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NEW JERSEY STATE HIGHWAY DEPARTMENT
DIVISION OF RAILROAD TRANSPORTATION

NEW YORK AND LONG BRANCH RAILROAD

CAPITAL IMPROVEMENTS

SOUTH AMBOY TO LITTLE SILVER AND SHREWSBURY

SEPTEMBER 1966

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TRENTON

RICHARD J. HUGHES
GOVERNOR

Dear Legislators, County and Municipal Officials:

On May 16 of this year, I sent the Legislature a Special Message on Transportation. The Message included the broad outlines of a ten-year capital improvement program for public transportation in New Jersey with special emphasis on our suburban railroad system.

The Legislature's response was swift and bipartisan--the Transportation Act of 1966 was passed unanimously by both Houses. The Act transformed the Highway Department into a Department of Transportation with expanded responsibility and increased statutory powers in the area of public transportation.

The Division of Railroad Transportation within the present Highway Department is carrying out work on the detailed capital improvement program pending implementation of the new legislation. The division for some time has assigned a high priority to the rehabilitation of the New York and Long Branch Railroad. The following report describes in detail the first phase of improvements on this railroad.

Our complete plans for the New York and Long Branch include electrification to a point south of Asbury Park, but the present phase focuses on the 17-mile section from South Amboy in Middlesex County to Little Silver and Shrewsbury in Monmouth County. The improvements will begin immediately and include eliminating street-railroad grade crossings at five locations, extending electrification, construction of several new passenger stations at locations affording convenient access and ample parking, and the acquisition of modern, air-conditioned commuter cars for the electrified areas.

Upon completion of the work of the first phase, commuters from Little Silver, Shrewsbury and other stations to the north and east on the New York and Long Branch will have substantially faster service. Commuters patronizing stations between the present terminal in Bay Head and the newly electrified section will continue to have through service to Newark and New York in commuter hours. In non-rush hours, service for these passengers will be improved by transferring to the electrified trains at the Red Bank-Little Silver-Shrewsbury Station.

Although the rail service improvements between South Amboy and Little Silver will be completed first, the preliminary engineering work on the second phase, which includes improvements south of Asbury Park, will be started in the near future.

I have directed the Division of Railroad Transportation to commit \$600,000 out of the current capital improvement budget to initiate the New York and Long Branch project. The first application for federal funds under the Urban Mass Transit Program will be submitted by November 1, 1966, but the commitment of current funds will enable us to proceed with phase one immediately.

Sincerely yours,


GOVERNOR

October 17, 1966

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CAPITAL IMPROVEMENTS

SOUTH AMBOY TO LITTLE SILVER AND SHREWSBURY

Previous reports prepared by the Division of Railroad Transportation have outlined in general terms improvements needed to be accomplished on the New York and Long Branch Railroad. The needed improvements were in four categories, namely: electrification, station consolidation and improvements, new commuter cars and grade crossing eliminations. This document represents the results of engineering work carried out as the first necessary step leading toward the accomplishment of these improvements.

The objective of the improvement program is to enhance the quality of the railroad passenger service and to improve the environmental relationship between the railroad plant and the communities in which it is located. Recognizing that complete realization of the objective could not be attained initially the work to be accomplished in each of the four categories had first to be defined, the design developed, and then priorities assigned in order that the total improvement could be accomplished at least cost. For instance, if traffic projections indicate that in five years a grade crossing should be eliminated and the engineering shows that in order to eliminate the crossing the railroad should be elevated or depressed, the grade separation should be accomplished prior to electrification in favor of

another location which might have greater traffic volumes. Otherwise costly reconstruction of comparatively new installations might result. The same holds true for station improvements. Accordingly, a program has been developed for improving the New York and Long Branch Railroad striving to balance between funds that reasonably can be expected to become available for the project and the benefits accruing to the passengers and the communities from the four improvement elements. Proposals with regard to each follow.

GRADE CROSSINGS

Surveying present conditions on the New York and Long Branch it is clearly evident that by all current standards several of the railroad-street grade crossings should have been separated years ago and probably they would have been if an economic engineering separation could have been developed. The New York and Long Branch tracks have been in place for about 90 years. Historically, development in the older communities has followed along railroads and areas adjacent to the intersections of roads and railroads usually developed first. It is the intensity of land use at grade crossings that is the principal obstacle to their elimination.

Although officials and citizens alike prefer that crossings be eliminated funds have not been available in quantity to carry out

such programs in the difficult areas. Criteria now governing the design of grade separations in order that the separation function safely for motorists may cause such dislocation that the cure often seems to be more painful to the community than the crossing.

The situation along the New York and Long Branch from South Amboy to Red Bank is typical and although a minimum number of grade crossings are proposed to be eliminated initially those that are scheduled cannot be accomplished without property acquisition and street rearrangements.

The preliminary plans for effecting the elimination of certain railroad-street crossings included herein reflect the results of studying a number of alternatives at each location. It is not professed, however, that everything that should be known concerning a particular location is known. Officials and citizens in the communities will always be more aware of local conditions than those remote from the site. Additionally, they look upon such conditions with a somewhat different set of values. It is the intention of the Highway Department to continue discussions in each community with appropriate officials expecting to improve upon the proposals outlined herein within economic limitations. The same holds true with regard to recommendations made for railroad station improvements and other features of the improvement program.

Between Augusta Street in South Amboy and White Road in the Borough of Little Silver and the Borough of Shrewsbury there are 23 crossings of public highways, streets or thoroughfares by the passenger tracks of the New York and Long Branch Railroad. A survey carried out in March 1966 by a team of engineers indicated that all 23 crossings could either be eliminated, or the streets closed at the crossings, and in some cases connected with other roads to provide traffic circulation, for about \$22 million. However, the street traffic at many of the crossings is not now at a density requiring grade separations and grade crossing devices are either adequate or will soon be made adequate to reasonably protect the safety of motorists and pedestrians. It has also been determined that with the exception of Broad Street and White Road just south of Red Bank all grade crossing eliminations in the area to be electrified could be carried out without appreciably changing the grade of the railroad. Therefore, with this exception, electrification could proceed without fear of later costly relocation of the catenary when the remaining grade crossings are eliminated. In order that future elimination costs be kept under control it is desirable to prevent further development at the crossings by advance purchase of vacant property within construction limits.

One other aspect of the grade crossing elimination program concerns giving proper consideration to county and municipal plans for new roads or alignment improvements in existing roads planned to be

grade separated. The proposals contained herein have considered such matters to the extent that they are known and as final plans are prepared consideration will continue to be given to any further road projects that may develop.

Surveys were made during July and August at the major highway and street grade crossings between South Amboy and Little Silver and the following data were tabulated:

1. Number of vehicle crossings
2. Number of pedestrian crossings
3. Number of gate closings
4. Time that the gates were down
5. Number of vehicles detained at gate closings
6. Total number of vehicles delayed in 30 minute periods because of gate closings.

Analysis of this material along with the electrification, station improvements, railroad grade changes and local street improvement plans previously outlined indicates that the following grade crossings be included in the initial program (Phase I) of the New York and Long Branch improvement project:

Main Street, Borough of Matawan

Church Street, Township of Middletown

Shrewsbury Avenue, Borough of Red Bank

Broad Street (State Rt. 35) Borough of Red Bank

White Road, Borough of Little Silver and Township of Shrewsbury

Following is a brief description of the work intended to be accomplished at each location:

Main Street and Atlantic Avenue, Borough of Matawan

Main Street is a principal east-west artery running between Matawan on the west and Keyport and other communities on the east. It also has a substantial volume of local traffic. Counts indicate over 10,000 vehicles crossed the tracks between 6:00 A.M. and 9:00 P.M. on a typical summer weekday. Train movements caused the gates to be closed 52 times and the average time of each closing was 64 seconds. Over 500 pedestrians crossed the tracks within the same time period - many of whom were railroad patrons.

Several years ago the Central Railroad Company of New Jersey prepared a scheme for separating the railroad from street traffic which indicated lowering Main Street on its present alignment and underpassing the railroad tracks. New development on Main Street adjacent to the crossing along with damage to older improvements would require substantial acquisition of property and reduction of ratables in the community if this plan were adopted today. The appended drawing, Exhibit 6 indicates an alternative to the earlier proposal and would utilize substantial property now in railroad ownership to effect the grade separation. As the plan indicates, Main Street would be realigned through the present railroad station and connected with Atlantic Avenue

northerly of the railroad. Atlantic Avenue south of the railroad would be joined to Main Street to provide traffic circulation. This scheme would reduce property damage but add to the cost of the grade separation structure making the total cost of the two schemes about the same. The alternate proposal would require a relocation of the station, the advantages and disadvantages of which are discussed in the section of the report on station improvements. Apart from the station considerations the street relocation scheme could be constructed with much less inconvenience to the travelling public.

Atlantic Avenue, located one block southerly of Main Street at the existing crossing, was observed to have only 921 vehicular crossings in a 15 hour period and is proposed to be closed at the railroad (under either scheme) and connected to Main Street south of the tracks.

Church Street (Middletown-Lincroft Road), Township of Middletown

The 15 hour traffic count at the intersection of Church Street and the railroad indicated a little over 3,000 vehicles and nearly 400 pedestrians crossing the intersection. Physically, the street can be lowered in place 20 feet to effect the grade separation, however, the resulting street profile although meeting geometric standards for such a facility was such as to prompt further study.

It was learned that the County of Monmouth was considering a relocation of Church Street to cross the railroad about 400 yards southerly of the present intersection and traverse essentially undeveloped land and connect with Kings Highway opposite the present intersection of King's Highway and Middletown Road. Such a relocation would provide a more direct north-south artery between Port Monmouth and Belford on the north and Middletown-Lincroft Road on the south.

The studies indicate that relocating Church Street would not only be a desirable improvement insofar as traffic circulation is concerned but would be greatly superior geometrically. A corollary advantage would be more convenient access to the Middletown Station from Belford and Port Monmouth - communities that would no longer have railroad passenger service after the elimination of the Atlantic Highlands Branch trains. A plan is appended, Exhibit 7 incorporating what is believed to be the county proposal.

The disadvantage of the proposal is that the relocation of the street should carry with it the relocation of the Middletown passenger station in order that vehicular access and egress would be most convenient. This situation is discussed in detail under the passenger station improvement section of the report. In any event, the planning for Church Street relocation should only be done on the basis of separating the grade of the street

and railroad traffic.

Borough of Red Bank

Shrewsbury Avenue

The railroad grade crossings in the Borough of Red Bank have been a source of congestion and hazard for many years and the seriousness of the condition prompted the Public Utility Commission in 1958 to order a number of the crossings eliminated at an estimated cost of \$19 million. Funds have not been appropriated to implement the order and it is unlikely that even with Federal participation sufficient funding could be arranged to carry out a complete grade crossing elimination program in Red Bank as was envisioned by the earlier order. Today, conditions at the several crossings are such that officials and the citizens are becoming impatient as studies, proposals and plans made in the past for grade separations, station area improvements or station relocations have all failed for one reason or another.

The July survey disclosed that nearly 10,000 vehicles crossed the tracks on Shrewsbury Avenue in the 15 hour period and that the 47 gate closings caused delays averaging 90 seconds each. The longest delays and those causing the most congestion occurred when passenger trains stopped at the station. Shrewsbury Avenue is a main north-south artery. It is proposed that the present crossing at grade be eliminated by lowering the

street on its present alignment to underpass the railroad tracks as indicated on the attached plan. In connection with this elimination project the intersection of Shrewsbury Avenue and West Front Street would be improved and, ideally, West Front Street lowered to provide greater vertical clearance at the existing structure carrying the Railroad over West Front Street. Effecting the elimination as proposed would require the acquisition of two commercial enterprises and five residences all located on the west side of Shrewsbury Avenue. (See Exhibit 8.)

