

Access Management: The Challenge of Retrofit Theory versus Reality

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ABSTRACT

This paper discusses issues encountered in developing a retrofit project for a roadway in a densely developed, commercialized area. Numerous, major shopping centers and a high volume of through traffic produce congestion and safety impacts. The study area involves New York State Route 27 (NY27), also known as Sunrise Highway, a principal arterial in suburban Long Island. The conditions along NY27 are typical of corridors throughout the United States where development approvals were granted by local land use agencies without sufficient consideration of whether the transportation system can accommodate the associated traffic. The state DOT, in this case, or other transportation agency is then put in the position of attempting to implement a retrofit project to mitigate the traffic and safety conditions.

On NY27, the proximity of the shopping center driveways to each other and to the nearby intersections results in heavy turning-movement volumes that block the through travel lanes and cause over-lapping conflicts, weaving movements, and queues. The significant traffic congestion and the high accident rate reflect the problems caused by inadequate access spacing and the need for improved access management. Numerous improvement options were identified, representing a wide range of access management strategies and configurations. These options were screened and modified to reflect community desires and business concerns. This paper reviews the operational and safety problems, identifies a theoretical access configuration along the NY27 corridor that could mitigate these problems, and reviews the alternative that was approved and is being progressed to final design. The approved alternative reflects “real-world” considerations that affect a retrofit project.

I. INTRODUCTION

The study area involves New York State Route 27 (NY27), also known as Sunrise Highway, a principal arterial in suburban Long Island. The conditions along NY27 are typical of corridors throughout the United States where development approvals were granted by local land use agencies without sufficient consideration of whether the transportation system can accommodate the associated traffic. The state DOT, in this case, or other transportation agency is then put in the position of attempting to implement a retrofit project to mitigate the traffic and safety conditions.

New York is a “Home Rule” state, with many municipalities that make land use planning and development decisions that have direct impacts on the transportation infrastructure. However, all too often, there is little if any coordination with the transportation agency having jurisdiction over the roadway system. The difficulty is that many of the major arterials in the roadway system serve often conflicting functions – access to abutting properties and mobility for through and neighborhood traffic. Strip development has occurred over time and, in many places, traffic-related problems have become serious. In some locations, many of the developments may have occurred before access management was a consideration. The layouts of these developments often precluded interconnections to future adjoining developments. Often, by the time the problem is recognized, the situation has become unbearable, and difficult to fix. This is a symptom of inadequate attention to access management and the preservation of the integrity of the roadway system as development occurs. Local governments have the authority which may be used to manage land uses and influence roadway improvements. State highway departments are limited to dealing with the roadway system. However, by the time development occurs and the related problems occur, remedial options may be constrained by the very developments causing the problems.

The one-mile section of NY27 between Sunrise Promenade (a major shopping center) and Loudon Avenue was the focus of the study efforts. On this section of NY27, the proximity of the shopping center driveways to each other and to the nearby intersections results in heavy turning-movement volumes that block the through travel lanes and cause over-lapping conflicts, weaving movements, and queues. The significant traffic congestion and the high accident rate reflect the problems caused by inadequate access spacing and the need for improved access management. The analyzed section has speed limits of 45 mph and 55 mph for the eastbound and westbound directions, respectively. **Figures 1 and 2** present the project location and study area, respectively.

For this section of the NY27 corridor, needs were identified with the New York State Department of Transportation (NYSDOT) relating to geometric, safety, and operational deficiencies. The section had three priority investigation locations (PILs) and an accident rate that was 24 percent higher than the statewide average rate. The section also experienced over-saturated traffic conditions and recurrent congestion (low speeds and poor level of service).

Short-term actions have been implemented to help relieve traffic congestion and were monitored to evaluate their effectiveness. These actions included supplemental signing, provision of changeable message signs, pavement markings, turn restrictions and traffic rerouting, and traffic signal retiming. Actions that were deemed successful have been continued to help maintain traffic flow.

Numerous improvement options were identified, representing a wide range of access management strategies and configurations. These options were screened and modified to reflect community desires and business concerns. This paper reviews the operational and safety problems, identifies a theoretical access configuration along the NY27 corridor that could mitigate these problems, reviews the alternative that was approved and is being progressed to final design, and presents a series of conclusions that could be applied to help avoid similar conditions. The approved alternative reflects “real-world” considerations that affect a retrofit project.

II. BASE CONDITION

Access Control

NY27 is without control of access within the project limits. However, the Long Island Railroad (LIRR) tracks generally preclude access to the north of NY27 except at major cross streets. This accounts for the higher westbound speed limit. There are numerous driveways within the project limits that provide access to a variety of retail establishments including restaurants, strip malls, shopping centers and gas stations.

Roadway Geometry and Access Density

The horizontal roadway alignment west of Old Sunrise Highway (NY27A) is characterized by long tangent sections and few horizontal curves. In general, horizontal curve radii exceed 5,000 feet, except for the radius of one horizontal curve at the NY27 bend in the vicinity of the junction with Old Sunrise Highway.

In most sections of the study area, the cross-sectional width of NY27 ranges from approximately 120 to 144 feet, including the shoulder and sidewalk areas. The right-of-way (ROW) width varies and is defined by the LIRR property line on the north (i.e., westbound) side of NY27 and the property lines on the south (i.e., eastbound) side. On-street parking is generally prohibited in the study area. The shoulder lane on the eastbound roadway serves as a continuous right-turn lane to the abutting commercial developments. The shoulder on the westbound roadway transitions to an exclusive right-turn lane at major intersections. The median is raised and curbed, and its width varies (up to 40 feet at some locations). Left turns are accommodated within the median. Curbs are present in most areas at the median and travel lane edges. Grades are flat-to-moderate. The analyzed one-mile section is characterized by nine signalized intersections and access points that are spaced as little as 100 feet apart.

Intersection Geometry and Spacing and Locations of Traffic Signals

NY27 has three through lanes in each direction. Turning bays for left- and/or right-turn movements are provided at signalized intersections and commercial driveways. Right- and left-turn lanes also are present on some cross-street approaches. The following is a list of major signalized intersections and driveways along NY27 in the study area, from west to east:

- Sunrise Promenade
- Unqua Road/Park Lane
- Sunrise Mall westerly driveway
- Philips Plaza (formerly “Sears Center”) westerly driveway
- Philips Plaza (formerly “Sears Center”) easterly driveway
- Old Sunrise Highway
- East Chestnut Street (Sunrise Mall easterly driveway)

Dual left-turn lanes are provided on eastbound NY27 at the Sunrise Mall westerly driveway and at East Chestnut Street (destined for one of the Sunrise Mall easterly driveways), and on westbound NY27 at Sunrise Promenade and Philips Plaza (“Sears Center”) westerly driveway.

