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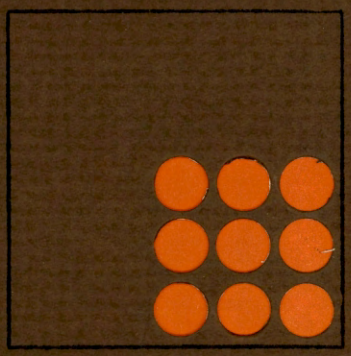

TOPICS
Monmouth County

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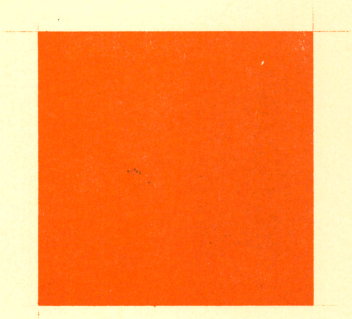

MONMOUTH COUNTY

NEW JERSEY DEPARTMENT OF TRANSPORTATION

IN COOPERATION WITH

MONMOUTH COUNTY

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

NOVEMBER, 1973

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November 1, 1973

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Mr. Joseph C. Irwin
Director Monmouth County Board of Freeholders
Monmouth County Offices
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Freehold, New Jersey 07728

Gentlemen:

We are pleased to submit herewith our TOPICS Report for the County of Monmouth, New Jersey, in accordance with the terms of our Agreement dated November 16, 1970.

We wish to acknowledge and express our appreciation to the officials of the New Jersey Department of Transportation, the Federal Highway Administration, the County of Monmouth and others for the cooperation and assistance afforded us during the preparation of this report.

Very truly yours,

William Garro
President

WG/ph

Consulting Civil Engineers
New Community Planning
Urban Design

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INTRODUCTION

The past decade has seen the completion of almost 90 percent of the Interstate Highway System. This complex system of modern freeways intended to connect the country's major urban centers has greatly improved the mobility of our population. This system of roadways when it reaches the various urban areas, however, is connected to the existing local roadway system, most of which was designed and installed 20 or 30 years ago. In most cases these local roads cannot handle the increased vehicular volume generated by the improved interstate system. The result has been congestion and delay on the urban street system.

Regularly scheduled rail and bus passenger service must supplement single vehicle transportation if ever-increasing travel demands are to be met. Recently, definite moves have been made to up-grade our deteriorating mass transportation facilities in order to develop a well-balanced transportation system. Rail and bus service, sufficient to meet anticipated demands, however, would require approximately 10 years of planning and development. In the case of the bus transportation, the already overloaded highways would still have to be used for routes.

It is clear that while the long range plans for upgrading mass transportation are affected, a short range program responsive to immediate traffic demands is necessary. The United States Department of Transportation recognized this need some years ago and under Section 10 of the Federal Aid Highway Act of 1968, established the "Traffic Operations Program to Increase Capacity and Safety", referred to as "TOPICS". This program recognizes, based on previous research, that our existing roadway system is not being used to its full potential. Most often, significant improvements in capacity and safety can be achieved simply by the proper application of existing traffic engineering technology. Functional roadway classification, upgrading of traffic control devices, synchronization of street signal systems, and, minor physical improvements to the roadways can be combined to produce significant improvements in capacity and increase safety with a minimum expenditure of new roadway construction funds.

The TOPICS program channels highway trust funds to local governments in order to encourage these units of government to take immediate, meaningful steps to improve their local roadway system.

The program is clearly a short range implementation program meant to produce physical and operational improvements on an established roadway network. In order to insure that the improvements are part of an overall area plan that will meet projected traffic demands, an areawide study is required. This study is intended to evaluate existing conditions, identify present and future problem areas,

and develop a staged program of corrective action. Problem locations are given a priority and arranged in a yearly sequence of implementation which is economically feasible.

The TOPICS program makes it possible for local units of government to develop a comprehensive short range program of traffic operations improvements by identifying problems and planning corrective action. The program also provides funds for the construction of the improvements, which the local units of government, in most cases, could not afford to finance independently. TOPICS also provides for a procedure of evaluation and updating of the yearly program. The flow diagram presented on CHART 1 provides a sequential description of the many factors considered in developing a TOPICS program.

REGIONAL SETTING

Most of Monmouth County is within 50 miles of New York City, The county is also located in the strategic transportation corridor between Boston and Washington, as illustrated on PLATE 1, and thus feels the strong influence of these economic generators.

Historically, the Battle of Monmouth was fought here in 1776, by General George Washington. A large park and recreational area is dedicated to the memory of this incident and is located in the Freehold area.

There is a large diversity of living facilities within the county. These range from beautiful and quaint horse farms, situated on lush rolling hills, to the most modern of high rise buildings.

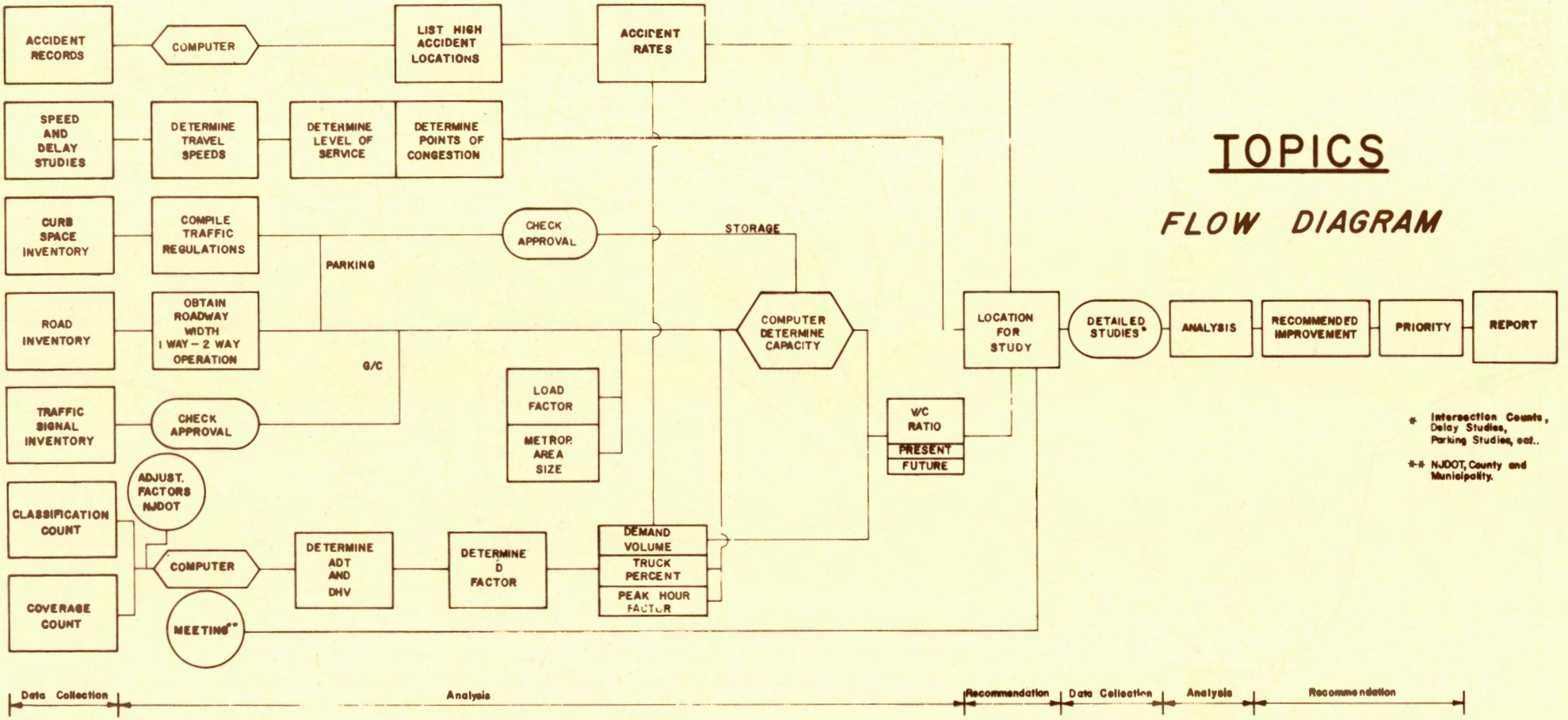
Much of the county retains the traditional atmosphere of its earlier days and many of the existing farms are strongholds of thoroughbred horse breeding, a sport and industry which supports three major racetracks in the State, two of which are located in Monmouth County.

Modern communities also exist in many newly developed areas. An aggressive and farsighted Planning Board has influenced zoning to generate an economic balance across the county, as illustrated on PLATE 2. Waterfront living is available including dockside houses on many of the county's rivers.

A well-developed recreational program is also present. The county claims one of the highest number of golf courses per capita of any location in the State and possibly the nation.

TOPICS

FLOW DIAGRAM



* Intersection Counts, Delay Studies, Parking Studies, ect..

** NJDOT, County and Municipality.

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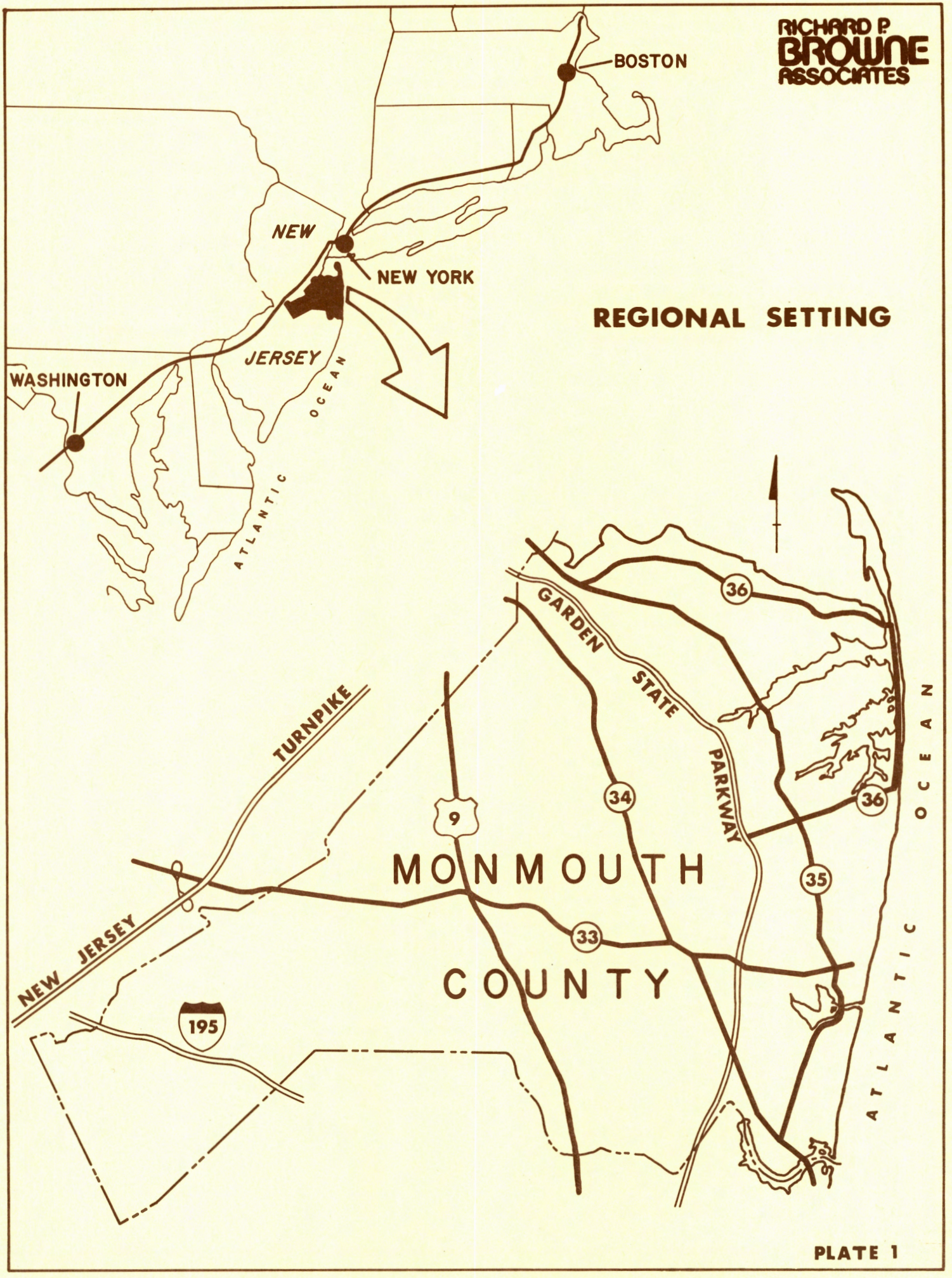
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BOSTON
NEW
NEW YORK
JERSEY
WASHINGTON
ATLANTIC OCEAN
REGIONAL SETTING
GARDEN STATE PARKWAY
TURNPIKE
NEW JERSEY
36
34
9
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195
MONMOUTH
COUNTY
ATLANTIC OCEAN
PLATE 1

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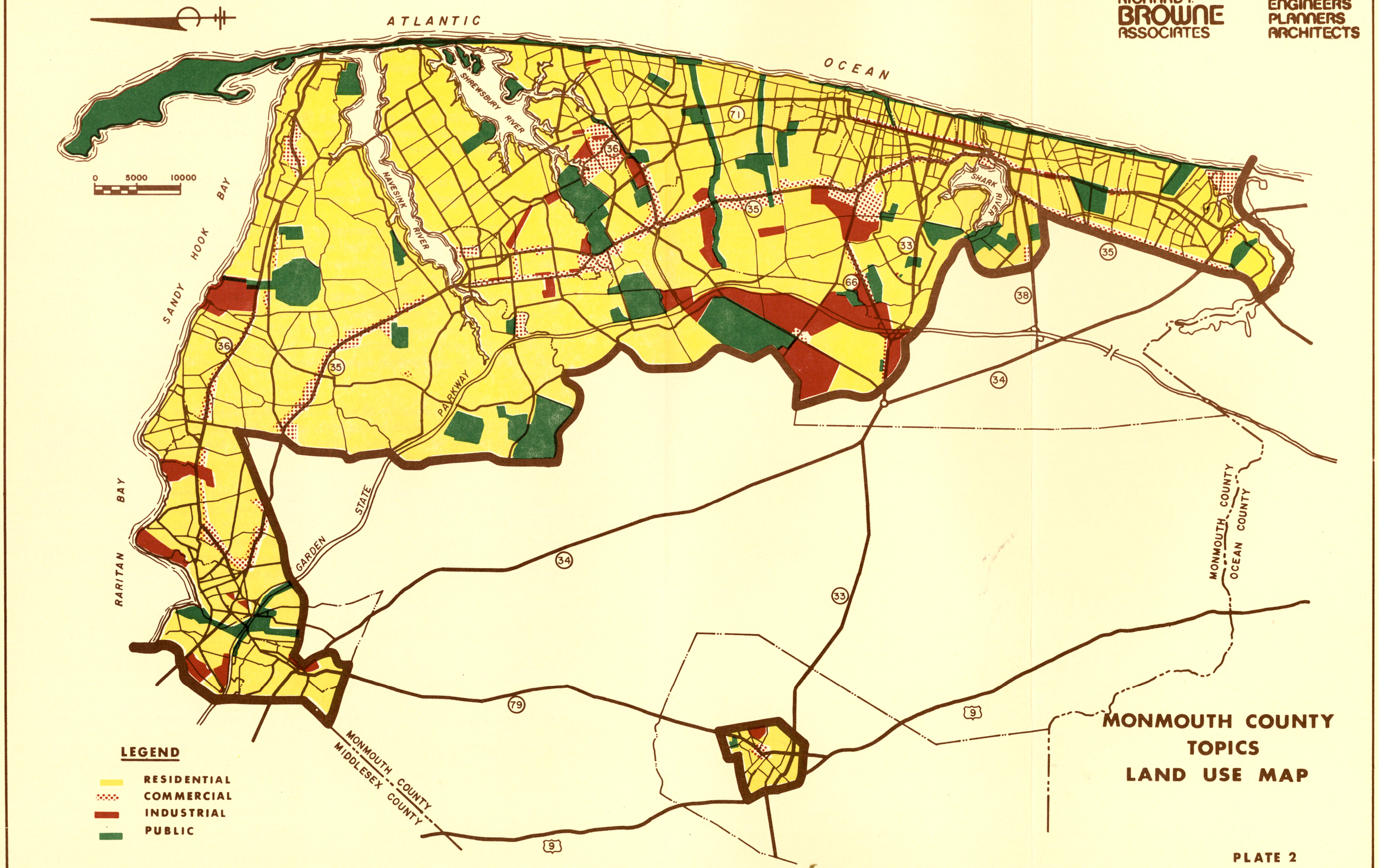

MONMOUTH COUNTY TOPICS LAND USE MAP

PLATE 2

Also available are adequate high quality educational facilities, including several well-rated colleges. This also includes several excellent vocational training centers.

Industrially, the county has a fine cross section of light industry. This industry is served by a roadway system and a rail system connecting directly to the major commercial centers.

Most parts of the county are less than an hour from Newark Airport, New York City and the Newark-Elizabeth seaport.

Monmouth County is served by several key highways. The New Jersey Turnpike passes by the western limit of the county with an interchange at N.J. Route 33. The Garden State Parkway runs north and south through the county serving the coastal regions through connecting roadways. New Jersey Route 18, which has been completed in a number of sections, also services as a north-south roadway and when fully completed will connect the northwestern quadrant of the county with the southern coastline area. Interstate Route 195 has been completed in the western portion of the county. When the Ocean County section is completed, this roadway will connect the southeastern area of Monmouth County with the western portion of the State.

With approximately 50 miles of shoreline, there is an extremely active recreational season. Much of the early county development was along a five mile strip bordering on this coastline. Other development has been along major transportation corridors within the county.

The summer population of some of the shoreline communities increases to as much as five times their off-season population. These communities are located within walking distance of the beaches or within a short drive by car. This generates large summertime pedestrian movement and greatly increased summertime parking demands. Those who drive to the beaches are forced to park several blocks from the beach and walk from that point to the beach. These groups thus become part of the pedestrian loading. Under these circumstances, pedestrian movement, especially on the roadways and intersections near the beaches must receive appropriate consideration.

DATA COLLECTION

Accident History

Except for a few occasions where State Police have primary jurisdiction, all accident information is kept at the local municipalities' Police Headquarters. Each

of the 41 municipalities in the study area was visited in order to obtain accident information. All accident reports relating to study system streets for calendar years, 1968, 1969, and 1970 were extracted.

The accident information was coded and filed for easy retrieval when required. Accident frequency is one of the methods of determining locations on the roadway system which require corrective action and thus is one of the priority rating inputs. When a location is selected for improvement, the individual accidents are carefully studied to help determine what type of improvement is needed.

As mentioned previously, in visiting each of the 41 municipalities involved in this study, in an attempt to obtain traffic accident data, a variety of filing methods were found. Methods varied from a simple pile of accident reports in a drawer to well maintained filing systems with locations, cross files, and card indexes. All of these reports had to be read and those relating to study system streets extracted and recorded for later analysis in connection with the priority selection system and corrective method analysis. In addition to the problem of the variety of filing systems, another problem was found relating to accident reports. In a large number of cases accident reports consisted only of the names of the participants and the date and time of the accident.

Frequently, there was a minimum of information or no information whatsoever on the type of accident, the specific location or where the drivers came from, etc. These accidents even though not recorded as to type, could not be ignored when considering where a possible improvement location might be placed on the priority list. Therefore, on a number of improvement location presented herein, the accident sketch which indicates the most frequent accident experience by type, does not reflect the number of accidents as recorded in the accident table. In the case where these numbers do not agree, a note under the accident sketch indicates the number of accidents which are not shown. The accidents which are "not shown", are those which could be directly related to the intersection from the accident reports, and could not be analyzed with sufficient accuracy to be included in the accident sketch.

Traffic Volumes

The New Jersey Department of Transportation and Monmouth County both maintain counting stations at various locations across the county. Some of these stations obtain data all year around and others only during selected periods in the year. To supplement this information and to determine more detailed local traffic characteristics and trends, over 400 additional 24-hour traffic volume counts were obtained. These counts were made at strategic locations in conjunction with

obtaining more than 300 detailed turning movement counts. Automatic traffic recorder locations were selected in such a way as to reflect overall network traffic patterns.

Since Monmouth County is recreationally oriented, it was considered desirable to obtain data on weekend travel patterns. Automatic traffic recorders were placed in strategic locations on most weekends of the summer months. These devices recorded traffic movements over the entire weekend, and were removed from these locations on the following Monday.

This information was used to develop detailed local travel trends and to help determine future local traffic demands. The turning movement counts also provided necessary data to determine present and future theoretical intersection capacity in accordance with procedures outlined in the Highway Capacity Manual, 1965. Theoretical capacity is described as one of the following levels of service.

Level of Service "A" is described as a condition of free flow, with low traffic volumes and high operating speeds. The driver encounters little or no restriction in maneuverability due to the presence of other vehicles.

Level of Service "B" is the zone of stable flow, with operating speeds beginning to be reduced somewhat by traffic conditions. Drivers still have reasonable freedom to select their speed and lane of operation.

Level of Service "C" is still in the zone of stable flow, but speeds and maneuverability are more closely controlled by the higher volumes. Drivers experience more restrictions on speed, lane changing and passing.

Level of Service "D" approaches unstable flow, with tolerable operating speeds being maintained. Drivers have little freedom to maneuver, and comfort and convenience are low, but conditions can be tolerated for short periods of time.

Level of Service "E" represents operations with volumes at or near the capacity of the highway. Flow is unstable, and there may be stoppages of momentary duration.

Level of Service "F" is described as forced flow operation at low speeds, where volumes are below capacity. These conditions usually result from queues of vehicles backing up from a restriction downstream.

Capacity information was used as an input for priority systems, and to determine specific improvement design requirements.

The traffic volumes shown on the design plans included with this report were

taken primarily during the summer months of 1971. These counts do not reflect traffic growth which has already taken place or growth that is anticipated to take place, between the time of the count and the time that the improvement is scheduled to be constructed. All improvement designs, however, have been checked for capacity based on anticipated traffic growth through design year 1980. In a number of cases, design plans presented herein do not include a traffic count. This is due to the fact that during the data collection portion of this study, no attempt was made to conduct turning movement counts at each and every intersection on the study system. Traffic count locations were chosen in such a way as to guarantee that traffic information would be available for every location which might turn out to be an improvement location, whether it was by direct turning movement count, or by estimated traffic volumes based on traffic count information at surrounding intersections. In every case where a traffic count is not included in the design plan, sufficient traffic volume information was available in the form of turning movement counts at adjacent intersections and automatic traffic recorder information, to estimate the traffic present at the design location to a degree of accuracy consistent with the goals and objectives of this program.

Network Travel Speed and Delay

A valuable measure of the service a roadway network is providing for area traffic demands is the average speed experienced along that network's roadways and the delay encountered at various network locations. A specially designed device called a data compiler is used to make these measurements. This is an electronic device which measures and records a vehicle's speed and elapsed time on a moving record tape. Fitted in a standard vehicle which is then driven normally over each roadway in the study system, the compiler records all necessary information which is later analyzed to determine average travel speed, points of delay, and delay locations. Points of high delay are studied to determine necessary corrective action. The network travel speed is helpful in determining functional roadway classification and determining a functional roadway system for each area studied.

Reconnaissance

Field data collection will quantify many factors affecting traffic operation, but other system dynamics must be observed to fully understand their effect on traffic. On site familiarity with the system and its dynamics is essential for a complete understanding. Engineering personnel, experienced in traffic operations, observed roadway operations at various times to evaluate traffic operations and to record characteristics which were unique to particular locations. This information was used in determining improvements which other data did not suggest.

Where necessary, usually in central business districts of the study area, parking data was obtained to the extent necessary to evaluate the impact of removing

parking from the street system due to engineering recommendations. General parking practices and enforcement techniques were also observed.

The relationship between certain nighttime accident experiences and deficient roadway lighting has been previously established. During the reconnaissance, observations of street lighting practices were noted. Shade tree obstructions of street lights were also observed. This information was used to help in analyzing accident reports pertaining to the various intersections.

Monmouth County is located less than an hour from Newark Airport. It has, however, several small airports of its own, the largest being the Monmouth County Airport. This facility, located adjacent to U. S. Route 34, has no significant scheduled airliner service, but a considerable amount of air charter and air taxi service connecting to the major metropolitan airports occurs. The traffic generation resulting from these services, however, is not of a sufficient degree or concentration during peak roadway hours to constitute a serious problem to the surrounding roadway network.

The County has a varied cross-section of light and medium industry and several larger industries. Employee movements generated by these facilities, as well as truck movements for the receiving and shipping of materials and supplies, were considered.

Traffic Signal Inventory

An inventory of all traffic signals on the study system was also made. This list was separated into two groups, those being New Jersey Department of Transportation maintained signals, and non-state maintained signals. The non-state group was then compared with records on file at the New Jersey Department of Transportation to determine if they had been authorized by that agency. Traffic signs and pavement marking practices were also observed.

Bus Transportation

Field personnel went to the office of the Public Utilities Commission, which administers bus operations in the State and obtained information on bus lines passing through any of the municipalities within the study area. Information on existing bus routes was also confirmed and verified in the field. Generally, mass bus transportation on the local level is greatly deficient in almost all areas of the county. On the other hand, bus service between various points in the county and major commercial locations in the New York-Newark vicinity is quite good and receives daily commuter use.

Rail Transportation

Only one commuter rail service remains operating in the county. This service connects Bay Head, just outside the southern boundary of Monmouth County, in northern Ocean County, with New York City, passing through most of the major Monmouth County coastline communities, then through Newark to New York City. For the most part, the equipment on these lines is old and in poor condition. This line, however, carries standing room only crowds of commuters during peak commuter periods.

Special Traffic Generators

Monmouth County has two active and very popular race tracks, one being Monmouth Park located in the eastern portion of the county, the other being Freehold Raceway, located in Freehold, the center of the county. Both of these facilities generate high "event" traffic volumes which, for short periods, load the surrounding highway network. Measurements were made during the appropriate seasons at these locations to quantitatively identify the dynamics of these event loadings.

Traffic information was also obtained as necessary at some of the large shopping centers, in order to determine their impact on the surrounding roadway system.

GENERAL RECOMMENDATIONS

Traffic Control Devices

The standard herein for traffic control device design is the Manual on Uniform Traffic Control Devices for streets and highways as published by the Federal Highway Administration. The use of this document is mandated by the Federal Aid Highway Act, Title 23, on all projects using Federal funding. Through the National Joint Council and its related agencies, the Manual is constantly being revised and updated.

In introducing significant changes in design concept, the Manual recommends new standards strongly on an advisory basis in one edition, and usually mandates them in the next edition. This allows communities several years to modify their traffic control devices to meet the new standards. For this reason, all recommendations for traffic control devices contained in this TOPICS program are based on the mandatory and advisory recommendation of the Manual.

Traffic signal modifications, where required, represent the largest expense in achieving conformance with current Manual on Uniform Traffic Control Devices practice. Within the scope of this program, it would be prohibitively expensive to attempt to upgrade all signals in the county. Therefore, the approach has been to bring any design into conformance if the location appeared on the county-wide priority list.

Traffic signs at these locations were also modified where necessary to meet new standards.

Pavement markings for the most part must be repainted yearly or more frequently. This traffic control device is thus most easily adjusted to meet new standards.

Maintenance

In order to insure that the benefits produced by the recommendations contained in this report will continue to be forthcoming, it is necessary to develop a systematic and comprehensive program for traffic maintenance in each of the municipalities responsible for it. In municipalities of less than 50,000 population, it is often difficult to justify financially, a qualified full time traffic engineer on the staff. The maintenance function under these circumstances should occur within that part of the administration that is responsible for roadway engineering in general. If this procedure is not practical, arrangements should be made to contract the maintenance function to a service contract company, experienced in the field. In each region, recommendations as to maintenance have been made.

Street Pattern

PLATE 3 shows the Monmouth County TOPICS study system streets and the study area boundaries. The study area of the county has been broken down into seven regions. TABLE 1 lists the various municipalities which comprise the regional areas.

This system of streets and roads was determined through consultation with both local and State officials prior to commencing the study. This system included all streets and highways currently in the Federal Aid Highway Systems as well as all arterial streets primarily carrying through traffic and the major collector streets leading to and comprising the central business district. Many of these streets are presently under one or more of the following designations.

(1) The National System of Interstate and Defense Highways consists of the routes of highest importance to the nation, and are intended to serve mainly interstate or interregional traffic. These highways receive Federal matching aid grants

for construction at a ratio of 90% Federal - 10% State funds. Segments of these highways scheduled for completion in the near future will have significant effects on regional traffic patterns.

(2) The Federal Aid Primary Highway System consists of major city-to-city highways, including their urban extensions, which are not part of the interstate system. This system is limited in mileage by law and is eligible for Federal participation equal to 50% of total costs of improvements. No changes in highways with this designation are contemplated.

(3) The Federal Aid Secondary Highway System consists of farm-to-market roads in rural areas and the major feeder routes into a city. Intra-urban arterial highways not on the above systems may also qualify for this designation. These roads usually receive matching Federal funds on a 50% - 50% basis for construction. This mileage is flexible and some additions and/or deletions to this system may be proposed as a result of this TOPICS study.

(4) The Federal Aid Urban System is a new Federally aided road system within the urbanized areas and for which matching Federal funds on a 50% - 50% basis for construction are available.

(5) The New Jersey State Aid Systems include most arterial highways and major collector streets not presently in a Federal Aid system. All of the existing State Aid roads are incorporated in the study network.

(6) The Monmouth County Road network not only includes highways and streets presently on the State Aid System, but also some collector streets of less importance, most of which are included in the TOPICS study. The county maintains these roads and provides the local contribution for construction or reconstruction costs.

(7) Those major municipal streets which are necessary to assure continuity of circulation have also been integrated into the study grid. These streets, primarily within the central business districts, are vital to the continued existence of a healthy urban environment.

From this initial study system, and additional streets if necessary, the Federal Aid System for TOPICS will be selected. Streets without Federal designation will be given such and will be in the Federal Aid Primary Type II System.

A TOPICS system should be based on a meaningful functional classification. The merits of developing and establishing this system go beyond funding benefits contained in the TOPICS program. Political subdivisions always have less than enough money in their budget to do all the things that are necessary. This includes

MONMOUTH COUNTY TOPICS - STUDY REGIONS

TABLE - I

REGION 1	REGION 2	REGION 3	REGION 4
Keyport Borough	Atlantic Highlands Borough	Long Branch City	Rumson Borough
Matawan Borough	Highlands Borough	Eatontown Borough	Little Silver Borough
Matawan Township (60%)*	Middletown Township	Oceanport Borough	Red Bank Borough
Keansburg Borough		Monmouth Beach Borough	Fair Haven Borough
Union Beach Borough		Sea Bright Borough	New Shrewsbury Borough
Hazlet Township		West Long Branch Borough	Shrewsbury Borough
			Shrewsbury Township

REGION 5	REGION 6	REGION 7
Allenhurst Borough	South Belmar Borough	Freehold Borough
Lock Arbor Village	Spring Lake Borough	
Asbury Park City	Spring Lake Heights Borough	
Interlaken Borough	Sea Girt Borough	
Ocean Township	Manasquan Borough	
Deal Borough	Brielle Borough	
Neptune City Borough	Belmar Borough	
Bradley Beach Borough	Wall Township (40%)*	
Avon-by-the-Sea		
Neptune Township		

* Remaining portion of municipality outside urban boundary.

T-4001 (16)

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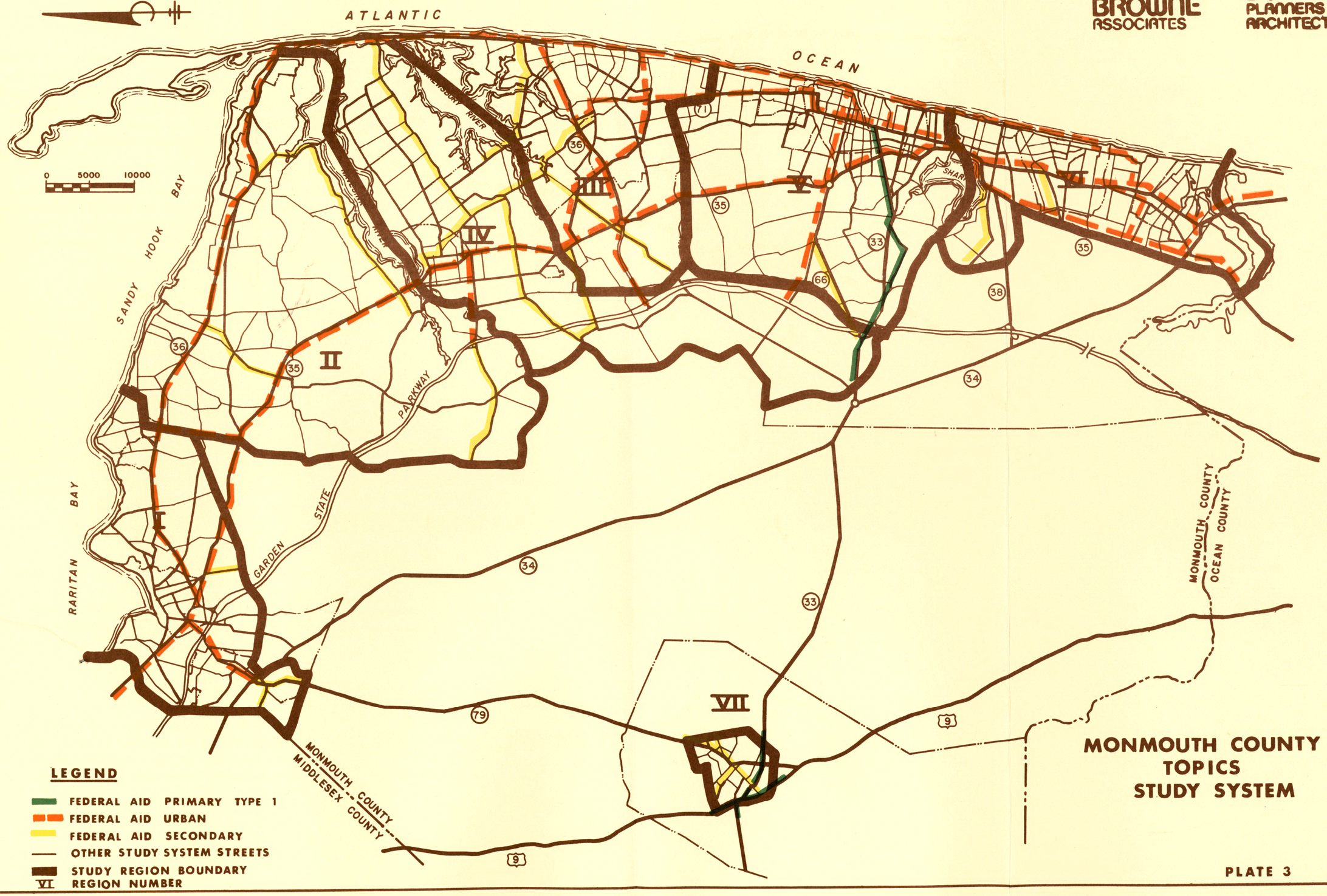

LEGEND

- FEDERAL AID PRIMARY TYPE 1
- FEDERAL AID URBAN
- FEDERAL AID SECONDARY
- OTHER STUDY SYSTEM STREETS
- STUDY REGION BOUNDARY
- VI REGION NUMBER

MONMOUTH COUNTY TOPICS STUDY SYSTEM

PLATE 3

updating and improving all the roadway facilities which need improving. Therefore, there results the need on the part of the political subdivision to determine in any one year which roadways shall get priority attention in terms of widening, resurfacing, or other improvement. In the absence of better information upon which to base a decision, all too often political considerations determine allocation of funds. This often leads to a fragmented and discontinuous roadway improvement program.

With a functional roadway network, each component of the system has already been identified as to its relative importance to the overall roadway network and the task of properly allocating funds, is greatly simplified. The recommended functional roadway system and Type II system will be contained in the appropriate sections of this report.

Parking Controls

The competition between traffic and parking for available roadway space has long been in existence. In the absence of a well defined program with appropriate alternatives, all too often business interests predominate, and roadway parking has taken priority over the efficient movement of vehicular traffic. The Federal Highway Administration, in recognizing this problem, has introduced a replacement parking program. This program provides funds to replace on-street parking lost due to TOPICS improvements with off-street parking on a one to one basis. The TOPICS program thus not only identifies locations where parking should be removed to facilitate vehicular traffic movement, but goes further by providing for a satisfactory alternative to on-street parking. Recommendations for removal of on-street parking and for alternative off-street locations are also contained in the appropriate sections of this report.

Traffic Regulations and Enforcement

Monmouth County is characterized by a large number of small political subdivisions, each having its own local problems and having its own governmental structure. Some traffic practices in many municipalities have no legal basis. These traffic regulations which cannot stand a test in higher courts are enforced in the local courts by local judges. This encourages a disrespect for all traffic regulations and impairs voluntary compliance.

Street Name Signs

During the reconnaissance and data collection portion of this study, it was observed that in many locations street name signs are deficient in number and in uniformity as to size, shape, color and location. In many locations including State Highways, the driver does not receive sufficient information to make a decision

about a turning movement until he has gone beyond the point where he can react to it. Frequently, drivers can be found parked on the shoulders of some of our better designed at grade intersections, trying to determine not only if the cross street is the one they are looking for but also trying to figure out what maneuver they must make to get on that street in the direction they wish to go. Most newer intersection designs have advanced warning signs with a legend "All Turns From Right Lane" or "Brown Street Right Lane", but the driver all too often finds himself on the named street going in the direction opposite from the direction desired. The lack of uniformity and of clearly marked directional signing generates the kind of decisions and unsafe, unsignaled maneuvers which result in increased accidents. While street name signs in this study area seem better than other urban areas previously observed, there is clearly indicated a need to establish a uniform policy on size, shape, color and placement and to upgrade street name signs in general to conform to these standards.

Street Lighting

The adverse effect that inadequate street lighting can have on roadway capacity and safety has been quantified by considerable research. Low lighting levels increase the possibility of nighttime accidents. It also produces an uncomfortable feeling for the driver. An undesirable diversion of traffic to an adjacent street may also be produced. In cases where accident experience or undesirable travel trends could be traced to lighting deficiencies, improvements to street lighting have been recommended.

Traffic Circles and Interchanges

In most cases traffic circles in the study area are located at the intersection of more than two major roadways. It follows that any improvements to traffic circles would involve extensive construction and is felt to be outside the scope of this TOPICS study. In the execution of the study, however, the effects of these traffic circles and area wide traffic operations cannot be ignored. During the accident data collection function, many accidents which occurred at traffic circles were recorded. In many instances, however, accident reporting techniques left the exact accident location within the traffic circle complex strongly in question. In view of the above, this consultant has not tried to make recommendations for improvements to any of the traffic circles within the study area. It is felt that these locations should be left to further detailed study in another project more oriented to large scale improvements to the State Highway System. It is, however, important to indicate at this time the accident experience developed by this study relating to these traffic circles, and this information is presented on TABLE 2.

Because of the difficulty mentioned above in determining exactly where within the traffic circle complex the accident did occur, no attempt is made to

isolate accidents other than to point out a specific number of accidents having occurred in the total traffic circle complex. The resulting accident numbers must thus be viewed with due consideration to the size and complexity of the traffic circle, number of points of conflict within that traffic circle, traffic volume loading on the traffic circle, and other significant factors.

This situation also prevails at some of the interchange locations indicated below. Sufficient information was not presented in most of the accident reports to adequately locate where the collision occurred and hence only the number of accidents reported has been indicated.

INTERCHANGE AND TRAFFIC CIRCLE ACCIDENTS
1968, 1969, 1970

TABLE 2

LOCATION	MUNICIPALITY	NUMBER OF ACCIDENTS
New Jersey Routes 35 and 71	Brielle	45
New Jersey Routes 33 and 66	New Shrewsbury	64
New Jersey Route 35 and Atlantic Avenue	Wall Township	44
New Jersey Routes 34, 35 and 70	Brielle	76
Eatontown Circle (N.J. Routes 35 and 36)	Eatontown	356
Asbury Park Circle (N.J. Route 35 and Asbury Avenue)	OceanTwp./Neptune Twp.	211
New Jersey Routes 35 and 36	Keyport/Hazlet	216
Manasquan Circle (N.J. Route 35 and Atlantic Avenue (County Road 524))	Wall Township	45

Priority System and Program Sequence

The Monmouth County TOPICS study involved over 500 intersections in 41 municipalities. Since it was impossible within the scope of this program to affect improvements at every location, a method of determining which location should be improved and in what order they should be improved, was necessary.

Three parameters were used to help develop a priority system and selection process. These were: accident experience, capacity restraint, and measured delay.

Accident information was obtained from the local police department and was tabulated. A list of accident locations, starting with the location with the highest number of accidents was made.

Traffic volume information at intersections was computed along with geometric and timing conditions in accordance with the procedures as defined in the "Highway Capacity Manual of 1965" to determine whether intersections were functioning at, above or below theoretical capacity. A list of intersections was prepared, starting with the intersection which least met the demands of the traffic present.

During the speed and delay data collection procedure, delay at intersections was measured by the data compiling device used in the study vehicle. A third list of intersections was made. This list started with the intersection having the most measured delay.

Finally, these three lists were combined into one list. Since the program is defined as capacity and safety, the accident information had more of an effect in the final list than did either capacity restraint or delay. Each parameter, however, was used in such a way that it had an effect on the ranking that the intersection attained on the final priority list. The final list consisted of intersections with priority index and started with the intersection having the highest priority index.

In using this list, some other considerations had to be made, for example, during the reconnaissance function, characteristics of certain intersections were observed, which were considered to be potentially dangerous. These characteristics may not have had an effect on historical accident experience, however, they were considered potentially dangerous. In using the priority list, these factors were also considered.

Since intersections, especially in high density areas, seldom function totally independent of each other, a factor for systems consideration was also considered.

Finally, a factor for local participation and desire was considered. Since under this program no project can be funded for implementation until all affected parties approve of same, this factor had to be considered, along with the other more technical inputs to develop a final sequence of improvements.

This input, while the hardest to quantify and evaluate, is nevertheless of equal importance with the other factors discussed above. Local police, public officials, and citizens concerned with traffic safety and movement are already aware of many of the problem locations within the community which a traffic engineering study will identify. Their knowledge can call to the attention of the traffic engineer, situations which may be inadvertantly overlooked in a study undertaken within the confining limits of a strict time schedule.

The result of all these considerations became the recommended sequence of improvements as presented in the sections for each of the regions in the study area. These final sequences in each region are based upon the list developed for the entire study area. They are shown in the form of specific project locations by the year in which it is recommended that they be installed along with a cost estimate for their implementation. In each case, projects shown in subsequent years have cost estimates which are adjusted upwards to allow for anticipated increases in construction costs and other factors.

TABLE 3 lists every improvement location in the Monmouth County TOPICS program, showing the municipality and priority rating based on the three basic parameters mentioned above. The priority number to the left of the location indicates the ranking this project has within the entire county study area while the priority index indicates the relative weighting of this location when all parameters mentioned above have been quantified and considered.

IMPROVEMENT LOCATIONS PRIORITY RATINGS

TABLE 3

PRIORITY NUMBER	LOCATION	MUNICIPALITY	PRIORITY INDEX
1	N.J. Route 35 and Tinton Avenue	Eatontown	797
2	Asbury Avenue and Main Street (N.J. Route 71)	Asbury Park	765
3	Broadway, Corlies Avenue (N.J. Rt.33) and Main Street	Neptune Twp./ Ocean Grove	673
4	Bath Avenue, Broadway and Norwood Avenue	Long Branch	635
5	N.J. Route 35 and Wyckoff Road	Eatontown	631
6	Garden State Parkway Spur and Wyckoff Road	Eatontown	564
7	Corlies Avenue (N.J. Rt. 33) and N.J. Route 35	Neptune Twp.	560
8	Throckmorton Street and West Main Street	Freehold	520
9	Newman Springs Road and Shrewsbury Avenue	Red Bank/ Shrewsbury	505
10	Broad Street (N.J. Route 71) and N.J. Route 35	Eatontown	501
11	Cookman Avenue and Main Street (N.J. Route 71)	Asbury Park	495
12	N.J. Route 36 and Broadway	West Long Branch	495
13	N.J. Route 34, N.J. Route 35, and N.J. Route 70 Circle	Wall Township	485
14	Monmouth Road (N.J. Route 71) and N.J. Route 36	West Long Branch	474
15	Hope Road and Garden State Parkway Spur	Eatontown	465
16	Lincoln Place, Prospect Avenue and Springwood Ave.	Asbury Park	465
17	Broadway, Maple Place and N.J. Route 35 (Interchange and Overpass)	Keyport	465
18	Lake Avenue, Main Street (N.J. Route 71) and Springwood Avenue	Asbury Park	460
19	Bridge Avenue, Rector Place, Riverside Avenue and N.J. Route 35	Red Bank	439
20	Amboy Avenue, Cliffwood Avenue and N.J. Rt.35	Matawan Twp.	431
21	Clinton Avenue and N.J. Route 35	Eatontown	425
22	Court Street, East Main Street, West Main Street and South Street (N.J. Route 79)	Freehold	425
23	N.J. Route 33 and N.J. Route 66 (Interchange)	New Shrewsbury	425
24	Broad Street and N.J. Route 36	Keyport	422
25	Park Avenue (N.J. Route 33) and South Street (N.J. Route 79)	Freehold	420
26	Asbury Avenue, Bowne Avenue, N.J. Route 66 and Wayside Avenue	Neptune Twp.	410
27	Park Avenue (N.J. Route 33) and West Main Street	Freehold	400
28	Atkins Avenue and Corlies Avenue (N.J. Route 33)	Neptune Twp.	395
29	N.J. Route 35, N.J. Route 71 and Twelfth Ave.	Belmar	390
30	Branchport Avenue and Broadway	Long Branch	388
31	Joline Avenue and Long Branch Avenue	Long Branch	385
32	Bangs Avenue and Main Street (N.J. Route 71)	Asbury Park	380
33	Clark Street and Garden State Parkway Exit 117	Keyport/Hazlet	375
34	New Monmouth Road and N.J. Route 35	Middletown	375

IMPROVEMENT LOCATIONS PRIORITY RATINGS

TABLE 3

PRIORITY NUMBER	LOCATION	MUNICIPALITY	PRIORITY INDEX
35	Broad Street (N.J. Route 35) and Sycamore Ave.	Shrewsbury	372
36	Harmony Road, N.J. Route 35 and Kings Highway	Middletown	370
37	Hope Road and Tinton Avenue	Eatontown/ Shrewsbury	370
38	Bridge Avenue and Monmouth Street	Red Bank	366
39	Broad Street, Maple Avenue, N.J. Route 35 and Newman Springs Road	Red Bank	362
40	Ocean Avenue and Rumson Road	Sea Bright	359
41	Middle Road and N.J. Route 36	Hazlet	356
42	Broadway and Liberty Street	Long Branch	355
43	Cedar Avenue and Norwood Avenue and Cedar Ave. (N.J. Route 71) and Norwood Avenue (N.J. Rt.71)	Long Branch	355
44	Fifth Avenue and Main Street (N.J. Route 71)	Asbury Park	355
45	Main Street (N.J. Route 71) and Sunset Avenue	Asbury Park	355
46	Broadway, Center Street, East Main Street and Spring Street	Freehold	353
47	Springdale Avenue and Springwood Avenue	Neptune Twp.	350
48	Laurel Avenue and N.J. Route 36	Hazlet	345
49	Branch Avenue and Sycamore Avenue	Little Silver	340
50	Monmouth Shopping Center and N.J. Route 35	Eatontown	340
51	Drummond Avenue and Springwood Avenue	Neptune Twp.	335
52	Shrewsbury Avenue and Sycamore Avenue	New Shrewsbury	331
53	Brighton Avenue and Ocean Avenue	Long Branch	330
54	N.J. Route 35 and Springwood Avenue	Neptune Twp.	330
55	Norwood Avenue - High Street and Wall Street	Long Branch	328
56	Atlantic Avenue and N.J. Route35 (Circle)	Wall Township	325
57	Newman Spring Road and Swimming River Road	Middletown	325
58	Main Street (N.J. Route 71) and Munroe Avenue	Asbury Park	320
59	Ridge Avenue, N.J. Route 35 and Sylvania Ave.	Neptune City	320
60	N.J. Route 36 and Thompson Avenue	Middletown	320
61	Branch Avenue and Rumson Road	Little Silver	315
62	Chapel Hill Road and N.J. Route 35	Middletown	315
63	Main Avenue and Main Street (N.J. Route 71)	Neptune Twp./ Ocean Grove	315
64	Main Street (N.J. Route 71) and Summerfield Ave.	Asbury Park	315
65	Maple Avenue and Nappi Place	Keyport	315
66	Norwood Avenue (N.J. Route 71) and Roosevelt Ave.	Deal	315
67	First Avenue and N.J. Route 36	Atlantic Highlands	314
68	Navesink River Road and N.J. Route 35	Middletown	311
69	Oceanport Avenue and N.J. Route 36	West Long Branch	311
70	Corlies Avenue (N.J. Route 33) and Springdale Ave.	Neptune Twp.	310
71	Brinley Avenue and N.J. Route 71	Bradley Beach	310
72	Broadway and Third Avenue	Long Branch	310

IMPROVEMENT LOCATIONS PRIORITY RATINGS TABLE 3

PRIORITY NUMBER	LOCATION	MUNICIPALITY	PRIORITY INDEX
73	Brighton Avenue and Second Avenue	Long Branch	306
74	Bergen Place and Broad Street	Red Bank	305
75	Ridge Avenue and Springwood Avenue	Asbury Park	305
76	Atkins Avenue and Springwood Avenue	Asbury Park	300
77	Broadway, North Broadway and Second Avenue	Long Branch	300
78	Eighth Avenue and N.J. Route 35	Belmar	300
79	Bath Avenue and Westwood Avenue	Long Branch	299
80	Broad Street and Front Street	Red Bank	297
81	N.J. Route 36 and Union Avenue	Hazlet/Union Beach	296
82	Corlies Avenue (N.J. Route 33) and Ridge Avenue	Neptune Township	295
83	N.J. Route 71 and Sea Girt Avenue	Manasquan	295
84	Monmouth Road and West Park Avenue	Ocean Township	292
85	Broad Street and N.J. Route 34 (Middlesex Road)	Matawan Twp.	291
86	Half Mile Road and Newman Springs Road	Middletown	290
87	Main Street (N.J. Route 71) and Second Avenue	Asbury Park	290
88	Main Street and N.J. Route 34 (Middlesex Road)	Matawan Borough	290
89	Bridge Avenue and Front Street	Red Bank	285
90	Locust Avenue and Wall Street	West Long Branch	285
91	Main Street (N.J. Route 71) and Third Avenue	Asbury Park	285
92	N.J. Route35 and Sixth Avenue	Neptune Township	285
93	Broad Street and Sea Girt Avenue	Manasquan	280
94	Corlies Avenue (N.J. Route 33) and West Bangs Ave.	Neptune Twp.	280
95	First Avenue and Main Street (N.J. Route 71)	Asbury Park	280
96	Heck Avenue and N.J. Route 35	Neptune Twp.	280
97	Corlies Avenue (N.J. Route 33), Schoolhouse Road, and West Jumping Brook Road	Neptune Twp.	275
98	Harding Road and Spring Street	Red Bank	275
99	Middle Road and Poole Avenue	Hazlet	271
100	18th Avenue and N.J. Route 71	Wall Township	270
101	Front Street, Maple Avenue (N.J. Route 35 NB), Pearl Street (N.J. Route 35 SB) and Riverside Avenue	Red Bank	270
102	Milton Avenue and N.J. Route 35	Neptune Township	270
103	Broad Street and Monmouth Street	Red Bank	265
104	Corlies Avenue and Monmouth Road	Ocean Township	265
105	Corlies Avenue (N.J. Route 33), Oxford Way and Sixth Avenue	Neptune City	265
106	New Ocean Avenue, Ocean Avenue and Seaview	Long Branch	265
107	South Street (N.J. Route 79) and Mechanic Street	Freehold	265
108	Branch Avenue, Harding Road and Hudson Avenue	Red Bank	260
109	Fourth Avenue and Main Street (N.J. Route 71)	Asbury Park	260
110	Lawrence Drive, Oxford Way and Sylvania Avenue	Neptune City	260
111	Myrtle Avenue and Springwood Avenue	Neptune Township	260

IMPROVEMENT LOCATIONS PRIORITY RATINGS TABLE 3

PRIORITY NUMBER	LOCATION	MUNICIPALITY	PRIORITY INDEX
112	Monmouth Street and N.J. Route 35 (Maple Ave.)	Red Bank	259
113	Poole Avenue and N.J. Route 36	Hazlet	259
114	Broadway and Morris Avenue	Long Branch	257
115	Kings Highway, N.J. Route 35 and Tindall Road	Middletown	256
116	Atlantic Avenue and Long Branch Avenue	Long Branch	255
117	Broad Street, Harding Road and Reckless Place	Red Bank	255
118	Braod Street, Thomas Avenue and White Road	Shrewsbury Borough	255
119	Broad Street and Throckmorton Street	Freehold	255
120	Larchwood Avenue and Park Avenue	Ocean Township	255
121	La Reine Avenue and Main Street (N.J. Route 71)	Bradley Beach	255
122	Branchport Avenue and Joline Avenue	Long Branch	252
123	Cedar Avenue and Ocean Avenue	Long Branch	250
124	Cherry Tree Farm Road and Harmony Road	Middletown	250
125	Fisher Avenue and Springwood Avenue	Neptune Township	250
126	Fourth Avenue and Kingsley Street	Asbury Park	250
127	Garden State Parkway Spur and N.J. Route 35 (Circle)	Eatontown	250
128	Ocean Avenue (N.J. Route 36) and Highlands Bridge	Sea Bright	250
129	Cherry Tree Farm Road and N.J. Route 35	Middletown	248
130	Corlies Avenue and Fortunado Drive	Neptune Township	245
131	Garden State Parkway Spur and Grant Avenue	Eatontown	245
132	Hull Avenue, South Street (N.J. Route 79) and Jerseyville Avenue	Freehold	245
133	Prospect Avenue and N.J. Route 35	Matawan Township	245
134	Main Street and N.J. Route 71	Manasquan	242
135	Atlantic Avenue and Florence Avenue	Long Branch	240
136	County Road and N.J. Route 35	Matawan Township	240
137	First Avenue and Kingsley Street	Asbury Park	240
138	Fourth Avenue and Ocean Avenue	Asbury Park	240
139	Grand Avenue and Sunset Avenue	Asbury Park	240
140	Linden Avenue and N.J. Route 36	Highlands	240
141	N.J. Route 35 and Seventh Avenue	Belmar	240
142	Asbury Avenue and Shafto Road	New Shrewsbury	235
143	Broad Street and Little Street	Matawan Borough	235
144	Bridge Avenue and Chestnut Street	Red Bank	235
145	Grand Avenue and N.J. Route 36	Atlantic Highalnds	235
146	Liberty Street and Union Avenue	Long Branch	235
147	N.J. Route 71 and Warren Avenue	Spring Lake Heights	231
148	Broad Street and Maple Place	Keyport	231
149	Beacon Boulevard, Manasquan Turnpike and N.J. Route 71	Sea Girt	230
150	Bergen Place and Maple Avenue (N.J. Route 35)	Red Bank	230
151	Cedar Avenue, Locust Avenue and Monmouth Road	West Long Branch	230
152	"F" Street and Tenth Avenue	Belmar	230

IMPROVEMENT LOCATIONS PRIORITY RATINGS TABLE 3

PRIORITY NUMBER	LOCATION	MUNICIPALITY	PRIORITY INDEX
153	Middle Road and Union Avenue	Hazlet	230
154	N.J. Route 35 and Tenth Avenue	Belmar	230
155	First Avenue and Railroad Avenue	Asbury Park	225
156	Main Street (A) and N.J. Route 36	Middletown (Port Monmouth)	225
157	Main Street - Palmer Avenue and N.J. Route 36	Keansburg/Hazlet	225
158	Morris Avenue and Second Avenue	Long Branch	225
159	Palmer Avenue and N.J. Route 35	Middletown	225
160	Bath Avenue and Ocean Avenue	Long Branch	222
161	Little Street and Main Street	Matawan Borough	222
162	Asbury Avenue and Railroad Avenue	Asbury Park	220
163	Cedar Avenue and Second Avenue	Long Branch	220
164	Church Street and Lloyd Road	Matawan Borough	220
165	East Main Street and Sherriff Road	Freehold	220
166	Hance Avenue and Newman Springs Road	Red Bank	220
167	Main Street (B) and N.J. Route 36	Middletown (Belford)	220
168	Munroe Avenue and N.J. Route 35	Neptune Township	220
169	N.J. Route 35 and Sea Girt Avenue	Wall Township	220
170	Main Street (N.J. Route 71) and Sylvania Avenue	Avon-by-the-Sea	220
171	Oceanport Avenue and Port-Au-Peck Avenue	Oceanport	220
172	Bergen Place and Shrewsbury Avenue	Red Bank	215
173	Logan Road and Sunset Avenue	Ocean Township	215
174	Bingham Avenue and Ridge Road	Rumson	210
175	Chelsea Avenue, Third Avenue and Westwood Avenue	Long Branch	210
176	Cherry Tree Farm Road, Leonardville Road, New Monmouth Road and Park Avenue	Middletown	210
177	Fairhaven Road and Ridge Road	Fair Haven/Rumson	210
178	Fourth Avenue and Ridge Avenue	Neptune City	210
179	Grand Avenue and Summerfield Avenue	Asbury Park	210
180	Joline Avenue and Rockwell Avenue	Long Branch	210
181	Main Street and Ravine Drive	Matawan Borough	210
182	Monmouth Street and Pearl Street	Red Bank	210
183	Ocean Avenue and Roosevelt Avenue	Deal	210
184	Park Avenue and N.J. Route 71 (Norwood Avenue)	Long Branch	210
185	West Park Avenue and Whalepond Road	Ocean Township	210
186	Broad Street and Church Street	Matawan Borough	205
187	Broad Street and Front Street	Keyport	205
188	Cherry Tree Farm Road and Wilson Avenue	Middletown	205
189	Grand Avenue and Lake Avenue	Asbury Park	205
190	Marcey Street, McLean Street and South Street (N.J. Route 79)	Freehold	205
191	N.J. Route 35 and Twinbrooks Road	Middletown	205
192	N.J. Route 35 and Woodland Drive	Middletown	205
193	Ocean Road and N.J. Route 71	Spring Lake Heights	205
194	Rumson Road and Seven Bridges Road	Little Silver	205

IMPROVEMENT LOCATIONS PRIORITY RATINGS

TABLE 3

PRIORITY NUMBER	LOCATION	MUNICIPALITY	PRIORITY INDEX
195	N.J. Route 36 and Wilson Avenue	Middletown	204
196	Main Street and Port Monmouth Road	Keansburg	201
197	Bangs Avenue and Railroad Avenue	Asbury Park	200
198	Comstock Avenue and Summerfield Avenue	Asbury Park	200
199	"F" Street and Eighth Avenue	Belmar	200
200	"F" Street and Ninth Avenue	Belmar	200
201	Green Grove Road and N.J. Route 66	Neptune Township	200
202	Main Street (N.J. Route 71) and McCabe Avenue	Bradley Beach	200
203	N.J. Route 71 and Wall Street	Spring Lake Heights	200
204	Neptune Avenue and Sylvania Avenue	Neptune City	200
205	Cooper Road and N.J. Route 35	Middletown	198
206	Avenue of Two Rivers and Rumson Road	Rumson	195
207	Broad Street and Church Street	Matawan Borough	195
208	Broad Street (N.J. Route 71) and Wyckoff Road	Long Branch	195
209	Broad Street (N.J. Route 35) and White Street	Shrewsbury Borough	195
210	Center Avenue and First Avenue	Atlantic Highlands	195
211	Corlies Avenue (N.J. Route 33) and Old Corlies Ave.	Neptune Township	195
212	East Road and Leonardville Road	Middletown	195
213	Miller Avenue and N.J. Route 36	Highlands	195
214	N.J. Route 35 and Oakwood Road	Belmar	195
215	Tinton Avenue and Sycamore Avenue	New Shrewsbury	195
216	Laird Avenue, N.J. Route 35 and Sylvania Avenue	Neptune City	190
217	N.J. Route 35 and Higgins Avenue	Brielle	190
218	Belmar Boulevard (Sixteenth Avenue) and N.J. Rt.35	Wall Township	185
219	Harding Road and Prospect Avenue	Fair Haven	185
220	Ocean Avenue and Presley Street	Long Branch	185
221	Broad Street and White Street	Red Bank	180
222	Cedar Avenue and Ocean Avenue	Allenhurst	180
223	Church Street and Holmdel Road	Hazlet/Holmdel	180
224	"F" Street and Fifth Avenue	Belmar	180
225	Hance Avenue and Sycamore Avenue	New Shrewsbury	180
226	N.J. Route 35 and Warren Avenue	Wall Township	180
227	Hance Avenue and Ridge Road	Fair Haven	175
228	Center Street and Railroad Bridge	Freehold	170
229	Lincoln Avenue and Ocean Avenue	Long Branch	170
230	Main Street (N.J. Route 71) and Deal Lake Dr.	Asbury Park	170
231	North Broadway and Ocean Avenue	Long Branch	170
232	Route 71 and Sixteenth Avenue	Wall Township	170
233	Tinton Avenue and Swimming River Road	New Shrewsbury	165
234	Tinton Avenue and Wayside Avenue	New Shrewsbury	165
235	Atlantic Avenue and Main Street	Manasquan	160
236	Barker Avenue and Shrewsbury Avenue	Shrewsbury Township	160
237	Marcellus Avenue and South Street	Manasquan	160
238	Atlantic Street and N.J. Route 36	Keyport	150
239	Church Street and Main Street	Matawan Borough	150
240	Red Hill Road and Everett Road	Middletown	150

Design Criteria

Technology in the area of traffic engineering, more so today than ever before, is increasing. Standards that applied yesterday have been modified today to meet new requirements. This consideration becomes most important when a program is developed that requires that improvements be designed today which are not scheduled for installation for as much as five years hence. For example, many of the unsignalized intersections in the study area experience significant numbers of right angle collisions. However, present traffic volumes are insufficient to warrant the installation of a traffic signal now. Yet in the design year, five years hence, these volume warrants are expected to be met. Therefore, it has been recommended that traffic signals be installed at these locations but actual construction has not been scheduled until the years 1976 or 1977, when the anticipated volumes should be achieved.

The designer must be most careful to make sure that these designs meet all the requirements of today's traffic engineering technology, but must attempt also to meet anticipated future requirements as much as possible. Failing to do this would be to build obsolescent designs before they even seek completion on the street.

Even during the study portion of this program, a newly revised "Manual on Uniform Traffic Control Devices" was published and deposited with the Attorney General's Office and the Commissioner of Transportation in accordance with the statutory requirements of Title 39.

Traffic signal design criteria is most important since the driver depends more on this device than any other when approaching a conflict area. A green light in the driver's view, tells him that the conflicting movements have been stopped and are waiting. He exercises less caution here than he might when approaching an intersection where the conflicting movements are controlled only by stop signs or no device at all.

Traffic signals must perform the function of assigning the right-of-way alternately to intersecting roadways having conflicting movements when the volumes at these locations exceed that which can satisfactorily be handled through the use of stop sign control. The traffic signal is usually considered primarily as a safety device since the presence of the signal with its need for clearance intervals, in most cases, usually does not increase the capacity of locations.

The study of accident experience at many of the signalized intersections in the study area indicates accident experience of the type which should be corrected by a traffic signal still occurring even though the traffic signal is present and has been there for sometime. The traffic engineer must look more deeply into the design and presence of this traffic signal if he is to determine the cause of accidents which occur in spite of the traffic signal's presence.

Signal visibility frequently becomes a matter for consideration when this accident experience is encountered. In its most obvious sense, signal visibility simply means the ability of the driver to see the signal. Is the signal in a position where the driver can see it and not obstructed by trees, and is the illumination bright enough?

Some equally important but more subtle factors exist to affect a signal's visibility, and more specifically the target value the signal has for the driver's eye. One of these factors is background lighting and detail. It is not uncommon for a traffic signal to be forced to compete with highway advertising signs, a maze of overhead wires, cables, and background colors so as to be visible to the driver.

Recommendations as to modifications to signal layout made within this report, relate most frequently to attempts to increase the target value of the traffic signal to the driver. In most cases where it was felt that signal target value could be improved, additional equipment was recommended to be installed. This equipment took the form of additional signal heads, additional mast arms, and the use of back plates.

In every case, the location of the signal head with respect to the drivers' area of expectation was the primary concern, and not the availability or past use of certain types of poles, arms, or other physical equipment used, to suspend or locate the signal heads.

In many cases this leads to the installation of signal poles in the center median, especially on sections of the State Highway System. This procedure is not without precedent and can already be seen in use in some of the more recent Department of Transportation signal designs for limited access type State Highways. In most cases the center median offers protection for the signal poles and the location of the poles within the median allows for the use of shorter mast arms without sacrificing the location of signal head over traffic lanes.

REGION 1

REGION I - MONMOUTH COUNTY TOPICS

Regional Setting

Region I is made up of the Boroughs of Keyport, Keansburg, Union Beach and Matawan. Also included in the region is Hazlet Township and part of Matawan Township. The region is bordered on the north by the Raritan Bay, on the west by Middlesex County, on the east by Region II, and on the south by Holmdel Township.

The Garden State Parkway interchange 117 is located in the region which is also influenced by New Jersey Routes 34, 35, 36, and 79. The region is primarily residential with some light industry and several large manufacturing units. The region's northern boundary, Raritan Bay, has led to shore line development with a recreational influence.

Federal-Aid System

PLATE 1 - 1 shows the Region I study system streets and roads and the existing and proposed Federal-Aid System. Selection procedures were in accordance with the Federal Highway Administration PPM 21-18, May, 1972. The system is intended to provide the basis for present and future local traffic demands. The mileage of roadways included in the various Federal-Aid designations are given in TABLE 1 - 1.

The major traffic volumes in the area are carried by New Jersey Routes 35 and 36. New Jersey Route 79 also carries considerable volumes between Matawan and the Freehold area (Region VII). New Jersey Routes 35 and 36 are for the most part, modern four lane divided highways except for portions north of their interchange in Keyport where no center barrier exists. In these areas side friction and side street conflicts have contributed to accident experience.

Bus and Rail Transportation

Region I is served by several bus companies and the New York and Long Branch Railroad as shown on PLATE 1 - 2.

Most of the bus service connects the region with employment center in the New York Metropolitan area with little local service available.

The rail passenger service is primarily a commuter service to New York which carries standing room only loads on equipment badly in need of improvement. Rail passenger stations are located in Matawan, Cliffwood and Hazlet.

Accident Experience

The police department in each of the municipalities of the region made their accident records available for analysis. High accident locations along with computed

EXISTING AND PROPOSED FEDERAL-AID SYSTEMS MILEAGE TABLE 1 - 1

EXISTING	MILES
Federal Aid Urban	10.60
Federal Aid Secondary	2.61
PROPOSED ADDITIONS	
Federal Aid Primary Type II	10.39

T-4001 (16)

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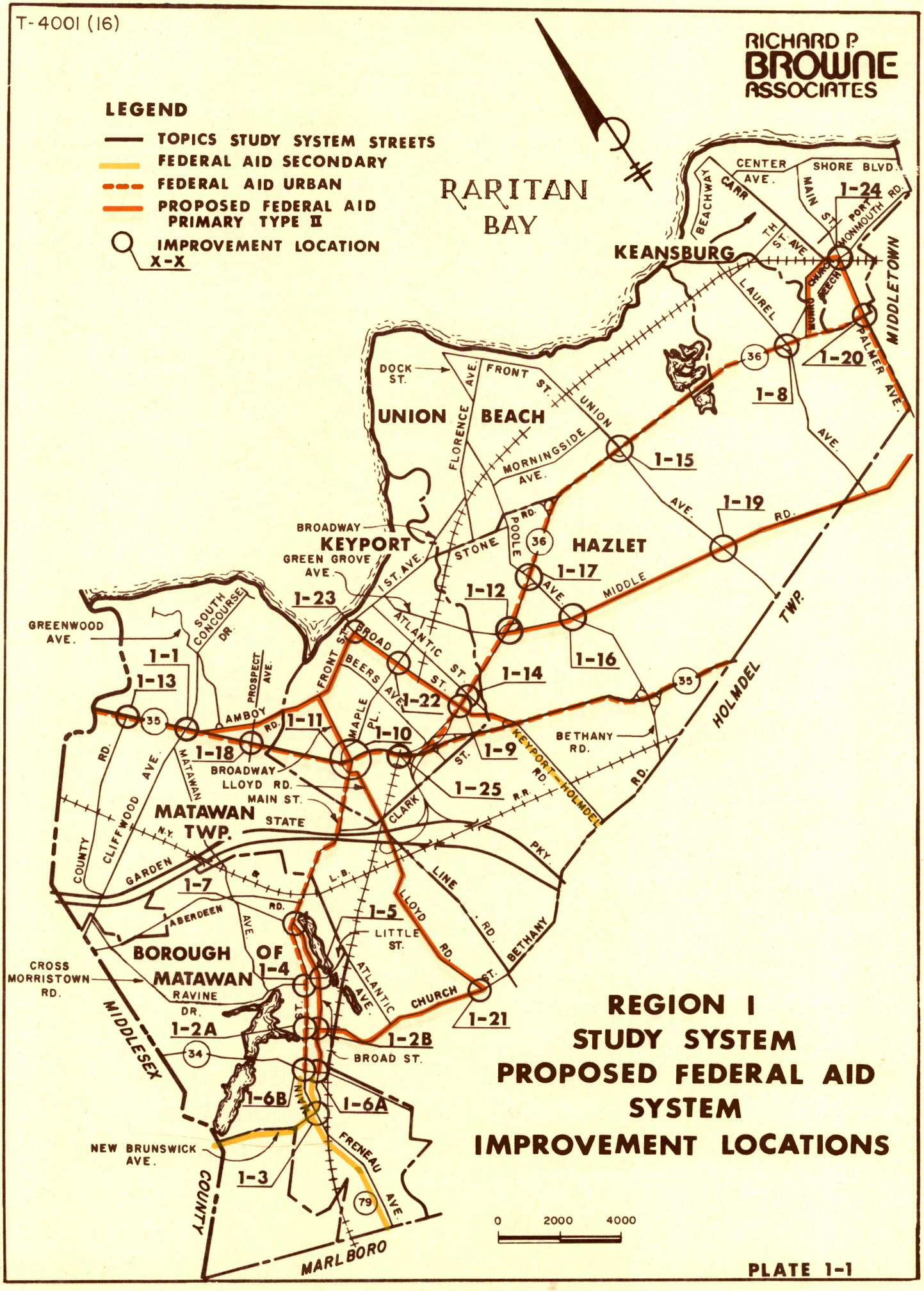

REGION 1
STUDY SYSTEM
PROPOSED FEDERAL AID SYSTEM
IMPROVEMENT LOCATIONS

PLATE 1-1

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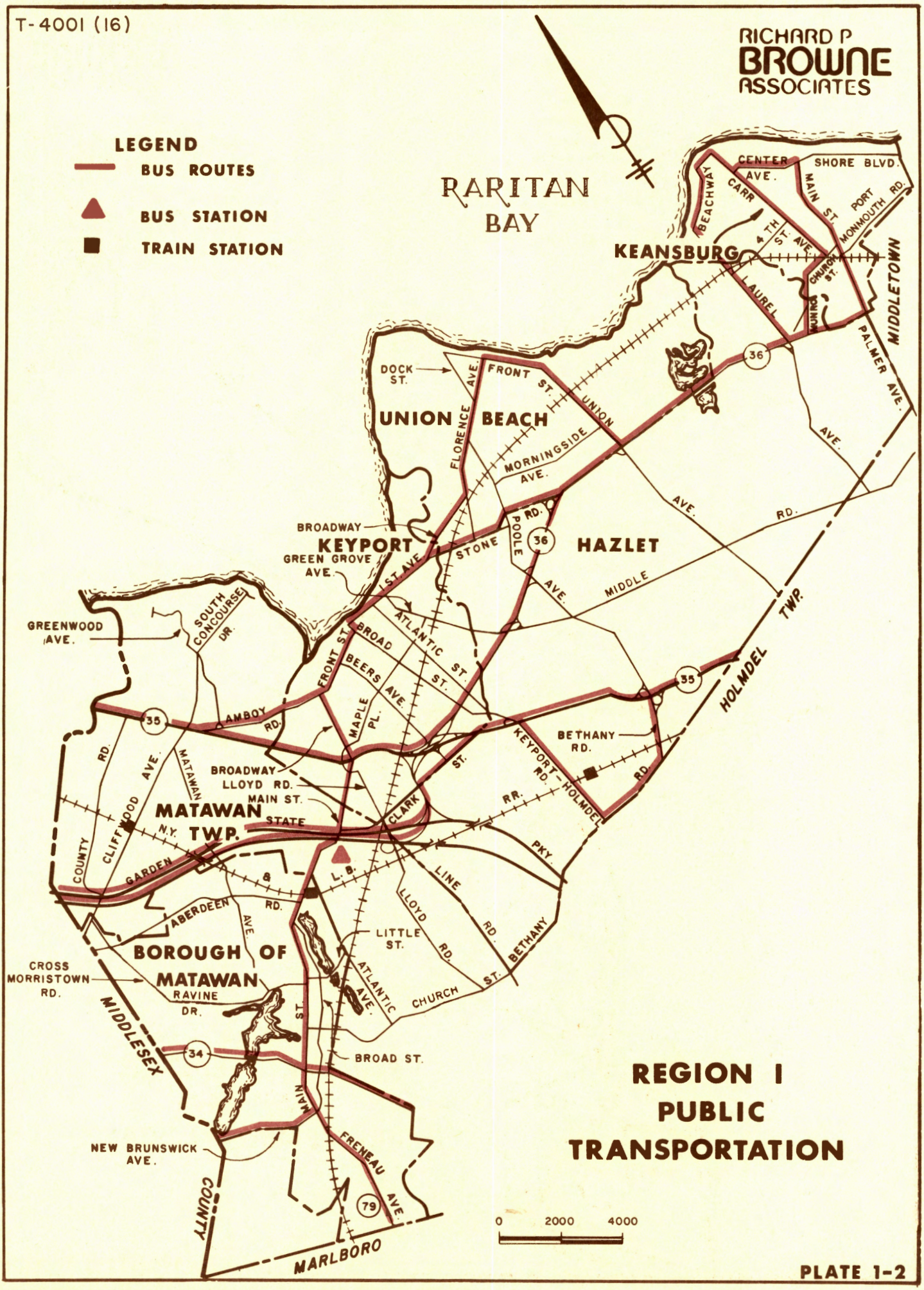

REGION 1
PUBLIC TRANSPORTATION

PLATE 1-2

accident rates are shown on PLATE 1 - 3 and summarized on TABLE 1 - 2.

The highest accident location in the Region is New Jersey Route 35 and Cliffwood Avenue. This location is influenced by the Amboy Avenue jughandle approximately 500 feet to the south. Detailed accident information was difficult to obtain at this location due to accident reporting procedures, however, the total number of accidents reported, was used to help in determining priority. Recommendations for improvement of this location are discussed in appropriate sections of this report.

Speed and Delay

Speed and delay data was obtained in Region I through the use of a data compiler installed in a moving car. Data for on and off peak periods were analyzed, and are presented on PLATE 1 - 4.

New Jersey Routes 35 and 36 are shown mostly in the 30 to 39 miles per hour range due to the effect of averaging along their length. Movements along the individual links are characterized, however, by higher speeds interrupted by stops and delays due to signals and side friction.

Traffic Volumes

Turning movement counts and automatic traffic recorder counts were made at various locations in the region. These were supplemented by traffic volume information supplied by the New Jersey Department of Transportation and the Monmouth County Engineer's Office. This information was analyzed and the traffic volume map on PLATE 1 - 5 was developed. The information was further analyzed and projected into the future, producing the design year volumes on PLATE 1 - 6 and PLATE 1 - 7.

Turning movement counts were also used to calculate theoretical capacity. Capacity restriant was used as an input in developing a priority list. Capacity of approaches at specific locations are shown on PLATE 1 - 4.

Traffic Signals

Analysis of existing conditions and anticipated future traffic demands led to the traffic signal systems recommendations shown on PLATE 1 - 8. Three additional signals are recommended along with modification of several others. It is recommended that the signals along New Jersey Routes 35 and 36 south of the Keyport interchange be interconnected. The four signals affected by the Proposed Matawan One-Way system, should also be interconnected. These systems are discussed in more detail later under Systems Improvements. TABLE 1 - 3 lists all traffic signals on the proposed Federal-Aid system along with their warrants. These warrants are contained in the "Manual on Uniform Traffic Control Devices" as listed below:

ACCIDENT INFORMATION SUMMARY — TABLE 1 - 2
REGION 1

LOCATION	ACCIDENT NUMBER*	ACCIDENT RATE**	PRIORITY INDEX
Broadway, Maple Pl., N.J. Route 35, Fourth Street (Interchange and Overpass)	69***	14.9	
Cliffwood Ave., Amboy Ave. and N.J. Rt.35	58	14.3	431
Broad Street and N.J. Route 36	56	14.0	422
Middle Road and N.J. Route 36	35	8.9	356
Laurel Rd. and N.J. Route 36	39	11.1	345
Union Avenue and N.J. Route 36	36	9.6	296
Broad Street and N.J. Rt.34 (Middlesex Rd.)	31	13.8	291
Main Street and N.J. Rt.34 (Middlesex Rd.)	39	15.0	290
Middle Road and Poole Avenue	29	21.9	271
Poole Avenue and N.J. Route 36	26	6.7	259
Prospect Avenue and N.J. Route 35	27	7.8	245
County Road and N.J. Route 35	27	7.8	240
Broad Street and Little Street	24	30.1	235
Broad Street and Maple Place	24	21.8	233
Middle Road and Union Avenue	23	22.8	230
Main St., Palmer Ave. and N.J. Route 36	22	6.7	225
Little Street and Main Street	21	14.0	222
Church Street and Lloyd Street	21	13.7	220
Broad Street and Front Street	20	22.7	205
Main Street and Port Monmouth Road	20	12.2	201
Broad Street and Church Street	19	19.5	195
Church Street and Holmdel Road	15	12.6	180
Atlantic Street and N.J. Route 36	12	3.1	110
Church Street and Main Street	6	3.9	75

* Per Three Years (1968-1970)
** Per Ten Million Vehicles
*** Total for Both Ramp Terminal and Approaches

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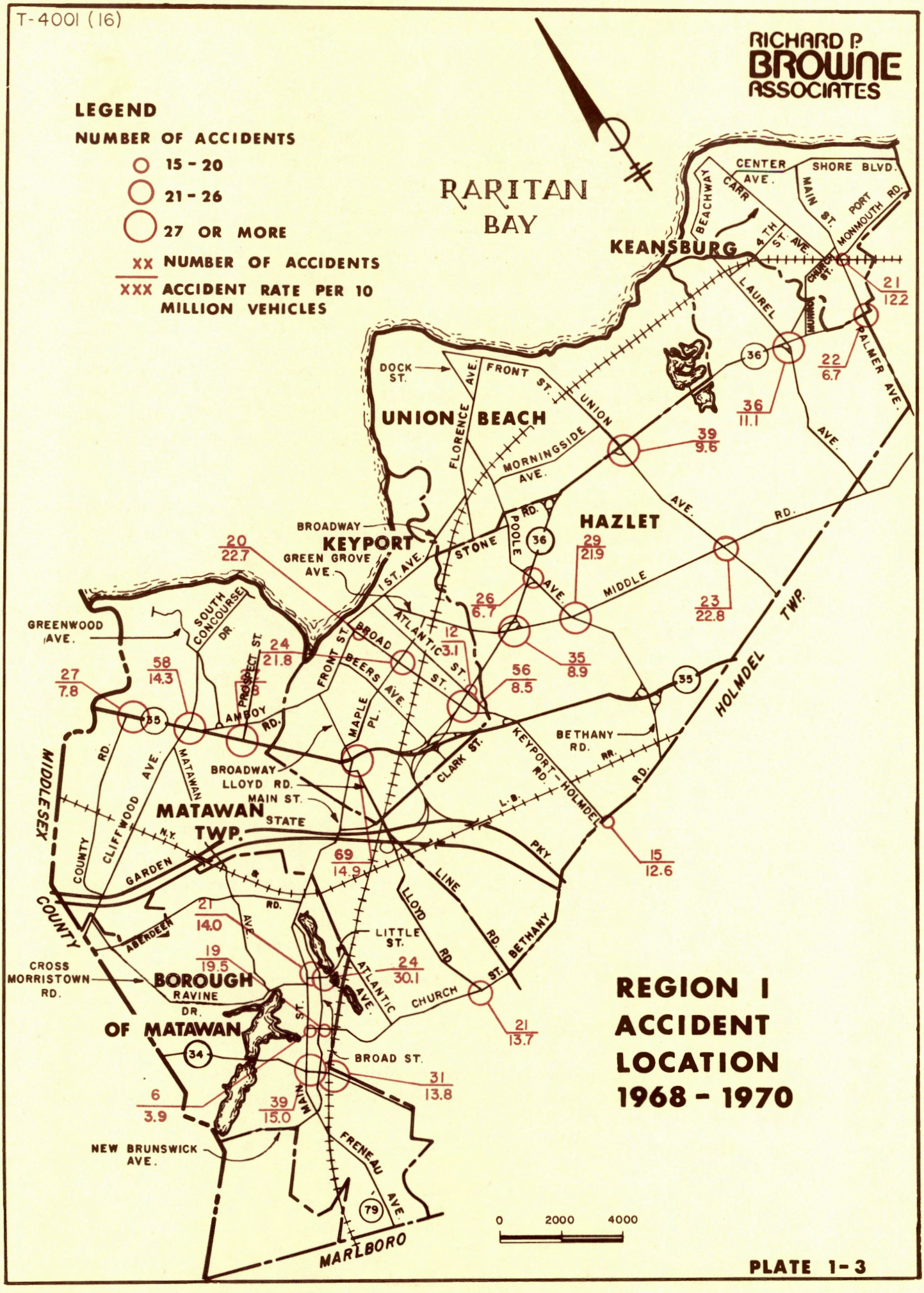

Warrant 1:	Minimum Vehicular Volume
Warrant 2:	Interruption of Continuous Traffic
Warrant 3:	Minimum Pedestrian Volume
Warrant 4:	School Crossing
Warrant 5:	Progressive Movement
Warrant 6:	Accident Experience
Warrant 7:	Systems Warrant
Warrant 8:	Combination of Warrants

Curb and Off Street Parking Facilities

Considerable use of the roadway system is made by parked vehicles in the Matawan and Keansburg central business district area. There are several off-street parking lots in the central business districts, having a variety of limitations in terms of time. Enforcement of local parking regulations is carried out by the local police department along with their other duties.