Bridge, Monmouth and Oakland Streets

The treatment of Bridge, Monmouth and Oakland Streets described in the following paragraphs assumes that the railroad passenger station will be relocated as discussed in other sections of this report.

Bridge Street

Bridge Street is a north-south Street parallel with Shrewsbury Avenue. In vicinity of the railroad crossing its development is mostly commercial with some industries abutting its right-of-way. From about River Street south to its intersection with Newman Springs Road (about $\frac{1}{2}$ its length) its development on both sides is predominantly residential.

The July typical day count (15 hours) showed a total of 3,400

vehicles and about 400 pedestrians, using the street. At its crossing of the tracks Bridge Street also intersects with Monmouth Street, complicating the grade crossing.

Monmouth Street

Monmouth Street is a principal east-west street serving the Red Bank central business district; it terminates on the west at Shrewsbury Avenue. The July counts indicated a total of 3,500 vehicles and nearly 1,000 pedestrians crossing the tracks.

Oakland Street

Oakland Street is located one block south of Monmouth and runs parallel with it. On the east it terminates at Rt. 35 and on the west at Shrewsbury Avenue. September counts indicated a total of 1,115 vehicles and 475 pedestrians in an 8½ hour period from 11:00 A.M. to 7:30 P.M. Extrapolating the figures for a 15 hour period would indicate a total of 1,827 vehicles and 680 pedestrians crossing the tracks.

As has been found in previous studies there is no economic arrangement for grade separating these streets. Improvements are required, however, and a reasonable solution can be found in utilizing the area of the present railroad station to combine the traffic on Bridge, Monmouth and Oakland Streets to cross the

railroad tracks at one location. Such a layout is indicated on the plan appended hereto. The street rearrangement shown on this plan contemplates in the future depressing the diagonal street to carry it under the railroad tracks. Initial construction would cross the tracks at grade with circulation as the plan indicates.

Many of the vehicular and pedestrian crossings on all three of these streets in the commuter hours are railroad passenger station oriented. Relocating the station would eliminate these trips and make the arrangement of streets as depicted safe and functional. Should the station not be relocated the extent of improvement that can be made is limited.

Chestnut Street and W. Bergen Place

Chestnut Street

The July traffic count indicated a total of 2,200 vehicles and 222 pedestrians crossing the railroad tracks in the 15 hour period. The street runs only between Rt. 35 on the east and Shrewsbury Avenue on the west accounting for its relatively low traffic volumes. The development on Chestnut Street adjacent to the grade crossing is such that to attempt to separate the railroad and street traffic would require acquisition of property involving costs disproportionate to the benefits. A possible

solution for the future might be found in terminating Chestnut Street at the railroad and grade separating Herbert Street located one block south and parallel to Chestnut. Herbert Street would be relocated beginning just easterly of Bridge Street, overpass both the New York and Long Branch and Jersey Central (southern division) tracks and connect with Reckless Place just westerly of Maple Street.

Bergen Place

Bergen Place is an east-west artery in Red Bank connecting Branch Avenue on the east and Shrewsbury Avenue on the west. The July count indicated nearly 4,900 vehicles and 185 pedestrians crossing the railroad in the 15 hour period. Similarly to Chestnut Street, the development along Bergen Place in vicinity of the railroad is intensive, being generally residential to the east of the tracks and commercial to the west. Traffic is expected to increase annually at both Chestnut and Bergen Place and although volumes are not sufficient to make elimination mandatory steps should be taken at both locations to prevent development that will make later elimination of the grade crossing more difficult. For its part the State should acquire any vacant land that would be needed to construct the grade separation and the municipality could limit the issuance of building permits that would improve substantially property acquisition costs within defined limits.

Preliminary studies indicate that the grade separation could best be accomplished by depressing Bergen Place to underpass the railroad and also to underpass Maple Avenue (Rt. 35).

Broad Street, Red Bank and White Road, Little Silver and Shrewsbury

Broad Street

Broad Street at its crossing of the New York and Long Branch has the largest traffic volumes of any crossing in the improvement area. Highway Department counts show a total of 14,000 vehicles crossing the tracks in an 8 hour period. Furthermore, traffic movements at the crossing are complicated by a tee intersection of Newman Springs Road and Broad Street just south of the crossing and the intersection of Maple Avenue (Rt. 35) and Broad Street just north of the crossing. Development is extensive on Broad Street which serves the central business section of Red Bank. Its northern terminus is at East Front Street; south of the railroad it is State Route 35.

The grade separation can best be accomplished by elevating the railroad to overpass Broad Street as indicated on the appended plan, Exhibit 9. Eliminating the grade crossing will ease the friction and reduce the hazard in vicinity of this intersection, however, annual growth will cause congestion to increase. At the time the railroad is elevated to overpass Broad Street the design should anticipate that subsequently the Newman Springs Road-Broad Street traffic would also be grade separated. The

only friction that would remain in the entire intersection would be the northbound Broad Street traffic turning left on Maple Avenue. This could be provided by a left turn lane, signal controlled.

White Road

White Road is the principal Street connecting Rt. 35 and the Borough of Little Silver. The July traffic count indicated a total of 4,250 vehicles and 33 pedestrians using the road at the railroad crossing. The growth in the area is such that more than the normal annual increases will occur during the next 10 years or more.

Unlike other grade crossings within the improvement area of the New York and Long Branch the development in the vicinity of White Road, particularly to the south of White Road, is such that some flexibility in developing grade separating schemes is afforded the designer. The most interesting proposal and the one that is most compatible with the new railroad station discussed in subsequent sections of this report involves relocating the Road to the south in vicinity of the crossing underpassing the partially elevated railroad and connecting it to Broad Street (Rt. 35) opposite the entrance of an existing shopping center. This would have the effect of keeping the through traffic off residential streets within the limits of

the relocation. The general layout is indicated on the appended plan, Exhibit 4.

SUMMARY - GRADE CROSSING ELIMINATIONS IN RED BANK AND VICINITY

It is proposed that the first phase of the New York and Long Branch Railroad improvement program include the elimination of Shrewsbury Avenue by lowering the street to underpass the railroad. In connection therewith, the intersection of Shrewsbury Avenue and West Front Street would be improved and the vertical clearance at the West Front Street railroad underpass increased.

With the relocation of the passenger station, a new street would be constructed that would consolidate at one location traffic now crossing the railroad on Bridge, Monmouth and Oakland Streets. The layout would be designed to permit later lowering of the consolidated street to underpass the railroad.

Chestnut and Bergen Place are proposed to continue as grade crossings and vacant land that would be needed to grade separate the streets in the future to be acquired by the State provided the municipality cooperates on withholding building permits that would further improve land needed to effect the separations.

The railroad would be elevated to overpass Broad Street and provision in the design would be made for a future separation of the Newman Springs Road-Broad Street traffic at their intersection.

White Road is proposed to be relocated to underpass the partially elevated railroad and the relocation extended to connect with Broad Street.

ELECTRIFICATION

One of the often heard criticisms of passenger service operation in New Jersey on non-electrified routes concerns the massiveness of the equipment used. A typical passenger train in the off-peak hour is hauled by a diesel locomotive weighing up to 180 tons pulling two or three coaches each weighing as much as 78 tons. In other words, it takes about 1.65 tons of equipment for each seat of transportation provided.

This situation is even worse on the Pennsylvania Railroad trains operating between New York and the terminal at Bay Head on the New York and Long Branch Railroad. Because diesel locomotives cannot operate through the Hudson River Tunnels it is necessary to change from a diesel to an electric locomotive enroute. Presently the change is made at South Amboy or at Rahway depending on schedules. Therefore, two locomotives are involved in each of these runs adding another 235 tons to the total weight of equipment used per train. The ratio increases to 2.59 tons per seat in the case of a 3 car train and reduces to 1.33 tons per seat in a 12 car train operating in the rush hours.

With electrification and operation of high density, self-propelled passenger cars (similar to those being purchased to be operated in main line services of the Pennsylvania Railroad) the ratio would be 0.50 tons per seat for trains made up of from two to fifteen cars.

Obviously, operation with MU equipment is more efficient and the trend in the industry bears this out. In Japan the new 320 mile railroad between Tokyo and Osaka was designed to, and is operating with individually powered electric cars. The new passenger cars now under construction to operate between New York and Washington will not be hauled by a locomotive — each car will have its own traction motors. Electrification has recently been completed on the Fox Chase line in suburban Philadelphia and extensions are planned on several Long Island Rail Road lines. Electric operation continues to expand in Europe.

The electric locomotives that haul the New York and Long Branch passenger trains from either South Amboy or Rahway to Newark and New York were built in the early 1930's. They have been in continuous operation since and have logged over a million miles providing an economical and dependable service. However, they are now approaching the end of their useful life; breakdowns are occurring regularly, maintenance costs are increasing annually and their retirement from regular operation must be scheduled. Also if the present operation is to continue indefinitely new diesel locomotives must be acquired and the passenger coaches must be replaced. It is inconceivable that a program to improve the quality of service on the New York and Long Branch Railroad would be planned around the present engine change operation

requiring 8 minutes on each trip — certainly today's technology should enable the transportation engineer to improve on such a time consuming and inefficient operation that has been in operation for about 30 years. But what are the alternatives?

Previously, the use of FL9 locomotives was considered but was not recommended (an FL9 is a diesel-electric locomotive that operates on diesel power on non-electrified routes and has either a pantograph or third rail shoe to pick up electric power to feed its traction motors). Subsequently, FL9 locomotives were tested as part of a Mass Transportation Demonstration Project carried out on New York Central Lines in New York State. The report on this demonstration indicated that the only improvement in service that resulted was in the elimination of the engine change. A fleet of new FL9 locomotives to operate all the New York and Long Branch service would cost about one-half as much as the electrification and even with new coaches the service would be slower, noisier and dirtier than operation with individually powered electric cars.

Another alternative is the use of gas turbine propelled cars as are now being tested on the Long Island Rail Road by the Metropolitan Commuter Transportation Authority. These cars are expected to have improved performance over the rail diesel cars (RDC) that were popular for a few years but the problem of operating under-

ground is the same as with diesels. To use gas turbines on the New York and Long Branch would require that they also be equipped with electric traction power. The cost of the car with both a turbine engine and electric traction motors is estimated to be about \$100,000 more than cars planned to be acquired for the electric operation. This would increase the cost of 40 cars by \$4 million.

A detailed study completed in 1955 by the Pennsylvania Railroad indicated that the service on the New York and Long Branch could be most economically operated by individually powered electric cars. The economics of Long Branch operation were re-stated in 1959 also indicating that electrification would result in an annual operating cost reduction of about \$600,000. A complete and detailed analysis of operating costs and generated revenue cannot be made without first defining schedules of the operation to be continued south of Little Silver and whether this would be shuttle or through service or a combination of the two. Also necessary to the study is a determination of whether the electrification would later be extended to Asbury Park or some other point on the Branch. The extent to which the Parkway might be used for access to the new Matawan Station and the extent to which commuters might be attracted to the new White Road Station will be determining factors in decisions on later extensions and the character of the service that will remain on the non-electrified

part of the Branch.