The following five traffic signals are located within a distance of 1,550 feet along NY27: Unqua Road/Park Lane, Sunrise Mall westerly driveway, Philips Plaza westerly driveway, Philips Plaza easterly driveway, and Old Sunrise Highway. As shown in the table below, traffic signal spacing on this section of NY27 is far less than desirable for an arterial with statutory speed of 45 mph (the lower eastbound speed limit). The traffic signals are semi-actuated, operated on a 170-second background cycle length, and controlled by New York Type 179 traffic signal controllers.

Location	Traffic Signal Spacing (feet)
Unqua Road/Park Lane - Sunrise Mall westerly driveway	600
Sunrise Mall westerly driveway-Philips Plaza westerly driveway	100
Philips Plaza westerly driveway-Philips Plaza easterly driveway	325
Philips Plaza easterly driveway-Old Sunrise Highway (NY27A)	525
<i>Total Section: Unqua Road/Park Lane - Old Sunrise Highway (NY27A)</i>	<i>1550</i>

Traffic Volumes and Operations

NY27 carries an average daily traffic (ADT) volume of 66,100 vehicles, a design hourly volume (DHV) of 3,500 vehicles, and a directional design hourly volume (DDHV) of 1,800 vehicles. The Saturday peak-hour volumes are shown in **Figure 3**. Volumes on NY27 in the vicinity of Unqua Road are approximately 3,100 and 2,700 vehicles in the eastbound and westbound directions, respectively, during the Saturday peak hour (3:00-4:00 PM). Left- and U-turn volumes are very high on eastbound NY27 at the Sunrise Mall westerly driveway (550 vehicles) and East Chestnut Street (500 vehicles) and on westbound NY27 at the Philips Plaza (formerly “Sears Center”) westerly driveway (700 vehicles).

Traffic operations on this 1,550-foot section of NY27 between Unqua Road/Park Lane and Old Sunrise Highway are characterized by conflicting traffic movements, congestion, high turning volumes, low speeds, and overlapping queues during the Saturday peak hour. Traffic operations are complex on the NY27 links between Unqua Road/Park Lane and Sunrise Mall westerly driveway, and between Sunrise Mall westerly driveway and the Philips Plaza (“Sears Center”) driveways and Old Sunrise Highway. Conflicting traffic movements east of Unqua Road under the existing condition are illustrated in **Figure 4**. The conditions studied to identify remediation measures were:

Unqua Road/Park Lane. High turning-movement volumes cause over-saturated conditions that are exacerbated by the inadequate capacity of the westbound NY27 left-turn lane at Unqua Road. This results in overflows of the westbound NY27 left-turn lane that extend to the east and

overlap with queues at the upstream signalized intersections. As shown in **Figure 5**, the intersection operated very poorly during the Saturday afternoon peak hour.

Sunrise Mall Westerly Driveway. Intense weaving activity and congestion were noted on westbound NY27 between the Sunrise Mall westerly driveway and Unqua Road/Park Lane. Motorists who exit this driveway and weave across the three through lanes to turn left at Unqua Road have a negative impact on safety and operations. Capacity for the eastbound left-turn movement into the Sunrise Mall westerly driveway appeared at times to be insufficient to service the demand. This may be exacerbated by the alignment and non-standard curvature of the Sunrise Mall access roadway under the LIRR tracks. Field observations also indicated that the unsignalized right-turn egress movement operates poorly during the Saturday afternoon peak hour with long traffic queues extending into the Mall.

Philips Plaza (formerly “Sears Center”) Driveways. The proximity of the easterly and westerly driveways, located approximately 325 feet from each other, severely impacts on the operation of both intersections (controlled by the same traffic signal controller). Conflicting movements take place between inbound, outbound and NY27 through vehicles, resulting in recurrent congestion on the eastbound and westbound links. As shown in **Figure 6**, queues of vehicles waiting to turn left from westbound NY27 into Philips Plaza at the westerly driveway, at times, block the egress movement from Philips Plaza onto westbound NY27 at the easterly driveway.

Old Sunrise Highway (NY27) . The traffic signal on NY27 at Old Sunrise Highway controls only the eastbound NY27 traffic. As a result, the westbound left-turn movement from Old Sunrise Highway must merge with the westbound NY27 traffic, after clearing the eastbound NY27 traffic stopped at the traffic signal. The frequency of accidents at this intersection is also an issue.

Safety Considerations

The approximate 0.5-mile section of NY27 from Sunrise Promenade to Old Sunrise Highway has an accident rate that significantly exceeds the statewide average that could be attributed to the frequency and density of conflicting traffic movements. Safety deficiencies can be attributed to frequent driveways, closely spaced signals, traffic congestion and heavy left-turn volumes, and overlapping traffic backups.

III. PROJECT OBJECTIVES AND IMPROVEMENT CONCEPTS

The following objectives were established with the various stakeholders:

- Maintain reasonable access to abutting properties
- Improve traffic safety at identified problem locations along NY27
- Improve traffic operations along NY27
- Preserve the aesthetics of the area.

The following improvement concepts were applied to help achieve the established objectives:

- Reduce the number of conflicting traffic movements
- Increase the spacing between conflict points
- Remove turning vehicle queues from the through lanes
- Add auxiliary lanes.

IV. IMPROVEMENT OPTIONS

A wide range of alternative improvements, involving various access options, was developed to address existing and future needs and deficiencies in the study area. These options were assessed to identify which ones should be further considered based on consistency with the project objectives. The screened alternatives were refinements or combinations of various options presented and reflect input and comments from NYSDOT, elected officials, and the local communities. They generally included the addition of an auxiliary through lane in each direction of NY27 and increasing turn storage lengths to reduce turning vehicle queues and backups into the through lanes. The alternatives generally differed in the access arrangements that were included for the abutting shopping centers along NY27. In this paper, two of the alternatives are presented:

- One illustrating what could be done theoretically, either if there was an access management plan before development occurred or if major access revisions could be implemented for the shopping centers abutting on NY27; and
- One showing the approved alternative that reflects modifications made based on the concerns and feedback from stakeholders.