Narrow roadway widths have required the removal of parking in some locations and the establishment of one-way street patterns in other areas. Parking and circulation is further complicated in many areas due to truck loading operations which are carried out using part of the roadway as a loading area.

Intersection Improvements

Recommended improvement projects are shown on the following pages. Their relative location in the region is indicated on PLATE 1 - 1.

System Improvement

Signal Interconnection

During the reconnaissance and speed and delay parts of the study, it was noted that movements along New Jersey Routes 35 and 36 were characterized by frequent stops at traffic signals. Platoons of vehicles seemed to be stopped or broken up frequently. A study of the accident experience along these roads, indicated a considerable number of rear end collisions at some locations.

It is felt that this situation could be improved by physical interconnection of the signals along these routes to insure that offsets determined by progression requirements, would be reliably maintained.

It is also recommended that the four signals involved in the proposed Matawan One-Way System, be interconnected to insure their operation in a coordinated manner.

These interconnection systems are shown on PLATE 1 - 8.

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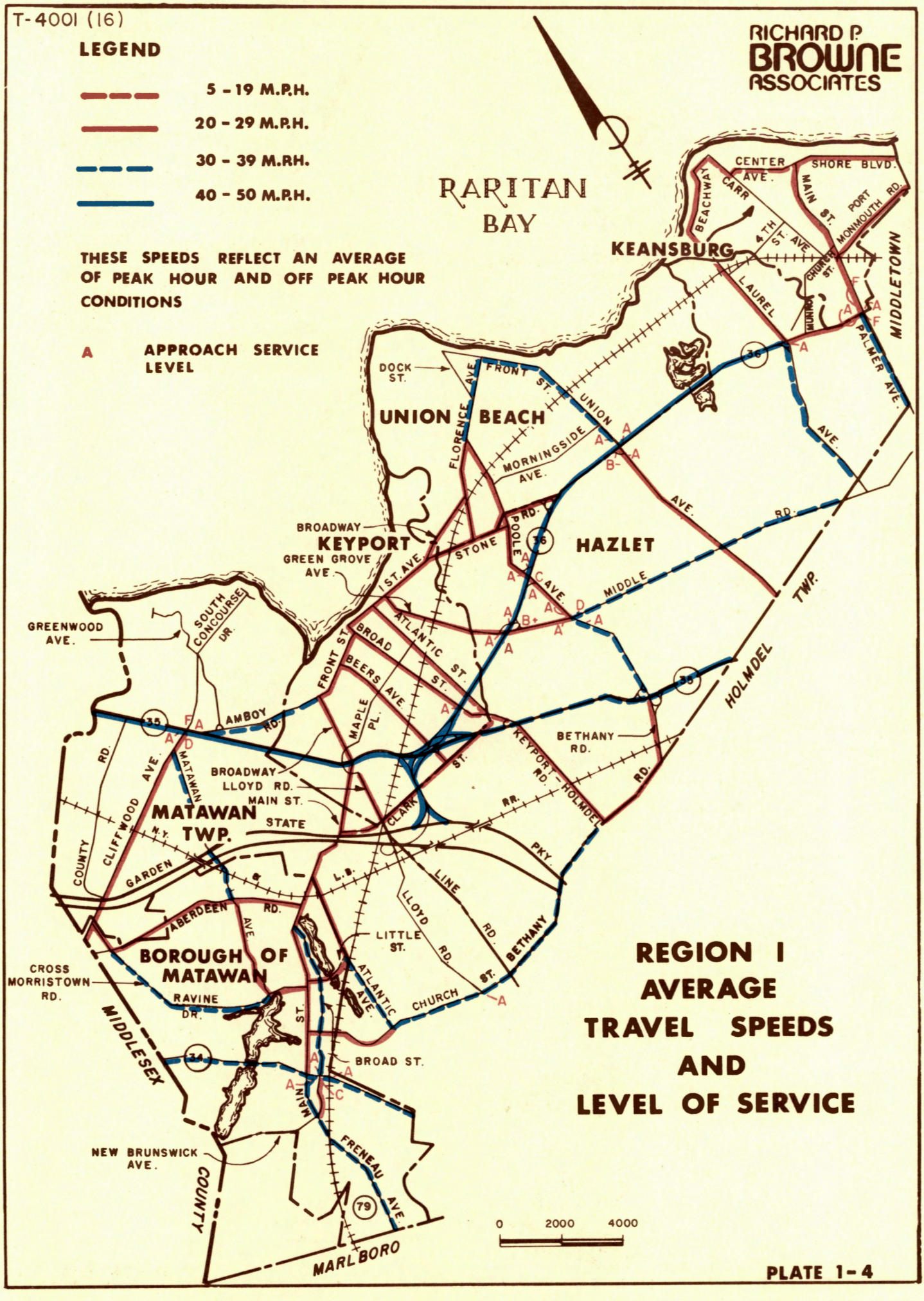

REGION 1 AVERAGE TRAVEL SPEEDS AND LEVEL OF SERVICE

PLATE 1-4

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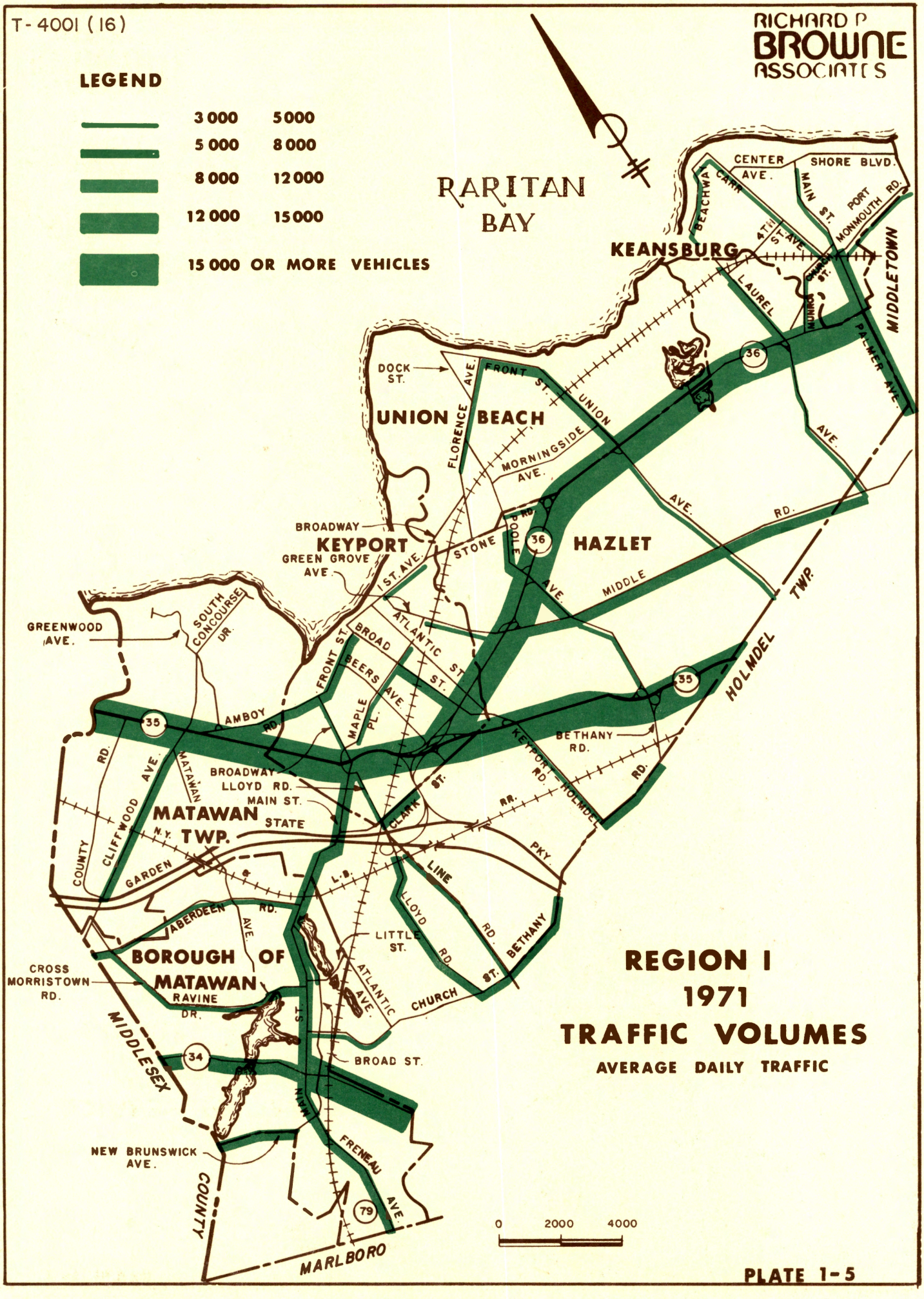

REGION 1
1971
TRAFFIC VOLUMES

AVERAGE DAILY TRAFFIC

PLATE 1-5

T-4001 (16)

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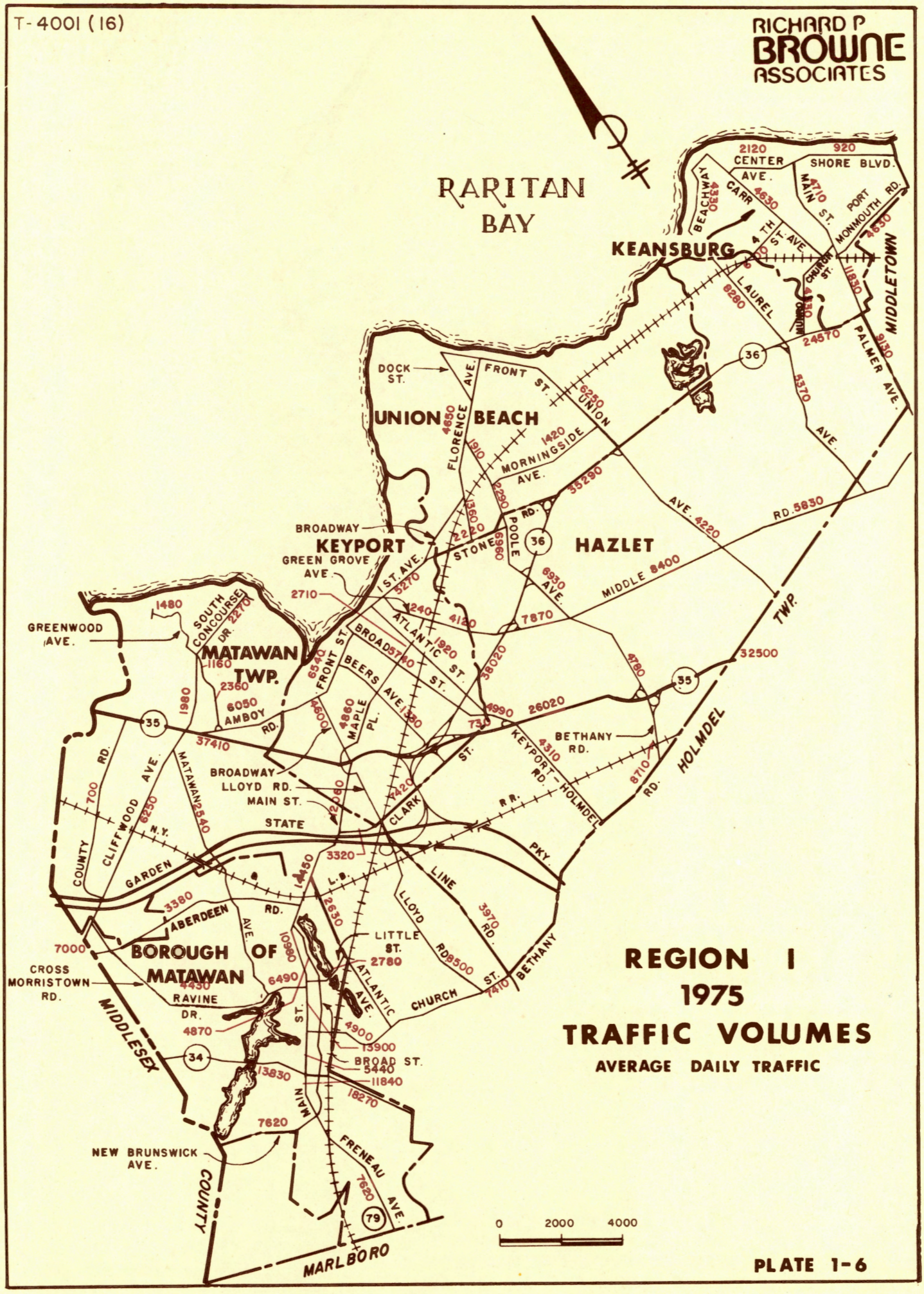

REGION 1
1975
TRAFFIC VOLUMES
AVERAGE DAILY TRAFFIC

PLATE 1-6

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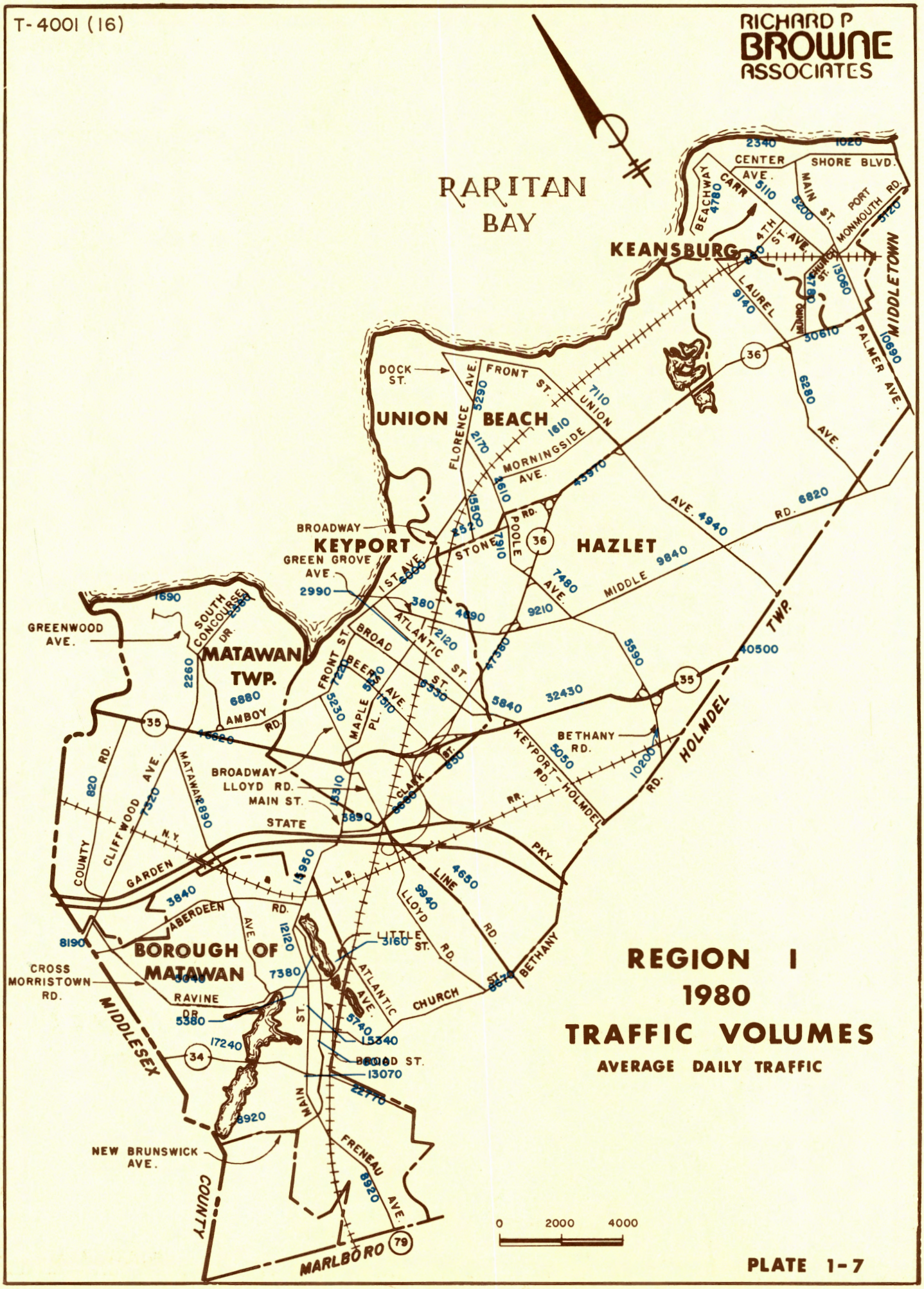

EXISTING AND PROPOSED TRAFFIC SIGNALS

TABLE 1 - 3

LOCATION	MUNICIPALITY	OPERATION	RECOMMENDATION	N.J.D.O.T. APPROVED	WARRANT*
Main St. (N.J.Rt. 79) and Broad Street	Matawan Boro.	Semi-Actuated	Retain	Yes	1
Main St. and Route 34	Matawan Boro.	Semi-Actuated	Retain	Yes	1
Broad St. and Route 34	Matawan Boro.	Semi-Actuated	Retain	Yes	1
Church St. and Lloyd Road	Matawan Boro.	Fully Actuated	Retain	Yes	1
Keyport-Holmdel Tpke. and Bethany Road	Hazlet	Semi-Actuated	Retain	Yes	1
Keyport-Holmdel Tpke. and Route 35	Hazlet	Semi-Actuated	Retain	Yes	1
Bethany Rd., Poole Ave. and Route 35	Hazlet	Semi-Actuated	Retain	Yes	1
Middle Rd. and Union Ave.	Hazlet	Flasher	Install	No	
Middle Rd. and Poole Ave.	Hazlet	Semi-Act/Fully Act.	Modify	Yes	6
Green Grove Rd., Middle Rd. and N.J. Route 36	Hazlet	Semi-Actuated	Retain	Yes	1
Poole Ave. and Route 36	Hazlet	Semi-Actuated	Retain	Yes	1
Atlantic Ave. and Route 36	Keyport	Semi-Actuated	Retain	Yes	1
Broad St. and Route 36	Keyport	Semi-Actuated	Retain	Yes	1
Broad St. and Maple Pl.	Keyport	Flasher	Retain	No	
Broad St. and Front St.	Keyport	Fully Actuated	Install	No	7
Amboy Ave., Front St. and Broadway	Keyport	Flasher	Retain	No	
Broadway and Maple Place	Keyport	FixedTime/Semi-Act.	Modify	No	1
Maple Avenue and Nappi Place	Keyport	Fixed Time	Retain	No	1
Amboy Ave. and Route 35	Matawan Twp.	Semi-Actuated	Retain	Yes	1
Cliffwood Ave. and Route 35	Matawan Twp.	Semi-Actuated	Retain	Yes	1
Stone Rd. and Route 36	Hazlet	Semi-Actuated	Retain	Yes	2
Sea Gate Ave. and Route 36	Hazlet	Semi-Actuated	Retain	Yes	2

EXISTING AND PROPOSED TRAFFIC SIGNALS

TABLE 1 - 3

(Continued)

LOCATION	MUNICIPALITY	OPERATION	RECOMMEN-DATION	N.J.D.O.T. APPROVED	WARRANT
Route 36 and Union Ave.	Hazlet	Semi-Actuated	Retain	Yes	1
Laurel Ave. and Route 36	Hazlet	Semi-Actuated	Retain	Yes	1
Palmer Ave. and Route 36	Middletown	Semi-Actuated	Retain	Yes	1
Port Monmouth Rd. and Main Street	Keansburg	Flasher	Modify	No	
Hazlet Ave. and Route 35	Hazlet	Semi-Actuated	Retain	Yes	2
Miller Ave. and Route 35	Hazlet	Semi-Actuated	Retain	Yes	2
Broad St. and Church St.	Matawan Twp.	Semi-Actuated	Install	No	7
Beachway and Carr	Keansburg	Fixed-Time	Retain	No	1

* Numbers shown refer to warrant numbers 1 through 8 as contained in the Manual on Uniform Traffic Control Devices.

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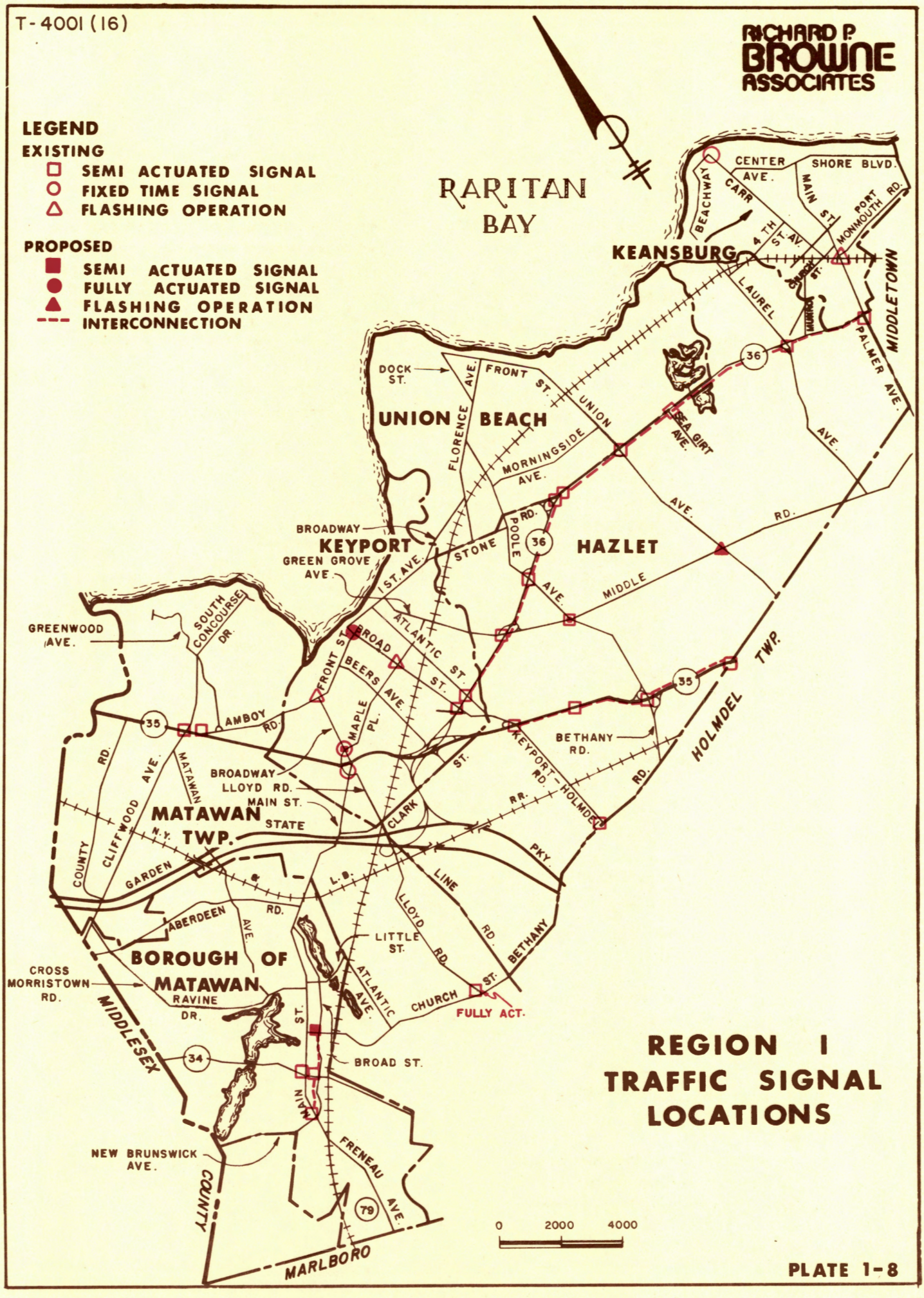


REGION 1 TRAFFIC SIGNAL LOCATIONS

PLATE 1-8

Matawan One-Way System

The central business district of Matawan Borough is made up of the two parallel roadways of Broad Street and Main Street. These roadways are connected to each other at points approximately one and one-half miles apart. These streets presently operate on a two-way basis and are characterized by excessive parking, narrow roadway widths, excessive side friction, conflicts at the intersection, high accident rates, and generally reduced quality of travel. Right-of-way availability prevents the widening of either of these two streets into a usable two-way central business district facility. The parallel nature of these streets however, and the fact that they are joined at two points a convenient distance apart, leads them easily to the development of a one-way pair.

The downtown roadway system as proposed is presented on PLATE 1 - 9. Illustrated, also on this PLATE are accidents at the intersection along the two roadways and summarized for roadway lengths between intersections. Six of the intersections, on the proposed system appear on the Monmouth County TOPICS priority list for improvements. Specific improvement designs for these locations are illustrated later in this section.

Since Main Street, south of New Jersey Route 34, is New Jersey Route 79, the adoption of the one-way system will require the New Jersey Department of Transportation to take over the matching section of Broad Street, and this portion will be added to the Federal-Aid Type II System. The portion of Broad Street, north of New Jersey Route 34 affected by the one-way system will also be added to the Federal-Aid Type II System.

These additions are shown on PLATE 1 - 1 and the mileage is included in TABLE 1 - 1 under proposed additions.

TABLE 1 - 4 lists all intersections involved in the one-way pair including the type of work to be done and the cost estimate.

Improvement Projects

On the following pages, concept drawings of the proposed improvement projects are shown along with descriptions of the problems encountered and recommendations being made.

TABLE 1 - 5 lists all projects by the year in which construction is recommended and the cost estimate.

At all improvement locations, recommendations include upgrading as necessary of traffic signs and pavement markings in accordance with the requirements as defined in the current "Manual on Uniform Traffic Control Devices".

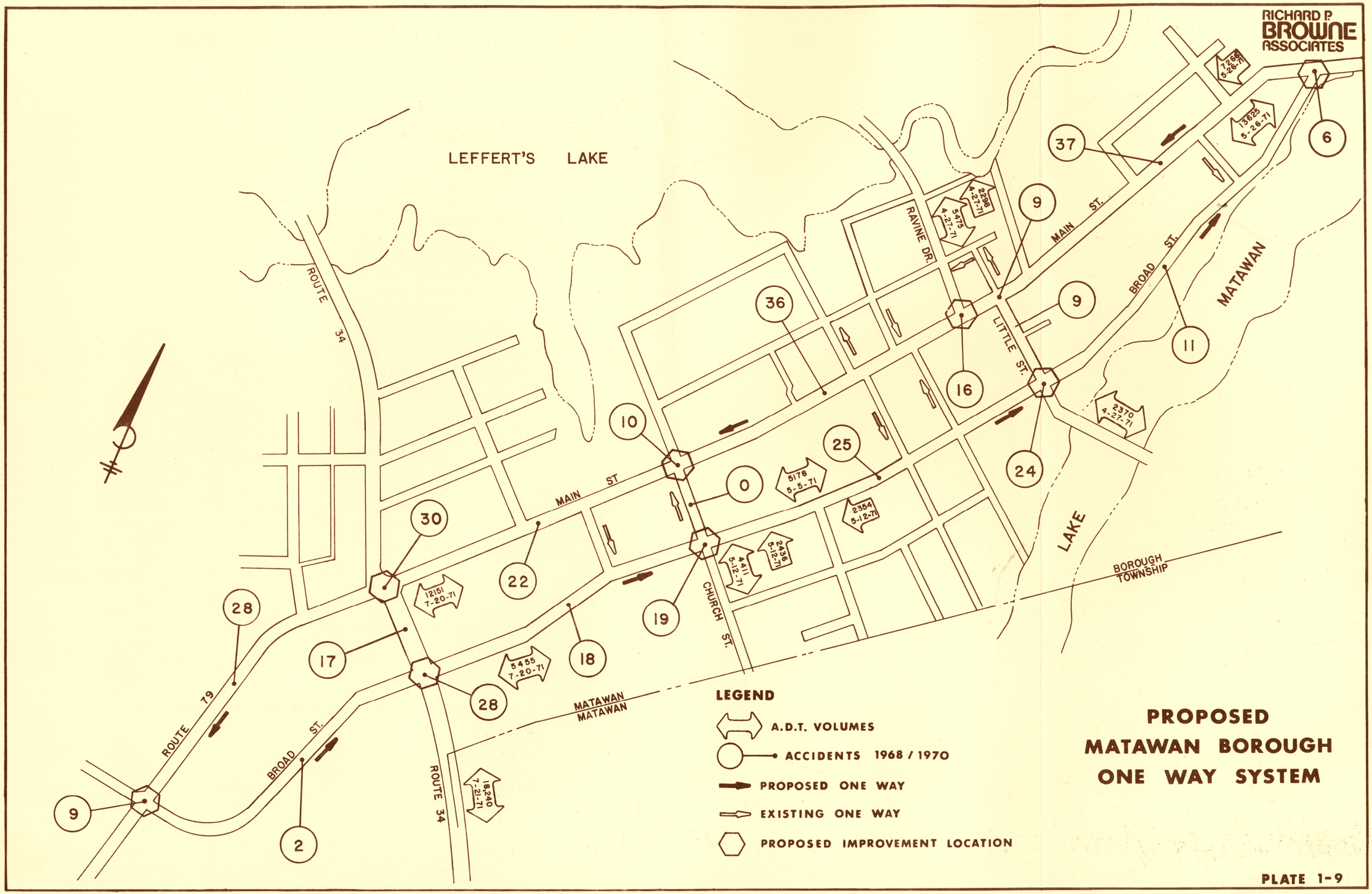
MATAWAN ONE-WAY SYSTEM

TABLE 1 - 4

LOCATION	TYPE OF MODIFICATION	COST
Main Street and Broad Street (N.E.)	1,2,4	$10,700.00
Main Street and Rabbit Lane	1,2	150.00
Main Street and Cortan Lane	1,2	150.00
Main Street and Maiden Lane	1,2	150.00
Main Street and Little Street	1,2,4	550.00
Main Street and Ravine Drive	1,2,4	2,049.00
Main Street and Park Avenue	1,2	150.00
Main Street and Fountain Avenue	1,2	150.00
Main Street and Center Street	1,2,4	2,500.00
Main Street and Spring Street	1,2	150.00
Main Street and Summit Street	1,2	150.00
Main Street and Church Street	1,2,4	1,754.00
Main Street and South Street	1,2	150.00
Main Street and Washington Street	1,2	150.00
Main Street and N.J. Route 34	1,2,3,4	19,360.00
Main Street and Schenck Avenue	1,2	150.00
Main Street, Broad Street and New Brunswick Avenue	1,2,3,4	41,800.00
Broad Street and N.J. Route 34	1,2,3,4	23,935.00
Broad Street and South Street	1,2	150.00
Broad Street and Church Street	1,2,3,4	24,480.00
Broad Street and Clinton Street	1,2	150.00
Broad Street and Center Street	1,2,4	850.00
Broad Street and Park Avenue	1,2	200.00
Broad Street and Little Street	1,2,4	2,600.00
Broad Street and Rabbit Lane	1,2	150.00
		TOTAL $132,728.00

Legend of Type of Modification

1) Signs
2) Pavement Markings
3) Signals
4) Roadway Construction (curbs, radii, etc.)



PROPOSED MATAWAN BOROUGH ONE WAY SYSTEM

PLATE 1-9

REGION I

IMPROVEMENT PROJECT SEQUENCE AND FINANCIAL PROGRAM

TABLE 1 - 5

YEAR	LOCATION	MUNICIPALITY	IMPROVEMENT NUMBER	ESTIMATED COST
1973	Amboy Ave., Cliffwood Ave. and Route 35	Matawan Township	1 - 1	$30,000.00
	Church Street and Main Street	Matawan Borough	1 - 2A	1,750.00*
	Church Street and Broad Street	Matawan Borough	1 - 2B	24,500.00*
	N.J. Route 79 (Main Street) and New Brunswick Avenue	Matawan Borough	1 - 3	41,800.00*
	Main Street and Ravine Drive	Matawan Borough	1 - 4	2,050.00*
	Broad Street and Little Street	Matawan Borough	1 - 5	3,000.00*
	Broad Street and N.J. Route 34	Matawan Borough	1 - 6A	23,950.00*
	Main Street and N.J. Route 34	Matawan Borough	1 - 6B	19,400.00*
	Main Street and Broad Street	Matawan Borough	1 - 7	10,700.00*
	N.J. Rt. 35 and C.N.J. Railraod Bridge	Keyport	1-25	26,000.00
1974	Laurel Avenue and N.J. Route 36	Hazlet	1 - 8	$ 1,400.00
	Broad Street and N.J. Route 36	Keyport	1 - 9	27,350.00
	Maple Avenue and Nappi Place	Keyport	1 - 10	29,400.00
	Broadway and Maple Place	Keyport	1 - 11	23,600.00
1975	Middle Road and N.J. Route 36	Hazlet	1 - 12	30,000.00
	County Road and N.J. Route 35	Matawan Township	1 - 13	2,700.00
	Atlantic Street and N.J. Route 36	Keyport	1 - 14	16,800.00
1976	N.J. Route 36 and Union Avenue	Hazlet	1 - 15	$23,150.00
	Middle Road and Poole Avenue	Hazlet	1 - 16	63,050.00
	Poole Avenue and N.J. Route 36	Hazlet	1 - 17	18,700.00
	Prospect Avenue and N.J. Route 35	Matawan Township	1 - 18	3,000.00
	Middle Road and Union Avenue	Hazlet	1 - 19	6,050.00
	Palmer Avenue and N.J. Route 36	Keansburg - Hazlet	1 - 20	15,000.00
1977	Church Street and Lloyd Road	Matawan Township	1 - 21	$ 9,850.00
	Broad Street and Maple Place	Keyport	1 - 22	6,550.00
	Broad Street and Front Street	Keyport	1 - 23	18,000.00
	Main Street and Port Monmouth Road	Keansburg	1 - 24	19,400.00

* See TABLE 1 - 4 for cost estimates at additional intersections affected by one-way system

Maintenance

The maintenance of traffic control devices, in good operating condition and appearance, is most important if they are to command the respect that is necessary to insure good driving habits. Signal maintenance becomes a difficult problem when a particular local government is too small to support a separate maintenance unit. Since most of the traffic signals in the region are on roadways under state jurisdiction, the state maintains them. It is suggested that the remaining signals in operation in the region, be maintained by the county or on a contract or agreement basis with an outside contractor. Signs and pavement markings should also be maintained in a similar manner.

Evaluation

In order to identify locations where traffic operational improvements are required, use was made of accident experience, average travel speeds on routes, congestion and delay at intersections, and the level of service provided. To measure the success of this program requires an in depth analysis of traffic conditions before and after implementation. This study provides the necessary data to evaluate a location as it now exists before the operational improvements have been implemented. Some additional speed and delay runs can be conducted to increase the reliability of our sample but other than this the necessary information has been inventoried.

After a reasonable period of time has elapsed, similar studies regarding accident experience, speed and delay runs and locations of congestion and delay can be conducted along selected routes where early implementation projects have been completed. Comparison of traffic conditions before and after improvement should be made to insure that the desired benefits are being achieved.

REGION 1 INTERSECTION IMPROVEMENTS

Improvement Number	Location	Municipality	Page No.
1-1	N.J. Route 35 and Cliffwood Avenue	Matawan	1 - 22
1-2A	Main Street and Church Street	Matawan	1 - 24
1-2B	Church Street and Broad Street	Matawan	1 - 26
1-3	Main Street (N.J. Route 79) with New Brunswick Avenue and Broad Street	Matawan	1 - 28
1-4	Main Street and Ravine Drive	Matawan	1 - 30
1-5	Broad Street and Little Street	Matawan	1 - 32
1-6A	N.J. Route 34 and Broad Street	Matawan	1 - 34
1-6B	N.J. Route 34 and Main Street	Matawan	1 - 36
1-7	Main Street and Broad Street	Matawan	1 - 38
1-8	N.J. Route 36 and Laurel Avenue	Hazlet	1 - 40
1-9	Broad Street and N.J. Route 36	Keyport	1 - 42
1-10	Maple Avenue, Nappi Place, and N.J. Route 35 Overpass	Keyport	1 - 44
1-11	Broadway, Front Street and N.J. Route 35 Overpass	Keyport	1 - 46
1-12	N.J. Route 36 and Middle Road	Hazlet	1 - 48
1-13	N.J. Route 35 and County Road	Matawan	1 - 50
1-14	N.J. Route 36 and Atlantic Street	Keyport	1 - 52
1-15	N.J. Route 36 and Union Avenue	Hazlet	1 - 54
1-16	Poole Avenue and Middle Road	Hazlet	1 - 56
1-17	N.J. Route 36 and Poole Avenue	Hazlet	1 - 58
1-18	N.J. Route 35 and Prospect Avenue	Matawan	1 - 60
1-19	Middle Road and Union Avenue	Hazlet	1 - 62
1-20	N.J. Route 36 at Palmer Avenue and Main Street	Keansburg/ Hazlet	1 - 64
1-21	Church Street and Lloyd Road	Matawan	1 - 66
1-22	Maple Avenue and Broad Street	Keyport	1 - 68
1-23	Broad Street and Front Street	Keyport	1 - 70
1-24	Main Street at Port Monmouth Road and Beech Street	Keansburg	1 - 72
1-25	N.J. Route 35 and Central of N.J. Railroad Bridge	Keyport	1 - 74

1 - 1 NEW JERSEY ROUTE 35 AND CLIFFWOOD AVENUE MATAWAN TOWNSHIP

Cliffwood Avenue runs from the Middlesex County line in a northeast direction through Matawan Township. All turns from northbound New Jersey Route 35 occur through the jughandle. Left turns from southbound New Jersey Route 35 occur at a signalized jughandle approximately 500 feet to the south. The location is presently controlled by a semi-actuated traffic signal.

Problems

New Jersey Route 35 has high traffic volumes and an unsatisfactory level of service on both side street approaches. Inadequate lane arrangement exists on the side street approaches. Signal visibility is hampered by the combination of background and the effect of the adjacent signals. A significant number of accidents occur at the jughandle connection with the side street. This location has the highest accident experience in Region 1.

Recommendations

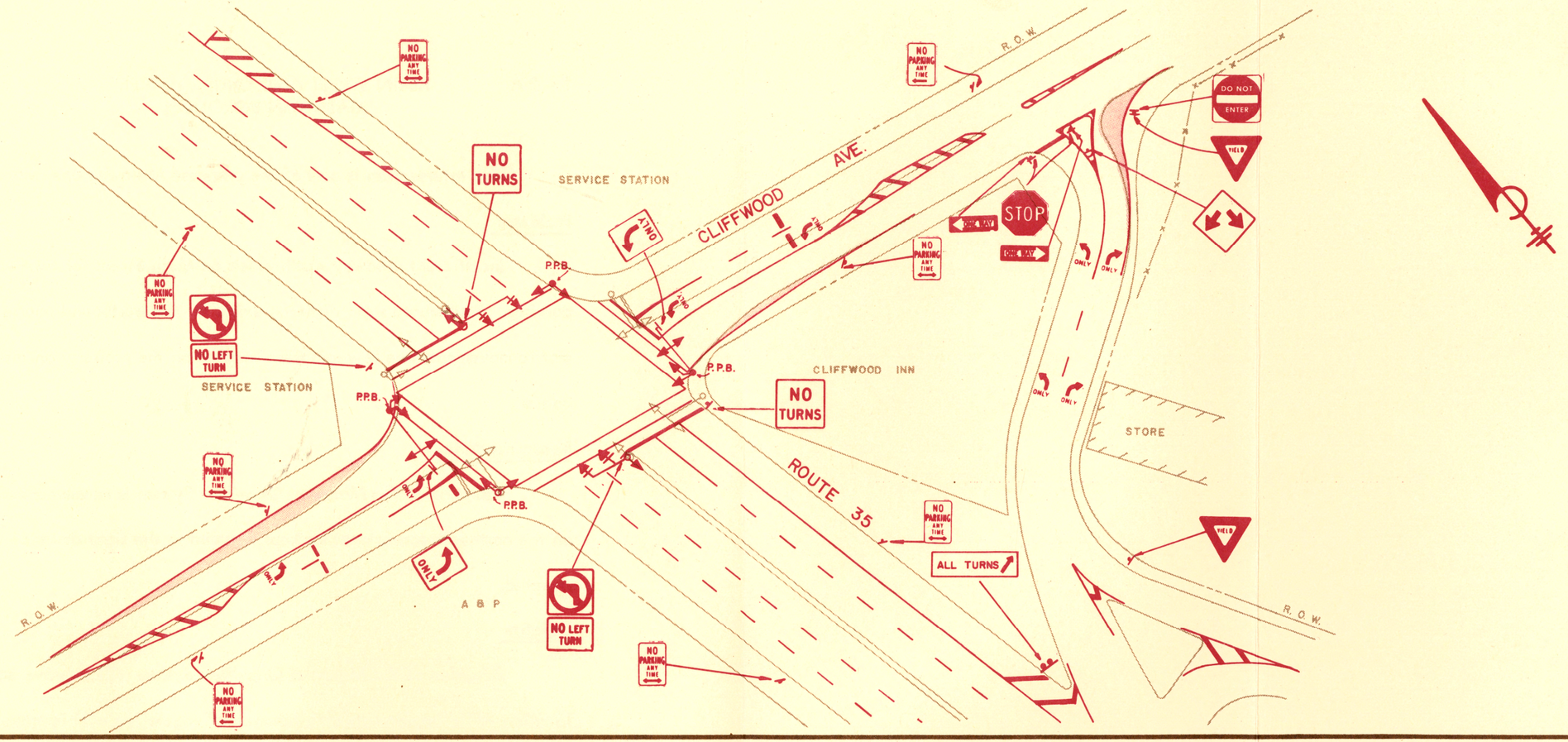
Modification to the side street approach lanes is recommended to provide for left turn lanes onto New Jersey Route 35. Revision of the geometrics of the jughandle connection with the side street and of the right of way control at this point is also recommended. Modification of the signal layout is also recommended to increase its visibility.

Benefits

The capacity will be improved by the approach lane arrangements for the side streets. The revision of the signal layout to the connection of the jughandle with the side streets will improve the safety of this location.

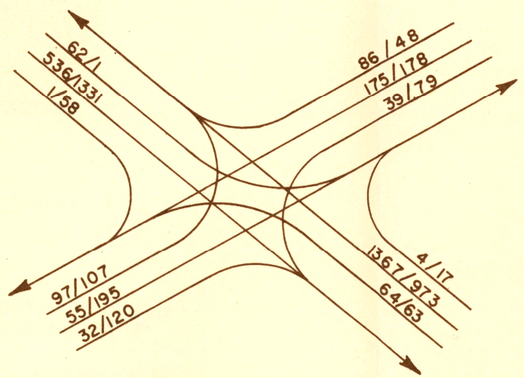
NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES

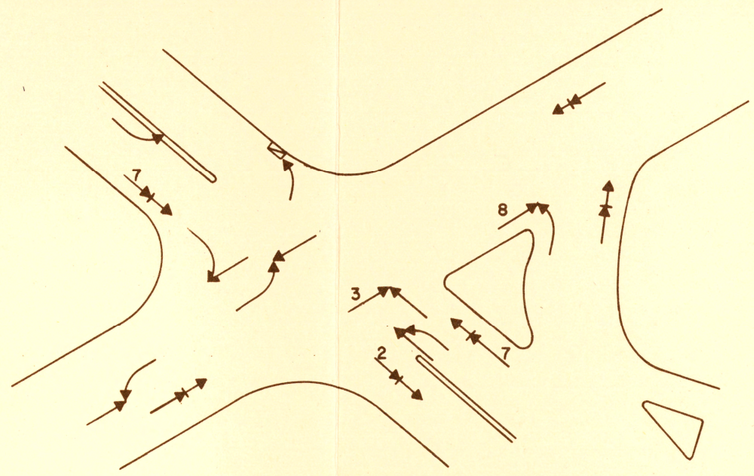




PROPOSED SIGNAL SEQUENCE



PEAK HOUR VOLUME
6:45 - 7:45 A.M. / 4:30 - 5:30 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD
23 NOT SHOWN

0 60 120
Scale: 1" = 60'

PROPOSED IMPROVEMENT 1-1

1 - 2A MAIN STREET AND CHURCH STREET
MATAWAN BOROUGH

This intersection is part of the proposed Matawan one-way system.

Problems

Insufficient roadway width exists on Main Street for two-way traffic and parking. Inadequate sight distance exists for the westbound and southbound traffic movements due to vegetation located on the property on the northeast corner.

Recommendations

Adoption of the Matawan One-Way System is recommended. The vegetation on the northeast corner must be kept trimmed so the sight distance will not be obstructed.

Benefits

Adoption of the Matawan One-Way System will improve capacity of this location while appropriate maintenance of vegetation will improve sight distance characteristics.

LEGEND FOR IMPROVEMENTS


EXISTING SIGNAL HEAD


PROPOSED SIGNAL HEAD


EXISTING STANCHION,
PROPOSED SIGNAL HEAD

THUS: ONLY OPEN SIGNAL HEADS OR STANCHIONS INDICATE AN EXISTING CONDITION. SOLID SIGNAL HEADS OR STANCHIONS INDICATE A PROPOSED CONDITION.


ROADWAY WIDENING

RIGHT OF WAY


BUILDING LINE

SIGN POST

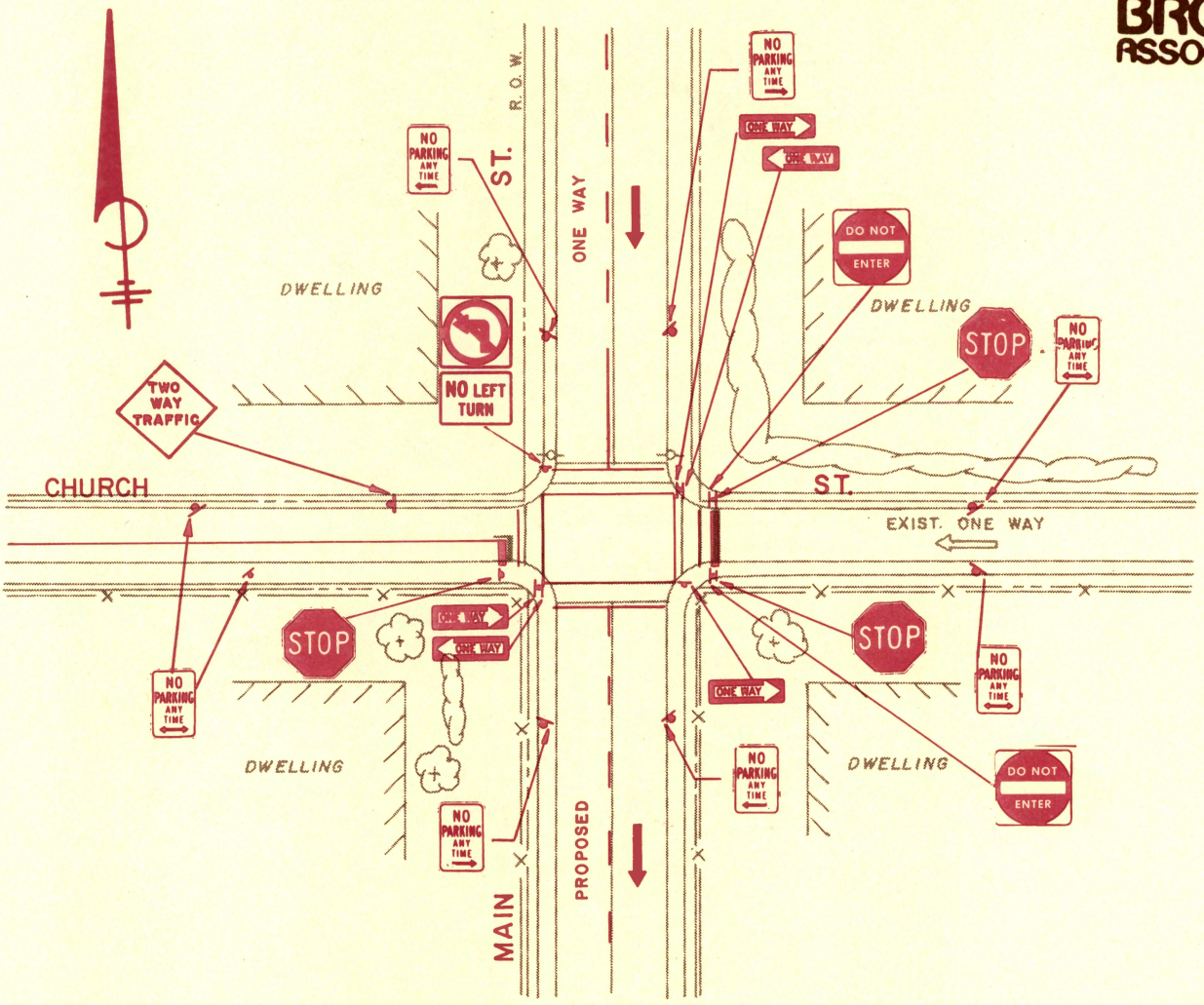
GUARD RAIL

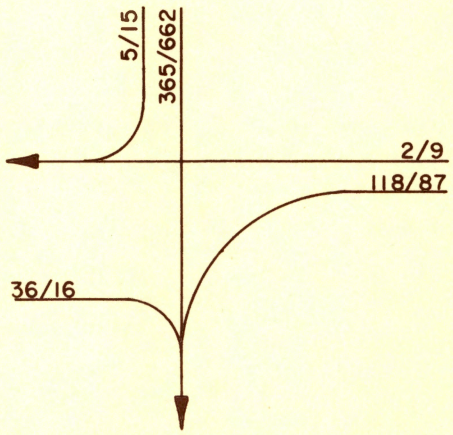

SIGNAL DETECTOR


PEDESTRIAN HEAD

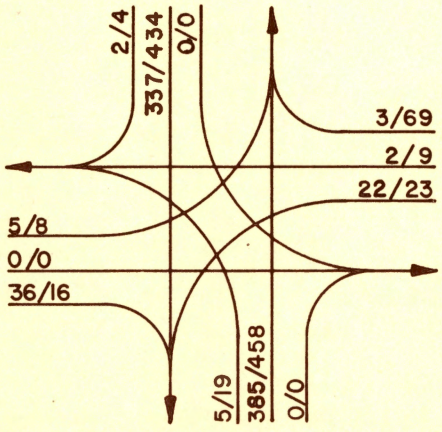
NOTE: DARK LINES INDICATE PROPOSED CONDITIONS. SCREENED OR LIGHT LINES INDICATE EXISTING CONDITIONS.

RICHARD P. BROWNE ASSOCIATES

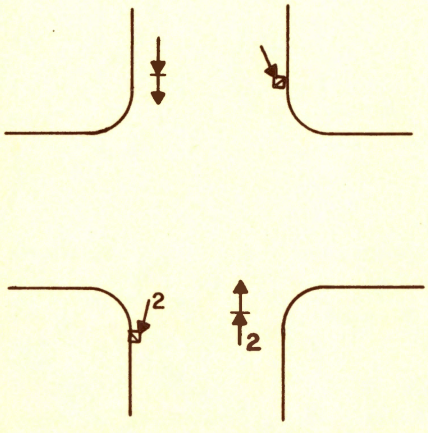




ONE WAY
ESTIMATED PEAK HOUR VOLUME



PEAK HOUR VOLUME
7:15 – 8:15 A.M. / 4:30–5:30 P.M.



ACCIDENT SUMMARY – 3 YR. PERIOD

0 60 120

Scale: 1" = 60'

PROPOSED IMPROVEMENT 1-2A

1 - 2B CHURCH STREET AND BROAD STREET MATAWAN BOROUGH

This intersection is part of the proposed Matawan One-Way System. A school is located on the southeast corner.

Problems

This location has insufficient roadway width for two-way traffic and parking. Sight distance for the westbound and southbound movements is restricted by vegetation on the property on the northeast corner.

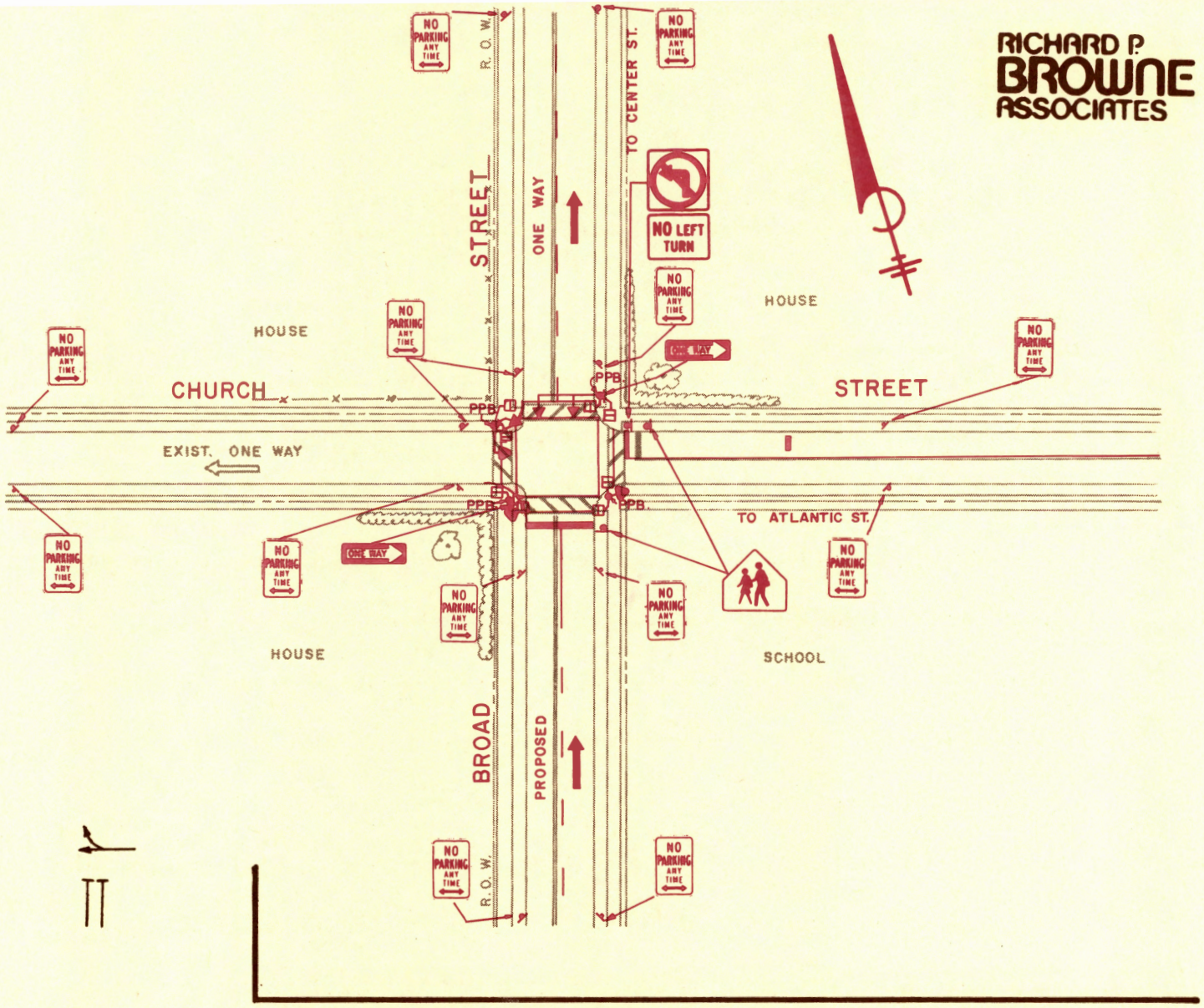
Recommendations

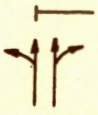
Adoption of the Matawan One-Way System is recommended. The installation of a semi-actuated traffic signal is also recommended.

Benefits

The signal installation will improve safety at this location. Adoption of the one-way system on Broad Street will improve the capacity.

RICHARD P. BROWNE ASSOCIATES





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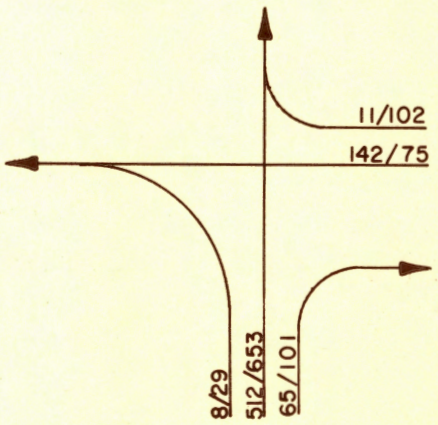
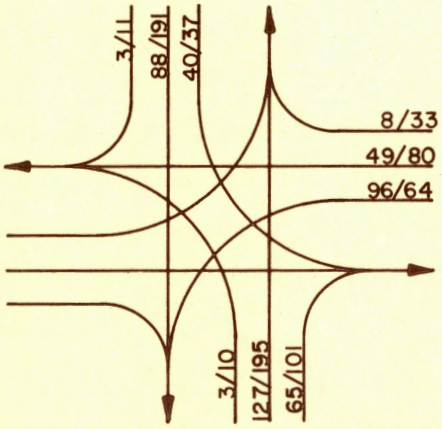
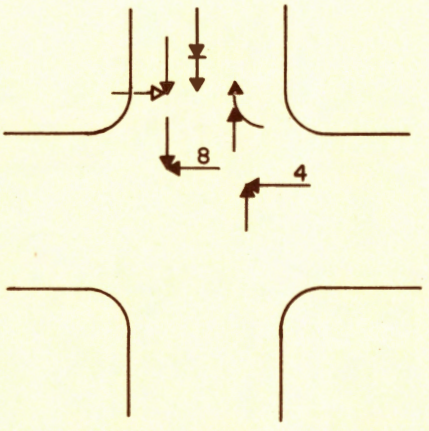


ONE WAY
ESTIMATED PEAK HOUR VOLUME



PEAK HOUR VOLUME
7:15-8:15 A.M. / 4:30-5:30 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD
4 NOT SHOWN

0 60 120

Scale: 1" = 60'

PROPOSED IMPROVEMENT 1-2B

1 - 3 MAIN STREET (NEW JERSEY ROUTE 79) WITH NEW BRUNSWICK AVENUE AND BROAD STREET MATAWAN BOROUGH

This intersection will be the southern terminus of the Matawan One-Way System. There is a semi-traffic-actuated signal at this location.

Problems

As a result of the Matawan One-Way System traffic volumes will increase on Main Street north of this intersection. Insufficient roadway width exists for these volumes. There will also be a heavy right turn into Broad Street. The present curb radii are inadequate to allow this right turn and the left turn from southbound Main Street to occur without interferring with each other.

Recommendations

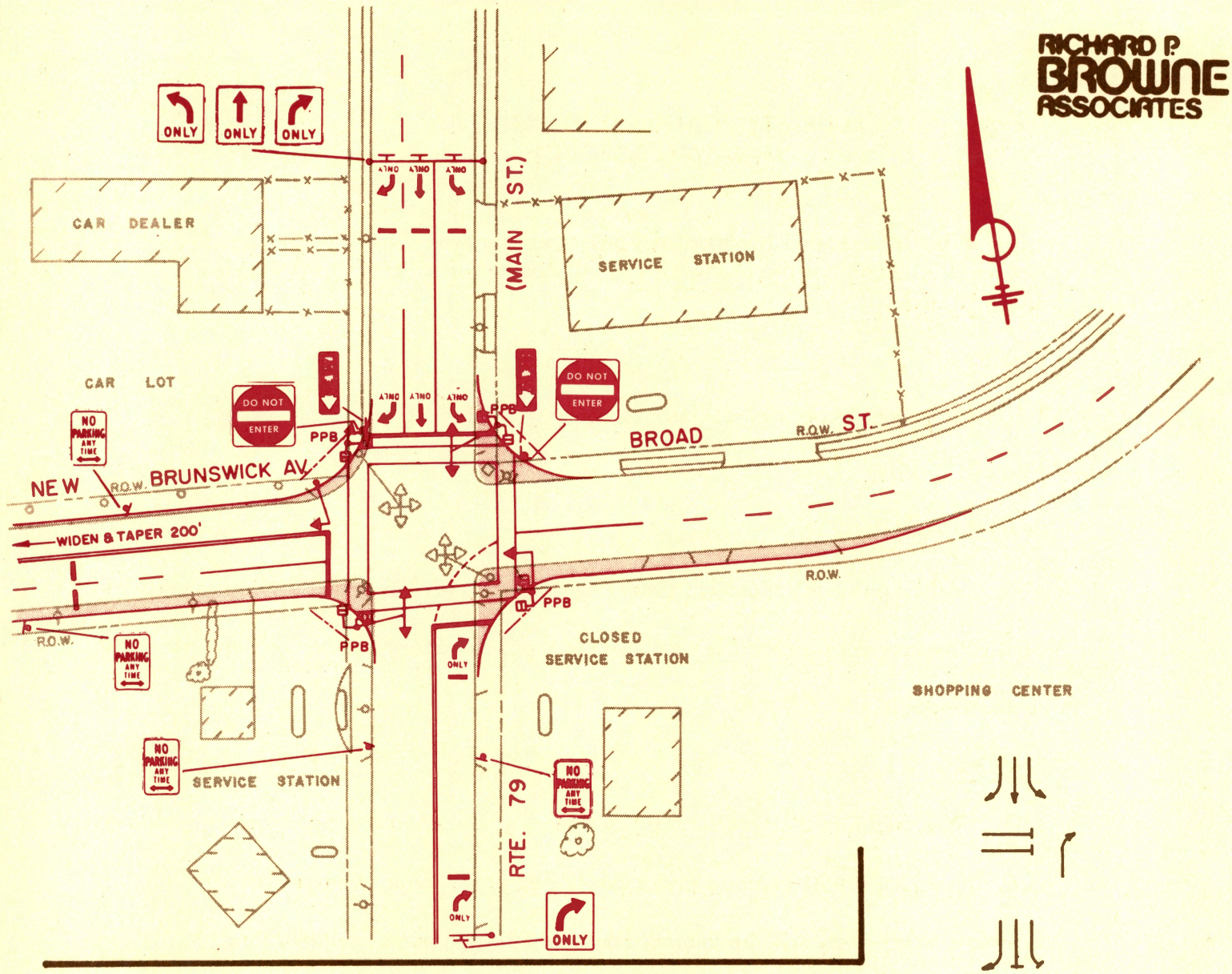
Widen Main Street (Route 79) north of the intersection and New Brunswick Avenue and Broad Street at the intersection. Modify the curb turning radii on all corners. Convert the signal to full traffic actuated operation. Install overhead lane control signs.

Benefits

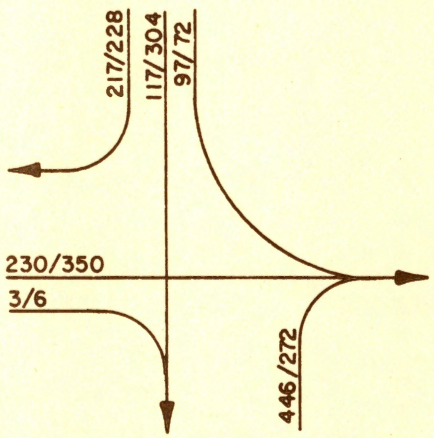
The safety and operational charavteristics of this location will be improved by these recommendations.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

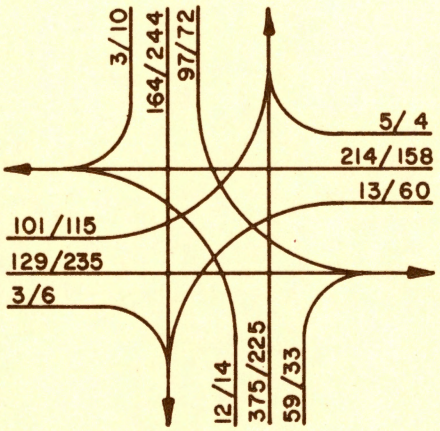
RICHARD P. BROWNE ASSOCIATES



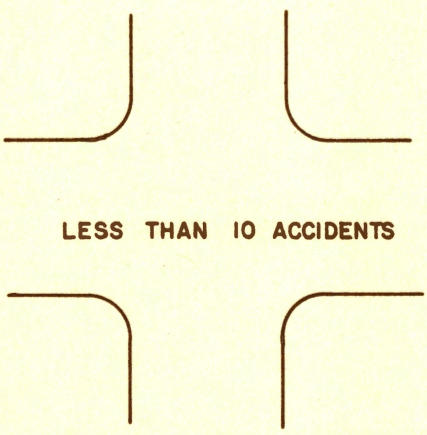
PROPOSED SIGNAL SEQUENCE



PEAK HOUR VOLUME
(AFTER IMPROVEMENT)

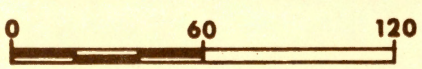


PEAK HOUR VOLUME
7:15 - 8:15 A.M./4:45-5:45 P.M.



LESS THAN 10 ACCIDENTS

ACCIDENT SUMMARY - 3 YR. PERIOD



Scale : 1"= 60'

PROPOSED IMPROVEMENT 1-3

1 - 4 MAIN STREET AND RAVINE DRIVE MATAWAN BOROUGH

This intersection is part of the proposed Matawan One-Way System. Ravine Drive connects the Matawan central business district with the Garden State Parkway.

Problems

This location has inadequate roadway width and considerable parking friction.

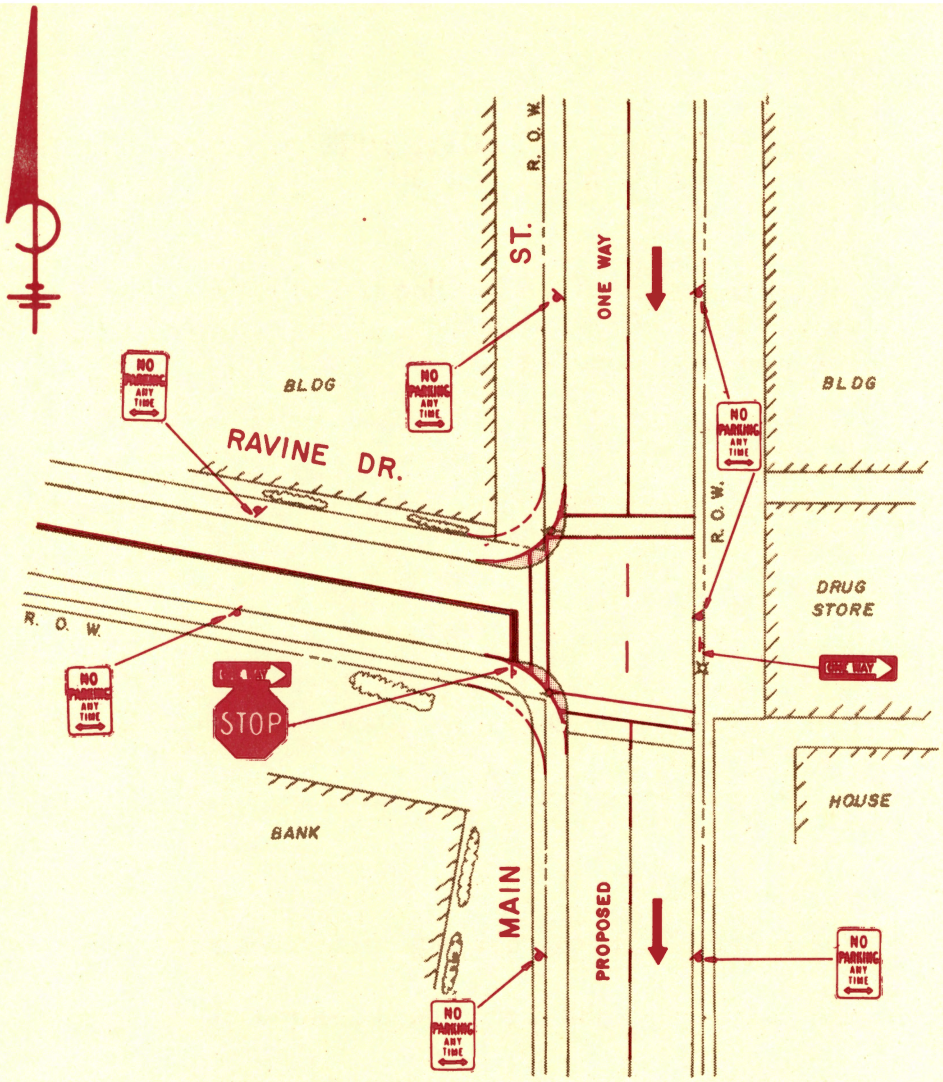
Recommendations

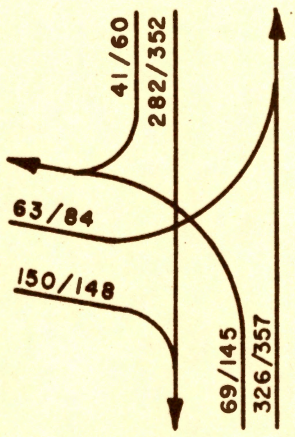
Adoption of the Matawan One-Way System is recommended. Minor modification of the curb turning radii is recommended. Curb parking restrictions are also recommended.

Benefits

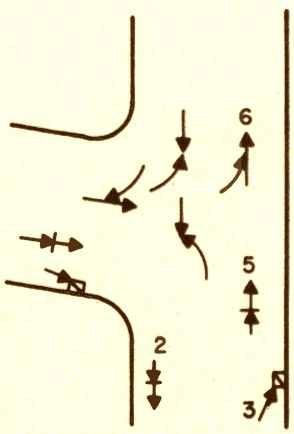
The adoption of Main Street as a one-way route and the modification of the curb turning radii will improve the capacity and operational characteristics of this location. The safety will be improved by the proposed parking restrictions.

RICHARD P. BROWNE ASSOCIATES





PEAK HOUR VOLUME
8:00-9:00 A.M./4:30-5:30 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD

0 60 120
Scale : 1" = 60'

PROPOSED IMPROVEMENT 1-4

1 - 5 BROAD STREET AND LITTLE STREET MATAWAN BOROUGH

Little Street to the east of this location is a collector roadway for the surrounding area, and west of the intersection is a main circulation route for movements in the Matawan central business district.

Problems

This location has insufficient roadway width and inadequate curb turning radii.

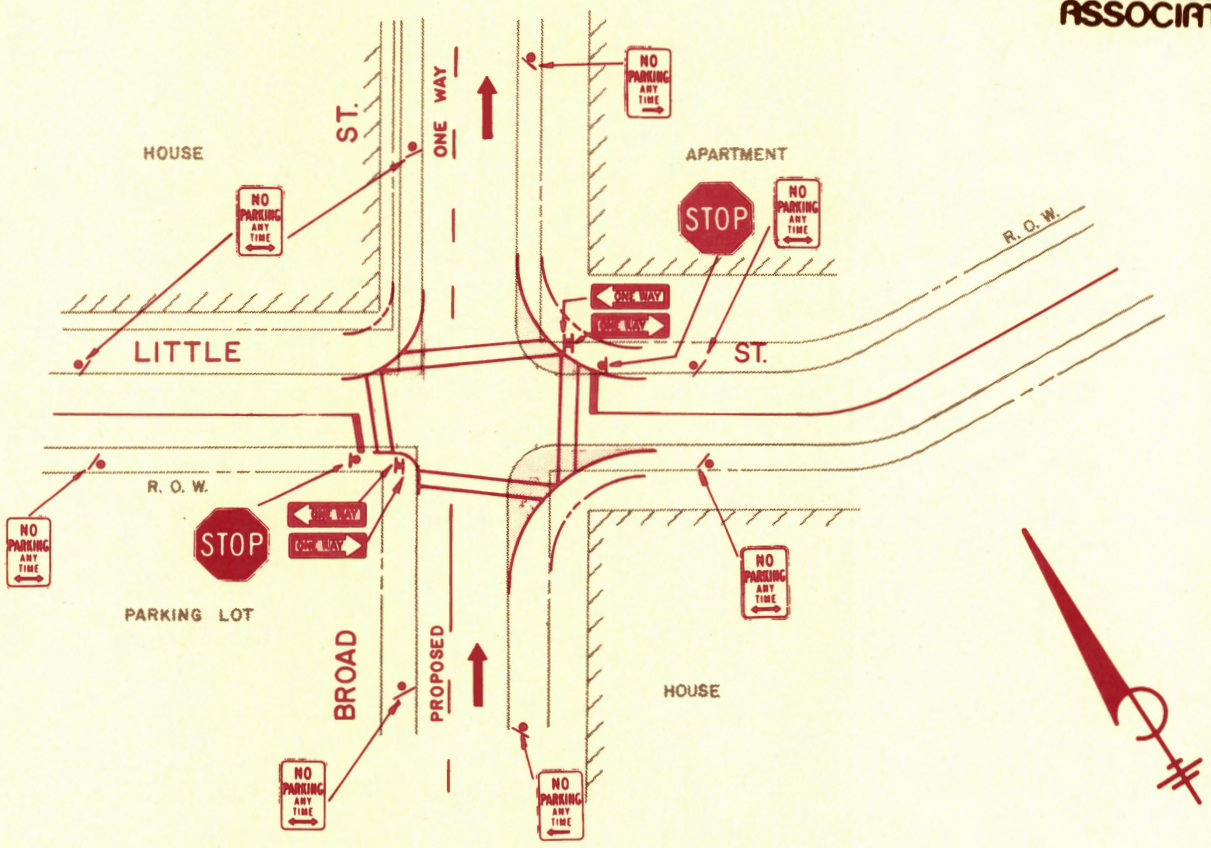
Recommendations

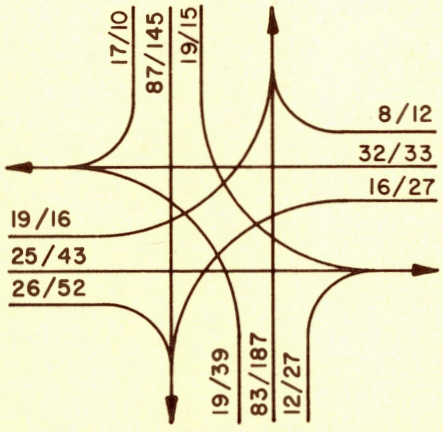
Adoption of the Matawan One-Way System is recommended, along with modification to the curb turning radii.

Benefits

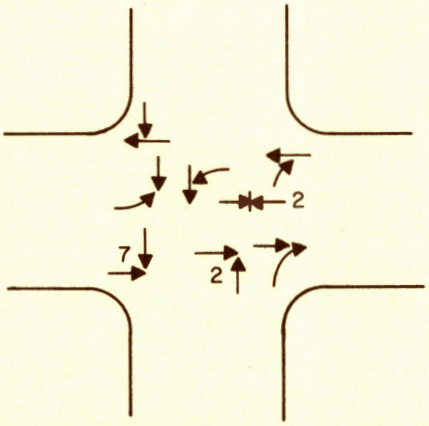
Adoption of Broad Street as a one-way street along with modification of the curb turning radii will improve the capacity and operational characteristics of this location. A reduction in the number of conflicts should improve safety.

RICHARD P. BROWNE ASSOCIATES





PEAK HOUR VOLUME
8:00-9:00 A.M./4:45-5:45 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD
7 NOT SHOWN

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 1-5

1 - 6 A NEW JERSEY ROUTE 34 AND BROAD STREET MATAWAN BOROUGH

New Jersey Route 34 is a major state highway in this area. Broad Street is part of the proposed Matawan One-Way System.

Problems

This location has high traffic volumes and inadequate roadway width. In connection with the Broad Street - Main Street one-way system an increased number of left turns from eastbound to northbound will be occurring at this location.

Recommendations

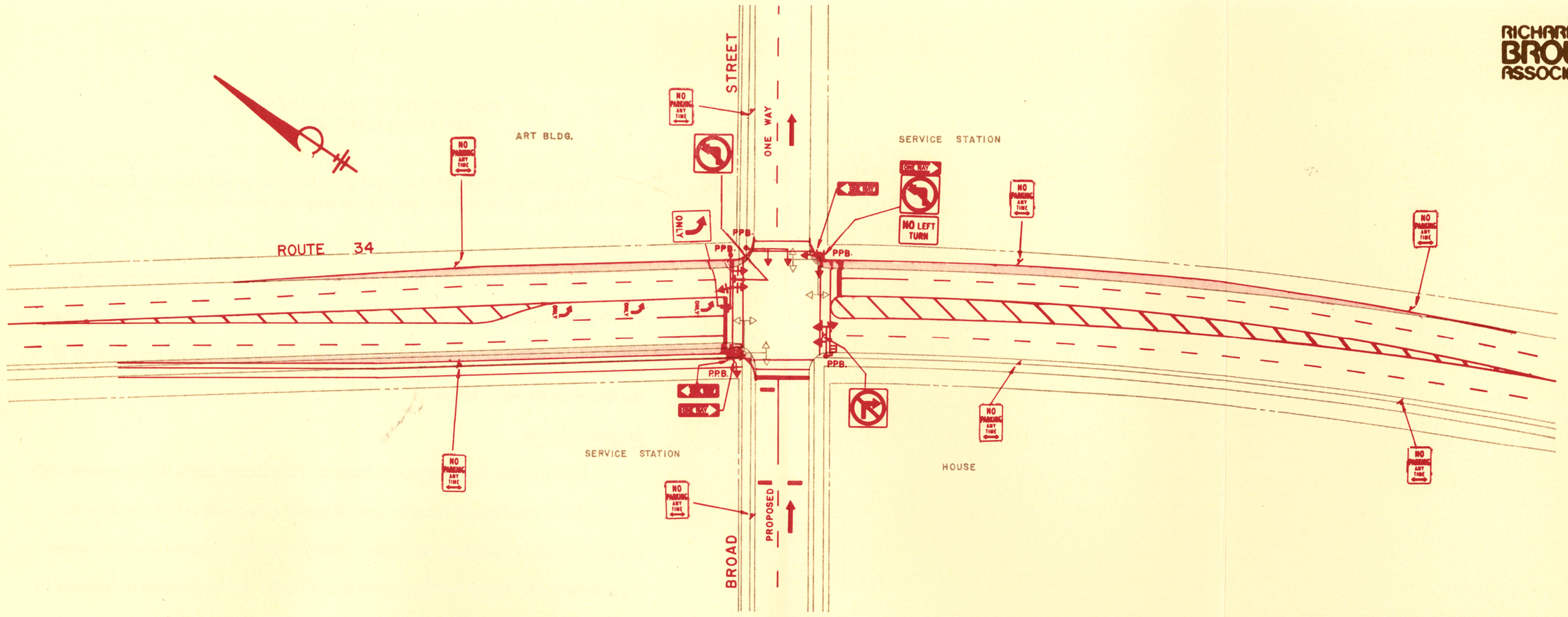
Adoption of the Matawan One-Way System is recommended. Widening of the New Jersey Route 34 approaches to provide for two through lanes in each direction and a special left turn lane on the eastbound approach is recommended. Revision to the signal layout is recommended to increase its visibility.

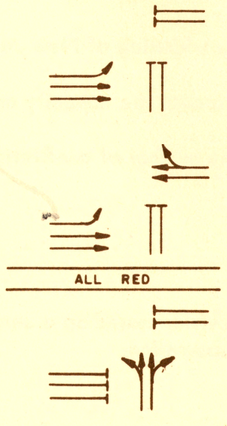
Benefits

Adoption of the Matawan One-Way System and the widening on New Jersey Route 34 will increase the capacity and operational characteristics of this location. A reduction in the number of conflicts will improve the safety.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES





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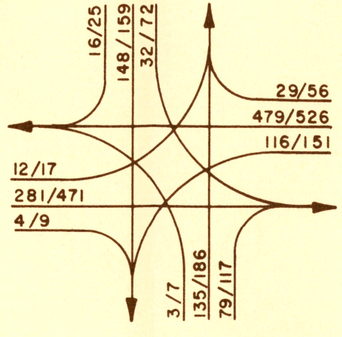
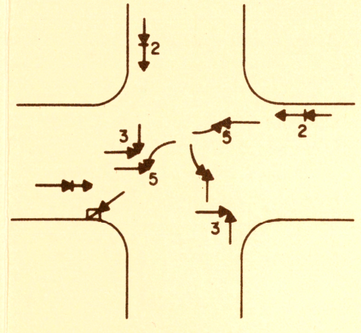


PEAK HOUR VOLUME
7:15 - 8:15 A.M. / 4:30 - 5:30 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD
8 NOT SHOWN

0 60 120
Scale: 1" = 60'

PROPOSED IMPROVEMENT 1-6A

1 - 6B NEW JERSEY ROUTE 34 AND MAIN STREET MATAWAN BOROUGH

New Jersey Route 34 is a major state highway paralleling the Garden State Parkway. Main Street is part of the proposed Matawan one-way system.