Comparison of operating costs to the railroads (and eventually to the State) under the several power source possibilities should not be the only, or even the controlling factor in deciding on an improvement program. Passenger service operation with individually powered electric cars similar to those being purchased by the State to operate on the Pennsylvania Railroad main line (suburban service) is a high quality service. The trains whether two or eight cars long (240 to 960 seats) accelerate faster, operate quieter and cleaner than any other type operation existing or under development today. The cars are capable of continuous high speed operation without discharging a screen of air polluting material, visible or not, and decelerate to a stop in a fraction of the distance of a locomotive-hauled train. The time saving on a trip from Red Bank to New York should be at least 10 minutes plus another 8 minutes because of eliminating the engine change. While the value of time to an individual may vary greatly, if we were to assume that \$2 an hour is a proper figure, the benefit to such a commuter may be computed at approximately \$300 a year. Time savings between other points may differ but considering there are some 4,500 rail passenger now originating in the territory to be electrified, total savings can be conservatively estimated at over \$1,000,000 per year.

The high quality service combined with the station and parking improvements should also attract a substantial number of passengers not now riding the rails. Projects in Philadelphia, Boston and Chicago have shown that major improvements have developed patronage — and revenue. The corollary benefit is that the streets have a fewer number of vehicles. If no improvements are made diversion from the rails will continue and public expenditures for highway expansion will increase.

Electric railroad operation is more acceptable in any community. The combination of grade crossing eliminations, electrification and station relocation should spur the redevelopment of a number of areas along the New York and Long Branch that are now showing continued deterioration.

Existing Electrification System

The Pennsylvania Railroad's present electrification is an 11,000 volt, 25 cycle catenary system. Electrification presently extends from the South Amboy passenger station easterly over short sections of the New York and Long Branch and Jersey Central Railroads and then over the Pennsylvania's Perth Amboy and Woodbridge Branch to the connection with the main line in the vicinity of Rahway. The main line is electrified from Washington to New York and from Philadelphia to Harrisburg, Pennsylvania.

The Railroad purchases all power from electric power companies at 13.2 KV, 25 cycles, single phase and uses railroad-owned sub-stations to step it up to 132 KV. This power is transmitted on the catenary support structures to sub-stations and then stepped down and fed to the contact wire at 11,000 volts. Sub-stations are spaced from 4 to 14 miles apart depending on the demand on the system.

Proposed Extension

It is proposed in the first phase of the New York and Long Branch improvement program to extend the electrification southerly to the vicinity of White Road in Little Silver and Shrewsbury, a distance of about 16 miles. The installation would be light duty for commuter service only with capacity to operate individually powered commuter cars in sufficient number to accommodate a 35% increase in present patronage.

The catenary support would be a single steel column with a steel arm cantilevered over the two tracks and suitably braced. In fully developed areas consideration would be given to use of an ornamental column and bracket to improve the aesthetics of the installation. Special supports would be required at the Navesink River Bridge, at the Morgan Drawbridge and at ten existing overhead structures. A new sub-station would be required in the vicinity of Red Bank, tentatively proposed to be constructed

adjacent to the railroad just north of the Navesink River Bridge. A 132 KV transmission line would be carried on the catenary columns from South Amboy to the new sub-station, which would be designed to accommodate extension of the electrification southerly at a later date. New switching gear would be required in the South Amboy sub-station.

The trend in recent years for railroad electrification is to use higher voltage (25,000 volts) and commercial frequency (60 cycles). Since the Pennsylvania Railroad is studying the feasibility of converting its entire system to commercial frequency and since all electrically powered rolling stock being purchased by the Railroad and the new commuter cars under order by the State of New Jersey for operation in Pennsylvania Railroad territory will have convertibility to commercial frequency, the new sub-station will also have provisions for later conversion to the standard 60 cycle power.

The catenary wire would be set to provide, normally, a vertical clearance from top of rail of 19'6". At 3 existing bridges the vertical clearance will have to be reduced (to a minimum of 18'3") because of insufficient clearance between structure and rail.

Signals and Communications

Existing Installations

The existing signal plant on the New York and Long Branch Railroad

was installed in 1928 and consists of an automatic block alternating current system with superimposed circuits that activate signals in the cabs of locomotives or in the cabs of individually powered rail cars. Separate circuits operate grade crossing lights and gates and operate interlocked signals and switches. The block lengths are normally either 3,500 or 5,000 feet long permitting operating speeds of about 70 - 75 miles per hour.

Wires to operate the circuits are normally carried on an adjacent and parallel pole line with the number of open wires varying from 10 to 28 depending on location. Multi-wire cables are used in place of open wire both on poles and underground for relatively short sections. The track rails are the conductors that complete the circuits with insulated joints used to isolate currents within block limits.

The communication lines on the New York and Long Branch are open wires carried on the same pole lines used to support the signal wires. The pole line and most of the facilities on the line are property of the Western Union Telegraph Company.

Proposed Modification of Signal and Communication System

The electrification of a railroad route generally requires extensive changes in the signal and communication plant and the situation on the New York and Long Branch is no exception.

On electrified routes the rails are used for the return path of propulsion energy and as such must be continuous between substations. The insulated joints which limit the length of signal circuits (energized at 100 cycles per second) must be by-passed by the propulsion circuit. This is done by installing filters (impedance bonds) which prevent the passage of signal circuits at block limits. In addition, the relays (signal system activating devices) must be immune to propulsion energy and this is accomplished by installing electrically timed devices at the relays to respond to track circuit energy and to reject propulsion energy.

At locations where existing highway crossing protection is to be retained (where grade separations are not included in the first phase of the improvement program) it is proposed to use high frequency overlay circuits to activate the crossing protection devices rather than impedance bonds and timed track relays.

Existing rail joints are bonded to carry the track circuits across the joints. This bonding has to be enhanced to carry the high ampere propulsion energy return. Likewise, the rail shunts at hand-operated switches must be replaced to carry the heavier circuits.

The signal and communication wires now carried on the Western Union Telegraph Company pole line would be subject to picking

up induced (electro-static) voltage from the 132 KV transmission line and the 11,000 volt contact wire. This induced voltage would be damaging to equipment and hazardous to personnel. It is proposed to replace the open wires in a metallically shielded cable with the shielding bonded to the return propulsion circuit (tracks) at selected locations. In addition, to increase the protection of railroad personnel using equipment connected with the communication and signal cable the insulation of such equipment will be increased to equal that of the cable and further protected by arrestors and suppressors.

Conclusion

The track distance from the proposed Red Bank-Little Silver Station to Pennsylvania Station, Manhattan is about 47 miles, 30 of which are now electrified. Extending the electrification will expand the area to be served by one type of commuter car and will be the first step in standardizing the rolling stock to be operated by the Pennsylvania Railroad on several routes in the northern New Jersey area. As equipment is standardized efficiency in operation will result and maintenance work can be mechanized both leading to lower annual costs.

The gas turbine powered car may prove to be a substantial improvement over the rail diesel cars in operation today. If so, their use may be most appropriate on the non-electrified lines serving Bergen, Passaic and Essex Counties rather than electrifying such routes as discussed in earlier reports.

PASSENGER STATION IMPROVEMENTS

Matawan and Hazlet

Existing Stations

The Matawan Station is located between Atlantic Avenue and Main Street in the Borough of Matawan. Both of these streets cross the railroad at grade. The station is situated at Milepost 6.7 where the existing track alignment is on a 2° - 41' curve. Passengers board trains from one side only, from ground surface which is graded at track level. Passengers boarding eastbound (Newark) trains cross westbound tracks at grade to reach the coaches. Trains stopped at the station block both grade crossings.

Parking at the station area is limited to approximately 80 non-paying parking spaces. There are approximately 700 additional privately-owned pay spaces adjoining the station area.

During 1965 on a typical day the number of passengers boarding trains at Matawan was 1,180. Use of the station in 1965 was about 18% higher than in 1961.

Responses to a questionnaire survey taken on April 7, 1965 indicate that approximately 60% (700) of the patrons drive to the station and park, another 28% (330) are driven to and from the station by others, and less than 5% (60) walk. Approximately 65% (770) of the passengers originate in the Borough of Matawan. Most of the others originate from areas east of the station.

The Hazlet Station is located in Raritan Township just east of Keyport-Holmdel Road which crosses the railroad at grade. The station is situated at Milepost 8.5. Track alignment is tangent. Boarding conditions are similar to those at Matawan.

Cleared, unpaved area at the station provides parking space for a little more than 100 cars. Parking is free. At the present time approximately 50 cars park at the station on an average day.

On a typical weekday in 1965 the number of passengers boarding trains at Hazlet was 110. This represents a 55% increase over usage during the year 1961. Responses to the questionnaire survey indicate that approximately 45% (50) of the passengers drive to the station and park, another 30% (33) are driven to and from the station and 25% (27) walk. Approximately 78% (88) of the commuters originate in the Hazlet area. Most of the remainder originate in Holmdel Township.

Proposed Matawan-Hazlet Station (Exhibits 1 and 2)

A new station to serve both the Matawan and Hazlet areas is proposed to be located between the existing Matawan and Hazlet Stations at Lloyd Road where it overpasses the Garden State Parkway in the Township of Matawan (railroad Milepost 7.3 — 0.6 miles east of the existing Matawan Station and 1.2 miles west of the Hazlet Station).

Station facilities would include a single paved parking area with lighting located on the north side of the railroad. This parking area would have a capacity for approximately 920 cars, adequate to accommodate the present and projected parking needs for the next several years. Parking would be free for rail patrons. The area south of Lloyd Road, now owned by the Parkway, would be reserved for future expansion of parking facilities for an additional 500 cars.

Since a substantial number of commuters originate in the Borough of Matawan, it is essential that convenient access to the station be provided. To accomplish this, the extension of First Street to Lloyd Road, as shown on Exhibit 2 is proposed as part of this project. This would, in conjunction with the grade elimination plan to relocate Main Street, provide the Borough with direct and convenient access to and from the station as well as to the Garden State Parkway and residential areas in Matawan and Raritan Townships. The existing entrance to the Parkway on Lloyd Road would be altered to facilitate the extension of First Street and to provide traffic control at the entrance to the station parking area. This would also provide vehicles leaving the station parking lot with direct access to the Parkway for southward destinations.

Access to and from points to the north and east would be convenient by way of existing Route 35, Route 36 and Parkway connections to

Lloyd Road north of the railroad. If warranted at some future date, direct access to the new station from the Parkway's north-bound roadway could be provided by making a connection to Lloyd Road as shown on Exhibit 2.

At the present time the Townships of Raritan and Matawan are through cooperative effort undertaking the resurfacing of Line Road. This improvement together with a proposed relocation of Line Road to connect with Lloyd Road as shown on Exhibit 2 would improve accessibility from points to the south and east and it would eliminate the existing Line Road grade crossing of the railroad. It is assumed that this relocation of Line Road will be accomplished by the time the station is constructed.

Other street improvements which would enhance accessibility to the station and improve traffic circulation in the area would be the future extension of Little Street along railroad right-of-way to Jannarone Avenue. This proposed extension is also shown on Exhibit 2.

At the new station, canopy-covered sidewalk platforms would provide protected discharge and pick-up points for passengers driven to and from the station. A new building constructed at the parking area level would adjoin high level side platforms. The side platforms would be connected by an overpass and stairs. Both platforms would be partially covered by canopies.

The estimated cost of construction and right of way for the station facilities is \$735,000. The estimated cost for the extension of First Street is \$204,000.