Theoretical Alternative

This alternative (see **Figures 7 and 8**) was devised to address the operational and safety deficiencies in the study area based on the application of basic access management principles. It involved NY27 access modifications that included reconfiguration of the Philips Plaza (formerly ASears Center®) driveways and the elimination of the eastbound left-turn access at the Sunrise Mall westerly driveway. Good access management theory was applied to improve the overall roadway system by eliminating or separating conflicting movements, providing adequate storage and capacity for turning movements, and increasing spacing between access points. Based on the access modifications, traffic signal control could be eliminated at two at the study locations. This alternative was viewed as improving both traffic operations and safety. The more significant access modifications and improvements are briefly described below:

NY27 at Unqua Road and Sunrise Mall Westerly Driveway. This alternative includes a major modification to access at Sunrise Mall to enable other access improvements that would help to reduce delay and improve safety in the corridor. The following are the key improvement features:

- The heavy eastbound double left-turn movement into the mall would be eliminated and eastbound motorists would access the shopping area at the other entrances, located further east.
- A raised separator would be provided on westbound NY27, extending from Unqua Road to east of the Sunrise Mall westerly driveway. This median would prevent vehicles exiting the Sunrise Mall westerly driveway from weaving across westbound NY27 into the left-turn lane at Unqua Road. Separating these two movements would help improve traffic safety and operations.
- A second left-turn lane would be added to westbound NY27 for the left-turn movement onto southbound Unqua Road. The additional turn lane would process additional vehicles and provide additional storage that would help avoid the problem of turning vehicles queuing and blocking the westbound through lanes. Right-of-way acquisition on Unqua Road would be needed south of NY27 to provide sufficient width for accommodating the two left-turn lanes from westbound NY27.

- A double right-turn lane would be provided for the egress movement at the westerly Sunrise Mall driveway, using the road space that would become available with the elimination of the eastbound left turn entering movement. A minimal amount of right-of-way acquisition would be needed on the north side of NY27 at the Sunrise Mall westerly driveway.

Philips Plaza (formerly “Sears Center” The following access modifications and improvements were included for Philips Plaza:

- The Philips Plaza westerly driveway, which is currently an entrance only, would become a two-way entrance/exit, providing right-turn access to and left-turn egress from the shopping area. Internal traffic circulation would need to be modified in conjunction with the driveway changes.
- The Philips Plaza easterly driveway, which is currently an entrance and exit, would be reconfigured to provide for eastbound right-turn ingress and egress and westbound left-turn ingress to the shopping area.
- As a result of the Philips Plaza access changes, the westbound traffic signal at the easterly driveway could be eliminated.

Old Sunrise Highway at NY27

- The movement from Old Sunrise Highway to westbound NY27 would be eliminated, reducing the numbers and locations of conflicting traffic movements. This traffic could continue to perform this movement via alternative routes.
- As a result of the elimination of this movement, the eastbound traffic signal at this location could be eliminated.

The issues raised in meetings with the various stakeholder groups concerned the additional pavement that pedestrians would need to cross on NY27, based on the widening to provide auxiliary lanes. There was also a desire to preserve the character and aesthetics of NY27 in the study area. In addition, there were major concerns regarding the access modifications at the shopping centers. Sunrise Mall owners were not willing to test the elimination of the eastbound left turn at the westerly driveway; they were concerned with the potential economic impact of the access restriction on businesses located on the western side of the mall. In addition, the Philips Plaza owners were not interested in major internal circulation changes to accommodate the reconfigured access. Philips Plaza owners also were concerned with a potential reduction in the number of parking spaces. The Parent Teacher Association (PTA) opposed the elimination of the movement from Old Sunrise Highway to westbound NY27. The PTA was concerned with the rerouting of some school buses to/from an area school that would be needed, if this movement was eliminated.

Based on these issues related to the access modifications and other improvements, this alternative was dropped. As a result, a detailed traffic operational analysis was not done for comparison with selected alternatives. However, a safety analysis indicated that this alternative had the potential to reduce the number of accidents by 53 percent, 77 percent, and 48 percent, respectively, for NY 27 at Unqua Road/westerly Sunrise Mall driveway, Philips Plaza driveways, and Old Sunrise Highway. Although this alternative was dropped, various

components were advanced as part of an alternative that focused on traffic safety with reduced emphasis on traffic operations.

Approved Alternative

The alternative that was approved (see **Figures 9 and 10**) included minor widening and channelization improvements on NY27, modified ingress and egress at Philips Plaza, and a reconfigured westbound left-turn from Old Sunrise Highway to westbound NY27. This alternative reflects modifications to an earlier version that was presented at the May 21, 2002 Public Information Center for the project. It includes several of the features described in the theoretical alternative, such as adding an eastbound auxiliary lane on NY27 from west of Unqua Road to Old Sunrise Highway and providing additional storage for major left-turn movements. Its focus was mainly safety, since it was scaled down to eliminate several of the operational improvements based on “real-world” constraints. A narrower cross section was provided in response to community concerns regarding pedestrian crossings of NY27 and retaining the character of NY27. The elimination of the movement from Old Sunrise Highway to westbound NY27, which had been opposed by the PTA and others, was replaced with reconfiguring the intersection to retain this movement. This was achieved by introducing an additional traffic signal on westbound NY27 to improve the safety for the westbound left-turn movement. In addition, the access arrangement at Philips Plaza was modified to retain the existing internal circulation patterns.

The more significant access modifications and improvements in the approved alternative are briefly described below:

NY27 at Unqua Road and Sunrise Mall Westerly Driveway. This alternative includes a major modification to access at Sunrise Mall to enable other access improvements that would help to reduce delay and improve safety in the corridor. The following are the key improvement features:

- Additional storage for the single left-turn lane from westbound NY27 onto Unqua Road would be provided with sufficient pavement width to allow for re-striping a double left-turn lane on westbound NY27 to Unqua Road at some future date.
- A raised separator would be provided on westbound NY27, extending from Unqua Road to east of the Sunrise Mall westerly driveway. This median would prevent vehicles exiting the Sunrise Mall westerly driveway from weaving across westbound NY27 into the left-turn lane at Unqua Road. Separating these two movements would help improve traffic safety and operations

Philips Plaza

- This alternative includes reconfiguring the access to Philips Plaza to provide for full movements at the easterly driveway. This would replace the current arrangement where left turns to the shopping center, at the westerly driveway, may queue and block left turns from the shopping center, at the easterly driveway.
- The revised access arrangement would enable the removal of the traffic signal at the westerly driveway. The easterly driveway would be widened to provide a third egress

lane. There would be no property acquisition envisioned at Philips Plaza. Only minor traffic circulation changes within the parking lot would be needed.