Problems

The roadway width at this location is inadequate. A considerable number of left turns from northbound to westbound which occur at the Broad Street intersection immediately to the south, will be reassigned to this location upon the adoption of the Matawan one-way system.

Recommendations

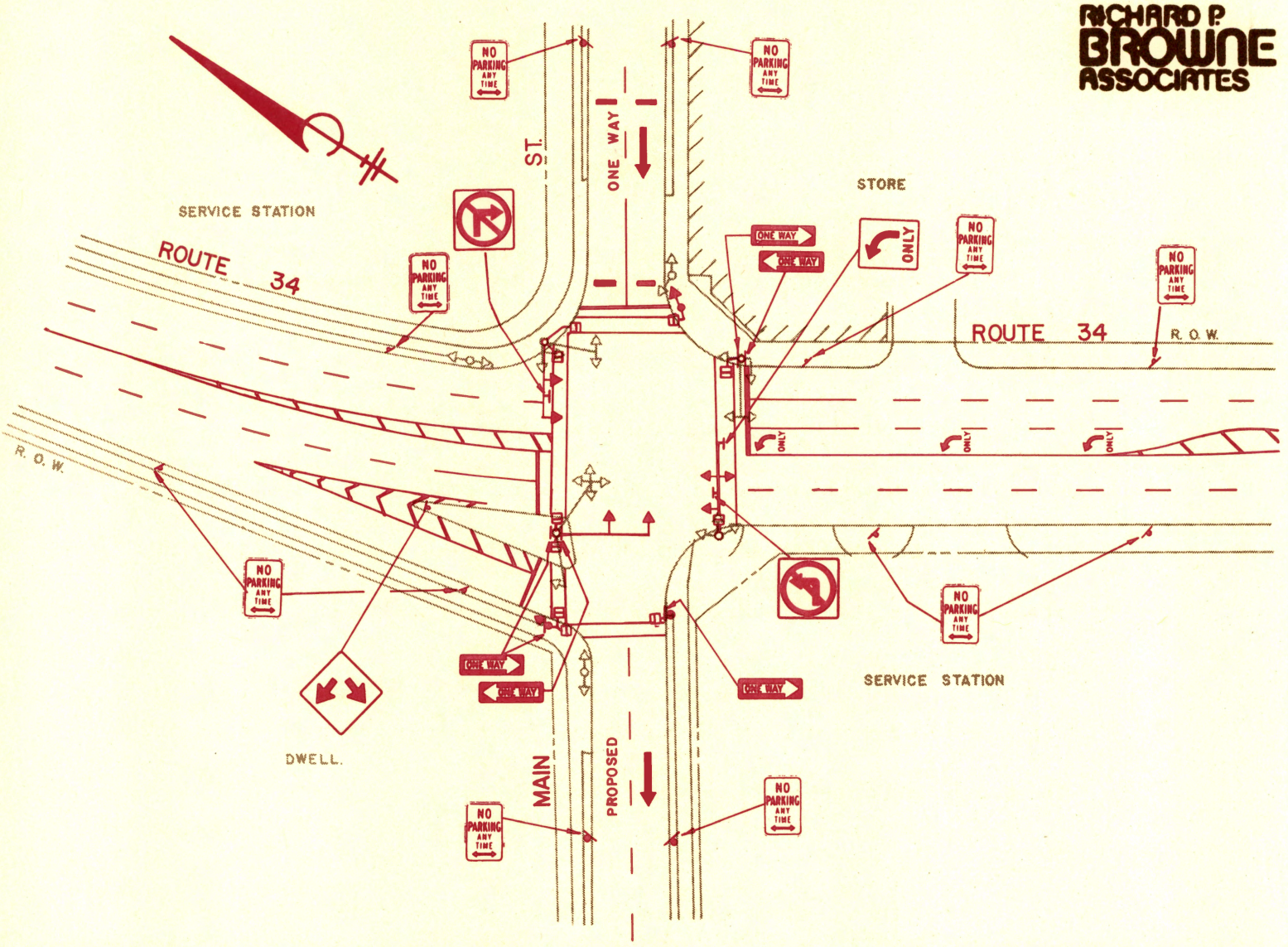
Modification to the approach lanes on New Jersey Route 34 are recommended to provide for two through lanes in each direction along with a left turn lane for the northbound to westbound direction. Adoption of the Matawan one-way system is recommended. Minor revision to the signal layout is recommended to increase its visibility.

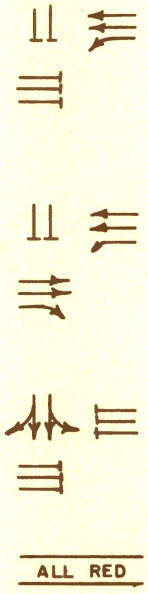
Benefits

Adoption of the Matawan one-way system, widening of New Jersey Route 34, and provision for the special left turn lane will increase the capacity and operational characteristics of this location. A reduction in the number of conflicting movements will increase safety.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

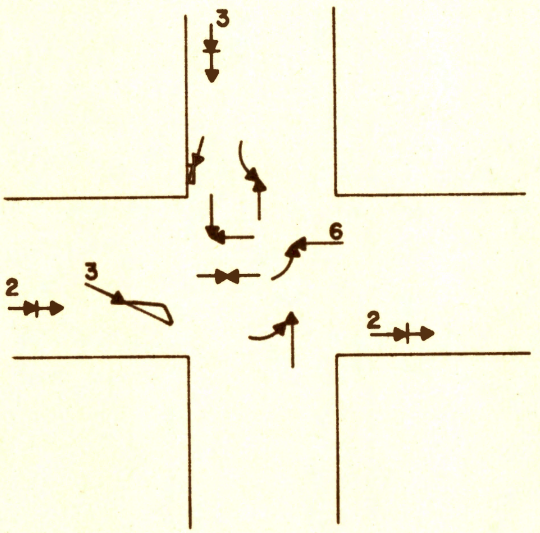
RICHARD P. BROWNE ASSOCIATES





PROPOSED SIGNAL SEQUENCE

NO COUNT



ACCIDENT SUMMARY-3 YR. PERIOD
18 NOT SHOWN

0 60 120
Scale : 1" = 60'

PROPOSED IMPROVEMENT 1-6B

1 - 7 MAIN STREET AND BROAD STREET
MATAWAN BOROUGH

This intersection will be the northern terminus of the Matawan One-Way System.

Problems

As a result of the Matawan One-Way System southbound traffic on Main Street will not be permitted to left turn into Broad Street. A physical island will be necessary to discourage motorists from making this manuever. A physical island is also necessary to guide traffic from Broad Street onto Main Street.

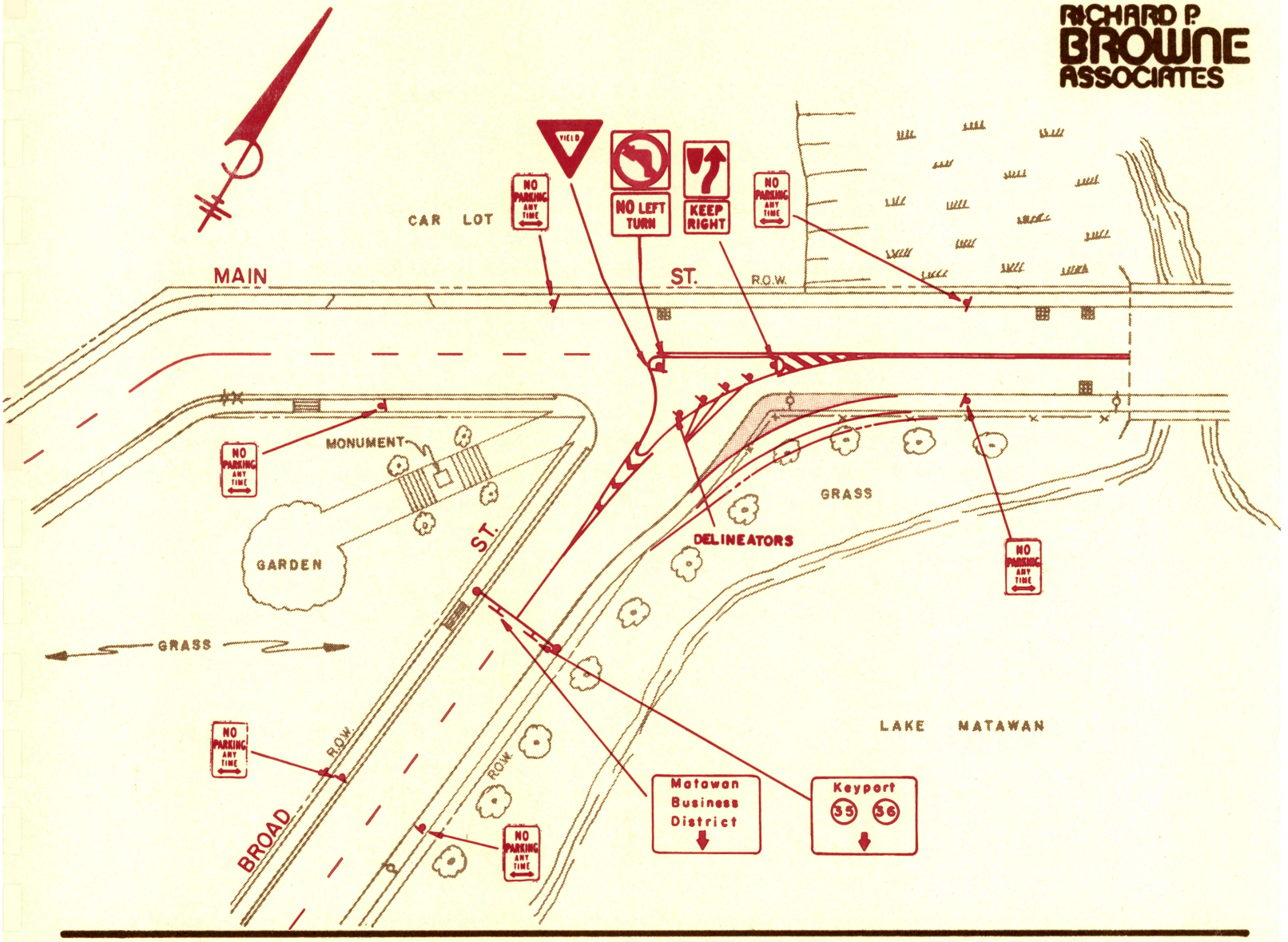
Recommendations

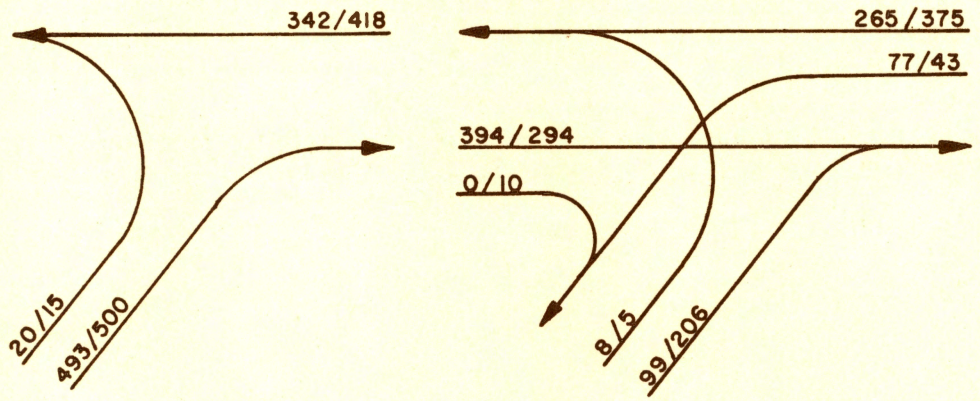
Installation of a channelizing island is recommended along with the installation of overhead directional signing.

Benefits

The safety and operational characteristics of this location will be improved by these recommendations.

RICHARD P. BROWNE ASSOCIATES





PEAK HOUR VOLUME
(AFTER IMPROVEMENT)

PEAK HOUR VOLUME
7:15 - 8:15 A.M. / 4:45 - 5:45 P.M.

ACCIDENT SUMMARY - 3 YR. PERIOD

LESS THAN 10 ACCIDENTS

0 60 120
Scale : 1" = 60'

PROPOSED IMPROVEMENT 1-7

1 - 8 NEW JERSEY ROUTE 36 AND LAUREL AVENUE HAZLET

Laurel Avenue is a major collector roadway for the surrounding area. This location is a school crossing and presently has a school guard posted during appropriate hours. All turning movements from New Jersey Route 36 are directed through jughandles. The location is presently controlled by a semi-actuated traffic signal.

Problems

This location has high traffic volumes on New Jersey Route 36 with considerable turning movements from the side street approaches.

Recommendations

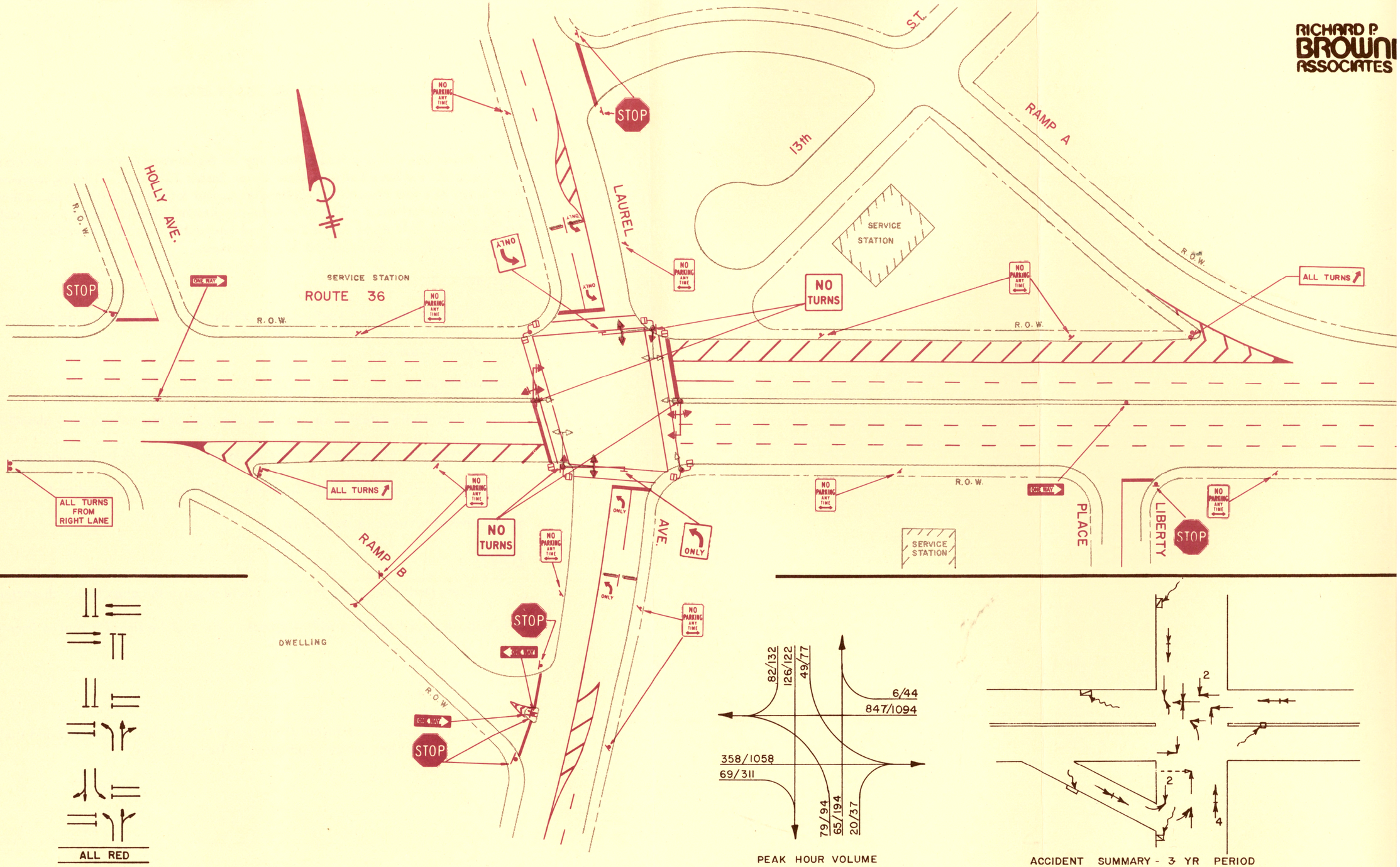
Modification to the side street approach lane arrangement is recommended in order to provide special left turn only lanes. Revision to the signal layout is recommended to increase its visibility. The addition of "Walk - Don't Walk" signal heads is also recommended. The installation of oversized stop signs at the eastbound jughandle connection with the side street is also recommended.

Benefits

Provision for the left turn lanes at this location combined with signal modifications should increase the operational characteristics of this intersection. Oversized stop signs at the jughandle exists should increase the safety at these points.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWN ASSOCIATES



PROPOSED SIGNAL SEQUENCE

PEAK HOUR VOLUME
7:00-8:00 A.M./4:15-5:15 P.M.

ACCIDENT SUMMARY - 3 YR PERIOD
15 NOT SHOWN

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 1-8

1 - 9 BROAD STREET AND NEW JERSEY ROUTE 36
KEYPORT

Broad Street is a collector roadway for the surrounding area and functions as a connector roadway between New Jersey Routes 35 and 36. Turning movements from Route 36 occur through the jughandles except for the right turn from southwestbound to northwestbound. The intersection is presently controlled by a semi-actuated traffic signal. This signal is the first signal encountered by traffic eastbound on Route 36 after leaving the Route 35 and 36 interchange.

Problems

Although there is a traffic signal at this location most of the accidents are of the right angle type.

Recommendations

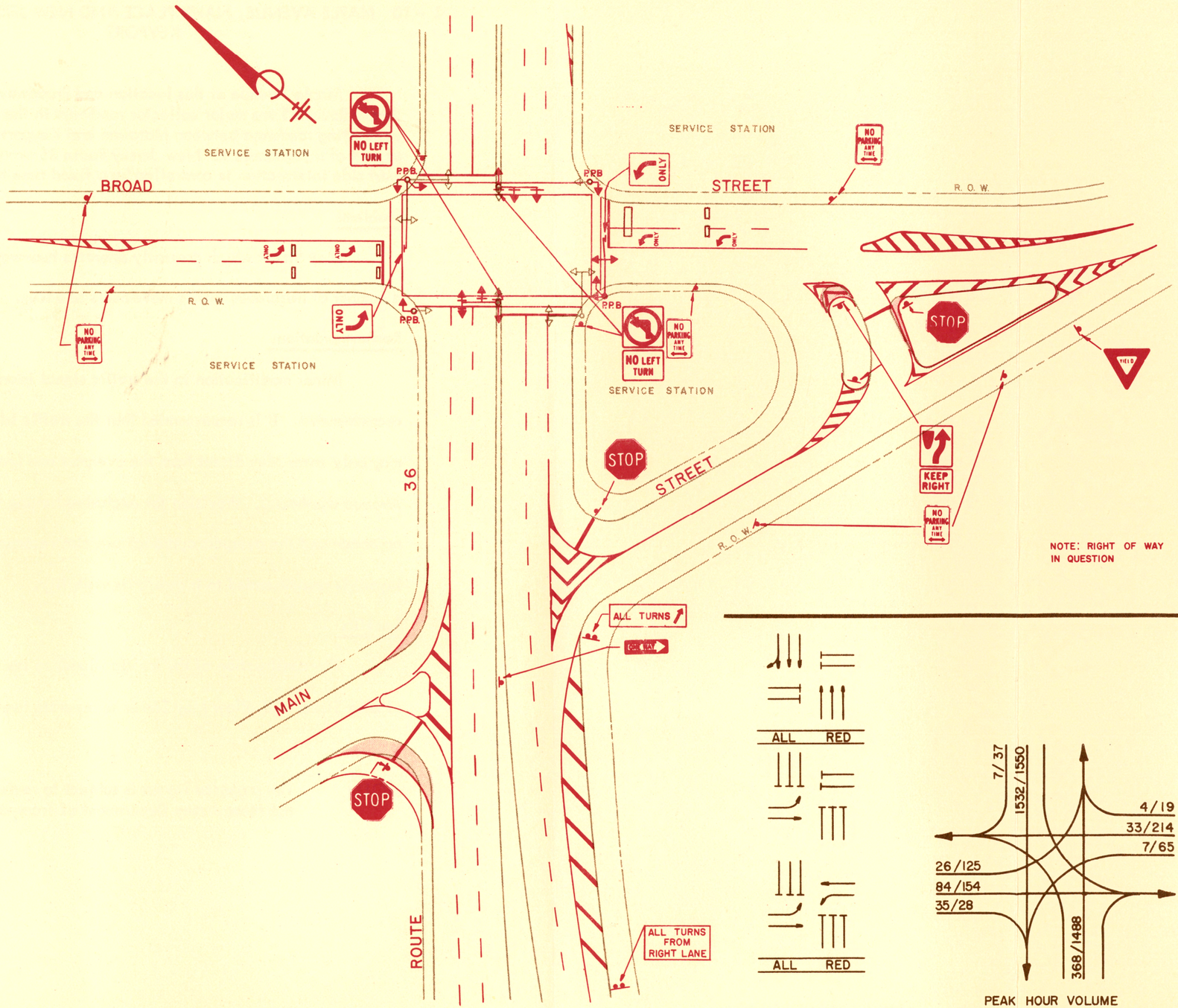
Minor modification to the curb turning radii at the main street jughandle entrance are recommended. Modification to the Broad Street approach lane arrangement is recommended to provide exclusive left turn lanes. It is also recommended that the signal layout be revised to increase its visibility.

Benefits

These modifications to the radii should improve the operational characteristics at this location and combine with the modifications to the signal layout to improve safety.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

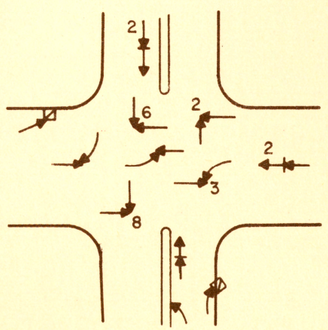
RICHARD P. BROWNE ASSOCIATES



NOTE: RIGHT OF WAY IN QUESTION

PROPOSED SIGNAL SEQUENCE

PEAK HOUR VOLUME
6:30–7:30 A.M./4:15–5:15 P.M.

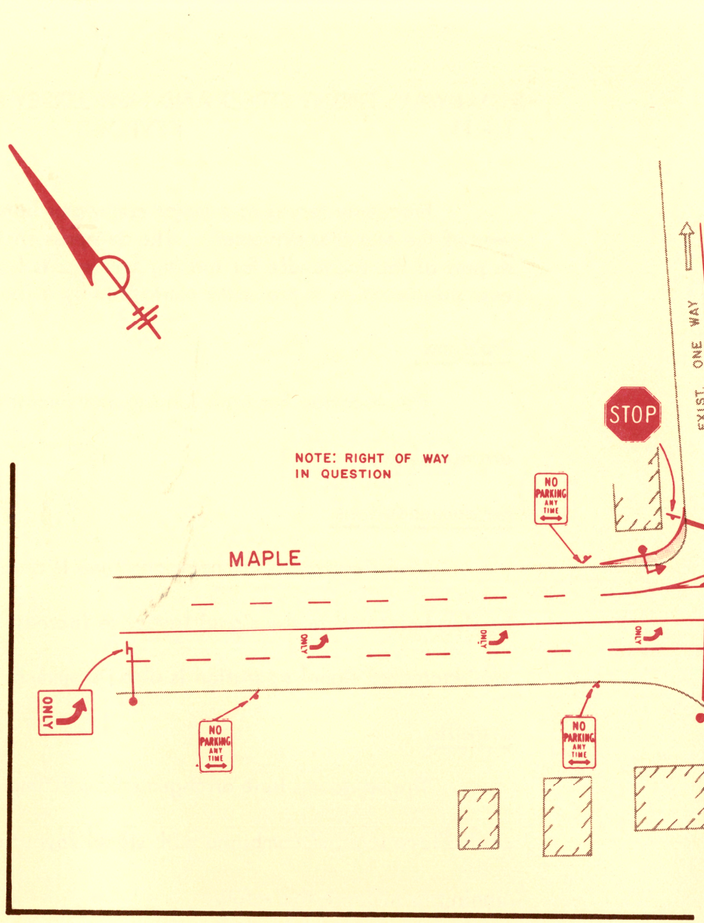


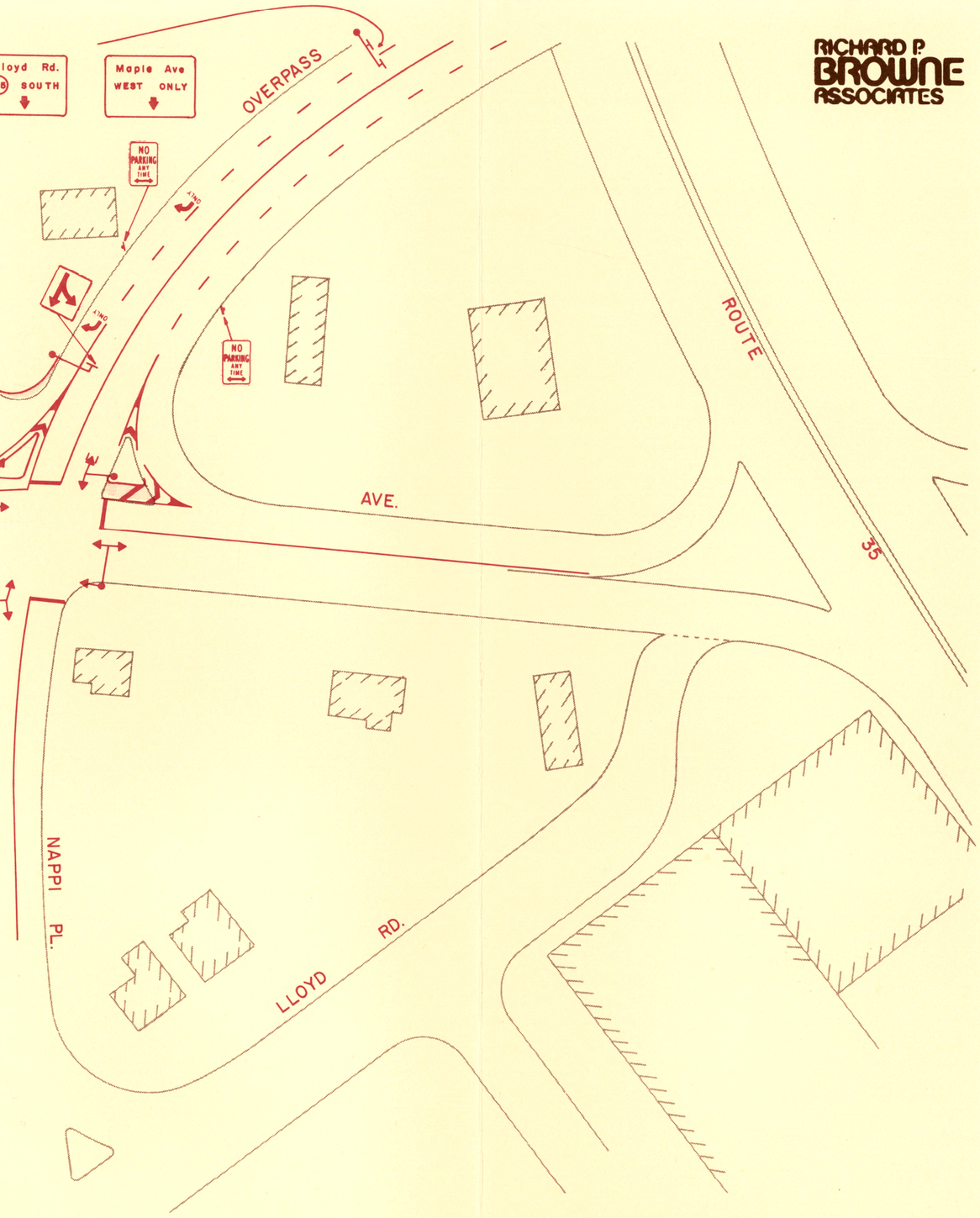
ACCIDENT SUMMARY – 3 YR. PERIOD
27 NOT SHOWN

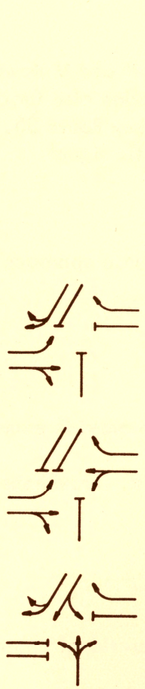
0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 1-9

RICHARD P. BROWNE ASSOCIATES







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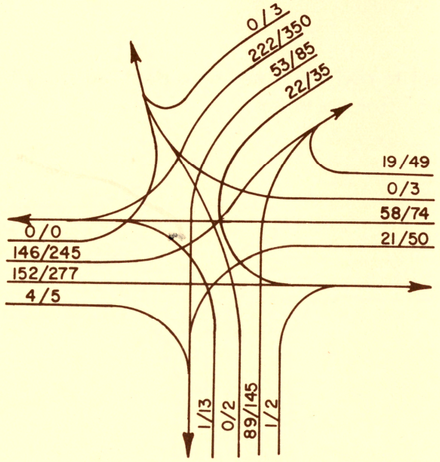
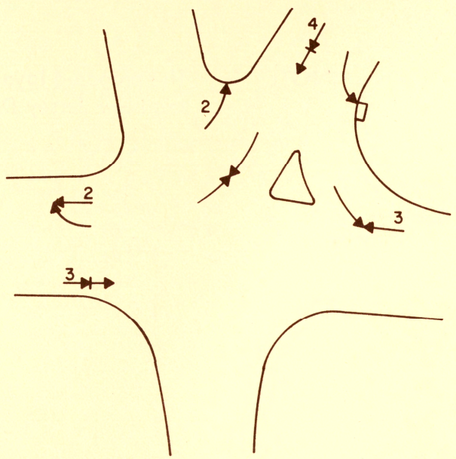


PEAK HOUR VOLUMES
7:30-8:30 A.M. / 4:30-5:30 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD

0 60 120
Scale: 1" = 60'

PROPOSED IMPROVEMENT 1-10

1 - 10 MAPLE AVENUE, NAPPI PLACE AND NEW JERSEY ROUTE 35 OVERPASS KEYPORT

Maple Avenue at this location and Broadway on the east side of New Jersey Route 35 are major collector roadways in the area and also serve as connecting roadways between Matawan and Keyport. The overpass also functions as part of a jughandle for New Jersey Route 35 movements in both directions. The west side intersection is controlled by a fixed time traffic signal.

Problems

May Street which presently operates two-way at this intersection allows for a number of hazardous traffic movements to occur.

Recommendations

Minor modification to the traffic signal islands and curb turning radii is recommended. It is recommended that the traffic islands be constructed so that traffic may only enter May Street from the overpass and leave May Street to enter Maple Avenue westbound. Provision for exclusive turning lanes on the Maple Avenue approach and the overpass approach are also recommended. Revision to the signal layout is recommended to increase its visibility.

Benefits

The construction of the traffic islands to control traffic movements in and out of May Street will allow May Street to operate two-way yet reduce vehicle conflicts.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES

Lloyd Rd. (36) SOUTH

Maple Ave WEST ONLY

OVERPASS

ROUTE 36

MAY ST.

EXIST. ONE WAY

PROPOSED TWO WAY

STOP

NOTE: RIGHT OF WAY IN QUESTION

MAPLE

AVE.

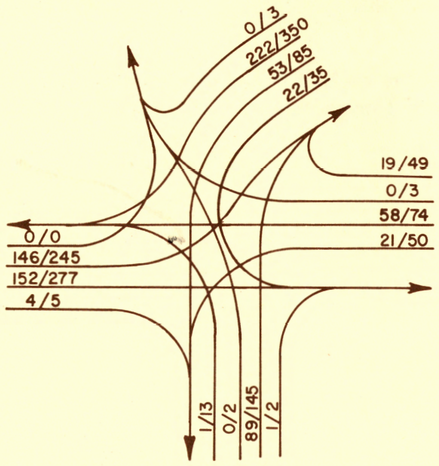
NAPPI PL.

LLOYD RD.

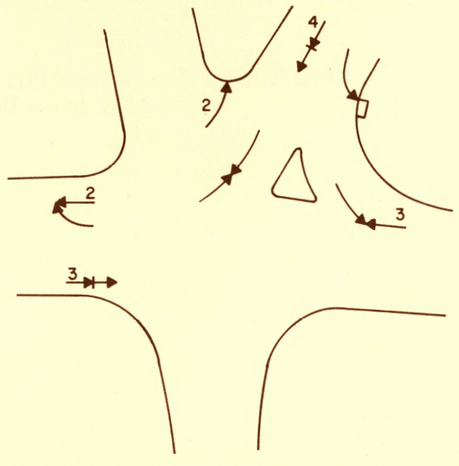
NO PARKING ANY TIME

ONLY

PROPOSED SIGNAL SEQUENCE



PEAK HOUR VOLUMES
7:30-8:30 A.M. / 4:30-5:30 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD

0 60 120

Scale: 1"= 60'

PROPOSED IMPROVEMENT 1-10

BROADWAY, FRONT STREET AND NEW JERSEY ROUTE 35 OVERPASS
1 - 11 KEYPORT

Broadway serves as a major connector between Keyport and Matawan by way of the overpass movement. The overpass on this intersection also functions as part of the jughandle for turning movements from New Jersey Route 35. This east side location is presently controlled by a fixed time traffic signal.

Problems

This location has high turning movements and inadequate approach lane arrangements.

Recommendations

Modification to the approach lane is recommended to provide exculsive turning lanes and to the signal layout to increase its visibility. Provisions for semi-actuated signal operation is also recommended.

Benefits

The approach lane arrangements will improve the operational characteristics of this location and combined with signal layout modifications and lane control signing to improve the safety.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES

OVERPASS

ROUTE 35

BROADWAY

MAPLE AVE.

PARKING LOT

HOUSE

HOUSE

ELKS LODGE

FOURTH ST.

Broadway
EAST ONLY

Fourth St. South
35 NORTH

FOURTH ST.
N.J. 35 NORTH

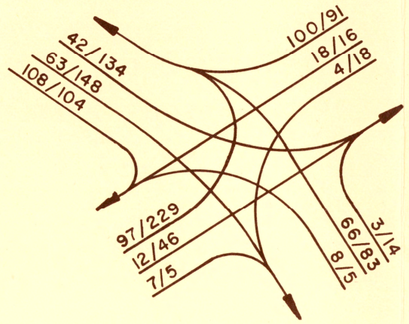
NO PARKING ANY TIME

ONLY

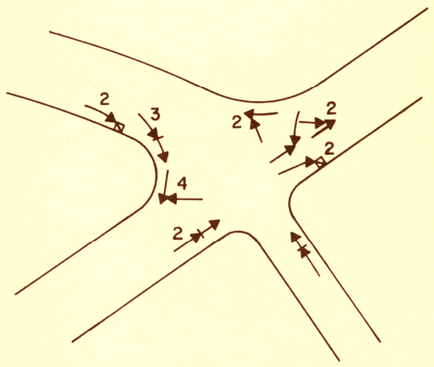
YIELD

NOTE: RIGHT OF WAY IN QUESTION

PROPOSED SIGNAL SEQUENCE



PEAK HOUR VOLUME
7:30-8:30 A.M./4:30-5:30 P.M.



ACCIDENT SUMMARY — 3 YR. PERIOD

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 1-11

1 - 12 NEW JERSEY ROUTE 36 AND MIDDLE ROAD HAZLET

Middle Road is a major county highway in this area. Turning movements from New Jersey Route 36 except for right turns eastbound are handled through jughandles. This location is presently controlled by a semi-actuated traffic signal.

Problems

This location has high traffic volumes on New Jersey Route 36 and moderate turning movements from the side streets. Significant accident experience occurs at the westbound jughandle connection with the side street. Inadequate approach lane arrangement exists for the side street.

Recommendations

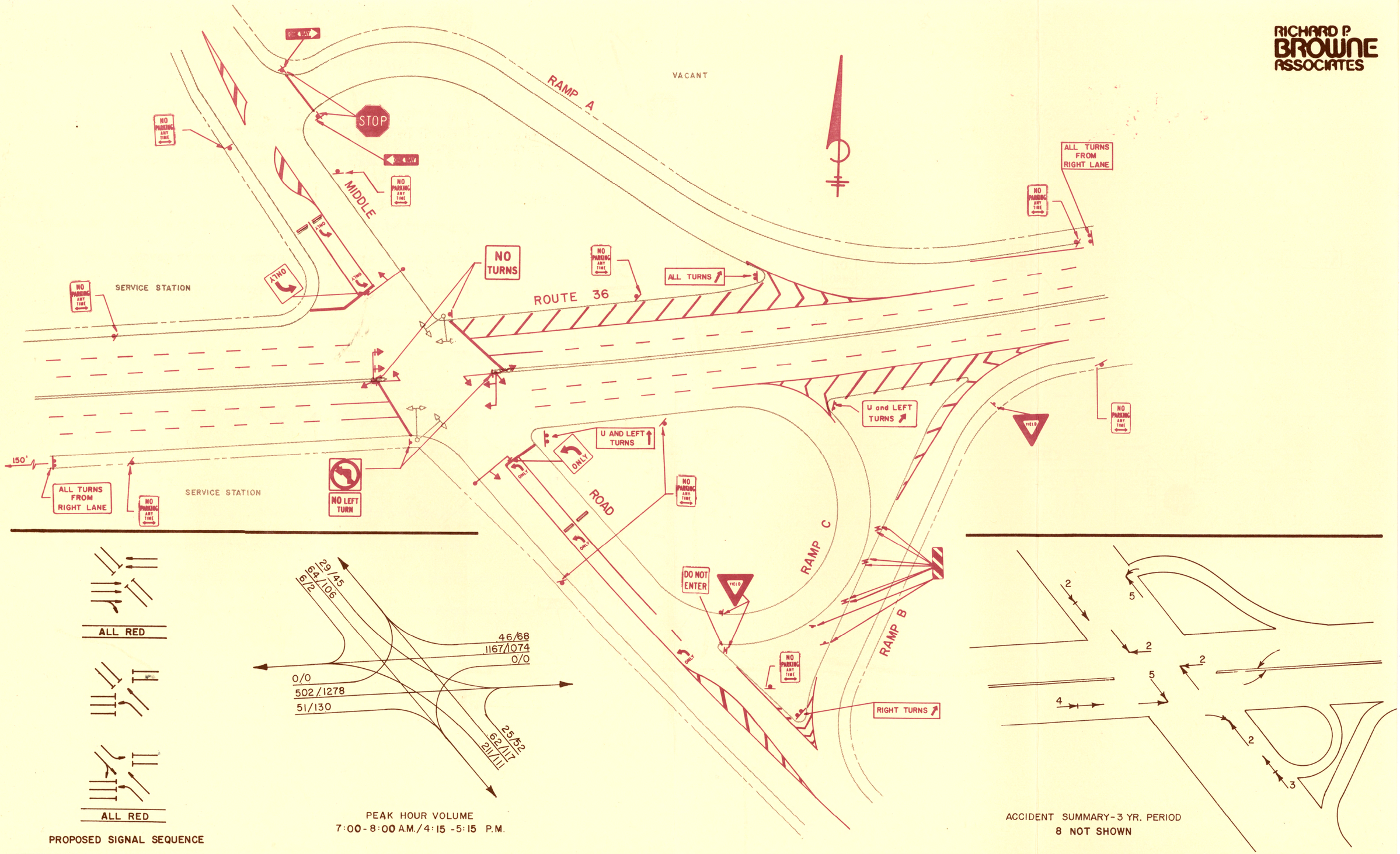
Modification of the approach lane arrangement is recommended to provide for separate left turn lanes on Middle Road. Installation of oversized stop signs at the ramp A connection with the side street is also recommended. Revision of the signal layout is recommended to increase its visibility, including the use of back plates for the westbound far side signal heads. Modification to the signal timing is recommended to provide for an all red interval after both phases.

Benefits

Provision of special left turn lanes will improve the capacity and combined with signal modification and ramp terminal controls will improve safety.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES



PROPOSED SIGNAL SEQUENCE

PEAK HOUR VOLUME
7:00-8:00 A.M./4:15 -5:15 P.M.

ACCIDENT SUMMARY-3 YR. PERIOD
8 NOT SHOWN

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 1-12

1 - 13 NEW JERSEY ROUTE 35 AND COUNTY ROAD MATAWAN TOWNSHIP

This section of New Jersey Route 35 does not have a center barrier. All movements are presently permitted to and from County Road. County Road connects to Cliffwood Avenue near the Garden State Parkway by way of Rose Street. Most of the development on County Road is in the vicinity of those two connections.

Problems

All turning movements are permitted into and out of County Road. Relatively small traffic volumes generate a considerable number of turning movements and right angle accidents. Most of the rear end accidents which occur can also be related to movements generated from this local road.

Recommendations

Modification of the curb turning radii and the construction of a small traffic island are recommended along with necessary signing to prohibit left turns out of or into County Road.

Benefits

The above recommendations will eliminate most of the hazardous traffic movements from this location. The prohibited movements may occur on Cliffwood Avenue at Rose Street to County Road. The safety of this location will be improved by these recommendations.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

1 - 14 NEW JERSEY ROUTE 36 AND ATLANTIC STREET KEYPORT

Atlantic Street is a collector roadway for the surrounding area. Left turning movements from New Jersey Route 36 occur through a jughandle utilizing the adjacent street network. There is a fire department located on the southwest corner. The location is controlled by a semi-actuated traffic signal.

Problems

This location has high traffic volumes on the main street. Inadequate curb turning radii exists on the southwest and northeast corners.

Recommendations

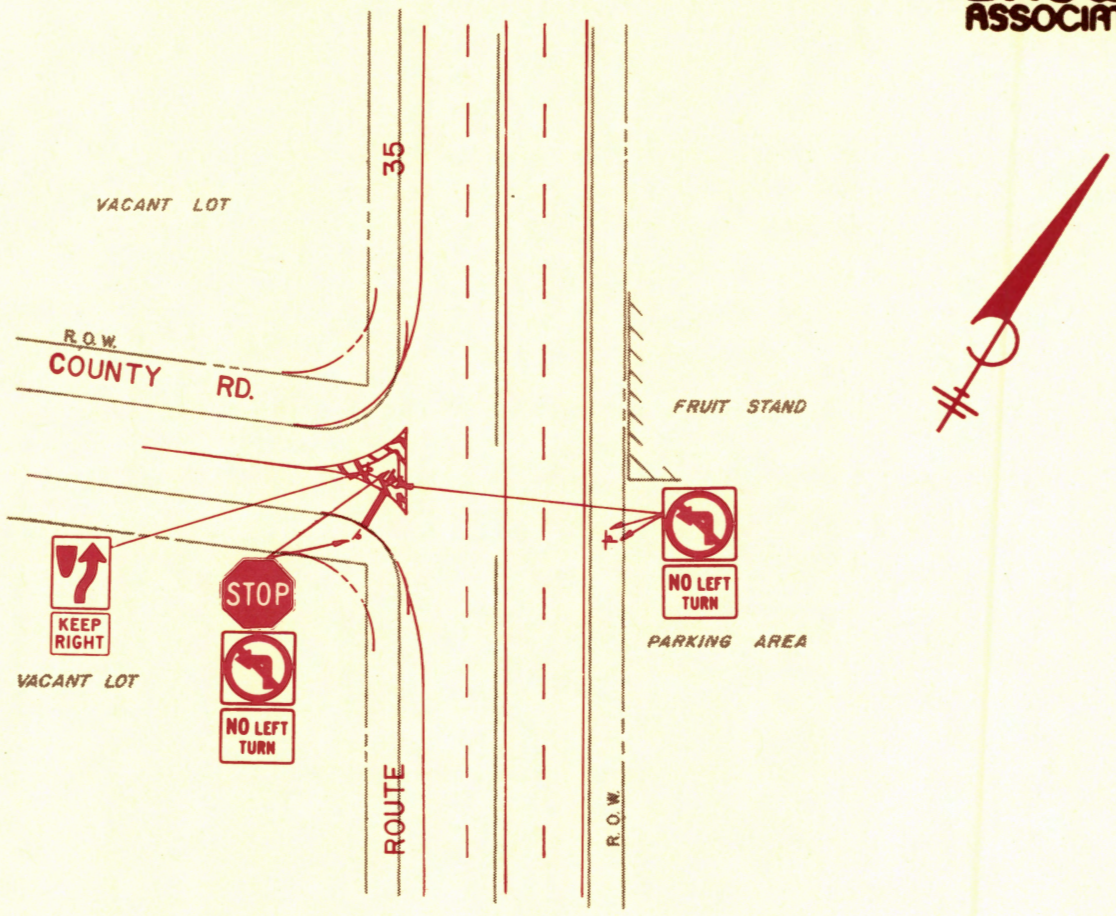
Modification to the curb turning radii is recommended. Revision to the signal layout is recommended to increase its visibility and to the signal timing to provide an all red interval after side street green. Interconnected pre-emption with the fire house signal is also recommended.

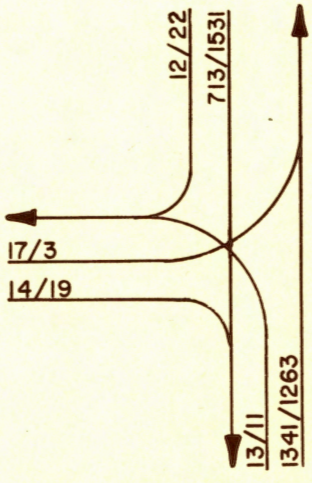
Benefits

The safety and operational characteristics of this location will be improved by these recommendations.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES





PEAK HOUR VOLUME
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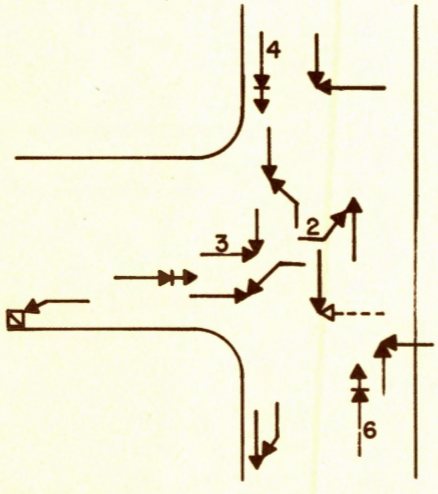


ACCIDENT SUMMARY–3 YR. PERIOD
4 NOT SHOWN

0 60 120
Scale : 1" = 60'

PROPOSED IMPROVEMENT 1-13

1 - 15 NEW JERSEY ROUTE 36 AND UNION AVENUE HAZLET

Union Avenue is a major connecting roadway linking Union Beach with New Jersey Routes 35 and 36. Eastbound turning movements occur through a jughandle while turning movements for westbound New Jersey Route 36 use the adjacent street network. The location is controlled by a semi-actuated traffic signal.

Problems

This location has high traffic volumes on New Jersey Route 36. Right angle and turning movement accidents are experienced. Some accidents are noted at the jughandle connection with the side street on the southside of the intersection.

Recommendations

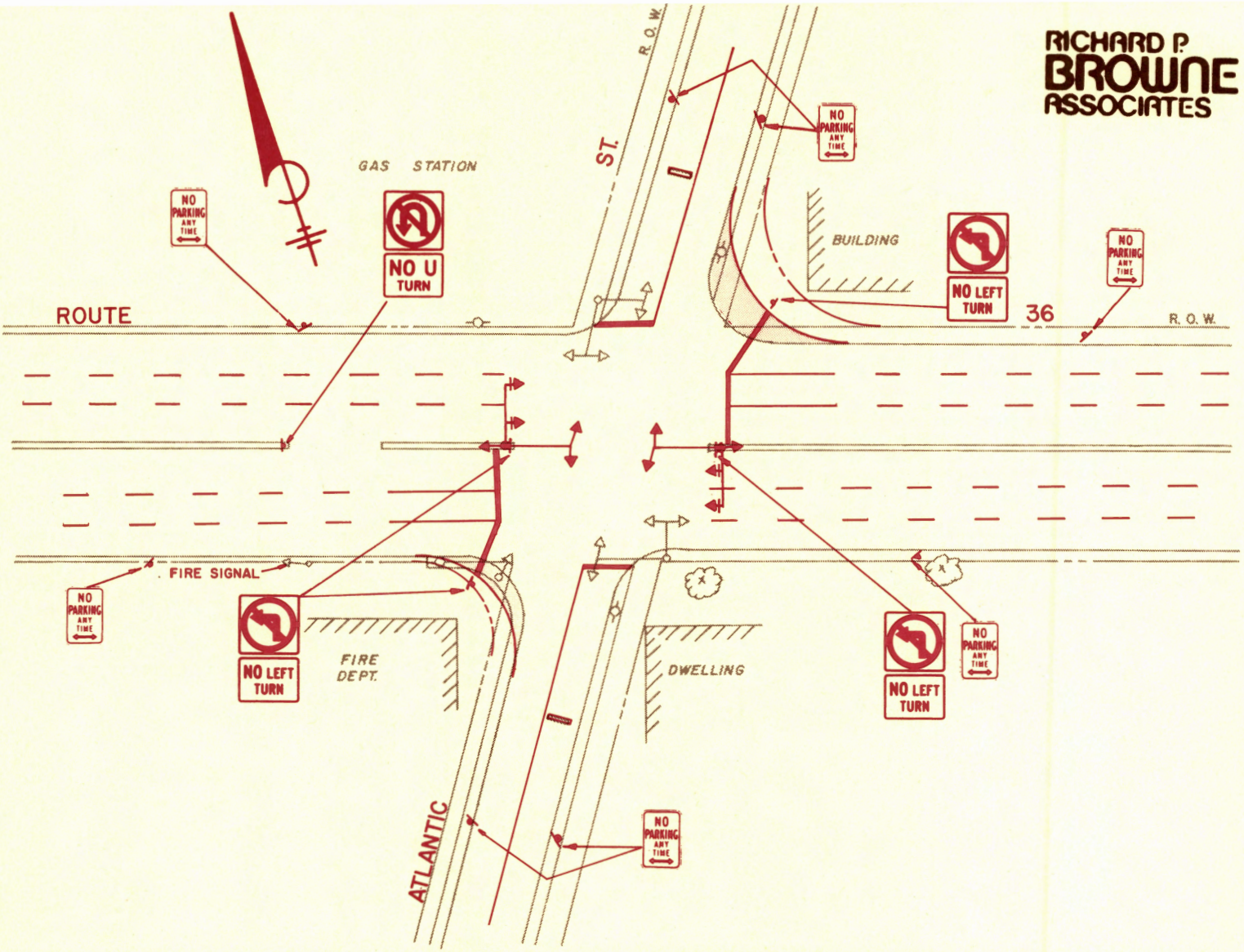
The installation of oversized stop signs at the jughandle connection, with the side street at the south side of the intersection, is recommended. Modification of the approach lane arrangement is recommended to provide for special left turning lanes for both side street approaches. Revision of the signal layout is recommended to increase its visibility including the installation of back plates for the signal heads of the main street.

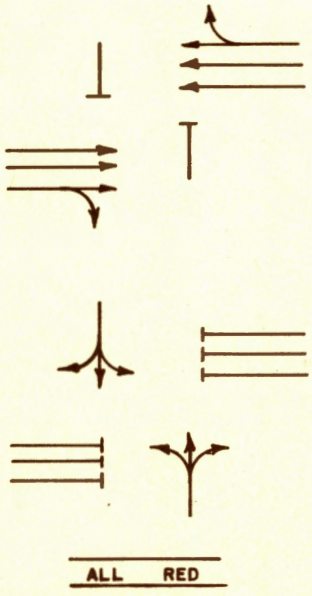
Benefits

The safety and operational characteristics of this location will be improved by these recommendations.

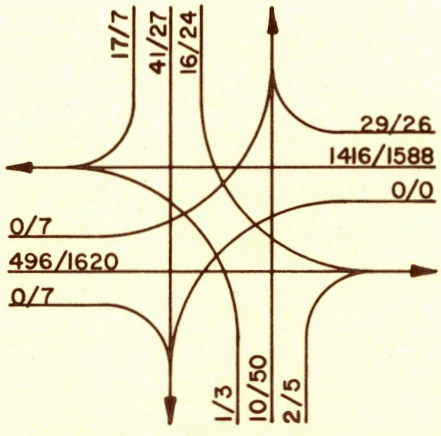
NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES

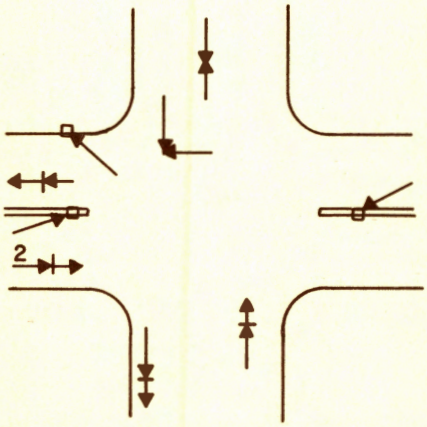




PROPOSED SIGNAL SEQUENCE



PEAK HOUR VOLUME
7:00-8:00 A.M. / 4:15-5:15 P.M.



ACCIDENT SUMMARY-3 YR. PERIOD
2 NOT SHOWN

0 60 120

Scale: 1"= 60'

PROPOSED IMPROVEMENT 1-14

RICHARD P. BROWNE ASSOCIATES

WASHINGTON AVE.

ROUTE 36

AVE.

ROAD SHORE

UNION

TAVERN

BANK

FRUIT STAND

VACANT

STOP

NO PARKING ANY TIME

ONLY

NO LEFT TURN

PPB.

KEEP RIGHT

U and LEFT TURNS

YIELD

ALL TURNS

NO TURNS

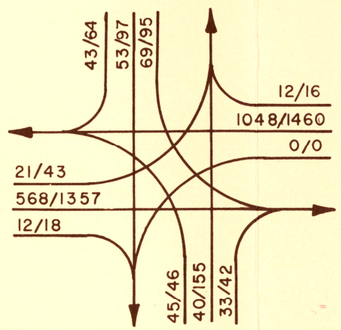
200'

ALL TURNS FROM RIGHT LANE

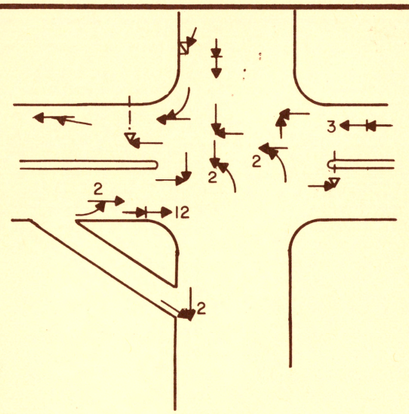
ONE WAY

ALL RED

PROPOSED SIGNAL SEQUENCE



PEAK HOUR VOLUME
7:15–8:15 A.M. / 4:15–5:15 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD
4 NOT SHOWN

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 1-15

1 - 16 POOLE AVENUE AND MIDDLE ROAD
HAZLET

This intersection is controlled by a semi-actuated traffic signal with signal heads suspended over the roadway on a span wire.

Problems

Traffic volumes fluctuate considerably on both streets. The intersection approaches are somewhat skewed and approach widths are inadequate. Seven right angle collisions and several turning movement accidents were experienced during the three year study period.

Recommendations

Modification to the approach lane width and lane arrangement is recommended to provide for special left turn lanes on all approaches. Construction of a traffic island on the northwest corner is also recommended. Revisions to the signal equipment to provide for full actuation and in the signal layout to increase visibility are also recommended.

Benefits

The safety and operational characteristics of this location will be improved by these recommendations.

1 - 17 NEW JERSEY ROUTE 36 AND POOLE AVENUE HAZLET

Poole Avenue is a collector roadway for the surrounding area. Turning movements from New Jersey Route 36 occur through jughandles. The location is controlled by a semi-actuated traffic signal.

Problems

This location has high traffic volumes in New Jersey Route 36. Some right angle accidents are experienced at the intersection along with a significant number of rear end collisions involving eastbound New Jersey Route 36 movements. Some same direction accidents occurred in the jughandles.

Recommendations

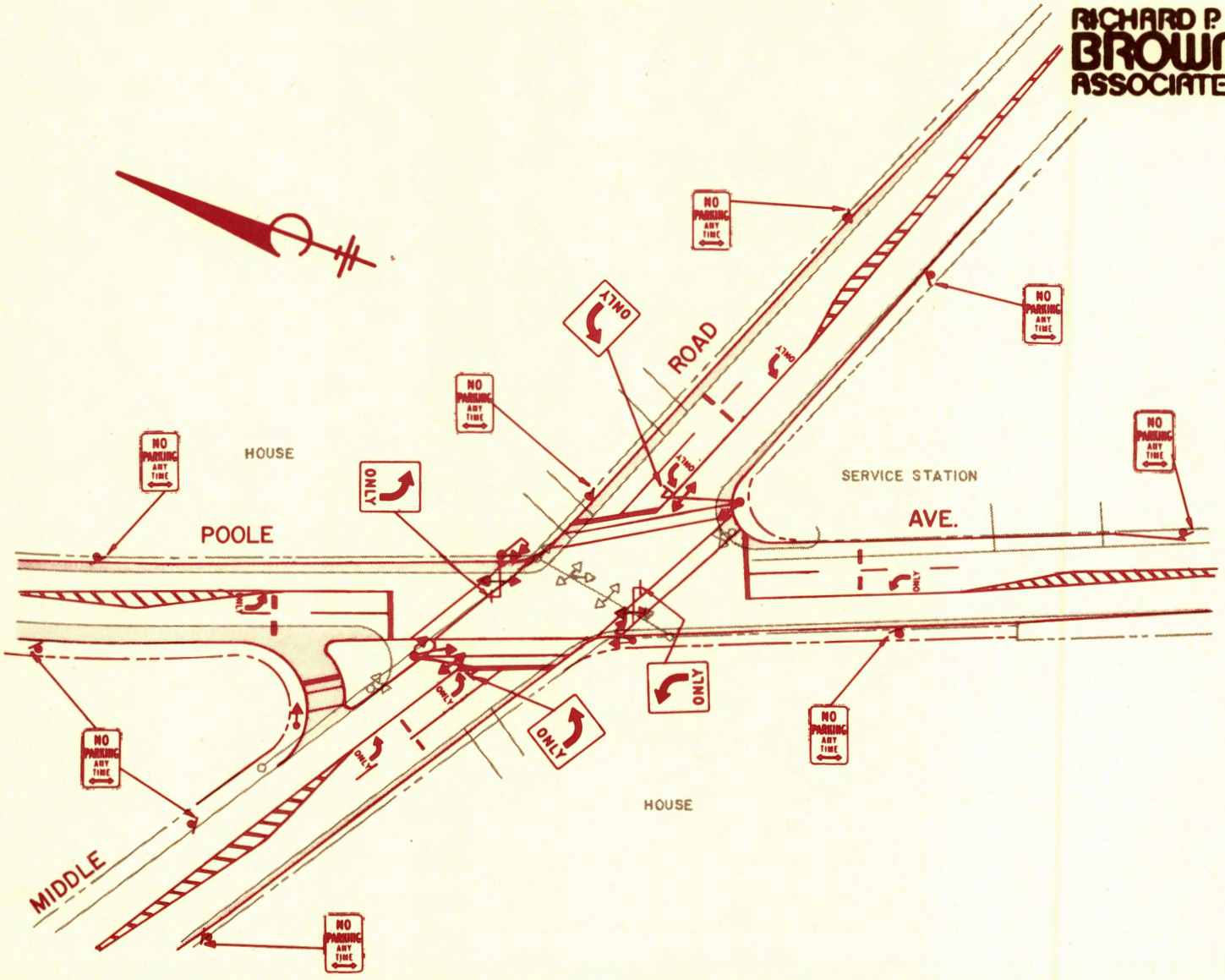
Minor modification of the large traffic island on the northeast side of the intersection is recommended to provide for two adequate receiving lanes from the two approach lanes. The installation of oversized stop signs at the jughandle connections with the side street is recommended. Revision to the signal layout is recommended to increase its visibility including the installation of back plates for the signal heads on New Jersey Route 36.

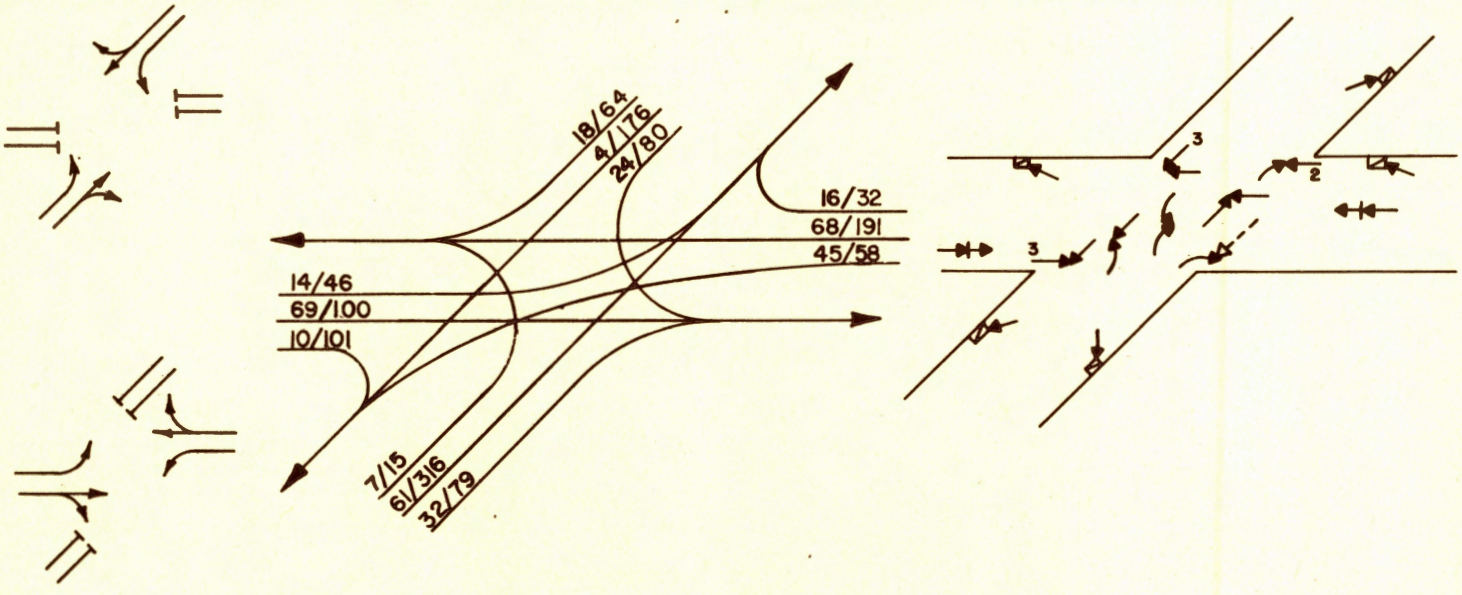
Benefits

The capacity, safety and operational characteristics of this location will be improved by these recommendations.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES





PROPOSED SIGNAL SEQUENCE

PEAK HOUR VOLUME
7:15 - 8:15 A.M. / 5:00 - 6:00 P.M.

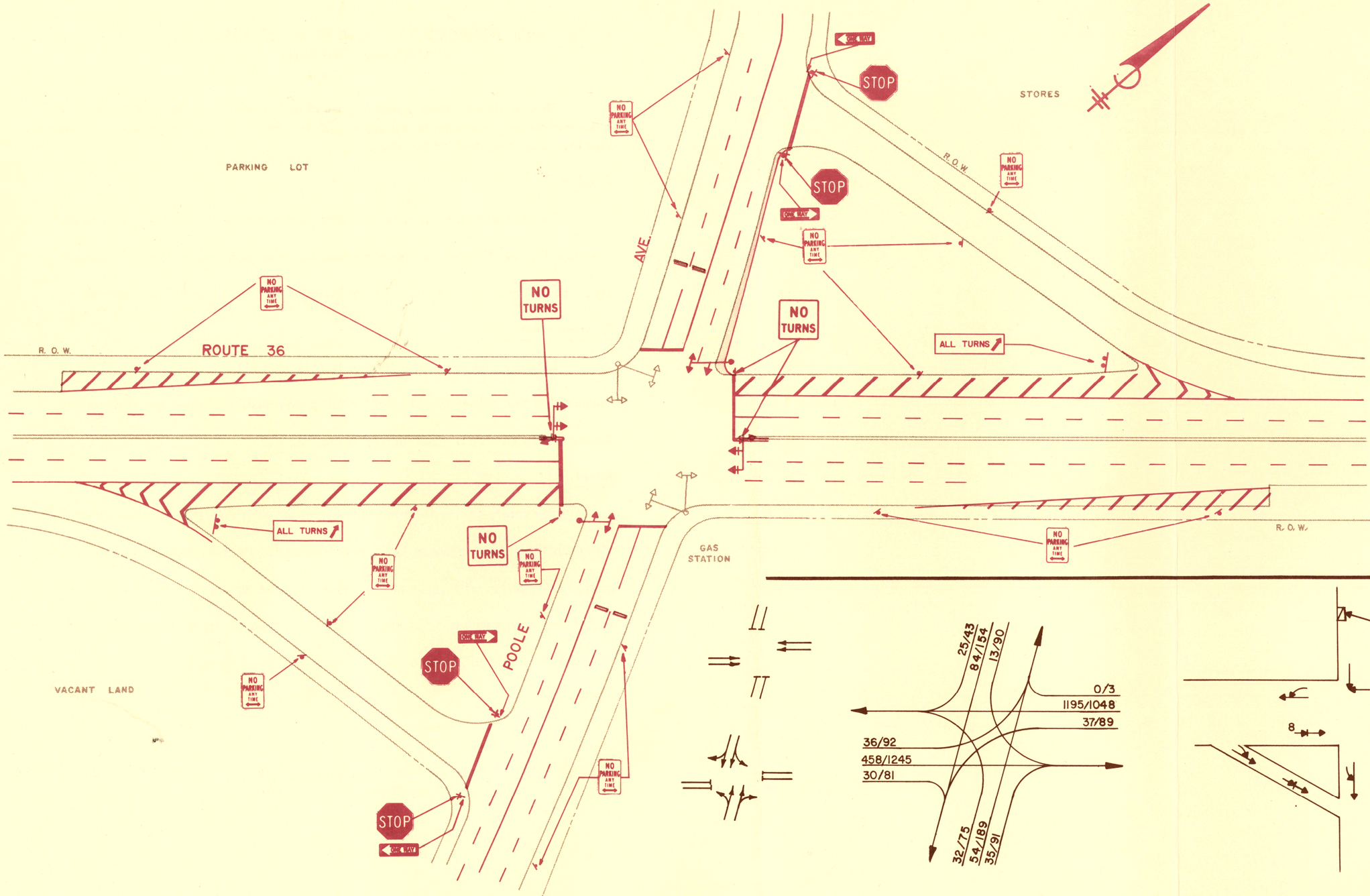
ACCIDENT SUMMARY - 3 YR. PERIOD
8 NOT SHOWN

0 60 120

Scale : 1" = 60'

PROPOSED IMPROVEMENT 1-16

RICHARD P. BROWNE ASSOCIATES



PROPOSED SIGNAL SEQUENCE

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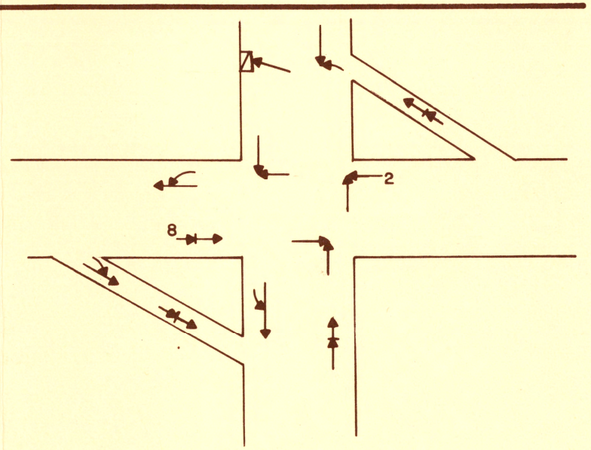


ACCIDENT SUMMARY – 3 YR. PERIOD
6 NOT SHOWN

0 60 120
Scale: 1" = 60'

PROPOSED IMPROVEMENT 1-17

1 - 18 NEW JERSEY ROUTE 35 AND PROSPECT AVENUE MATAWAN TOWNSHIP

This section of New Jersey Route 35 does not have a center barrier. All cross and turning movements are permitted from both approaches of Prospect Avenue. The location is controlled by stop signs.

Problems

This location has considerable accident experience which appears to be generated by conflicting movements occurring from both approaches of Prospect Avenue. A significant amount of head on type collisions have also occurred.

Recommendations

Extension of the center barrier to this area of New Jersey Route 35 is recommended thus allowing only right turning movements into and out of Prospect Avenue on each side of New Jersey Route 35.

Benefits

The safety of this location will be improved by the above recommendations. The prohibited turning movements generated by Prospect Avenue on the north side of the intersection will occur along Amboy Avenue through the existing traffic signals. Prohibited movements generated by Prospect Avenue on the south side of the intersection will occur by way of Matawan Avenue and Cliffwood Avenue through the existing traffic signal.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

1 - 19 MIDDLE ROAD AND UNION AVENUE HAZLET

This location is the intersection of two major streets for the surrounding area and is presently controlled by stop signs.

Problems

This location has inadequate turning radius on the southeast corner. 12 right angle accidents and several turning movement accidents were experienced during the three year study period.

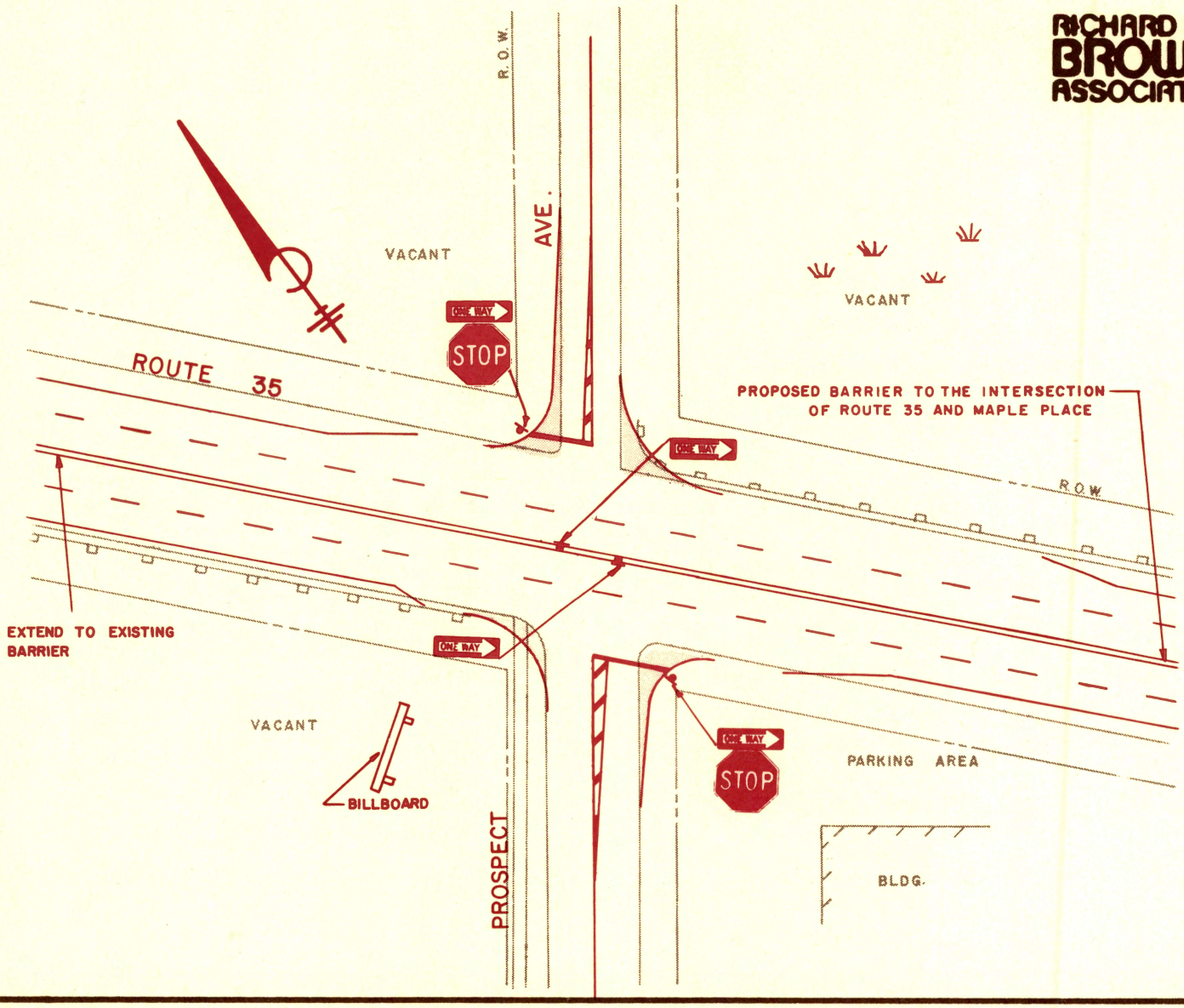
Recommendations

The installation of a flashing signal with oversized stop signs is recommended. Modification to the curb turning radius on the southeast corner is also recommended.

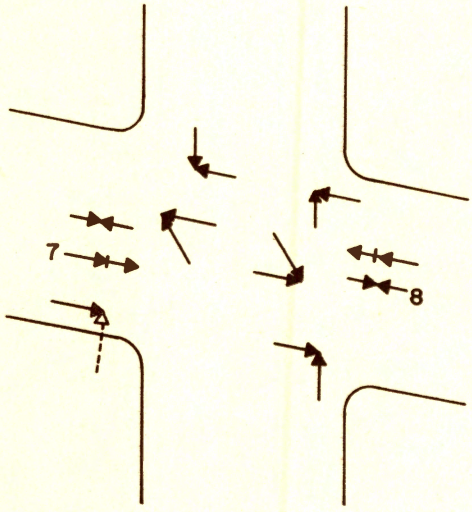
Benefits

The operational characteristics and safety of this location will be improved by these recommendations.

RICHARD P. BROWNE ASSOCIATES



NO COUNT



ACCIDENT SUMMARY – 3 YR. PERIOD
4 NOT SHOWN

0 60 120
Scale : 1" = 60'

PROPOSED IMPROVEMENT 1-18

1 - 20 N.J. ROUTE 36 AT PALMER AVENUE AND MAIN STREET KEANSBURG/HAZLET

Palmer Avenue-Main Street connect Keansburg with New Jersey Routes 35 and 36. Most turning movements from New Jersey Route 36 occur as jughandle movements using the adjacent street network.

Problems

New Jersey Route 36 has moderately high traffic volumes. The side street approach widths are inadequate. A considerable number of same direction type accidents have occurred on the side road.

Recommendations

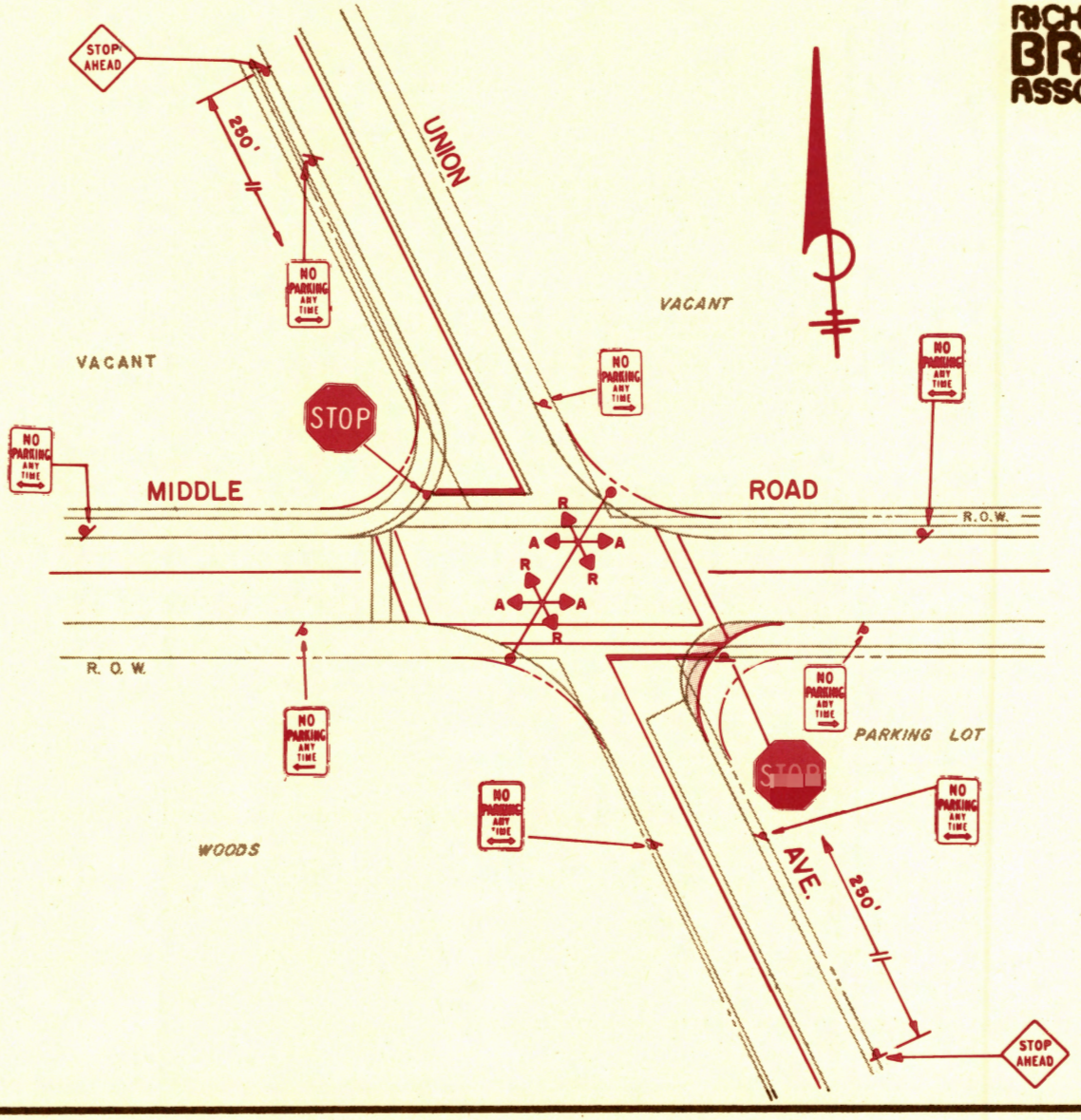
Widening and modification to the approach lanes is recommended to provide special left turning lanes on Palmer Avenue-Main Street. Modification to the signal layout is recommended to improve its visibility including the installation of back plates for the signals on New Jersey Route 36.

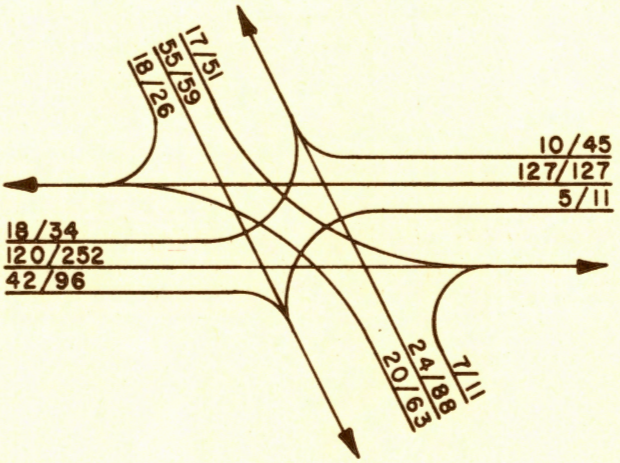
Benefits

The capacity, safety and operational characteristics of this location will be improved by these recommendations.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

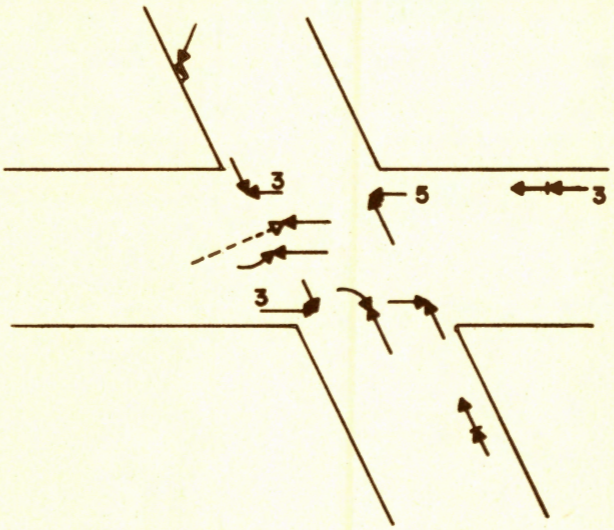
RICHARD P. BROWNE ASSOCIATES





PEAK HOUR VOLUME

8:00-9:00 A.M./4:45-5:45 P.M.



ACCIDENT SUMMARY- 3 YR. PERIOD

3 NOT SHOWN

0 60 120

Scale : 1"= 60'

PROPOSED IMPROVEMENT 1-19

RICHARD P. BROWNE ASSOCIATES

STOP

STOP

MAIN ST.