Support for the Consolidated Station

1. The Lloyd Road site with the proposed First Street extension and Line Road improvement would be conveniently accessible by car from all surrounding areas and from the Garden State Parkway.
2. Population center in the Matawan-Hazlet area has shifted to the south away from the Borough of Matawan due to large residential development in Matawan and Raritan Townships. Population growth projections by the Monmouth County Planning Board shows a continuing shift in population center to the south. Consolidation of the station as proposed would place the station closer to the population center.
3. The Lloyd Road Station would be convenient for Keyport and Union Beach residents who will not have railroad passenger service after discontinuance of the Atlantic Highlands Branch.
4. The Lloyd Road site has sufficient clear ground area for construction of needed parking facilities without acquiring developed land.
5. Grade separating Main Street in the Borough of Matawan would either require relocating the existing passenger station or

would interfere with station access and further diminish areas available for parking, depending on scheme adopted. Additionally, the existing curve in the track alignment at Matawan would prevent the construction of high level platforms.

Red Bank and Little Silver

Existing Stations

The Red Bank passenger station is located between Oakland and Monmouth Streets in the northwestern section of the Borough of Red Bank approximately $\frac{1}{2}$ mile south of the Navesink River. Passengers board trains from low level side platforms which are connected by a pedestrian tunnel passing under the tracks. A fence located between the tracks prevents pedestrians from walking across the tracks in the station area.

Parking at the station is very limited due to the lack of available space, inefficient parking layout and use of portions of the property by taxi and bus companies. Even with full use of the available space, only about 140 spaces could be provided. Charges of .50¢ per day or \$8 per month are levied for parking at the station. Because of the limited parking most of the railroad patrons utilize surrounding streets (non-metered) and private pay parking areas in the vicinity.

During 1965 on a typical weekday the number of passengers board-

ing trains at Red Bank was approximately 1,980. Use of the station has decreased at a rate of about 7% per year since 1963. Responses to a questionnaire survey taken on December 12, 1964 indicate that approximately 55% of the patrons drive to the station and park, another 33% are driven to and from the station, 4% walk and 5% reach the station by bus.

Approximately 25% (500) of the patrons originate in the Borough of Red Bank. The residential development in Red Bank is most dense to the south and east of the station, therefore it is assumed that most of the Red Bank users originate from these areas. Approximately another 45% (900) originate in Shrewsbury, Little Silver, Rumson, New Shrewsbury and Eatontown. Approximately 20% (400) originate in the Fair Haven area, 4% (80) from locations north of the station and 6% (120) from the west.

The Little Silver passenger station is located between the Sycamore Avenue and Oceanport Avenue grade crossings in Little Silver at Milepost 18.8. Passengers board trains from low level side platforms. A fence between tracks extends the full distance between Sycamore Avenue and Oceanport Avenue to prevent pedestrians from walking across the tracks in the station area. There are no connecting over or underpasses between the two side platforms.

About 200 commuters park in the vicinity of the station on an average day. Cleared, unpaved area on the eastbound side of the tracks provide parking at the station for a little more than 100 cars. The surrounding streets are utilized for the additional parking required.

During 1965, the daily average number of passengers boarding trains at Little Silver was approximately 460. Use of this station has decreased by about 30% since 1961.

Responses to the April 7, 1965 questionnaire survey indicate that approximately 60% of the patrons drive to the station and park, another 30% are driven to and from the station and 8% walk. Approximately 48% (220) of the commuters originate in Little Silver, 16% (75) originate from the east (Rumson) 16% (75) come from the west (Shrewsbury and New Shrewsbury) and the remaining 20% come from the south.

Proposed Little Silver-Shrewsbury Station (Exhibit 4)

A new station to serve the Red Bank and Little Silver areas is proposed to be located between the existing Red Bank and Little Silver stations just south of White Road in the Boroughs of Little Silver and Shrewsbury, 1 mile north of the present Little Silver Station and 1.5 miles south of Red Bank Station.

The proposed station, to be constructed on undeveloped land, would include parking areas on each side of the railroad right-of-way with an initial capacity of about 1,500 cars. The parking areas would be paved and lighted and access and egress would be developed so that there would be minimum friction between parking patrons and those being driven to or from the station. Canopies

would provide protection at sidewalk loading areas. A passageway constructed at ground level would underpass the elevated tracks and connect both parking areas to the new station building. An escalator would be provided to carry passengers from the station to the passenger train platform which would be located between the north and southbound tracks. The platform would be partially covered by a canopy.

The cost of the station including construction and acquisition of property needed for its full development has been estimated to be \$1,010,000.

Support for the Consolidated Station

1. The White Road site is the only undeveloped area along the railroad in the Red Bank-Little Silver area of suitable size to construct a passenger station with adequate parking space.
2. The White Road site is a centralized location convenient to the majority of the present commuters from both the Red Bank and Little Silver areas.
3. The relocation of the existing Red Bank Station would make possible traffic improvements at existing grade crossings in the station area and would facilitate their eventual elimination with minimum property damage.
4. The relocation of the Red Bank Station and operation of the passenger service with MU cars would eliminate the need to

decelerate on the Navesink River Bridge (1500 feet long) under normal operations. This would permit the present speed restrictions (20 mph) on the bridge to be lifted and speed up running times.

5. A passenger station at the proposed location would provide far greater convenience for the majority of the commuters and be more accessible from the developing areas to the east, south and southwest of Red Bank.

Middletown Station (Exhibit 3)

Existing Station

The Middletown Station is located just north of Middletown-Lincroft Road in the Township of Middletown at railroad Milepost 12.8 where the existing track alignment is on a 1° curve. Passengers board trains from each side of the tracks at ground level and a fence located between the tracks prevents pedestrians from crossing the tracks in the station area.

A paved parking lot adjacent to the eastbound track at the station has space for about 250 cars. A second parking area with cleared space for approximately 150 cars is located adjacent to the railroad just south of Middletown-Lincroft Road. This area is unpaved. All parking is free.

During 1965, the daily average number of passengers boarding trains at Middletown was approximately 700. Use of this station has

increased by approximately 60% since 1961.

Analysis of responses to the April 7, 1965 questionnaire survey indicates that approximately 70% of the patrons drive to the station and park, another 25% are driven to and from the station and 5% walk.

Proposed Improvements

With adoption of the Church Street (Middletown-Lincroft Road) grade separation plan requiring relocation of the street it is proposed that the station also be relocated as indicated on Exhibit 3. A new station building would be constructed near the center of the two proposed parking lots laid out to provide safe and convenient vehicular access. High level canopied side platforms are proposed and these would be connected by an overpass and stairs. Both platforms would have canopies extending over their center sections.

The parking areas would have a combined capacity for approximately 700 cars sufficient to accommodate the present and projected parking needs for the next several years. Parking would be free for rail patrons.

Canopy covered sidewalk platforms located near the train platform would provide convenient discharge and pick-up points for passengers driven to and from the station.

South AmboyExisting Station

The existing station is located between Augusta and John Streets in South Amboy within the present electrified territory. Passengers board trains from low level ground surface on each side of the tracks. A pedestrian overpass provides for safe movement between boarding areas. A fence located between the tracks prevents pedestrians from walking across the tracks in the station area.

There are approximately 60 free parking spaces available in the station area. The only other available parking is at a small portion of the Pennsylvania Railroad yard on the north side of Augusta Street where the daily fee is 25¢. Local parking restrictions prohibit commuter parking on streets adjacent to the station.

An average of approximately 175 passengers board trains daily at the South Amboy station. This relatively light patronage does not justify the expenditure of approximately \$175,000 to provide high level platforms and other improvements at this time.

Proposed Improvements

A part of the parking area to accommodate about 80 cars in the Pennsylvania yard north of Augusta Street is proposed to be paved and the area lighted. This would increase the parking spaces to approximately 140 in the immediate area of the station. The

construction of the proposed improvements would cost about \$25,000. No acquisition of property is anticipated.

TERMINAL FACILITIESMU Coach Storage Yard (Exhibit 5)

At the present time, an MU coach storage yard is located at South Amboy, the present terminus of electrified territory. For efficient operation of the service originating at the Red Bank-Little Silver Station and serving New York and Long Branch stations to Newark and New York a yard will be required near the southerly end of the electrification extension. The yard should accommodate about 75 cars and would partially replace the existing yard at South Amboy.

The new yard is proposed to be constructed in Red Bank on property now in railroad ownership between the freight yards of the New York and Long Branch Railroad and the Central Railroad Company of New Jersey, just south of Chestnut Street. Its cost including electrification would be about \$470,000 + \$200,000 for signals.

HIGH SPEED OPERATION

At present the maximum speed permitted on the New York and Long Branch is 60 mph for passenger equipment and 40 mph for freights except in the following areas where restrictions are in force:

Milepost 3.3 - Morgan Drawbridge - 40 mph

Milepost 6.5 - 6.8 - Matawan, curve in alignment -
2° - 41' - 50 mph

Milepost 15.9 - 16.2 - Navesink River Bridge - 20 mph

The proposed operations would involve improvements to attain a maximum speed of 90 mph in passenger operations with new MU cars designed to decelerate at 2.2 mph per second (service stop) and the continuation of freight train operating speeds of 40 mph.

With the specified rate of deceleration the present spacing of the automatic block signal system would be adequate for 90 mph operation except at the Morgan Drawbridge and at the Navesink River Bridge. The speed restrictions at the former could be raised to about 60 mph by rehabilitation of the track and reinforcement of rail at the junctions at each end of the bridge. With regard to the latter, the relocation of the Red Bank Station will eliminate the cause for the present restriction (braking on the bridge). Changes in signal spacing would be required because the existing block spacing is marginal for high speed movements for both the proposed new equipment as well as existing conventional equipment (The present signal spacing was apparently predicated on all

passenger trains stopping at the existing Red Bank Station). The speed restriction at Matawan could be improved by increasing the superelevation of both tracks from their present 3 inches to a maximum of 6 inches. Running speeds could then be raised to about 70 miles per hour. Any further improvement would require realigning the tracks through the area using a larger radius curve. Signal spacing at the Matawan restriction is adequate for 90 mph operation with the new MU cars.

With the increased operating speeds the approach timing for all remaining grade crossings would have to be lengthened to provide sufficient time for warning and activating the crossing gates. The existing track would have to be surfaced, ballast cleaned and ties replaced. This type of rehabilitation would insure safe and smooth riding at the higher speeds. Subsequent improvements would include substitution of welded rail throughout.

Provision must also be made for passing wide freight shipments past the high level platforms at Matawan-Hazlet and Middletown Stations. Since such shipments are rare on the New York and Long Branch it is proposed to use gauntlet tracks with hand-operated switches with operation by train order.