Old Sunrise Highway

- Access from Old Sunrise Highway onto westbound NY27 would be made via a reconfigured left-turn lane within the raised island and median. Currently, only eastbound NY27 at this intersection is signalized and, as a result, the westbound movement from Old Sunrise Highway must merge with the westbound NY27 traffic. Both the eastbound and westbound NY27 through movements at Old Sunrise Highway would be signal controlled in this alternative.

The overall advantage of the approved alternative is that, by eliminating the access modifications that were opposed by specific interests, it appears to be implementable within a reasonable timeframe. Although it would be an improvement compared to the no-build scenario, it would not provide the same level of operational or safety benefits as the theoretical alternative. **Table 1** compares the estimated accident reductions at three critical study locations between the two alternatives presented. As could be expected, there would be greater accident reductions as a result of the theoretical alternative. However, the safety benefits estimated with the approved alternative are still significant. In addition, as shown in **Table 2**, there are operational benefits projected by CORSIM for the approved alternative relative to the no-build scenario. The scaled-down improvements would result in higher operating speeds that would still be considered undesirable in most areas, but not unusual for Long Island. Below are the major results of a comparison between the approved and the theoretical alternatives:

- The approved alternative would not be expected to produce the same level of traffic operations or safety improvements as compared to the theoretical alternative. However, conditions with the approved alternative are expected to improve relative to the no-build scenario.
- Addresses concerns about eliminating the movement from westbound Old Sunrise Highway to NY27 by reconfiguring this movement and providing an additional signal on westbound NY27.
- Addresses concerns by shopping center owners regarding the access revisions by retaining the eastbound left turn at the Sunrise Mall westerly driveway and by reconfiguring the access arrangement at Philips Plaza to reduce changes needed to internal circulation.

V. CONCLUSIONS

This paper discussed issues encountered in developing a retrofit project for a roadway in a densely developed, commercialized area on NY27. Numerous, major shopping centers and a high volume of through traffic result in congestion and safety impacts. The conditions along NY27 are typical of corridors throughout the United States where development approvals were granted by local land use agencies without sufficient consideration of whether the transportation system can accommodate the associated traffic. NYSDOT was put in the position of attempting to implement a retrofit project to mitigate the traffic and safety conditions.

Numerous improvement options were identified, representing a wide range of access management strategies and configurations. The theoretical alternative presented in this paper was assembled to incorporate basic access management principles. It was viewed as having

significant potential for improving traffic operations and safety in the NY27 corridor. However, there were “real-world” considerations that needed to be addressed in this retrofit project. As a result, several key elements of theoretical alternative were modified to make it more acceptable to the stakeholders. The final design plans are projected to be completed in 2004 and the construction scheduled for 2005.

There are lessons that should be applied in reviewing proposed developments along major roadway facilities. Unfortunately, after developments are approved and they and the resultant traffic problems become a reality – as the case in the NY27 corridor – it was too late to apply a number of these lessons. The result is not only poor traffic operations and safety, but also other quality of life issues, such as noise, air quality, and cut-through traffic avoiding the congestion on the arterial network. The lessons are related to trying to make the right decisions from the beginning and looking at a bigger picture in identifying impacts and needs:

- Coordinate land use with available transportation resources. If the transportation infrastructure is not in place to support the potential development traffic, decisions are needed to achieve a balance. This may involve investing in transportation infrastructure to accommodate traffic or modifying the allowable land use to result in less traffic.
- Provide the appropriate transportation agency an opportunity to review the land use plan while there is still a chance to be proactive.
- Assess conditions at locations that extend beyond the immediate vicinity of the site. A broader perspective should be applied in terms of potential implications elsewhere in the area. For example, a new traffic signal could constrain future flexibility to achieve progressive corridor speeds.
- Consider conditions beyond the time of the development review. Again, a broader perspective should be applied in terms of what is expected in the future. An access arrangement that works when the first development occurs in a corridor, may cause operational and safety problems when other projects are built. The roadway network needs to be viewed as serving more than just the first developer. A supporting road system needs to be developed to avoid overloading the arterials. In addition, provisions for cross access to allow for internal circulation should be made wherever appropriate. .
- Identify the long-term implications and cumulative impacts of access-related decisions. Allowing more driveways than needed or approving traffic signals where only marginally needed provide precedents. By being proactive, fewer problems will occur and there will be fewer constraints that will preclude future improvements.
- Use opportunities that arise to apply access management principles to improve traffic operations and safety – this includes when a developer requests approval for an expansion or other major change as well as a transportation agency progressing roadway improvement plans.
- If a retrofit project is necessary, get the stakeholders involved and develop a plan that recognizes the “real world” constraints. An improvement plan that gains approval and gets implemented, even with modest benefits, is better than one that may be theoretically better but ends up on a shelf.

V. ACKNOWLEDGEMENT

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Table 1 - Accident Frequency & Reduction

LOCATION	Current Number of Accidents *	Estimated Accident Reduction	
		Theoretical Arrangement	Approved Plan
Unqua Road/ Sunrise Mall Westerly Driveway	89	53%	46%
“Sears Center” (Philips Plaza)	13	77%	51%
Old Sunrise Highway	15	48%	30%