NO PARKING ANY TIME

NO PARKING ANY TIME

ONLY

ONLY

ONLY

SERVICE STATION

ROBERT HALL

U AND LEFT TURNS

KEEP RIGHT

YIELD

U and LEFT TURNS

NO PARKING ANY TIME

ONLY

NO LEFT TURN

PPB.

PPB.

NO PARKING ANY TIME

ROUTE 36

NO PARKING ANY TIME

U and LEFT TURNS

NO PARKING ANY TIME

PPB.

PPB.

NO LEFT TURN

ONLY

NO PARKING ANY TIME

A & P

ONLY

ONLY

U AND LEFT TURNS

NO PARKING ANY TIME

PALMER AVE.

STOP

NO PARKING ANY TIME

PROPOSED SIGNAL SEQUENCE

74/72
150/184
94/143
18/13
776/753
2/66
383/814
3/10
88/107
120/402
7/28

PEAK HOUR VOLUME
7:15 - 8:15 A.M. / 4:15 - 5:15 P.M.

3
2
2
3

ACCIDENT SUMMARY — 3 YR. PERIOD
3 NOT SHOWN

0 60 120
Scale: 1" = 60'

PROPOSED IMPROVEMENT 1-20

1 - 21 CHURCH STREET AND LLOYD ROAD
MATAWAN TOWNSHIP

This location is the intersection of two collector roadways for the surrounding area. A fire house and first aid squad are located on the southeast corner. The location is controlled by a fully-actuated traffic signal.

Problems

This location has somewhat skewed approaches which reduce the visibility of signals for pedestrians. Intersection operations are affected by the presence of a fire house and first aid squad.

Recommendations

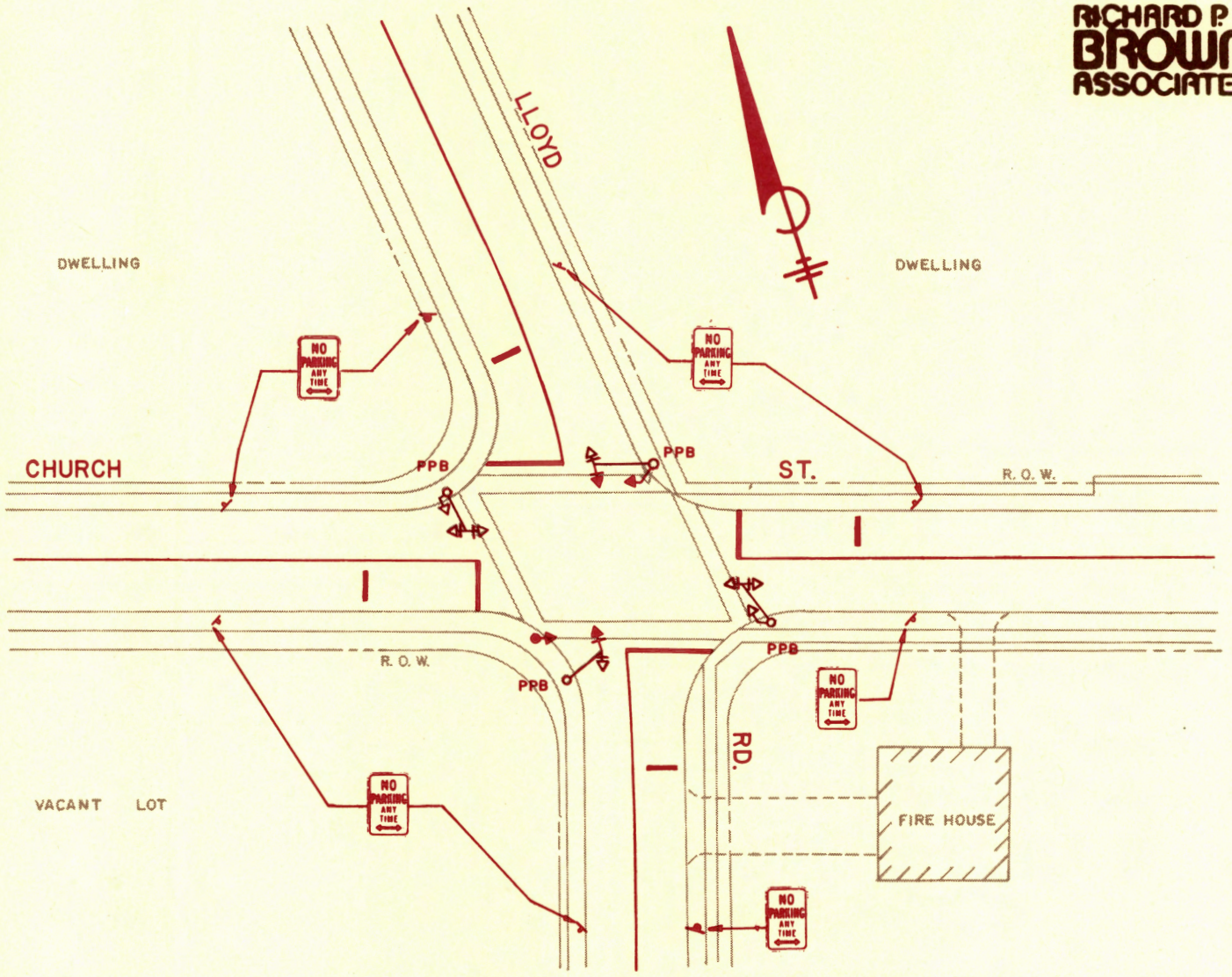
Interconnection of this signal with the fire house for pre-emption during emergencies is recommended. Installation of several additional heads is recommended to increase signal visibility for pedestrians.

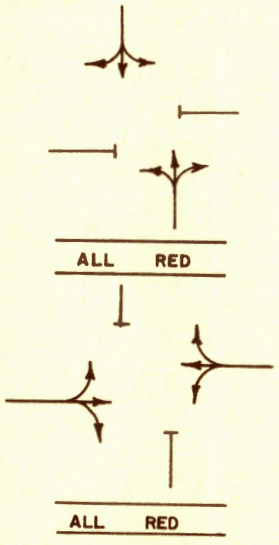
Benefits

The safety and operational characteristics of this location will be improved by these recommendations.

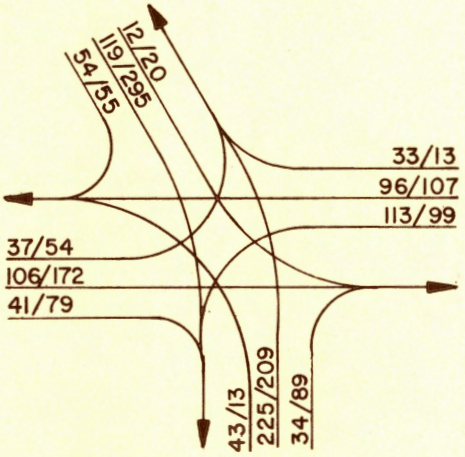
The Monmouth County Engineer's Office records indicate that this signal was modified in 1969. Only one of the correctible type accidents shown on the diagram occurred in 1970; Therefore, it is assumed that corrective measures carried out by the County already improved the accident experience at this location.

RICHARD P. BROWNE ASSOCIATES

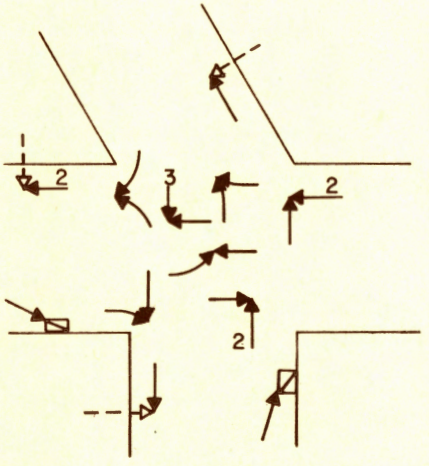




PROPOSED SIGNAL SEQUENCE



PEAK HOUR VOLUME
7:30- 8:30 A.M. / 4:00-5:00 P.M.



ACCIDENT SUMMARY-3 YR. PERIOD
4 NOT SHOWN

0 60 120
Scale : 1"=60'

PROPOSED IMPROVEMENT 1-21

1 - 22 MAPLE AVENUE AND BROAD STREET KEYPORT

This location is a school crossing and has a school crossing guard during appropriate hours. The intersection is controlled by a flashing signal and stop signs.

Problems

This location has experienced 16 right angle collisions during the three year study period.

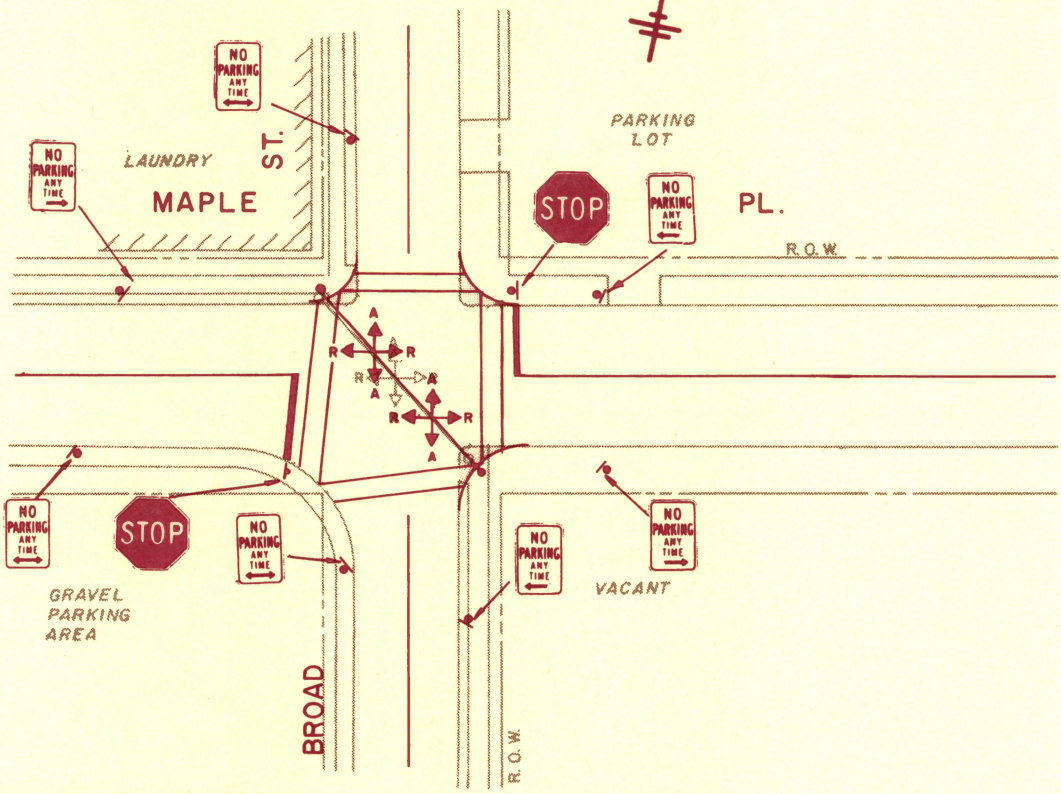
Recommendations

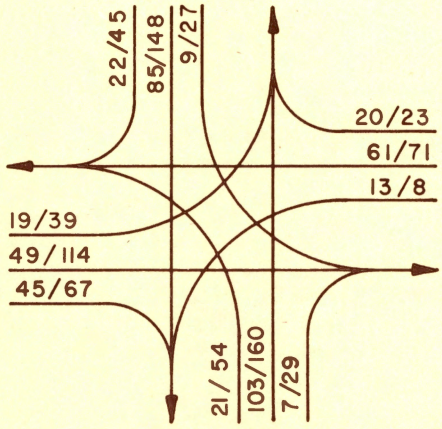
Minor modifications of the curb turning radii are recommended. Installation of oversized stop signs is recommended along with additional signal faces for the flasher.

Benefits

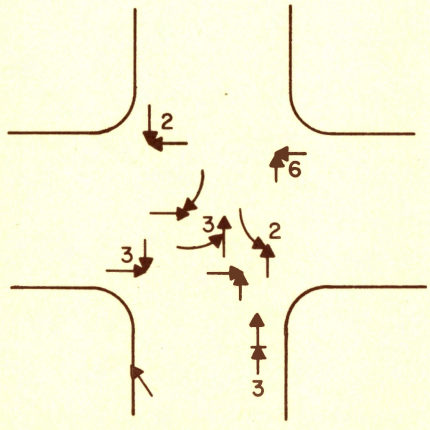
The operational characteristics and safety of this location will be improved by these recommendations.

RICHARD P. BROWNE ASSOCIATES





PEAK HOUR VOLUME
7:45-8:45 A.M./4:30-5:30 P.M.



ACCIDENT SUMMARY – 3 YR. PERIOD
2 NOT SHOWN

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 1-22

1 - 23 BROAD STREET AND FRONT STREET KEYPORT

This location is the major intersection in the Keyport central business district. Over a period of time, stop signs have been tried on both streets in an attempt to correct accident experience. Additionally, four way stop sign control has also been tried but to no avail. At present, this intersection functions with no control.

Problems

This location has poor sight distance and narrow approach widths. Vehicles parked close to the intersection further restrict sight distance. The major traffic volumes occur from the west and the south, generating moderate turning movements. There is significant right angle and turning movement accident experience. Various traffic control measures have been tried with no success. Future traffic volumes will satisfy the warrants for traffic signal control (warrant 6).

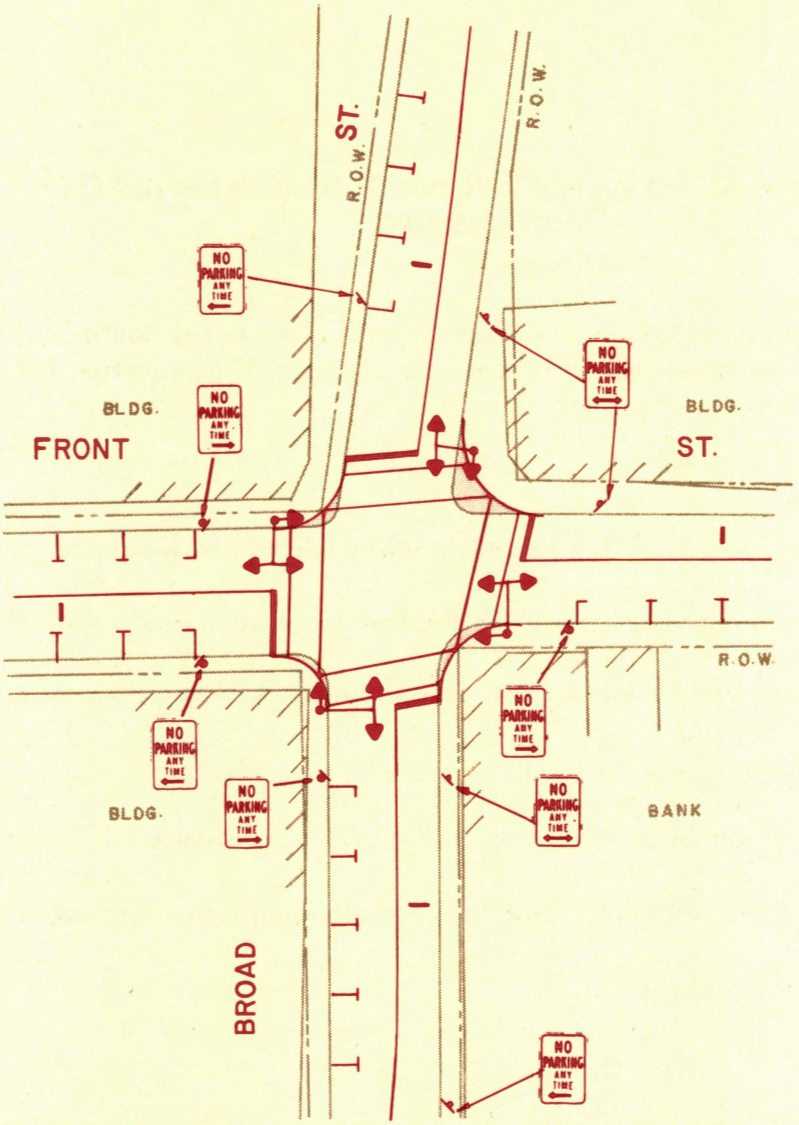
Recommendations

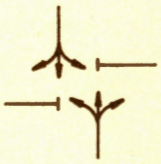
Removal of parking adjacent to the intersection is recommended along with minor modifications to the curb turning radii. Installation of a fully actuated traffic signal is recommended.

Benefits

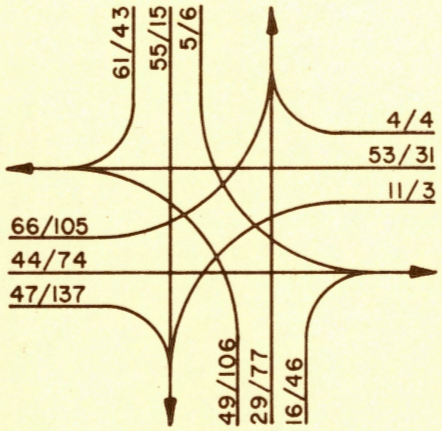
The operational characteristics and safety of this location will be improved by these recommendations. A reduction in accidents should be achieved by the installation of the traffic signal.

RICHARD P. BROWNE ASSOCIATES

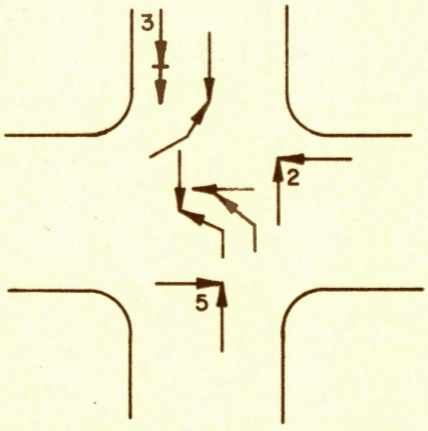




PROPOSED SIGNAL SEQUENCE



PEAK HOUR VOLUME
8:00-9:00 A.M./4:15-5:15 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD
7 NOT SHOWN

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 1-23

1 - 24 MAIN STREET AT PORT MONMOUTH ROAD AND BEECH STREET KEANSBURG

Main Street connects Keansburg with New Jersey Route 36. Beech Street is a minor local street which is presently unpaved. The location is controlled by a flashing signal and stop signs.

Problems

This intersection has narrow roadway widths and inadequate turning radii. Moderate turning volumes occur on the Port Monmouth Road approach. A significant number of accidents involving vehicles hitting parked cars have occurred.

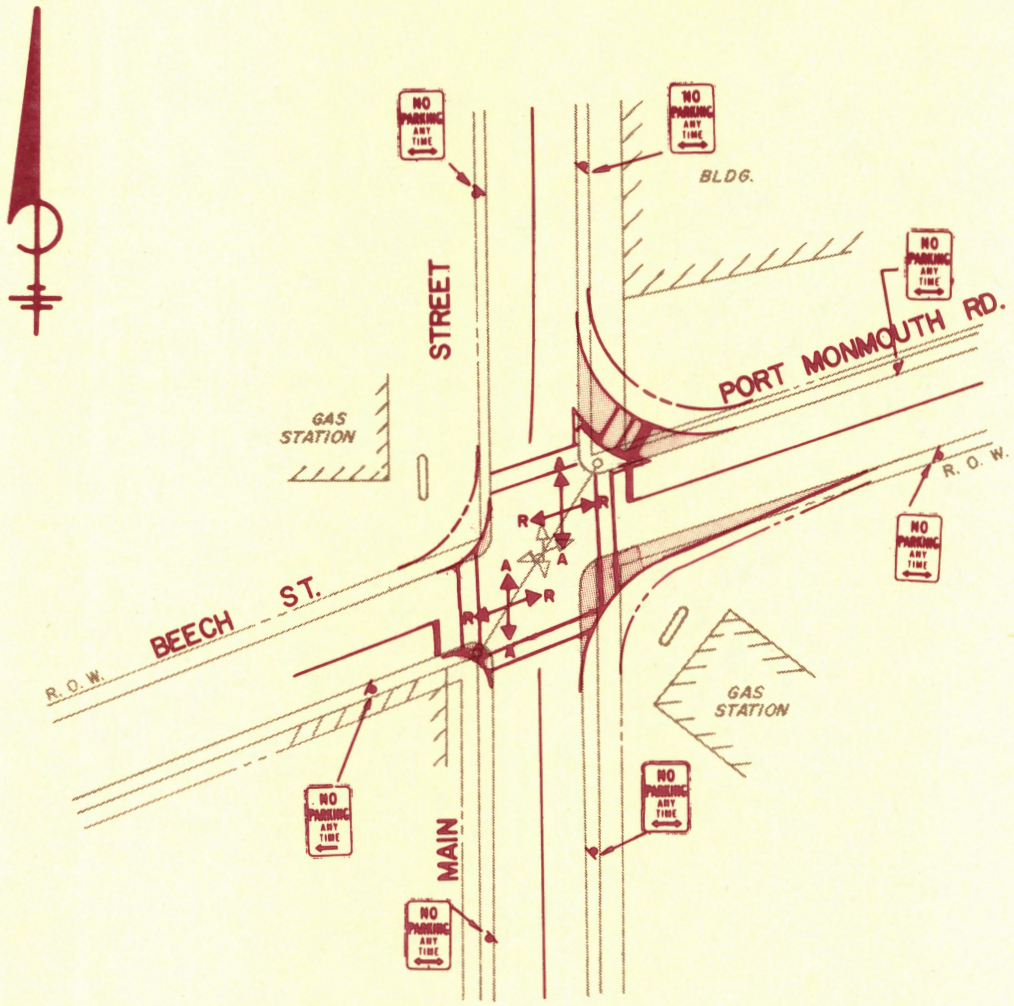
Recommendations

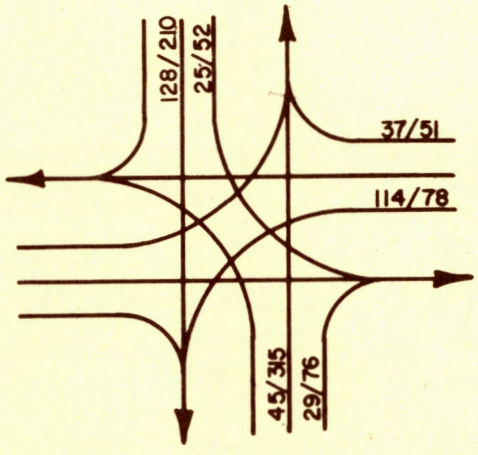
Modification to the curb turning radii is recommended. Upgrading of the flashing traffic signal is also recommended along with the removal of parking in the vicinity of the intersection.

Benefits

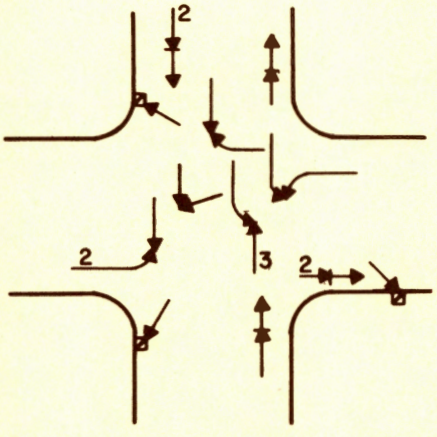
The capacity, safety and operational characteristics will be improved by these recommendations.

RICHARD P. BROWNE ASSOCIATES





PEAK HOUR VOLUME
6:30–7:30 A.M. / 4:30–5:30 P.M.



ACCIDENT SUMMARY – 3 YR. PERIOD

0 60 120

Scale : 1" = 60'

PROPOSED IMPROVEMENT 1-24

1 - 25 N.J. ROUTE 35 AND CENTRAL OF NEW JERSEY RAILROAD BRIDGE KEYPORT

Problems

A number of accidents at this location involve vehicles hitting the bridge piers.

Recommendations

A protective concrete barrier curb should be constructed around the center piers and protecive fence should be installed in the bridge parapet.

Benefits

The safety of this location will be improved by these recommendations.

REGION 2

REGION II - MONMOUTH COUNTY TOPICS

Regional Setting

Region II is made up of the Boroughs of Highlands, Atlantic Highlands, and the Township of Middletown. It is bounded on the north by Raritan Bay, on the east and south by the Navesink River and on the west by Holmdel Township. The major highways in this area are the Garden State Parkway and New Jersey Routes 35 and 36. The region is primarily residential with some light industry and a few large industrial units. Much of the early residental development occurred along the Raritan Bay coastline due to the recreational activities available there. Other development has occurred along the major traffic corridors with more recent development being characterized by small single unit housing communities in previously undeveloped areas of the region.

Federal-Aid System

PLATE 2 - 1 shows the Region II study system and the recommended Federal-Aid System. Selection procedures were in accordance with Federal Highway Administration PPM 21-18, May, 1972. The system is intended to provide the basis for present and future local traffic demands. The major traffic volumes in the region are carried by New Jersey Routes 35 and 36 and the Garden State Parkway. Two Parkway interchanges serve surrounding areas in the western part of the region leaving New Jersey Routes 35 and 36 as the major roadways. Both of these roadways are for the most part modern, well designed four lane facilities with center barriers or medians. Major turning movements are handled mostly through the use of jughandles.

The Garden State Parkway, a toll road, is not on the Federal-Aid System. New Jersey Routes 35 and 36 are both on the Urban System as is Palmer Avenue. The remaining portion of the recommended roadway system is made up of Federal-Aid Primary Type II and Federal-Aid Secondary designations. TABLE 2 - 1 shows the mileage of these roadways.

Bus and Rail Transportation

Region II is served by several bus companies and the New Yrok and Long Branch Railroad as shown on PLATE 2 - 2 .

Most of the bus service connects the region with employment centers in the New York Metropolitan area. Minimal local service is available.

The rail passenger service is primarily a commuter service to New York which carries standing room only loads on equipment badly in need of improvement. The only passenger station in this region is located in Middletown.

EXISTING AND PROPOSED FEDERAL-AID SYSTEMS MILEAGE TABLE 2 - 1

EXISTING	MILES
Federal Aid Urban	10.23
Federal Aid Secondary	10.89
PROPOSED ADDITIONS	
Federal Aid Primary Type II	22.4

T-4001 (16)

RICHARD P. BROWNE ASSOCIATES

REGION II
STUDY SYSTEM
PROPOSED FEDERAL AID SYSTEM
IMPROVEMENT LOCATIONS

LEGEND

- TOPICS STUDY SYSTEM STREETS
- FEDERAL AID SECONDARY
- FEDERAL AID URBAN
- PROPOSED FEDERAL AID PRIMARY TYPE II
- IMPROVEMENT LOCATION X-X

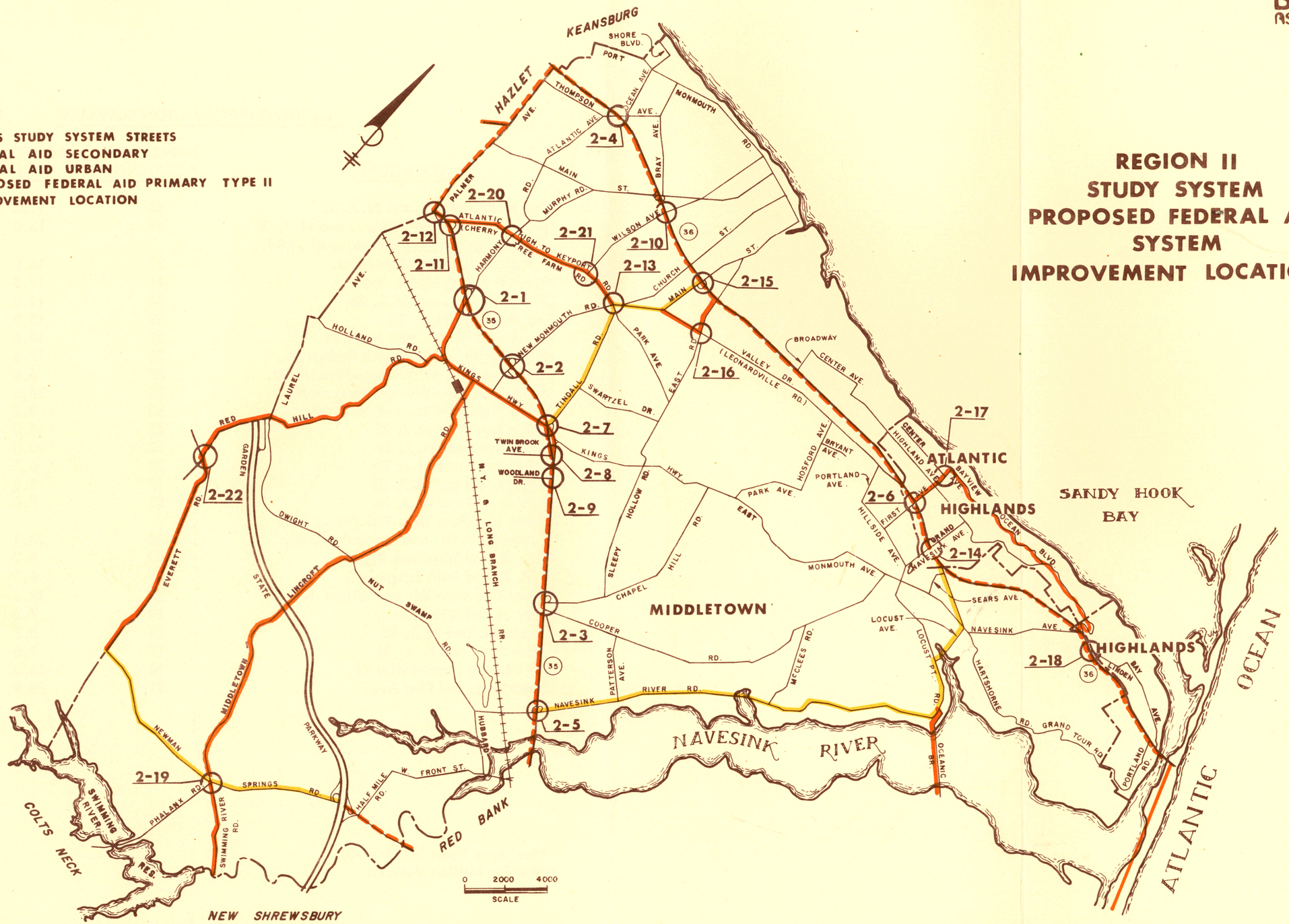


PLATE 2-1

ACCIDENT INFORMATION SUMMARY

TABLE 2 - 2

LOCATION	NUMBER OF ACCIDENTS*	ACCIDENT RATE**	PRIORITY INDEX
New Monmouth Rd. and N.J. 35	48	11.2	375
Harmony Rd., Kings Highway and N.J. 35	49	13.0	370
Newman Springs Rd., Swimming River Rd., Phalanx Rd. and Lincroft Rd.	29	15.0	325
N.J. 36 and Thompson Ave.	41	14.5	320
Chapel Hill Rd. and N.J. 35	44	11.0	315
First Ave. and N.J. 36	38	15.0	314
Navesink River Rd. and N.J. 35	39	10.6	311
Half Mile Rd. and Newman Springs Rd.	33	12.6	290
Kings Highway, N.J. 35 and Tindall Rd.	27	6.8	256
Cherry Tree Farm Rd. and Harmony Rd.	29	24.5	250
Cherry Tree Farm Rd. and N.J. 35	28	8.2	248
Linden Ave. and N.J. 36	27	14.0	240
Grand Ave. and N.J. 36	22	10.0	235
Palmer Ave. and N.J. 35	24	6.7	225
Main St. (A) and N.J. 36	17	6.4	225
Main St. (B) and N.J. 36	22	7.8	220
Cherry Tree Farm Rd., Park Ave., New Monmouth Rd. and Leonardville Rd.	22	10.1	210
N.J. 35 and Woodland Dr.	20	6.2	205
N.J. 35 and Twin Bridge Rd.	19	6.2	205
Cherry Tree Farm Rd. and Wilson Ave.	20	18.6	205
N.J. 36 and Wilson Ave.	19	7.3	204
Cooper Rd. and N.J. 35	18	5.7	198
Miller Ave. and N.J. 36	18	9.8	195
East Rd. and Leonardville Rd.	18	16.8	195
Center Ave. and First Ave.	21	20.9	196

*Per Three Years (1968-1970)
**Per Ten Million Vehicles

T-4001 (16)

RICHARD P. BROWNE ASSOCIATES

REGION II PUBLIC TRANSPORTATION

LEGEND

- LOCAL BUS SERVICE
- LOCAL BUS SERVICE ON NON-SYSTEM STREETS
- LONG DISTANCE BUS SERVICE
- TRAIN STATION

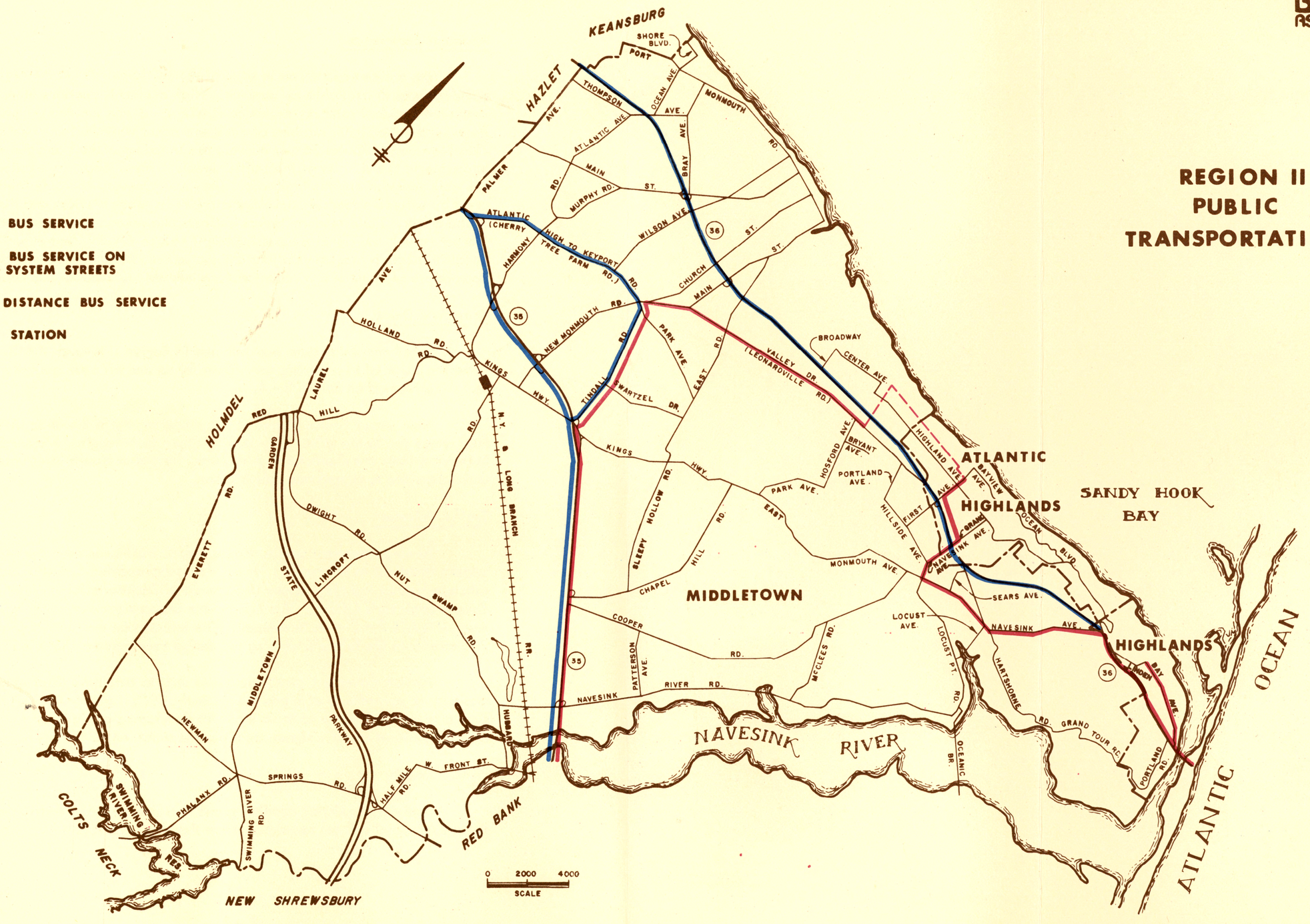


PLATE 2-2

Accident Experience

The police departments in each of the municipalities in the region made accident records available for analysis. High accident locations along with computed accident rates are shown on PLATE 2 - 3 and summarized on TABLE 2 - 2 As expected the higher numbers of accidents occur where volumes were higher. Thus New Jersey Routes 35 and 36 were the locations of most accidents, these occurring in the vicinity of the traffic signals. These roads, as mentioned earlier, are well designed divided highways. They are however, characterized in many areas by extensive roadside development with its usual frictions and distractions to the driver. Field reconnaissance indicated however, that improved signal "target value" and signal progression might reduce the accident experience. Specific location recommendations and systems recommendations will be made in appropriate sections of this report and are intended to improve this conditions.

Speed and Delay

Speed and delay data was obtained in Region II through the use of a data compiler installed in a moving car. Data for on and off peak periods were analyzed and are presented on PLATE 2 - 4.

New Jersey Routes 35 and 36 are shown mostly in the 30 to 39 miles per hour range due to the effect of averaging along their length. Movements along the individual links are characterized however, by higher speeds interrupted by stops and delays due to signals and side friction.

Traffic Volumes

Turning movement counts and automatic traffic recorder counts were made at various locations in the region. These were supplemented by traffic volume information supplied by the New Jersey Department of Transportation and the Monmouth County Engineer's Office. This information was analyzed and the traffic volume map on PLATE 2 - 5 was developed. The information was further analyzed and projected into the future producing the design year volumes shown on PLATE 2 - 6.

Turning movement counts were also used to calculate theoretical approach capacity in accordance with procedures in the 1965 Highway Capacity Manual. Capacity restraint was used as an input for developing a priority list. Capacity of approaches at specific signal locations are shown on PLATE 2 - 4.

Traffic Signals

Analysis of existing conditions and anticipated future traffic demands led to the traffic signal systems recommendation shown on PLATE 2 - 7 . Interconnection

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RICHARD P. BROWNE ASSOCIATES

REGION II
ACCIDENT LOCATIONS
1968-1970

LEGEND

NUMBER OF ACCIDENTS

- ○ 15 - 20
- ○ 21 - 26
- ◯ 27 OR MORE
- XX NUMBER OF ACCIDENTS
- XXX ACCIDENT RATE PER 10 MILLION VECHICLE

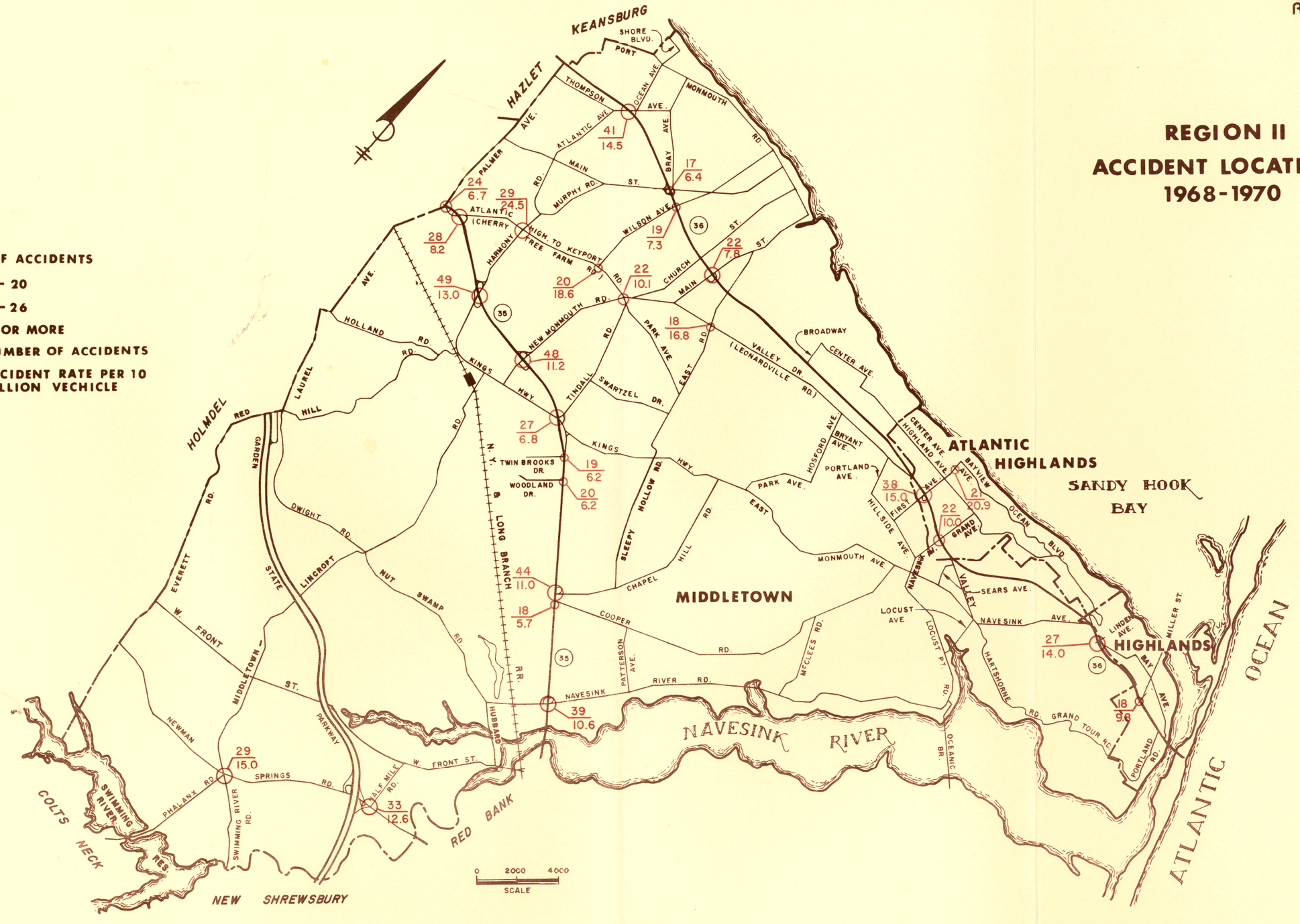


PLATE 2-3

T-4001 (16)

RICHARD P. BROWNE ASSOCIATES

REGION II AVERAGE TRAVEL SPEEDS AND LEVEL OF SERVICE

LEGEND

- 5 - 19 M.P.H.
- 20 - 29 M.P.H.
- 30 - 39 M.P.H.
- 40 - 50 M.P.H.

THESE SPEEDS REFLECT AN AVERAGE OF PEAK HOUR AND OFF PEAK HOUR CONDITIONS.

A REPRESENTS THE LEVELS OF SEVICE

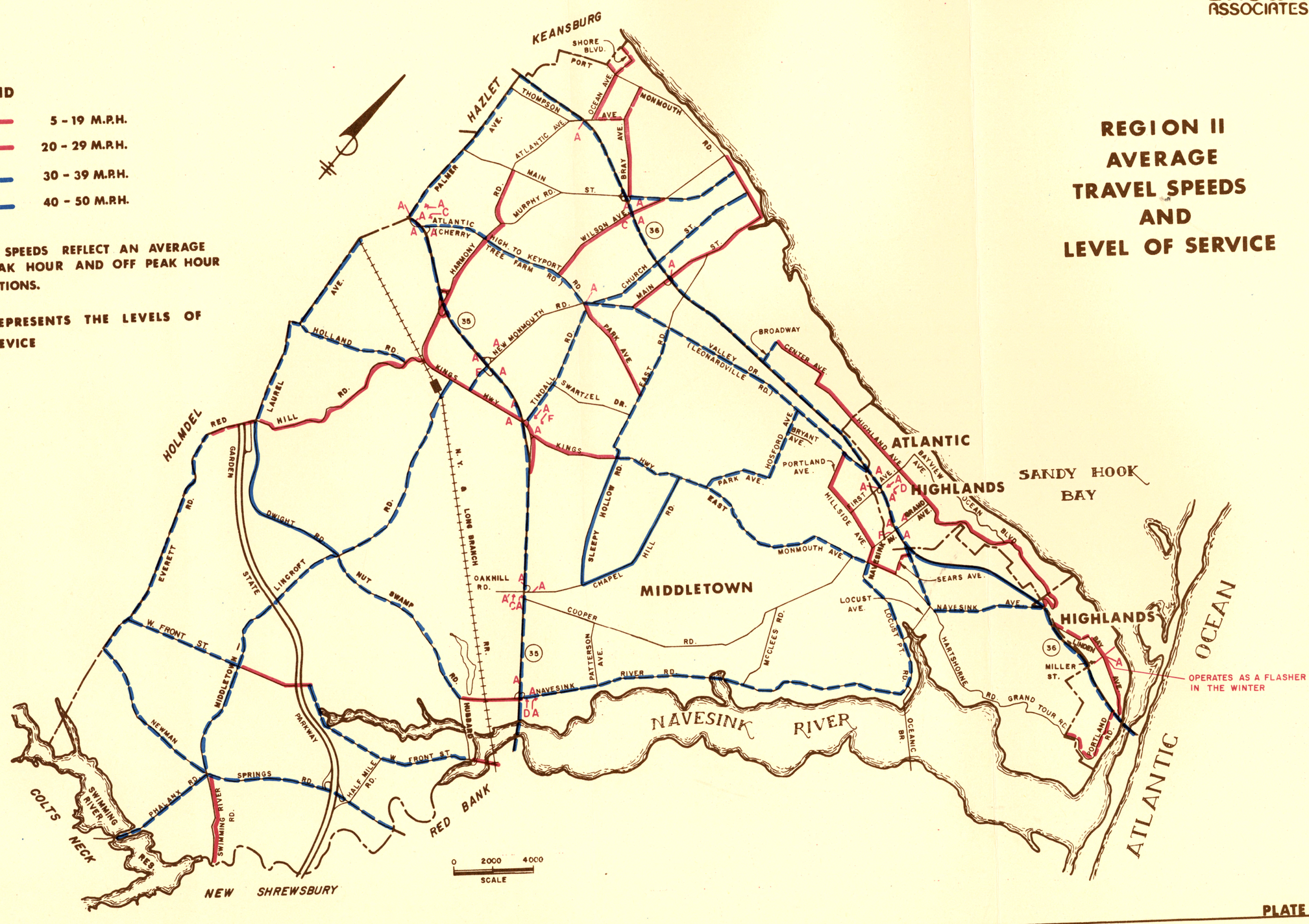


PLATE 2-4

T-4001 (16)

RICHARD P. BROWNE ASSOCIATES

REGION II
1971
TRAFFIC VOLUMES
AVERAGE DAILY TRAFFIC

LEGEND

- 3000 - 5000
- 5000 - 8000
- 8000 - 12000
- 12000 - 15000
- 15000 OR MORE VEHICLES

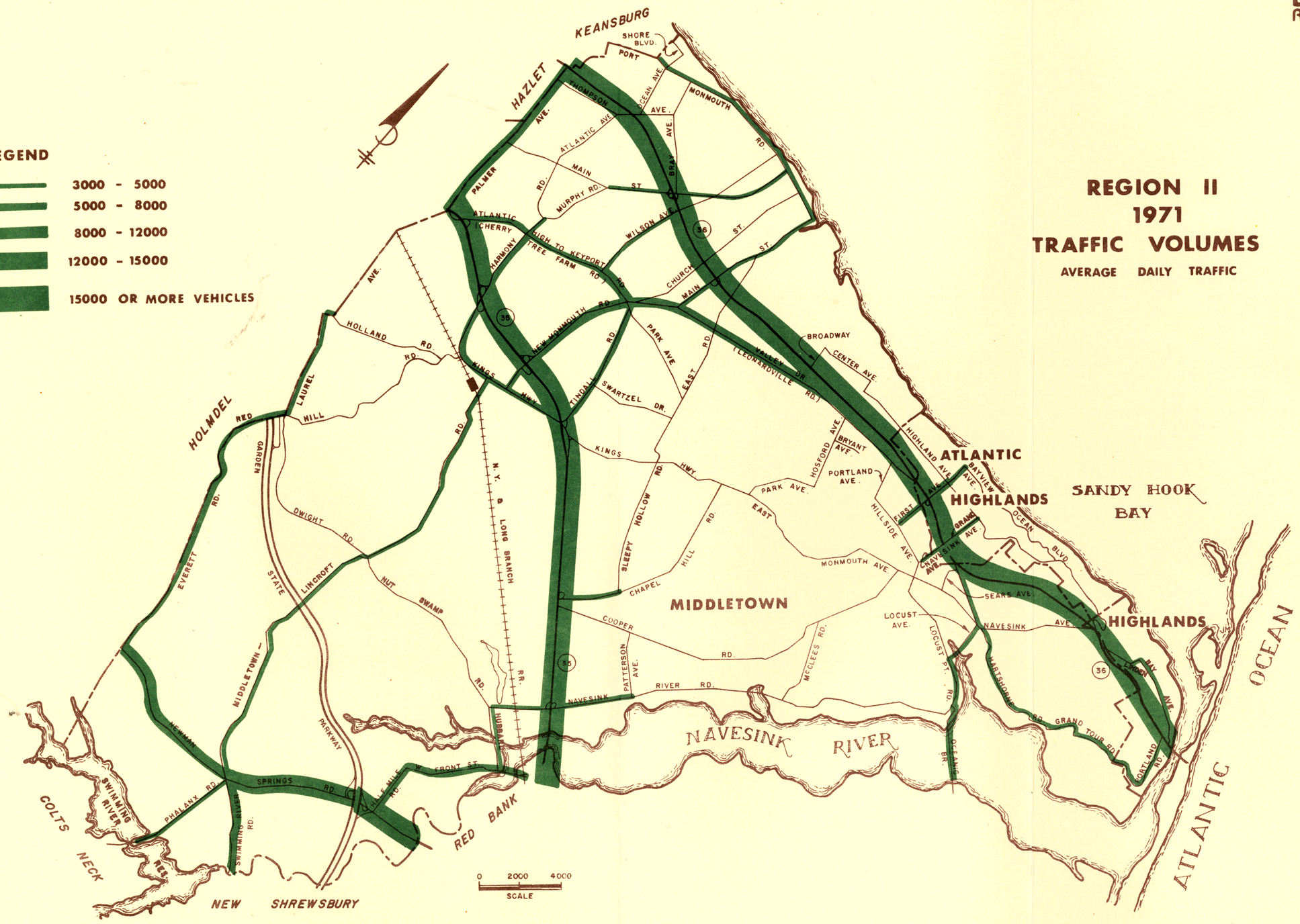


PLATE 2-5

T-4001 (16)

RICHARD P. BROWNE ASSOCIATES

LEGEND

XXXX 1975

XXXX 1980

REGION 11
1975 - 1980
TRAFFIC VOLUMES
AVERAGE DAILY TRAFFIC

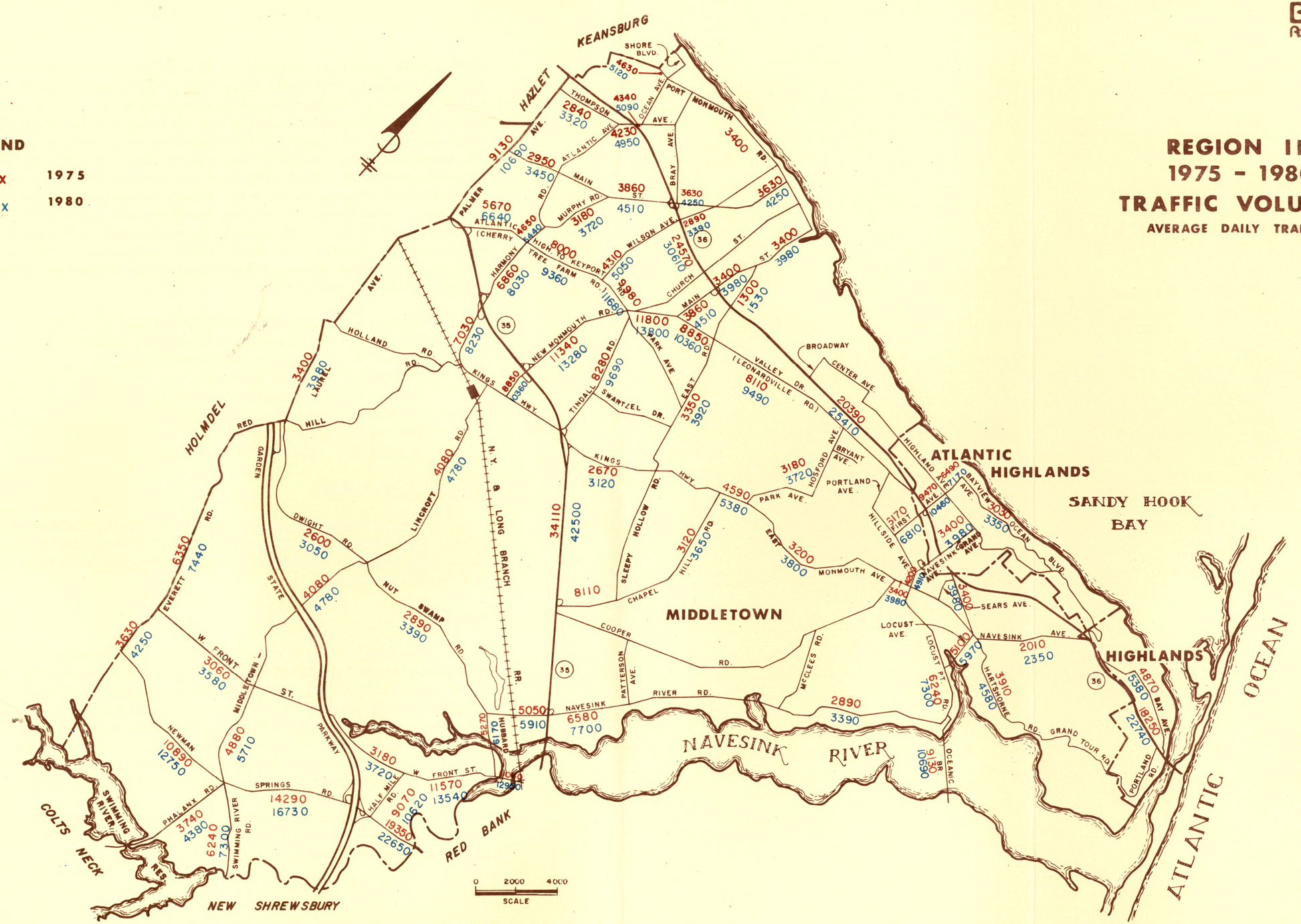


PLATE 2-6

of the signals along New Jersey Routes 35 and 36 is recommended. Speed and delay data indicates that traffic along New Jersey Routes 35 and 36 is required to stop frequently. Traffic platoons were required to stop or were broken up by traffic signal or movements occurring from the sidestreets. Analysis of the accident experience at a number of locations along these roadways indicated a disproportionately high number of rear end collisions. It is felt that physical interconnection of the signal along these two roadways will insure reliable offsets and provide progression which will help to reduce certain types of accident experience. Modifications to existing signals and new signal installations have been recommended and are discussed in the presentation for the specific improvement locations. TABLE 2 - 3 lists all existing and proposed traffic signals including their warrants. These warrants are contained in the "Manual on Uniform Traffic Control Devices" as listed below:

Warrant 1:	Minimum Vehicular Volume
Warrant 2:	Interruption of Continuous Traffic
Warrant 3:	Minimum Pedestrian Volume
Warrant 4:	School Crossing
Warrant 5:	Progressive Movement
Warrant 6:	Accident Experience
Warrant 7:	Systems Warrant
Warrant 8:	Combination of Warrants

Intersection Improvements

Recommended improvement projects are shown and discussed on the following pages. Their location relation to the region and the individual municipalities are shown on PLATE 2 - 1. TABLE 2 - 4 lists each improvement with its cost estimate and year of construction.

Maintenance

The maintenance of traffic control devices, in good operating condition and appearance is most important if they are to command the respect that is necessary to insure good driving habits. Signal maintenance becomes a difficult problem when a particular local government is too small to support a separate maintenance unit. Since most of the traffic signals in the region are on roadways under state jurisdiction, the state maintains them. It is suggested that the remaining signals in operation in the region be maintained by the county or on a contract or agreement basis. Signs and pavement markings should be maintained in a similar manner.

At all improvement locations, recommendations for traffic signs and pavement markings are in accordance with the requirements as defined in the current Manual on Uniform Traffic Control Devices.

EXISTING AND PROPOSED TRAFFIC SIGNALS

TABLE 2 - 3

LOCATION	MUNICIPALITY	OPERATION	RECOMMEN-DATION	N.J.D.O.T. APPROVED	WARRANT*
Route 36 and Thompson Ave.	Middletown	Semi-Actuated	Retain	Yes	1
Main St. and Route 36	Middletown	Semi-Actuated	Retain	Yes	1
Wilson Ave. and Route 36	Middletown	Semi-Actuated	Retain	Yes	1
Belford First Aid Squad and Route 36	Middletown	Semi-Actuated	Retain	Yes	
Main St. and Route 36	Middletown	Semi-Actuated	Retain	Yes	1
East Road and Route 36	Middletown	Semi-Actuated	Retain	Yes	2
Route 36 and Earl Depot	Middletown	Semi-Actuated	Retain	Yes	
Broadway and Route 36	Middletown	Semi-Actuated	Retain	Yes	7
Appleton Road and Route 36	Middletown	Semi-Actuated	Retain	Yes	7
Thompson Ave. and Route 36	Middletown	Semi-Actuated	Retain	Yes	7
Leonard Ave. and Route 36	Middletown	Semi-Actuated	Retain	Yes	6
Avenue D and Route 36	Middletown	Semi-Actuated	Retain	Yes	7
Valley Rd. and Route 36	Atlantic Highlands	Semi-Actuated	Retain	Yes	7
First Ave. and Route 36	Atlantic Highlands	Semi-Actuated	Retain	Yes	1
Navesink Ave. and Route 36	Atlantic Highlands	Semi-Actuated	Retain	Yes	1
Sears Ave., Valley Dr. and Route 36	Atlantic Highlands	Semi-Actuated	Retain	Yes	2
Route 36 Jughandle near Lake St.	Middletown	Semi-Actuated	Retain	Yes	5
Orchard Ave., Navesink Ave. and Route 36	Middletown and Highlands	Semi-Actuated	Retain	Yes	1
Waterwitch Ave. and Route 36	Atlantic Highlands	Semi-Actuated	Retain	Yes	7
Miller Ave. and Route 36	Atlantic Highlands	Semi-Actuated	Retain	Yes	2
Highlands Bridge and Route 36	Atlantic Highlands	Semi-Actuated	Retain	Yes	
Grand Ave. and Route 36	Atlantic Highlands	Semi-Actuated	Retain	Yes	1
Palmer Ave. and Route 35	Middletown	Semi-Actuated	Retain	Yes	1
Linden Ave. and Route 36	Atlantic Highlands	Semi-Actuated	Retain	Yes	1
Newman Springs Rd., Phalanx Rd., Middletown-Lincroft Rd. and Swimming River Road	Middletown	Semi-Actuated	Retain	Yes	1
Red Hill Road and Everett Road	Middletown	Fully-Actuated	Install	Yes	7

EXISTING AND PROPOSED TRAFFIC SIGNALS (Continued)

TABLE 2 - 3

LOCATION	MUNICIPALITY	OPERATION	RECOMMENDATION	N.J.D.O.T. APPROVED	WARRANT*
Navesink River Road and Route 35	Middletown	Semi-Actuated	Retain	Yes	1
Pine St. and Route 35	Middletown	Semi-Actuated	Retain	Yes	2
Route 35 and Middletown Fire Company #1	Middletown	Semi-Actuated	Retain	Yes	2
Chapel Hill Rd. and Route 35	Middletown	Semi-Actuated	Retain	Yes	1
Crestview Ave. and Route 35	Middletown	Semi-Actuated	Retain	Yes	2
Applefarm Rd. and Route 35	Middletown	Semi-Actuated	Retain	Yes	2
Woodland Ave. and Route 35	Middletown	Semi-Actuated	Retain	Yes	2
Kings Highway, Tindall Rd. and Route 35	Middletown	Semi-Actuated	Retain	Yes	1
New Monmouth Rd. and Route 35	Middletown	Semi-Actuated	Retain	Yes	1
Old Village Fire Co. and Route 35	Middletown	Semi-Actuated	Retain	Yes	2
Kings Highway, Harmony Rd. and Route 35	Middletown	Semi-Actuated	Retain	Yes	1
Cherry Tree Farm Rd. and Harmony Rd.	Middletown	Semi-Actuated/ Fully Actuated	Retain/ Modify	No	1
Cherry Tree Farm Rd. and Route 35	Middletown	Semi-Actuated	Retain	Yes	1
Laurel Ave. and Route 35	Middletown	Semi-Actuated	Retain	Yes	1
Cherry Tree Farm Rd. and Wilson Avenue	Middletown	Fully-Actuated	Install	No	2
Cherry Tree Farm Rd., New Monmouth Rd., and Leonardville Rd.	Middletown	Semi-Actuated/ Fully Actuated	Modify	No	1
East Rd. and Leonardville Rd.	Middletown	Semi-Actuated	Install	No	6,7
N.J. Route 35 and Twin Brook Avenue	Middletown	Semi-Actuated	Retain	Yes	1

* Numbers shown refer to warrant numbers 1 through 8 as contained in the Manual on Uniform Traffic Control Devices.

T-4001 (16)

RICHARD P. BROWNE ASSOCIATES

REGION II TRAFFIC SIGNAL LOCATIONS

LEGEND

EXISTING
- SEMI ACTUATED SIGNAL
- FIXED TIME SIGNAL
- FLASHING OPERATION

PROPOSED
- FULLY ACTUATED SIGNAL
- FLASHING OPERATION
- INTERCONNECTION
- SEMI ACTUATED SIGNAL

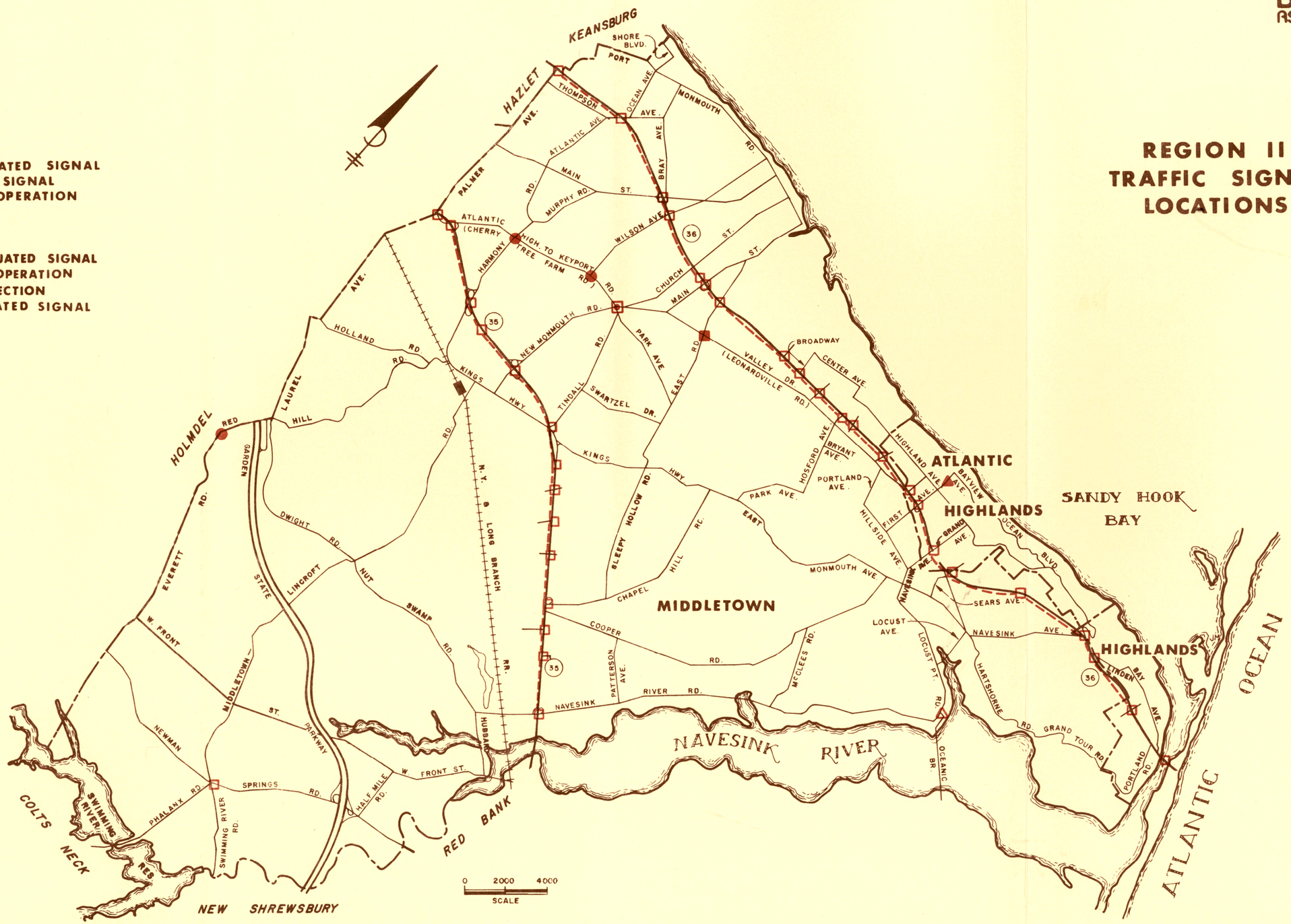


PLATE 2-7

IMPROVEMENT PROJECT SEQUENCE AND FINANCIAL PROGRAM

TABLE 2 - 4

REGION II

YEAR	LOCATION	MUNICIPALITY	IMPROVEMENT NUMBER	ESTIMATED COST
1973	Harmony Rd., King's Highway and N.J. Route 35	Middletown	2 - 1	$40,000.00
	* Middletown-Lincroft Rd., Newman Springs Rd., Phalan Rd., and Swimming River Road	Middletown	2 - 19	625,000.00
	* Harmony Rd. and Cherry Tree Farm Rd.	Middletown	2 - 20	40,000.00
	* Cherry Tree Farm Rd. and Wilson Ave.	Middletown	2 - 21	35,000.00
	* Red Hill Road and Everett Road	Middletown	2 - 22	30,000.00
1974	New Monmouth Rd. and N.J. Route 35	Middletown	2 - 2	$20,000.00
	Chapel Hill Rd. and N.J. Route 35	Middletown	2 - 3	40,000.00
	N.J. Route 36 and Thompson Avenue	Middletown	2 - 4	20,000.00
	Navesink River Rd. and N.J. Route 35	Middletown	2 - 5	18,000.00
	First Avenue and N.J. Route 36	Atlantic Highlands	2 - 6	20,000.00
1975	King's Highway, N.J. Route 35 and Tindall Road	Middletown	2 - 7	$45,500.00
	N.J. Route 35 and Twinbrooks Ave.	Middletown	2 - 8	140,000.00
	N.J. Route 35 and Woodland Avenue	Middletown	2 - 9	12,000.00
1976	N.J. Route 36 and Wilson Avenue	Middletown	2 - 10	$15,000.00
	Cherry Tree Farm Rd. and N.J. Route 35	Middletown	2 - 11	20,000.00
	Palmer Avenue and N.J. Route 35	Middletown	2 - 12	20,000.00
1977	Cherry Tree Farm Rd., Leonardville Rd., New Monmouth Rd. and Tindall Rd.	Middletown	2 - 13	$20,000.00
	Grand Avenue and N.J. Route 36	Atlantic Highlands	2 - 14	10,000.00
	Main Street and N.J. Route 36	Middletown	2 - 15	23,500.00
	East Road and Leonardville Road	Middletown	2 - 16	25,000.00
	Center Avenue and First Street	Atlantic Highlands	2 - 17	8,000.00
	Linden Avenue and N.J. Route 36	Highlands	2 - 18	12,000.00

* Intersection improvement plans being prepared by the Monmouth County Engineer.

Evaluation

In order to identify locations where traffic operational improvements are required, use was made of accident experience, average travel speeds on routes, congestion and delay at intersections, and the level of service provided. To measure the success of this program requires an in depth analysis of traffic conditions before and after implementation. This study provides the necessary data to evaluate a location as it now exists before the operational improvements have been implemented. Some additional speed and delay runs can be conducted to increase the reliability of our sample but other than this the necessary information has been inventoried.

After a reasonable period of time has elapsed, similar studies regarding accident experience, speed and delay runs and locations of congestion and delay can be conducted along selected routes where early implementation projects have been completed. Comparison of traffic conditions before and after improvement should be made to insure that the desired benefits are being achieved.

LEGEND FOR IMPROVEMENTS



EXISTING SIGNAL HEAD



PROPOSED SIGNAL HEAD



EXISTING STANCHION,
PROPOSED SIGNAL HEAD

THUS: ONLY OPEN SIGNAL HEADS OR STANCHIONS INDICATE AN EXISTING CONDITION. SOLID SIGNAL HEADS OR STANCHIONS INDICATE A PROPOSED CONDITION.



ROADWAY WIDENING

RIGHT OF WAY



BUILDING LINE

SIGN POST

GUARD RAIL



SIGNAL DETECTOR



PEDESTRIAN HEAD

NOTE : DARK LINES INDICATE PROPOSED CONDITIONS. SCREENED OR LIGHT LINES INDICATE EXISTING CONDITIONS.

REGION 1 INTERSECTION IMPROVEMENTS

Improvement Number	Location	Municipality	Page No.
2-1	N.J. Route 35 at Harmony Road and Kings Highway	Middletown	2 - 18
2-2	N.J. Route 35 and New Monmouth Rd.	Middletown	2 - 20
2-3	N.J. Route 35, Oak Hill Road and Chapel Hill Road	Middletown	2 - 22
2-4	N.J. Route 36 and Thompson Avenue	Middletown	2 - 24
2-5	N.J. Route 35 and Navesink River Rd.	Middletown	2 - 26
2-6	N.J. Route 36 and First Avenue	Atlantic Highlands	2 - 28
2-7	N.J. Route 35 at Kings Highway and Tindall Road	Middletown	2 - 30
2-8	N.J. Route 35 and Twin Brook Avenue	Middletown	2 - 32
2-9	N.J. Route 35 and Woodland Drive	Middletown	2 - 34
2-10	N.J. Route 36 and Wilson Avenue	Middletown	2 - 36
2-11	N.J. Route 35 and Cherry Tree Farm Road	Middletown	2 - 38
2-12	N.J. Route 35 and Palmer Avenue	Middletown	2 - 40
2-13	Cherry Tree Farm Road, Leonardville Road, Monmouth Road and Tindall Road	Middletown	2 - 42
2-14	N.J. Route 36 and Grand Avenue	Atlantic Highlands	2 - 44
2-15	N.J. Route 36 and Main Street	Middletown	2 - 46
2-16	East Road and Leonardville Road	Middletown	2 - 48
2-17	First Avenue and Center Avenue	Atlantic Highlands	2 - 50
2-18	N.J. Route 36 and Linden Avenue	Highlands	2 - 52
2-19	Middletown-Lincroft Road with Newman Springs Road and Phalanx Road	Middletown	2 - 54
2-20	Harmony Road and Cherry Tree Farm Road	Middletown	2 - 55
2-21	Cherry Tree Farm Road and Wilson Avenue	Middletown	2 - 56
2-22	Red Hill Road and Everett Road	Middletown	2 - 57

2 - 1 N.J. ROUTE 35 AT HARMONY ROAD AND KINGS HIGHWAY MIDDLETOWN

Kings Highway and Harmony Road are major streets and serve as collector roads for the surrounding residential areas. Left turning movements from New Jersey Route 35 are handled through farside jughandles. The intersection is controlled by a semi-actuated traffic signal.

Problems

The side streets are at an angle with the main street creating long side street stop bar distances, requiring long clearance intervals. 8 right angle accidents and several turning movement accidents are experienced. 13 rear end collisions were experienced on the northbound New Jersey Route 35 approach.

Recommendations

Modification to the Kings Highway approach lane arrangement is recommended to provide for a special left turn lane. Removal of the traffic island on the Harmony Road approach and modification to the curb radius at this location is recommended. Revision to the signal layout is recommended to increase its visibility.

Benefits

The operation characteristics and safety of this location will be improved by these recommendations. The existence of the right turning lane on the Harmony Road approach allows for the radius at the corner to be reduced, thus compacting the intersection and reducing the area of conflict.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES

KINGS HIGHWAY

SEARS PARKING LOT

ROUTE 35

OPEN FIELD

HARMONY RD.

WOODS

WOODS

R.O.W.

R.O.W.

R.O.W.

NO PARKING ANY TIME

NO LEFT TURN

NO LEFT TURN

ONE WAY

ALL TURNS FROM RIGHT LANE

ALL TURNS FROM RIGHT LANE

U and LEFT TURNS

U and LEFT TURNS

U and LEFT TURNS

U and LEFT TURNS

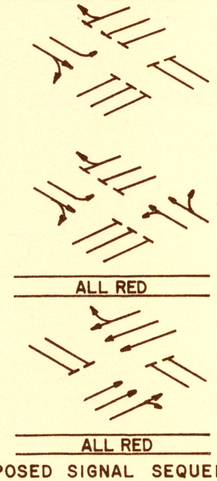
RIGHT TURNS

YIELD

YIELD

YIELD

YIELD



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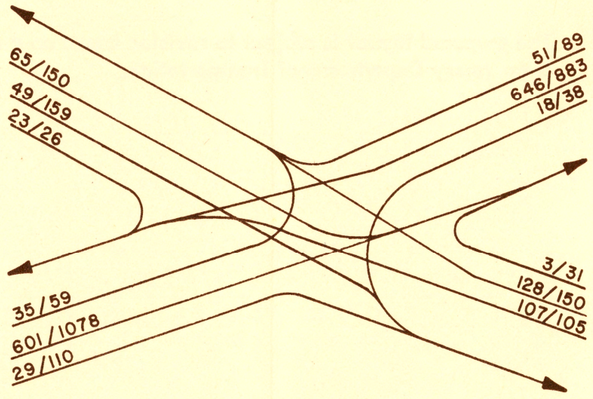

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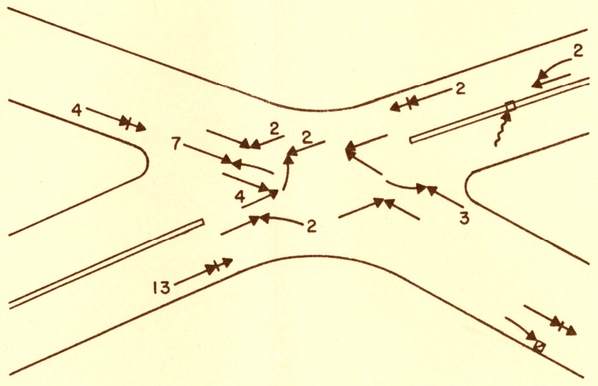
8:00 - 9:00 A.M. / 4:15 - 5:15 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD
3 NOT SHOWN

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 2-1

2 - 2 N.J. ROUTE 35 AND NEW MONMOUTH ROAD MIDDLETOWN

New Monmouth Road is a main connecting roadway between N.J. Routes 35 and 36. Left turns from New Jersey Route 35 occur through farside jughandles. The intersection is controlled by a semi-actuated traffic signal.

Problems

This location has high traffic volumes on New Jersey Route 35. The signal is not interconnected with adjacent traffic signals along New Jersey Route 35.

Recommendations

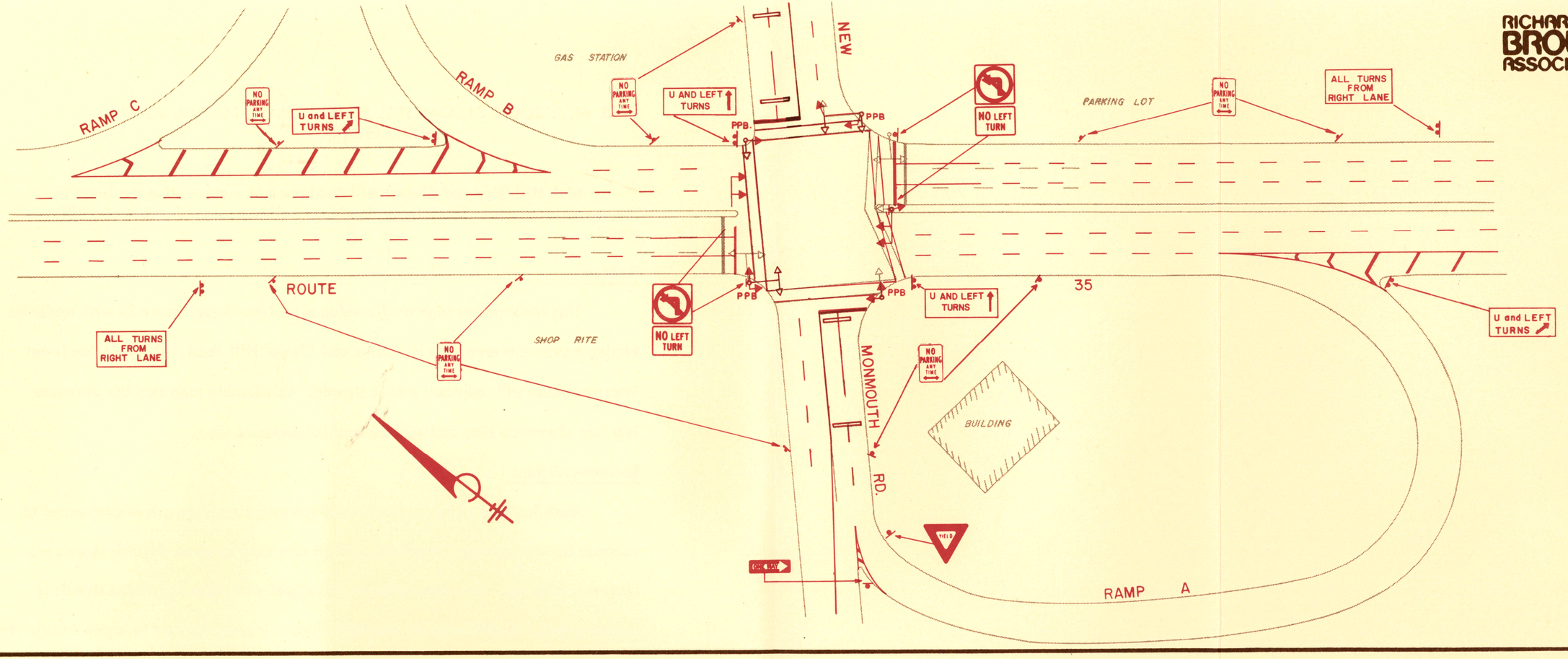
Interconnection of this intersection with adjacent traffic signal is recommended along with modifications to the signal timing. Revision of the signal layout to improve visibility is also recommended.

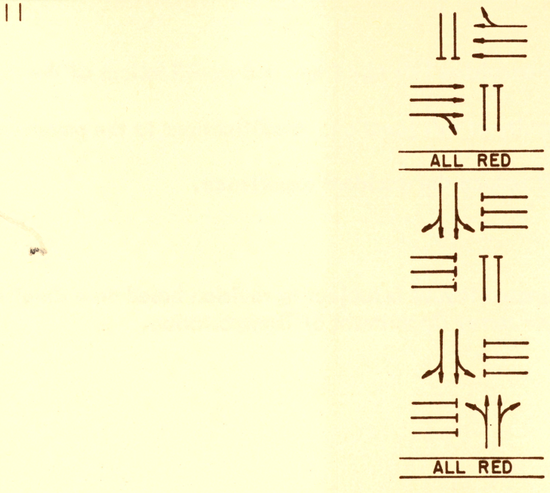
Benefits

Signal timing modifications and interconnection will improve the capacity and traffic flow at this location. Modification to the signal layout should contribute to a reduction in accident experience.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES





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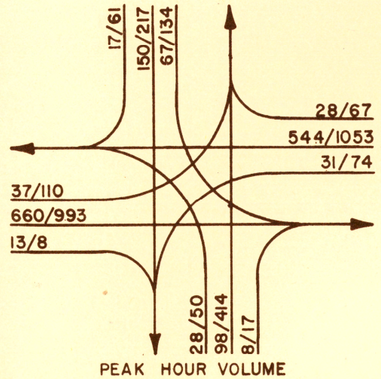

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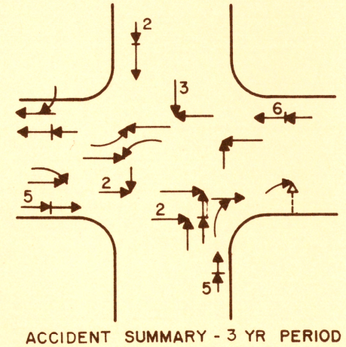


ACCIDENT SUMMARY - 3 YR PERIOD
14 NOT SHOWN

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 2-2

2 - 3 N.J. ROUTE 35, OAK HILL ROAD AND CHAPEL HILL ROAD MIDDLETOWN

Oak Hill Road and Chapel Hill Road are major connecting roadways to the surrounding area. The intersection is controlled by a semi-actuated traffic signal.

Problems

This location has high traffic volumes on New Jersey Route 35 with moderate turning movements onto Oak Hill Road and Chapel Hill Road. This location is not interconnected with adjacent traffic signals. Consierable long stop bar distances increase clearance time and vehicle conflict exposure time.