CONSTRUCTION SCHEDULE AND FUNDING

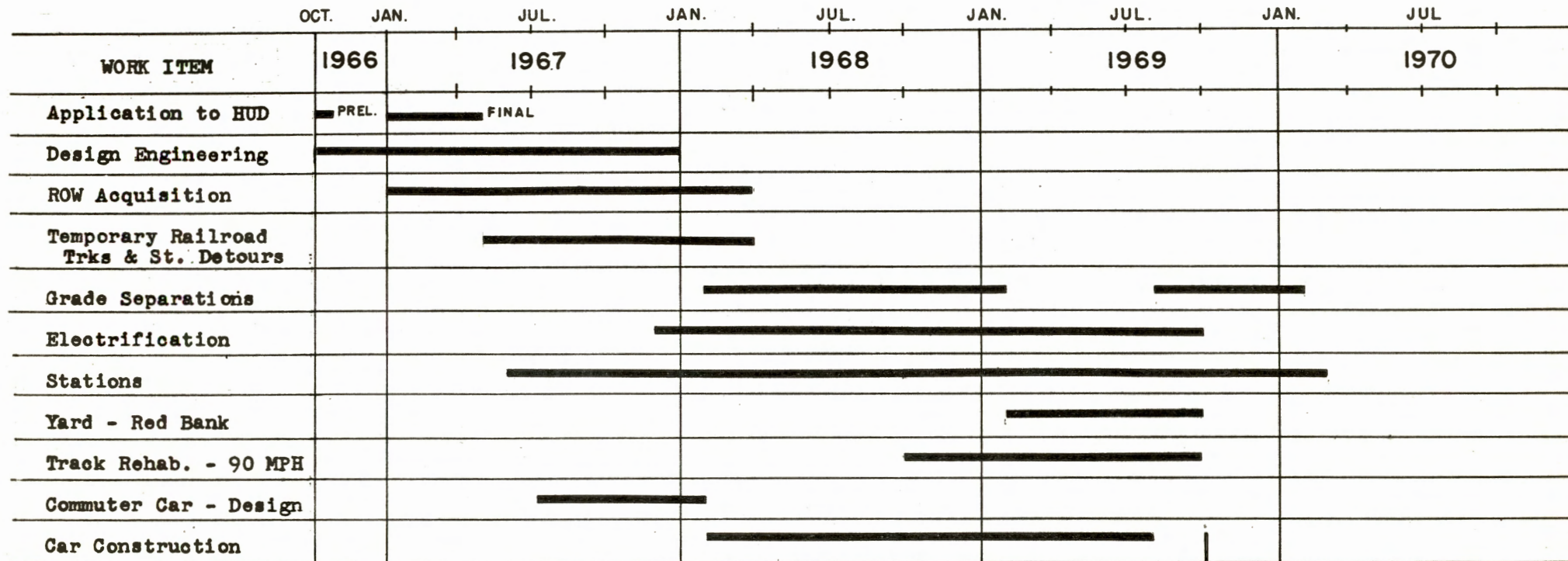
Funds are currently available to continue the design engineering through the end of the fiscal year. Sufficient funds are also on hand to initiate the purchase of property at the station relocations and to initiate the acquisition of critical parcels at the proposed grade crossing eliminations.

Reference to the bar chart on the following page shows that the New York and Long Branch improvement project (Phase I) can be put into operation by October 1, 1969. In order to meet this date, detail engineering and right-of-way acquisition work should commence this fall anticipating that railroad detour contracts would be ready for construction by May 1, 1967.

Funds to carry out the project are proposed to come from current budgets, State appropriations in both the 1968 and 1969 fiscal years and from matching grants from the Department of Housing and Urban Development under the terms of the Urban Mass Transportation Act of 1964. Although the State is soon expected to qualify for grants amounting to 2/3 of costs, planning must proceed on the basis that, initially, such grants will be limited to one-half the net project costs. A preliminary application reflecting a project estimate to cost \$30 million is scheduled for filing by November 1 with a final application submitted in the Spring of 1967. The application will request \$400,000 in HUD funds in the

current year, \$9,000,000 in the 1968 fiscal year and \$5,500,000 in 1969. State appropriations would be requested in the 1968 and 1969 fiscal years equal to the amounts of the HUD application.

NEW JERSEY STATE HIGHWAY DEPARTMENT - DIVISION OF RAILROAD TRANSPORTATION
NEW YORK AND LONG BRANCH RAILROAD - CAPITAL IMPROVEMENTS
SOUTH AMBOY TO LITTLE SILVER AND SHREWBURY - CONSTRUCTION SCHEDULE - PHASE II



FUNDING REQUIREMENTS - PHASE I

| | <u>1967 Fiscal Year</u> | <u>1968 Fiscal Year</u> | <u>1969 Fiscal Year</u> |
|---------------------------|-------------------------|-------------------------|-------------------------|
| Available State | \$600,000 | | |
| Prop. HUD Grant | \$400,000 | \$9,000,000 | \$5,500,000 |
| Prop. State Appropriation | | \$9,000,000 | \$5,500,000 |

**START OF ELECTRIFIED
OPERATION - OCT. 1, 1969**

TOTAL PROJECT \$30,000,000

NEW JERSEY STATE HIGHWAY DEPARTMENT
DIVISION OF RAILROAD TRANSPORTATION

NEW YORK AND LONG BRANCH RAILROAD

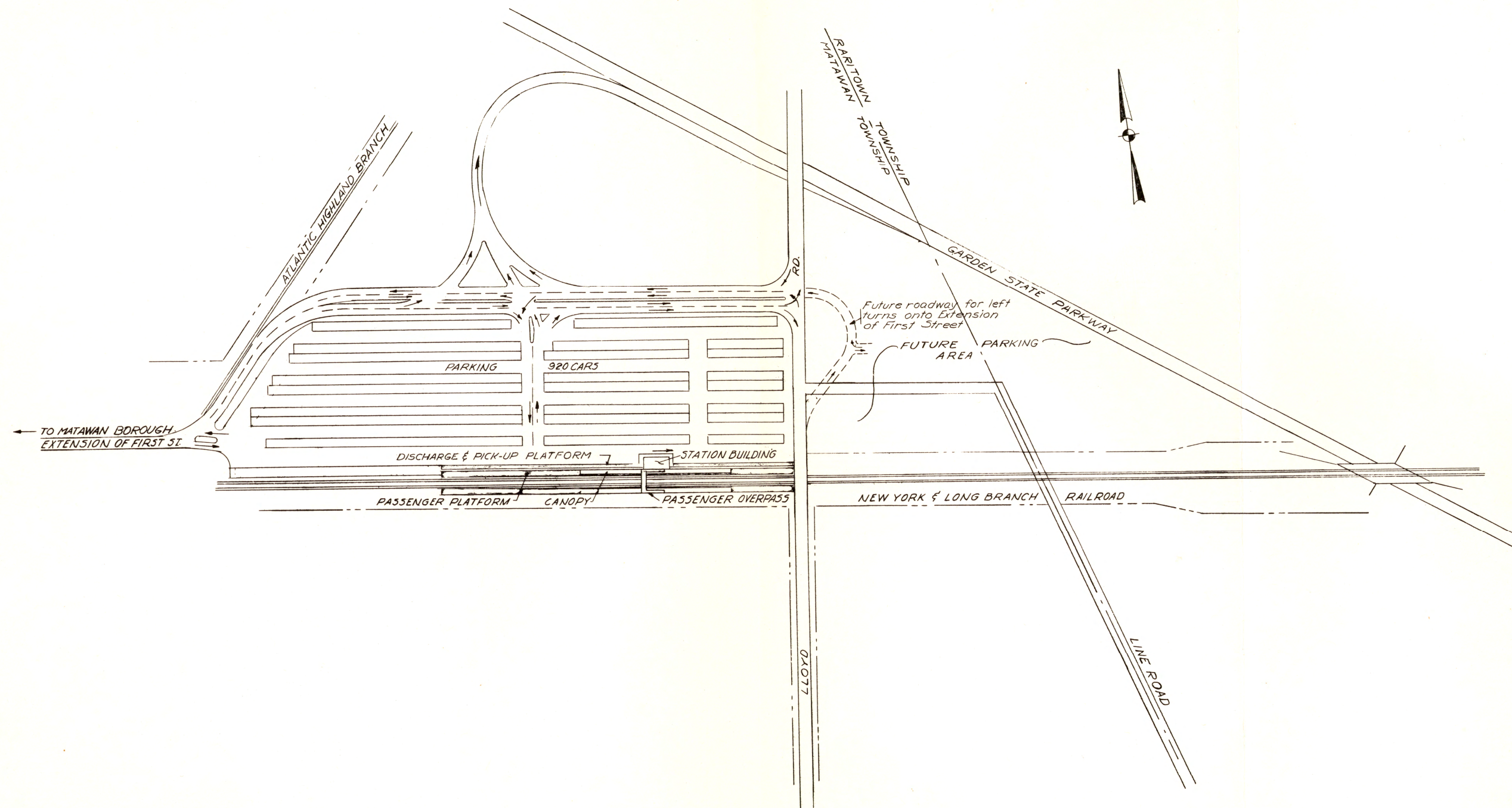
CAPITAL IMPROVEMENTS

SOUTH AMBOY TO LITTLE SILVER AND SHREWSBURY

SUMMARY

PRELIMINARY COST ESTIMATE - PHASE I

| | | |
|--|------------------|------------------|
| ELECTRIFICATION | | \$7,700,000 |
| GRADE SEPARATIONS | | |
| Main Street, Matawan | \$1,080,000 | |
| Church Street (Middletown Lineroft Road, Middletown) | 725,000 | |
| Shrewsbury Avenue, Red Bank | 1,020,000 | |
| Consolidation of Monmouth Street, Bridge Avenue and Oakland Street Grade Crossings | 325,000 | |
| Broad Street, Red Bank and Relocated White Road, Little Silver and Shrewsbury | <u>2,130,000</u> | 5,280,000 |
| STATION IMPROVEMENTS | | |
| South Amboy Station | \$ 25,000 | |
| Matawan-Hazlet Station | 735,000 | |
| Extension of First Street, Matawan | 204,000 | |
| Middletown Station | 755,000 | |
| Little Silver - Shrewsbury Station | <u>1,010,000</u> | 2,729,000 |
| MU STORAGE YARD | | |
| Track Work | \$ 470,000 | |
| Signals | <u>200,000</u> | <u>670,000</u> |
| Sub-Total | | \$16,379,000 |
| GENERAL IMPROVEMENTS FOR 90 MPH (Maximum) OPERATION | | |
| Grade Crossings - Signal Circuit Adjustments 12 locations @ \$12,500 | | \$ 150,000 |
| Track surfacing, aligning and tie renewal 15 miles @ \$40,000 | | 600,000 |
| New Multiple Unit Electric Commuter Cars 40 @ \$275,000 | | 11,000,000 |
| PROVISION FOR WIDE FREIGHT SHIPMENTS | | <u>170,000</u> |
| PHASE I CONSTRUCTION & ROW | | \$28,299,000 |
| Engineering @ 6% | | <u>1,697,940</u> |
| TOTAL PHASE I PROJECT | | \$29,996,940 |
| Round to | | \$30,000,000 |