* 1½ - Year Accident Data

Table 2 - Projected Operations With Approved Plan

	SPEED (MPH)	
	No Build	Build
Eastbound NY27	8.7	10.4
Westbound NY27	6.5	13.6

Figure 1: Project Location



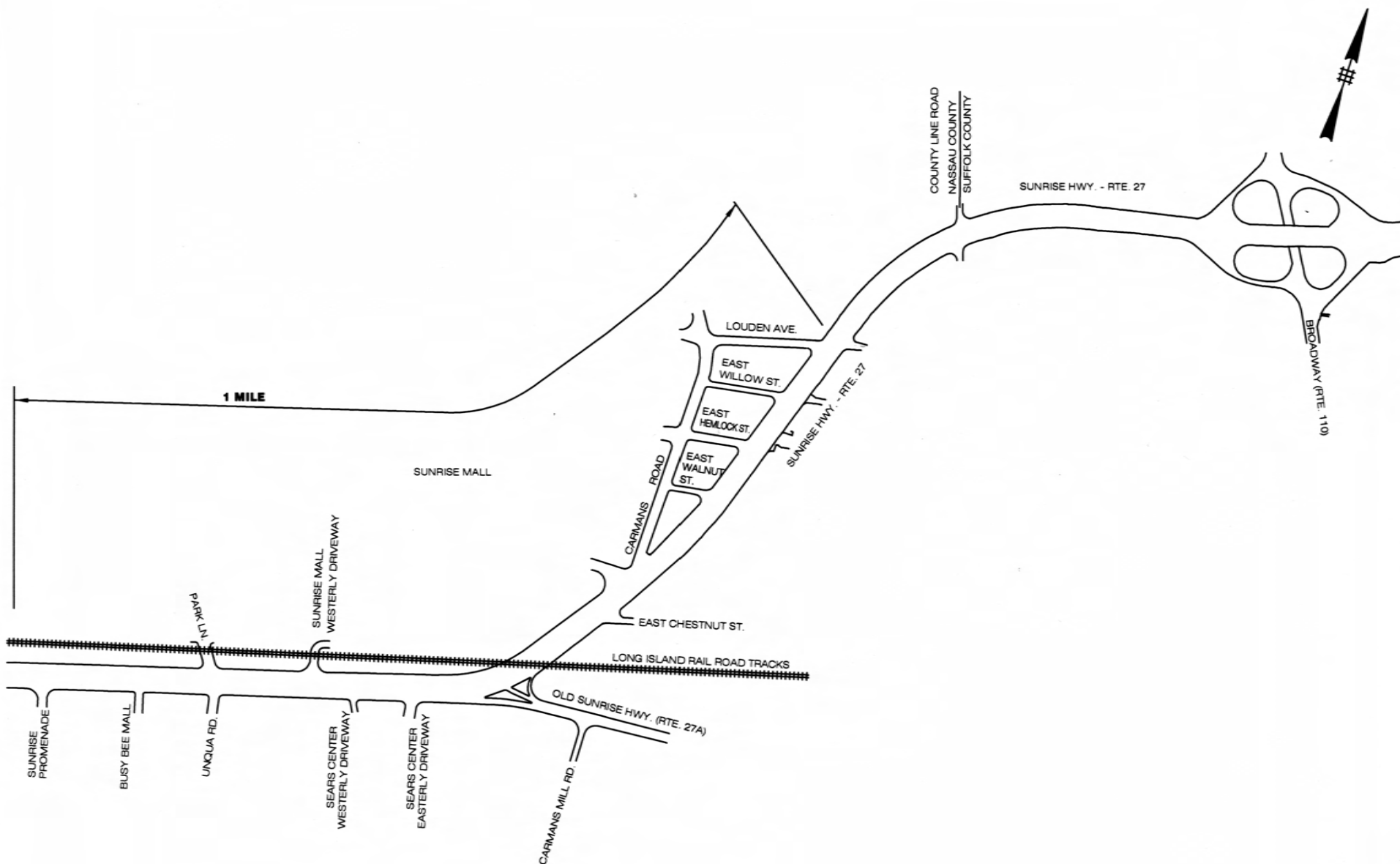


FIGURE 2
STUDY AREA

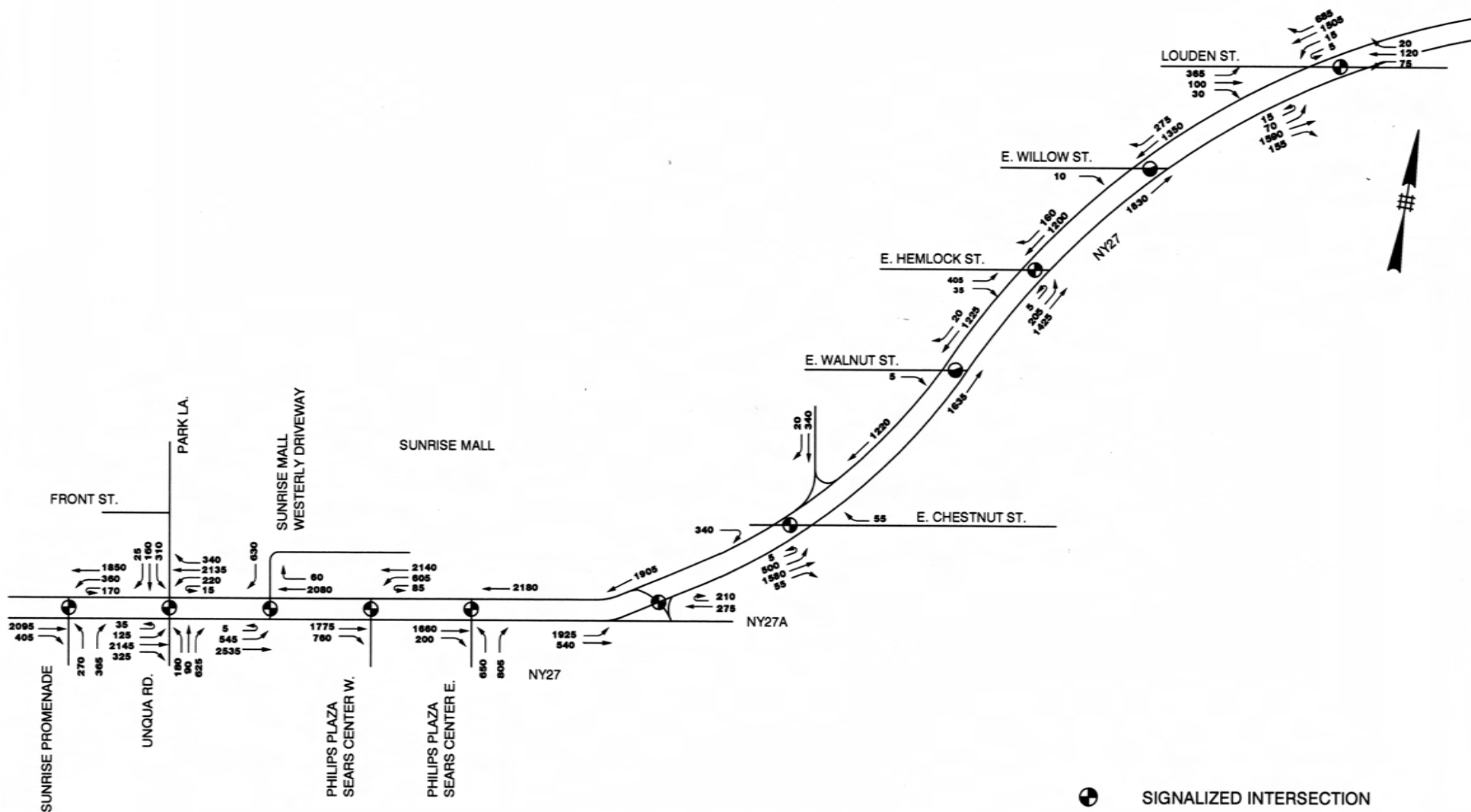


FIGURE 3
SATURDAY PM PEAK-HOUR VOLUMES