Recommendations

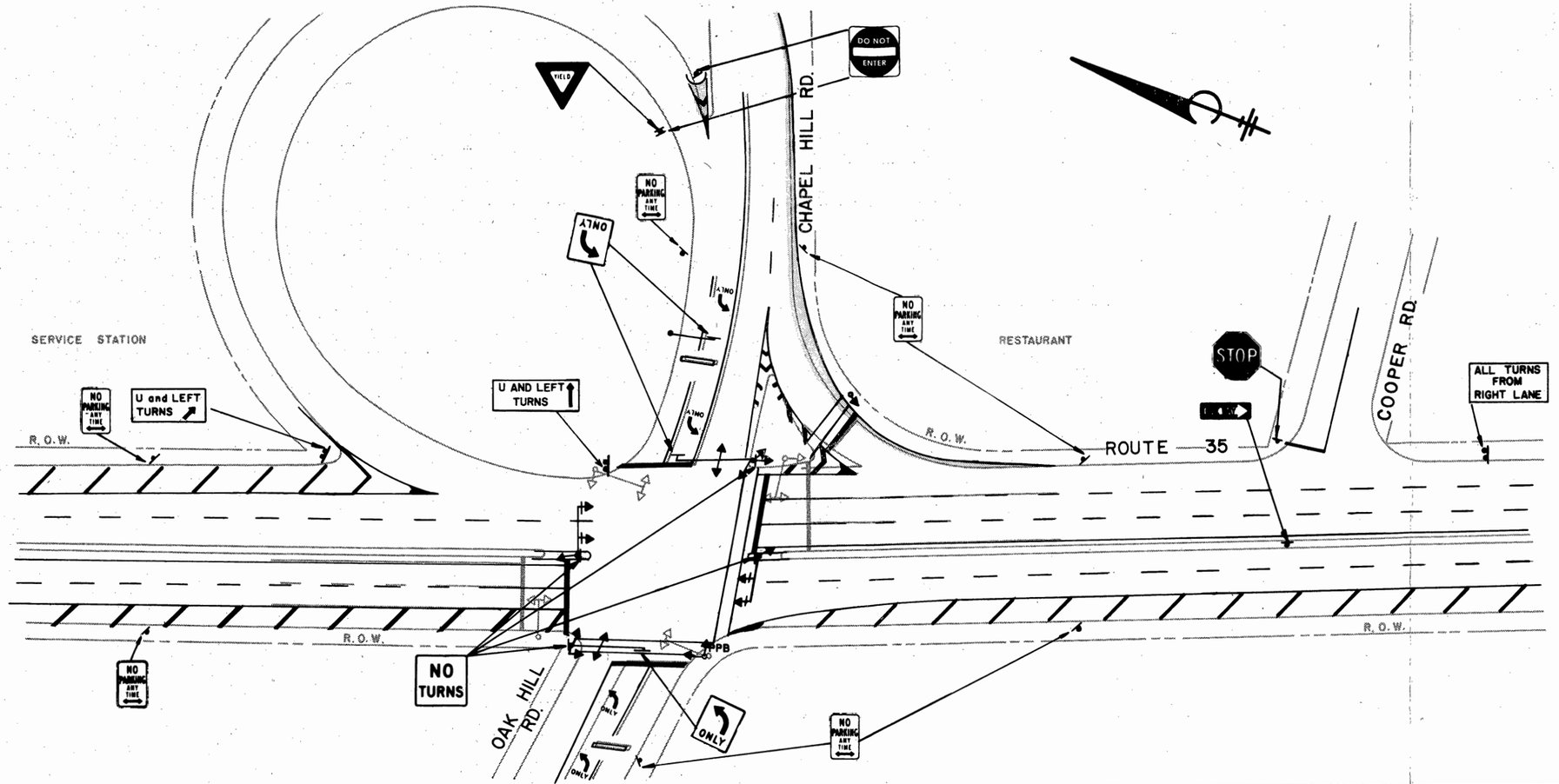
Modifications of center barrier and pavement markings are recommended to compact the intersection. Provision for left turn only lanes on the side streets are also recommended. Interconnection of this signal with adjacent traffic signals is recommended. Modification of the signal layout is recommended to inprove visibility.

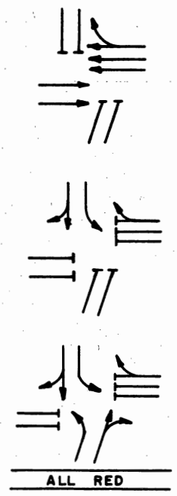
Benefits

Provisions for exculsive left turn lanes and modifications of the signal timing will improve the capacity at this location. Modifications to the pavement markings and signal layout will reduce the accident experience.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES





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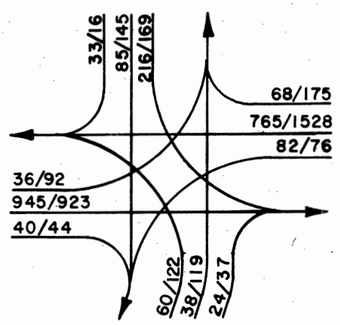

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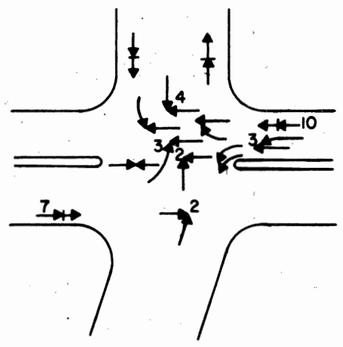


ACCIDENT SUMMARY - 3 YR. PERIOD
7 NOT SHOWN

0 60 120
Scale: 1" = 60'

PROPOSED IMPROVEMENT 2-3

2 - 4 N.J. ROUTE 36 AND THOMPSON AVENUE MIDDLETOWN

Thompson Avenue parallets New Jersey Route 36 and crosses it at a skewed angle. All turns from New Jersey Route 36 occur at nearside jughandles. The intersection is controlled by a semi-actuated signal.

Problems

This location has moderately high volumes on New Jersey Route 36. Conflicts at the jughandles connecting to the side streets generate accident experience. Some pedestrian accident experience is also indicated. This intersection is not interconnected with adjacent traffic signals. The intersection is somewhat skewed resulting in considerably long stop bar distances.

Recommendations

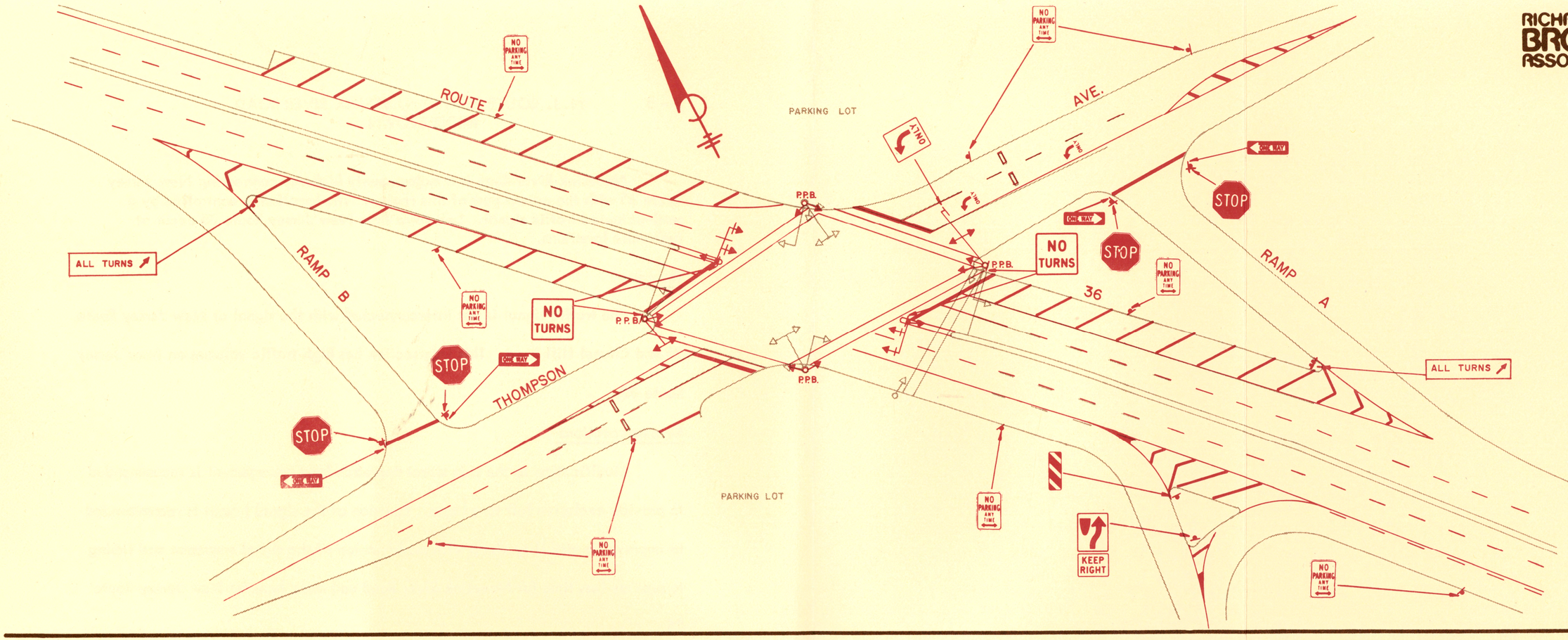
Modification of the center barrier and pavement markings is recommended to compact the intersection. Introduction of a left turn only lane on the westbound approach of Thompson Avenue is recommended. Installation of stop signs at the jughandle connections to the side streets is recommended. Interconnection of this signal with its adjacent signals is recommended along with modification to the signal layout to improve its visibility.

Benefits

Compacting of the intersection will reduce clearnace times and reduce the vehicle exposure areas. Modification to the approach lane layouts, and signal timing will increase capacity. Revisions to the right-of-way control at the jughandle connections with side streets should reduce accident experience in these areas. An improved crosswalk layout should reduce pedestrian accident experience.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES





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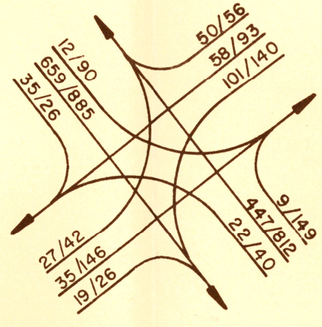

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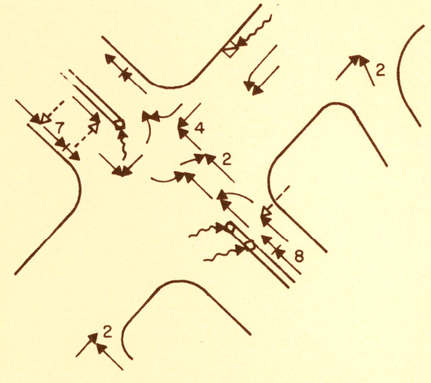


ACCIDENT SUMMARY - 3 YR. PERIOD
3 NOT SHOWN

0 60 120
Scale: 1" = 60'

PROPOSED IMPROVEMENT 2 - 4

2 - 5 N.J. ROUTE 35 AND NAVESINK RIVER ROAD MIDDLETOWN

Navesink River Road is a major county highway connecting New Jersey Route 35 with the eatern part of this region. The location is controlled by a semi-actuated traffic signal. Left turns from New Jersey Route 35 occur at jughandle locations.

Problems

The traffic signal is not interconnected with the signal at New Jersey Route 35 and Chapel Hill Road. This intersection has high traffic volumes on New Jersey Route 35.

Recommendations

Modification to the side street approach lane arrangement is recommended to provide exclusive left turn lanes. Revision of the signal layout is recommended to improve its visibility along with modification of the signal sequence and timing to provide less time for Navesink River Road and more time for New Jersey Route 35.

Benefits

The capacity of this location will be improved by the interconnection and signal timing modifications and side street approach lane arrangements, while safety will be improved by modification of the signal layout.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES

DO NOT ENTER

STOP

NAVESINK RIVER

RAMP "A"

NO PARKING ANY TIME

ONLY

NO TURNS

BANK

R.O.W.

ROUTE

PPB.

35

ALL TURNS

ALL TURNS FROM RIGHT LANE

NO LEFT TURN

U AND LEFT TURNS

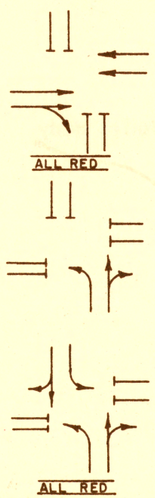
U and LEFT TURNS

YIELD

RD.

RAMP "B"

HOUSE



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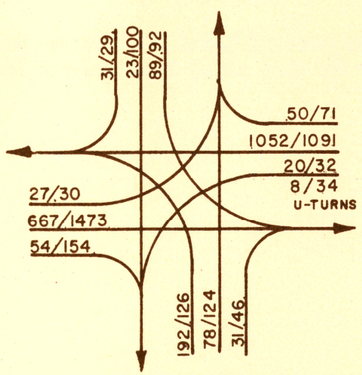

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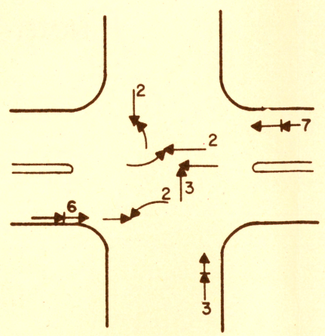


ACCIDENT SUMMARY - 3 YR. PERIOD
14 NOT SHOWN

0 60 120

Scale: 1"= 60'

PROPOSED IMPROVEMENT 2-5

2 - 6 NEW JERSEY ROUTE 36 AND FIRST AVENUE ATLANTIC HIGHLANDS

First Avenue connects the beach area of Atlantic Highlands with New Jersey Route 36. Left turns from New Jersey Route 36 occur at southbound to eastbound farside jughandle. Left turns northbound to westbound are negotiated by using local streets.

Problems

Approach lane arrangement is insufficient. The location has high traffic volumes on New Jersey Route 36 and on First Avenue.

Recommendations

Modification of the side street approach lanes is recommended to provide for special turning lanes as indicated. Revision of the signal layout is recommended to reduce vehicle accident experience.

Benefits

Modification of the approach lane arrangement should improve the capacity and operational characteristics of this location. Improvements in the signal layout and pavement markings should increase safety.

NOTE: The proposed layout is subject tor revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES

WEST AVE.

KEEP RIGHT

U and LEFT TURNS

ROUTE 36

SERVICE STATION

U AND LEFT TURNS

NO PARKING ANY TIME

RIGHT LANE MUST TURN RIGHT

AVE.

ONLY

NO LEFT TURN

SERVICE STATION

ALL TURNS FROM RIGHT LANE

BANK

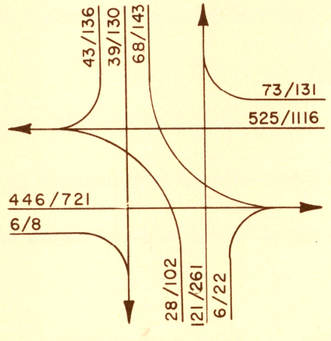
U AND LEFT TURNS

U and LEFT TURNS

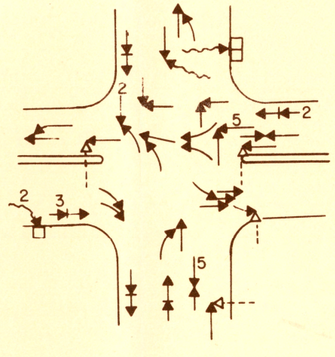
FIRST



PROPOSED SIGNAL SEQUENCE



PEAK HOUR VOLUME
7:15-8:15 A.M./ 4:00-5:00 P.M.



ACCIDENT SUMMARY, 3 YR. PERIOD
2 NOT SHOWN

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 2-

2 - 7 N.J. ROUTE 35 AT KINGS HIGHWAY AND TINDALL ROAD MIDDLETOWN

Kings Highway and Tindall Road are both collector roads for the surrounding residential areas. Immediately to the south of this location, the center island widens and has a number of commercial establishments located therein. Turning movements for New Jersey Route 35 occur through the jughandle. The intersection is presently controlled by a semi-actuated traffic signal.

Problems

This location has high traffic volumes on New Jersey Route 35 and high turning movements from the side streets. The southbound receiving lanes require lane signing, due to a rather wide pavement width.

Recommendations

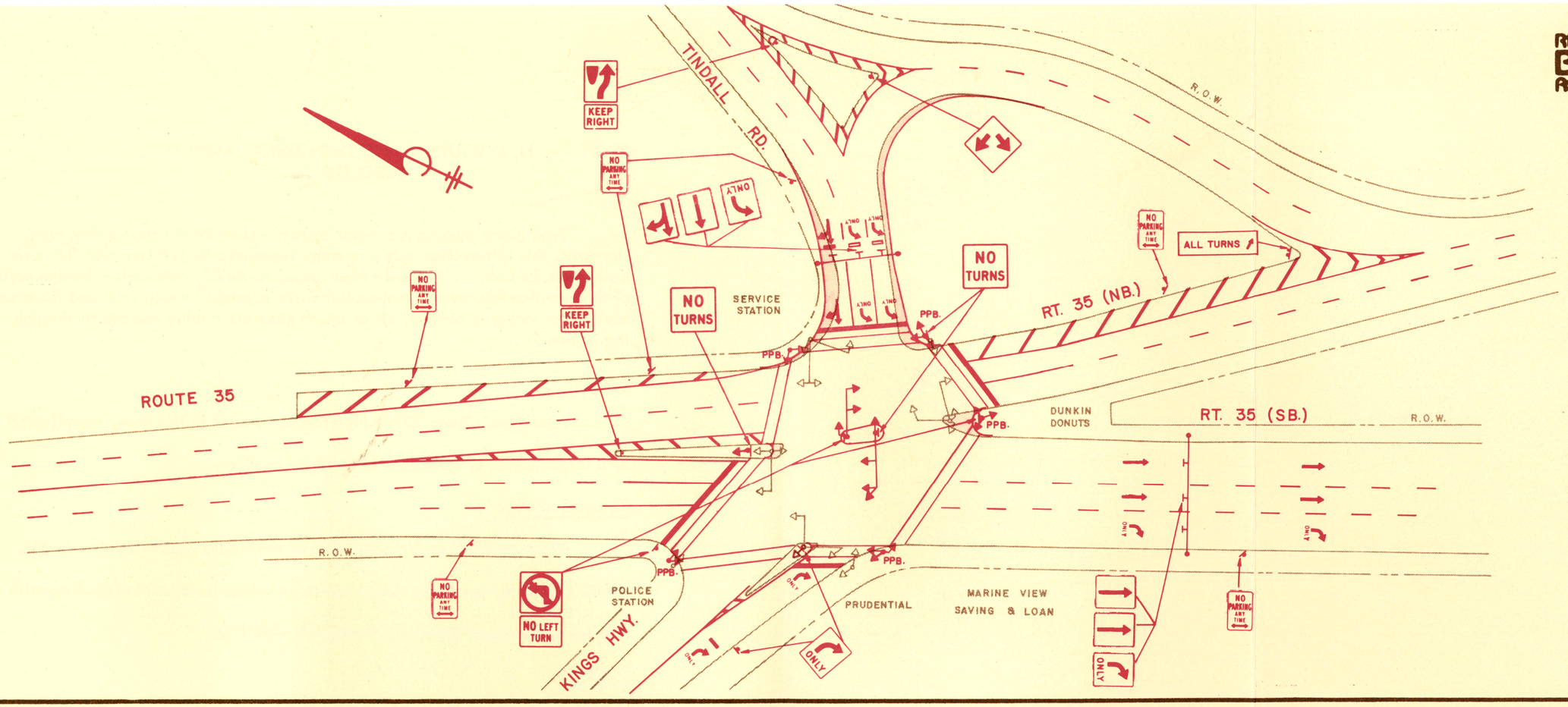
Minor widening of the Tindall Road approach and provisions for special turning lanes, as indicated, is recommended. Overhead lane control signs are recommended for the southbound receiving lanes. Modification of the center island and pavement markings is recommended to compact the intersection. Revision to the signal timing and interconnection is recommended along with modification of the signal layout to improve its visibility.

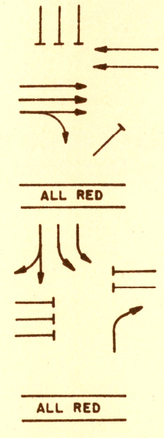
Benefits

Improvements of the side street approach lane arrangements and compaction of the intersection should improve its capacity, while lane signing and modification of the signal layout will contribute to a reduction in the accident experience.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES





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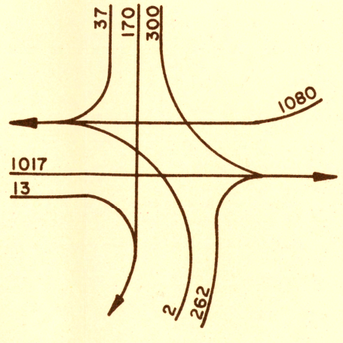
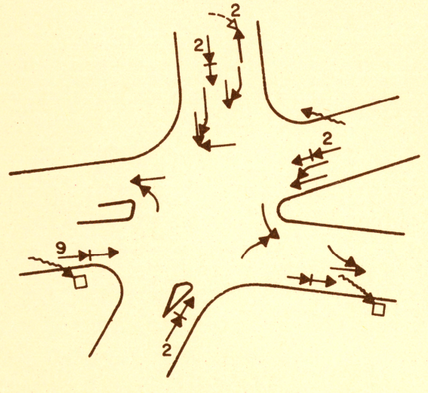


PEAK HOUR VOLUME
4:00 - 5:00PM.



ACCIDENT SUMMARY - 3YR. PERIOD

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 2 - 7

2 - 8 N.J. ROUTE 35 AND TWIN BROOK AVENUE MIDDLETOWN

Twin Brook Avenue is a minor collector road for the surrounding area. However, this intersection acts as a major jughandle for left turn and "U" turn movements for both directions on New Jersey Route 35. The center median north of this location has several commercial business establishments in it and the area has several shopping centers, all of which generate turning movements through the jughandle.

Problems

New Jersey Route 35 has high traffic volumes in this area, complicated by a large number of concentrated points of conflict.

Recommendations

Minor revisions to the geometrics of the traffic island is recommended. Modifications to the signing and pavement markings is recommended along with revision of the signal layout to increase its visibility.

Benefits

The operational characteristics and safety of this location should be improved by these recommendations.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES

ROUTE 35

DRIVEWAY TO BE CLOSED

NO PARKING ANY TIME

NO TURNS

NO TURNS

NO PARKING ANY TIME

PARKING AREA

U AND LEFT TURNS

NO PARKING ANY TIME

U AND LEFT TURNS

(NORTHBOUND)

SERVICE STATION

NO RIGHT TURN

ROUTE 35

(SOUTHBOUND)

U and LEFT TURNS

U AND LEFT TURNS

U AND LEFT TURNS

NO PARKING ANY TIME

NO PARKING ANY TIME

VACANT

KEEP RIGHT

PARKING AREA

YIELD

STOP

ONE WAY

NO PARKING ANY TIME

TWIN BROOKS AVE.

ONE WAY

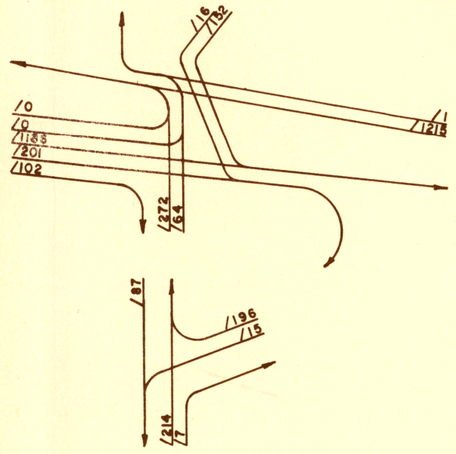
STOP

RIGHT TURNS

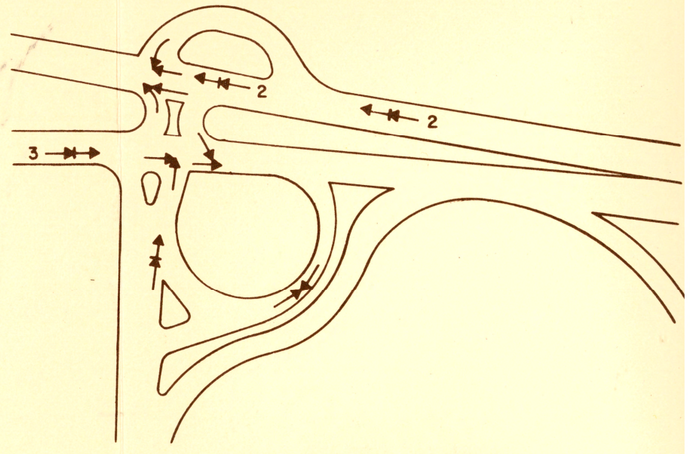
ALL RED

ALL RED

SIGNAL SEQUENCE



PEAK HOUR VOLUME
4:00-5:00 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD
7 NOT SHOWN

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 2-8

2 - 9 N. J. ROUTE 35 AND WOODLAND DRIVE MIDDLETOWN

Woodland Drive is a local collector road for the residential area southwest of the intersection. The portion of the intersection east of New Jersey Route 35 functions as a jughandle for northbound New Jersey Route 35 movements making left turns and "U" turns. The location is presently controlled by a semi-actuated traffic signal.

Problems

The right angle accidents experienced at this location tends to indicate vehicle clearance and signal visibility problems.

Recommendations

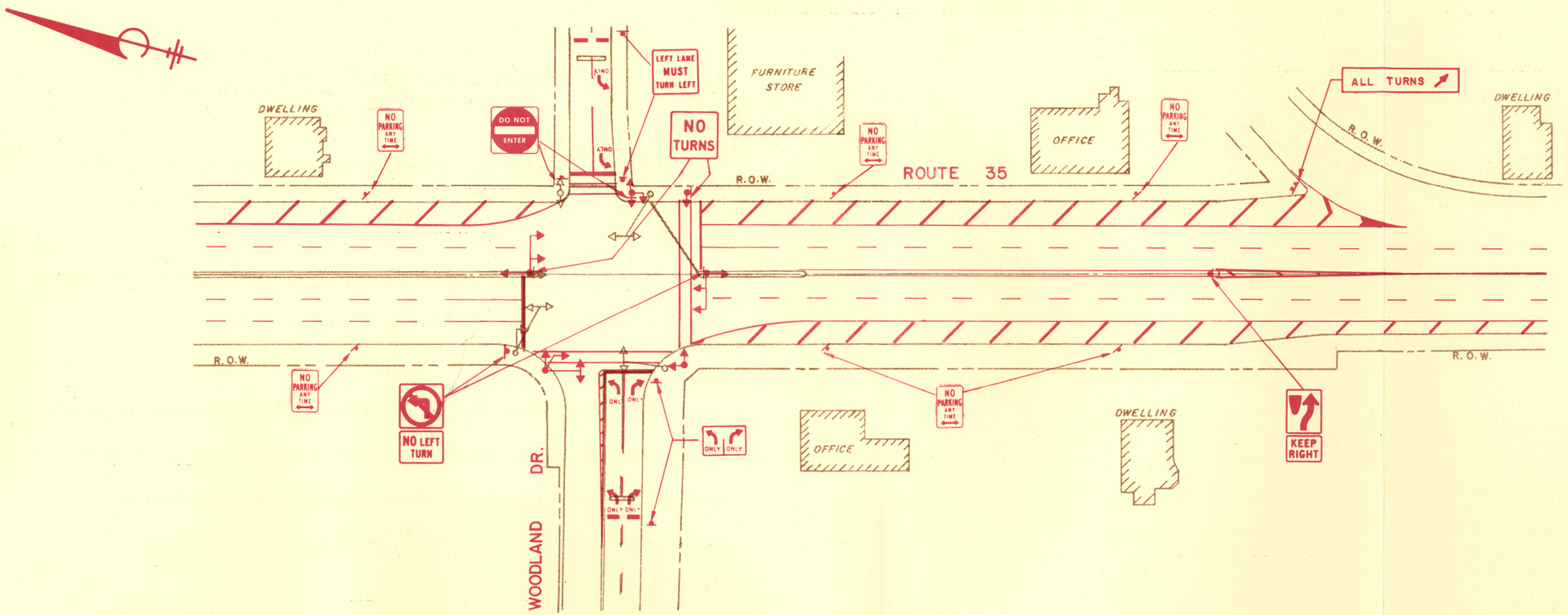
Revision of the signal timing to provide for all red clearance intervals after both movements is recommended. Modification of the signal layout to improve its visibility is also recommended.

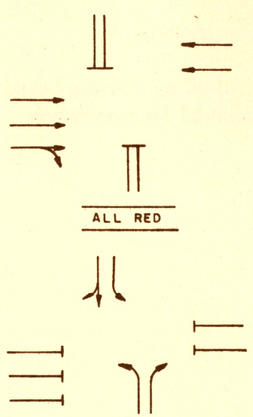
Benefits

The safety and operational characteristics of this location should be improved by these recommendations.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES





PROPOSED SIGNAL SEQUENCE

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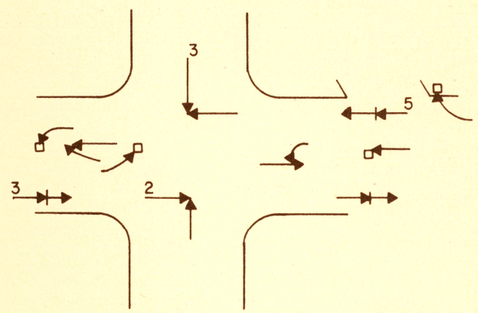


ACCIDENT SUMMARY - 3 YR. PERIOD

0 60 120

Scale: 1" = 60'

PROPOSED IMPROVEMENT 2-9

2 - 10 N.J. ROUTE 36 AND WILSON AVENUE MIDDLETOWN

Wilson Avenue is a connecting roadway running from Port Monmouth Road and the coastline to Keyport Road.

Problems

This location has high straight through traffic volumes on New Jersey Route 36 with a large turning movement from northbound to westbound.

Recommendations

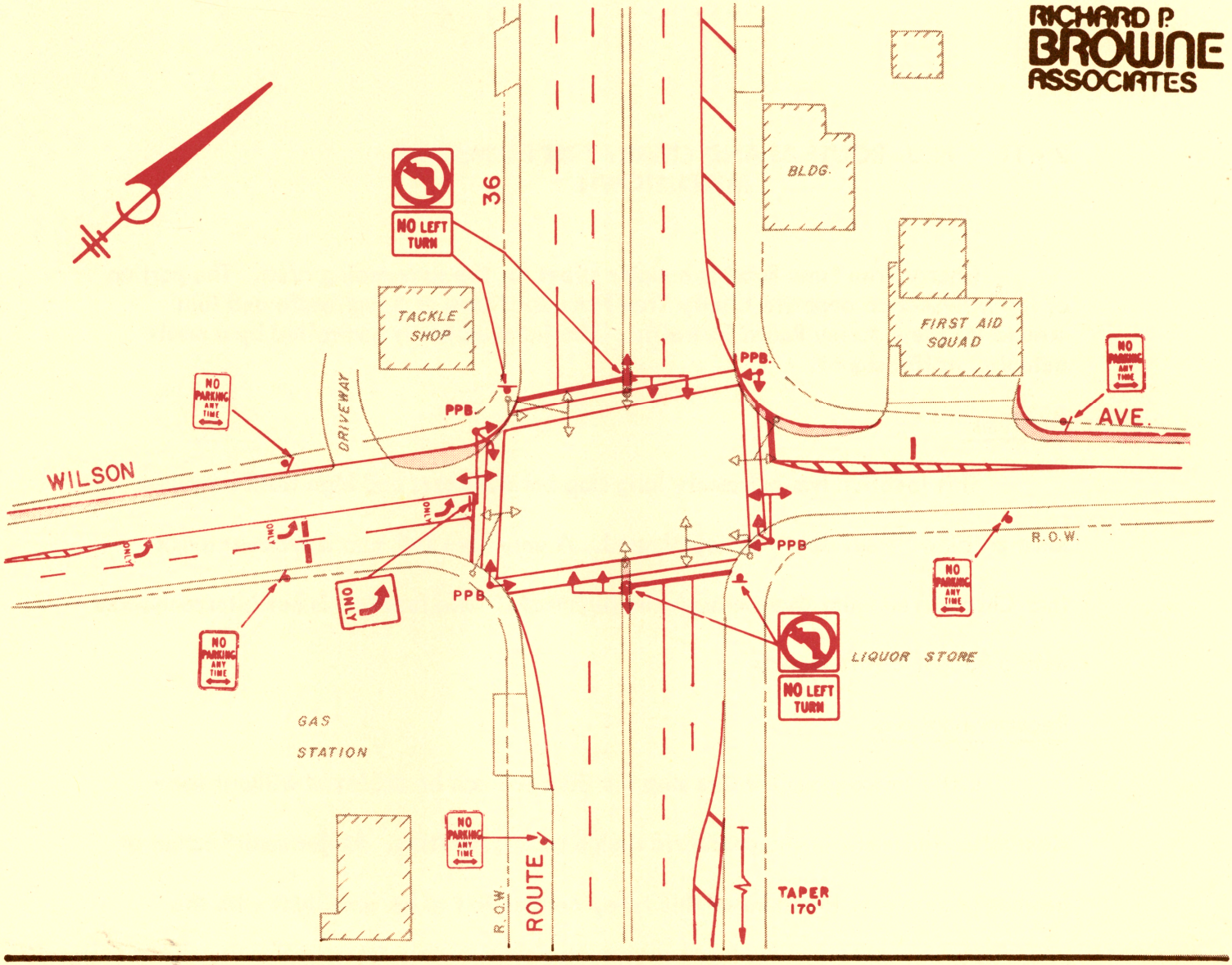
Widening of Wilson Avenue south of the signal is recommended to provide for a separate left turning lane. Minor revision to the curb turning radii on the northwest corner and along the southbound approach lane is recommended. Modification of the signal layout is recommended to increase its visibility.

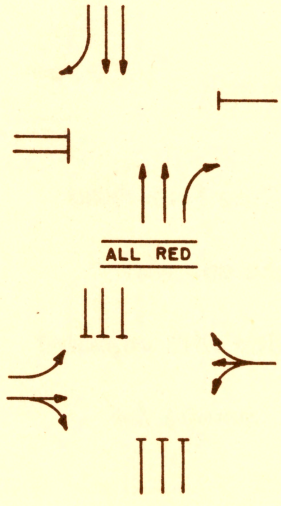
Benefits

A special left turning lane and curb radii revisions should improve the capacity and operational characteristics of this location, while modification of the signal layout should reduce the accident experience.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES





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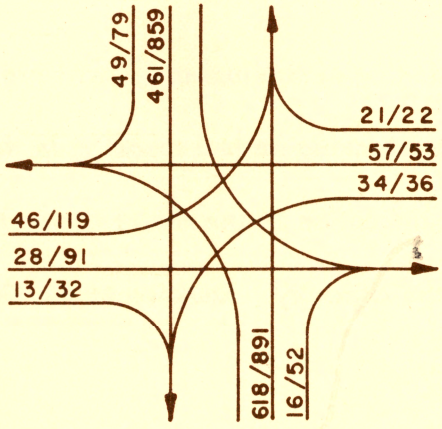
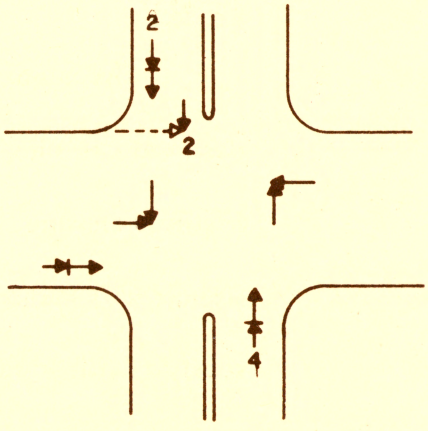


PEAK HOUR VOLUME
7:00-8:00 A.M./4:15-5:15 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD
8 NOT SHOWN

0 60 120

Scale : 1"- 60'

PROPOSED IMPROVEMENT 2-10

2 - 11 N.J. ROUTE 35 AND CHERRY TREE FARM ROAD MIDDLETOWN

Cherry Tree Farm Road is a major street for the surrounding area. The portion of the intersection opposite Cherry Tree Farm Road acts as a jughandle and turn around for New Jersey Route 35 traffic. The intersection is controlled by a semi-actuated traffic signal.

Problems

This location has extremely long stop bar distances and high traffic volumes exist on New Jersey Route 35 southbound. A very high left turn movement exists into Cherry Tree Farm Road through the jughandle. The location is not interconnected with adjacent traffic signals.

Recommendations

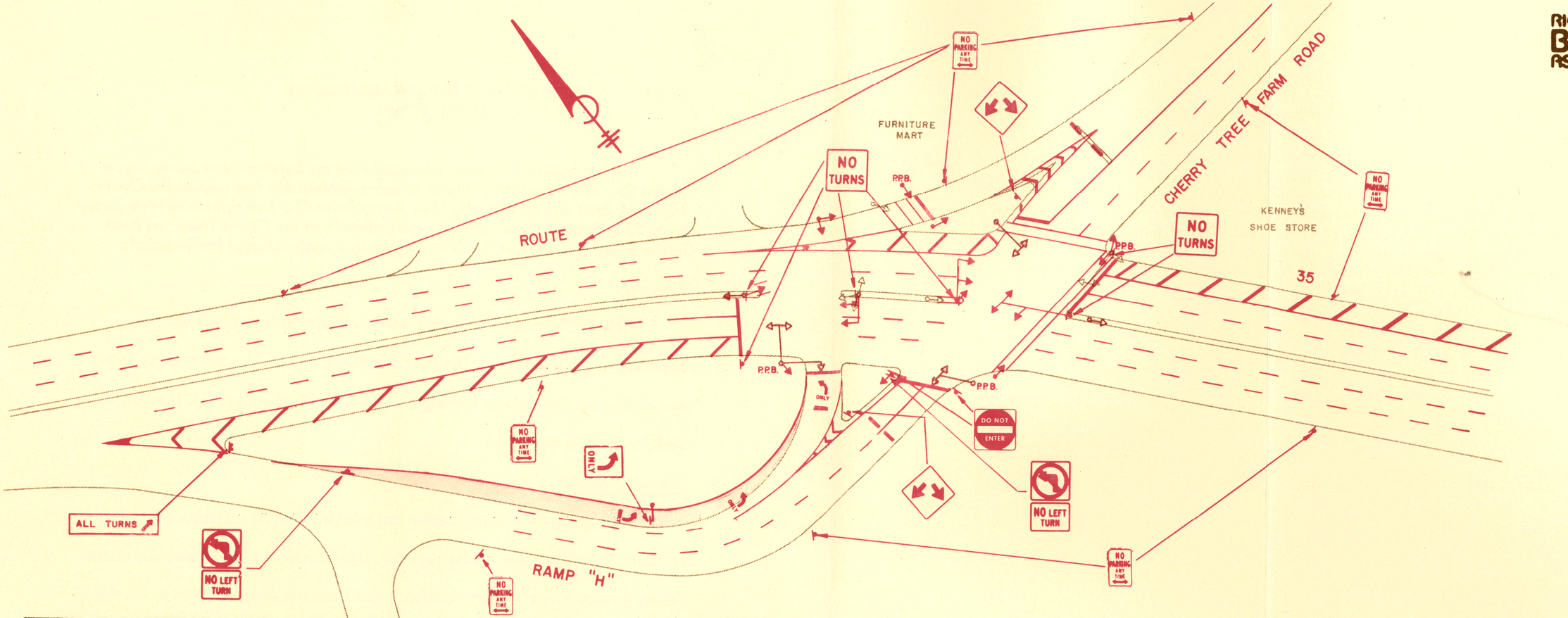
Little improvement in the stop bar distance can be achieved without considerable adjustment in the grometric design at this location. Major modification of geometric design at locations of this type, are not felt to be consistent with the scope of the TOPICS project. Minor widening of the jughandle is recommended. Minor modification to the signal layout is recommended to improve its visibility along with interconnection of this signal with adjacent traffic signals.

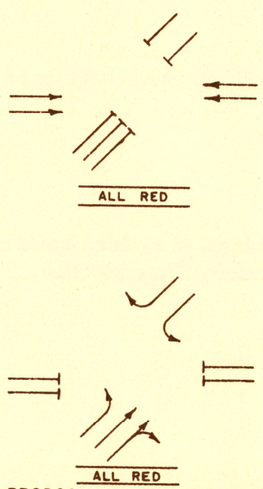
Benefits

The minor widening of the jughandle will prevent the Cherry Tree Farm Road destined vehicles from blocking normal stacking in the turn around lane and will increase storage. Modification of the signal timing and interconnection with adjacent signals will improve the capacity. Revision to the signal layout will improve the safety of this location.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES





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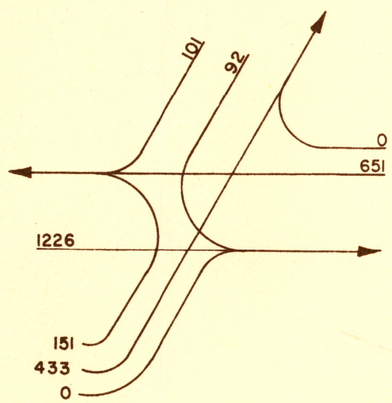
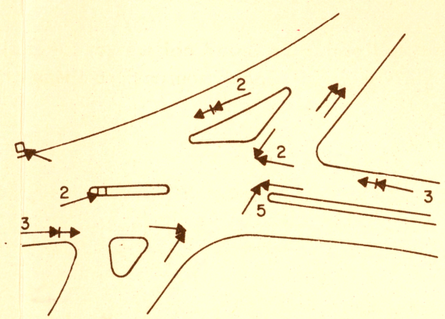


PEAK HOUR VOLUME
5:00-6:00 P.M.



ACCIDENT SUMMARY — 3 YR. PERIOD
8 NOT SHOWN

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 2-11

2 - 12 N.J. ROUTE 35 AND PALMER AVENUE MIDDLETOWN

Palmer Avenue is a major connector roadway between New Jersey Routes 35 and 36. The intersection is located approximately 500 feet west of the Cherry Tree Farm Road intersection with New Jersey Route 35. Left turns from New Jersey Route 35 to Palmer Avenue must use the jughandle at the Cherry Tree Farm Road intersection. The intersection is controlled by a semi-actuated traffic signal.

Problems

This "T" intersection has high traffic volumes with moderate volumes occurring on the side street. The somewhat larger intersection immediately to the east of this location reduces the target value of traffic signals at this location for vehicles heading westbound.

Recommendations

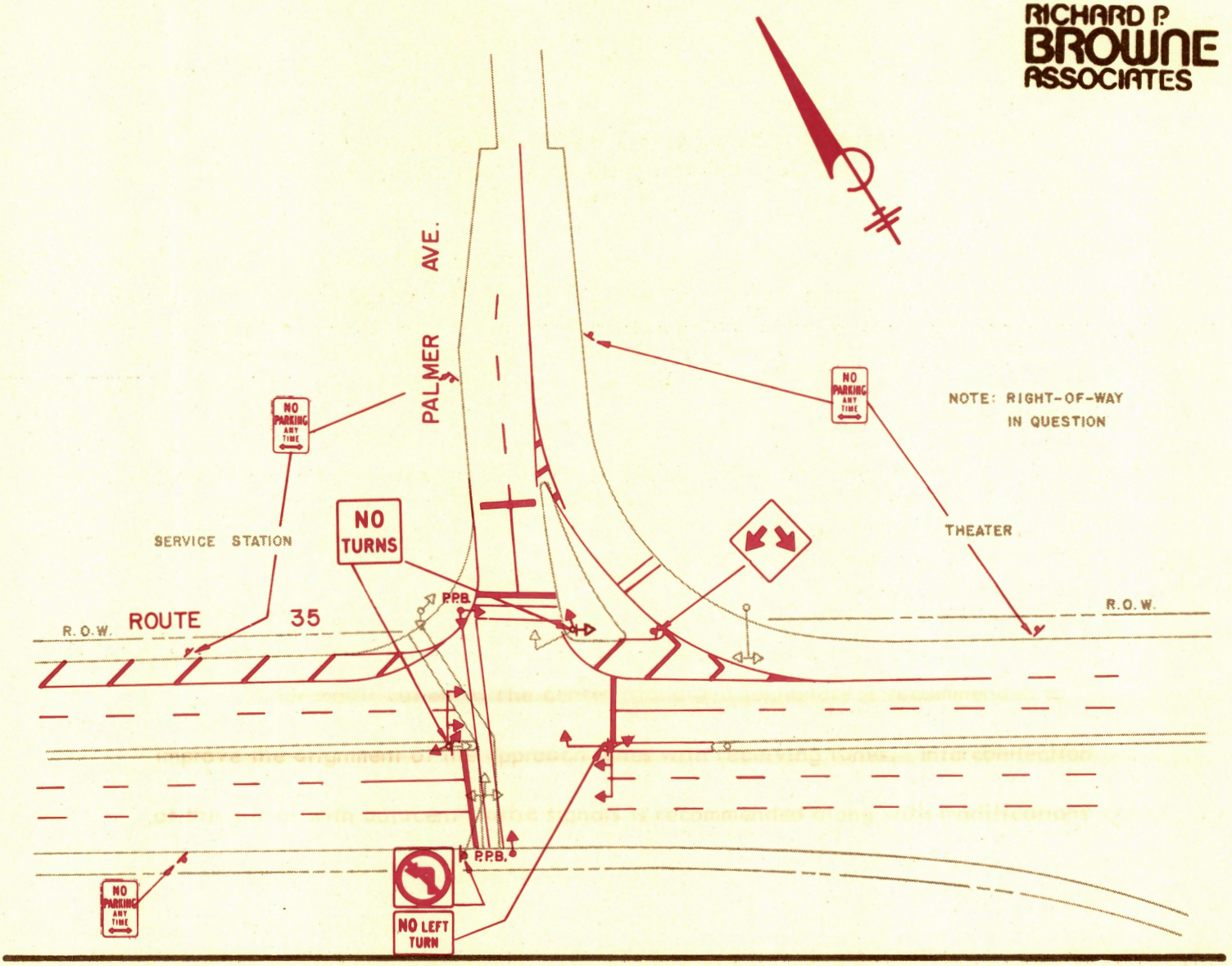
Extension of the center barrier and relocation of the northbound stop line on Route 35 will compact the intersection. Modifications of the geometrics on the Palmer Avenue side of the intersection is also recommended. Revision to the signal layout is recommended to improve its visibility.

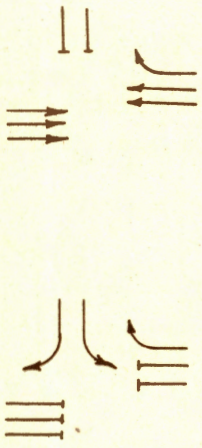
Benefits

The capacity, safety and operational characteristics of this location will be improved by these recommendations.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

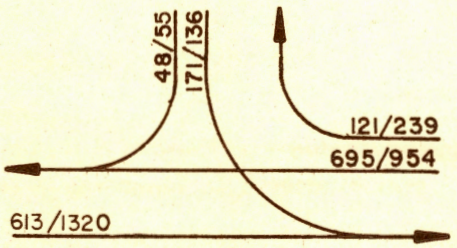
RICHARD P. BROWNE ASSOCIATES



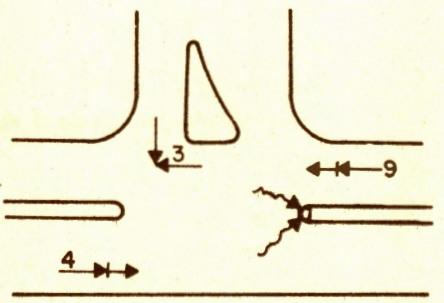


ALL RED

PROPOSED SIGNAL SEQUENCE



PEAK HOUR VOLUME
8:30–9:30 A.M. / 5:00–6:00 P.M.



ACCIDENT SUMMARY – 3 YR. PERIOD
6 NOT SHOWN

0 60 120
Scale : 1" = 60'

PROPOSED IMPROVEMENT 2-12

2 - 13 CHERRY TREE FARM ROAD, LEONARDVILLE ROAD, MONMOUTH ROAD AND TINDALL ROAD MIDDLETOWN

This location is the intersection of four collector roadways serving the surrounding area. The location is presently controlled by a semi-actuated traffic signal.

Problems

This location has moderately high traffic volumes with high turning movements on several approaches.

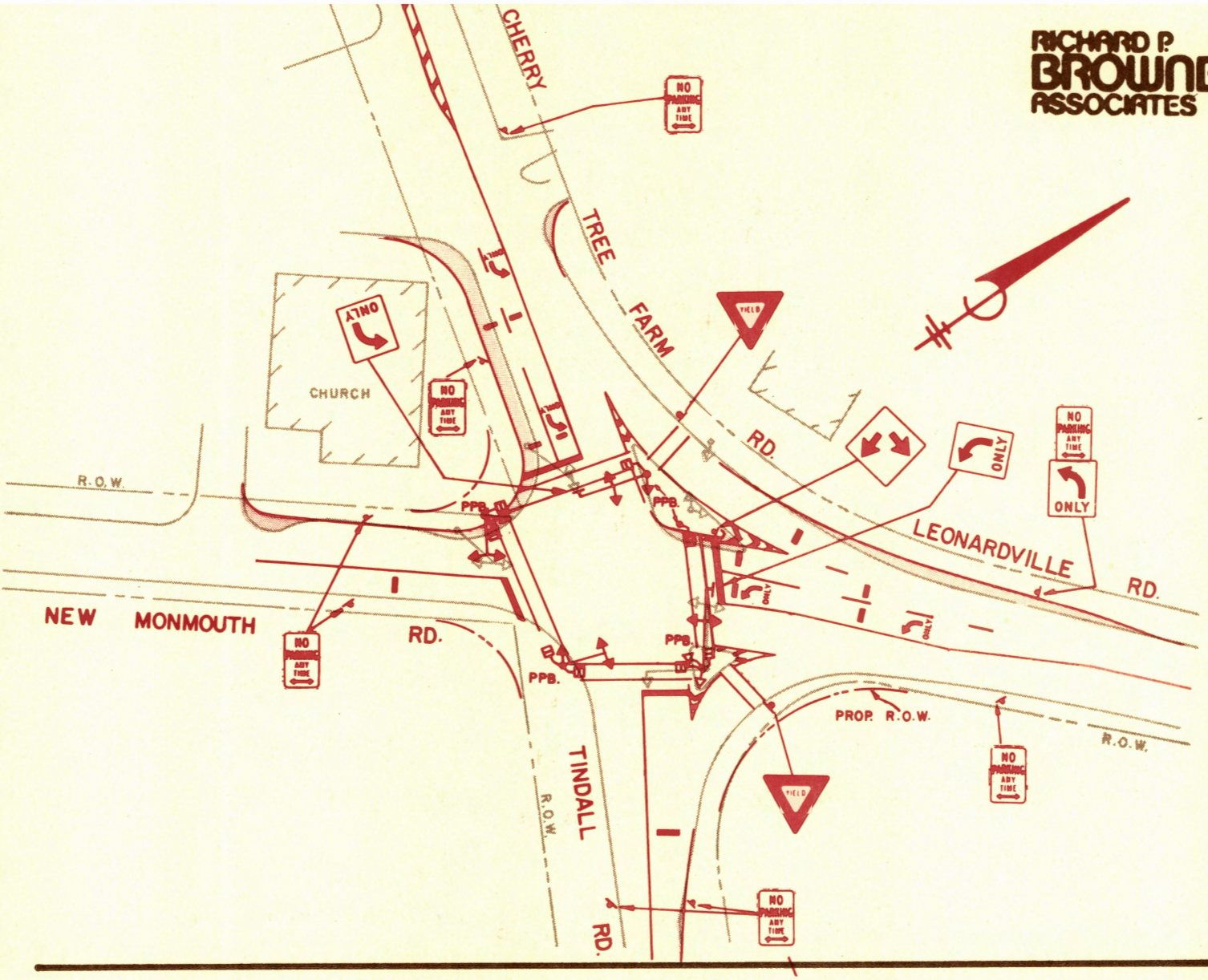
Recommendations

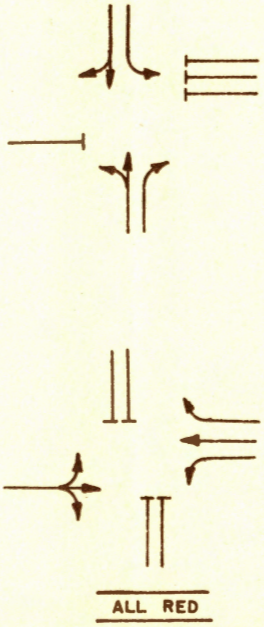
Modification to the approach lanes on Cherry Tree Farm Road and Leonardville Road are recommended to provide for special left turning lanes. Incidental modification to the curb area and traffic island is also recommended. Modification of the signal layout is also recommended; convert to full actuation.

Benefits

Modification to the approach lane arrangements and traffic island geometrics will improve the capacity of this location, while modification to the signal layout will improve the safety. The operational characteristics of this location will also be improved by these recommendations.

RICHARD P. BROWNE ASSOCIATES





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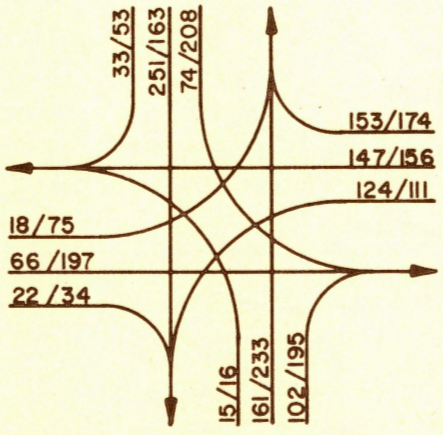
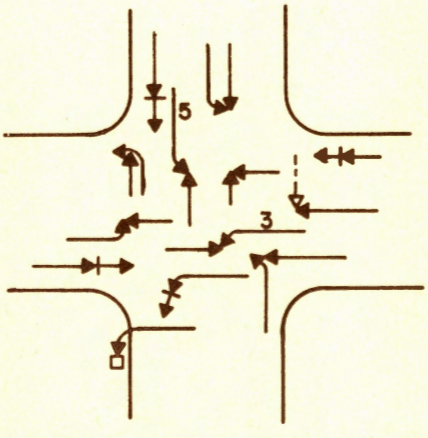


PEAK HOUR VOLUME
8:00-9:00 A.M./4:00-5:00 P.M.



ACCIDENT SUMMARY-3 YR. PERIOD
3 NOT SHOWN

0 60 120
Scale : 1"= 60'

PROPOSED IMPROVEMENT 2-13

2 - 14 N.J. ROUTE 36 AND GRAND AVENUE ATLANTIC HIGHLANDS

At this location left turns from New Jersey Route 36 occur through jughandle arrangements using local streets. This section of New Jersey Route 36 passes through a residential area, and is presently controlled by a semi-actuated traffic signal.

Problems

This location has insufficient turning radii. A significant number of right angle accidents have occurred.

Recommendations

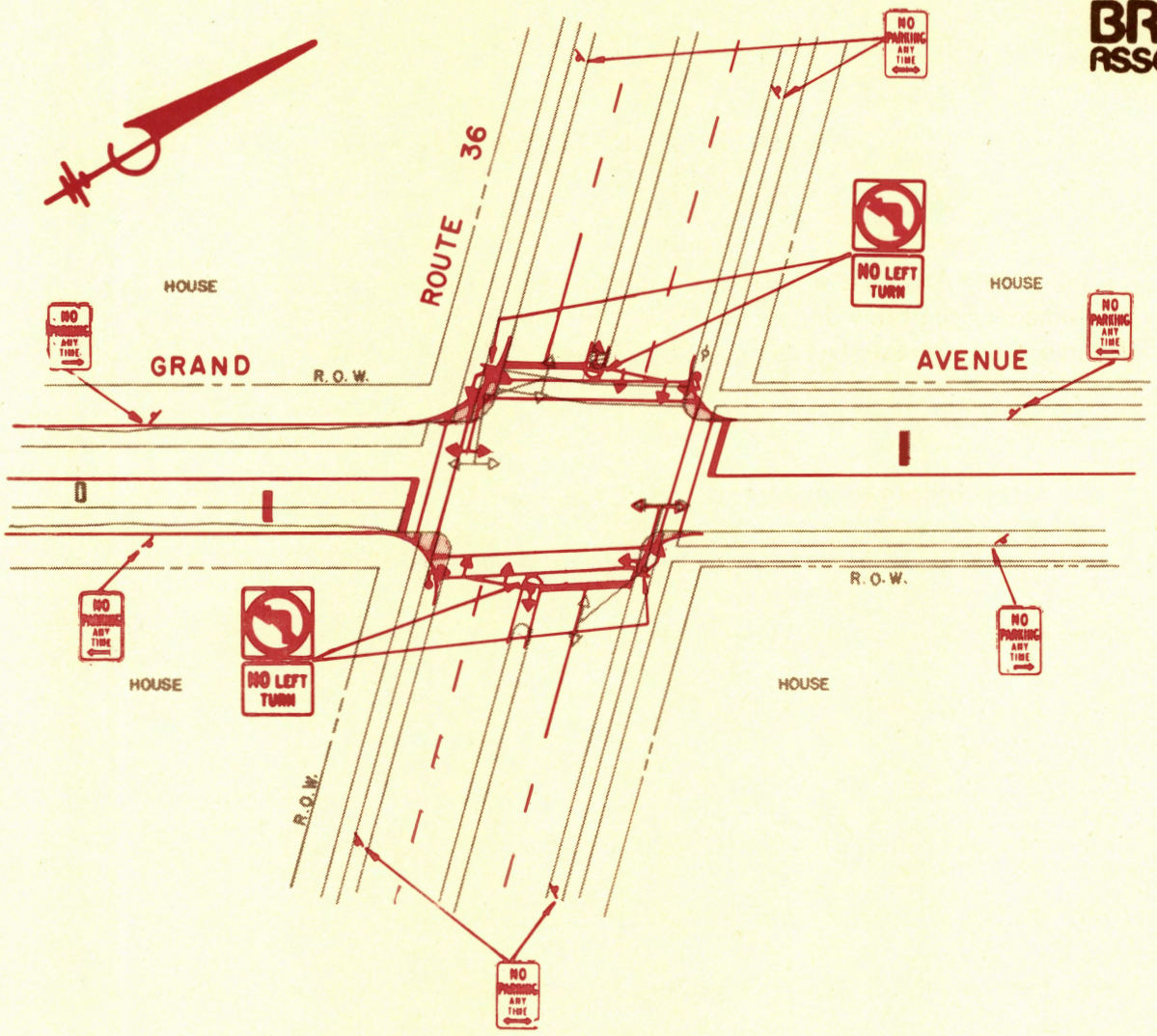
Modification to the curb turning radii is recommended along with minor modification to the center median on the east side of the intersection. Modification of the signal layout is recommended to increase its visibility.

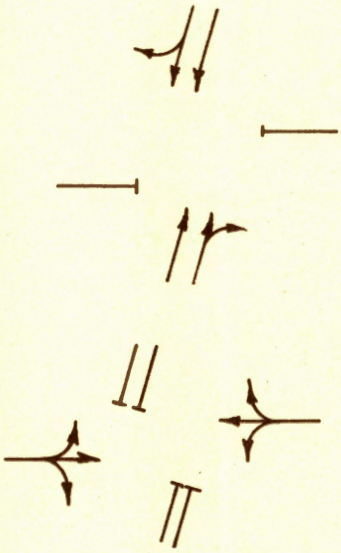
Benefits

The capacity, safety and operational characteristics of this location will be improved by these recommendations.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES





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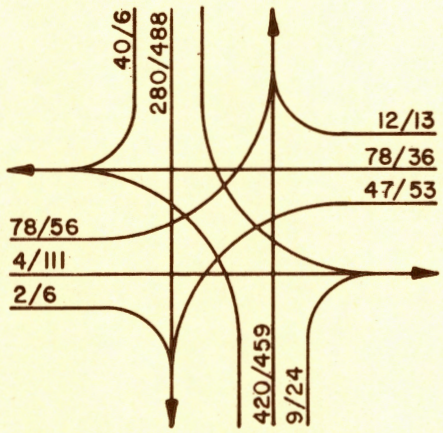
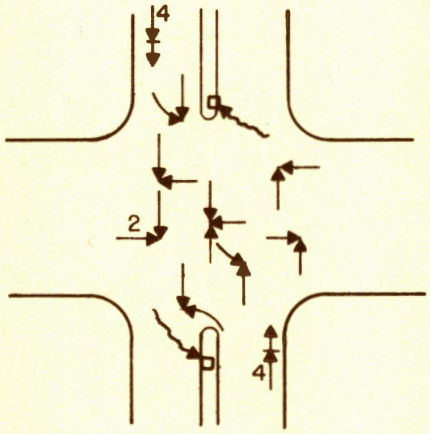


PEAK HOUR VOLUME
7:00-8:00 A.M. /4:00-5:00 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD
3 NOT SHOWN

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 2-14

2 - 15 N.J. ROUTE 36 AND MAIN STREET
MIDDLETOWN

Main Street is a collector road for the surrounding area. Left turning movements from New Jersey Route 36 are handled through jughandles. The intersection is presently controlled by a semi-actuated traffic signal.

Problems

This location has high traffic volumes on New Jersey Route 36 with considerable movements occurring from the side streets. Offset of easterly curb along Main Street does not permit two lanes to be carried northbound across New Jersey Route 36.

Recommendations

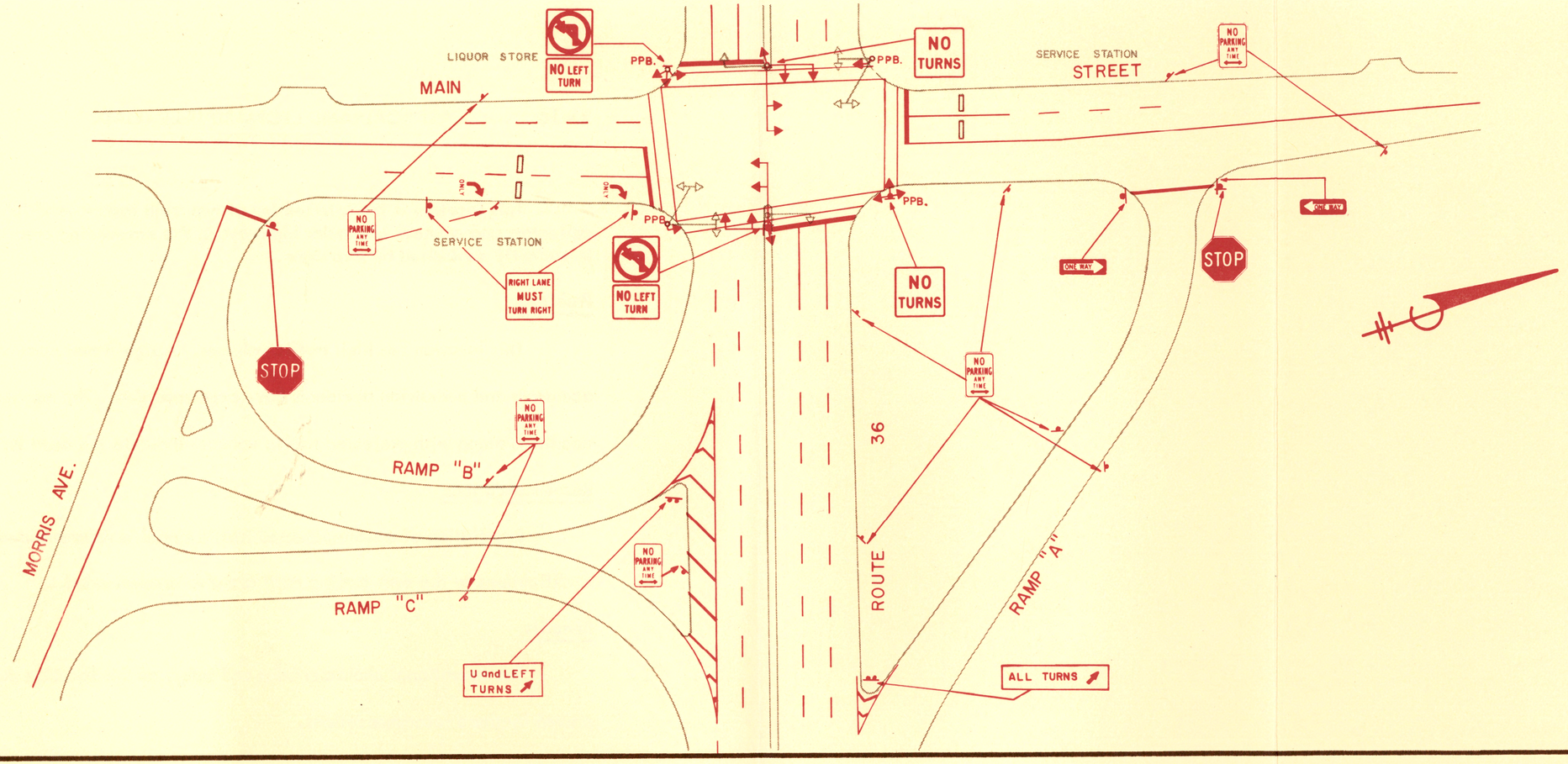
Modification of the south approach lane arrangements to provide for a right turn lane is recommended. Installation of stop signs at the jughandle connection north of the intersection is also recommended. Modification of the signal layout is recommended to improve its visibility while modification to the signal timing is also recommended to include all red clearance intervals.

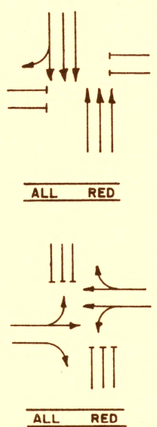
Benefits

Improved signal visibility combined with shorter vehicle clearance distances should increase safety at this location.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES





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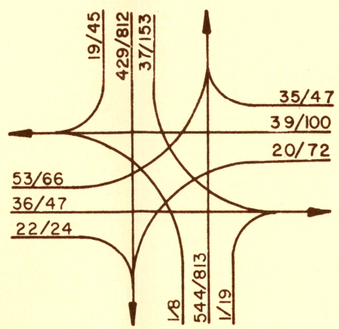
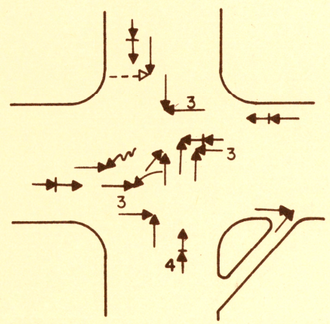


PEAK HOUR VOLUME
7:00–8:00 A.M./ 4:15–5:15 P.M.



ACCIDENT SUMMARY 3 YR. PERIOD

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 2-15

2 - 16 EAST ROAD AND LEONARDVILLE ROAD MIDDLETOWN

This location is the intersection of two main roadways which function as collectors and connect two major highways in the surrounding area. This location is presently controlled by stop signs.

Problems

This location has high traffic volumes. A significant number of right angle accidents and pedestrian accidents have been recorded. The number of these type accidents along with projected traffic volumes indicate the need for a traffic signal.

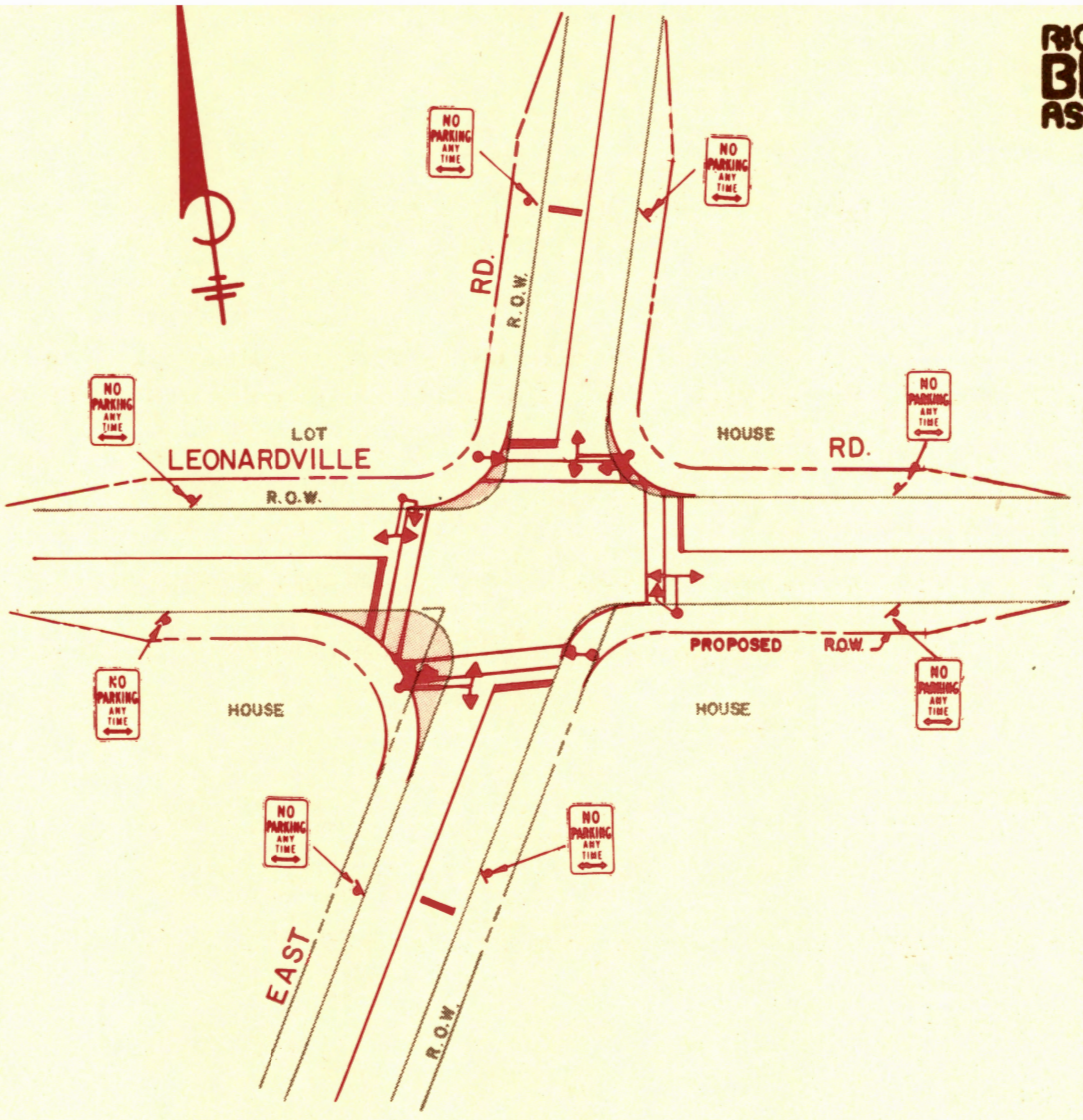
Recommendations

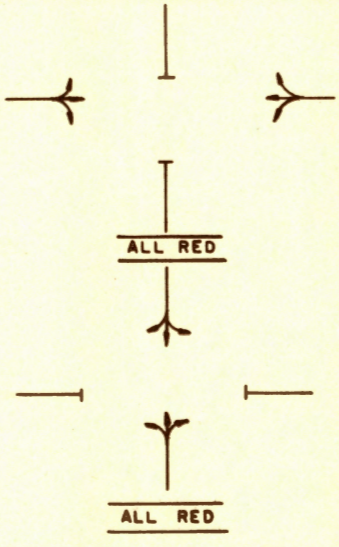
Installation of a semi-actuated traffic signal is recommended. Minor modifications to the curb turning radii are also recommended.

Benefits

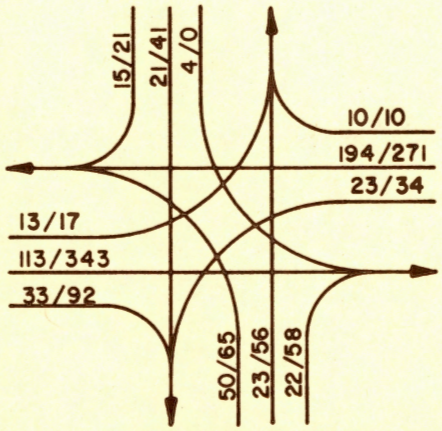
The operational characteristics and safety of this location should be improved by these recommendations.

RICHARD P. BROWNE ASSOCIATES

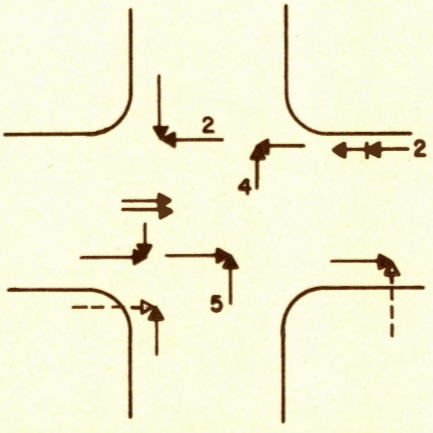




PROPOSED SIGNAL SEQUENCE



PEAK HOUR VOLUMES
8:30-9:30AM / 4:15-5:15 PM



ACCIDENT SUMMARY - 3 YR. PERIOD
1 NOT SHOWN

0 60 120
Scale : 1"= 60'

PROPOSED IMPROVEMENT 2-16

2 - 17 FIRST AVENUE AND CENTER AVENUE ATLANTIC HIGHLANDS

First Avenue and Center Avenue are local roadways which also function as collectors for the surrounding area. The location is presently controlled by a stop sign.

Problems

This location has narrow roadways and reduced sight distance due to adjacent land use. Vehicles parked too close to the intersection also contribute to reduced sight distance and accident experience.

Recommendations

Installation of over-sized stop signs and a stop ahead sign. Adjustment of the parking restriction is recommended to prevent vehicles from parking too close to the intersection.

Benefits

The above recommendations should improve the operational characteristics and safety of this location.

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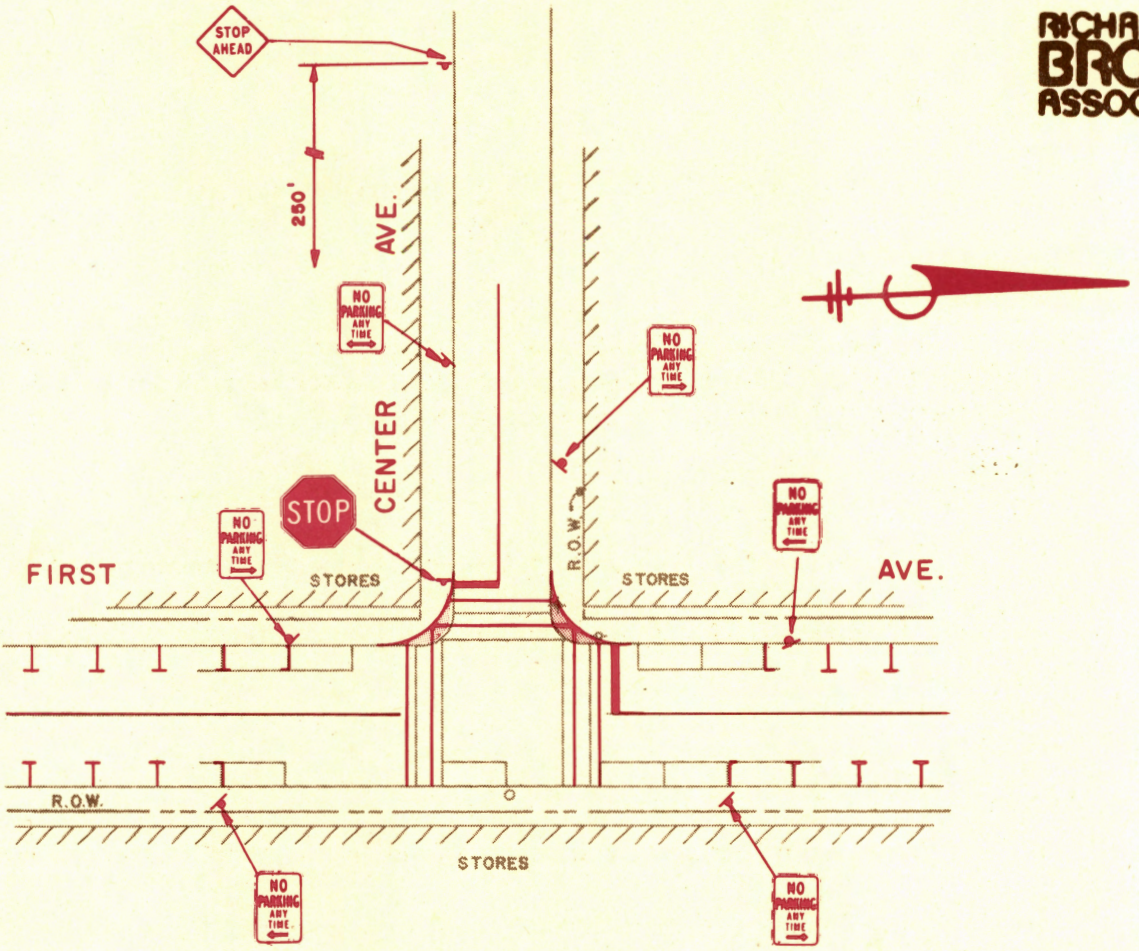

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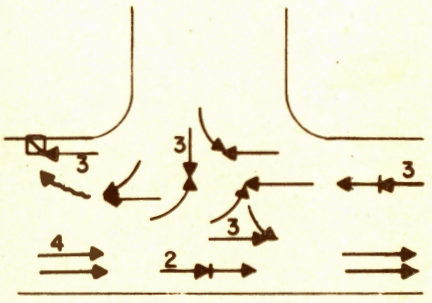

ACCIDENT SUMMARY - 3 YR. PERIOD

0 60 120

Scale : 1" = 60'

PROPOSED IMPROVEMENT 2-17

2 - 18 NEW JERSEY ROUTE 36 AND LINDEN AVENUE HIGHLANDS

Linden Avenue is a main road for the immediate area. Ramp E provides for left turn and "U" turn movements from New Jersey Route 36. The intersection is presently controlled by a semi-actuated traffic signal.

Problems

This intersection has considerable stop bar distances and high traffic volumes on New Jersey Route 36. There is no physical interconnection with adjacent traffic signals.

Recommendations

Minor modification to the center island and jughandle is recommended to improve the alignment of the approach lanes with receiving lanes. Interconnection of this signal with adjacent traffic signals is recommended along with modifications of the signal layout to improve its visibility.

