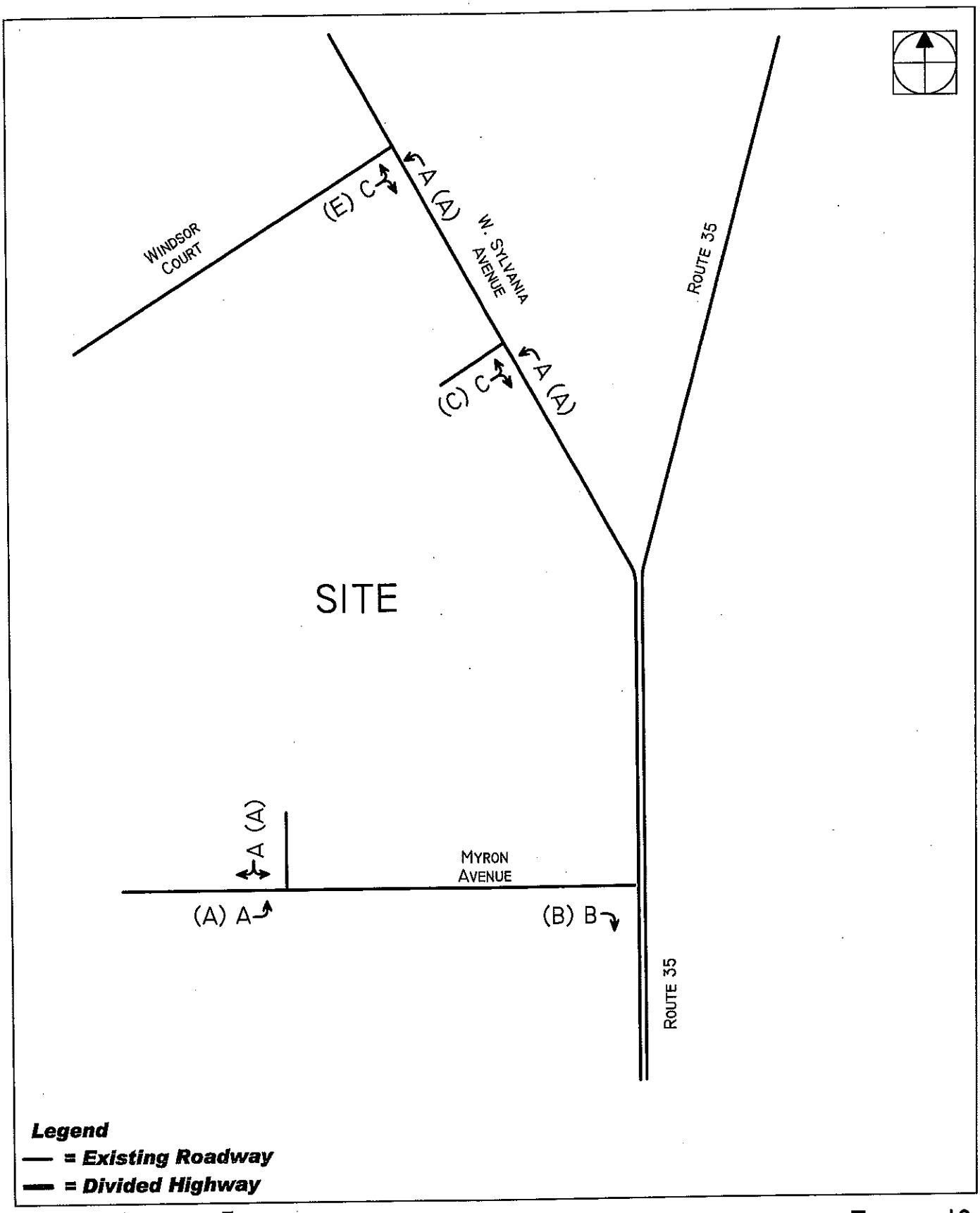

PROPOSED BUILDING EXPANSION
NEPTUNE CITY
MONMOUTH COUNTY, NEW JERSEY

FIGURE 10

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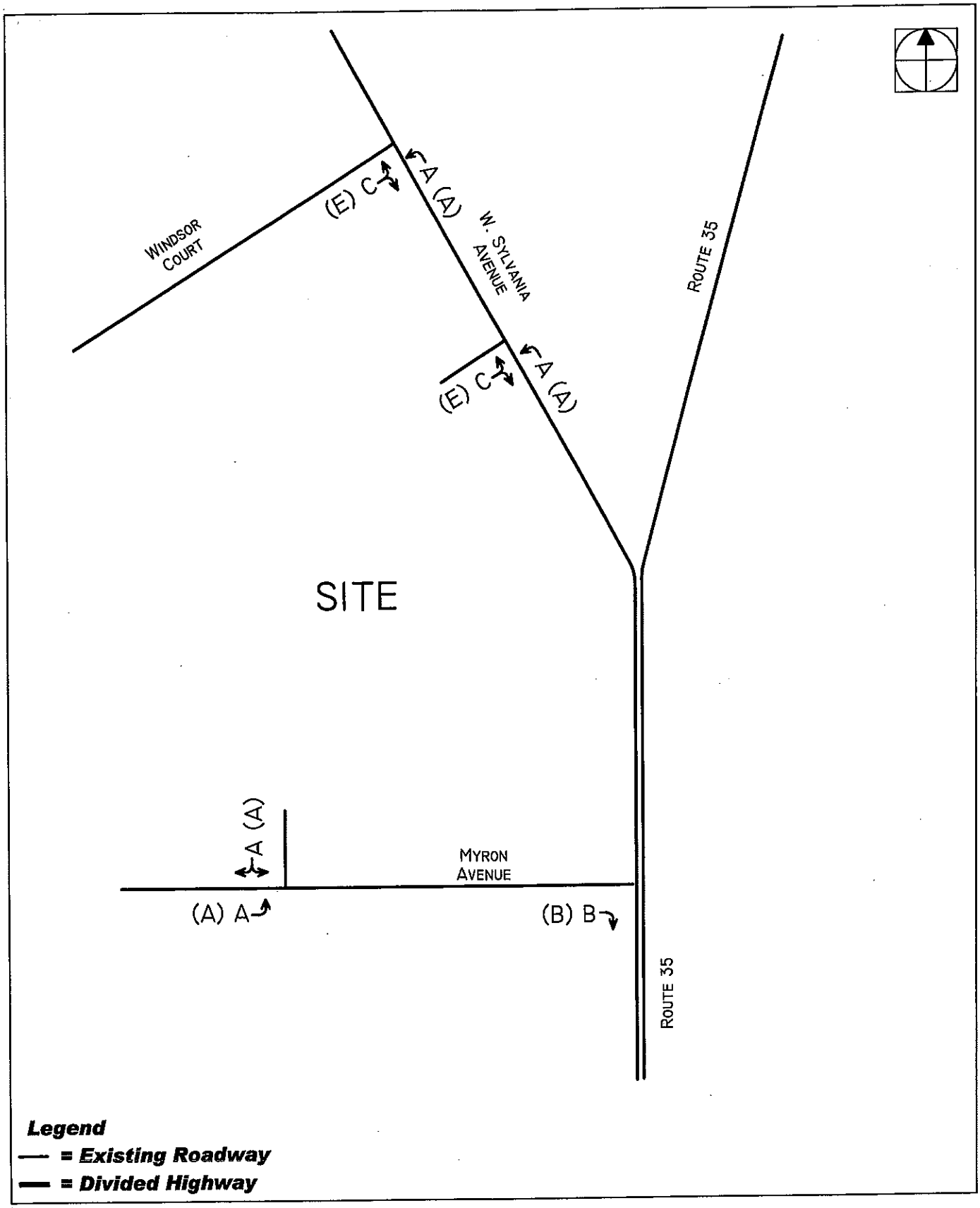
2012 NO BUILD LEVELS OF SERVICE
MORNING (EVENING) PEAK HOUR



PROPOSED BUILDING EXPANSION
NEPTUNE CITY
MONMOUTH COUNTY, NEW JERSEY

FIGURE II

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2012 BUILD LEVELS OF SERVICE
MORNING (EVENING) PEAK HOUR