Figure 4

Major Turning Movements East of Unqua Road

EXISTING CONDITION

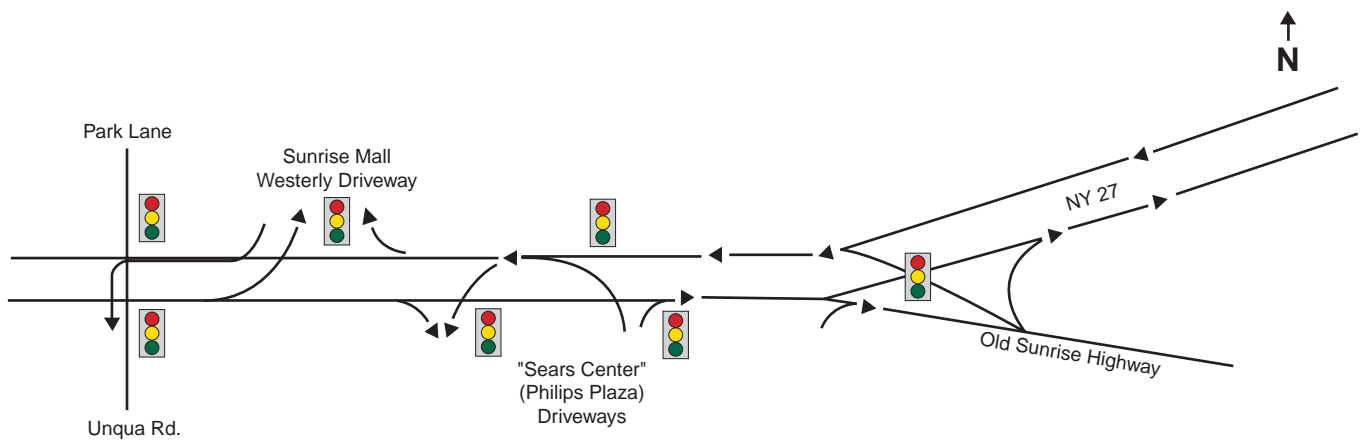


Figure 5: Traffic Condition on NY27 Near Unqua Road



Figure 6: Traffic Condition on NY27 Near Philips Plaza & Old Sunrise Hwy.

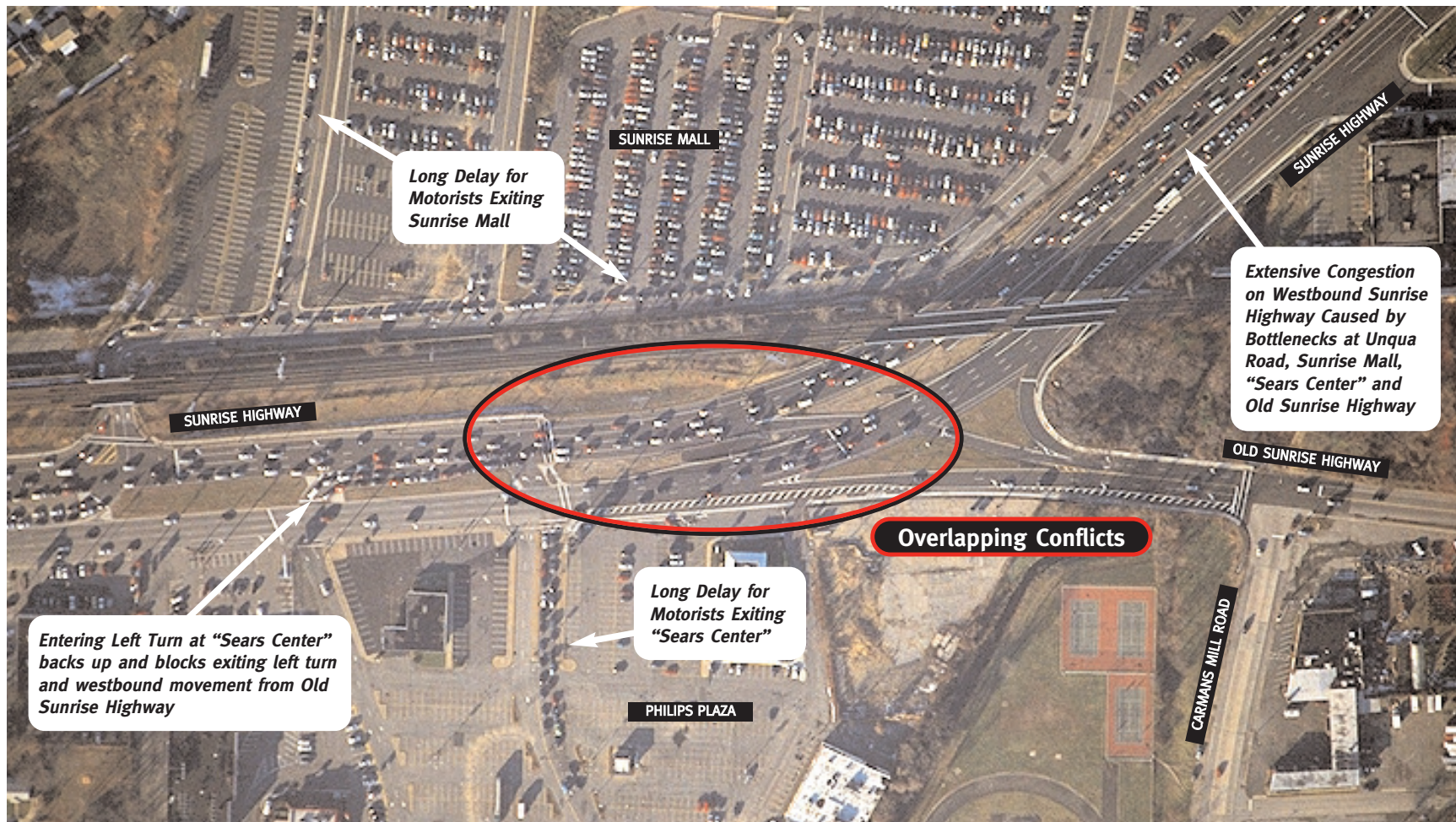
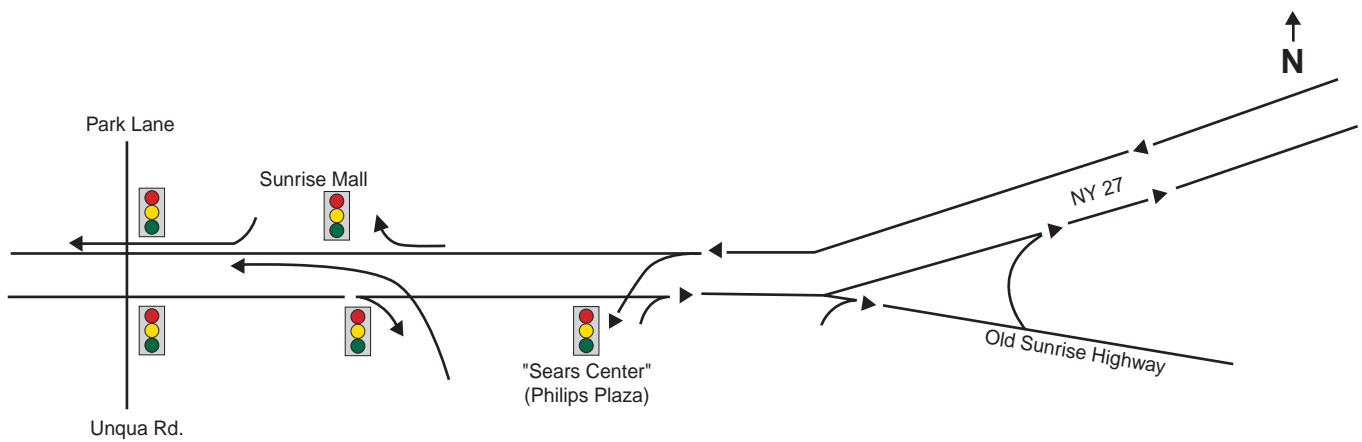