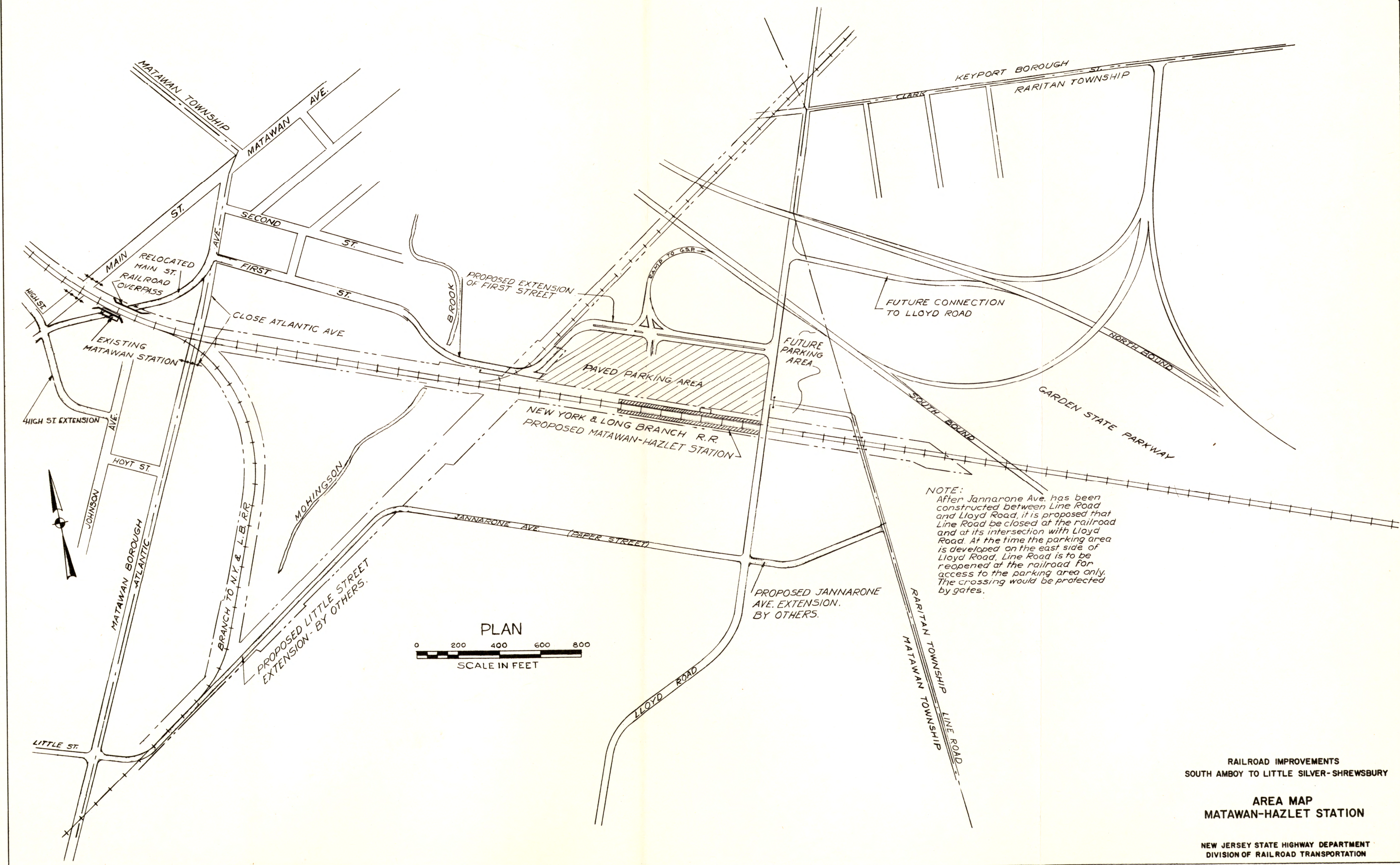


PLAN
0 100 200 300 400
SCALE IN FEET

RAILROAD IMPROVEMENTS
SOUTH AMBOY TO LITTLE SILVER-SHREWSBURY

MATAWAN-HAZLET STATION

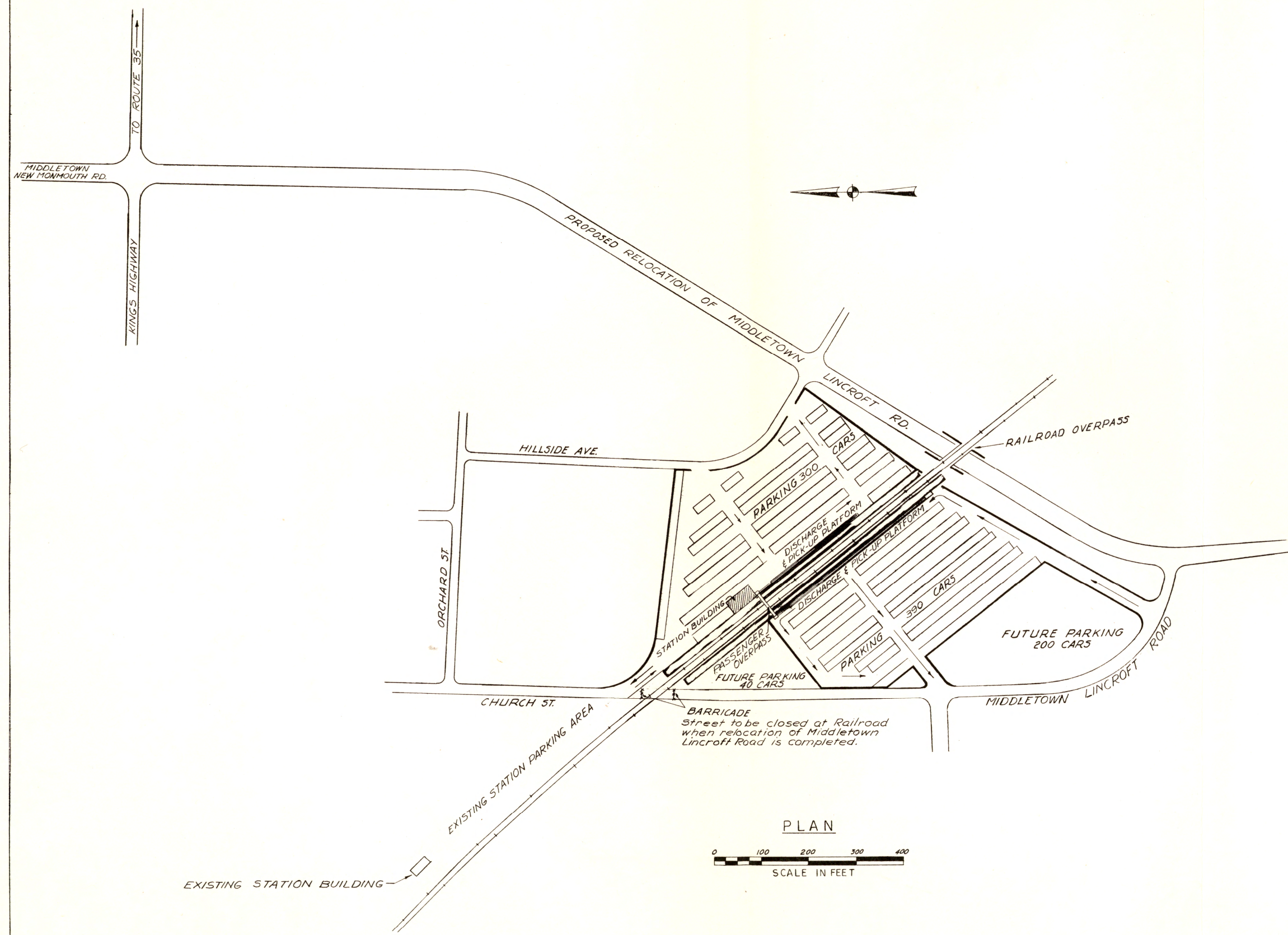
NEW JERSEY STATE HIGHWAY DEPARTMENT
DIVISION OF RAILROAD TRANSPORTATION



RAILROAD IMPROVEMENTS
SOUTH AMBOY TO LITTLE SILVER-SHREWSBURY

AREA MAP
MATAWAN-HAZLET STATION

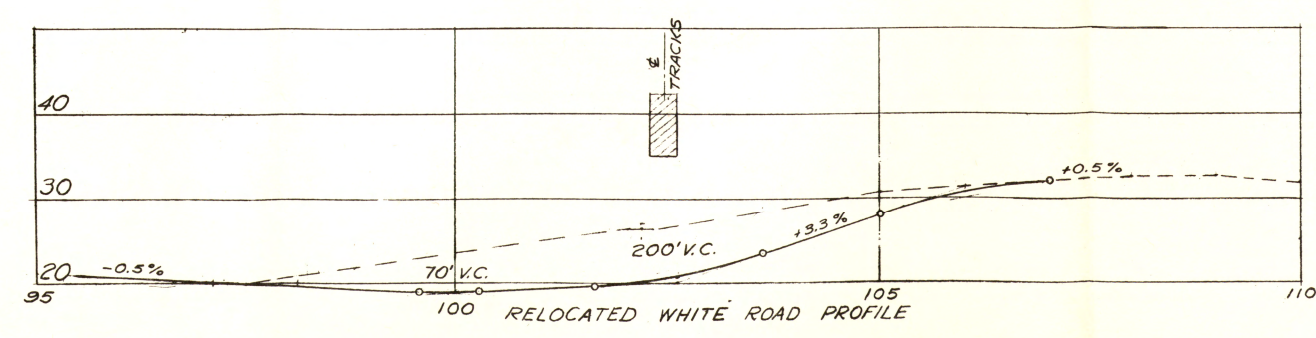
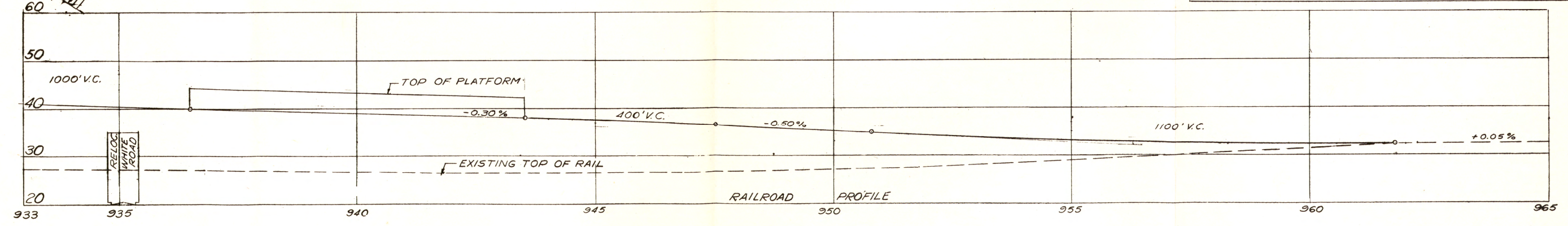
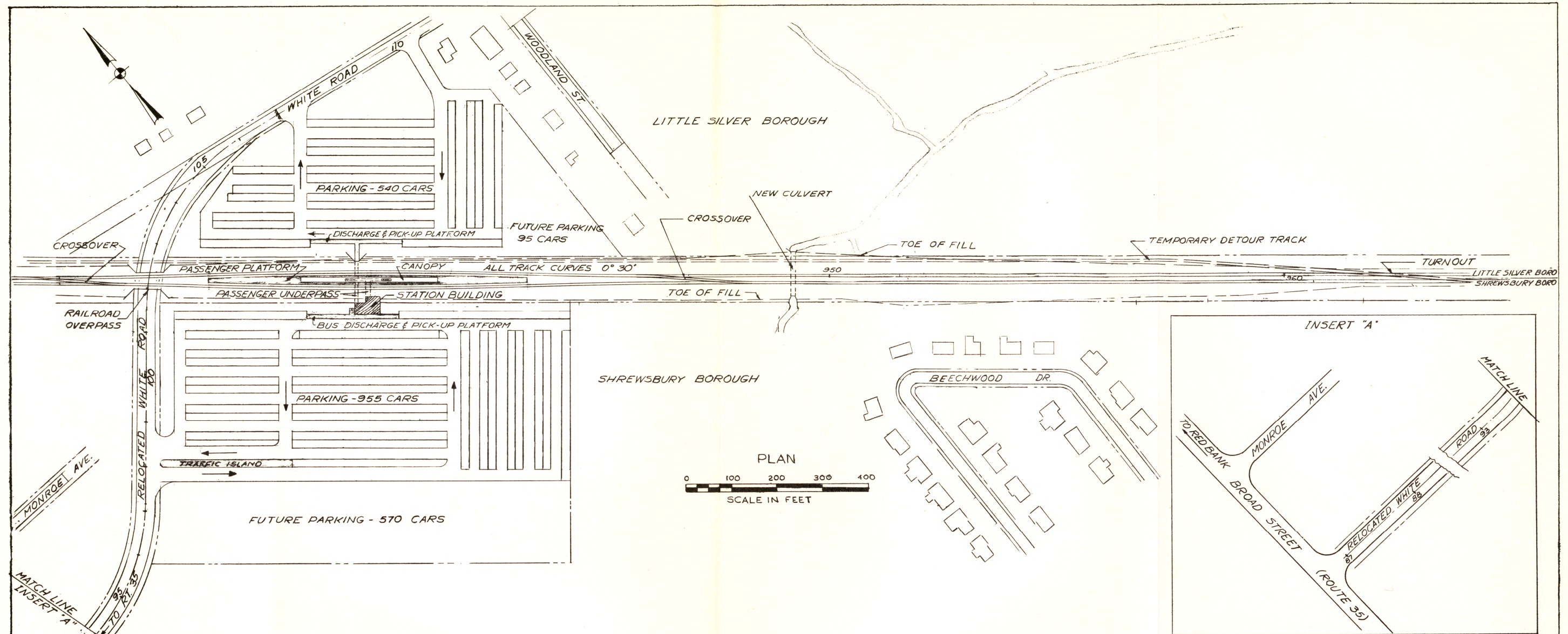
NEW JERSEY STATE HIGHWAY DEPARTMENT
DIVISION OF RAILROAD TRANSPORTATION