Benefits

Modification to the jughandle and center median will improve the operational characteristics and capacity of this location. Modifications to the signal layout will improve the safety.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

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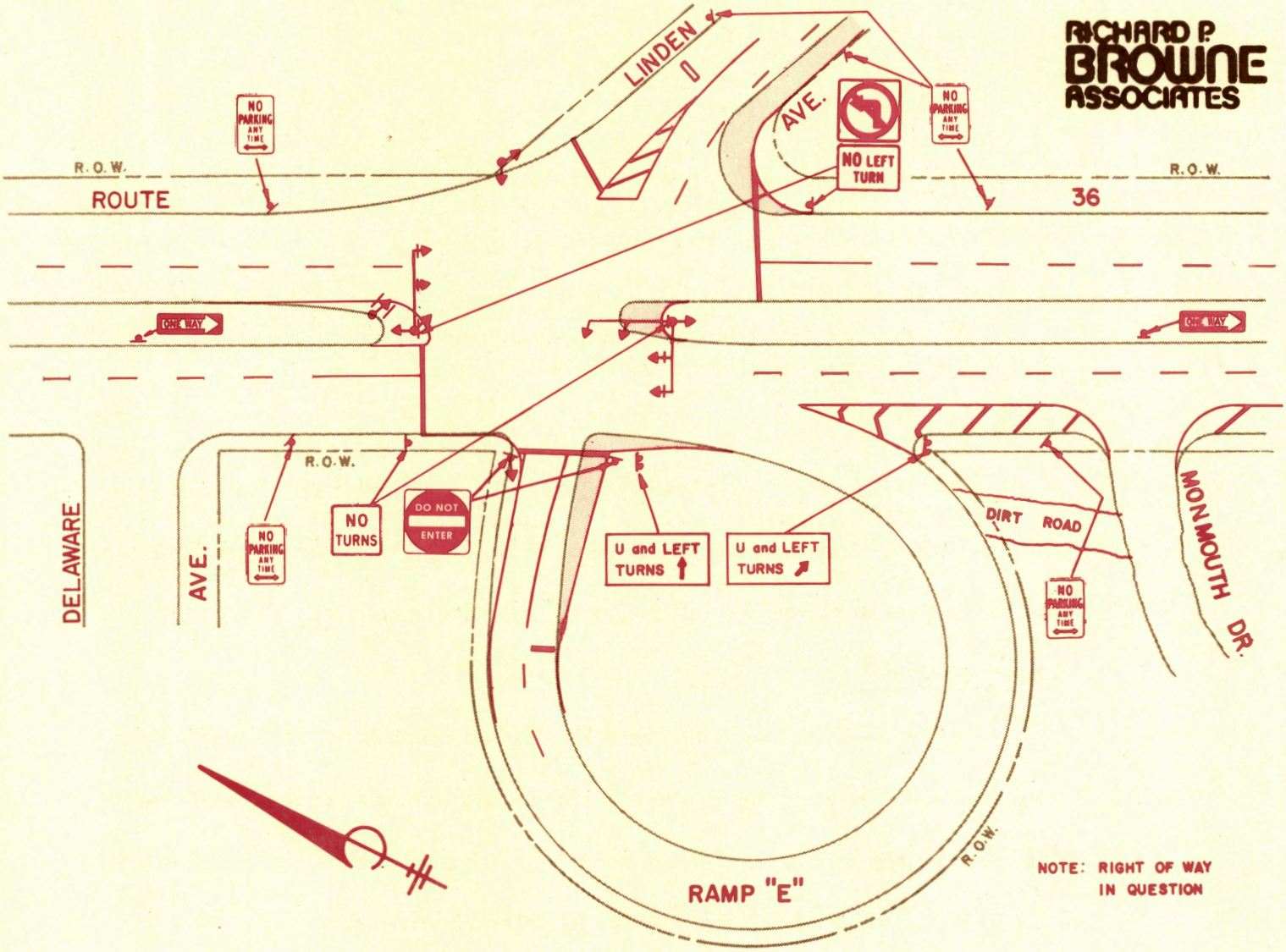
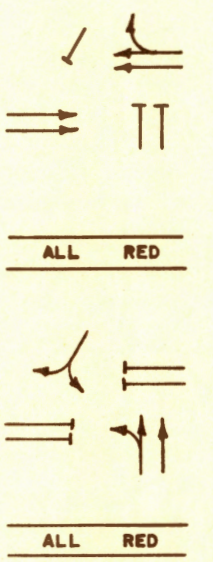
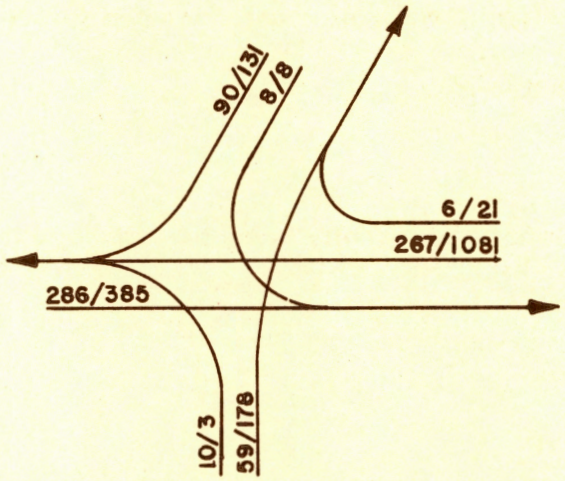
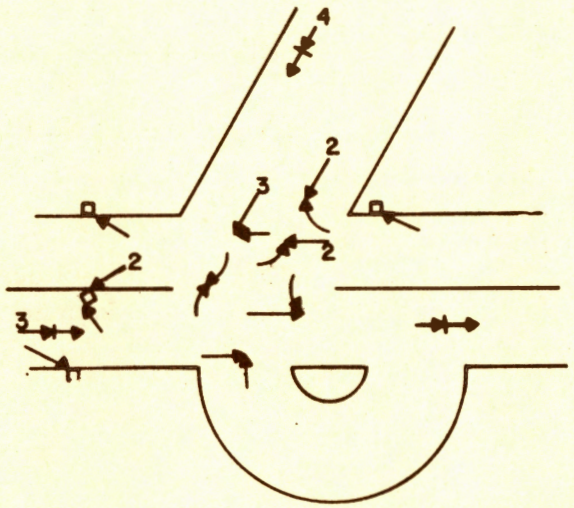




PROPOSED SIGNAL SEQUENCE



PEAK HOUR VOLUME
7:00-8:00 A.M./4:00-5:00 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD
3 NOT SHOWN

0 60 120
Scale : 1" = 60'

PROPOSED IMPROVEMENT 2 - 18

2 - 19 MIDDLETOWN-LINCROFT ROAD WITH NEWMAN SPRINGS ROAD AND PHALANX ROAD MIDDLETOWN TOWNSHIP

This location is the intersection of three major roads in this region. A semi-actuated traffic signal presently controls traffic.

Problems

This location is a multi-legged intersection with high traffic volumes on all approaches. Insufficient roadway width exists on all approaches. A significant number of same direction and left turn accidents have occurred.

Recommendations

Major widening of the Newman Springs Road approaches is recommended. Phalanx Road is to be closed at the intersection and relocated so that it intersects Newman Springs Road west of the intersection. Channelization and the installation of a traffic signal are also recommended for this new intersection.

Benefits

The capacity of the intersection will be increased by the roadway widening while improved channelization, signalization and signing should increase its safety and operational characteristics.

NOTE: Final design plans are currently being prepared by the Monmouth County Engineer.

2 - 20 HARMONY ROAD AND CHERRY TREE FARM ROAD MIDDLETOWN TOWNSHIP

This location has the highest accident rate in Region II.

Problems

A total of 29 accidents have occurred at this location during the three year study period. Of these 25 were of the right angle type.

Recommendations

It is recommended that a fully actuated traffic signal be installed at this location (underground conduits are already in place).

Benefits

The safety and operational characteristics of this location should be improved by these recommendations.

NOTE: Final design plans are currently being prepared by the Monmouth County Engineer.

2 - 21 CHERRY TREE FARM ROAD AND WILSON AVENUE MIDDLETOWN TOWNSHIP

Problems

A total of twenty accidents occurred at this location during the three year study period. Of this total 16 were of the right angle type.

Recommendations

It is recommended that a fully actuated traffic signal be installed.

Benefits

The safety and operational characteristics of this location should be improved by these recommendations.

NOTE: Final design plans are being prepared by the Monmouth County Engineer.

2 - 22 RED HILL ROAD AND EVERETT ROAD MIDDLETOWN TOWNSHIP

Problems

Very high turning movements occurred at this intersection particularly on Everett Road.

Recommendations

It is recommended that fully actuated traffic signal be installed at this location. It is also recommended that left turn lanes be painted on Everett Road.

Benefits

The safety and operational characteristics of this location should be improved by these recommendations.

NOTE: Final design plans are being prepared by the Monmouth County Engineer.

REGION 3

REGION III - MONMOUTH COUNTY TOPICS

Regional Setting

Region III is made up of the Boroughs of Eatontown, Oceanport, Monmouth Beach, Sea Bright, West Long Branch and the City of Long Branch. The region is bounded on the north by the Shrewsbury River, on the west by Region IV, on the east by the Atlantic Ocean, and on the south by RegionV.

The region is served by New Jersey Routes 35, 36 and 71 and is also influenced by the close proximity of the Garden State Parkway.

Federal-Aid System

PLATE 3 - 1 shows the Region III study system, which includes study roadways which do not have Federal-Aid designations, and the proposed Federal-Aid system. Selection procedures were in accordance with the Federal Highway Administration PPM 21-18, May, 1972. The system is intended to provide the basis for present and future local traffic demands. TABLE 3 - 1 shows the mileage of the recommended system by type.

The recreational nature of the coastline area generates considerable summer traffic volumes. Ocean Avenue serves north-south movements along the coastline, but its capacity is limited by its two lane size, somewhat discontinous path, and side friction generated by the recreational development. New Jersey Route 35 provides the major capacity supply for the north-south movements in the center of the region, with New Jersey Routes 36 and 71, supplying most of the east-west service.

Bus and Rail Transportation

Region III is served by several bus companies and the New York and Long Branch Railroad, as shown on PLATE 3 - 2.

Most of the bus service connects the region with employment centers in the New York Metropolitan area with little local service available.

The rail passenger service is primarily a commuter service to New York which carries standing room only loads, on equipment badly in need of improvement. Rail passenger stations are located in Long Branch and Elberon.

Accident Experience

The police departments in each of the municipalities of the region made their accident records available for analysis. High accident locations along with computed accident rates are shown on PLATE 3 - 3 and summarized on TABLE 3 - 2.

EXISTING AND PROPOSED FEDERAL-AID SYSTEMS MILEAGE TABLE 3 - 1

EXISTING	MILES
Federal Aid Urban	27.0
Federal Aid Secondary	9.85
PROPOSED ADDITIONS	
Federal Aid Primary Type II	4.81

T-4001 (16)

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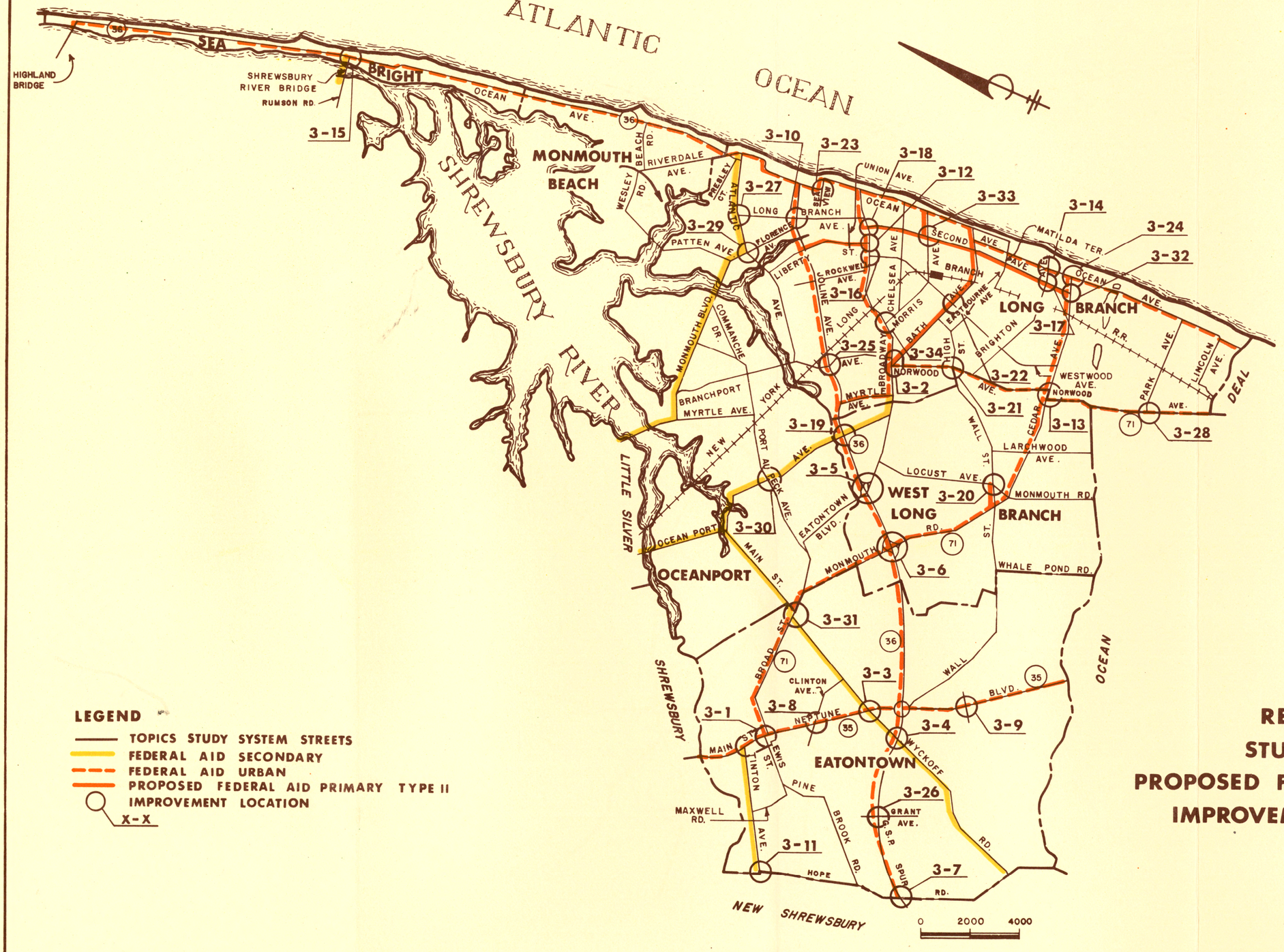

LEGEND

- TOPICS STUDY SYSTEM STREETS
- FEDERAL AID SECONDARY
- FEDERAL AID URBAN
- PROPOSED FEDERAL AID PRIMARY TYPE II
- IMPROVEMENT LOCATION X-X

REGION III
STUDY SYSTEM
PROPOSED FEDERAL AID SYSTEM
IMPROVEMENT LOCATIONS

PLATE 3-1

T-4001 (16)

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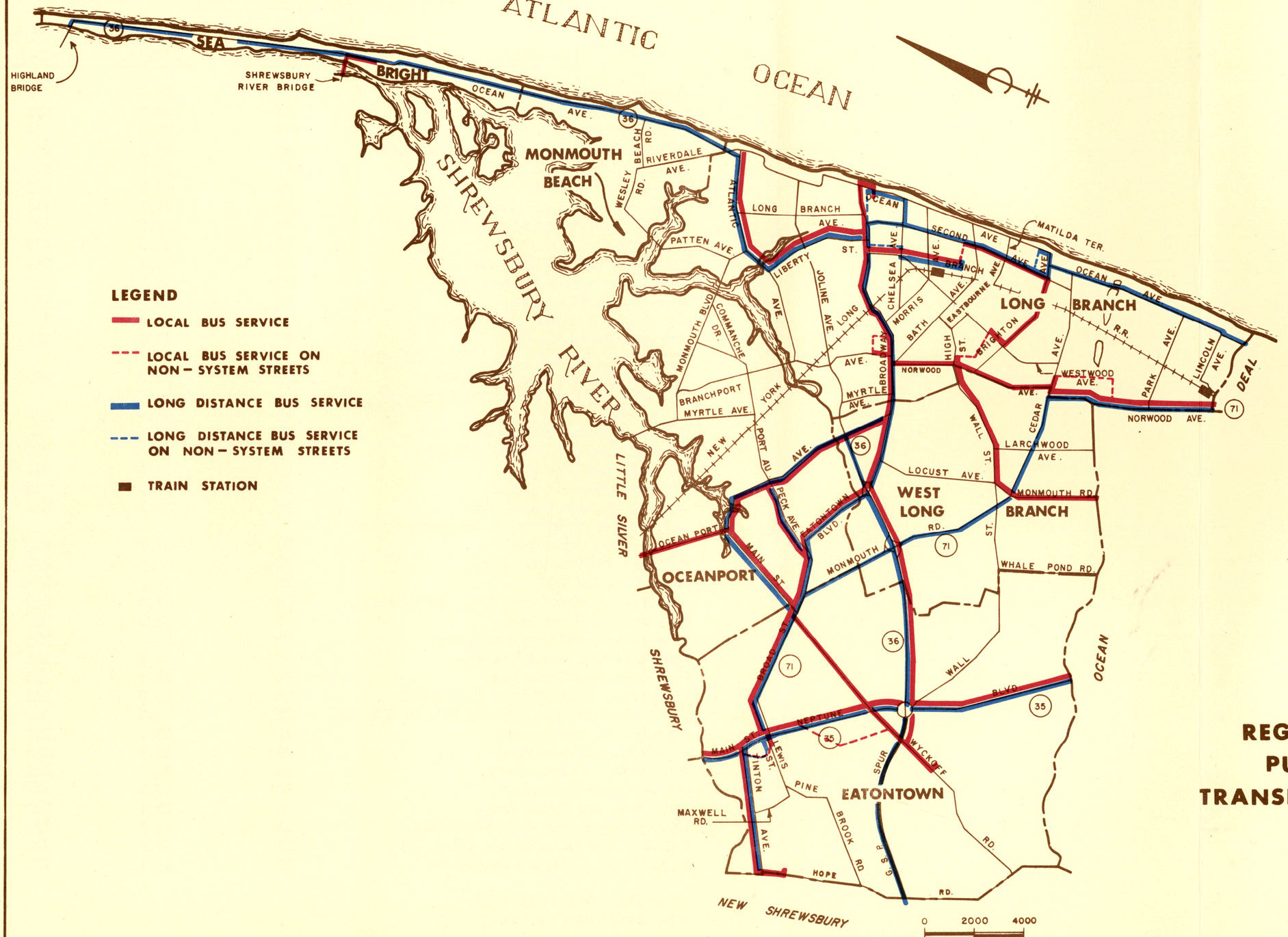

REGION III
PUBLIC TRANSPORTATION

PLATE 3-2

ACCIDENT INFORMATION SUMMARY

TABLE 3 - 2

LOCATION	NUMBER OF ACCIDENTS*	ACCIDENT RATE**	PRIORITY INDEX
Tinton Ave. and N.J. Route 35	125	35.2	797
Bath Ave., Broadway and Norwood Ave.	72	48.1	635
N.J. Route 35 and Wyckoff Rd.	105	27.2	631
Garden State Parkway Spur and Wyckoff Rd.	84	23.0	564
Broad St. (N.J. 71) and N.J. 35	71	20.2	501
Broadway and N.J. 36	74	23.2	495
Monmouth Rd. (N.J. 71) and N.J. 36	70	19.1	474
Hope Rd. and Garden State Parkway Spur	72	29.2	465
Clinton Ave. and N.J. 35	63	20.5	425
Branchport Ave. and Broadway	31	29.6	388
Joline Ave. and Long Branch Ave.	56	56.7	385
Hope Rd. and Tinton Ave.	49	30.9	370
Ocean Rd. (N.J. 36) and Rumson Rd.	45	20.2	359
Broadway and Liberty St.	51	49.2	355
Cedar Ave., Norwood Ave., (N.J. 71), Cedar Ave and (N.J. 71) Norwood Ave.	50	22.3	355
Monmouth Shopping Center Jug Handle and N.J. 35	46	15.4	340
Brighton Ave. and Ocean Ave.	45	32.3	330
Norwood Ave. and High-Wall Streets	43	34.0	328
Oceanport and N.J. 36	36	12.3	311
Broadway and Third Avenue	39	31.3	310
Brighton Ave. and Second Ave.	35	32.3	306
Broadway, N. Broadway, S. Broadway, Second Ave., and Union Ave.	39	31.9	306
Bath Ave. and Westwood Ave.	32	21.1	299
Locust Ave. and Wall St.	34	25.2	285
Ocean Ave., New Ocean Ave., Seaview Ave.	32	22.8	265
Broadway and Morris Ave.	25	18.8	257
Atlantic Ave. and Long Branch Ave.	28	26.0	255
Branchport Ave. and Joline Ave.	27	13.8	252
Cedar Ave. and Ocean Ave.	30	18.1	250
Ocean Ave. (N.J. 36) and Highlands Dr.	29	16.0	250
Garden State Parkway Spur and N.J. 36 (Circle)	27	4.3	250
Atlantic Ave. and Florence	27	23.6	240
Liberty St. and Union Ave.	26	25.9	235
Morris Ave. and Second Ave.	26	25.7	225
Bath Ave. and Ocean Ave.	24	13.3	222
Cedar Ave. and Second Ave.	23	20.4	220
Oceanport Ave. and Port Au Peck Ave.	23	11.8	220
Park Ave. and Norwood Ave. (N.J. 71)	21	14.9	210
Broad St. (N.J. 71) and Wyckoff Rd.	18	11.1	195

*Per Three Years (1968-1970)
**Per Ten Million Vehicles

T-4001 (16)

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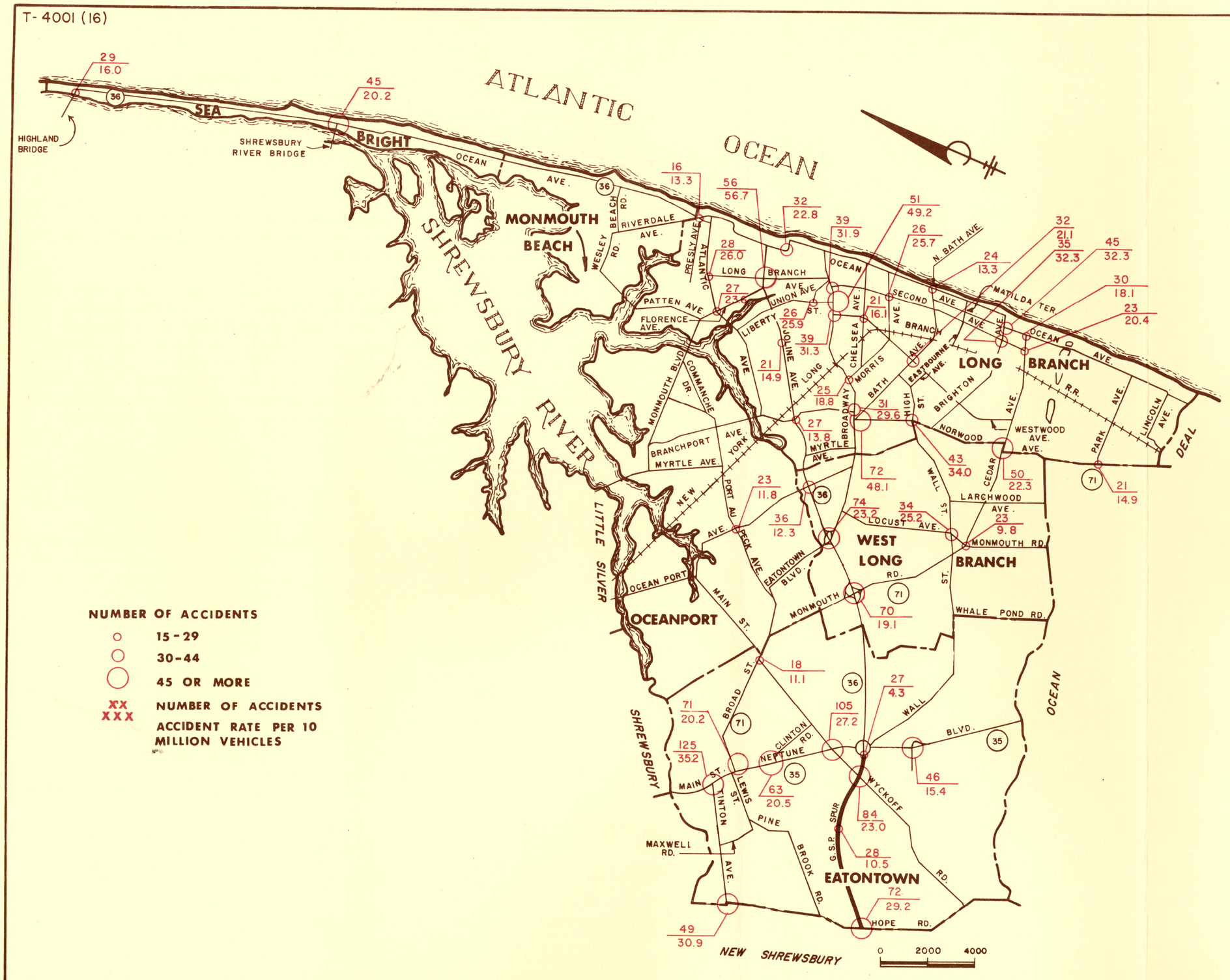

NUMBER OF ACCIDENTS

- 15-29
- 30-44
- 45 OR MORE
- XX NUMBER OF ACCIDENTS
- XXX ACCIDENT RATE PER 10 MILLION VEHICLES

REGION III ACCIDENT LOCATIONS 1968 - 1970

PLATE 3-3

The highest accident location is at Tinton Avenue and New Jersey Route 35 (Main Street). On the east side of this intersection is a major entrance to Fort Monmouth. Operation here is complicated by through traffic movements having to turn and thus conflicting with traffic generated by the Fort. This intersection is part of a major system improvement presented later in this report.

Speed and Delay

Speed and delay data was obtained in Region III through the use of a data compiler installed in a moving car. Data for on and off peak periods was analyzed and is presented on PLATE 3 - 4.

The short section of roadway between Tinton Avenue and Broad Street on New Jersey Route 35 (Main Street) shows a speed of five to nineteen miles per hour. In this short link, traffic eastbound on Tinton Avenue, with destinations east along Broad Street (New Jersey Route 71), mix with high volumes on New Jersey Route 35. This traffic, in order to get to Broad Street, must use an on street "jughandle" arrangement through Lewis Street. These roadways are in the Eatontown central business district which contributes its parking and side friction to the problem. A systems improvement to reduce this problem is recommended later in this section of the report.

Traffic Volumes

Turning movement counts and automatic traffic recorder counts were made at various locations in the region. These were supplemented by traffic volume information supplied by the New Jersey Department of Transportation and the Monmouth County Engineer's Office. These were analyzed and the traffic volume map on PLATE 3 - 5 was developed. The information was further analyzed and projected into the future, producing the design year volumes shown on PLATE 3 - 6.

Turning movement counts were also used to analyze capacity at various locations. This information is presented on PLATE 3 - 7.

Traffic Signals

Analysis of all data and projected traffic growth led to the traffic signal system recommendations shown on PLATE 3 - 8. Recommendations include the installation and modification of a number of signals. Interconnection of signals along part of New Jersey Route 35 in Eatontown, Broadway in West Long Branch and Long Branch, and a small section of New Jersey Route 71 has been recommended.

All existing and proposed signals on the recommended Federal-Aid system are listed in TABLE 3 - 3 along with the modification proposed and the warrant. These warrants are contained in the "Manual on Uniform Traffic Control Devices" as listed below:

T-4001 (16)

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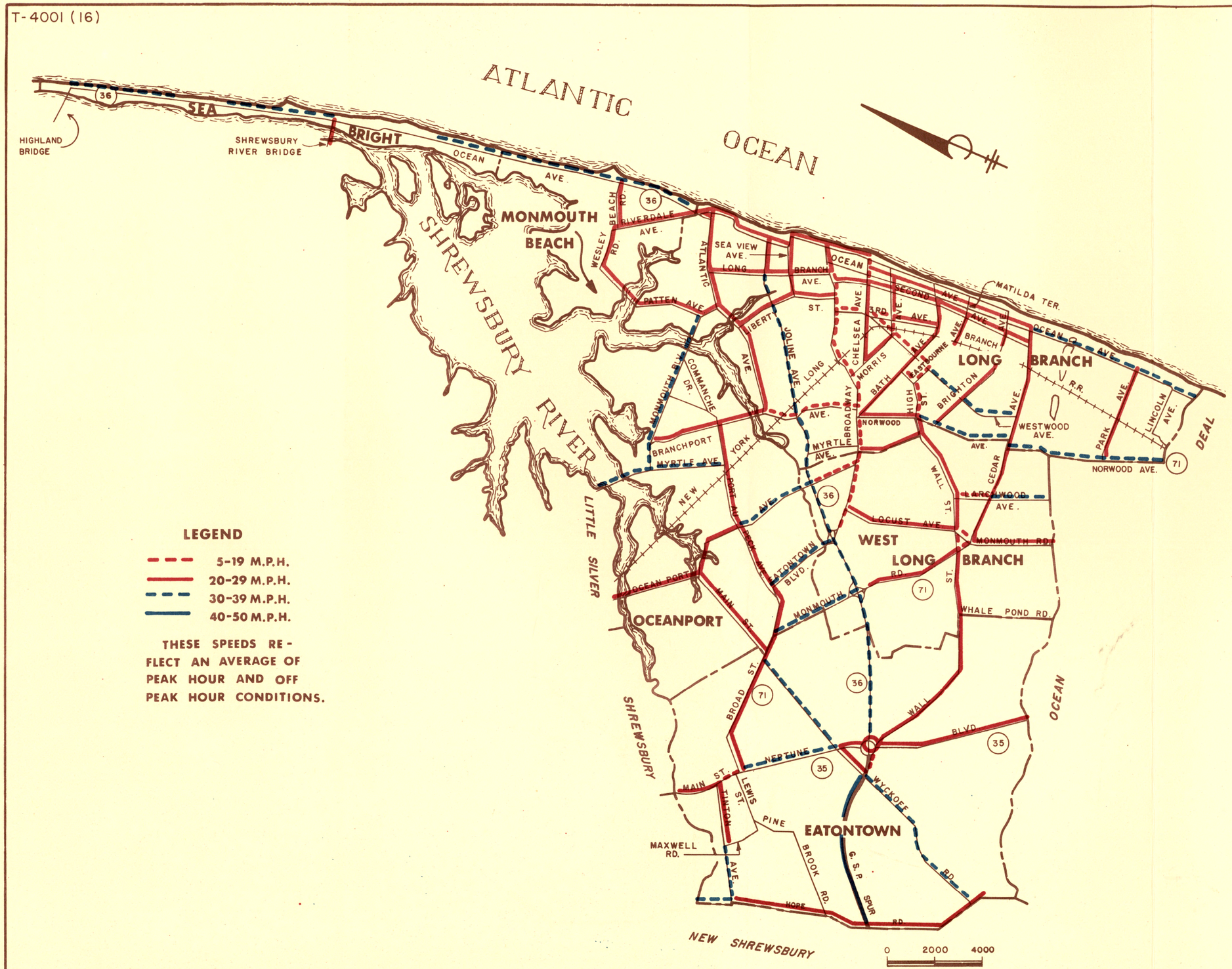

LEGEND

- 5-19 M.P.H.
- 20-29 M.P.H.
- 30-39 M.P.H.
- 40-50 M.P.H.

THESE SPEEDS REFLECT AN AVERAGE OF PEAK HOUR AND OFF PEAK HOUR CONDITIONS.

REGION III AVERAGE TRAVEL SPEEDS

PLATE 3-4

T-4001 (16)

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LEGEND

- 3000 - 5000
- 5000 - 8000
- 8000 - 12000
- 12000 - 15000
- 15000 OR MORE VEHICLES

REGION III
1971
TRAFFIC VOLUMES

AVERAGE DAILY TRAFFIC

PLATE 3-5

T-4001(16)

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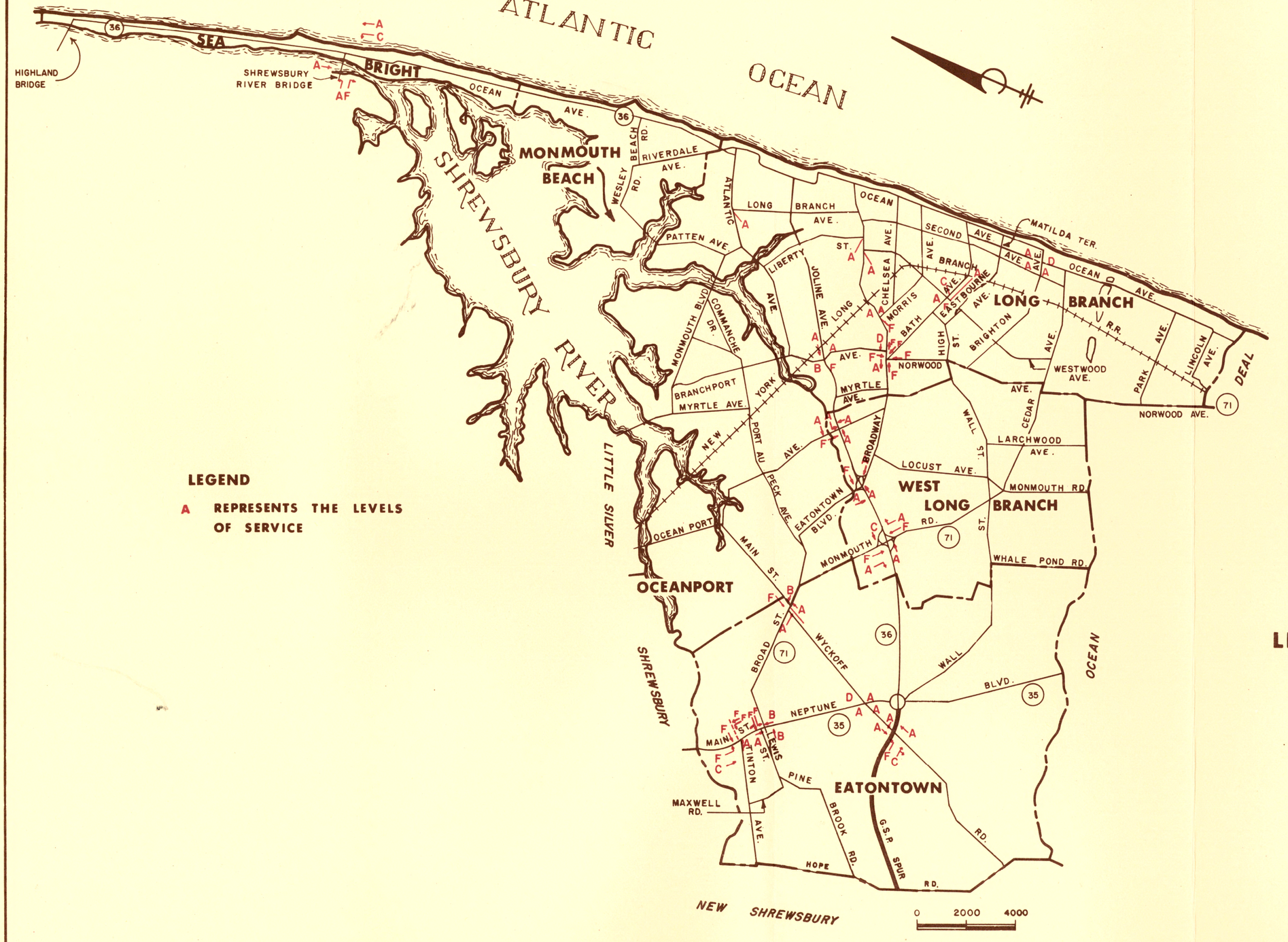

LEGEND

A REPRESENTS THE LEVELS OF SERVICE

REGION III
LEVEL OF SERVICE

PLATE 3-7

EXISTING AND PROPOSED TRAFFIC SIGNALS

TABLE 3 - 3

LOCATION	MUNICIPALITY	OPERATION	RECOMMEN-DATION	N.J.D.O.T. APPROVED	WARRANT*
Hope Road and Tinton Avenue	Eatontown	Semi-Actuated	Install	Yes	1
Hope Road and Garden State Parkway Spur	Eatontown	Fully Actuated	Install	Yes	1
N.J. Route 35 and Tinton Ave.	Eatontown	Semi-Actuated	Retain	Yes	1
N.J. Route 35 and Throckmorton Street	Eatontown	Semi-Actuated	Retain	Yes	2
N.J. Route 35 ond Broad Street	Eatontown	Semi-Actuated	Retain	Yes	1
N.J. Route 35 and Clinton Ave.	Eatontown	Semi-Actuated	Retain	Yes	2
N.J. Route 35 and Wyckoff Rd.	Eatontown	Semi-Actuated	Retain	Yes	1
Garden State Parkway and Wyckoff Road	Eatontown	Semi-Actuated	Retain	Yes	
Eatontown Circle (E.B. Approach)	Eatontown	Semi-Actuated	Retain	Yes	1
Eatontown Circle (N.B. Approach)	Eatontown	Flashing	Retain	Yes	
Eatontown Circle (W.B. Approach)	Eatontown	Semi-Actuated	Retain	Yes	1
Monmouth Shopping Center and N.J. Route 35	Eatontown	Semi-Actuated	Retain	Yes	2
Monmouth Road and Wall Street	West Long Branch	Semi-Actuated	Retain	Yes	1
Monmouth Road and Locust Ave.	West Long Branch	Semi-Actuated	Retain	Yes	1
Locust Avenue and Wall Street	West Long Branch	Flashing	Retain	No	-
Monmouth Rd. (N.J. Rt. 71) and N.J. Route 36	West Long Branch	Semi-Actuated	Retain	Yes	1
Broadway and N.J. Route 36	West Long Branch	Semi-Actuated	Retain	Yes	1
Broadway and Locust Avenue	West Long Branch	Flashing	Retain	No	
Oceanport Avenue and N.J. Rt. 36	West Long Branch	Semi-Actuated	Retain	Yes	1
Oceanport Ave. and Broadway	West Long Branch	Semi-Actuated	Retain	No	1
Cedar Ave. and Larchwood Ave.	West Long Branch	Semi-Actuated	Retain	No	2
Broad St. and Wyckoff Road	Eatontown	Semi-Actuated	Install	No	2
Broad St. and Main Street	Eatontown	Semi-Actuated	Retain	Yes	1
Oceanport Ave. and Port-Au-Peck Avenue	Oceanport	Semi-Actuated	Retain	Yes	1,7
Ocean Avenue and Rumson Rd.	Sea Bright	Semi-Actuated	Retain	Yes	1
Atlantic Ave. and Florence Ave.	Long Branch	Semi-Actuated	Install	No	6

EXISTING AND PROPOSED TRAFFIC SIGNALS (Continued)

TABLE 3 - 3

LOCATION	MUNICIPALITY	OPERATION	RECOMMEN-DATION	N.J.D.O.T. APPROVED	WARRANT*
Atlantic Ave. and Long Branch Avenue	Long Branch	Fixed-Time/ Flasher	Modify	No	
Joline Avenue and Liberty St.	Long Branch	Semi-Actuated	Retain	Yes	1
Joline Avenue and Long Branch Avenue	Long Branch	Flasher/ Semi-Actuated	Modify	Yes	1
Joline Ave. and Branchport Ave.	Long Branch	Semi-Actuated	Retain	No	1
Broadway, Bath Ave. and Norwood Avenue	Long Branch	Semi-Actuated	Retain	No	1
Broadway and Branchport Avenue	Long Branch	Semi-Actuated	Retain	No	1
High St., Norwood Ave. and Wall Street	Long Branch	Fully Actuated	Install	No	1,7
Cedar Ave. and Norwood Ave.	Long Branch	Semi-Actuated	Modify	No	1**
Park Avenue and Norwood Ave.	Long Branch	Semi-Actuated	Install	Yes	2
Ocean Ave. and Lincoln Ave.	Long Branch	Fixed Time	Remove	No	
Broadway and Morris Avenue	Long Branch	Semi-Actuated	Retain	No	7
Cedar Ave. and Ocean Ave.	Long Branch	Semi-Actuated	Install	No	1
Brighton Ave. and Ocean Ave.	Long Branch	Semi-Actuated	Install	No	2
Brighton Ave. and Second Ave.	Long Branch	Semi-Actuated	Convert to Flasher	No	-
Broadway and Third Ave.	Long Branch	Semi-Actuated	Retain	No	1
Broadway and Liberty St.	Long Branch	Fixed-Time/ Semi-Actuated	Modify	No	7
Broadway and Fifth Avenue	Long Branch	Semi-Actuated	Retain	Yes	1
Broadway and Second Ave.	Long Branch	Semi-Actuated	Install	No	7
Chelsea Ave. and Ocean Ave.	Long Branch	Semi-Actuated	Retain	No	2
Ocean Ave. and Laird Ave.	Long Branch	Semi-Actuated	Retain	No	3
N.J. Route 36 and Fort Haycock Entrance	Long Branch	Semi-Actuated	Retain	Yes	5
Bath Ave. and Westwood Ave.	Long Branch	Semi-Actuated	Retain	No	1
Second Ave. and North/South Bath Avenue	Long Branch	Semi-Actuated	Retain	No	7
Second Ave. and Chelsea Ave.	Long Branch	Semi-Actuated	Retain	No	8

* Numbers shown refer to warrant numbers 1 through 8 as contained in the Manual on Uniform Traffic Control Devices

** Additional Signal equipment installed at offset intersection

T-4001 (16)

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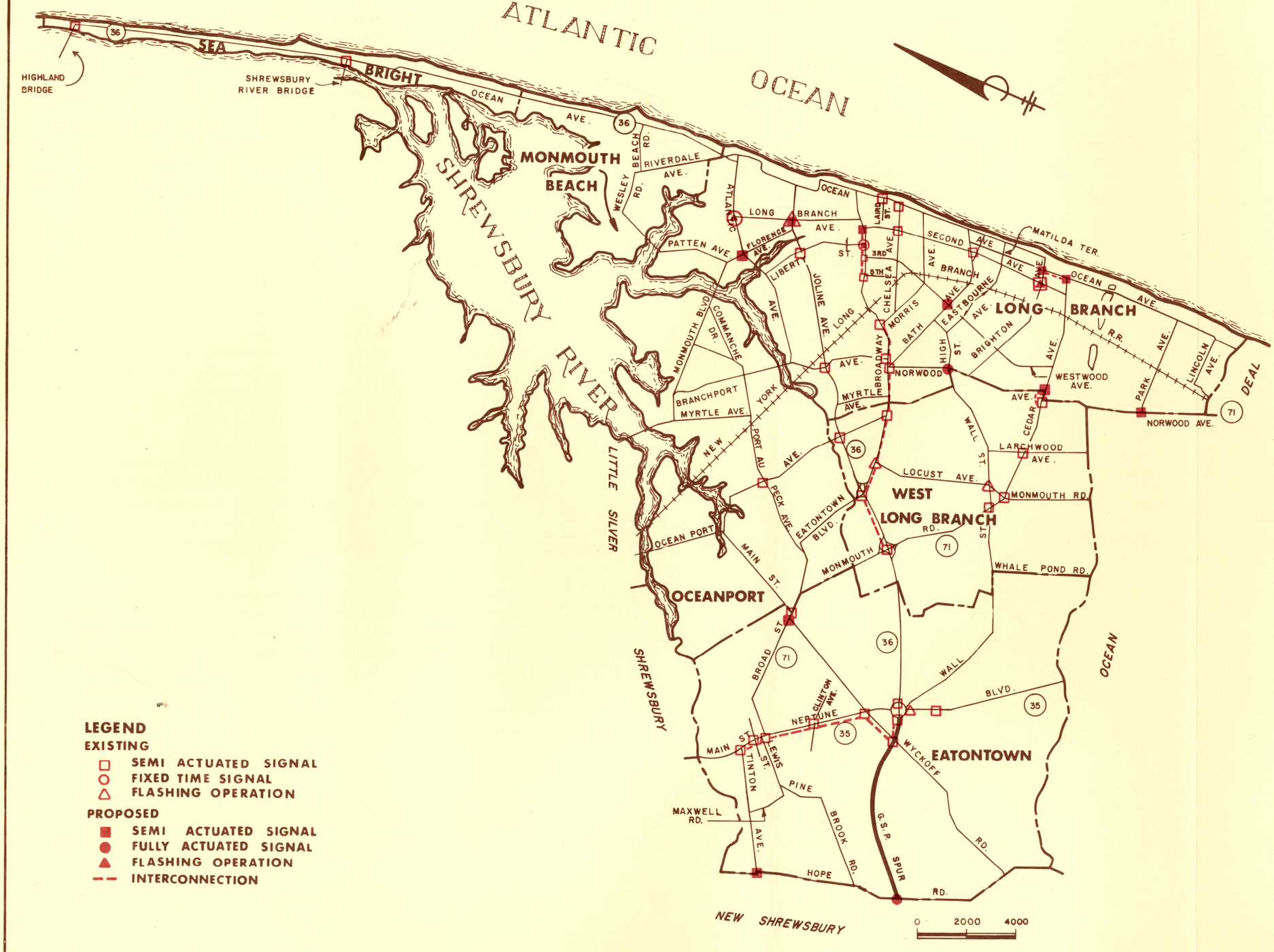


LEGEND

EXISTING

- □ SEMI ACTUATED SIGNAL
- ○ FIXED TIME SIGNAL
- △ FLASHING OPERATION

PROPOSED

- ■ SEMI ACTUATED SIGNAL
- ● FULLY ACTUATED SIGNAL
- ▲ FLASHING OPERATION
- — — INTERCONNECTION

REGION III TRAFFIC SIGNAL LOCATIONS

PLATE 3-8

Warrant 1:	Minimum Vehicular Volume
Warrant 2:	Interruption of Continuous Traffic
Warrant 3:	Minimum Pedestrian Volume
Warrant 4:	School Crossing
Warrant 5:	Progressive Movement
Warrant 6:	Accident Experience
Warrant 7:	Systems Warrant
Warrant 8:	Combination of Warrants

Curb and Off Street Parking Facilities

Considerable use of the roadway system is made by parked vehicles in the higher density central business district areas. There are off-street parking lots in these central business districts having a variety of limitations in terms of time. The regular police forces enforce the curb and off street parking regulations.

Narrow roadway widths have required the removal of parking in some locations and the establishment of one-way street patterns in other areas. No extensive parking removal in any concentrated area was found necessary. Parking and circulation is further complicated in many areas due to truck loading operations, which are carried out using part of the roadway as a loading area.

Signal Interconnections

The portion of New Jersey Route 35, north of the Eatontown Circle, has considerable commercial development along it. Traffic movements along this section experience delays due to side friction and the effect of side street traffic movements. In order to create smooth traffic flow through this area, as much as possible, interconnection of the traffic signals is recommended to achieve signal progression with reliable offsets.

Interconnection of the traffic signals along Broadway is also recommended. The first system would consist of interconnection of the signals along Broadway from Second Avenue to Fifth Avenue and at the intersection of Liberty Street and Union Avenue. The second system would consist of interconnection of the signals along Broadway from Morris Avenue to New Jersey Route 36 and at the intersection of New Jersey Routes 36 and 71. Because of their close proximity to one another it is also recommended that the signals at Monmouth Road and Wall Street, Monmouth Road and Locust Avenue, and Locust Avenue and Wall Street be interconnected.

Improvement Projects

Recommended improvement project concept drawings are shown on the following pages along with descriptions of the problems found and recommendations are made. TABLE 3 - 4 lists these projects by year of construction with cost estimates.

3 - 1 N.J. ROUTE 35 AND TINTON AVENUE AND BROAD STREET EATONTOWN

The Earle Naval Ammunition Depot lies between Freehold and the eastern part of the county. This has resulted in there being only two major traffic corridors to serve east-west traffic. One of these is New Jersey Route 35 and the other is County Road 537 (Tinton Avenue). Tinton Avenue ends at the opening of the Fort Monmouth Reservation. Only traffic with destinations in the Fort continue straight through the intersection. All other traffic must turn north or south at this point. Thus, this intersection functionally is a "T" intersection with County Road 537 terminating at this point. Approximately 1,200 feet south of this point, New Jersey Route 71 (Broad Street) starts at what is functionally another "T" intersection and continues east and south serving as a corridor to the populated coastline areas. East-west traffic in this area must find a way between the Tinton Avenue "T" and the Broad Street "T" in order to complete their trip. The small portion of New Jersey Route 35 between these points is used along with the surrounding street system.

The through traffic thus contributes to the congested traffic conditions on this downtown street system. In order to provide for future traffic demands on a roadway network having functional continuous arterials and to provide east-west arterial continuity, it is recommended that New Jersey Route 71 (Broad Street) be relocated starting at a point approximately 2,000 feet east of New Jersey Route 35 and traversing north from this point along the southern boundary of the Fort Monmouth Reservation and connecting at a point opposite Tinton Avenue on New Jersey Route 35. This concept is illustrated on proposed Improvement 3 - 1, which shows the Eatontown Roadway Network improvement recommendations and the Eatontown One-Way Pair.

NEW JERSEY ROUTE 35 ONE-WAY PAIR EATONTOWN

New Jersey Route 35 presently runs south and north through Eatontown. It is a four lane facility with a roadway width of 44 feet through the center of town. Small buildings located at the intersection are not set back far enough from the roadway to consider the possibility of future widening for additional capacity. Vacant land in the vicinity of New Jersey Route 35, approximately 200 feet to the east, however, does indicate the possibility of developing a parallel roadway, thus allowing the new roadway and existing roadway to function as a one-way pair. This arrangement to provide capacity supply, capable of handling anticipated traffic demands without considerable expensive property acquisitions and building removal, is illustrated on the proposed Improvement 3 - 1 entitled "Eatontown Roadway Network Improvement". However, this one-way pair requires that seven buildings located east of New Jersey Route 35 be demolished. This improvement has been discussed with appropriate officials of Eatontown and they are in agreement.

Region 3 Intersection Improvements
Continued

Improvement Number	Location	Municipality	Page No.
3-31	Broad Street at Wyckoff Road and Main Street	Eatontown	3 - 81
3-32	Second Avenue and Cedar Avenue	Long Branch	3 - 83
3-33	Second Avenue and Morris Avenue	Long Branch	3 - 85
3-34	Broadway and Morris Avenue	Long Branch	3 - 87

LEGEND FOR IMPROVEMENTS


EXISTING SIGNAL HEAD


PROPOSED SIGNAL HEAD


EXISTING STANCHION,
PROPOSED SIGNAL HEAD

THUS: ONLY OPEN SIGNAL HEADS OR STANCHIONS INDICATE AN EXISTING CONDITION. SOLID SIGNAL HEADS OR STANCHIONS INDICATE A PROPOSED CONDITION.


ROADWAY WIDENING

RIGHT OF WAY


BUILDING LINE

SIGN POST

GUARD RAIL


SIGNAL DETECTOR


PEDESTRIAN HEAD

NOTE : DARK LINES INDICATE PROPOSED CONDITIONS. SCREENED OR LIGHT LINES INDICATE EXISTING CONDITIONS.

REGION 3 INTERSECTION IMPROVEMENTS

Improvement Number	Location	Municipality	Page No.
3-1	N.J. Route 35 and Tinton Avenue and Broad Street	Eatontown	3 - 21
3-2	Broadway at Norwood Avenue and Branchport Avenue	Long Branch	3 - 23
3-3	N.J. Route 35 and Wyckoff Road	Eatontown	3 - 25
3-4	Garden State Parkway Spur and Wyckoff Road	Eatontown	3 - 27
3-5	N.J. Route 36 and Broadway	West Long Branch	3 - 29
3-6	N.J. Route 36 and N.J. Route 71	West Long Branch	3 - 31
3-7	Garden State Parkway Spur and Hope Road	Eatontown	3 - 33
3-8	N.J. Route 35 and Clinton Avenue	Eatontown	3 - 35
3-9	N.J. Route 35 at Eatontown Shopping Center Jughandle	Eatontown	3 - 37
3-10	Joline Avenue (N.J. Route 36) and Long Branch Avenue	Long Branch	3 - 39
3-11	Tinton Avenue and Hope Road	Eatontown/ Shrewsbury	3 - 41
3-12	Broadway and Liberty Street	Long Branch	3 - 43
3-13	Cedar Avenue and Norwood Avenue	Long Branch	3 - 45
3-14	Brighton Avenue and Ocean Avenue	Long Branch	3 - 47
3-15	Ocean Avenue (Route 36) and Rumson Road	Sea Bright	3 - 49
3-16	Broadway and Third Avenue	Long Branch	3 - 51
3-17	Brighton Avenue and Second Avenue	Long Branch	3 - 53
3-18	Broadway at Second Avenue and Long Branch Avenue	Long Branch	3 - 55
3-19	N.J. Route 36, Oceanport Avenue and Victor Avenue	West Long Branch	3 - 57
3-20	Locust Avenue and Wall Street	West Long Branch	3 - 59
3-21	Norwood Avenue, High Street and Wall Street	Long Branch	3 - 61
3-22	Bath Avenue and Westwood Avenue	Long Branch	3 - 63
3-23	New Ocean Avenue and Sea View Ave.	Long Branch	3 - 65
3-24	Cedar Avenue and Ocean Avenue	Long Branch	3 - 67
3-25	Branchport Avenue and Joline Avenue (N.J. Route 36)	Long Branch	3 - 69
3-26	Garden State Parkway Spur and Grant Avenue	Eatontown	3 - 71
3-27	Atlantic Avenue and Long Branch Ave.	Long Branch	3 - 73
3-28	Park Avenue and Norwood Avenue	Long Branch	3 - 75
3-29	Atlantic Avenue and Florence Avenue	Long Branch	3 - 77
3-30	Port-Au-Peck Avenue and Oceanport Avenue	Oceanport	3 - 79

Maintenance

The maintenance of traffic control devices, in good operating condition and appearance is most important if they are to command the respect that is necessary to insure good driving habits. Signal maintenance becomes a difficult problem when a municipality is too small to support a separate maintenance unit. Since most of the traffic signals in the region are on roadways under state jurisdiction, the state maintains them. It is suggested that the remaining signals in operation in the region be maintained by the county or on a contract or agreement basis with an outside contractor. Signs and pavement markings should also be maintained in a similar manner.

At all improvement locations, recommendations include upgrading as necessary of traffic signs and pavement markings in accordance with the requirements as defined in the current "Manual on Uniform Traffic Control Devices".

Evaluation

In order to identify locations where traffic operational improvements are required, use was made of accident experience, average travel speeds on routes, congestion and delay at intersections, and the level of service provided. To measure the success of this program requires an in depth analysis of traffic conditions before and after implementation. This study provides the necessary data to evaluate a location as it now exists before the operational improvements have been implemented. Some additional speed and delay runs can be conducted to increase the reliability of our sample but other than this the necessary information has been inventoried.

After a reasonable period of time has elapsed, similar studies regarding accident experience, speed and delay runs and locations of congestion and delay can be conducted along selected routes where early implementation projects have been completed. Comparison of traffic conditions before and after improvement should be made to insure that the desired benefits are being achieved.

IMPROVEMENT PROJECT SEQUENCE AND FINANCIAL PROGRAM

TABLE 3 - 4

REGION III
(Continued)

YEAR	LOCATION	MUNICIPALITY	IMPROVEMENT NUMBER	ESTIMATED COST
1976	Brighton Avenue and Ocean Avenue	Long Branch	3 - 14	45,600.00
	Broadway and Third Avenue	Long Branch	3 - 16	21,700.00
	Cedar Avenue and Ocean Avenue	Long Branch	3 - 24	20,500.00
	Branchport Avenue and Joline Avenue	Long Branch	3 - 25	31,500.00
	Garden State Parkway Spur and Grant Avenue	Eatontown	3 - 26	18,000.00
	Atlantic Avenue and Long Branch Avenue	Long Branch	3 - 27	13,200.00
	Park Avenue and Norwood Avenue	Long Branch	3 - 28	22,200.00
	Atlantic Avenue and Florence Avenue	Long Branch	3 - 29	27,500.00
	Oceanport Avenue and Port-Au-Peck Avenue	Long Branch	3 - 30	69,500.00
	Broad Street (N.J. Route 71) and Wyckoff Road	Eatontown	3 - 31	107,600.00
1977	Cedar Avenue and Second Avenue	Long Branch	3 - 32	5,700.00
	Morris Avenue and Second Avenue	Long Branch	3 - 33	2,800.00
	Broadway and Morris Avenue	Long Branch	3 - 34	13,800.00

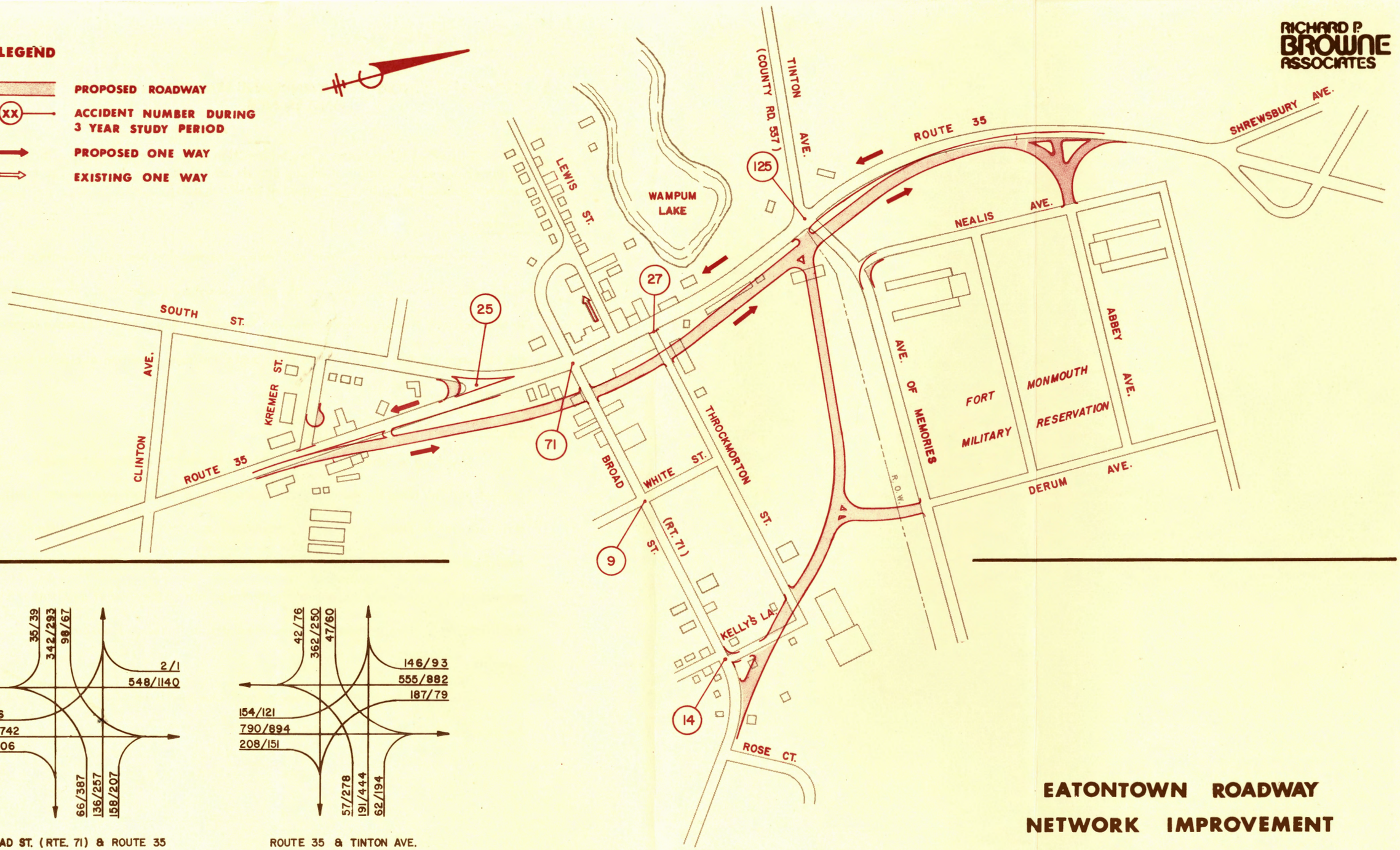
IMRPOVEMENT PROJECT SEQUENCE AND FINANCIAL PROGRAM — TABLE 3 - 4
REGION III

YEAR	LOCATION	MUNICIPALITY	IMPROVEMENT NUMBER	ESTIMATED COST
1793	N.J. Route 35 and Tinton Avenue, and Broad St. (N.J. Route 71) and N.J. Route 35	Eatontown	3 - 1	$1,019,000.00
	Bath Avenue, Broadway and Norwood Avenue, and Branchport Avenue and Broadway	Long Branch	3 - 2	72,400.00
	N. J. Route 35 and Wyckoff Road	Eatontown	3 - 3	53,300.00
	Garden State Parkway Spur and Wyckoff Rd.	Eatontown	3 - 4	145,350.00
	Broadway and N. J. Route 36	West Long Branch	3 - 5	73,700.00
	Monmouth Road (N.J. Route 71) and N. J. Route 36	West Long Branch	3 - 6	117,700.00
	Hope Road and Garden State Parkway Spur	Eatontown	3 - 7	37,800.00
	Clinton Avenue and N.J. Route 35	Eatontown	3 - 8	35,450.00
	Monmouth Shopping Center and N.J. Route 35	Eatontown	3 - 9	40,000.00
	Joline Avenue and Long Branch Avenue	Long Branch	3 - 10	24,850.00
	Hope Road and Tinton Avenue	Eatontown-Shrewsbury	3 - 11	66,800.00
	Broadway and Liberty Avenue	Long Branch	3 - 12	21,500.00
	Cedar Avenue and Norwood Avenue	Long Branch-West Long Branch	3 - 13	67,800.00
1974	Ocean Avenue and Rumson Road	Sea Bright	3 - 15	92,500.00
	Brighton Avenue and Second Avenue	Long Branch	3 - 17	19,800.00
	Broadway, North Broadway and Second Avenue	Long Branch	3 - 18	102,000.00
1975	Oceanport Avenue and N.J. Route 36	West Long Branch	3 - 19	51,300.00
	Locust Avenue and Wall Street	West Long Branch	3 - 20	26,500.00
	High St., Norwood Avenue and Wall Street	Long Branch	3 - 21	33,500.00
	Bath Avenue and Westwood Avenue	Long Branch	3 - 22	28,400.00
	New Ocean Avenue, Ocean Avenue and Seaview Avenue	Long Branch	3 - 23	13,600.00

RICHARD P. BROWNE ASSOCIATES

LEGEND

- PROPOSED ROADWAY
- (XX) ACCIDENT NUMBER DURING 3 YEAR STUDY PERIOD
- PROPOSED ONE WAY
- EXISTING ONE WAY



BROAD ST. (RTE. 71) & ROUTE 35
PEAK HOUR VOLUME
7:15 - 8:15 A.M. / 4:15 - 5:15 P.M.

ROUTE 35 & TINTON AVE.
PEAK HOUR VOLUME
7:15 - 8:15 A.M. / 4:15 - 5:15 P.M.

0 400 800
Scale: 1" = 400'

EATONTOWN ROADWAY NETWORK IMPROVEMENT

PROPOSED IMPROVEMENT 3-1

3 - 2 BROADWAY AT NORWOOD AVENUE AND BRANCHPORT AVENUE LONG BRANCH

This offset intersection is the intersection of three major roadways for the surrounding area, located in the Long Branch central business district. The intersections are controlled by semi-actuated traffic signals.

Problems

The Norwood Avenue and Bath Avenue approaches presently operate on the same signal interval. Roadway widths on Broadway are inadequate. The monument at the Norwood Avenue intersection with Broadway requires traffic to make hazardous movements. A large number of right angle and same direction accidents are experienced.

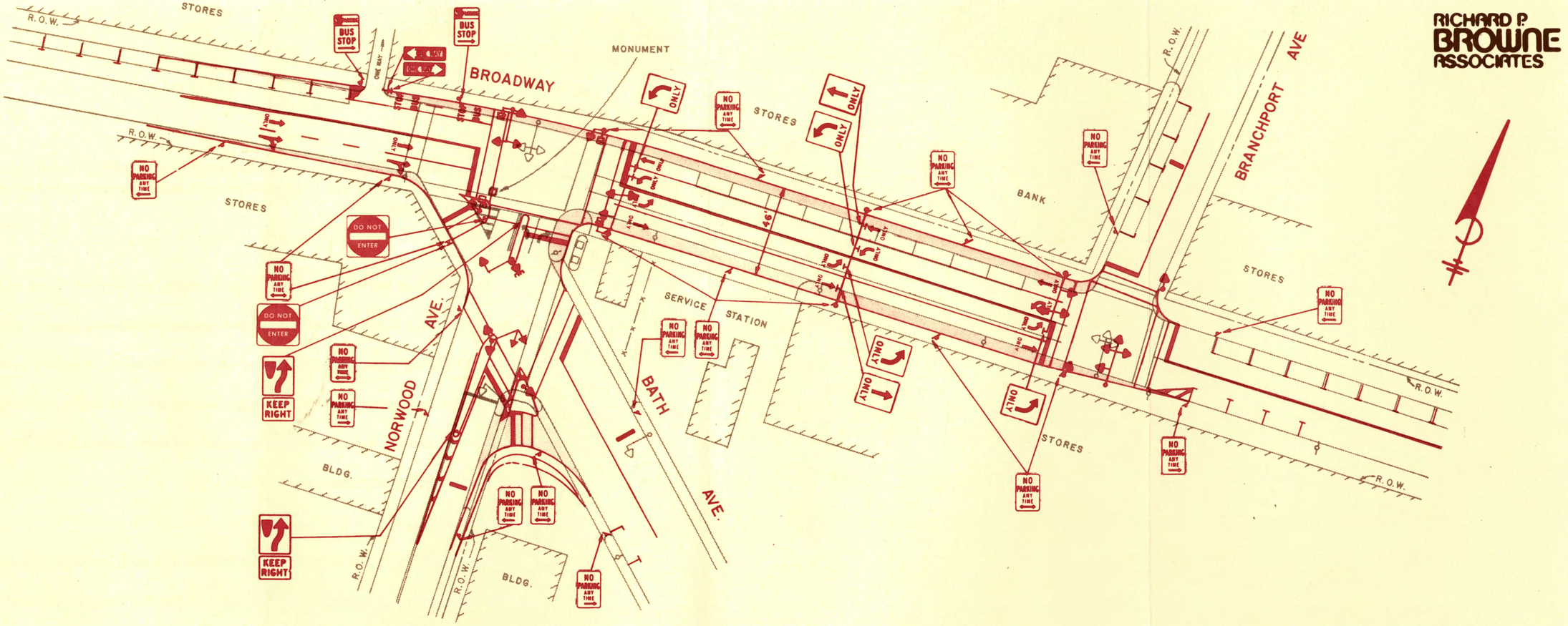
Recommendations

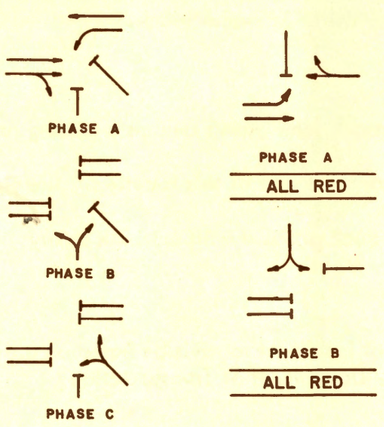
Widening of Broadway is recommended to provide for straight through and left turning lanes on the eastbound approach to Branchport Avenue and a left turn and straight through lane on the westbound approach to Norwood Avenue. Modification of curb turning radii is recommended along with relocation of the existing monument approximately 20 feet to the southwest out of the area of conflict. Modification to the signal layout is recommended to increase its visibility.

Benefits

The capacity, safety, and operational characteristics of this location will be improved by these recommendations.

RICHARD P. BROWNE ASSOCIATES





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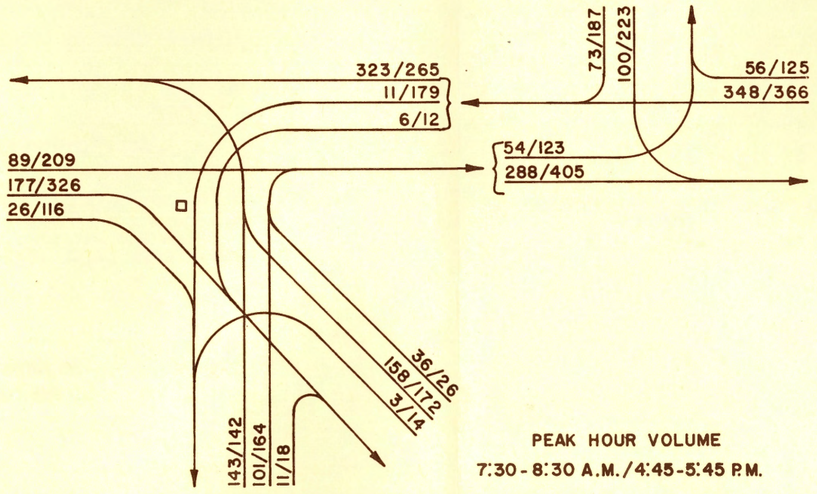
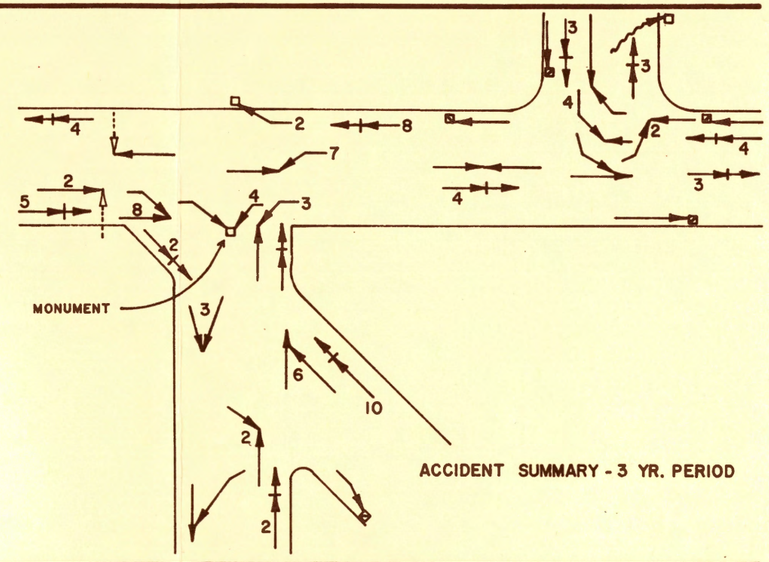


PEAK HOUR VOLUME
7:30 - 8:30 A.M. / 4:45 - 5:45 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD

0 60 120
Scale: 1" = 60'

PROPOSED IMPROVEMENT 3-2

3 - 3 NEW JERSEY ROUTE 35 AND WYCKOFF ROAD EATONTOWN

Wyckoff Road is a major county highway in this area. It also intersects with the Garden State Parkway spur. This location is presently controlled by a semi-actuated traffic signal.

Problems

This location has inadequate approach widths on Wyckoff Road and insufficient curb turning radii. Signal visibility for southbound vehicles is greatly reduced by background lighting generated by commercial development. A heavy left turn movement occurs on the west approach. A large number of right angle and left turn accidents have occurred, and on the southbound approach of New Jersey Route 35 eleven same direction accidents were experienced.

Recommendations

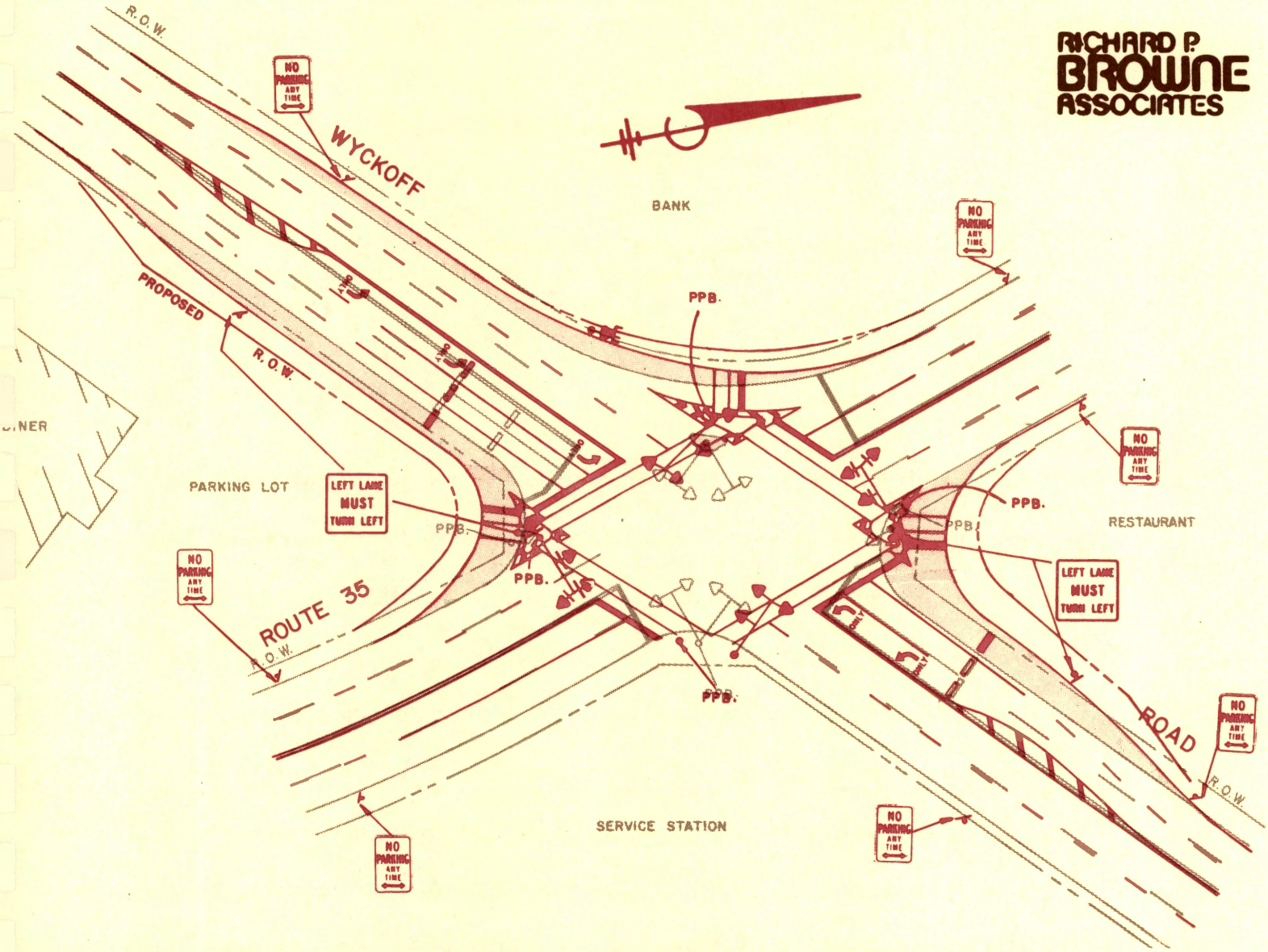
Modification to the approach lane widths and curb turning radii on Wyckoff Road are recommended to provide for special left turning lanes. Revision of the signal layout is recommended to increase its visibility, including the installation of back plates on the New Jersey Route 35 signal heads.

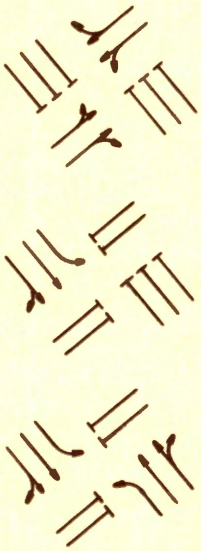
Benefits

Modification to the approach lane widths and curb turning radii will increase the capacity and operational characteristics of this location. The signal layout modification and installation of back plates should enhance safety.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES





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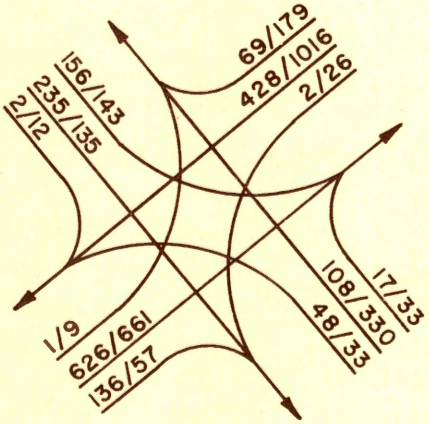
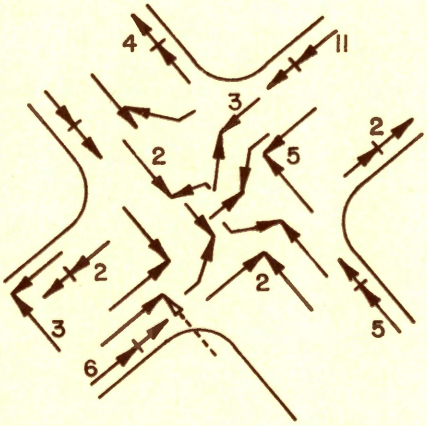


PEAK HOUR VOLUME
7:15 - 8:15 A.M. / 4:15 - 5:15 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD
48 NOT SHOWN

0 60 120
Scale : 1" = 60'

PROPOSED IMPROVEMENT 3-3

3 - 4 GARDEN STATE PARKWAY SPUR AND WYCKOFF ROAD EATONTOWN

The Garden State Parkway spur connects the Eatontown circle and New Jersey Route 36 with a major Garden State Parkway interchange. Wyckoff Road is a major collector roadway for the surrounding area. Left turning movements for the westbound direction are presently handled through a farside jughandle. The intersection is controlled by a semi-actuated traffic signal.

Problems

This location has high traffic volumes with high turning movements on several approaches. A large number of right angle and turning movement accidents are experienced. A considerable number of rear end collisions are also experienced on the westbound approach. Insufficient capacity exists on the Wyckoff Road north approach and is aggravated by forcing left turns to be made through the jughandle.

Recommendations

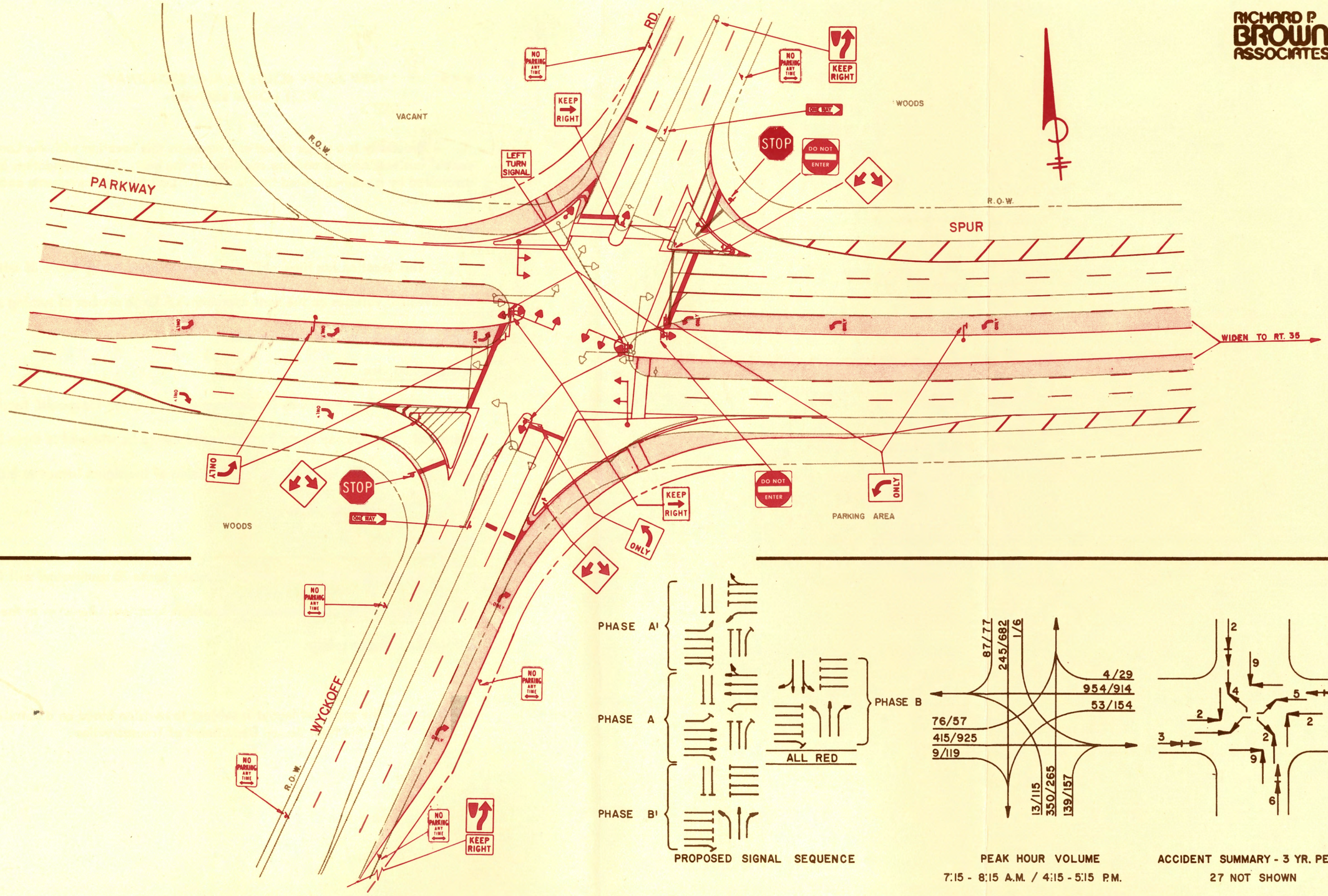
Modification of the approach lanes on the Parkway spur are recommended to provide for three lanes (each way) operation and for special left turning lanes between this location and the Eatontown circle immediately to the east. Elimination of the farside jughandle is also recommended to reduce the traffic volume on the Wyckoff Road north approach. Modification of the signal layout to increase visibility is also recommended.

Benefits

The capacity and operational characteristics of this location will be improved by the approach lane modification and widening and will combine with signal modification to increase safety. The installation of left turn lanes and separate left turn signal phasing should reduce the left turn accidents on the Garden State Parkway spur.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES



PROPOSED SIGNAL SEQUENCE

PEAK HOUR VOLUME
7:15 - 8:15 A.M. / 4:15 - 5:15 P.M.

ACCIDENT SUMMARY - 3 YR. PERIOD
27 NOT SHOWN

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 3-4

3 - 5 NEW JERSEY ROUTE 36 AND BROADWAY WEST LONG BRANCH

Broadway is a major street and connects this location with the Long Branch central business district and the coastline to the east. This intersection is presently controlled by a semi-actuated traffic signal. Left turning movements occur through jughandles.

Problems

This location has high traffic volumes on New Jersey Route 36 with high turning movement volumes on the west approach. A large number of turning movement and right angle accidents are experienced.

Recommendations

Widening of Broadway is recommended to provide for special turning lanes as indicated. New Jersey Route 36 southbound should be widened to three lanes from this intersection to New Jersey Route 71. Revision of the signal layout to improve its visibility is also recommended.

Benefits

Widening of Broadway and New Jersey Route 36 southbound will increase the capacity and operational characteristics of this location. Revision to the signal layout should increase safety.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES

DO NOT ENTER

YIELD

ONE WAY

STOP

BROADWAY

R.O.W.

ROUTE 36

NO TURNS

ONLY

U AND LEFT TURNS

U AND LEFT TURNS

YIELD

ONLY

ONLY

ONLY

ONLY

RIGHT TURNS

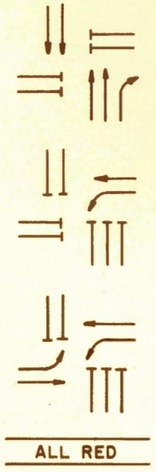
R.O.W.

R.O.W.

NO LEFT TURN

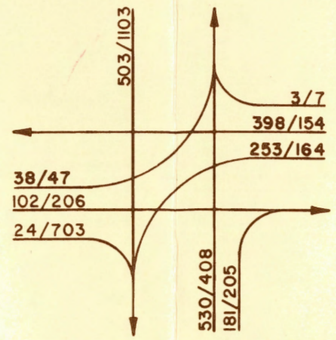
WIDEN TO ROUTE 71

ALL TURNS FROM RIGHT LANE

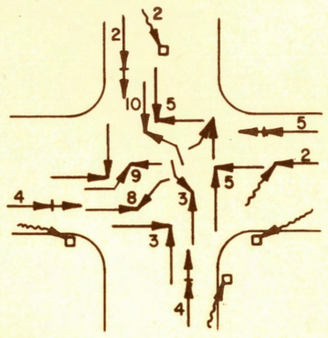


ALL RED

PROPOSED SIGNAL SEQUENCE



PEAK HOUR VOLUME
7:30 - 8:30 A.M. / 5:30 - 6:30 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD
7 NOT SHOWN

0 60 120

Scale: 1" = 60'

PROPOSED IMPROVEMENT 3-5

3 - 6 NEW JERSEY ROUTE 36 AND NEW JERSEY ROUTE 71 WEST LONG BRANCH

This complex intersection is located on the New Jersey Route 36 corridor between the Eatontown traffic circle and the easterly portion of the county.