Figure 7

Major Turning Movements East of Unqua Road

THEORETICAL SEPARATION OF CONFLICTING MOVEMENTS



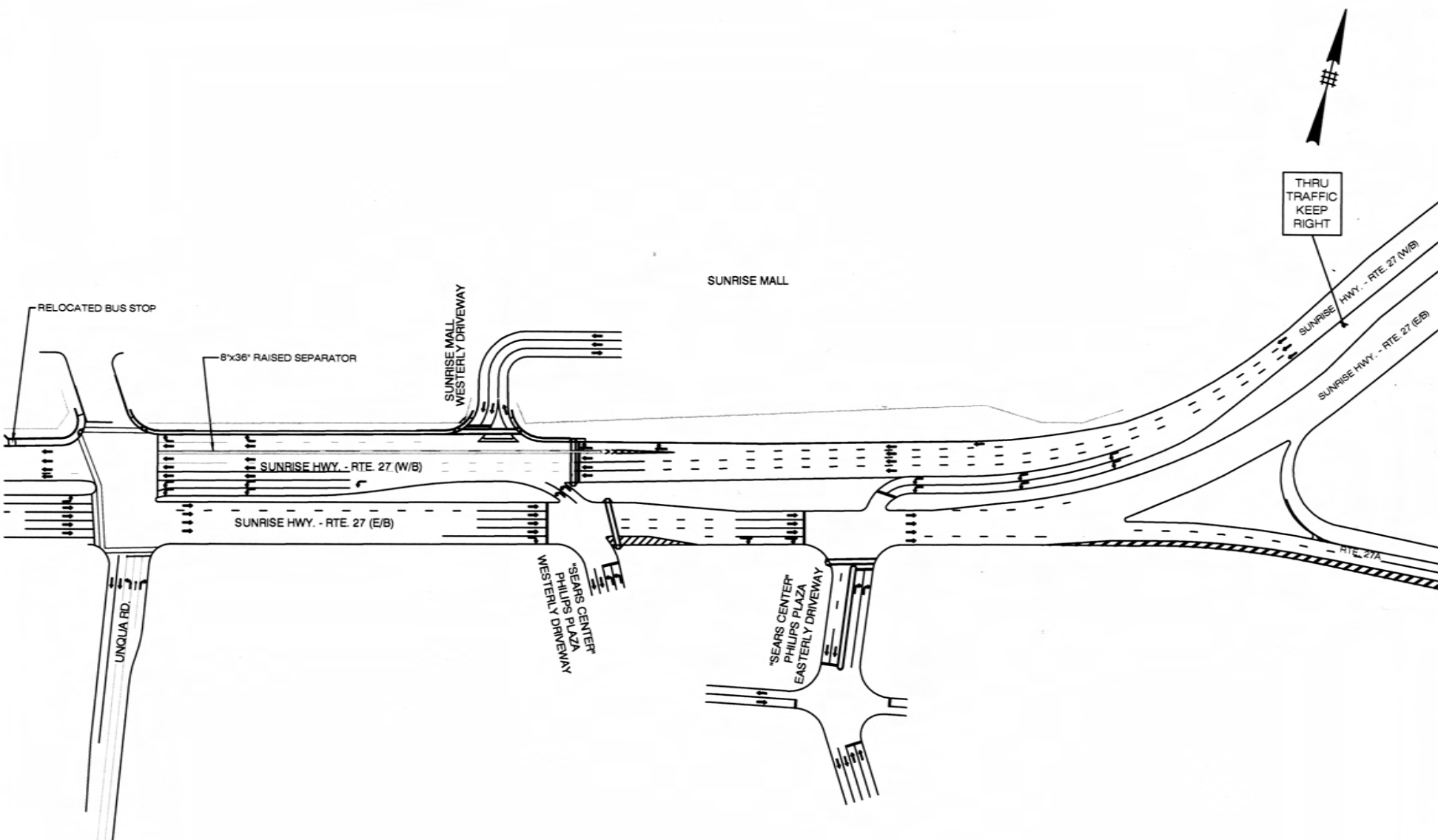
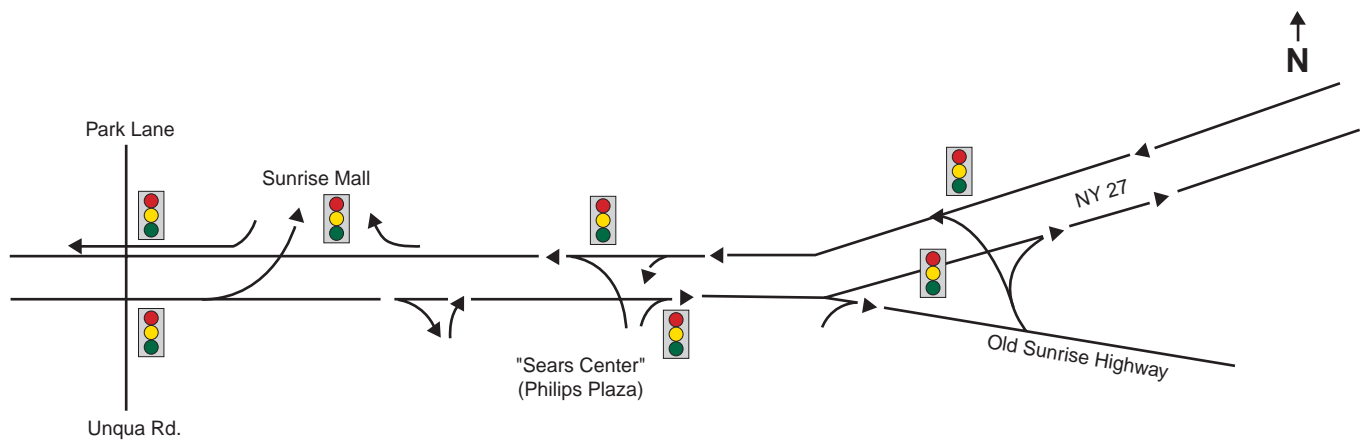