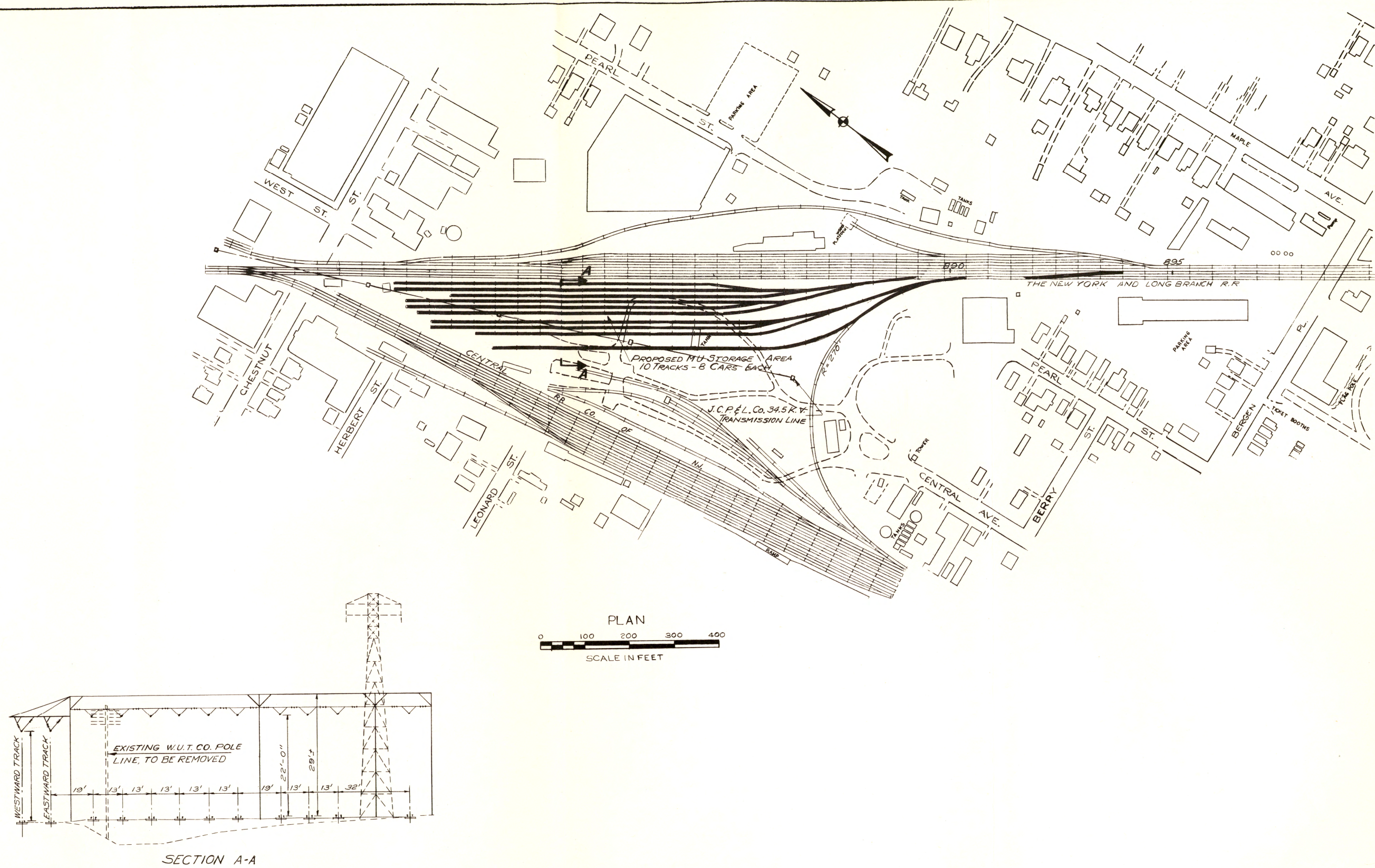
RAILROAD IMPROVEMENTS
SOUTH AMBOY TO LITTLE SILVER-SHREWSBURY

MIDDLETOWN STATION

NEW JERSEY STATE HIGHWAY DEPARTMENT
DIVISION OF RAILROAD TRANSPORTATION



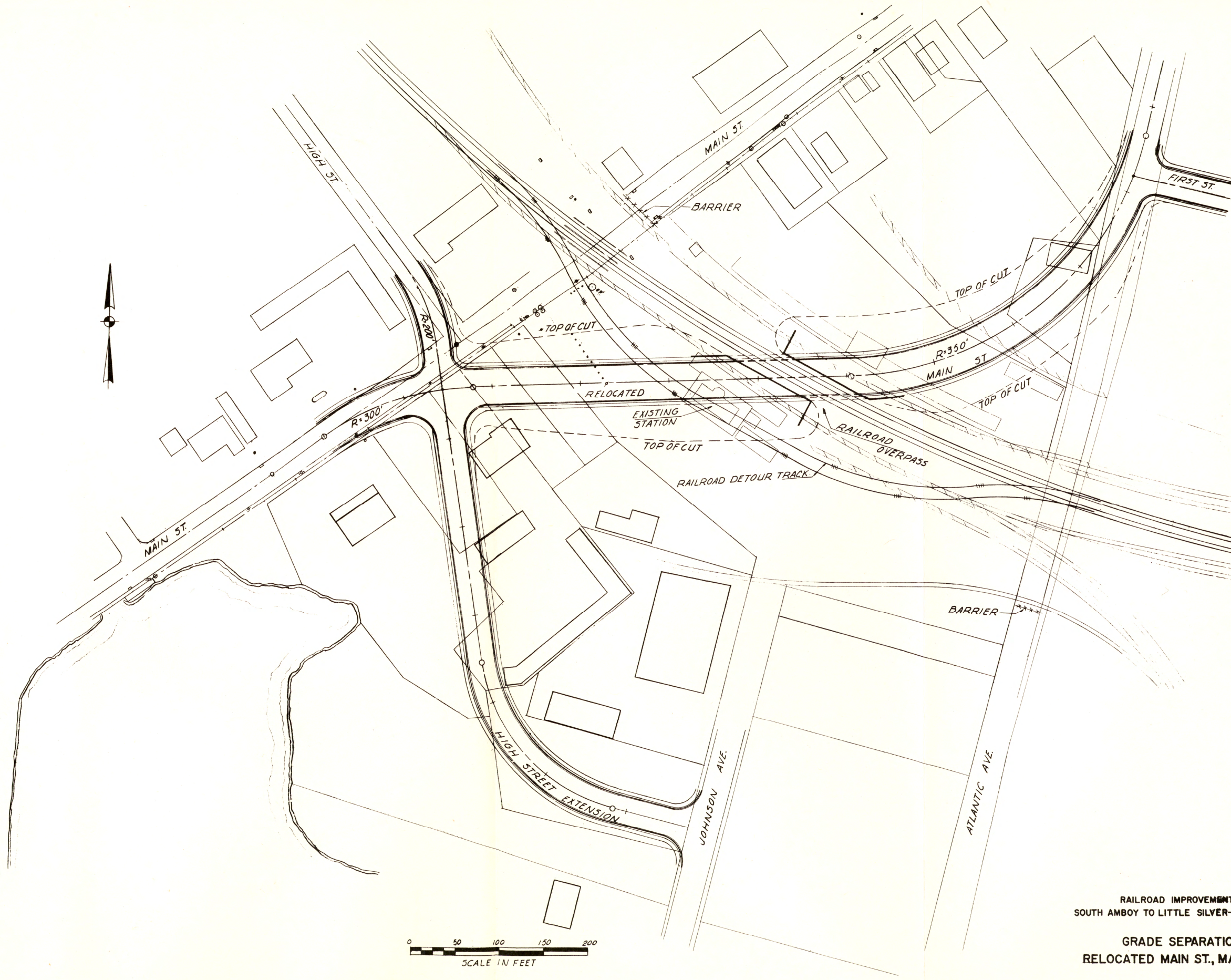
RAILROAD IMPROVEMENTS
SOUTH AMBOY TO LITTLE SILVER-SHREWSBURY
GRADE SEPARATION-RELOC. WHITE RD.
LITTLE SILVER-SHREWSBURY STATION
NEW JERSEY STATE HIGHWAY DEPARTMENT
DIVISION OF RAILROAD TRANSPORTATION



RAILROAD IMPROVEMENTS
SOUTH AMBOY TO LITTLE SILVER-SHREWSBURY

M.U. CAR STORAGE YARD

NEW JERSEY STATE HIGHWAY DEPARTMENT
DIVISION OF RAILROAD TRANSPORTATION



RAILROAD IMPROVEMENTS
SOUTH AMBOY TO LITTLE SILVER-SHREWSBURY

GRADE SEPARATION
RELOCATED MAIN ST., MATAWAN

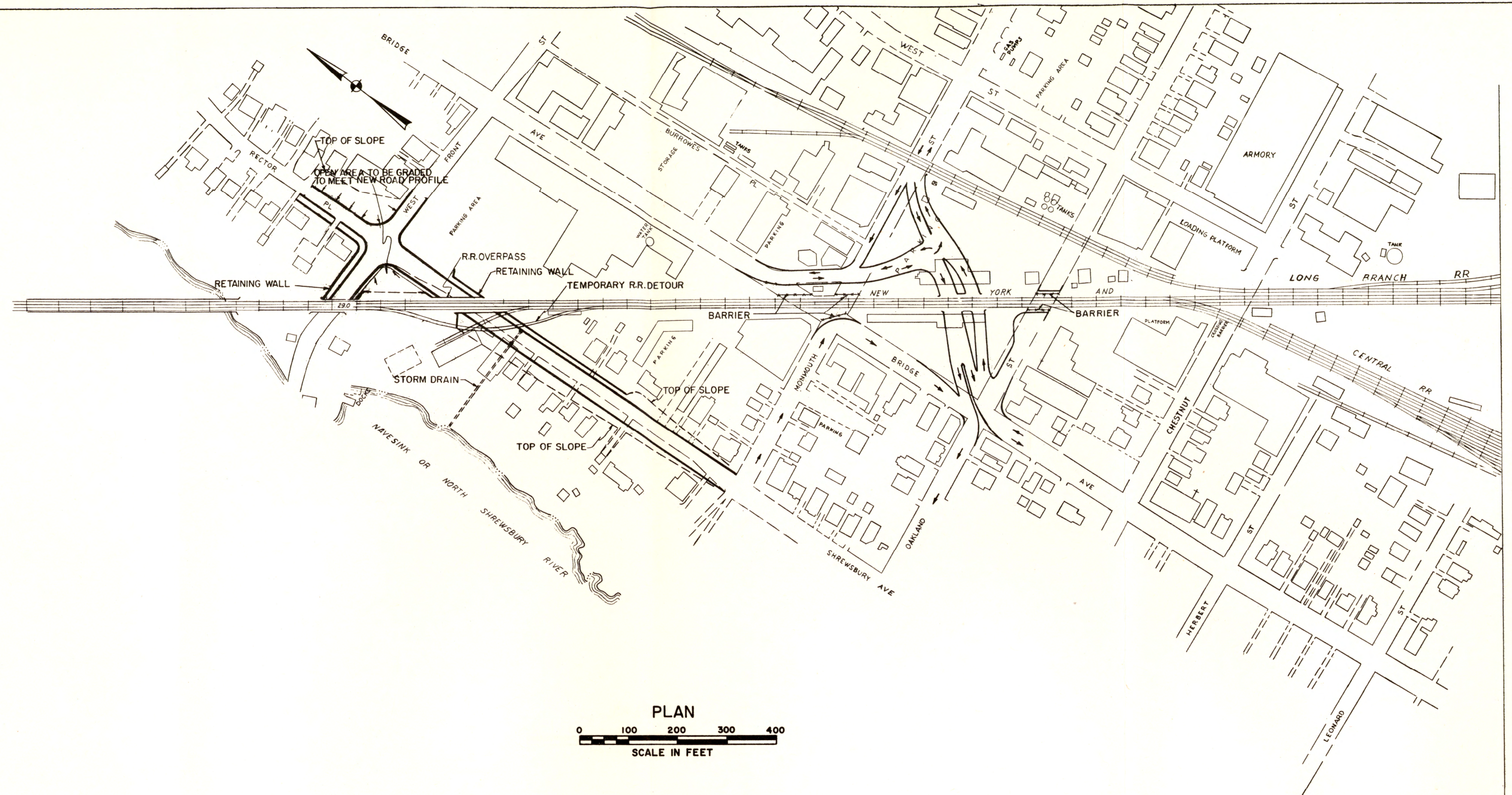
NEW JERSEY STATE HIGHWAY DEPARTMENT
DIVISION OF RAILROAD TRANSPORTATION

RAILROAD IMPROVEMENTS
SOUTH AMBOY TO LITTLE SILVER-SHREWSBURY

GRADE SEPARATION

MIDDLETOWN-LINCROFT ROAD, MIDDLETOWN
(CHURCH STREET)

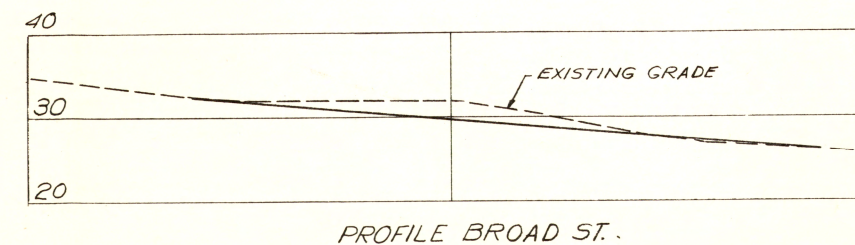
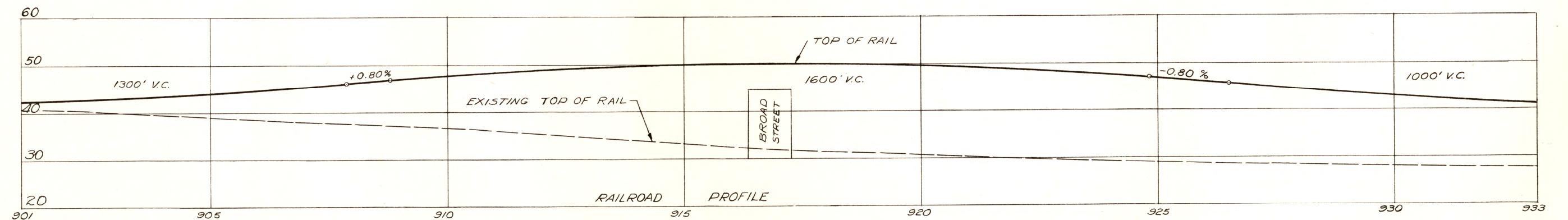
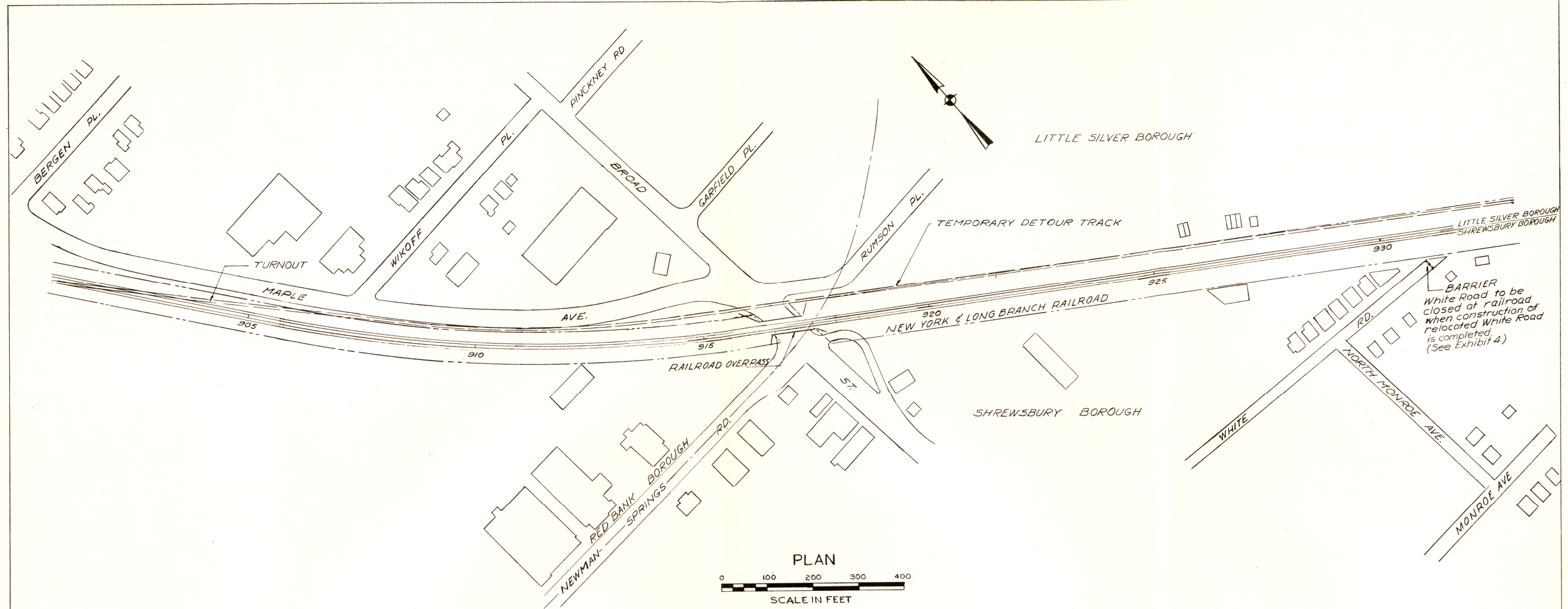
NEW JERSEY STATE HIGHWAY DEPARTMENT
DIVISION OF RAILROAD TRANSPORTATION



PLAN
 0 100 200 300 400
 SCALE IN FEET

RAILROAD IMPROVEMENTS
 SOUTH AMBOY TO LITTLE SILVER-SHREWSBURY
 GRADE SEPARATION-SHREWSBURY AVENUE
 IMPROVEMENTS AT BRIDGE AVENUE
 MONMOUTH & OAKLAND STREETS

NEW JERSEY STATE HIGHWAY DEPARTMENT
 DIVISION OF RAILROAD TRANSPORTATION



RAILROAD IMPROVEMENTS
SOUTH AMBOY TO LITTLE SILVER-SHREWSBURY

GRADE SEPARATION
BROAD STREET

NEW JERSEY STATE HIGHWAY DEPARTMENT
DIVISION OF RAILROAD TRANSPORTATION

NEW JERSEY STATE HIGHWAY DEPARTMENT
DIVISION OF RAILROAD TRANSPORTATION

HIGH SPEED ELECTRIC MULTIPLE UNIT COMMUTER RAILWAY CARS

- BODY:** Stainless steel, 85 feet long, 10'6" wide (at seat level).
- POWER:** 4 electric traction motors in each car; energy from overhead source at 11,000 volts alternating current, 25 cycle transformed and rectified in each car and fed to the motors at a maximum of 850 volts per motor. The power package in each car to be designed for later convertibility to commercial frequency.
- PERFORMANCE:** Capable of operating at 95 - 100 miles per hour; initial acceleration to be 1.95 miles per hour per second and cars will reach a speed of 80 mph in 90 seconds. From a stopped position they will traverse a distance of one mile in 74 seconds. The normal braking rate will be 2.2 miles per hour per second.
- SEATING:** The six inch added width at the seat line makes possible a transverse seating arrangement with two seats on one side of the aisle and three seats on the other. Both seat cushions and backs will be made of foam and contoured for comfort. The backs will be set at an angle of 105 to 110 degrees and will be 28 inches above the seat. All seats will be fixed in place with one-half of the seats facing in one direction and one-half in the other. Ash trays will be recessed into the back of each seat and hand-grips provided.
- DOORS:** Motorized doors will be provided at each end of each car on both sides. In addition centerbi-parting motorized doors will be initially installed in each car or the framing so constructed that center doors can later be added with minimum cost.
- CAPACITY:** Cars with the center doors will seat 119 passengers; without center doors will seat 129 passengers.
- HEATING,
VENTILATING
AND AIR CON-
DITIONING:** The cars will be electrically heated and thermostatically controlled using a combination of overhead and side

panel heating coils. Ventilation shall be accomplished by blower fans in the overhead evaporator units. Car air will be recirculated and mixed with fresh air and distributed throughout the length of the car in stainless steel ducts. The air conditioning system will also be thermostatically controlled and capable of maintaining a car temperature no greater than 75° with a relative humidity of 55% and 125 people in the car when the outside temperature is 95°.

COMMUNICATIONS:

The cars will be equipped with a public address system so that trainmen can make announcements to passengers; so that trainmen can intercommunicate and provision will be made for communication by train-radio from wayside stations to train crews. In order that announcements will be effectively and pleasantly communicated, ten speakers will be installed at even intervals throughout the car.

TOILETS:

Each car will be equipped with a stainless steel toilet room with modern facilities.

CAR BUILDER COMPETITIVE BIDS

Invitations were sent out to car builders on April 28, 1966 with the car construction specifications and drawings.

Bids were submitted by the Budd Co. and the St. Louis Car Division of General Steel Industries on July 22, 1966. The low bidder was St. Louis Car Co. Evaluation of bids by the Railroad Division and the Pennsylvania Railroad is about completed and award to the low bidder is expected to be made soon. With the selection of alternatives, the bids indicate that 35 cars can be constructed with the Federal Grant and the State funds that have been appropriated.

The St. Louis proposal provides that the first two cars will be delivered in 365 calendar days after award of the contract; the next 18 cars in the following 63 days and the balance of the order (15) in the following 52 days.