Problems

This intersection has high traffic volumes, inadequate approach widths and approach lane arrangements. Insufficient signal visibility also exists on New Jersey Route 71.

Recommendations

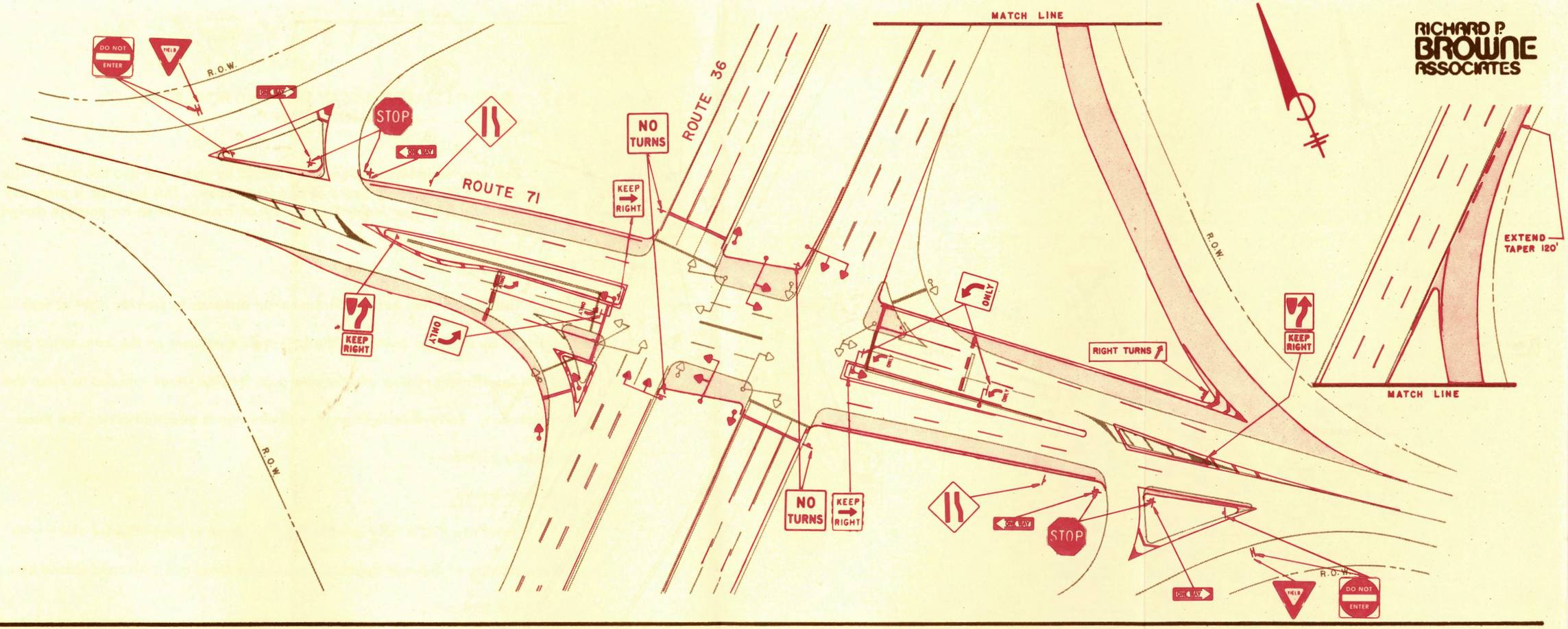
Widening of the approaches is recommended along with provisions for left turn lanes. Provisions for a right turning lane from New Jersey Route 71 to New Jersey Route 36 northbound is recommended. Modificiation to the signal layout is also recommended.

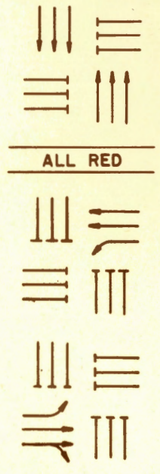
Benefits

The capacity and operational characteristics will be improved by the widening and approach lane arrangements. Improved signal visibility should also increase safety at this intersection.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES





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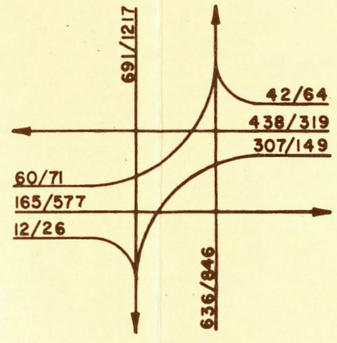

PEAK HOUR VOLUME
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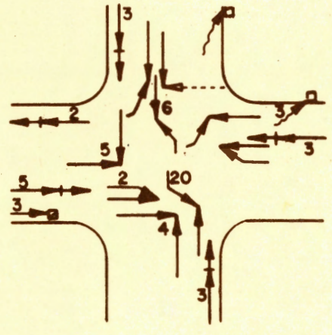


ACCIDENT SUMMARY - 3 YR. PERIOD
9 NOT SHOWN

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 3-6

3 - 7 GARDEN STATE PARKWAY SPUR AND HOPE ROAD EATONTOWN

This very wide intersection is controlled by stop signs and has high traffic volumes both on New Jersey Route 36 and Hope Road. This location is presently being studied by the New Jersey Department of Transportation for possible design changes.

Problems

This intersection has insufficient sight distance to provide right of way assignment by stop sign control. The high traffic volumes on the main street produce an insufficient number of adequate gaps for side street vehicles to clear the conflict area. Forty-five right angle collisions have occurred during the three year study period.

Recommendations

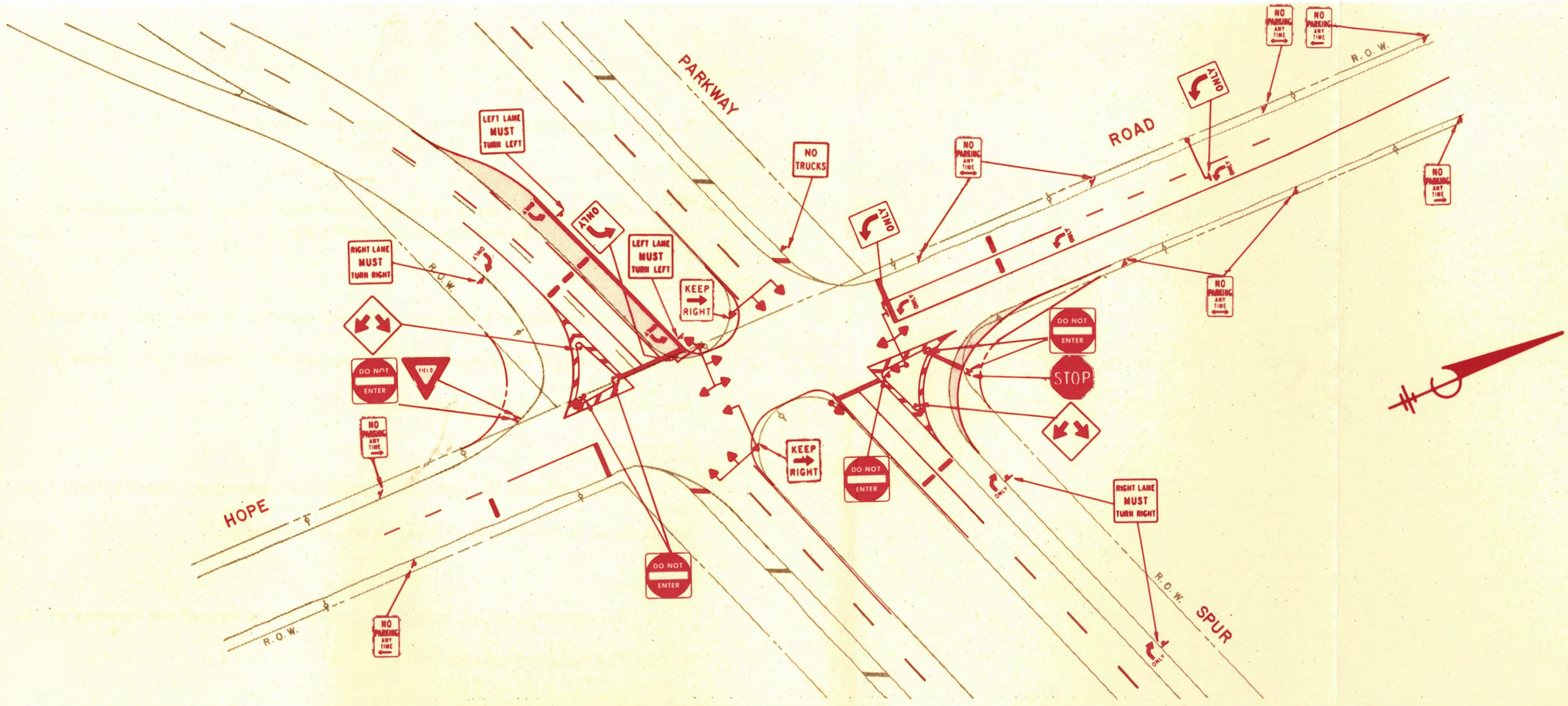
Installation of a fully actuated traffic signal is recommended along with minor widening of the west approach. Left turn lanes and curb radii should be provided as indicated.

Benefits

The safety and operational characteristics of this location will be improved by signalization and the capacity will be improved by the provision of the improved turning lanes.

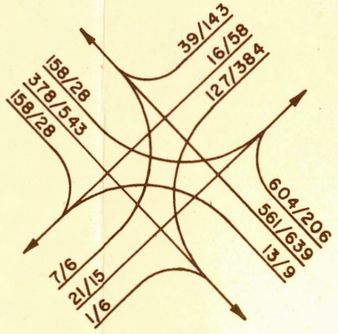
NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES

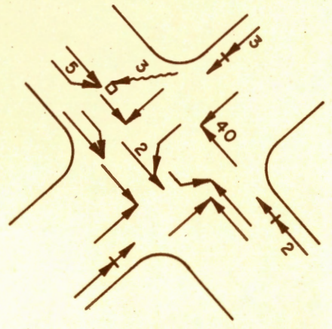




PROPOSED SIGNAL SEQUENCE



PEAK HOUR VOLUME
7:15 - 8:15 A.M. / 4:15 - 5:15 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD
11 NOT SHOWN

0 60 120
Scale: 1" = 60'

PROPOSED IMPROVEMENT 3-7

3 - 8 NEW JERSEY ROUTE 35 AND CLINTON AVENUE EATONTOWN

Clinton Avenue connects Route 35 and Main Street. The intersection is presently controlled by a semi-actuated traffic signal.

Problems

This location has inadequate curb turning radii. A large number of turning movement and right angle accidents are experienced. A considerable number of rear end collisions are also experienced.

Recommendations

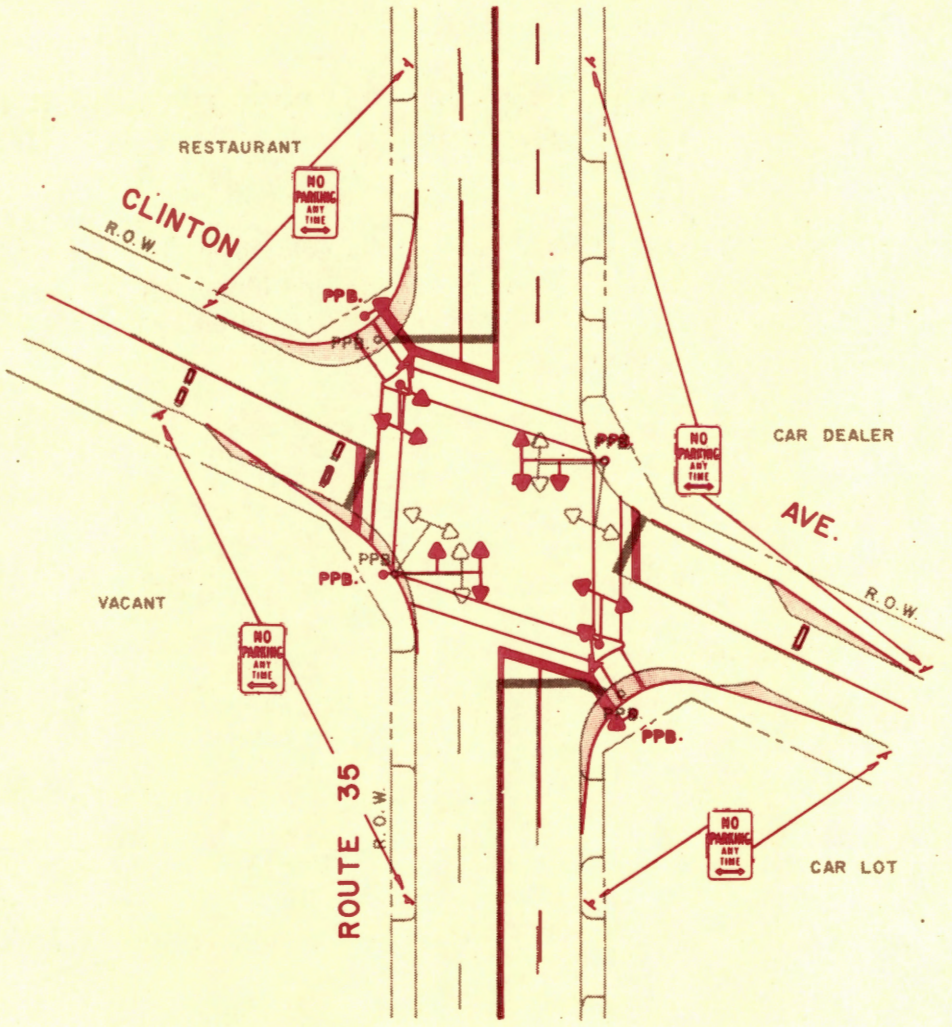
Modification to the curb turning radii is recommended. Modification of the traffic signal to increase its visibility is also recommended.

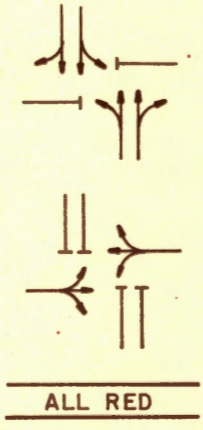
Benefits

The capacity, safety, and operational characteristics of this location will be improved by these recommendations.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES





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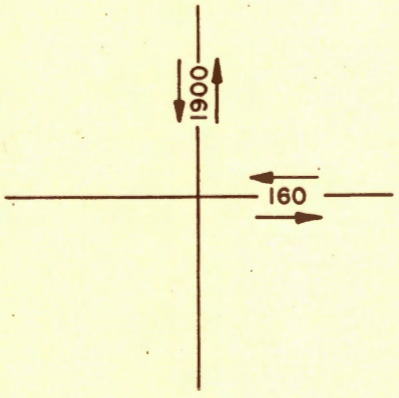
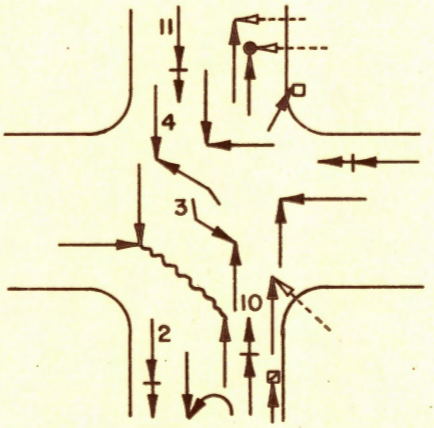


PEAK HOUR VOLUME
4:15 – 5:15 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD
23 NOT SHOWN

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 3-8

3 - 9 N.J. ROUTE 35 AT EATONTOWN SHOPPING CENTER JUGHANDLE EATONTOWN

This location is immediately south of the Eatontown Traffic Circle, and operates as a jughandle for turning movements into the Monmouth Shopping Center and for "U" turns on New Jersey Route 35. The intersection is presently controlled by a semi-actuated traffic signal.

Problems

This location has inadequate approach lane arrangements for the northbound jughandle and a considerable number of right angle, turning movement, and rear end collisions are experienced.

Recommendations

Widening of the east approach is recommended to provide for two lanes having destinations in the shopping center and a separate left turning lane for "U" turns to New Jersey Route 35 southbound. Modification to the signal layout is recommended to increase its visibility.

Benefits

The capacity, operational characteristics and safety of this location will be improved by these recommendations.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES

ROUTE 35

R.O.W.

ENTRANCE TO MONMOUTH SHOPPING CENTER

KEEP RIGHT

GAS STATION

DO NOT ENTER

STOP

NO TURNS

ALL TURNS

ALL TURNS FROM RIGHT LANE

U AND LEFT TURNS

NO TURNS

LEFT LANE MUST TURN LEFT

KEEP RIGHT

GRASS

PAVED PARKING

NO COUNT

ALL RED

PROPOSED SIGNAL SEQUENCE

3

2

6

2

2

2

ACCIDENT SUMMARY - 3 YR. PERIOD
24 NOT SHOWN

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 3-9

3 - 10 JOLINE AVENUE (N.J. ROUTE 36) AND LONG BRANCH AVENUE LONG BRANCH

This intersection is presently controlled by stop signs and a flasher.

Problems

This location has moderate traffic volumes. The west approach width of Joline Avenue is insufficient. A very high number of right angle accidents are experienced and a significant number of accidents involve parked vehicles.

Recommendations

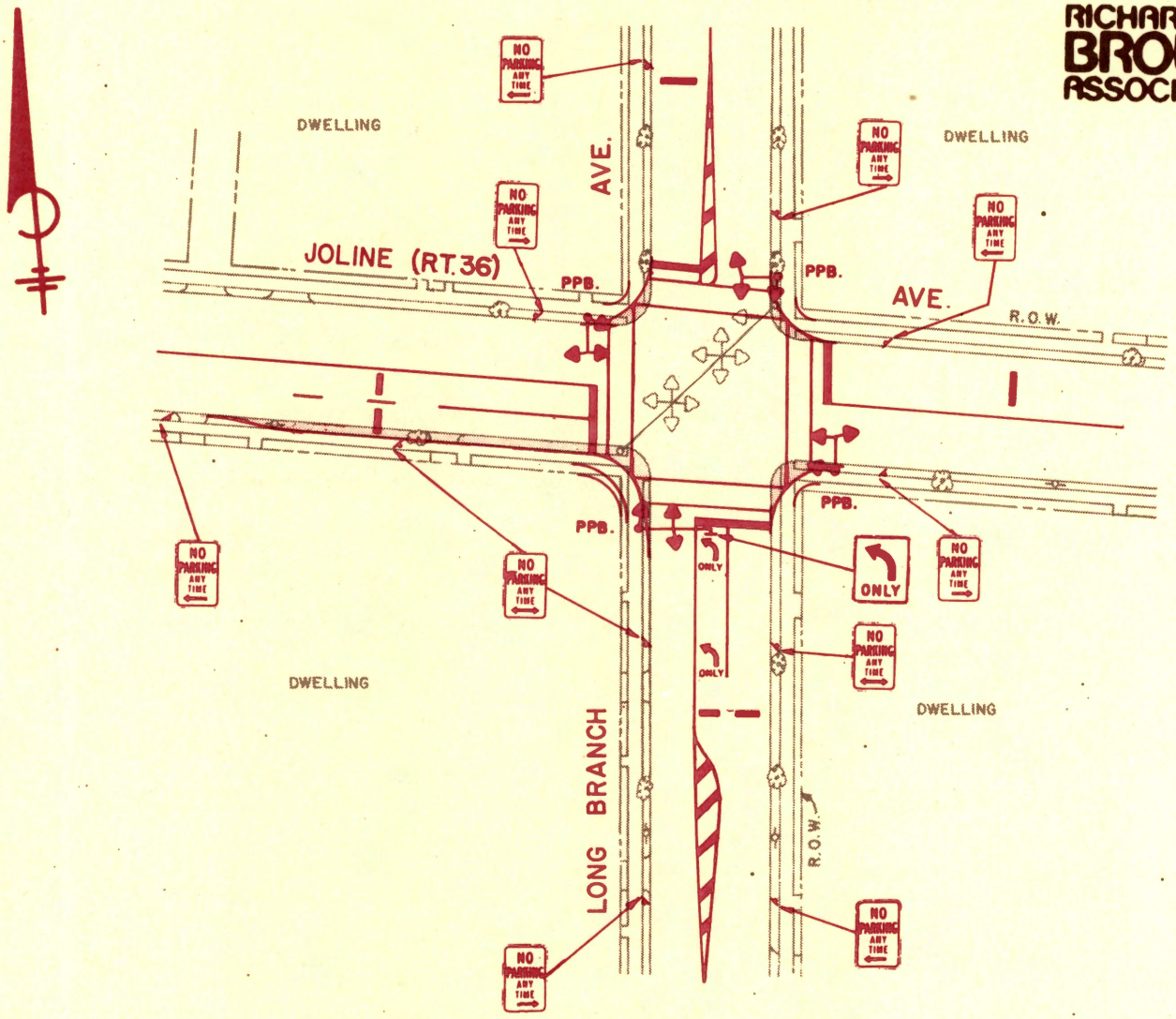
Installation of a traffic signal is recommended along with minor widening of the Joline Avenue west approach to provide a right turn lane. Modifications of the northbound lane to provide a left turn lane is also recommended along with minor improvements to the turning radii. Parking should be prohibited at the intersection.

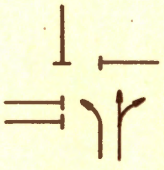
Benefits

The safety and operational characteristics of this location will be improved by these recommendations.

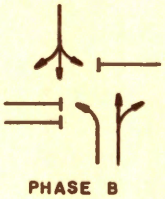
NOTE: The need for a signal and proposed layout is subject to a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES









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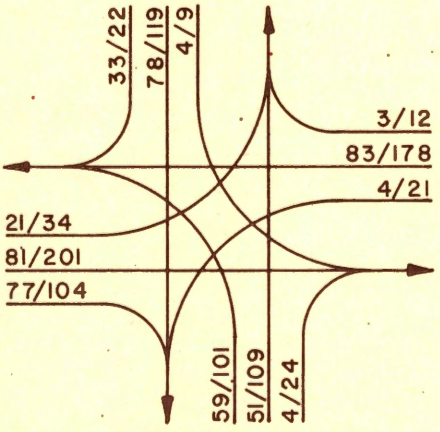
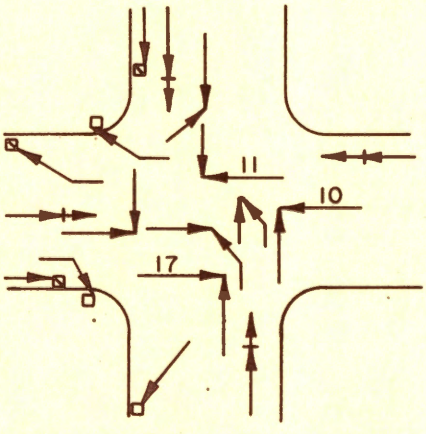


PEAK HOUR VOLUME
7:30-8:30 A.M. /4:30-5:30P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD
4 NOT SHOWN

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 3-10

3 - 11 TINTON AVENUE AND HOPE ROAD EATONTOWN/SHREWSBURY

Problems

This intersection has a considerable offset creating a difficult traffic manuever for the north and southbound traffic. During the time this traffic is in the intersection, it is exposed to high volumes and high speed traffic on Tinton Avenue.

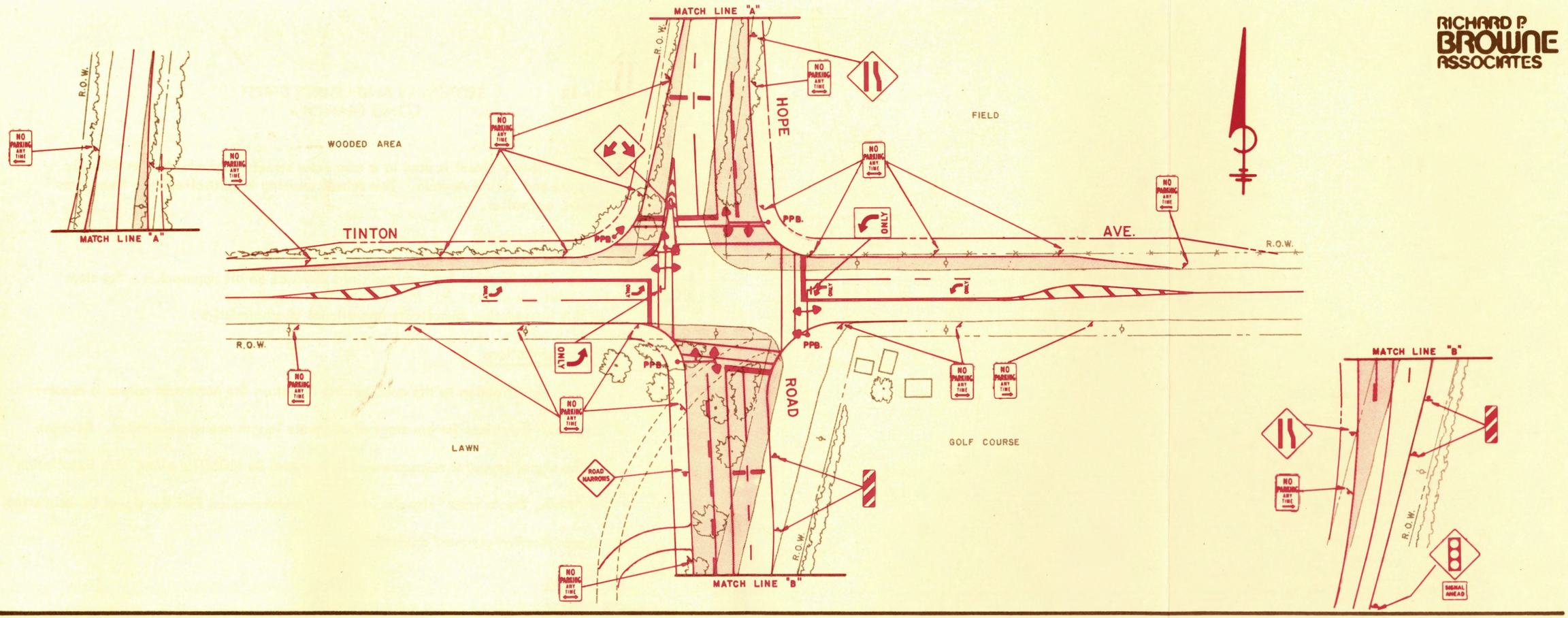
Recommendations

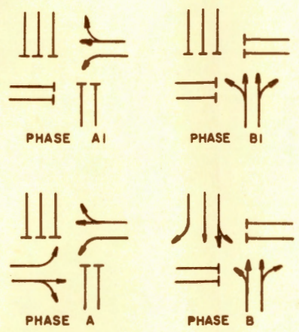
It is recommended that the intersection be aligned so as the approaches are opposite each other. The installation of a semi-actuated traffic signal is recommended.

Benefits

Safety and operational characteristics of this location will be improved by these recommendations. The improvement shown is essentially one which was developed by the Monmouth County Engineer's Office.

RICHARD P. BROWNE ASSOCIATES





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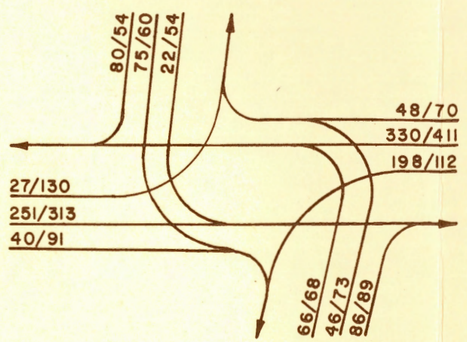

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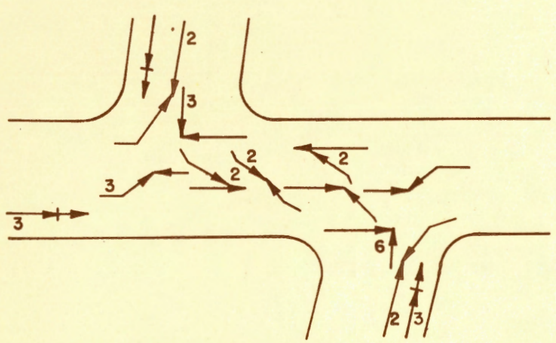


ACCIDENT SUMMARY - 3 YR. PERIOD
18 NOT SHOWN

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 3-11

3 - 12 BROADWAY AND LIBERTY STREET LONG BRANCH

Liberty Street is used as a connector street to Broadway from Atlantic Avenue and Joline Avenue. This school crossing is controlled by a fixed time traffic controller.

Problems

This location has reduced sight distance on all approaches. Bus stops at this intersection complicate operational characteristics.

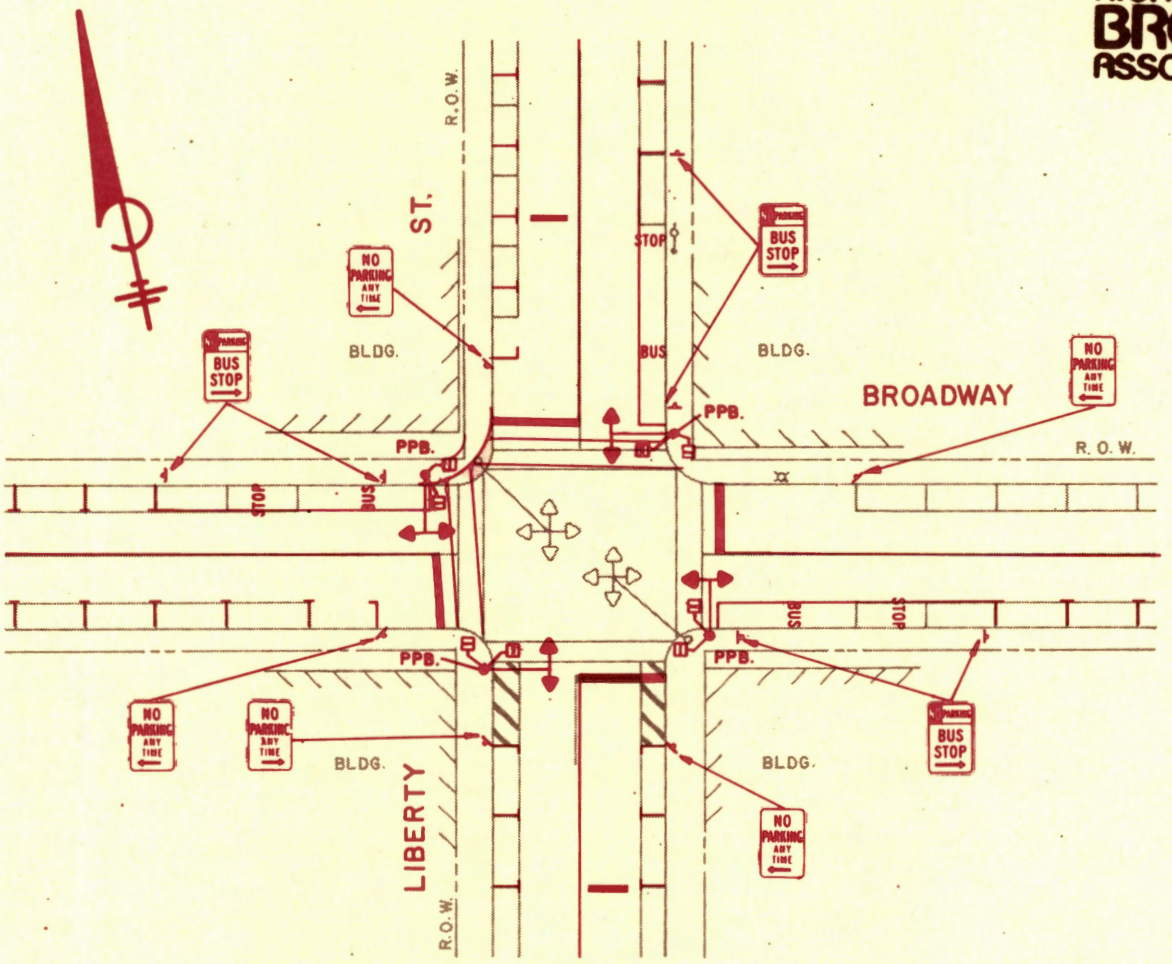
Recommendations

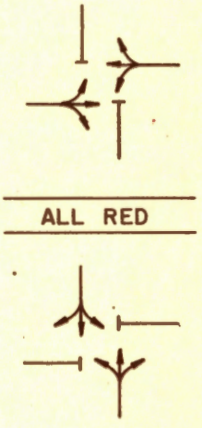
Modification to the curb turning radius on the northwest corner is recommended. Provisions for bus stops of adequate length are recommended. Revision to the signal layout is recommended to increase its visibility along with installation of "Walk, Don't Walk" signals. It is also recommended that the signal be converted to semi-traffic-actuated operation.

Benefits

The operational characteristics and safety of this location will be improved by these recommendations. The provision for adequate sized bus stops will allow buses to stop far enough away from the intersection to reduce their detrimental effect on sight distance, visibility, and on other vehciles turning at the intersection.

RICHARD P. BROWNE ASSOCIATES





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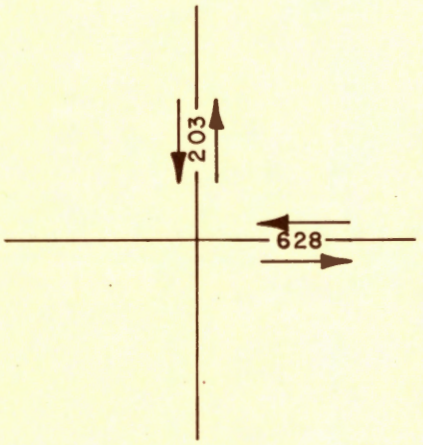
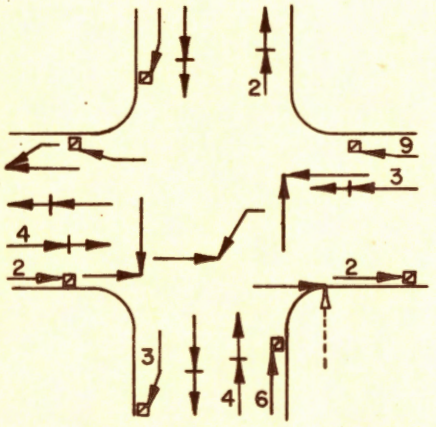


PEAK HOUR VOLUME
5:30-6:30 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD
5 NOT SHOWN

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 3-12

3 - 13 CEDAR AVENUE AND NORWOOD AVENUE LONG BRANCH

N.J. Route 71 changes its alignment from along Cedar Avenue in an east-west direction to a north-south direction along Norwood Avenue. Where N.J. Route 71 makes this turn a semi-traffic actuated signal has been installed. The other intersection is stop sign controlled. Monmouth College campus is located north of Cedar Avenue, consequently, there is a significant amount of pedestrian traffic at these two intersections.

Problems

A heavy left turn movement from Cedar Avenue to Norwood Avenue exists at the signalized intersection. A number of left turn accidents have occurred at this location. At the stop sign controlled intersection a number of right angle collisions have occurred. At this intersection during the afternoon peak hour there is a heavy left turn movement out of Norwood Avenue.

Recommendations

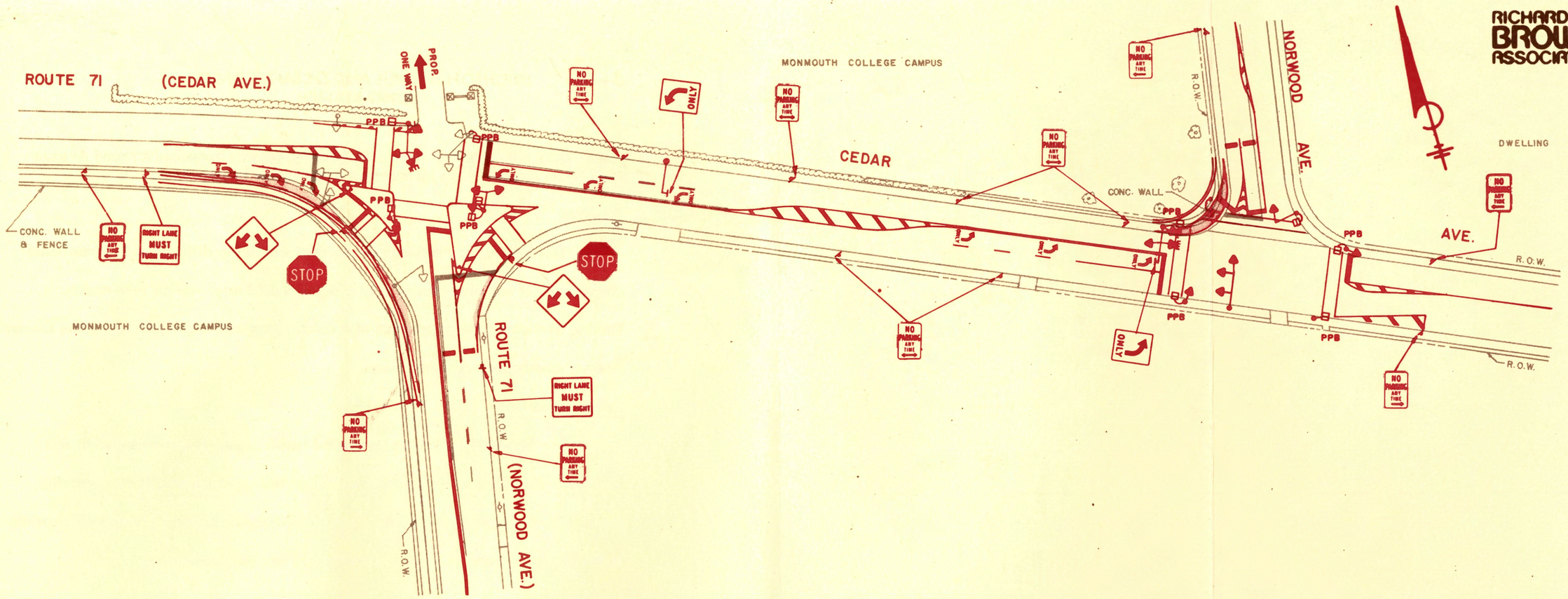
Installation of a semi-traffic actuated signal is recommended at the east intersection. This signal must be interconnected with the existing signals to the west. Left turn lanes are recommended on Cedar Avenue at both intersections. The existing signal should be modified to increase signal visibility and "Walk, Don't Walk" signals should be provided at each location.

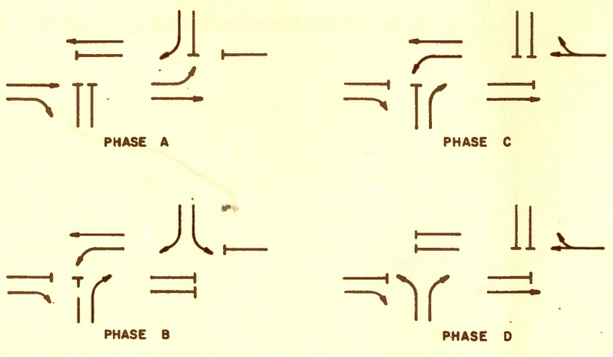
Benefits

The capacity, safety and operational characteristics of these locations will be improved by these recommendations.

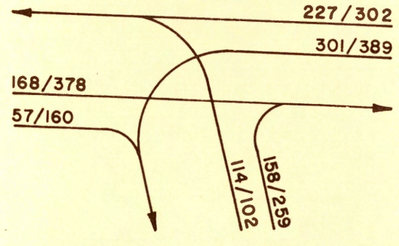
NOTE: The need for a signal and proposed layout at Cedar Avenue and Norwood Avenue is subject to a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES

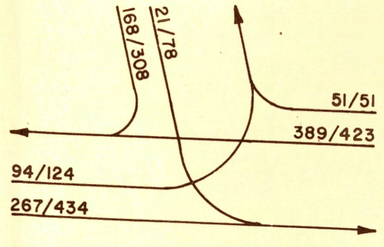




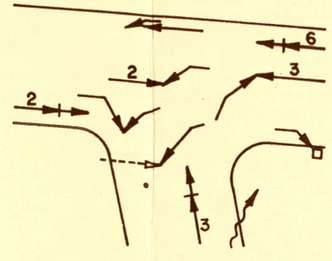
PROPOSED SIGNAL SEQUENCE



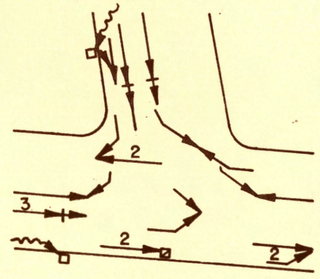
PEAK HOUR VOLUME
8:00-9:00 A.M./4:45-5:45 P.M.



PEAK HOUR VOLUME
8:00-9:00 A.M./5:30-6:30 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD



ACCIDENT SUMMARY - 3 YR. PERIOD
7 NOT SHOWN

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 3-13

3 - 14 BRIGHTON AVENUE AND OCEAN AVENUE LONG BRANCH

Brighton Avenue is a main connecting roadway between Norwood Avenue and Ocean Avenue. The intersection is controlled by stop signs.

Problems

This intersection is somewhat misaligned causing difficulties in operational characteristics and also causing a considerable number of various type accidents. Parking friction on the approaches also exists along with angle parking on the Ocean Avenue southbound receiving lanes.

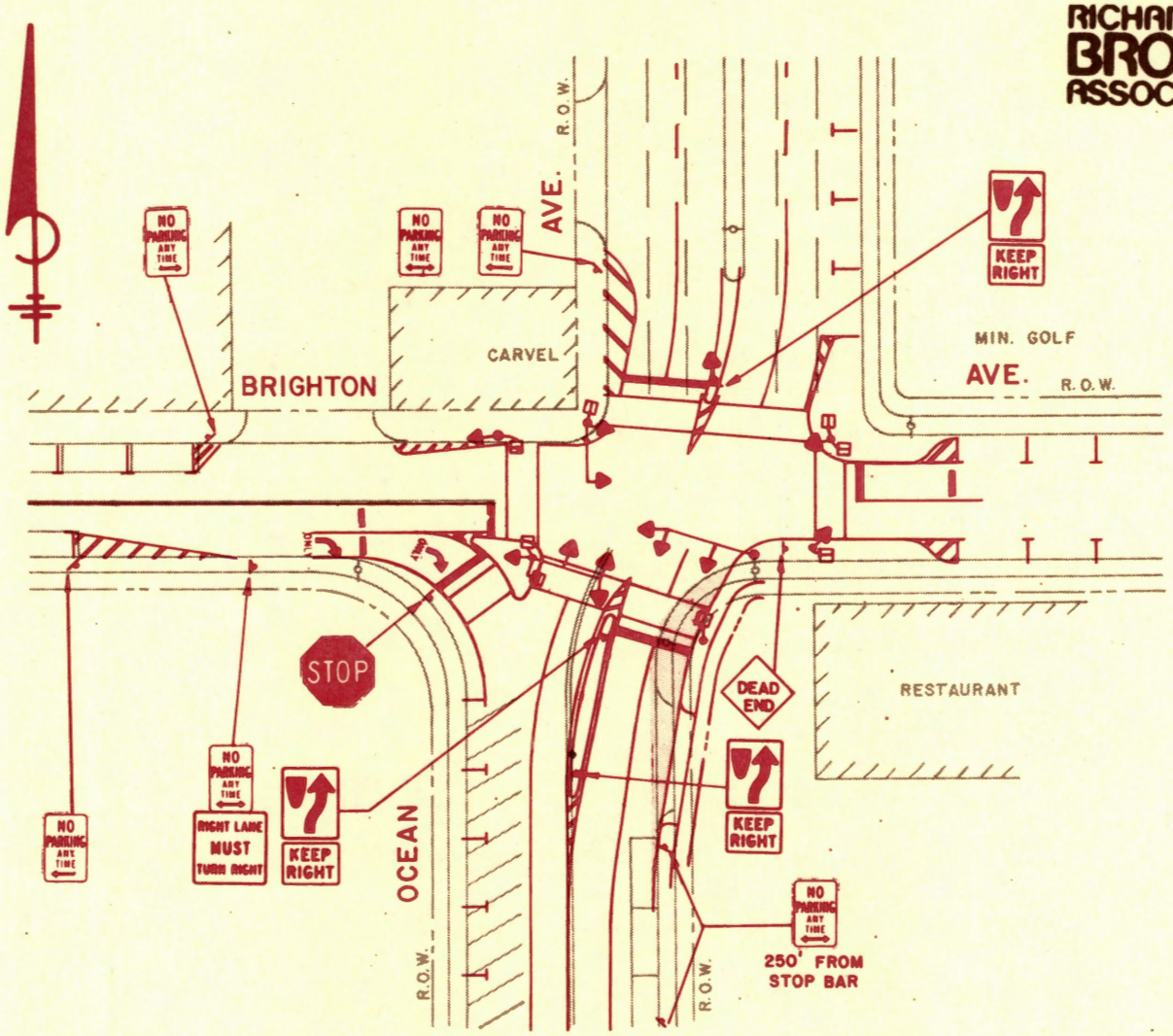
Recommendations

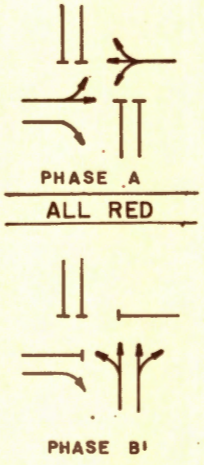
The installation of a semi-actuated traffic signal is recommended at this location. Revisions to the roadway will align the approaches with the receiving lanes. The angle parking should be converted to parallel parking with modification to the approach lanes in order to provide for right turn movements.

Benefits

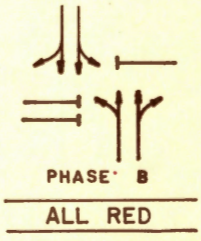
The capacity and safety of this location will be improved by these recommendations. Removal of the angle parking will reduce the accident potential generated by blindside parking manuevers.

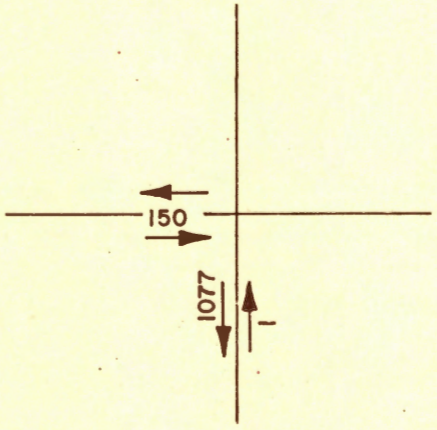
RICHARD P. BROWNE ASSOCIATES



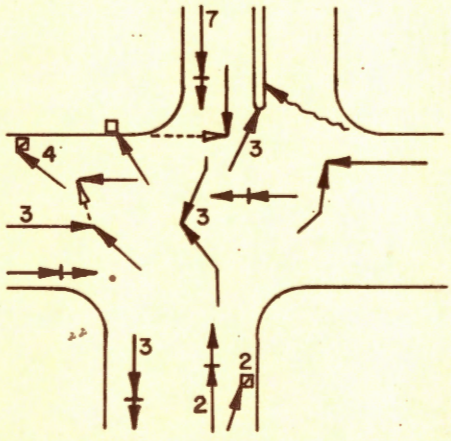


PROPOSED SIGNAL SEQUENCE





PEAK HOUR TRAFFIC
4:00-5:00 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD
11 NOT SHOWN

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 3-14

3 - 15 OCEAN AVENUE (ROUTE 36) AND RUMSON ROAD SEA BRIGHT

This location is a major intersection where east-west traffic from the Rumson region peninsula gains access to the coastline peninsula. It is the only river crossing either north or south for a considerable distance. The present bridge as shown on the illustration has four ten foot lanes. The widening of the bridge is outside the scope of the TOPICS program.

Problems

Heavy eastbound to southbound movement and complimentary northbound to westbound movement produce complex traffic operations at this location.

Recommendations

Several corrective measures have been studied at this location including a "fly over" which would carry northbound to westbound traffic on a grade separated structure. However, the width of the existing bridge and the distances and grades involved made this facility of marginal value.

It is recommended that the existing approaches be widened to provide for a double left turn lane for northbound to westbound traffic and an additional lane for northbound to northbound traffic.

Minor improvement to the turning radii is also recommended along with modification to the channelization island.

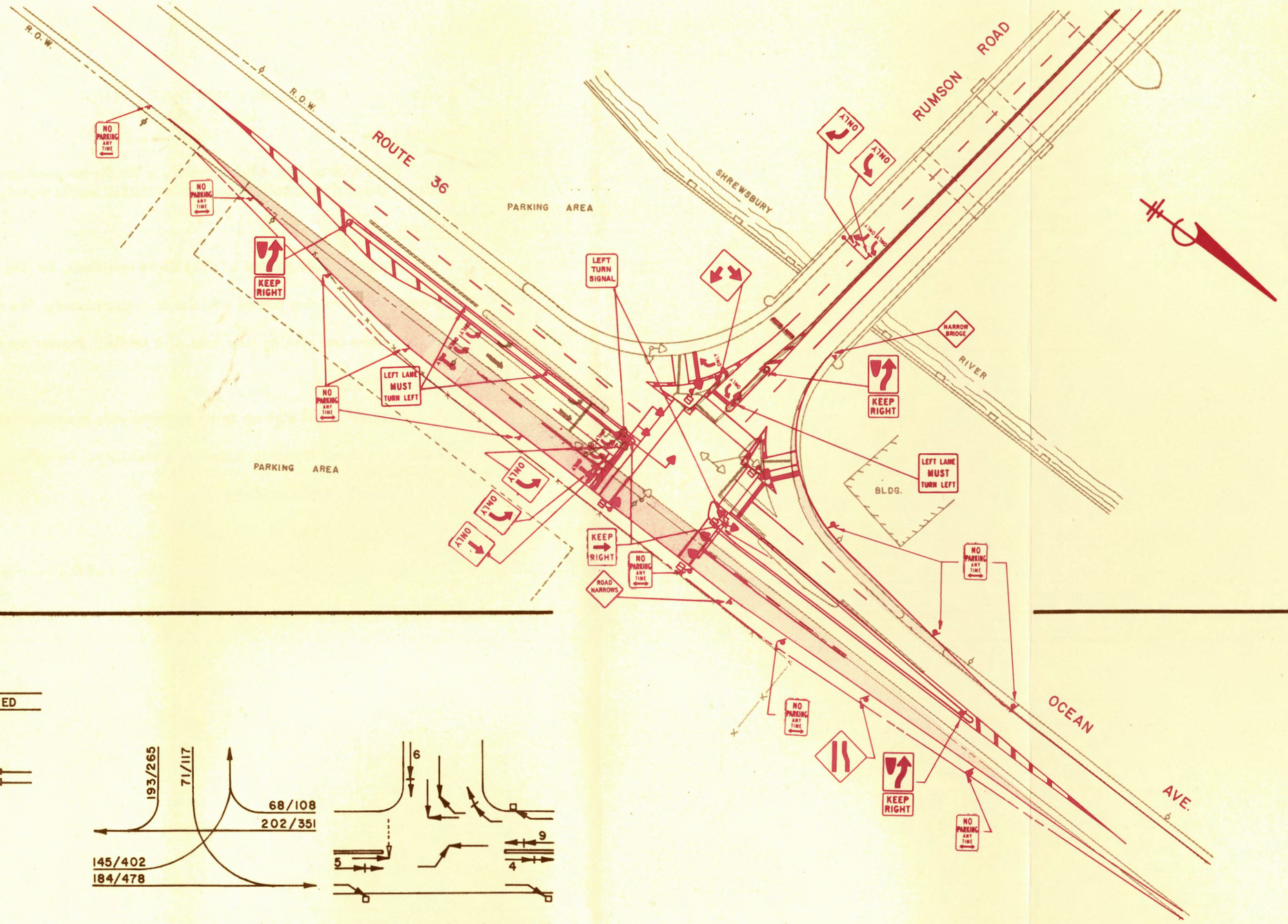
Modification to the signal layout and sequence is also recommended.

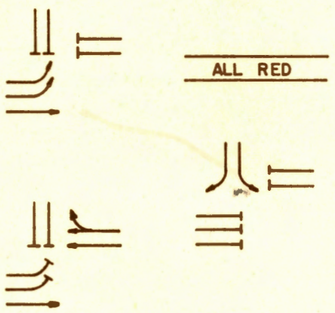
Benefits

The capacity and safety of this location will be improved by these recommendations. The operational characteristics will also be improved. Future traffic demands will require improvement to the existing bridge. At that time a more sophisticated solution to traffic movements at this location may be effected.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES





PROPOSED SIGNAL SEQUENCE

PEAK HOUR VOLUME
8:30-9:30 A.M./4:30-5:30 P.M.

ACCIDENT SUMMARY - 3 YR. PERIOD
13 NOT SHOWN

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 3-15

3 - 16 BROADWAY AND THIRD AVENUE LONG BRANCH

Third Avenue is a collector roadway for the surrounding area. This intersection is presently controlled by a semi-actuated traffic signal.

Problems

A considerable number of right angle collisions, turning movement accidents and accidents involving parked vehicles are experienced. The northbound roadway width is narrow and parking interferes with traffic. Present bus stops are inadequate.

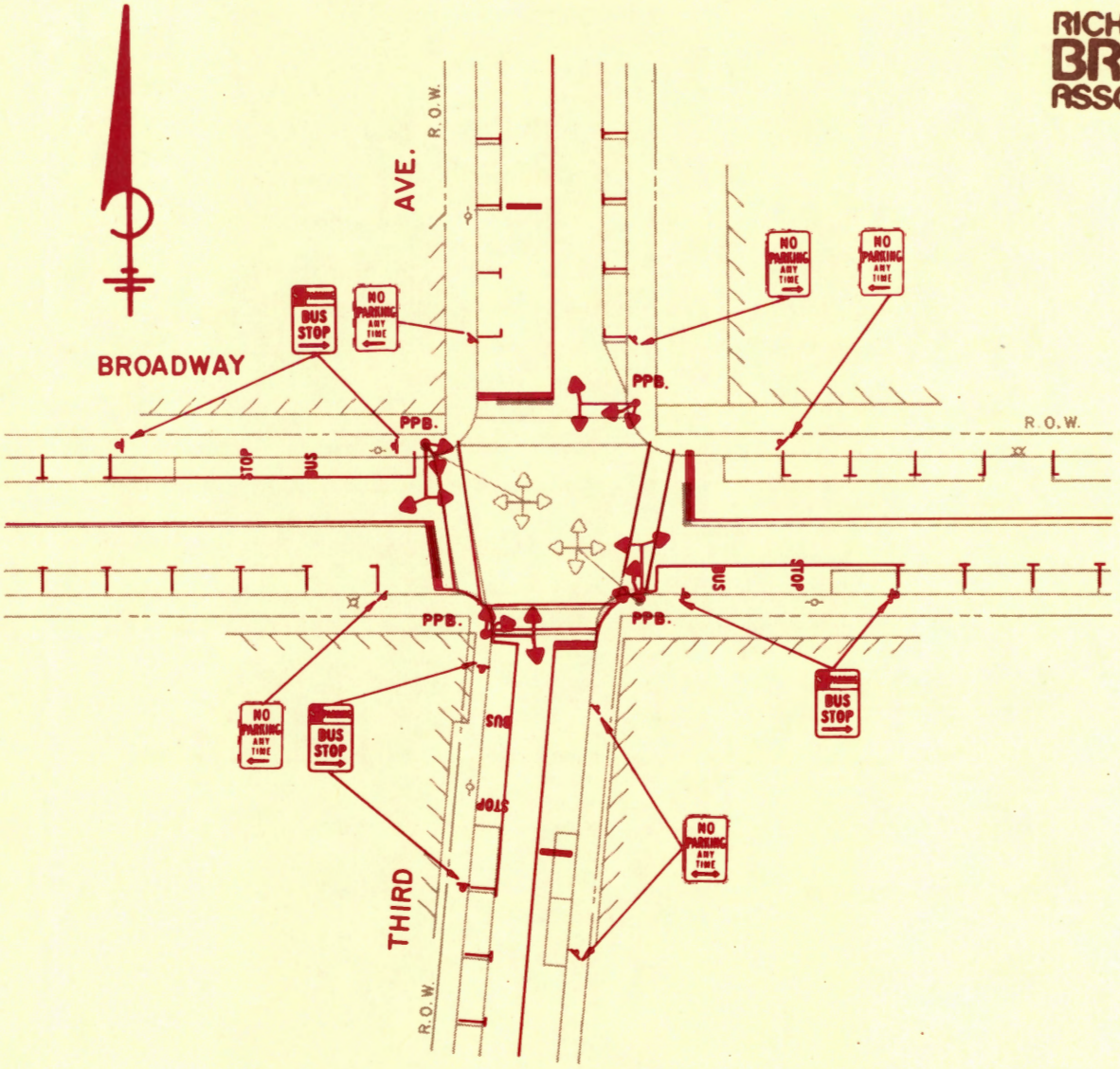
Recommendations

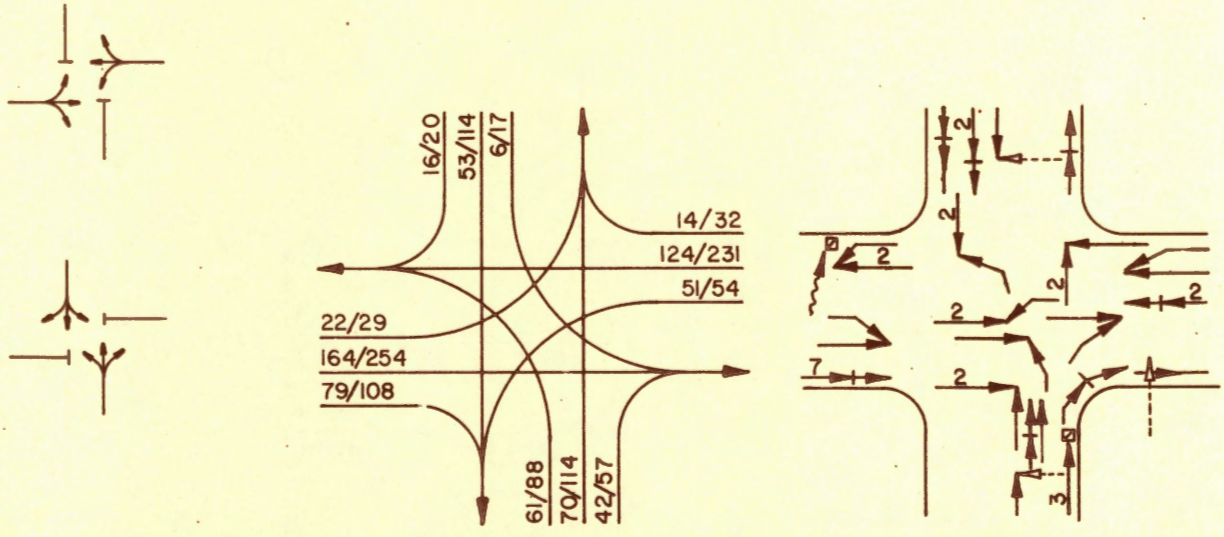
Removal of all parking on all approaches is recommended along with modification of the signal layout to increase its visibility. Provisions for full sized, far side bus stops are recommended on Broadway.

Benefits

The safety and operational characteristics of this location will be improved by these recommendations.

RICHARD P. BROWNE ASSOCIATES





PROPOSED SIGNAL SEQUENCE

PEAK HOUR VOLUME
8:30 - 9:30 A.M. / 4:30 - 5:30 P.M.

ACCIDENT SUMMARY - 3 YR. PERIOD
3 NOT SHOWN

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 3-16

3 - 17 BRIGHTON AVENUE AND SECOND AVENUE LONG BRANCH

This location is the intersection of two minor collector roadways for the surrounding area. It is presently controlled by span wired mounted semi-actuated traffic signal.

Problems

This location has a considerable number of right angle and turning movement accidents. A significant number of pedestrian and fixed object accidents are also experienced. Signal visibility is poor for pedestrians.

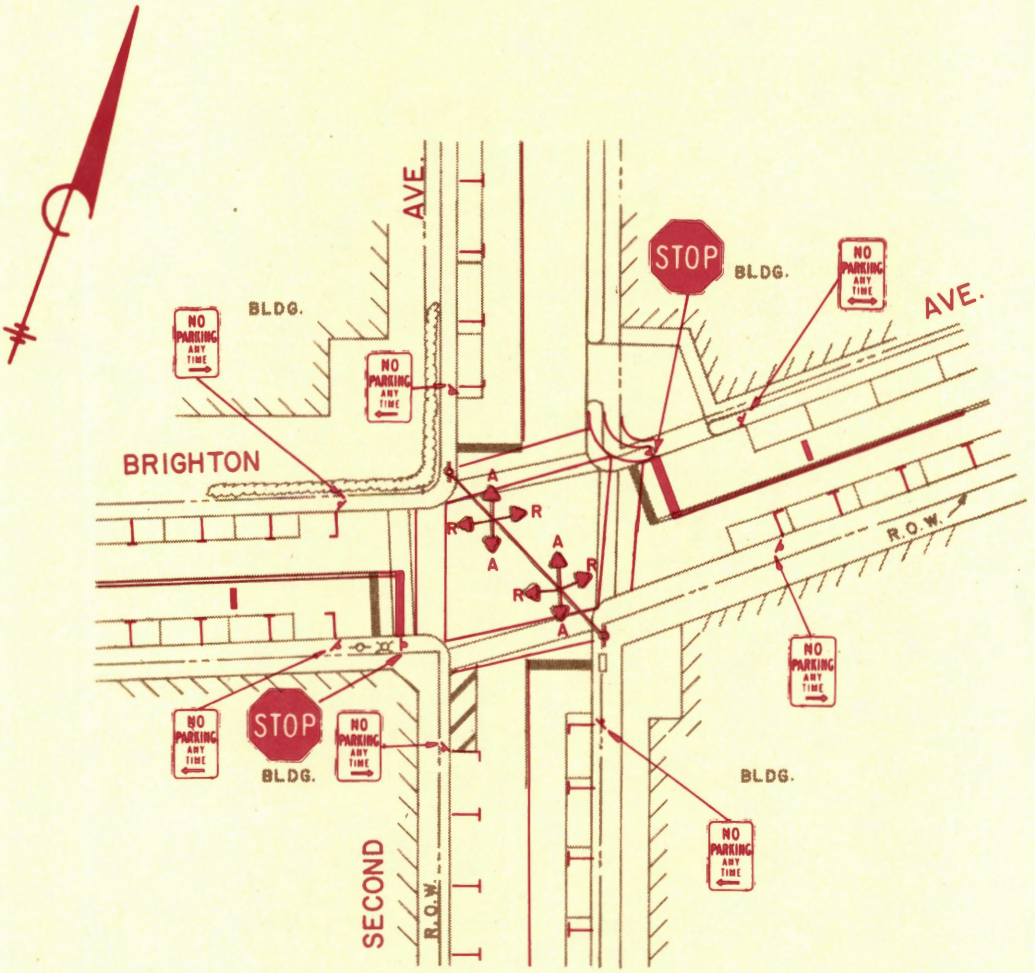
Recommendations

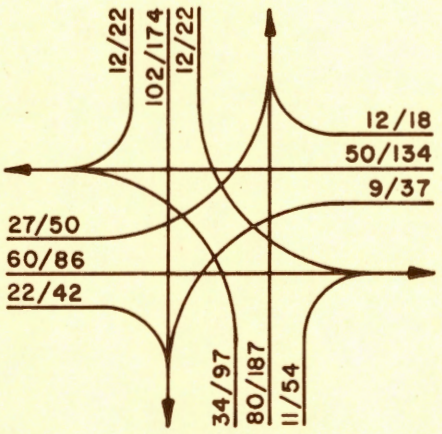
Modification to the curb turning radii in the northeast corner is recommended along with conversion of the signal to flashing operation. Removal of parking on all approaches is recommended. The vegetation on the northwest corner must be kept trimmed to a low level or be removed.

Benefits

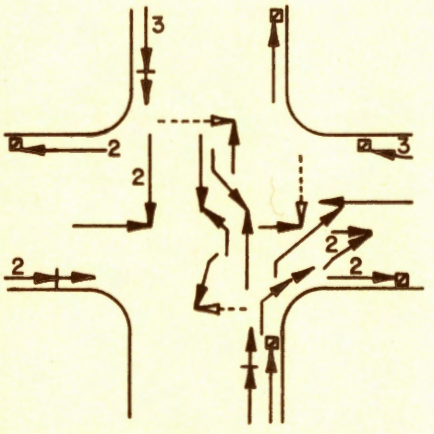
The safety and operational characteristics will be improved by these recommendations. Trimming or removal of the vegetation and the prohibition of the parking on the approaches will improve the sight distance.

RICHARD P. BROWNE ASSOCIATES





PEAK HOUR VOLUME
8:30-9:30 A.M./4:30-5:30 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD
10 NOT SHOWN

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 3-17

3 - 18 BROADWAY AT SECOND AVENUE AND LONG BRANCH AVENUE LONG BRANCH

Second Avenue and Long Branch Avenue are major collector roadways for the surrounding area. They both intersect Broadway, and the two intersections are separated from each other by about 300 feet.

Problems

This location has high traffic volumes which connect through an offset intersection. A considerable number of accidents are experienced at the Second Avenue and Broadway intersection.

Recommendations

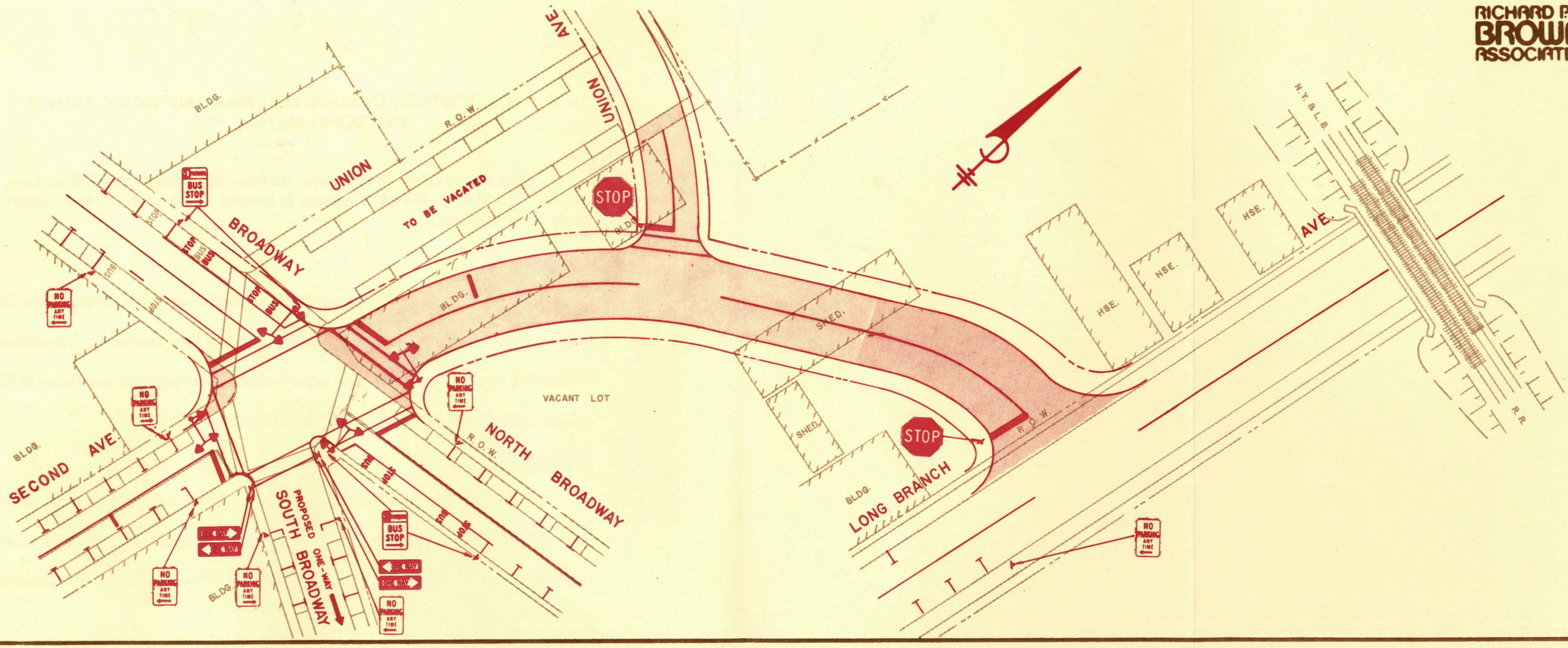
Construction of a new roadway to align Second Avenue and Long Branch Avenue is recommended. The installation of a semi-actuated traffic signal at the intersection at Second Avenue and Broadway is also recommended. It is also proposed that South Broadway will be made one-way for one block away from this intersection.

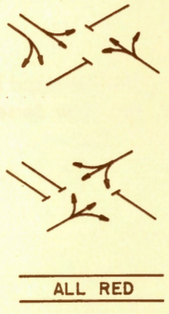
Benefits

The safety and operational characteristics of this location will be improved by these recommendations. The capacity of the Second Avenue and Long Branch Avenue links will be improved by the removal of the jog movement.

The proposed punch-through passes through an area of abandoned or deteriorated buildings, which is presently undergoing urban renewal.

RICHARD P. BROWNE ASSOCIATES





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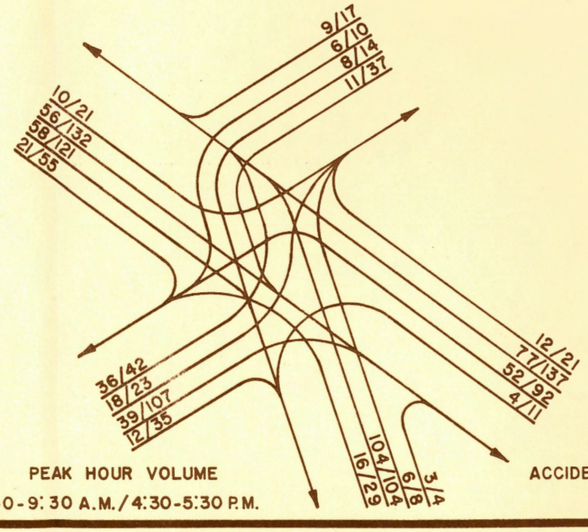

PEAK HOUR VOLUME
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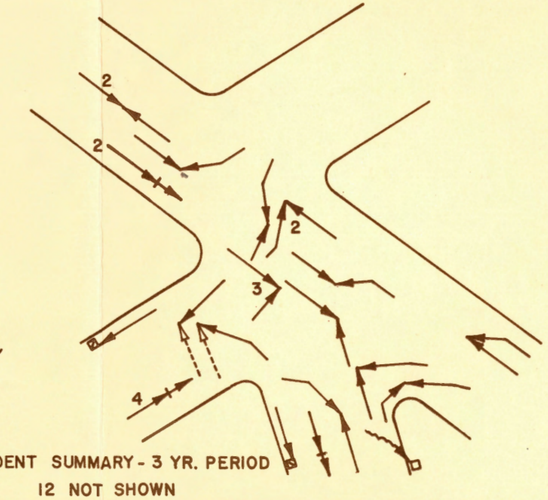


ACCIDENT SUMMARY - 3 YR. PERIOD
12 NOT SHOWN

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 3-18

3 - 19 N.J. ROUTE 36, OCEANPORT AVENUE AND VICTOR AVENUE WEST LONG BRANCH

New Jersey Route 36 is a major six lane expressway through West Long Branch. The Monmouth Park Racetrack is located to the north of New Jersey Route 36 in this area.

Problems

This combination of intersections is located where New Jersey Route 36 reduces from a six lane expressway facility to a two lane roadway. Transitional difficulties from this reduction are experienced here along with additional difficulties caused by access problems associated with the race track.

Recommendations

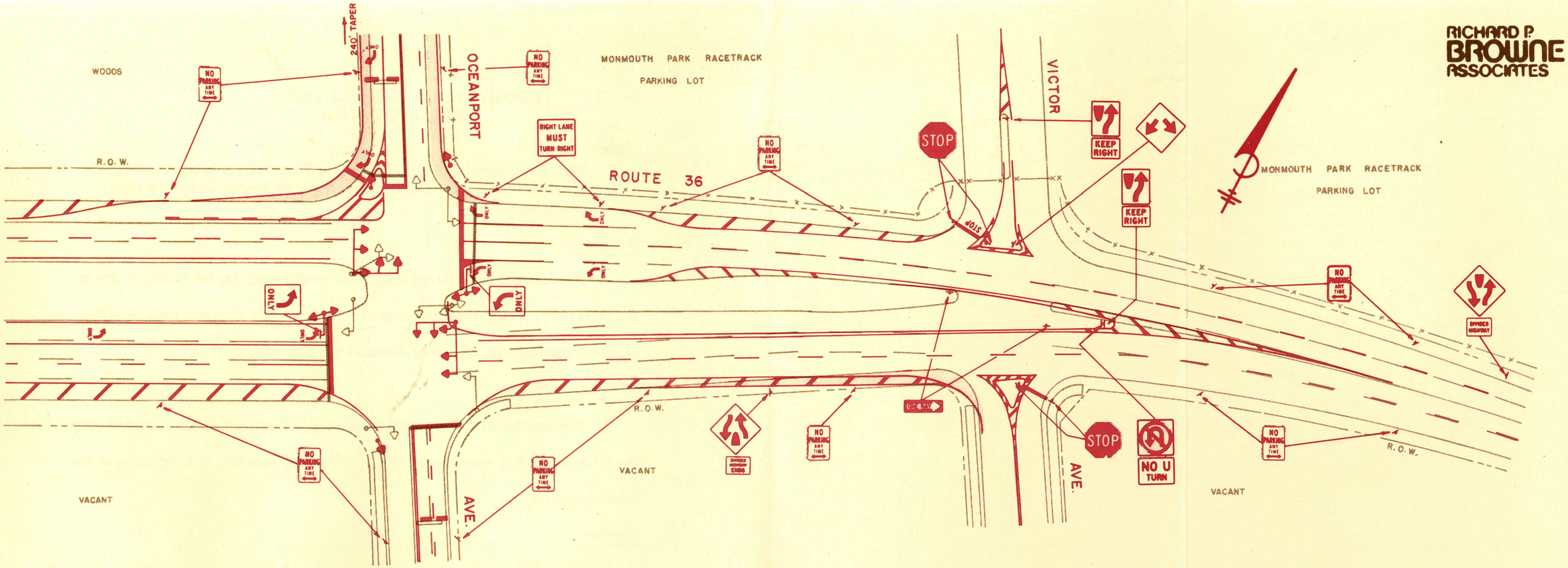
Modification to the signal layout and sequence are recommended. Provisions for left turn slots on New Jersey Route 36, the widening of Oceanport Avenue, and restrictions of certain turning movements at Victor Avenue are also recommended.

Benefits

The capacity and safety and operational characteristics of this location will be improved by these recommendations.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES





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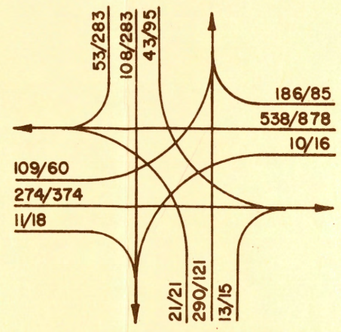
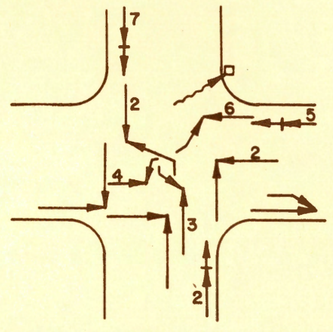


PEAK HOUR VOLUME
7:15 - 8:15 A.M./5:30-6:30 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD
1 NOT SHOWN

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 3-19

3 - 20 LOCUST AVENUE AND WALL STREET WEST LONG BRANCH

Wall Street parallels New Jersey Route 36 and serves as an alternate route to the shore area. The intersection is presently controlled by stop signs and a flashing signal.

Problems

This location has reduced sight distance and long stop bar distances due to the large radii. A significant number of right angle collisions and same direction accidents particularly, on Locust Avenue have occurred.

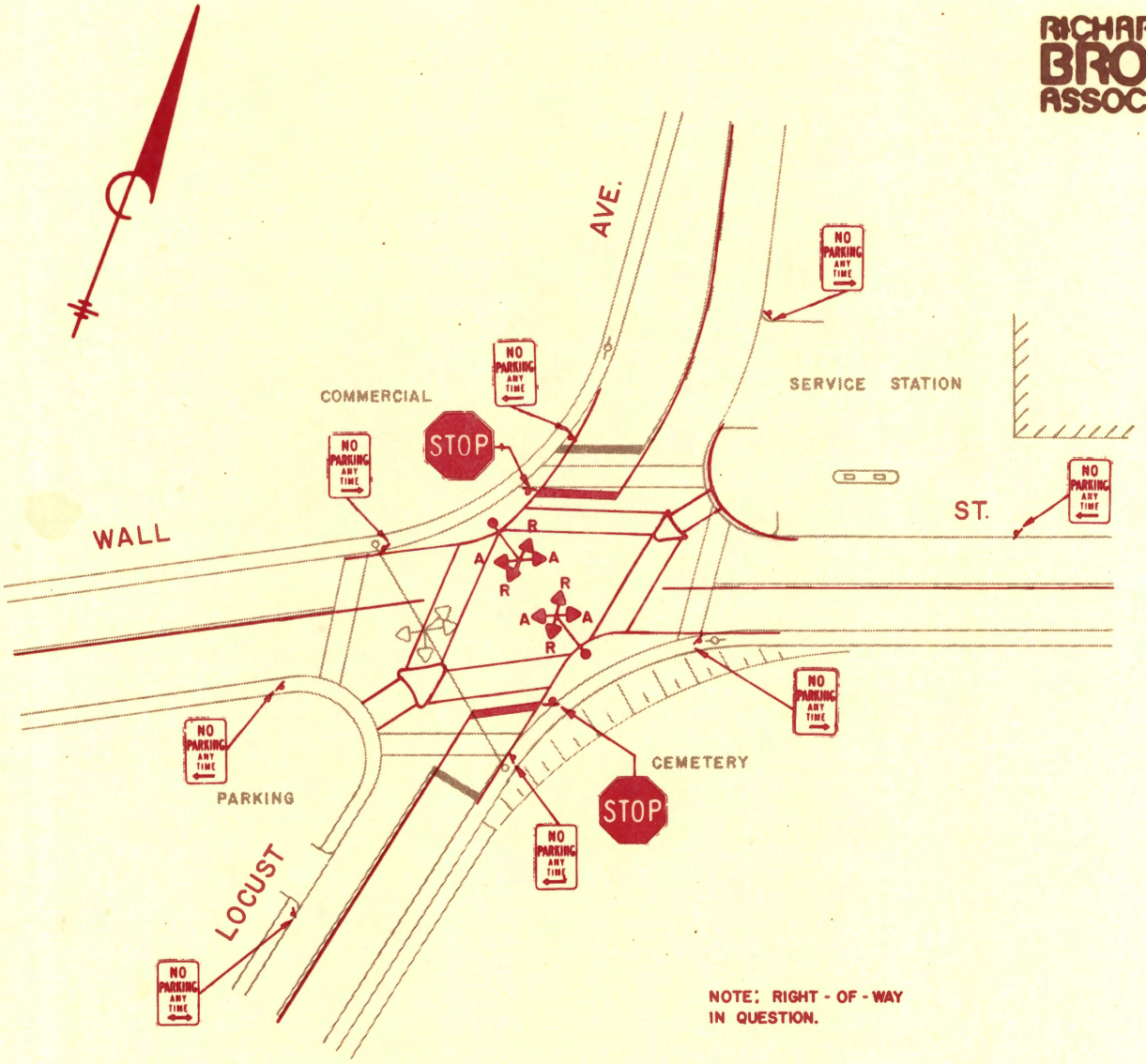
Recommendations

Construction of the two traffic islands as indicated is recommended to compact the intersection thus reducing the stop bar distance, resulting in a reduction of the area of conflict.

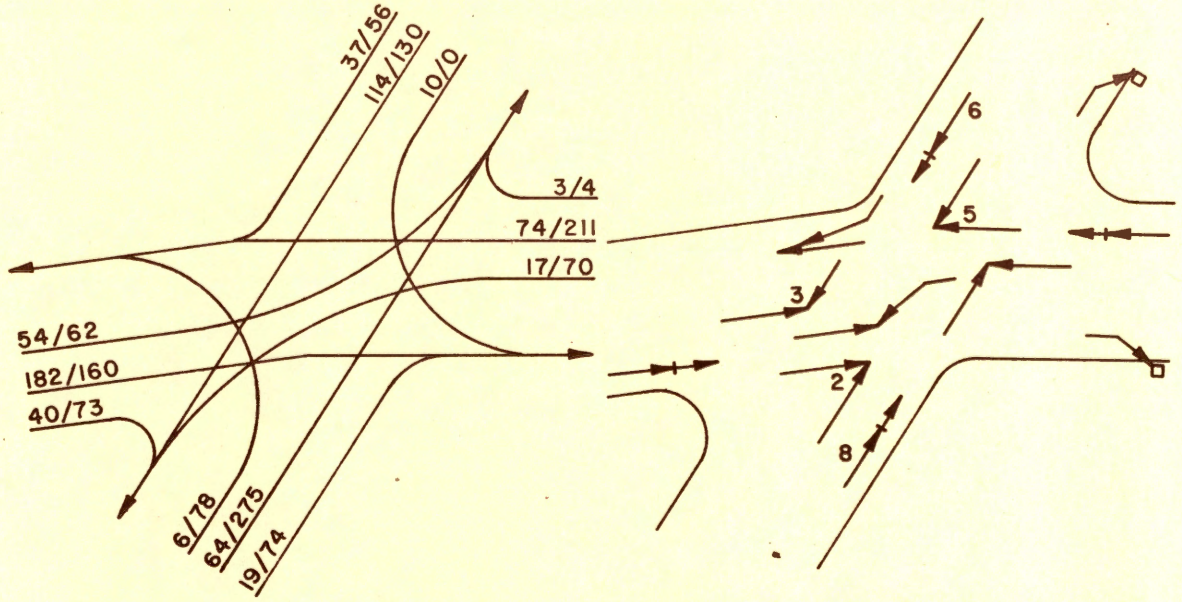
Benefits

The safety and operational characteristics of this intersection will be improved by compacting the intersection.

RICHARD P. BROWNE ASSOCIATES



NOTE: RIGHT - OF - WAY IN QUESTION.



PEAK HOUR VOLUME
7:30 - 8:30 A.M. / 4:30 - 5:30 P.M.

ACCIDENT SUMMARY - 3 YR. PERIOD
4 NOT SHOWN

0 60 120
Scale : 1" = 60'

PROPOSED IMPROVEMENT 3-20

3 - 21 NORWOOD AVENUE, HIGH STREET AND WALL STREET LONG BRANCH

This location is the intersection of three major streets in Long Branch. At present, this location is controlled by stop signs.

Problems

This intersection is significantly offset and the approach angles are skewed. The turning radii are also inadequate. A considerable number of right angle, head on and turning movement accidents are experienced.

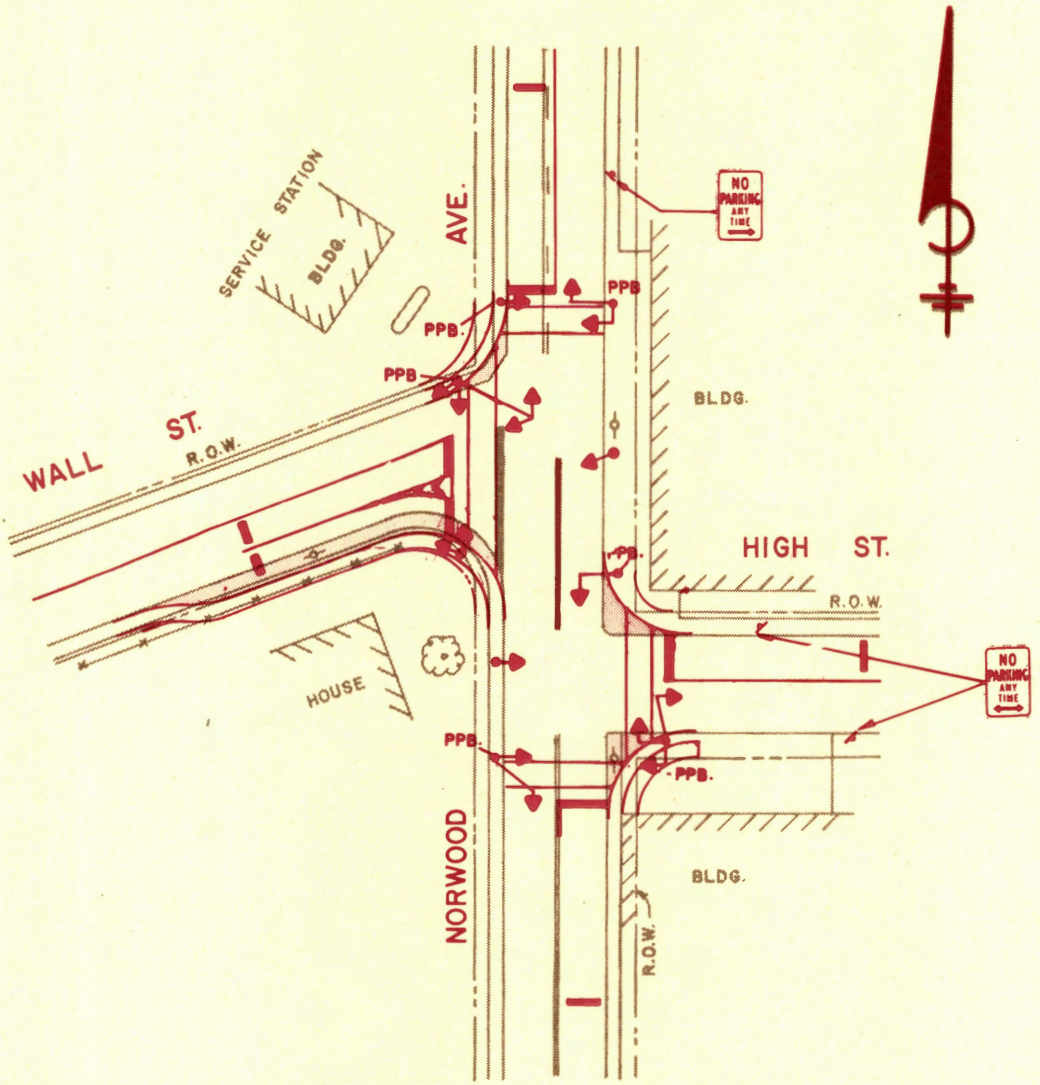
Recommendations

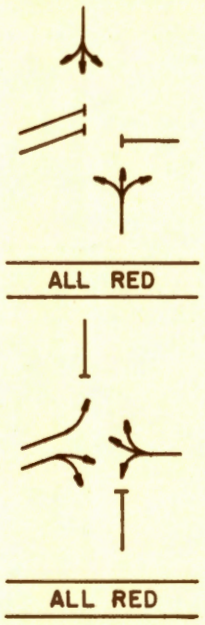
Improvements to the approach width, lane arrangement on Wall Street, and turning radii on all corners are recommended. The installation of a fully-actuated traffic signal is also recommended.

Benefits

The safety and operational characteristics of this intersection will be improved by these recommendations.

RICHARD P. BROWNE ASSOCIATES





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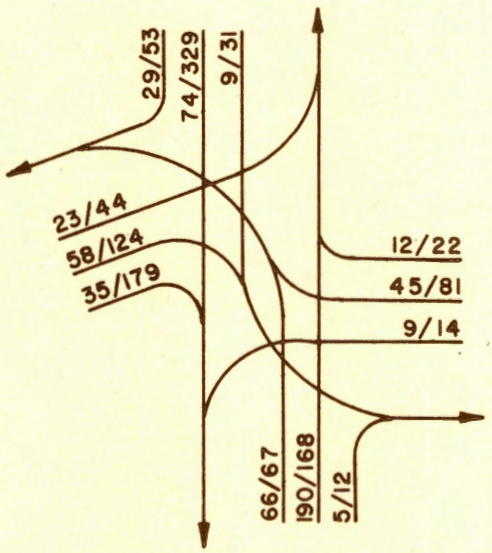

PEAK HOUR VOLUME
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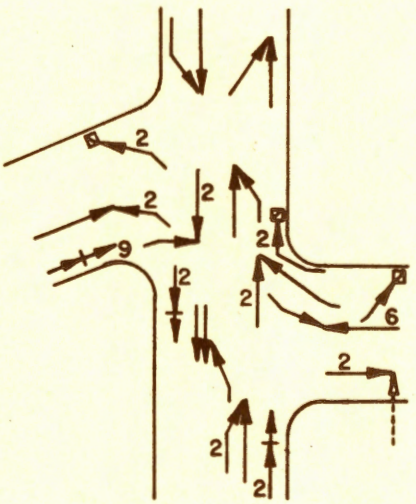


ACCIDENT SUMMARY - 3 YR. PERIOD
5 NOT SHOWN

0 60 120
Scale : 1" = 60'

PROPOSED IMPROVEMENT 3-21

3 - 22 BATH AVENUE AND WESTWOOD AVENUE LONG BRANCH

This location is the intersection of two collector roadways for the surrounding area. The intersection is presently controlled by a semi-actuated traffic signal.

Problems

This location has moderate traffic volumes on both streets. Curb turning radii are inadequate. A high number of right angle accidents are experienced. Signal visibility is poor for pedestrains.

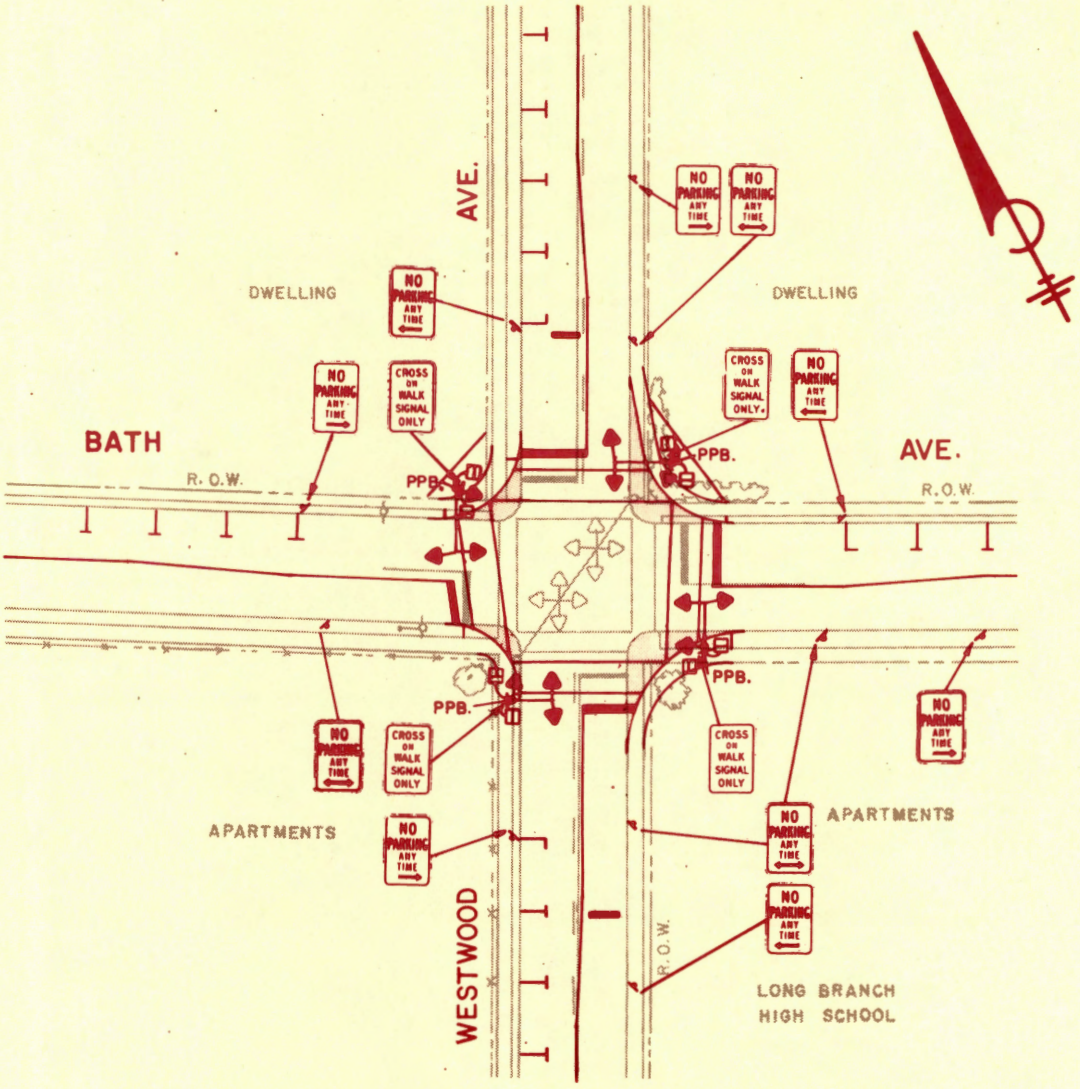
Recommendations

Modification to the curb turning radii are recommended along with parking on the intersection approaches is also recommended. Modification of the signal layout is recommended to increase its visibility.

Benefits

The operational characteristics and safety at this location will be improved by these recommendations.

RICHARD P. BROWNE ASSOCIATES





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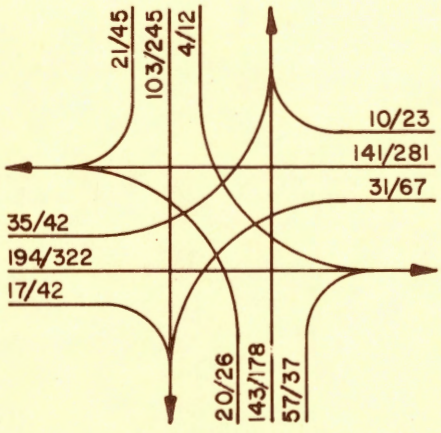
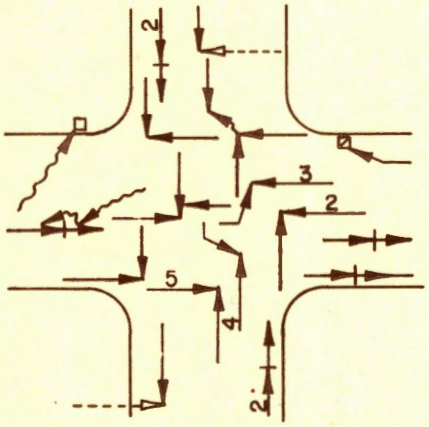


PEAK HOUR VOLUME
8:15 - 9:15 A.M. / 4:30 - 5:30 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD
3 NOT SHOWN

0 60 120
Scale: 1" = 60'

PROPOSED IMPROVEMENT 3-22

3 - 23 NEW OCEAN AVENUE AND SEA VIEW AVENUE LONG BRANCH

New Ocean Avenue is the principal roadway along the coastline in this area. Sea View Avenue, west of this location is a local street which is presently one-way eastbound.

Problems

The major traffic volume at this location is required to make a 90 degree turn. A large number of angle and head on accidents occurred at this location.

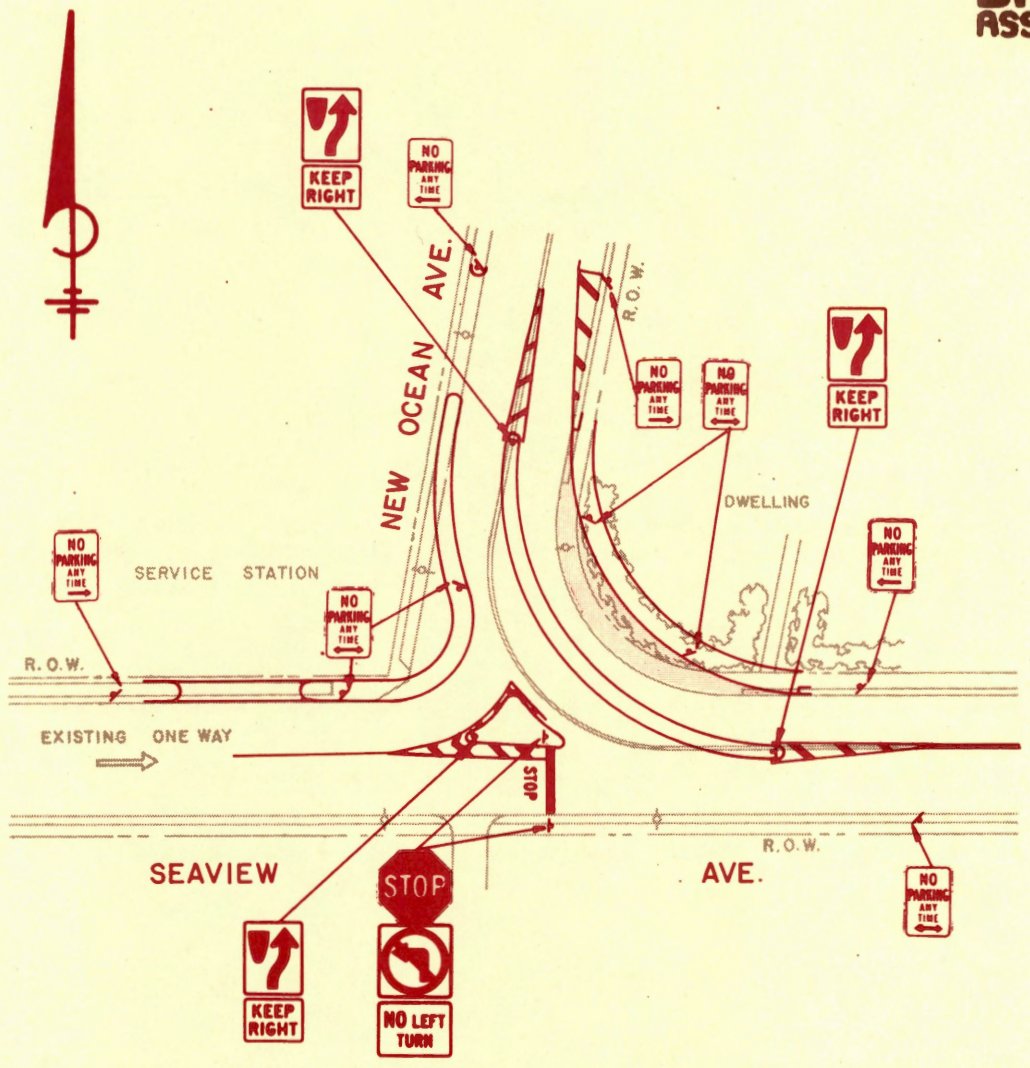
Recommendations

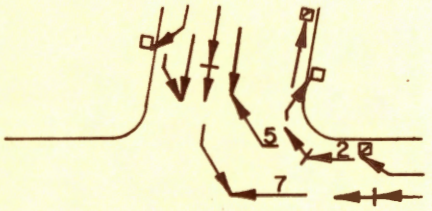
Construction of the turning radii, traffic island and center median as indicated will reduce the possibility of head on collisions and prevent improper movements into Sea View Avenue westbound. Sea View Avenue will become two-way, west of this location, to provide maximum circulation. Prohibited turning movements may be accommodated on the adjacent street network.

Benefits

The capacity and safety of this location will be greatly increased by the implementation of the above recommendations.

RICHARD P. BROWNE ASSOCIATES





NO COUNT

ACCIDENT SUMMARY - 3 YR. PERIOD

11 NOT SHOWN

0 60 120

Scale : 1" = 60'

PROPOSED IMPROVEMENT 3-23

3 - 24 CEDAR AVENUE AND OCEAN AVENUE LONG BRANCH

Cedar Avenue connects the beach area to the major north-south roads to the west. Ocean Avenue, a major roadway runs north and south along the coastline. At present, this intersection is controlled by a stop sign.

Problems

This location has high traffic volumes during the afternoon peak hour - approximately double that occurring during the morning peak hour. A significant number of right angle and turning movement accidents are experienced.

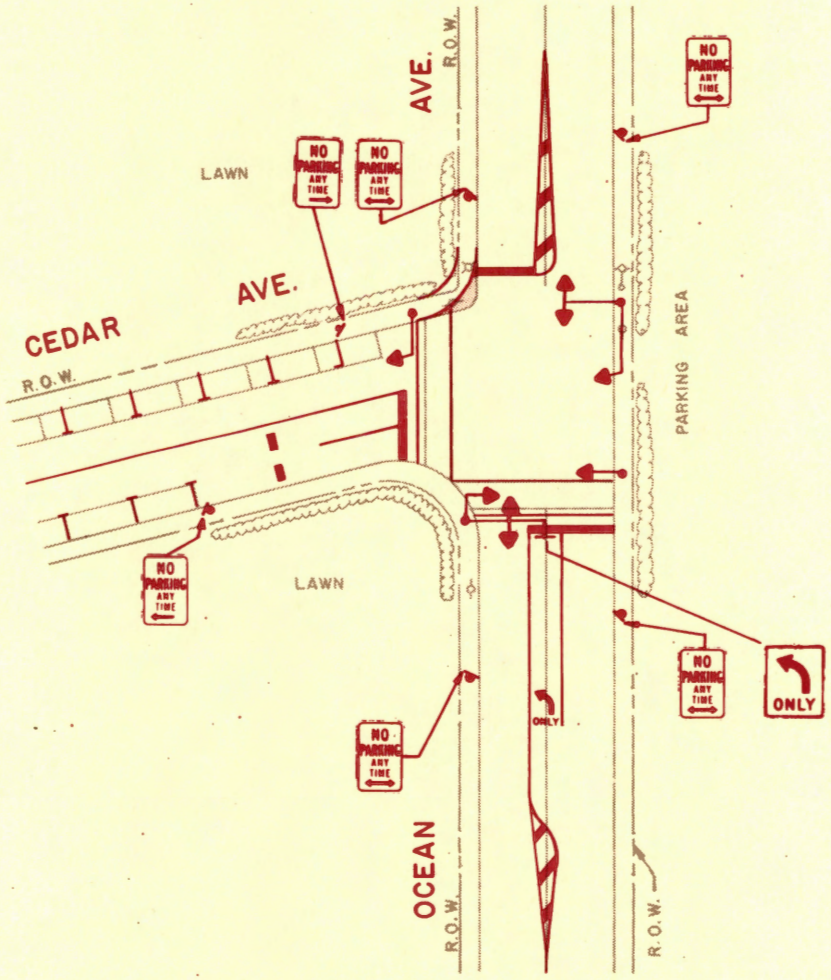
Recommendations

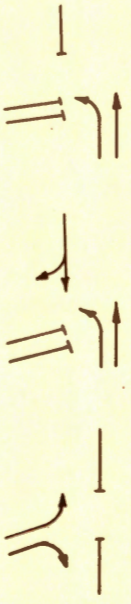
Installation of a semi-actuated traffic signal is recommended along with minor modification to the curb radii on the northwest corner. Provision of a left turning lane for northbound to westbound movements is also recommended.

Benefits

The safety and operational characteristics of this location will be improved by these recommendations. The left turning lane will remove the turning vehicles from the path of the straight through vehicles, and will increase the capacity of that approach.

RICHARD P. BROWNE ASSOCIATES





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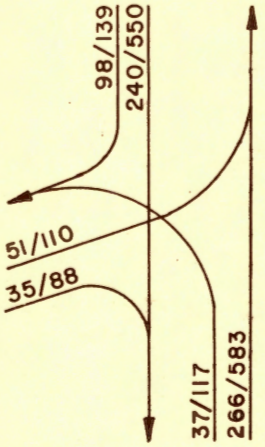
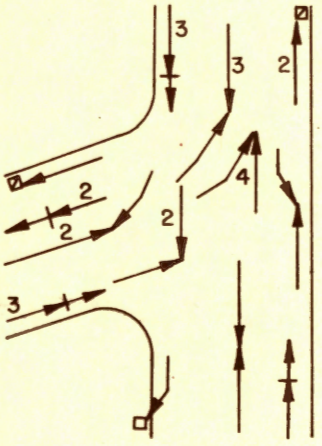


PEAK HOUR VOLUME
8:15 - 9:15 A.M. / 4:30-5:30 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD
.3 NOT SHOWN

0 60 120
Scale : 1" = 60'

PROPOSED IMPROVEMENT 3-24

3 - 25 BRANCHPORT AVENUE AND JOLINE AVENUE (N.J. ROUTE 36) LONG BRANCH

Joline Avenue (New Jersey Route 36) is a major state highway which runs along the shore and connects this area to other major highways such as New Jersey Route 35 and the Garden State Parkway. Branchport Avenue is a local collector road. The intersection is presently controlled by a semi-actuated traffic signal.

Problems

This location has high traffic volumes on Joline Avenue, particularly during the afternoon peak hour. The eastbound approach width, lane arrangement and curb turning radii are inadequate. A considerable number of side swipe accidents are experienced.

Recommendations

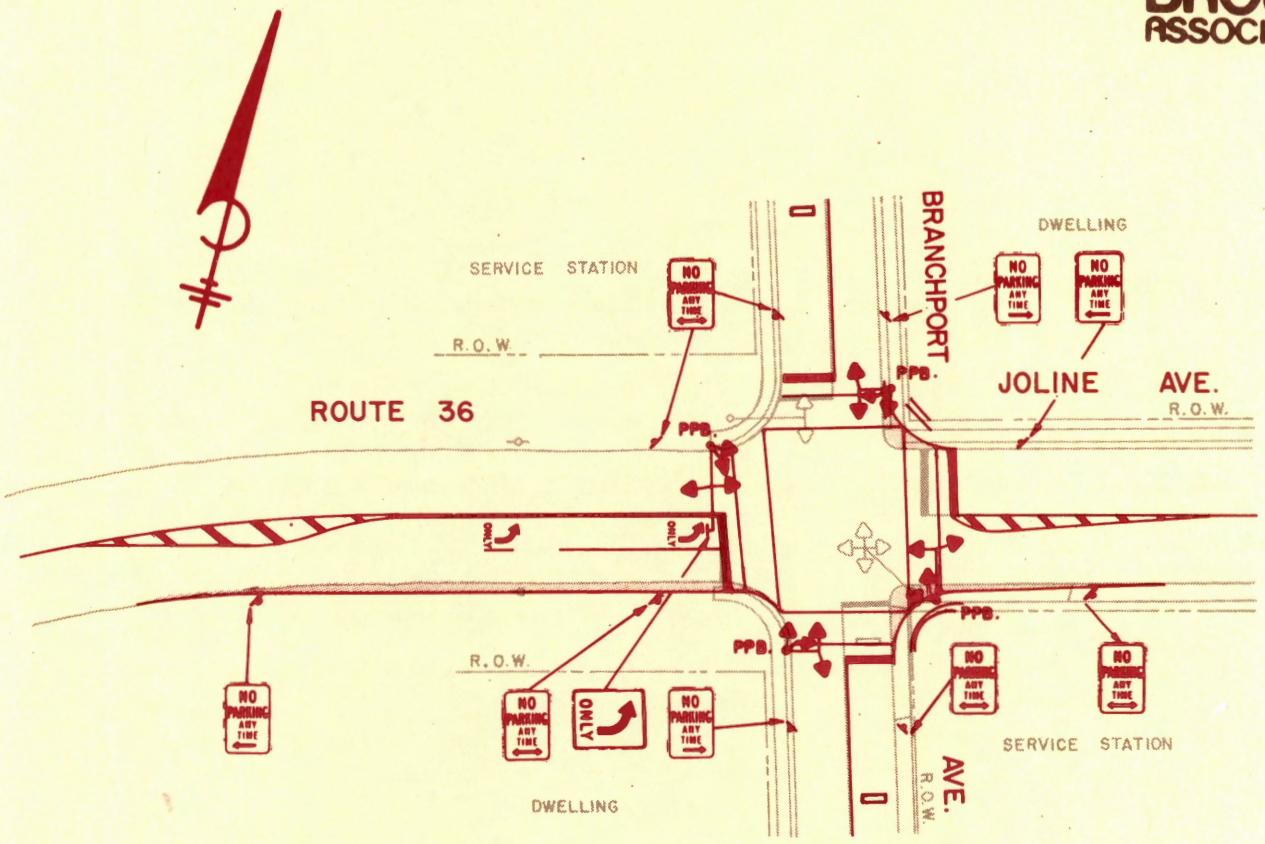
Widening of the eastbound approaches is recommended along with modification of the curb turning radius on three corners. Provisions should be made for a left turn lane on the eastbound approach. Modification of the signal layout to increase its visibility is recommended.

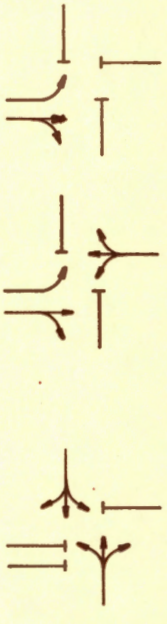
Benefits

The capacity and operational characteristics will be improved by the widening and turning radii improvements and will combine with the left turn lane and signal modification to increase safety.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES





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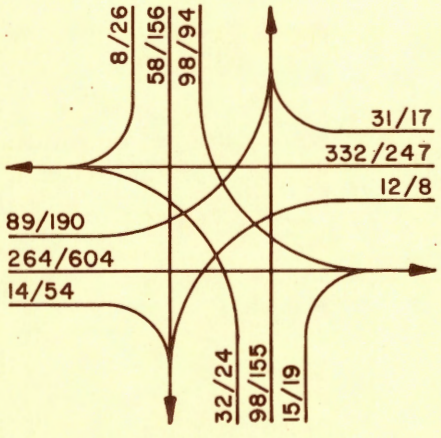
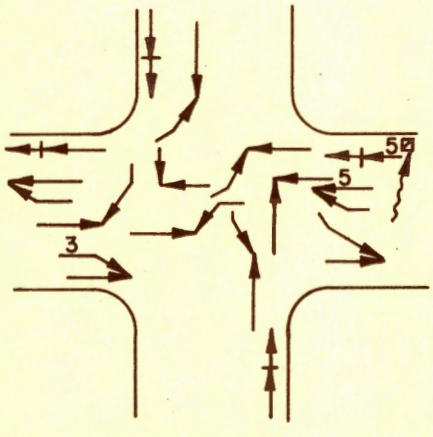


PEAK HOUR VOLUME
7:30-8:30 A.M./4:15-5:15 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD
1 NOT SHOWN

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 3-25

3 - 26 GARDEN STATE PARKWAY SPUR AND GRANT AVENUE EATONTOWN

Grant Avenue is a local roadway serving the immediate area and is controlled by stop signs.

Problems

This is an extremely wide intersection for side street traffic crossing the main street. The Spur has high speed traffic and sight distance is limited. A significant amount of right angle accidents have occurred.

Recommendations

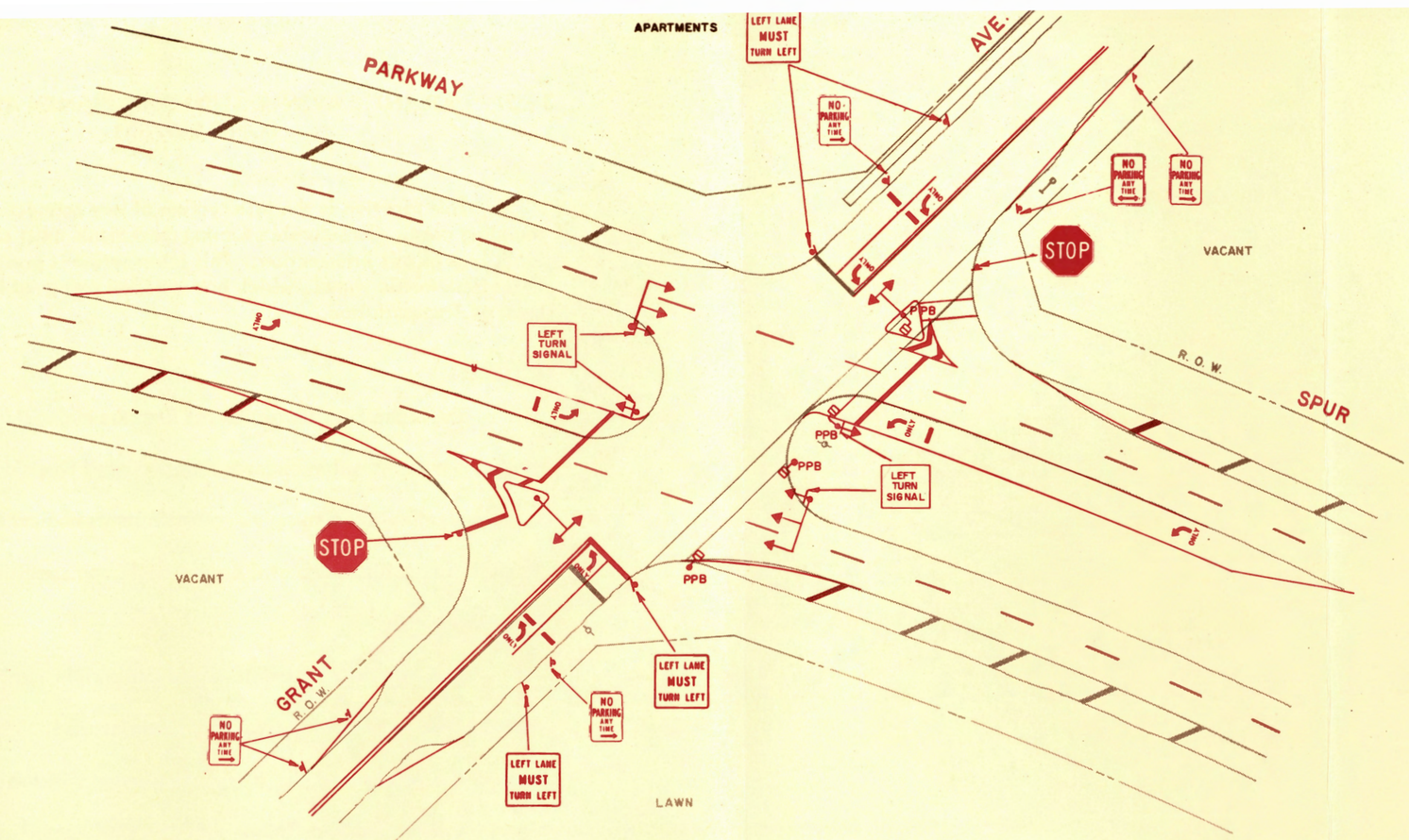
It is recommended that left turn lanes be constructed in the center median of the Garden State Parkway Spur. Channelizing islands should be constructed as indicated. Installation of a three phase semi-traffic-actuated signal is also recommended.

Benefits

The operational characteristics and safety of this intersection will be improved by these recommendations.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES





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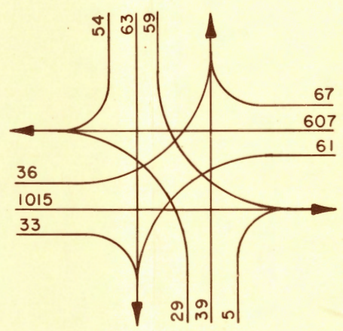
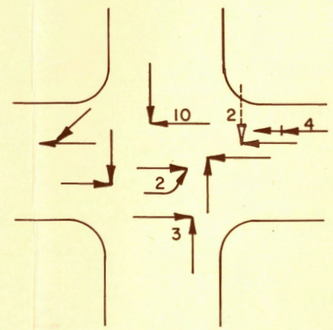


PEAK HOUR VOLUME
4:00-5:00 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD
4 NOT SHOWN

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 3-26

3 - 27 ATLANTIC AVENUE AND LONG BRANCH AVENUE LONG BRANCH

This location is the intersection of two connecting roadways for the surrounding area. Considerable turning movements exist connecting the west and south legs of this intersection. This intersection is presently controlled by a fixed time traffic signal, which has not been approved by the New Jersey Department of Transportation.

Problems

The highest traffic movement from the major side street approach is a right turning movement which exceeds the remaining five side street movements combined. A corresponding left turning movement from westbound to southbound also exists. Most of the accidents are of the right angle and some direction types.

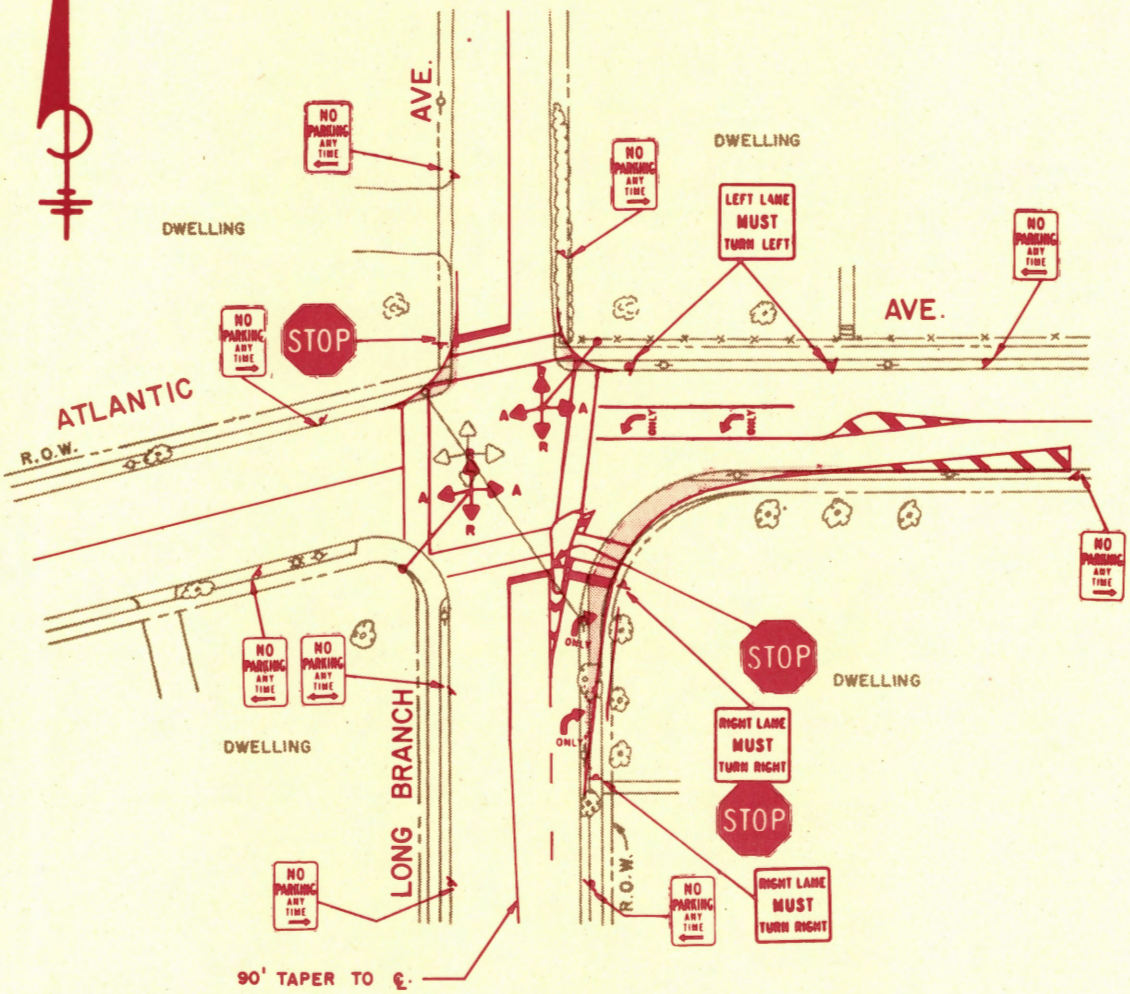
Recommendations

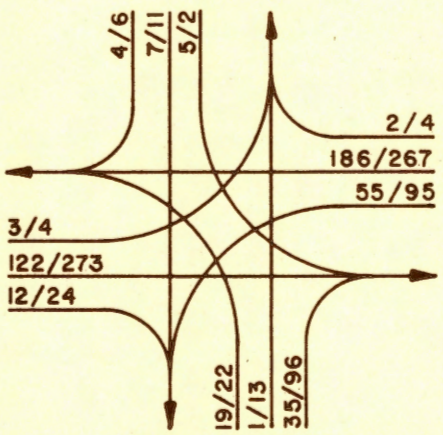
Construction of a traffic island and a right turning lane for northbound to eastbound movements as indicated is recommended. Modification to the turning radii is also recommended. It is recommended that the present fixed time traffic signal be converted to a flasher with stop sign control.

Benefits

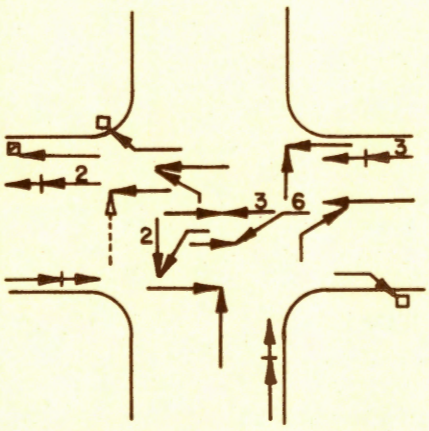
The right turning lane and improved radii should provide for that major movement without the need for the interruptions of main street traffic caused by the presence of the traffic signal. The provision of the left turning lane will remove the left turning vehicles from the path of the straight through vehicles and given them an area in the intersection to wait for an acceptable gap to effect that turning movement.

RICHARD P. BROWNE ASSOCIATES





PEAK HOUR VOLUME
7:15 - 8:15 A.M. / 4:00-5:00 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD
2 NOT SHOWN

0 60 120
Scale: 1" = 60'

PROPOSED IMPROVEMENT 3-27

3 - 28 PARK AVENUE AND NORWOOD AVENUE LONG BRANCH

Norwood Avenue is a major north-south highway in this area. Park Avenue is a local street. This location is presently controlled by stop signs.

Problems

A considerable number of right angle accident are experienced. Sight distance is obstructed by foliage adjacent to the approaches. Inadequate curb turning radii is found at this location.

Recommendations

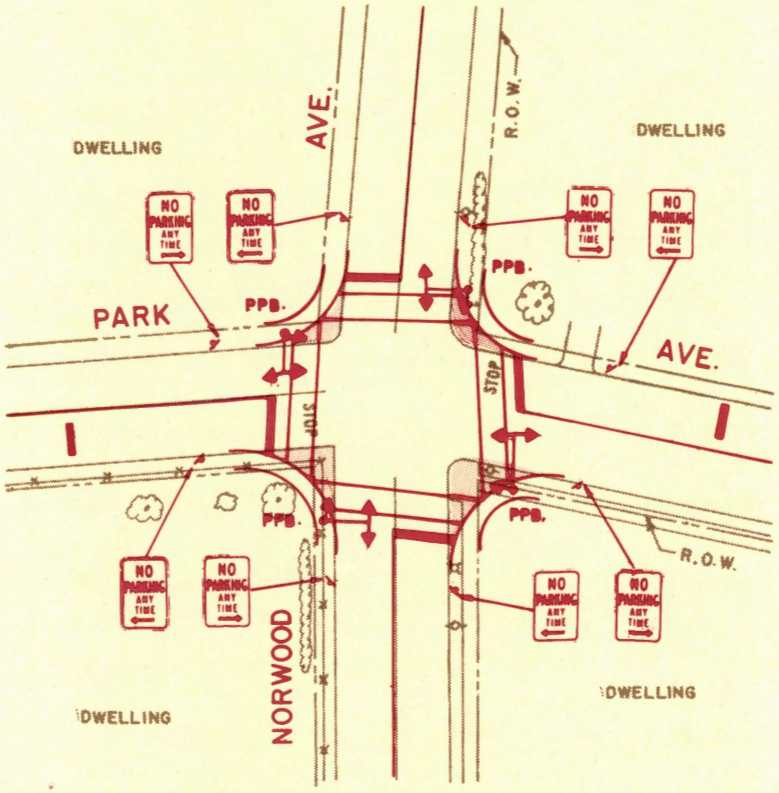
It is proposed that a semi-actuated traffic signal be installed at this location. It is recommended that the curb turning radii be modified while the foliage which presently reduces sight distance must be kept trimmed to a satisfactory level or be removed.

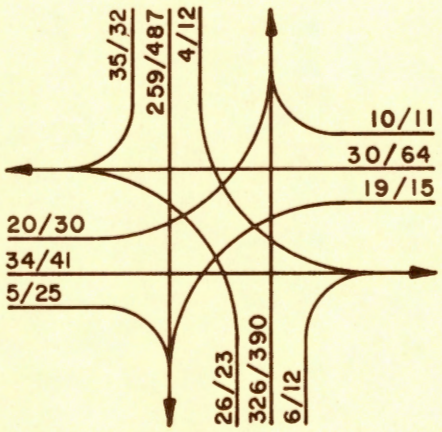
Benefits

The operational characteristics and safety of this location will be improved by these recommendations.

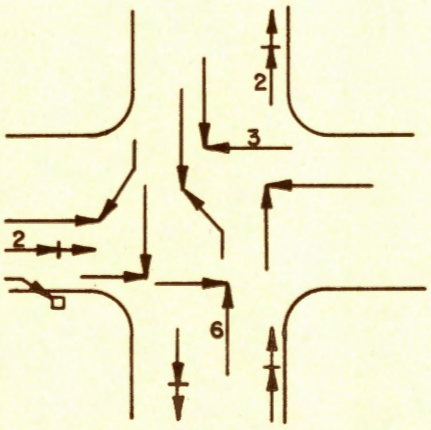
RICHARD P. BROWNE ASSOCIATES







PEAK HOUR VOLUME
7:30-8:30 A.M./4:30-5:30 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD
1 NOT SHOWN

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 3-28

3 - 29 ATLANTIC AVENUE AND FLORENCE AVENUE LONG BRANCH

This location is the intersection of two collector roads and is presently controlled by stop signs.

Problems

This location has heavy traffic on Atlantic Avenue with considerable left turns on the west approach and right turns on the east approach. Atlantic Avenue makes a bend as it passes through the intersection. The turning radius on the southwest corner leaves a large exposed area for possible vehicle conflicts and pedestrian movements. 14 right angle accidents were experienced at this location during the three year study period.

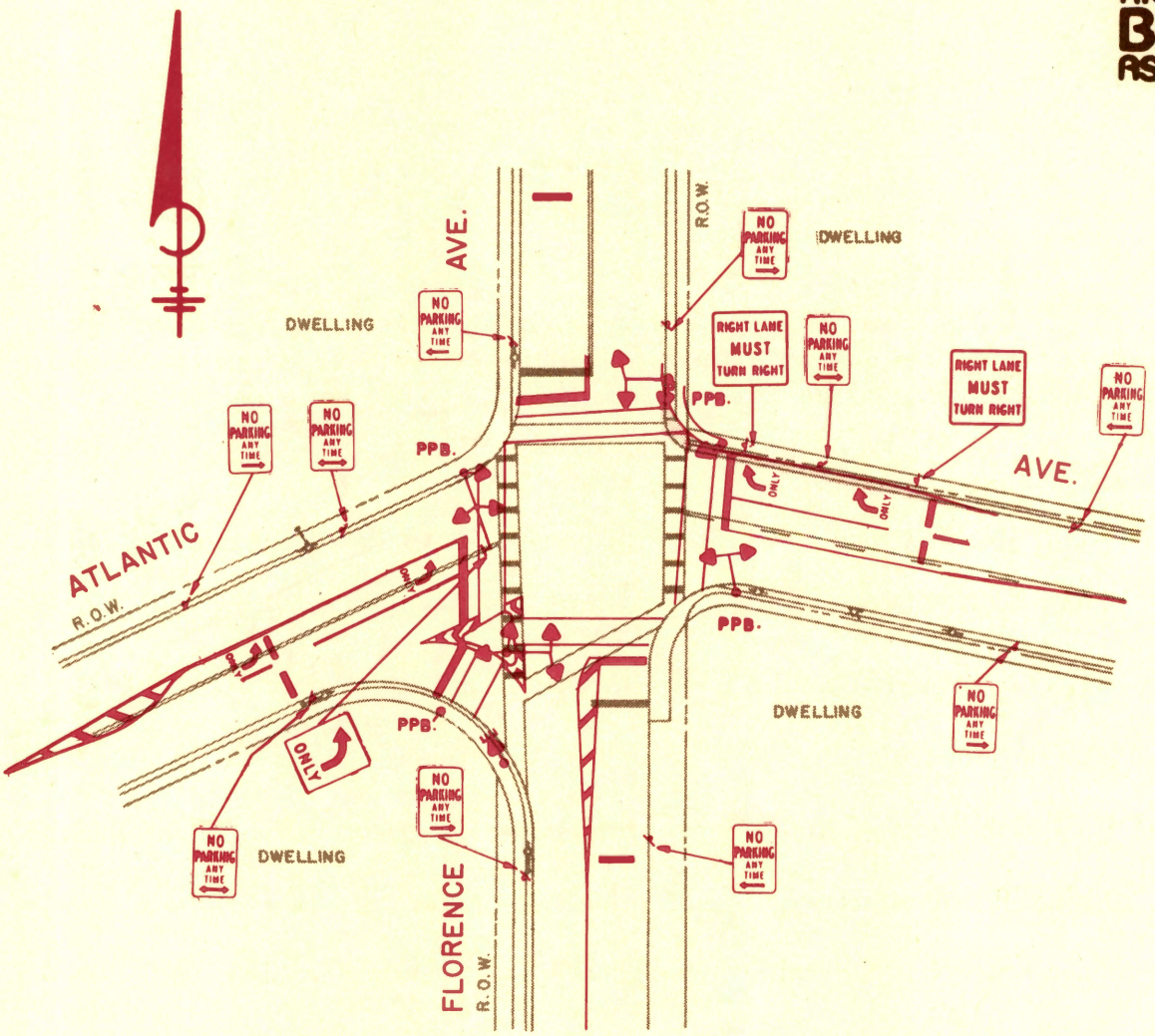
Recommendations

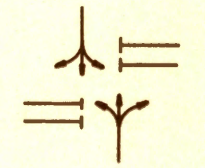
Provision for a left turning lane for the west approach is recommended. Minor widening is recommended for the east approach to provide two lane operation. Construction of the traffic island in the southwest corner is recommended along with the installation of a semi-actuated traffic signal at this location.

Benefits

Provisions for the additional approach lanes will increase the capacity of this location and with the installation of the traffic signal should improve safety. The construction of the traffic island will channelize traffic movements and reduce the potential area of vehicle conflict. This island will also provide a safety area for pedestrians making crossings.

RICHARD P. BROWNE ASSOCIATES





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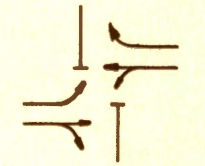

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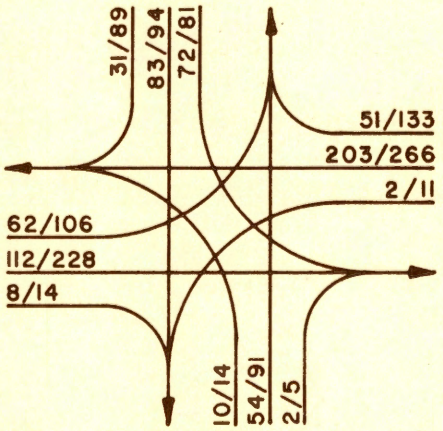
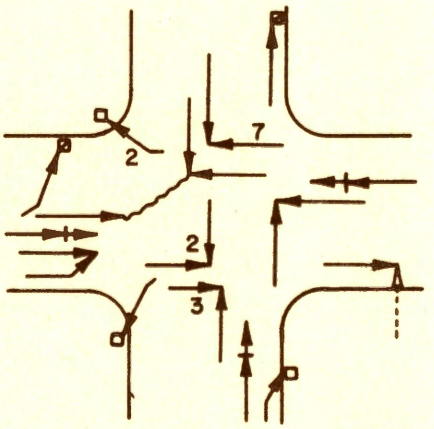


PEAK HOUR VOLUME

7:30-8:30 A.M./4:15-5:15 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD

2 NOT SHOWN

0 60 120

Scale: 1"= 60'

PROPOSED IMPROVEMENT 3-29

3 - 30 PORT-AU-PECK AVENUE AND OCEANPORT AVENUE OCEANPORT

This intersection is located at a major entrance to the Monmouth Park Race Track. The intersection carries large peak hour street volumes as well as event loadings during race track operations.

Problems

This intersection has high traffic volumes and high event loadings during racing season. Approaches have insufficient widths and lane arrangement. There is insufficient signal control for the race track operations.

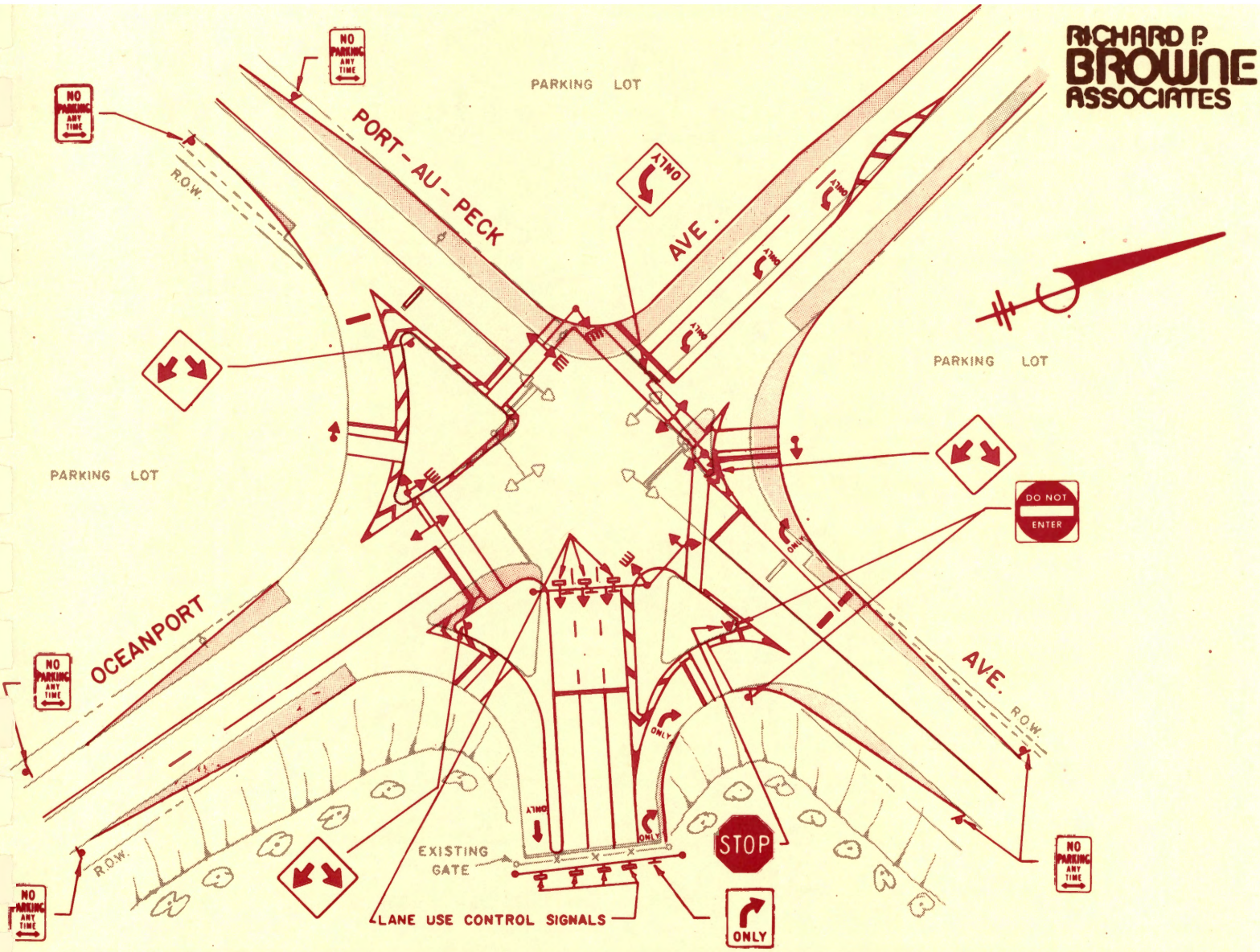
Recommendations

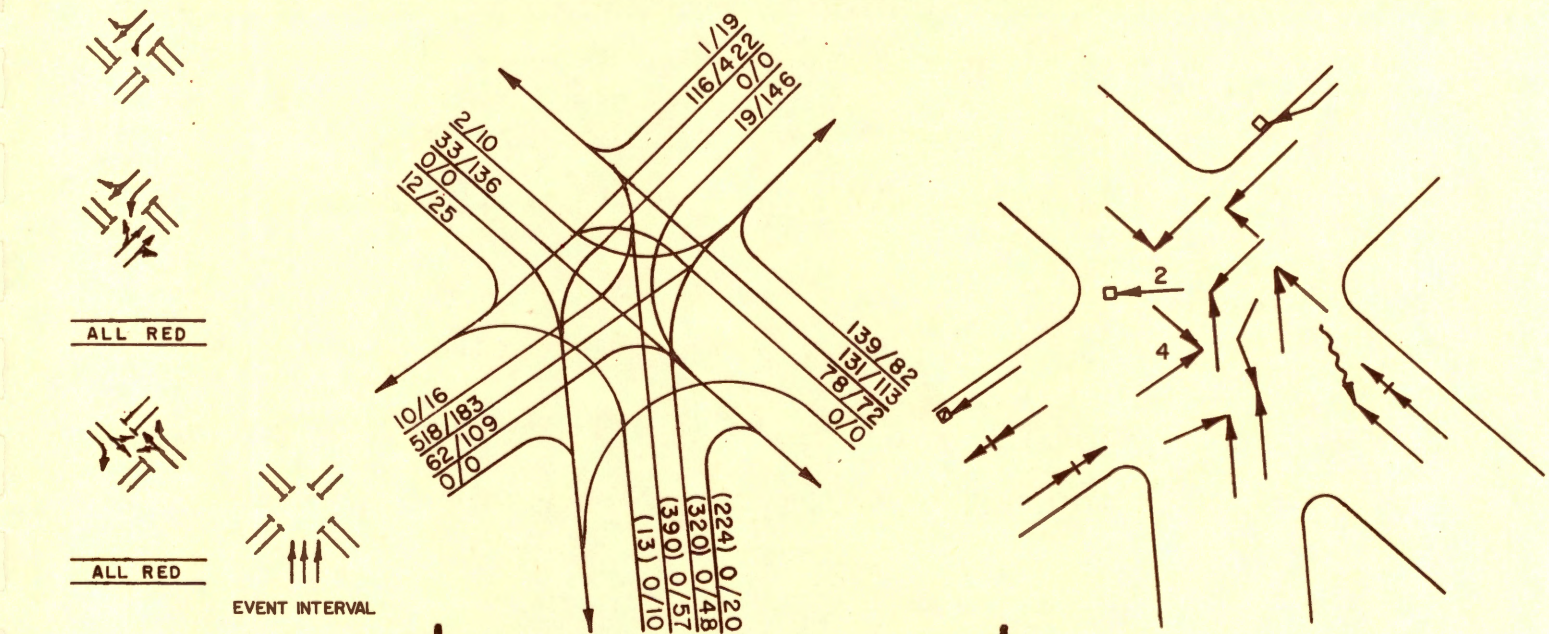
Modification to the signal installation is recommended including the addition of marked lane use control signals to handle volumes generated by the race track. Widening on the intersection approaches is also recommended along with modification to the intersection channelization. A left turning lane is also recommended on the southbound approach of Oceanport Avenue. All improvements associated with the entrance to Monmouth Park Racetrack are the responsibilities of the Park.

Benefits

The capacity and safety of this location and the operational characteristics will be improved by these recommendations. The provision for signalized control of the race track entrance will reduce the need for uniform police during event periods. The traffic count shown on the concept design was recorded during the normal peak hours.

RICHARD P. BROWNE ASSOCIATES





PROPOSED SIGNAL SEQUENCE

PEAK HOUR VOLUME 7:00-8:00A.M./4:00-5:00P.M.
RACETRACK TRAFFIC (5:30-6:30 P.M.)

ACCIDENT SUMMARY – 3 YR. PERIOD
5 NOT SHOWN

0 60 120
Scale : 1" = 60'

PROPOSED IMPROVEMENT 3-30

3 - 31 BROAD STREET AT WYCKOFF ROAD AND MAIN STREET EATONTOWN

Wyckoff Road and Main Street are major roadways through Eatontown. Broad Street (N.J. Route 71) is also a major roadway which connects the coastline and points south with County Road 537 at N.J. Route 35 in Eatontown. Watson Place and Elton Place are local streets providing access to abutting properties. The Main Street intersection is controlled by a semi-actuated traffic signal and the Wyckoff Road intersection is controlled by stop signs.

Problems

Broad Street in this area has insufficient roadway widths and arrangements for high turning movements. The roadway widths on Main Street are also inadequate. A considerable number of turning movements and five right angle collisions exist at the Wyckoff Road intersection.

Recommendations

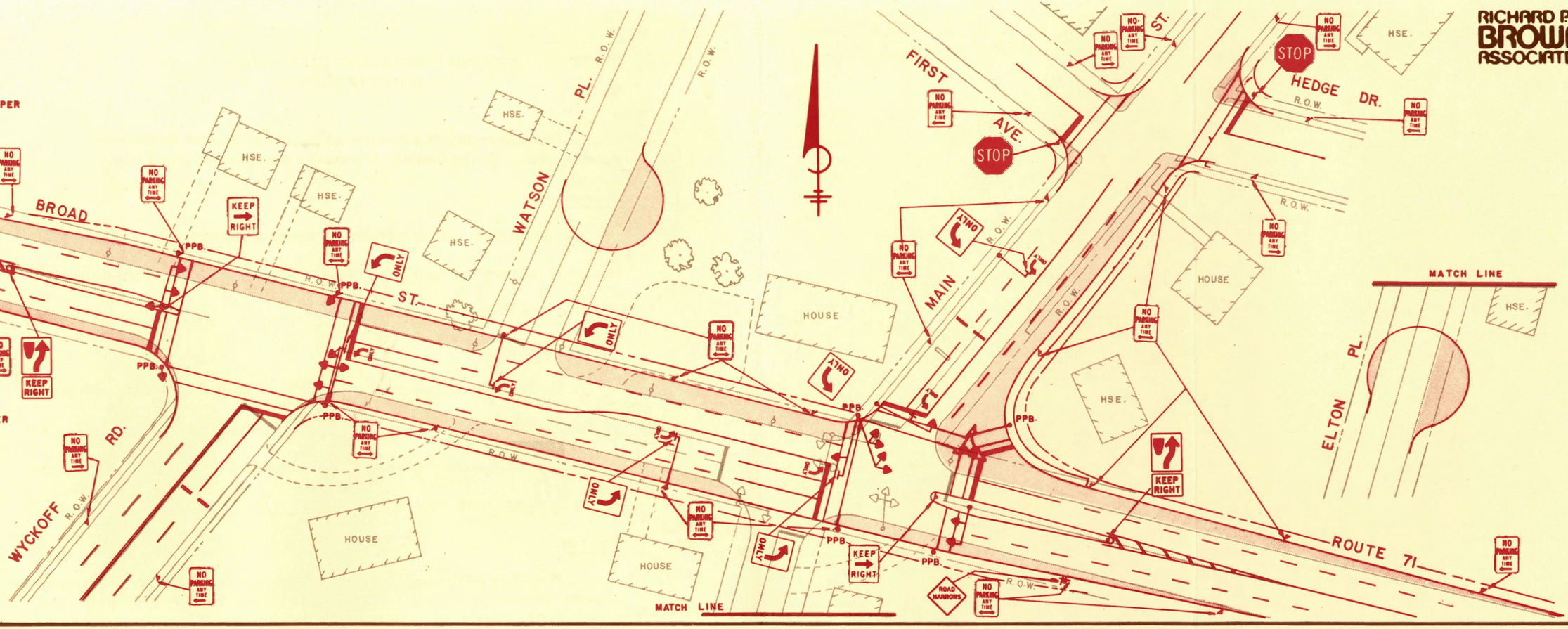
Widening of Broad Street in this area is recommended to provide two through lanes in each direction and a left turn lane on the approaches of Wyckoff Road and Main Street. Widening of approach lanes westbound to Main Street and the receiving lanes on Main Street is recommended. Provision for a left turning lane on the Main Street approach is further recommended. The installation of a semi-actuated traffic signal at Wyckoff Road is also recommended. Closing off of the Watson Place and Elton Place access points to this section of Broad Street is recommended.

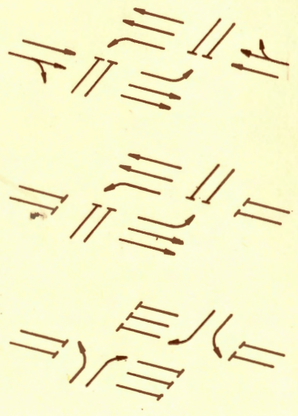
Benefits

The widenings and turning lane provisions will improve the capacity of this location and combined with the construction of the traffic islands and signal installation will increase the safety. Hazardous movements out of Watson Place and Elton Place will be eliminated.

NOTE: The proposed layout is subject to revision based on a detailed study by the New Jersey Department of Transportation.

RICHARD P. BROWNE ASSOCIATES





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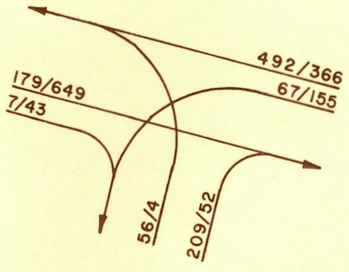

PEAK HOUR VOLUME
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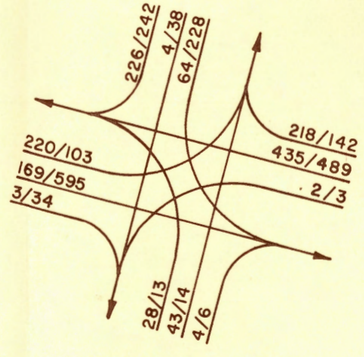

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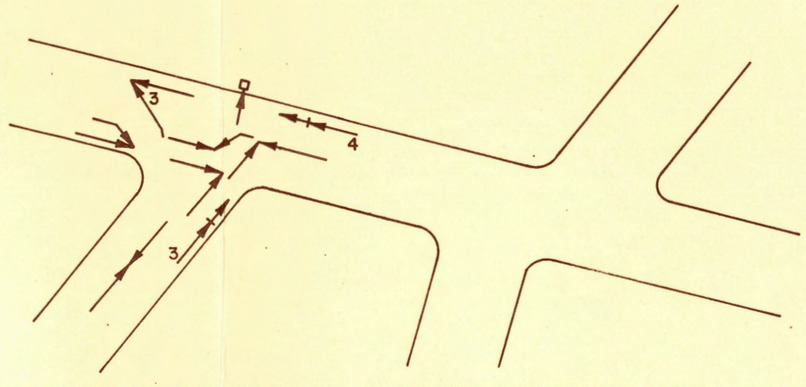
7:00 - 8:00 A.M. / 4:15 - 5:15 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD
2 NOT SHOWN

ACCIDENT SUMMARY - 3 YR. PERIOD
4 NOT SHOWN

0 60 120
Scale: 1"= 60'

PROPOSED IMPROVEMENT 3-31

3 - 32 SECOND AVENUE AND CEDAR AVENUE
LONG BRANCH

This intersection is a location of two collector roads for the surrounding area. The intersection is presently controlled by a stop sign.

Problems

Considerable turning movements exist on all approaches. A significant amount of left turn and right angle accidents are experienced. Sight distance is obscured by foliage on the northeast corner.

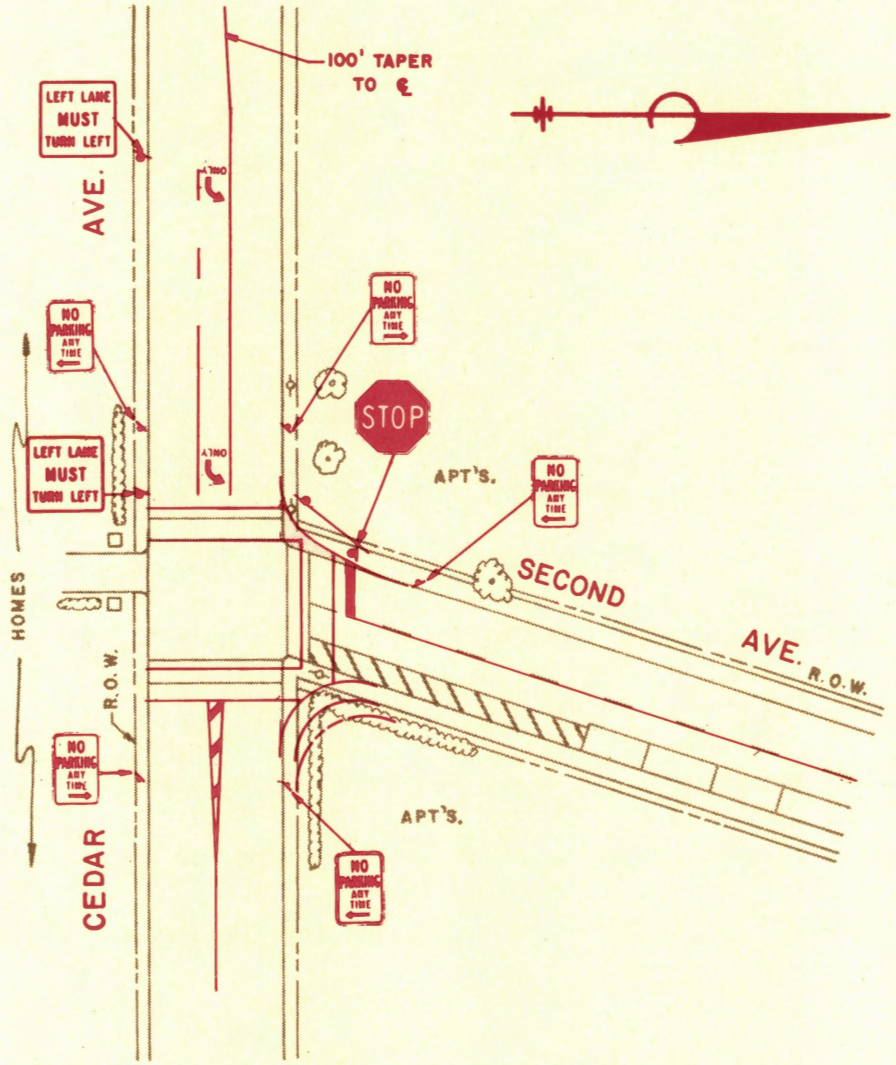
Recommendations

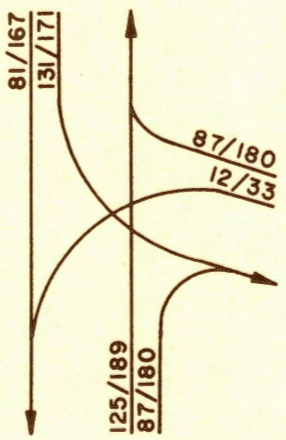
Modification to the curb turning radii is recommended along with provision for a left turning lane for eastbound to northbound turning movements. Installation of an over sized stop sign is also recommended. The remaining foliage on the northeast corner must be maintained at a low level or be removed.

Benefits

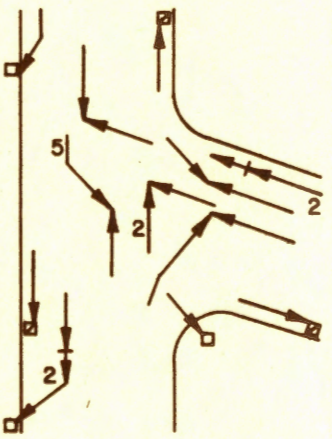
The safety and operational characteristics of this location will be improved by these recommendations.

RICHARD P. BROWNE ASSOCIATES





PEAK HOUR VOLUME
8:15-9:15 A.M. / 4:30-5:30 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD
4 NOT SHOWN

0 60 120
Scale : 1" = 60'

PROPOSED IMPROVEMENT 3-32

3 - 33 SECOND AVENUE AND MORRIS AVENUE LONG BRANCH

Second Avenue is a major road in Long Branch running parallel to Ocean Avenue. This intersection is presently controlled by stop signs.

Problems

This location has skewed approaches with inadequate sight distance on two approaches. The curb turning radii are inadequate. There were 10 right angle accidents experienced at this location in the three year period.

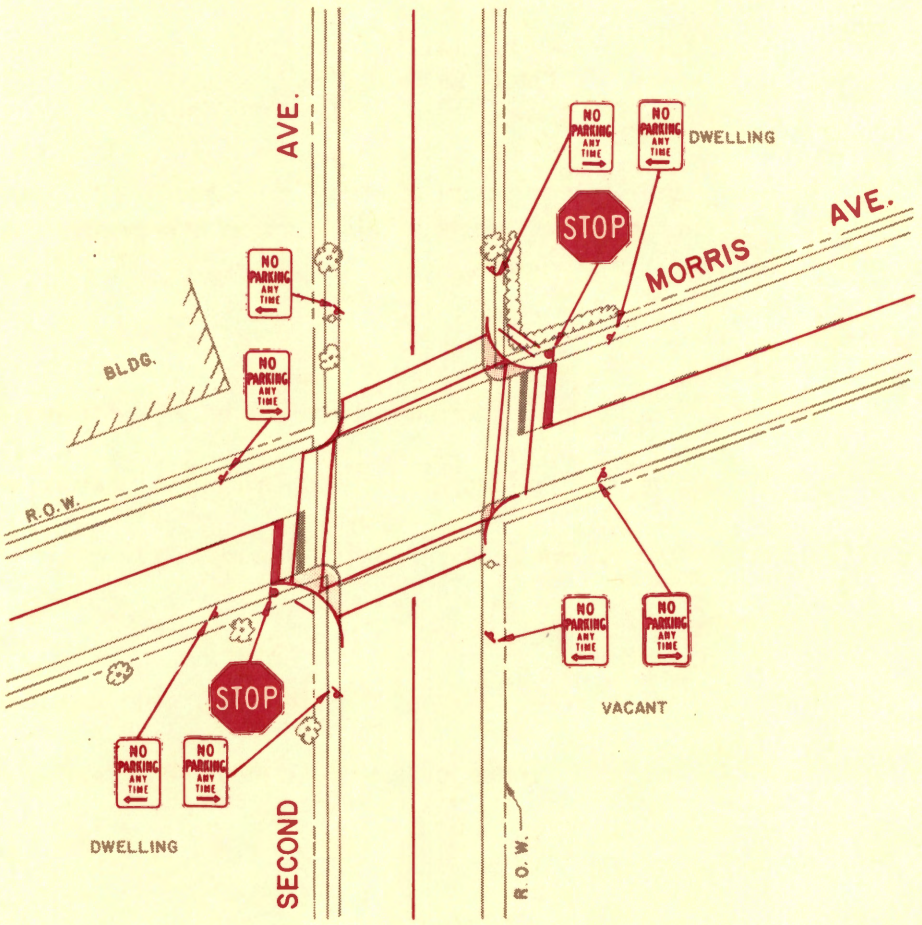
Recommendations

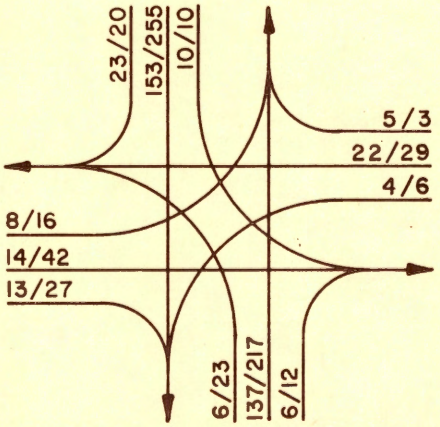
Modification to the curb turning radii are recommended. The installation of oversized stop signs is also recommended. The vegetation on the northeast corner should be kept trimmed to a level lower than the average drivers eye height.

Benefits

The safety and operational characteristics of this location will be improved by these recommendations. Normal maintenance of the vegetation on the northeast corner will increase sight distance on the affected approaches and should reduce the accident experience.

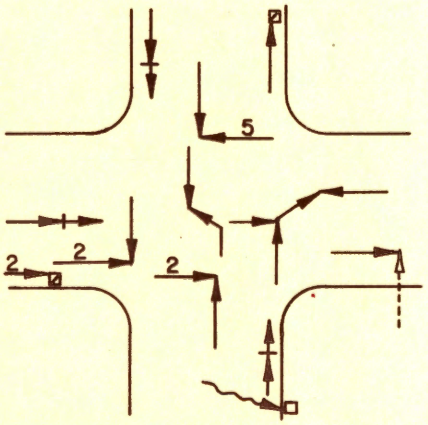
RICHARD P. BROWNE ASSOCIATES





PEAK HOUR VOLUME

7:45 - 8:45 A.M. / 4:30-5:30 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD

5 NOT SHOWN

0 60 120

Scale: 1"= 60'

PROPOSED IMPROVEMENT 3-33

3 - 34 BROADWAY AND MORRIS AVENUE LONG BRANCH

Morris Avenue is a collector roadway for the surrounding area while Broadway is a major east-west street. This location is presently controlled by a semi-actuated traffic signal.

Problems

This location has inadequate approach widths. Operations are complicated by a near side bus stop. This location has high traffic volumes on the main street and considerable left turn volumes out of Morris Avenue.

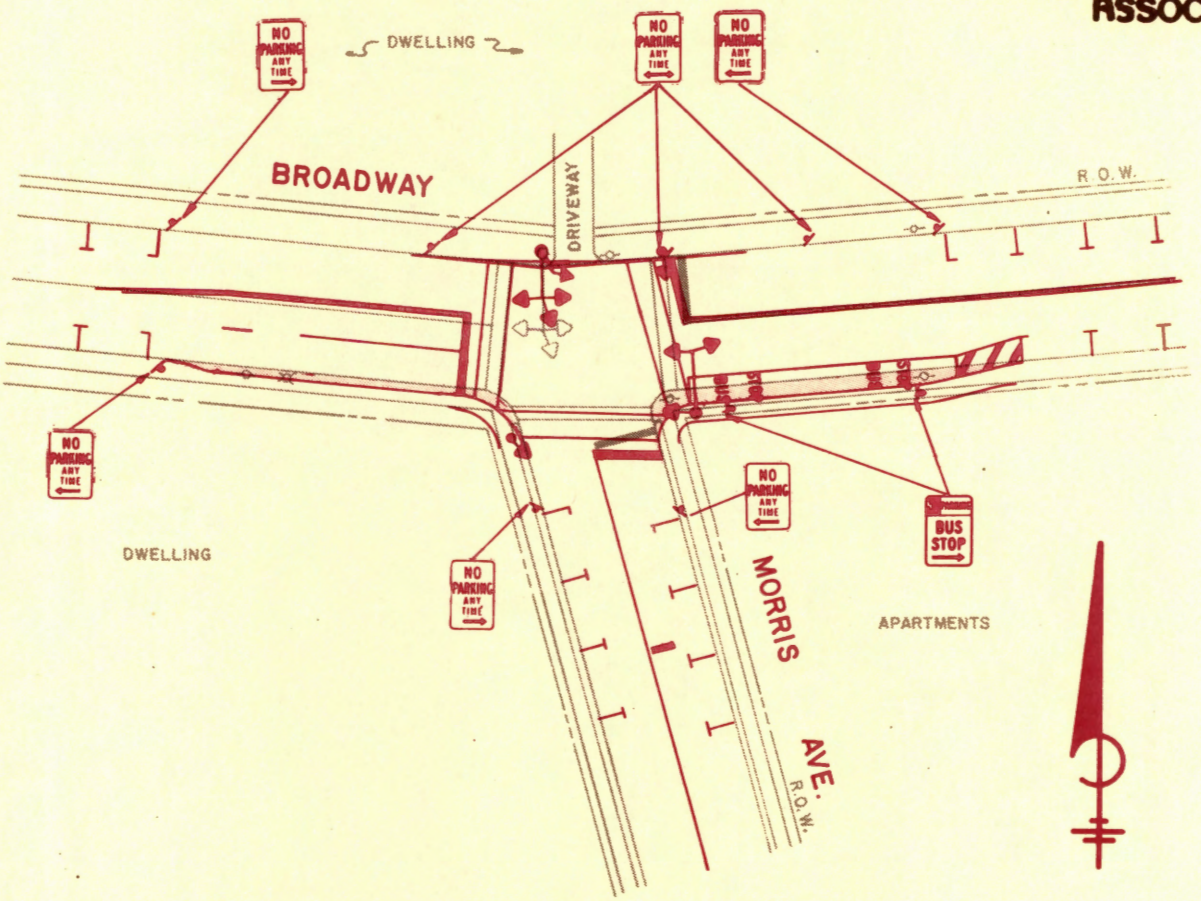
Recommendations

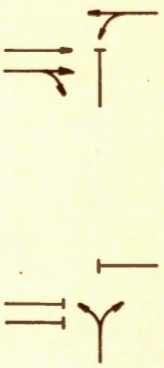
Minor widening on Broadway in the vicinity of this intersection is recommended to provide for two approach lanes for eastbound movements and for a farside bus turn-out.

Benefits

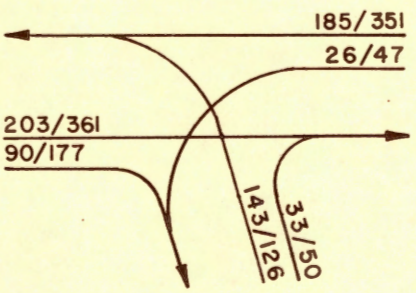
The provision for two approach lanes for eastbound movements will allow increased capacity for the high right turning volume. The farside bus stop will allow buses to stop in such a way as to avoid blocking through traffic.

RICHARD P. BROWNE ASSOCIATES

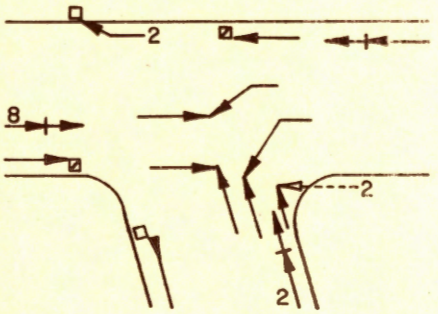




SIGNAL SEQUENCE



PEAK HOUR VOLUME
7:00-8:00 A.M./4:15-5:15 P.M.



ACCIDENT SUMMARY - 3 YR. PERIOD
4 NOT SHOWN

0 60 120
Scale : 1" = 60'

PROPOSED IMPROVEMENT 3-34