FIGURE 8
NY27 THEORETICAL ARRANGEMENT

Figure 9

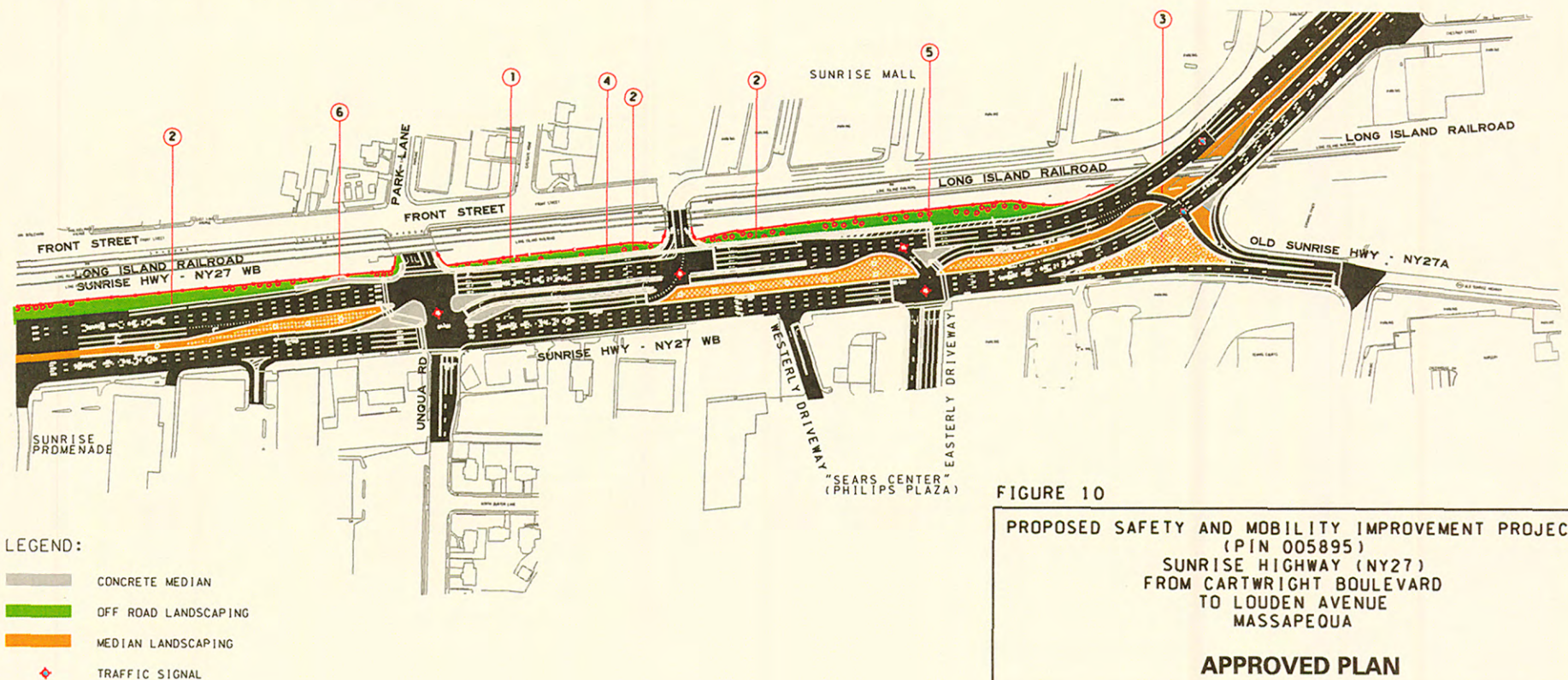
Major Turning Movements East of Unqua Road

SEPARATION OF CONFLICTING MOVEMENTS IN APPROVED PLAN



PROJECT HIGHLIGHTS:

- ① PROVIDE AN ADDITIONAL THROUGH LANE ON WESTBOUND NY27 NEAR PARK LANE (UNQUA ROAD) TO REDUCE TRAFFIC BACKUPS.
- ② INCREASE THE STORAGE LENGTH FOR MAJOR LEFT-TURN MOVEMENTS ALONG NY27 SUCH AS UNQUA ROAD AND SUNRISE PROMENADE.
- ③ RELOCATE MOVEMENT FROM WESTBOUND OLD SUNRISE HIGHWAY TO WESTBOUND SUNRISE HIGHWAY AND ADD TRAFFIC SIGNAL ON WESTBOUND SUNRISE HIGHWAY.
- ④ PROVIDE A RAISED TRAVEL LANE SEPARATOR ON WESTBOUND NY27 TO ELIMINATE TRAFFIC CONFLICTS CAUSED BY MOTORISTS WEAVING OVER FROM THE SUNRISE MALL WESTERLY DRIVEWAY TO THE LEFT-TURN LANE TO UNQUA ROAD.
- ⑤ RECONFIGURE ACCESS TO "SEARS CENTER" (NOW PHILIPS PLAZA) TO PROVIDE FOR SMOOTHER, SAFER TRAFFIC MOVEMENTS AT THE EASTERLY DRIVEWAY AND REMOVE THE TRAFFIC SIGNAL AT THE WESTERLY DRIVEWAY TO REDUCE TRAFFIC CONFLICTS.
- ⑥ RELOCATE AND RECONFIGURE THE EXISTING BUS STOP ON WESTBOUND NY27, WEST OF PARK LANE (UNQUA ROAD) TO PROVIDE ANEW BUS TURNOUT.



STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION