CA - Old Bridge 8/1980

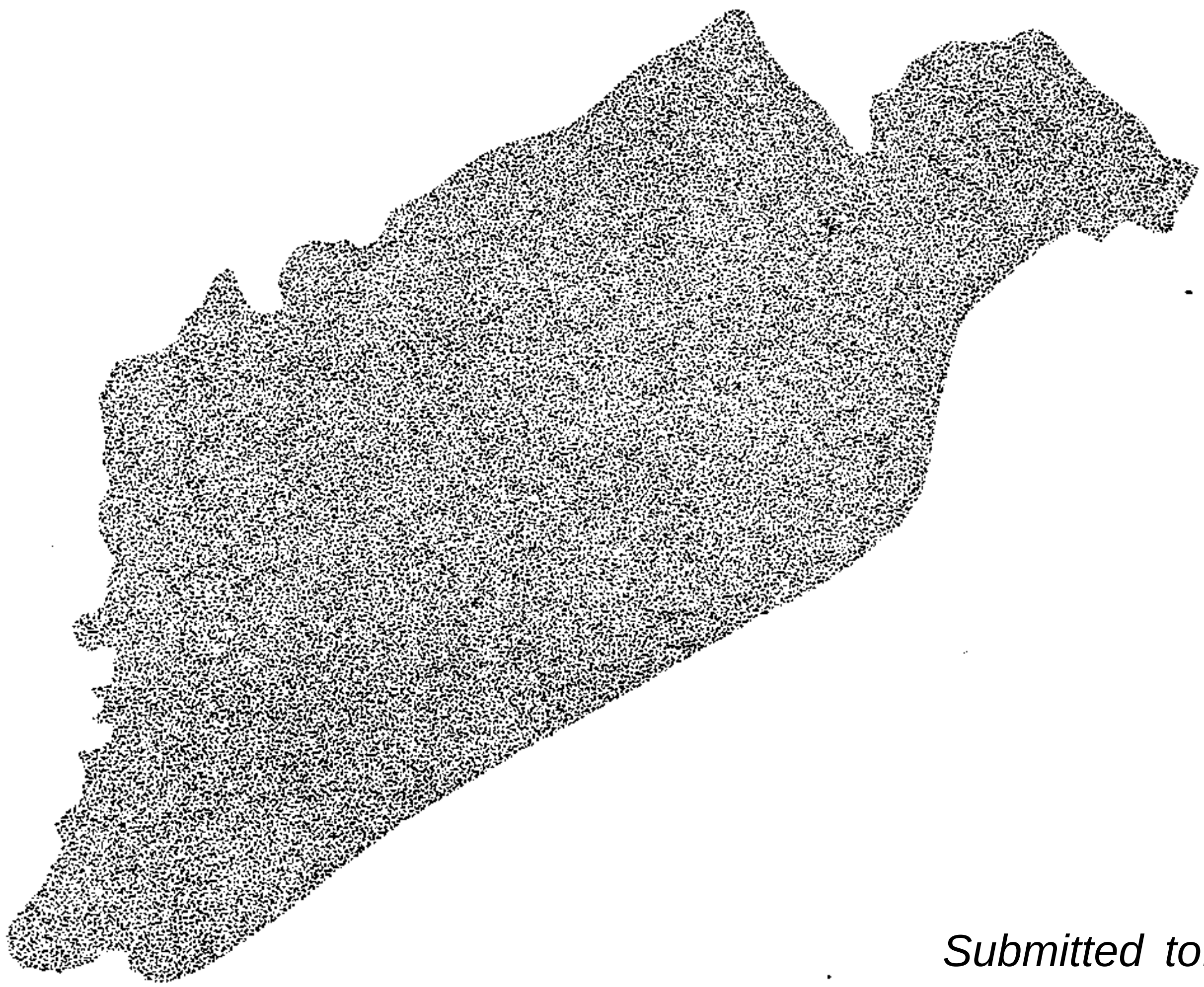
Methodology for off site pro-rata analysis
for Twp of Old Bridge

Pi. 1234
pg " 2 (double sided)

CA001783Z

Exhibit B

METHODOLOGY FOR OFF SITE PRO-RATA ANALYSIS FOR TOWNSHIP OF OLD BRIDGE



Submitted to:

TOWNSHIP OF OLD BRIDGE

by:

LOUIS BERGER & ASSOCIATES, INC.
100 Halsted Street
East Orange, New Jersey

August 1980

TOWNSHIP OF OLD BRIDGE

OFF-SITE PRO-RATA SHARING METHODOLOGY

BY

LOUIS BERGER & ASSOCIATES, INC.
100 HALSTED STREET
EAST ORANGE, NEW JERSEY

AUGUST, 1980

TABLE OF CONTENTS

INTRODUCTION

The Township of Old Bridge will soon experience considerable development. The anticipated impacts on the existing infrastructure can weigh heavily on the Township financial resources to handle all the off-site facility improvements necessary to their continued operation and safety. A system is therefore needed to relieve the anticipated burden on the Township resources.

The methods developed in this study pertain only to the Township roadway network, storm drainage culverts under Township roads, and the major streams. They have been devised to fairly and equitably apportion the costs of necessary off-site improvements to the future developers in the Township.

Section 1 of the report outlines the recommended method for determining each developers pro-rata share of the cost of the off-site improvements identified in the Drainage Analysis and Traffic Analysis as outlined in Sections 2 and 3. Included here is a description of the proposed methods for calculating the pro-rata share, a recommendation of procedures for keeping the calculation method current, and a discussion of outstanding legal issues.

In Sections 2 and 3, an inventory of existing drainage and transportation facilities was compiled, and the improvements needed to bring these facilities up to standard, under existing conditions, were identified. Service demands for the Township at full development capacity under the existing zoning ordinance were estimated. The improvements to the existing drainage and transportation facilities which would be needed to meet these service demands were then identified and construction costs were estimated and applied in the methodology.

SECTION 1 METHODOLOGY AND FINANCIAL ANALYSIS

1.1 General Background

The pro-rata share is defined as the amount a developer will pay the Township for financing the construction of drainage and road improvements, which are directly related to the proposed development. This amount is to be apportioned among all developers according to their relative contribution to the need for the improvement.

A developer is defined as anyone who is required to obtain subdivision and/or site plan approval for a project on land which is currently vacant and which will be developed. As per the scope of work provided by the Township, no provisions have been made to estimate the needs or determine the pro-rata share for projects which either change or intensify the use of existing developed land.

Off-tract improvements refer to increase in the capacity or changes in the configuration of existing drainage and transportation facilities which are not located within the boundaries of proposed developments. These facilities are those which the Township is currently responsible for and does not include County and/or State maintained facilities. In order to ensure that developers are not charged for improving facilities which are currently under capacity, the theoretical level at which all these facilities should exist given current conditions has been estimated. The need for an improvement is then calculated as any amount over the level which should exist to service existing development.

Drainage facilities are defined as culverts over Township roads and the attendant stream channels while transportation facilities include Township roads, intersections, signals and road markings.

The legal basis for requiring a pro-rata share of off-tract improvements is contained in Section 30 of the New Jersey Municipal Land Use Law (NJSA 40:55D-42).

1.2 Determination of the Drainage Pro-Rata Share

The drainage cost sharing method seeks to apportion the cost of improving culverts and cleaning stream channels to developers in relation to the degree to which a specific development causes the existing culverts and stream channels to become overutilized. To meet this goal, a method containing three components has been formulated. These are contribution to need, area affected and improvement cost.

1.2.1 Contribution to Need

The larger the size of the proposed development, the greater the volume of stormwater which will be contributed to the drainage network, all other things being equal. Similarly, the larger the amount of impervious surface, the greater the rate water will run. off a site and, thus, the larger the peak flow in the streams. To measure degree of contribution, the size, and the'impervious surface characteristics of a proposed development must be taken into account. Size is measured in terms of absolute acres of a particular development type while impervious surface is accounted for by an index value which represents the runoff coefficients for each land type shown in Table 2.5. Table 1.1 shows the corresponding runoff weighted for each land type. The development types are the same as those listed in the drainage and transportation sections.

1.2.2 Area Affected

Concerning the area affected, it is apparent that, at a minimum7 a new development would have the greatest ffect on the first culvert and that portion of the stream channel immediately downstream of the development site. This is the case because the development site is likely to occupy a relatively significant portion of that culvert's drainage area. However, since the water generated by the site will continue to flow downstream, other culverts and the remaining channel well be affected as well. In fact, every culvert and channel downstream of a new development will be affected to some degree by an upstream development. An illustration of this is shown in Figure 1.1 which portrays a schematic drainage network for Iresick Brook. As can be seen, the basin as a whole empties into the Duhernal Lake. As one moves upstream from the Lake, the brook has two main branches which then segment into smaller branches. The culverts are represented by the boxes.

If a new development was located in the drainage area to culvert 125, the affected culverts for which a pro-rata share should be calculated are 125, 121, 117 and 11. Similarly, a development upstream of 16 would affect 14 and 12 in addition to 16. The proportion of impacts would be greatest for the first affected culvert and decline as one moves downstream and the size of the development declines as a percentage of the drainage area for the affected culvert.

1.2.3 Definition of Improvement Costs

Cost has been defined for the drainage analysis as being the sum of the labor, material^and engineering design costs needed to increase the capacity of a particular culvert above the level which is needed to accommodate the existing amount of development. It also includes the labor and material costs for cleaning that portion of the stream channel within the drainage area of any one culvert. Tables 2.8 through 2.12 present the improvement cost figures for culverts and channels in each P6 A6-52 drainage basin.

No adjustments to these costs are made to account for the potential of monetary benefits to existing property owners arising from the construction of the improvements. This is the case because assuming that the culverts are at a size to handle existing development, an existing property owner would not gain any additional service from a larger culvert. As a result, no tangible benefit would accrue to these owners from additional improvements. However, it should be noted that there could be an aesthetic benefit to increased cleaning of stream channels in the sense that a stream free of debris is more pleasing to the eye. Similarly, there could be a water quality benefit to increased stream cleaning. The amount of this benefit would be dependent on the quality of the existing waters and the contribution to that quality from stream debris. In both of these cases, the relative value of these types of benefits would be extremely low. Given this and the general lack of information upon which these benefits could be monetized, they were not included within the analysis.

1.2.4 Forumlation of the Pro-Rata Equation

The amount of impact, then, will be directly proportional to the size of the development, its runoff intensity and the relative proportion of each culverts drainage area which it occupies. These three factors have been formulated into the equation which is shown in Figure 1.6. P6 16

To determine the pro-rata contribution for a particular development with this equation, one would first multiply the acreage of the proposed development by the runoff weight for that land type. In the event a development"contains more than one land category, the respective amounts of each type should be multiplied by their corresponding runoff weights and the resulting products summed.

1.2.1 Contribution to Need

The larger the size of the proposed development, the greater the volume of stormwater which will be contributed to the drainage network, all other things being equal. Similarly, the larger the amount of impervious surface, the greater the rate water will run. off a site and, thus, the larger the peak flow in the streams. To measure degree of contribution, the size, and the'impervious surface characteristics of a proposed development must be taken into account. Size is measured in terms of absolute acres of a particular development type while impervious surface is accounted for by an index value which represents the runoff coefficients for each land type shown in Table 2.5. Table 1.1 shows the corresponding runoff weighted for each land type. The development types are the same as those listed in the drainage and transportation sections.

1.2.2 Area Affected

Concerning the area affected, it is apparent that, at a minimum,- a new development would have the greatest ffect on the first culvert and that portion of the stream channel immediately downstream of the development site. This is the case because the development site is likely to occupy a relatively significant portion of that culvert's drainage area. However, since the water generated by the site will continue to flow downstream, other culverts and the remaining channel well be affected as well. In fact, every culvert and channel downstream of a new development will be affected to some degree by an upstream development. An illustration of this is shown in Figure 1.1 which portrays a schematic drainage network for Iresick Brook. As can be seen, the basin as a whole empties into the Duhernal Lake. As one moves upstream from the Lake, the brook has two main branches which then segment into smaller branches. The culverts are represented by the boxes.

If a new development was located in the drainage area to culvert 125, the affected culverts for which a pro-rata share should be calculated are 125, 121, 117 and II. Similarly, a development upstream of 16 would affect 14 and 12 in addition to 16. The proportion of impacts would be greatest for the first affected culvert and decline as one moves downstream and the size of the development declines as a percentage of the drainage area for the affected culvert.

1.2.3 Definition of Improvement Costs

Cost has been defined for the drainage analysis as being the sum of the labor, material and engineering design costs needed to increase the capacity of a particular culvert above the level which is needed to accommodate the existing amount of development. It also includes the labor and material costs for cleaning that portion of the stream channel within the drainage area of any one culvert. Tables 2.8 through 2.12 present the improvement cost figures for culverts and channels in each Pg 46-52 drainage basin.

No adjustments to these costs are made to account for the potential of monetary benefits to existing property owners arising from the construction of the improvements. This is the case because assuming that the culverts are at a size to handle existing development, an existing property owner would not gain any additional service from a larger culvert. As a result, no tangible benefit would accrue to these owners from additional improvements. However, it should be noted that there could be an aesthetic benefit to increased cleaning of stream channels in the sense that a stream free of debris is more pleasing to the eye. Similarly, there could be a water quality benefit to increased stream cleaning. The amount of this benefit would be dependent on the quality of the existing waters and the contribution to that quality from stream debris. In both of these cases, the relative value of these types of benefits would be extremely low. Given this and the general lack of information upon which these benefits could be monetized, they were not included within the analysis.

1.2.4 Forumlation of the Pro-Rata Equation

The amount of impact, then, will be directly proportional to the size of the development, its runoff intensity and the relative proportion of each culverts drainage area which it occupies. These three factors have been formulated into the equation which is shown in Figure 1.6. Pg 16

To determine the pro-rata contribution for a particular development with this equation, one would first multiply the acreage of the proposed development by the runoff weight for that land type. In the event a development'contains more than one land category, the respective amounts of each type should be multiplied by their corresponding runoff weights and the resulting products summed.

Second, this amount should be divided by the.total amount of developable undeveloped acreage for all land types weighted by the runoff factors which exists upstream of the first affected culvert. These values for each culvert in each drainage basin are located in Tables 1.2 through 1.6. P&Z 18-22

The result of this operation produces the relative burden placed on the drainage facility by this development and identifies the share of cost for which the developer is obligated for the first affected culvert and its attendant stream area. If this share is multiplied by the cost for improving the culvert and channel, the amount of cash contribution for the first affected culvert will be known'. The culvert and channel improvement costs are located in Tables 2.8 through 2.\2.P&Z>46-5Z

This sequence of steps must be repeated for each affected culvert until the last drainage facility in the basin is reached. The only values in the equation which change as one moves downstream are the total size of the weighted drainage area and the cost for each improvement.

Table 1.7 presents a sample drainage pro-rata calculation. In this example a development of 75 acres of R7 land was proposed for a site upstream of culvert 129 in Iresick Brook. Other affected culverts were 121, 117 and II. The pro-rata contribution was calculated by first multiplying 75 by 2.0 which is the runoff weight for R7. This value (150) was then divided by 216 which is the total weighted acreage upstream of culvert 129. The resulting proportion (.694) was multipled by the improvement cost for culvert 129 ($3,578) and this produced a value of $2,484.72

The value of 150 is then divided by the weighted area for culvert 121 and this proportion multiplied by $39,575. The resulting value ($3,058.03) is the pro-rata contribution for this culvert.

This process is repeated for culverts 117 and II to produce pro-rata contributions of $1118.40 and $1439.62, respectively. The individual pro-rata contributions are then summed to produce the total pro-rata contribtuion of $8,100.47.

The values for the runoff weights were obtained from Table 1.1. Table 1.2 provides weighted acreage upstream of each culvert and the improvement costs for each culvert are in Table 2.8.

To summarize the effect of this equation, a developer's reasonable share of contribution will vary with the size and the type of the proposed development, the total amount and type of development within a particular culvert's drainage area and the number of culverts downstream of the proposed development. Under this scheme a developer would pay the largest share for the culvert immediate downstream of his site. However, as the increase runoff will continue to effect other facilities downsteam he would pay a portion of that improvement cost as well. Since he contributes relatively less to the downsteam area, his pro-rata share will also decline.

1.3 Determination of Transportation Pro-Rata Share

The purpose of the transportation cost sharing method is to determine each developers fair share of the cost of making roadway improvements, the need for which is caused by new development. As in the drainage method, the calculation of this share and the cash contribution requires knowledge concerning the amount of contribution of each development to transportation needs, the influence area of a particular development and the cost of the needed improvements.

1.3.1 Contribution to Need

With regard to degree of contribution, a new development will utilize transportation facilities in relation to its size and the relative amount of trips produced by that development type. The larger the absolute size, the greater will be its impacts on transport facilities, all other things being equal. Similarly, the more intense the trip production or attraction from a particular land type, the greater the impact will be.

Development size is measured in terms of acres for residential land types and in units of 1,000 square feet of ground floor space for commercial and industrial land types. The intensity of trip production/attraction is accounted for by trip factors which indicate the vehicle trip ends per day per size unit for each land type. The trip factors were developed by the Institute for Traffic Engineers and are shown in Table 1.8. ^ z4-

1.3.2 Area Affected

To represent influence areas within which the cost sharing method can be applied, Old Bridge has been divided into three cost allocation districts as shown in Figure 3.7. rt 81

The use of the districts rather than the assignment of new development impacts to specific facilities, as in the drainage situation, is based on two considerations. First, in the course of the traffic analysis it was observed that.the overwhelming bulk of trips which used Township roads were intra-traffic district trips. This means that, for the most part, the vehicles on Township roads both began and ended their trip within the same traffic district. Inter-district travel was concentrated on County and/or State roads. The implication of this is that the impact of a new development on Township transportation facilities is likely to be confined to those facilities located within the traffic district in which the trip was generated. A development located in District I, then would largely affect the demand for increased road and intersection capacity in District I and have little impact on other Districts.

Second, while the analysis tools available are able to accurately indicate the flow and amount of traffic at any one point, they do not have sufficient accuracy to pinpoint the exact source of traffic at a single intersection or on a specific segment of roadway. Without this accuracy, the assignment of the traffic from a particular development to a specific facility could only be done by making a set of broad assumptions concerning travel behavior. As with any such assumptions, they would be open to legitimate challenge especially given the fine geographic level at which they would need to be applied. The more numerous the challenges, the lower the utility of the cost sharing system would be.

Given these two considerations, it was decided to adopt a system whereby development in any one district, would be responsible for a share of the cost of all the transportation improvements in that district but not in any other districts. The allocation districts were formed from the seven traffic districts described in Section 3 of this report. Allocation District 1 is composed of traffic districts I, II and III, Allocation District 2 contains traffic districts IV, V and VI and Allocation District 3 is coterminous with traffic district VII.'

The traffic districts were aggregated in order to ensure that the pro-rata system does not unduely influence location in any one area of town. An analysis was carried out on the variation in the average developer payment per traffic district. This analysis involved examining the variation in average payments under the seven traffic district configuration as well as a variety of other alternatives.

Each potential configuration was evaluated as to the degree of variation and conformance with the observation that the bulk of trips on each township roads were intra-district trips. Based on this review the alternative described above was selected for use in the pro-rata system.

1.3.3 Definition of Cost

Cost was defined as consisting of two components, base cost and adjusted base cost. Base cost consists of the land, labor material and engineering/design costs associated with the construction and/or installation of all traffic improvements needed to increase the capacity of township roadways to handle the traffic volumes which will be generated by new developments. A base cost value has been determined for each improvement and these costs have been summed for each district. (See-Table 1.9). PG 25

Adjusted base cost is the product of the base cost minus the value of any benefits which are likely to accrue to existing property owners as a function of the construction or installation of the proposed traffic improvements. It is this value for each district, which will actually be apportioned among individual developers.

For the purposes of this effort benefits are defined as the increase in the aggregate tangible value to existing property owners within a particular allocation district from the lower vehicle operating costs on Townships roads that would result from the proposed improvements.* The form of this increase is most likely to occur in terms of increased property values for the affected properties. This is the case because the lower the cost of using township roads, the greater the ease of traveling to properties located along these roads will be. The greater the access to the properties, the more attractive they will be as a site for existing development and as a site for potential new development. As their development potential rises so will their value. Determination of road improvement benefits are beyond the scope of this study and should be calculated by the township and subtracted from the Transportation Improvement Base Cost shown in Table 1.9. 25

1.3.4 Formulation of the Pro-Rata Equation

The amount of impact on transportation facilities, then, will be directly related to the absolute size of a particular development, the trip production/attraction rate for that land type and the total number of trips produced within the Allocation District. This can be represented by the following equation:

Pro-Rata Contribution = [(Number of Units of Land Type) . (Trip Factor for Land Type) / Total trips produced by all currently vacant developable land in the District] · [Adjusted Base Cost of all Traffic Improvements in the District.]

SAMPLE Pg 27

The equation would work as follows: First, the number of units of the development would be multiplied by the trip factor for that type of unit. As in the drainage equation, if more than one land type is proposed for a site, the number of units of each type should be multiplied by the respective factors and the products summed.

*For a discussion on the need to include the value of benefits in pro-rata methodology, see Divan Builders, Inc. v. Township of Wayne Planning Board, 66 N.J. 582 (1975).

Second, this amount should be divided by the total number of trips ends which will be produced by all new development in the particular allocation district. Their values have already been calculated and are located in Table 1.10.

As in the drainage equation the proportion produced by this second operation represents the developers contribution to the need for improvements and identifies his fair share of the cost of these improvements. If this is multiplied by the adjusted base cost for these improvements, the result will be the cash contribution for which the developer is responsible.

Table 1.11 presents a sample transportation pro-rata calculation. In this example a development of 200 acres of PD in Allocation District II is proposed. Its pro-rata contribution is calculated by multiplying the size of the development (200 acres) by the trip factor for the PD land type. This value (7800) is then divided by 429,726 which is the total number of trips in District II. The resulting proportion (.01815) is multiplied by the adjusted base cost for District II to produce a contribution of $127,164.87.

The trip factor values were obtained from Table 1.8 and the total District trips are located in Table 1.10. Base transportation improvement costs can be found in Table 1.9.

According to this equation, then, a particular new development's pro-rata contribution is dependent upon the size of the proposed development as defined by either the amount of residential acres or the square footage of commercial or industrial space, the trip generation rate for this particular type of development, the total trips being produced within the allocation district by all new development and the adjusted base cost of the proposed traffic improvements within the district.

1.4 Reconciliation of Estimated and Actual Costs

According to the New Jersey Supreme Court in Divan Builders, Inc. v. the Planning Board of Wayne Township (66 N.J. 582), a municipality which requires off-tract improvement contributions must make provisions for rebating over charges and collecting additional fees to account for under charges. Specifically, since the cost for and the improvement upon which the pro-rata contribution is based are only estimated values, the actual construction costs may differ. In order to insure that a developer pay only his fair share for the improvement, once it is actually constructed, a town should compare actual to estimated cost. If the actual cost is less than the estimated, a town would be legally obligated to refund the excess to each developer in proportion to their oriqinal contribution. In the event the actual cost is greater than the estimated, a town may require additional pro-rata contributions from the relevant developers.

To implement this requirement, the estimated costs for each individual drainage and transportation project identified as necessary by. the Consultant has been included in Tables 2.8 through 2.12 and in Appendix 3.3 respectively. Once any of these projects are actually constructed, the real cost should be compared to the actual and refunds or additional collections made as necessary.*

To illustrate the proper procedure, assume a culvert widening is called for at an estimated cost of $10,000. Over time contributions are collected from three developers with developer A-paying 40% of the estimated cost, developer B-10% and developer C-50%. Once the culvert is actually widened, the construction cost totals only $8,000. The $2,000 overcharge should be refunded as follows: Developer A should receive $800 (40%) Developer B would be eligible for $200 (10%) and Developer C should be payed the remaining $1,000 (50%).

A similar procedure should be followed for transportation improvements. However, since a developer contributes to all projects within an allocation district, all contributors would be eligible for rebates. Also, in order to minimize the actual number of township payments, the adjusted improvement cost for the district should be adjusted to reflect the actual construction values.

As an illustration of this situation, assume an intersection widening is an eligible project within a particular allocation district. The estimated cost for this project was $120,000 while the adjusted base cost for all district improvements was $5,000,000. However, when actually built, the project cost only $100,000. The excess $20,000 should be returned to all developers who had made contributions up to that time in proportion to their original contribution. In addition, the adjusted improvement cost for that district should be reduced by $20,000 to $4,980,000. This will prevent future contributors from being overcharged as well.

It should be noted that, in order to make this procedure workable, it will be necessary to maintain detailed records as to the identity of contributors to each project and the relative share of their contributions. Only if this is done will it be possible to physically make refunds or collect additional fees at a later time.

*If the developer contribution was made in the form of a bond guarantee and the construction cost is less than the amount guaranteed by the bond, the Township need only exact the amount needed to meet the cost. No actual refund would be necessary.

1.5 Re-examination and Revision of Improvement Need and Cost

Three factors exist which will make it necessary to periodical reexamine the current work. These factors are changes in the present zoning ordinance, changes in habits or technology and inflation.

With respect to the first factor, project need was determined from an analysis of future service demands and existing drainage and transportation facility capacity. Future service demands wen calculated on the basis of the current zoning ordinance at full development. Therefore, any change, especially a significant change, in the zoning ordinance would alter the level of future service demands. An alternation in the demand levels, if significant, would in turn either alter the need for a specific project or the extent of the improvement to be made. Unless this is accounted for, the pro-rata contributions system would be collecting money for either unneeded or improperly sized projects

Concerning the second factor, it is possible that over time habits or technology could change to the extent that proposed improvements should either be reduced in size or removed from consideration in their entirety. Similarly, new standards or equipment could be introduced which would require additional proje to be added to the list of recommended improvements. Additionall it is possible that a change in habits or technology could alter the value of benefits arising from implemented transportation projects. This would alter the cost which should be apportio among developers. Under either of these scenario's the townsh would no longer be collecting the correct amount of funds.

For example, with the increasing cost of gasoline driving habits have begun to change. If this trend accelerates and is coupled with an altered automobile technology, the roadway capacity requirements identified in this study could be overestimated. Improvement needs would also then have been overestimated. Under this scenario the township would have been collecting funds for a problem that did not exist to the extent originally estimated.

As to the third factor, the cost values contained within this report are based on 1979 cost figures. If inflation continues so that the value of the dollar declines relative to the cost of construction, the funds collected under the pro-rata system may b insufficient to cover the future cost of construction.* This wou severely reduce the utility of the entire effort.

---

*If the township is able to collect cash contributions rather tha performance bonds, the interest earned on the contributions will, some extent, ameliorate the effect of inflation.

To meet these factors, the Consultant recommends that at a minimum every six years, at the time the Master plan is re-viewed, a reexamination be undertaken in the areas noted above.

The review of project need should focus on the degree to which any zoning changes or any changed habit or technology will alter the demand levels assumed in this report.

In the event significant changes in demand levels have occurred, the need for and. the extent of projects in the affected areas should be reviewed as well. Appropriate changes should then be made to the list of improvements for which contributions are collected and the costs changed as needed.

Similarly, the methodology used to estimate the value of transport-ation project benefits should be reviewed to determine if any of the methodology's parameters have changed. Based on this review appropriate changes should be made in the Adjusted Base Cost value in the Transportation Pro-Rata equation.

Lastly, at a minimum interval of every six years, the construction cost of improvements should be altered by the ratio of the New Jersey Department of Transportation Construction Cost Index for that year to the 1979 Cost Index Value.

In the event the costs are actually reduced as a result of this process, the township should review the past contributions it has received and make rebates as necessary.

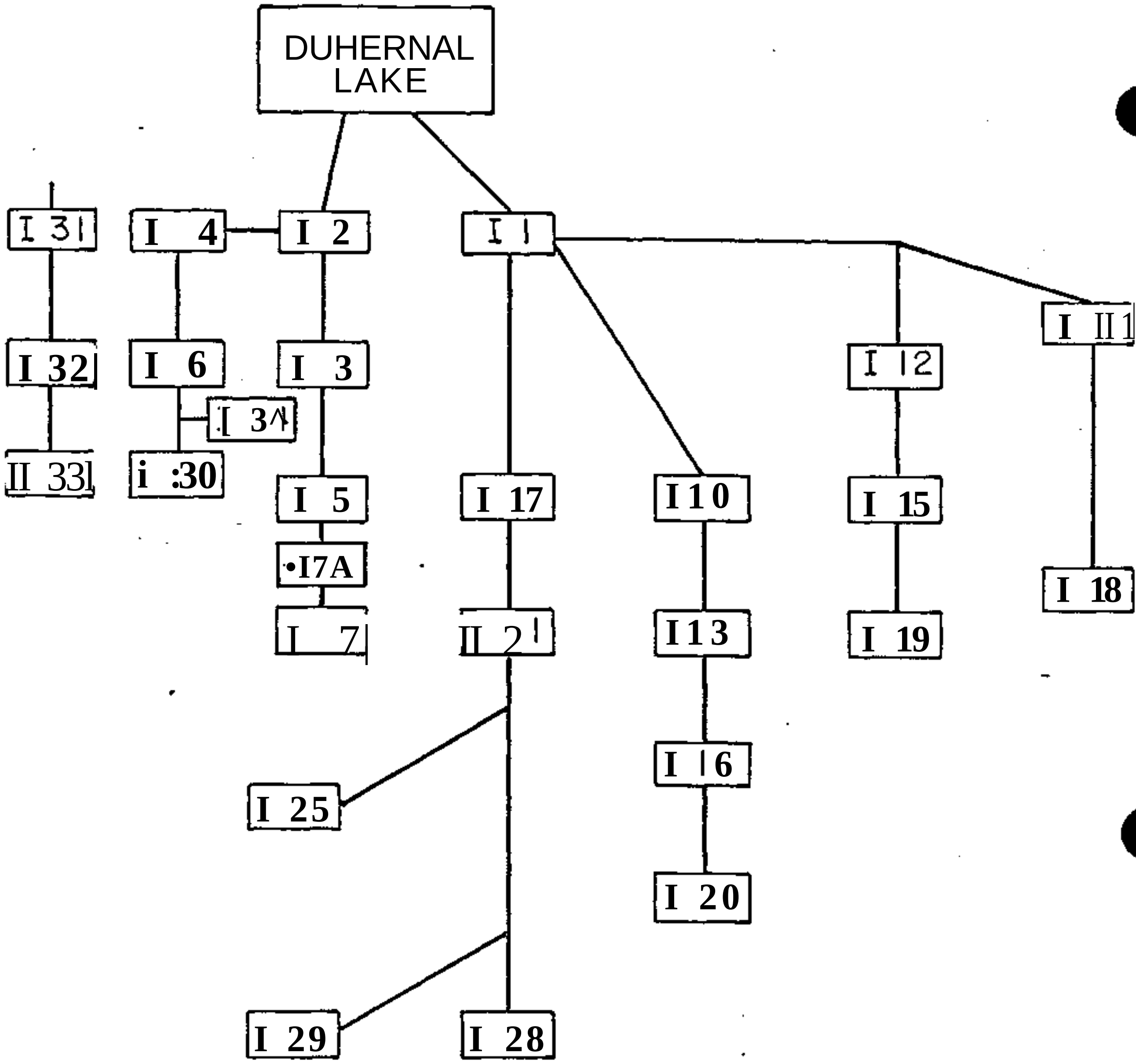


FIGURE I-I

SEQUENCE OF TOWNSHIP CULVERTS
IRESICK BROOK

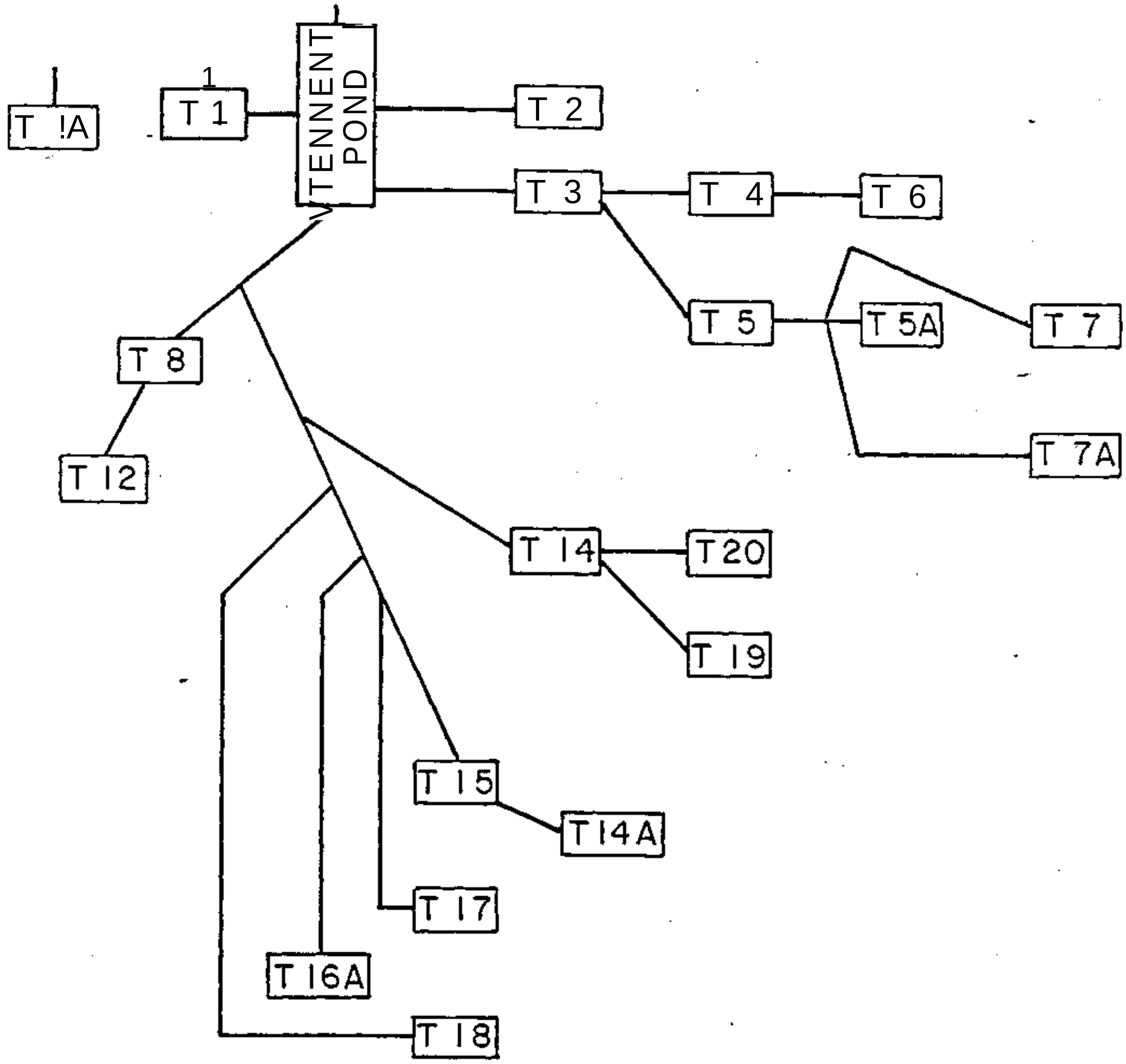


FIGURE I • 2

SEQUENCE OF TOWNSHIP CULVERTS
TENNENT BROOK

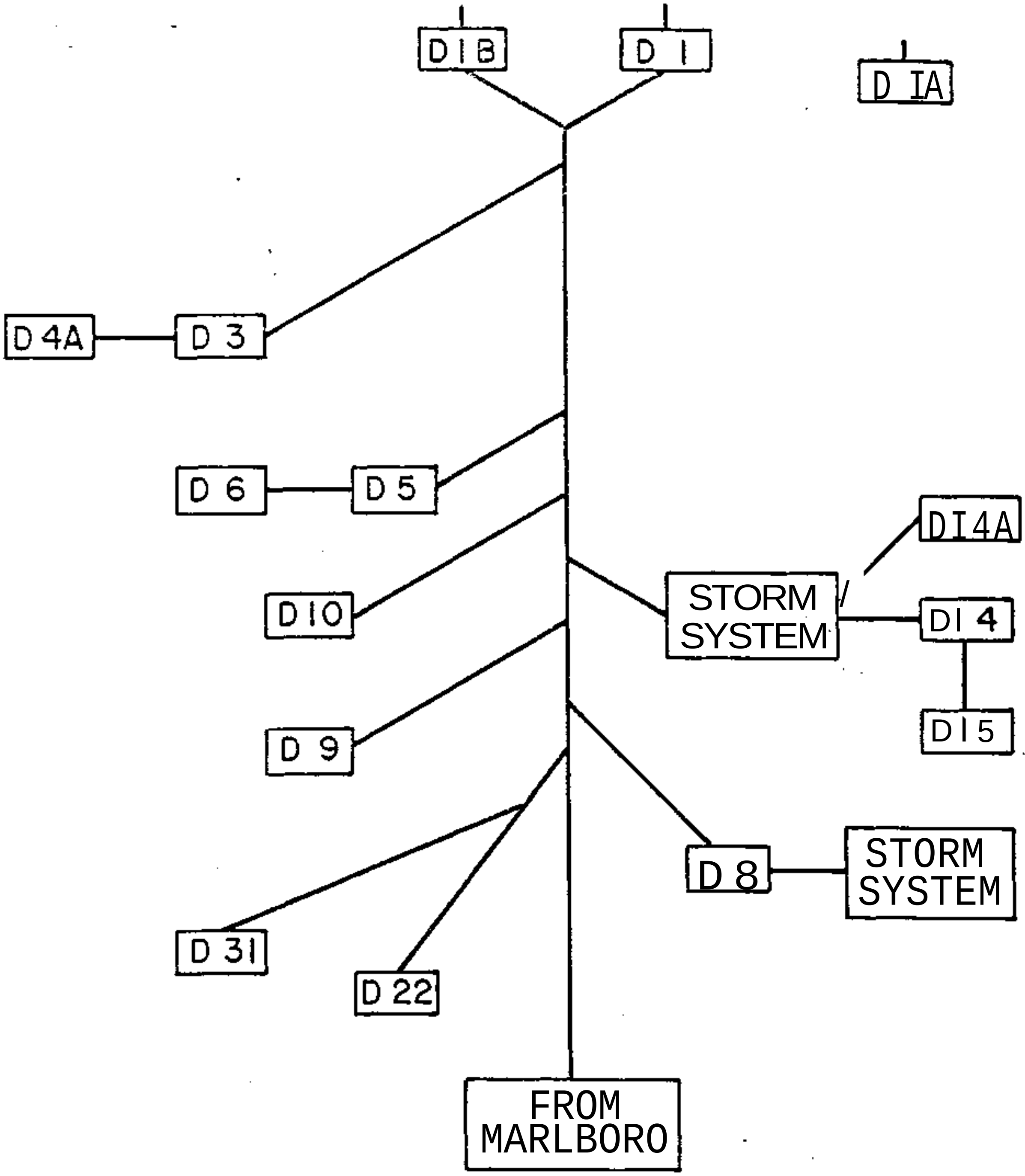


FIGURE 1-3

SEQUENCE OF TOWNSHIP CULVERTS

DEEP RUN BROOK

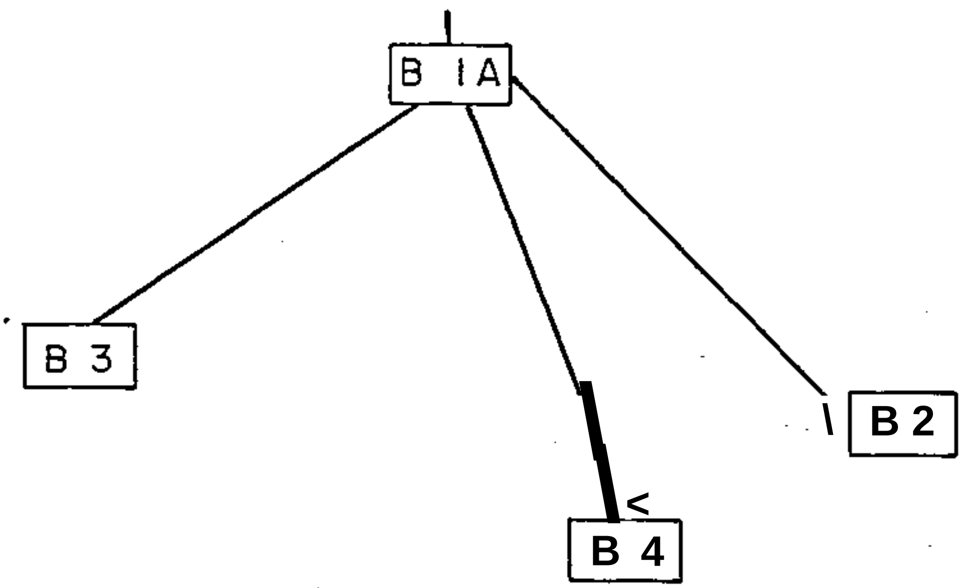


FIGURE 1-4

SEQUENCE OF TOWNSHIP CULVERTS
BARCLAY BROOK

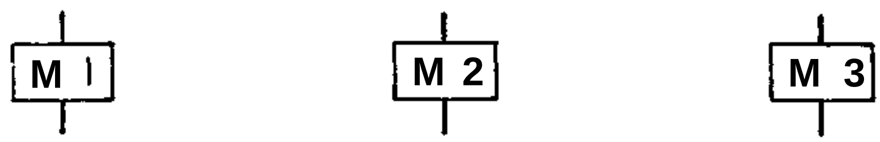


FIGURE i • 5

SEQUENCE OF TOWNSHIP CULVERTS
MATAWAN CREEK

FIGURE 1.6

Drainage Pro-Rata Equation

$$\text{Pro-Rata Contribution} = \left[\frac{\text{(Acres of Land Type)} \cdot \text{(Runoff Weight for Land Type)}}{\text{The sum of all weighted acres for all developable undeveloped land types upstrean of the first affected culvert}} \cdot \text{Cost of Improvement to First Affected Culvert}\right] +$$

$$\left[\frac{\text{(Acres of Land Type)} \cdot \text{(Runoff Weight for Land Type)}}{\text{The sum of all weighted acres for all developable undeveloped land types upstream of the second affected culvert}} \cdot \text{Cost of Improvement to Second Affected Culvert}\right] +$$

$$\left[\frac{\text{(Acres of Land Type)} \cdot \text{(Runoff Weight for Land Type)}}{\text{The sum of all weighted acres for all developable undeveloped land types upstream of the third affected culvert}} \cdot \text{Cost of Improvonent to the Third Affected Culvert}\right] + \cdots +$$

$$\left[\frac{\text{(Acres of Land Typel} \cdot \text{(Runoff Weight for Land Type)}}{\text{The sum of all weighted acres for all developable undeveloped land types upstream of the last affected culvert}} \cdot \text{Cost of Improvanent to the Last Affected Culvert}\right]$$

TABLE 1.1

Runoff Weights

Land Use	"C" Coefficient	Index Value
WS	.20	1.00
R20,R15	.30	1.50
R7,PD	.40	2.00
AR,AF,TH	.62	3.10
OG,SD,TCD	.83	4.15
M5,CC,CR,CN,CM	.89	4.45

Source: Louis Berger & Associates^ inc.

TABLE 1.2

Weighted Developable Undeveloped Acreage

Iresick Brook

Culvert Number	Weighted Acres Draining To Each Culvert from Immediate Area	Total Weighted Acres Draining to Each Culvert
I 1	-215.0	2399.7
I 2	373.5	475.5
I 3	4.4	474.1
I 4	0.	102.0
I 5	8.0	469.7
I 6	82.0	102.0
I 7	441.2	441.2
I 7A	20.5	461.7
110	0.	123.6
111	24.0	34.5
112	22.0	56.5
113	35.6	123.6
115	12.8	34.5
116	59.2	88.0
117	28.9	1970.1
118	10.5	10.5
119	21.7	21.7
120	28.8	28.8
121	773.0	1941.2
125	468.0	468.0
128	484.0	484.0
129	216.0	216.0
131	0.	0.
132	0.	0.
133	0.	0.
130	"0.	0.
134	20.0	20.0

SOURCE: Louis Berger & Associates, Inc.

TABLE 1.3

Weighted Developable Undeveloped Acreage

Tennent Brook

Culvert Number	Weighted Acres Draining To Each Culvert From Immediate Area	Total Weighted Acres Draining to Each Culvert
T 1	6285.6	10,725.7
T1A	0.	0.
T2	757.2	757.2
T3	911.9	2,140.8
T4	459.8	459.8
T5	468.3	769.1
T5A	0-	0.
T6	0.	0.
T7	82.7	82.7
T7A	218.1	218.1
T8	268.8	946.6
T12	677.8	677.8
T14	53.4	81.8
T14A	12.0	12.0
T15	129.7	141.7
T16A	46.0	46.0
T17	40.0	40.0
T18	286.0	286.0
T19	4.5	4.5
T20	23.9	23.9

SOURCE: Louis Berger & Associates, Inc.

TABLE 1.4

Weighted Developable Undeveloped Acreage

Deep Run Brook

Culvert Numbert	Weighted Acres Draining To Each'Culvert from Immediate Area	Total Weighted Acres Draining to Each Culvert
D 1	2189.6	3266.1
D IB	2189.6	3266.1
D 1A	0.	0.
D 3	205.4	205.4
D 4A	0.	0.
D 5	130.0	187.3
D 6	57.2	57.2
D 8	172.0	172.0
D 9	26.0	26.
D10	28.0	28.
D14	6.0	56.0
D14A	62.0	62.0
D15	50.0	50.0
D22	142.0	142.0
D31	1,446.5	1,446.5

SOURCE: Louis Berger & Associates, Inc.

TABIrE 1.5

Weighted Developable Undeveloped Acreage

Barclay Brook

Culvert Number	Weighted Acres Draining To Each Culvert from Immediate Area	Total Weighted Acres Draining to Each Culvert
B1A	796.0	3,095.8
B2	513.8	513.8
B3	828.0	828.0
B4	958.0	958.0

SOURCEr Louis Berger & Associates, Inc.

TABLE 1.6

Weighted Developable Undevelopable Acreage

Matawan Creek

Culvert Number	Weighted Acres Draining To Each Culvert from Imraediate Area	Total Weighted Acres Draining to Each Culvert
Ml	168.0	168.0
M2	87.5	87.5
M3	1172.9	1172.9

TABLE 1.7

Sample Drainage Pro-Rata Calculation

Development Proposal: 75 acres of R7

Runoff Index Weight: 2.0

Basin Location: Iresik Brook

First Culvert Affected: 129

Other Culverts Affected: 121, 117, II

Pro-Rata Calculation

$$= \left[\frac{(75 \cdot 2.00)}{216} \cdot \$3578.\right] + \left[\frac{(75 \cdot 2.00)}{1941.2} \cdot \$39{,}575\right] + \left[\frac{(75 \cdot 2.00)}{1970.1} \cdot \$14{,}689\right] + \left[\frac{(75 - 2.00)}{2399.7} \cdot \$23{,}031\right]$$

$$= \$2484.72 + \$3058.03 + \$1118.40 + \$1433.62$$

$$= \$8100.77$$

TABLE 1.8

Trip Generation/Attraction Factors

Zoning Type	Trips Per * Residential Acre	Trips Per 1,000 Sq. Ft. of Floor Space
Planned Development (PD)	39.	-
Single Family Residential (R20)	20.	-
Single Family Residential (R15)	28.	-
Single Family Residential (R7)	46.	-
Townhouse Residential (TH)	50.	-
Apartment-Family Residential (AF)	90.	
Apartment-Retirement Residential (AR)	50.	-
Neighborhood Connercial (CN)	1,000.	97.
Conmunity Carmercial (CC)	800.	65.
Regional Conmercial (CR)	590.	35.
Marine Commercial (CM)	370.	34.
Special Development (SD)	280'	88.
Town Center (TCD)	100.	25.
General Office (OG)	240.	12.
Heavy Industrial (M5)	72.	8.

Source: Institute Gf Traffic Engineers

* The Density of Dwelling Units Per Residential Acre is as of 7/1/80.

TABLE 1.9

Transportation Improvement Costs*

Allocation District	Transportation Improvement Base Cost
1	20,821,165.
2	9,056,255
3	1,246,425

*All costs are in 1979 dollars
Source: Louis Berger & Associates, Inc.

TABLE 1.10

Total Vehicle Trip Ends Per Day[1]

Allocation District	Total Vehicle Trip Ends Per Day at Development Capacity*
I	889,696
II	429,726
III	133,765

*Development Capacity defined as of Spring 1980.

Source: Louis Berger & Associates, Inc.

TABLE 1.11

Sample Transportation Pro-Rata Calculation

Development Proposal: 200 acres of PD

Trip Generation/Attraction Factor: 39 (TA&.L£ 1,6)

Allocation District: District II (-£.'£ ///)

$$\text{Pro-Rata Calculation} = \left[\frac{(200 \cdot 39)}{429,726}\right] \cdot \$7,006,329^{*}$$

TA£/-£ /.JO

$$= \left[\frac{11300\ 1}{429,726}\right] \cdot \$7,006,329$$

$$= .01815 \cdot 7,006,329$$

$$= \$127,164.87$$

*$7,006,329 is the assumed adjusted base cost after having deducted a hypothetical $2,000,000 to account for benefits to existing property owners. The actual base cost for all improvements in District II is $9,006,329.

SECTION 2 DRAINAGE ANALYSIS

2.1 Scope of Work

The purpose of the drainage analysis is to:

1. Determine the cost data of improving the culverts under Township roads, and streams in the Township due to future land development,

2. Provide land use runoff coefficients that reflect the percent of impervious land and thus the storm water runoff from various land uses contributing to each Township culvert,

3. Utilize the data of the analysis as one of the input elements in the formula for off-site pro-rata sharing, which will be used to assess the developers their fair share of the improvement costs.

Only Township culverts and streams are considered. Refer to Map 2.2 for the location of Township culverts.

2.2 Procedure

Watershed areas for all the culverts under Township roads were delineated and measured on the l"=800' scale township topographic maps. Where watershed areas extended beyond the bounds of the Township areas were delineated and measured on l"=2000' U.S.G.S. quadrangle maps. See Map 2.1. All existing culvert sizes and locations were checked in the field.

Next, hydrologic calculations of storm water runoff (peak flows) for the 1 in 100 year frequency storm return period, were determined for both the existing and future conditions. Culvert sizes required to carry the peak flow in both existing and future conditions were then determined by standard methods in hydraulics for flow through culverts. The differential cost of improvements for the required culvert sizes were then determined at each culvert crossing. Stream cleaning costs were also included in the improvement cost.

Finally, runoff coefficients and the various land use areas available for future development contributing to each culvert were tabulated. These values which reflect the percent imperviousness of the type land were applied in the allocation methodology for pro-rata sharing.

2.3 Hydrology

2.3.1" Methodology

The rational method was mainly used for peak flow determinations. This standard method was modified by considering the influence of soils types on the runoff coefficient.

The rational method formula used is Q = ACI where:

Q = peak runoff flow - cubic feet per second (cfs)
A = watershed area - Acres
C = runoff coefficient - dimensionless
i = rainfall intensity - inches per hour (in/hr.)

In New Jersey the rational method has been used widely for peak flow runoff determinations, and it is the method recommended by the Department of Environmental Protection, Division of Water Resources, for watershed areas less than one square mile. The method has also been used effectively for areas much greater than 1 square mile. In this analysis the rational method is used exclusively for all culverts under 1 square mile. It is used for watersheds 1 square mile and above with results checked by the methodology designated in Special Report 38, 1974 prepared by the State of New Jersey, Department of Environmental Protection and the U.S. Geological Survey. This method is recommended by the N.J.D.E.P. for areas over 1 square mile since it was developed on a regional basis for large watersheds.

The results of peak flows calculated by the Report 38 methodology were generally about 25% lower than those of the rational method. Since in most instances the rational method produced a reasonable and more conservative runoff determination its values were mainly used in this study. However, for the four watersheds over 3 square miles, culverts Tl in the Tennent Brook area and Dl, DIB, D22 in the Deep Run Area, the peak flows from the Rational Method and Report 38 were averaged to obtain required culvert sizes. This is considered a realistic approach since the limitation of the rational method to small watersheds requires a modification by a regional type method such as Report 38 provides.

2.3.2 Parameters Used in the Rational Method

Rainfall intensity in inches per hour was determined from Intensity-Duration curves for the 1 in 100 year frequency return period, as developed from Frequency-Duration curves in Technical Paper #40 for the Newark Area including Old Bridge. See Figure 2.1.

Time of Concentration (Tc) for the stream flow portions of the watershed were determined from nomographs based on the California Culvert equation as derived from Kirpich. They are represented in the nomograph in Figure 2.2 as reproduced from the "Design of Small Dams" by the U.S. Bureau of Reclamation.

Time of concentration is equal to the longest combination of overland flow time and channel flow time which exists anywhere in the basin. It is used to provide the time element to determine the rainfall intensity (i) from Intensity-Duration curves.

A second source of time of concentration (Tc) values was derived from the "Water Control Guide For Suburban and Rural-Residential New Jersey" Table 7 - Rutgers, the State University. See Figure 2.3. Tc values were sometimes averaged between the two sources, according to engineering judgement and experience.

Time of Concentration (Tc) for the overland flow portions of the watershed was determined by use of the overland flow nomograph from the New Jersey Highway Authority 1952, as reproduced in Figure 2.4.

Runoff coefficient is the dimensionless factor which reflects the type of land-use cover and imperviousness of that cover as used in the rational method. Runoff coefficients for the various land-use covers were determined by use of the table from "Design and Construction of Sanitary and Storm Sewers" prepared by the ASCE 1970 and as reproduced in Table 2.1, and by the use of tables from the "Storm Drainage Design Manual" Erie and Niagara Counties Regional Planning Board, July 1972, as reproduced in Table 2.2. This latter source accounts for the variation of runoff coefficients according to the hydrologic soils groups in the watershed. Values used were generally averaged from the two sources.

Soil types were obtained from "Engineering Soil Survey of New Jersey Report No. 10, Middlesex County". Hydrologic soil group classifications were obtained from the publication "Urban Hydrology for Small Watersheds", technical release No. 55, Soil Conservation Service. Most of the soils in the township were classified in Group B and the remainder in Group C. Group B is defined as "Soils having a moderate infiltration rate when wetted and consisting of well drained soil". Group C consists of soils with slow infiltration rates.

2.4 Hydraulics

Estimated culvert sizes for cost estimating purposes in this study were determined by use of culvert design methods in Circulars #5, 1965 - "Hydraulic Charts for the Selection of Highway Culverts and Circular #10 - Culvert Capacity Charts", from the U.S. Department of Transporation - Federal Highway Administration. The design selection was generally based on the inlet control condition with an allowable headwater depth equal to 1.5 x diameter or depth of culvert for culverts under 6', and an allowable headwater of 1.25 x diameter of depth of culverts for culverts 6' and over in diameter or depth.

All culverts were assumed to be of reinforced concrete. Pipe culverts were all assumed to be round for the purpose of estimating costs, although in design practice an ellipitical pipe could be substituted in conditions of limited cover availability. In several locations we have suggested the required ellipitical culvert.

Where approximate flood elevations were needed to aid in required culvert depth determinations, the flood profiles for the 1 in 100 year storm frequency, as determined in the U.S. Corps of Engineers Flood Hazard Report for Old Bridge, 1973 by Dames and Moore, were used with discretion, and only as an approximation. Communications with the U.S. Corps of Engineers indicated that doubt prevailed over the resulting flood levels in the report. Therefore the values were to be used only as qualitative data. The corps is considering further studies in this area.

2.5 Improvement Costs

Costs for culverts required in both existing and future conditions were determined from unit costs of culvert construction, reported by the Dodge Construction Guide of 1978. The cost was increased by 10% for 1979. Costs were multiplied by the New Jersey index factor of 1.1. Culvert costs for sizes that would be required in the existing land use condition for the design storm, were subtracted from the cost for sizes required in the future full land use developed condition. That is, the developer will not be assessed the cost required to bring the culvert size to that required for a 100 year storm under present conditions. He will only be assessed the cost required to increase the size of the culvert due to his developmental activities.

Costs of stream cleaning necessitated by future land development were also included in the improvement costs. These costs were considered as a first time capital activity with a portion attributed to future developments in proportion to the degree of future development in the watershed. That is, the actual cost was multiplied by the percent of future development available in the township as listed in Tables 2.13 through 2.17. Future costs for cleaning beyond the first-time cleaning will be carried by annual maintenance costs. Stream cleaning costs were determined from recent projects in the township resulting in a cost of $4.00 per foot of stream. The cost for lengths located between culverts was applied to each of the downstream culverts and added to the costs of culvert improvements. Only branches of major streams were considered in the cost estimate.

Costs for raising the roadway profile were minimal in this analysis,"since the roadways with low cover needed to be also raised in the existing required condition. Since raising the road from the existing required size to the future required size usually amounts to a differential height of I' or less of additional embankment, we have not included it in the cost estimate.

It should be noted that costs for culverts under roadways which do not exist today, but are included as future road links in the traffic analysis of this report, are included in the improvement of roadway costs, and not in the drainage improvement costs in this section.

2.5.1 Improvement Costs for Culverts with Partial Watershed in Other Townships

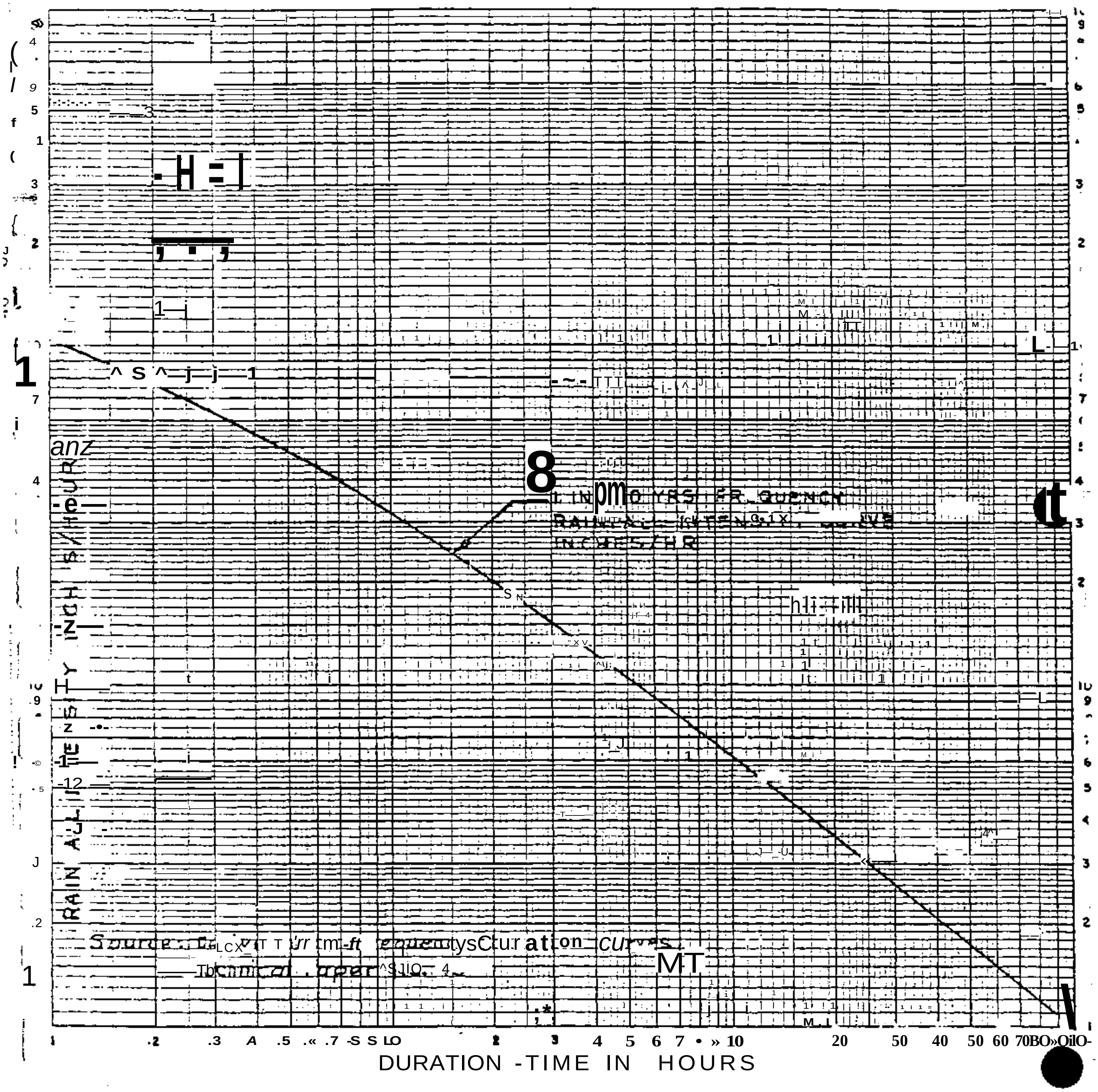
When part of the contributing watershed to a culvert lies in another Township, such as in Deep Run and Barclay watersheds, the cost of improvement must be adjusted. The total improvement cost cannot fairly be allocated to the developers in Old Bridge Township, thus only a fair fraction of the total cost was allocated. That fraction was determined by dividing the watershed area in Old Bridge by the Total Watershed Area.

For example, culvert D22 has only 173 acres located in Old Bridge out of the total of 4,934 watershed acres to that culvert. The cost of culvert and headwall improvements therefore were multiplied by $\frac{173}{4934}$ for the true cost allocation.

2.6 Summary of Drainage Results

Results of the drainage study including a tabulation of the field inventory of existing culverts are presented in Table 2.3 through 2.7, Summary of Culvert Data. Improvement costs are summarized in Tables 2.8 through 2.12. Areas of undeveloped land use in each watershed area are presented in Tables 2.13 through 2.17, with their corresponding runoff coefficients.

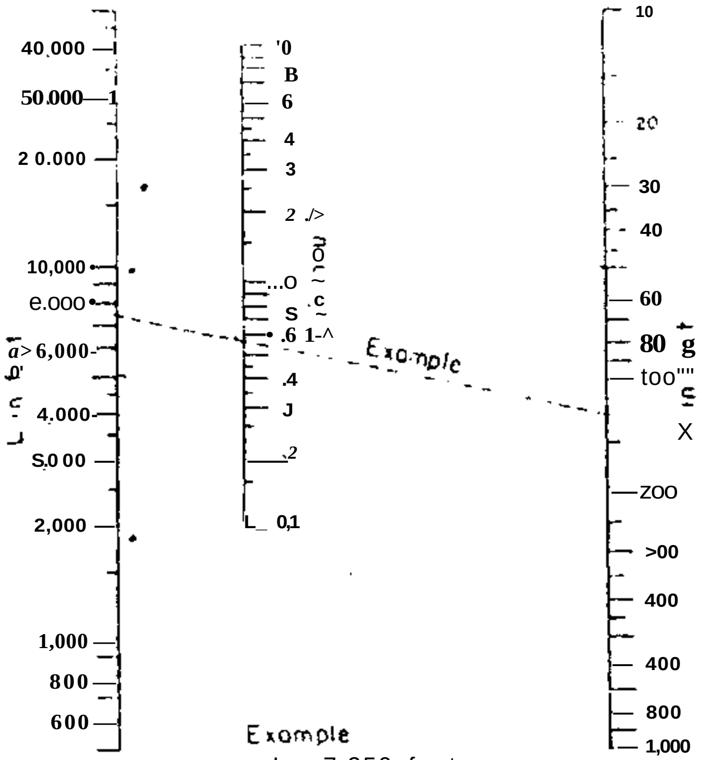
Cost data for drainage culvert cost determinations are found in Appendix 2.1, and a compilation of stream cleaning lengths and costs are found in Appendix 2.2.



RAINFALL INTENSITY-DURATION CURVE.

FIGURE 2-1

ESTIMATING T_c FROM LENGTHS AND SLOPES



Exomple
L = 7,250 feet
H = 130 feet
then T_c =0 57 hours

(a) fjnmoqraph (SCS Guide)

I = length of longest water-course in feet

H = difference in elevation m feet between outlet point and divide

(b) Solution may be mude by eq'jattcn from California Culverts Practice .California Highways and Public WorKs , September 1942.

$$T = \left(\frac{11.9 L^3}{H}\right)^{0.383}$$

T = T_c m hours

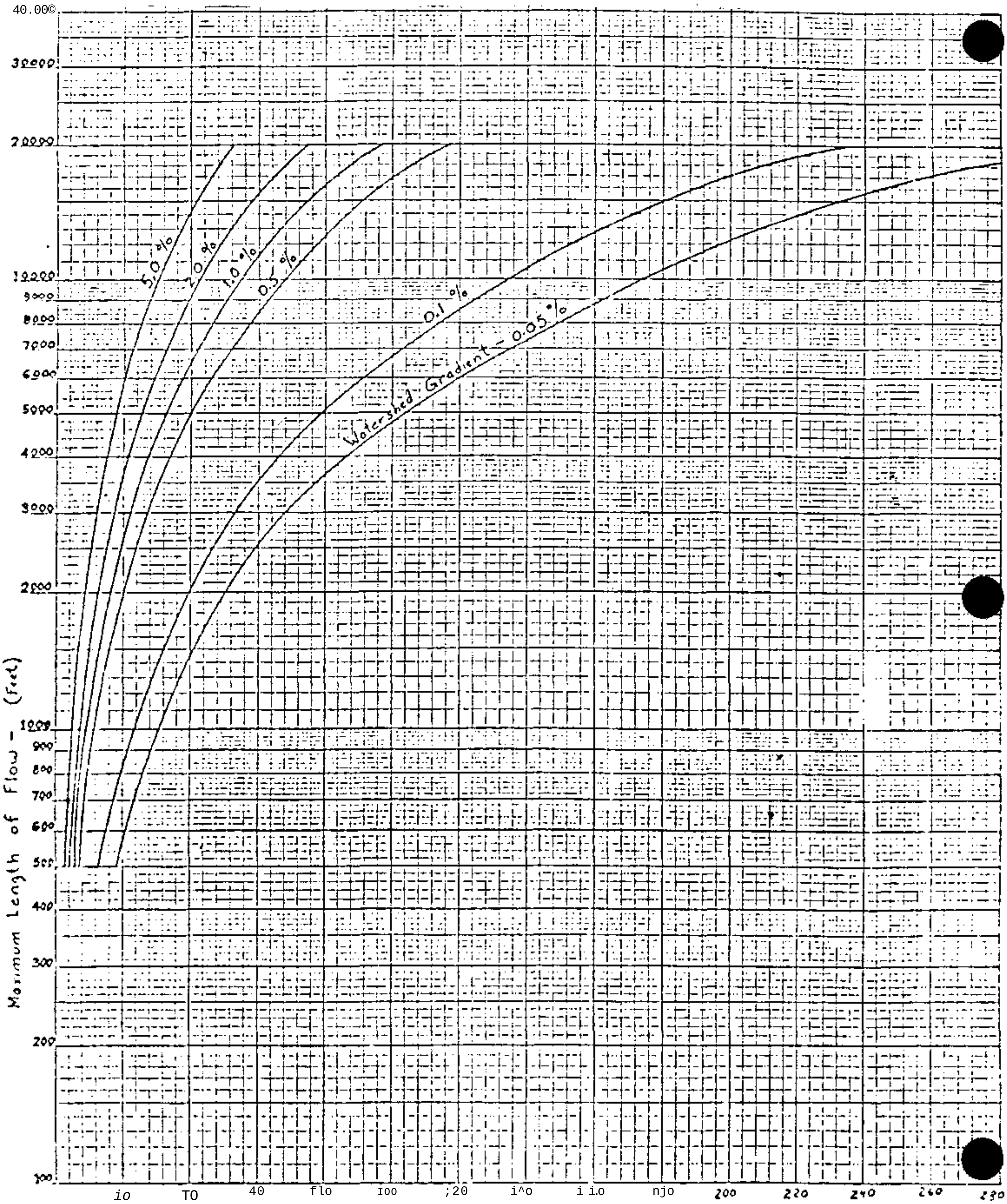
L = lenqth of longest wotercourse in miles

H = elevation differenca in feet

SOURCE: DESIGN OF SMALL DAMS, U.S. DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION

FIGURE 2.2 ESTIMATING TIME OF CONCENTRATION STREAM FLOW

SOURCE: WATER CONTROL GUIDE FOR SUBURBAN AND RURAL-RESIDENTIAL N.J.
FROM TABLE 7 RUTGERS, THE STATE UNIVERSITY



Time of Concentration (Tc)-min.

FIGURE 2.3 TIME OF CONCENTRATION FOR SMALL WATERSHEDS

SOURCE: NEW JERSEY HIGHWAY AUTHORITY

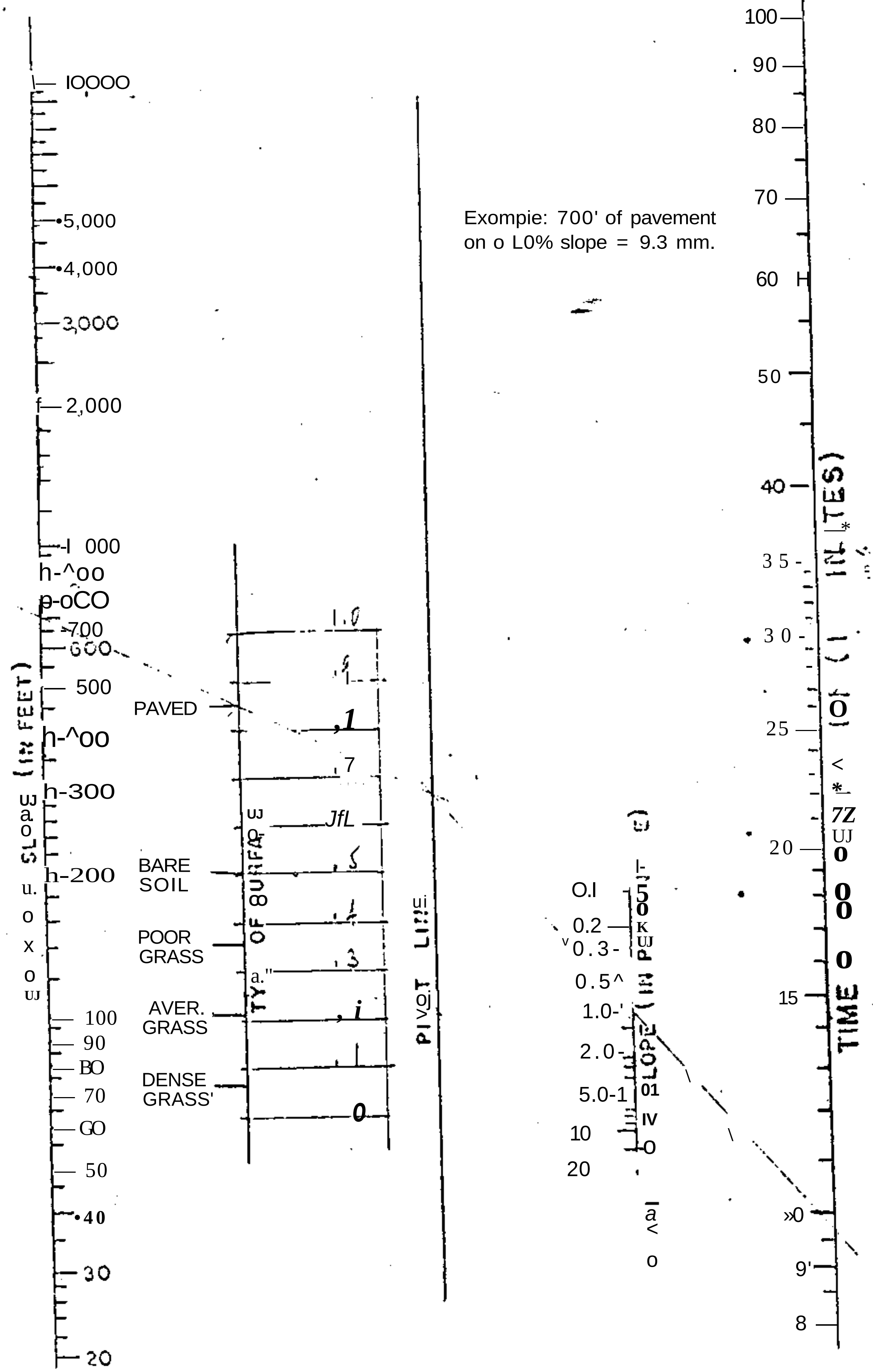


FIGURE 2.4 Tc OF OVERLAND FLOW

TABLE 2.1 RUNOFF COEFFICIENTS

Description of Area	Runoff (^efficients
Husinei-s	
Downtown	0.70 to 0.95
Neighborhood	0.50 (o 0.70
Residential	
Single-family	0.30 to 0.50
Multi-units, detached	0.10 to OCO
Multi-units, attached	OliO lo 0.75
Residential (suburban)	0.25 to ().•!()
Apartinent	0.50 to 0.70
Industrial	
Light	()..')() to 0.80
Heavy	0.00 to 0.90
Parks, cemeteries j,	0.10 to 0.25
Playgrounds	0.20 to 0.35
Railroad yard	0.20 to 0.35
Unimproved	0.10 to 0.30

It often is desirable to develop a composite runoff coefficient based on the percentage of different types of surface in the drainage area. This procedure often is applied to typical "sample" blocks as a guide to selection of reasonable values of the coefficient for an entire area. Coefficients with respect to surface type currently in use arc:

Character of Surface	Runoff Coefficients
Pavement	
A>plia!tic and Concrete	0.70 to 0.95
Brick	0.70 to 0.85
Roof.s	0.75 to 0.95
Lawns, sandy soil	
Flat, 2 percent	0.05 to 0.10
Average, 2 to 7 percent	0.10 to 0.15
Steep, 7 percent	0.1-5 to 0.20
Lawns, heavy soil	
Flat, 2 percent	0.13 to 0.17
Average, 2 lo 7 percent	0.1S to 0.22
S'teep, 7 percent	0.25 to 0.35

SOURCE: DESIGN AND CONSTRUCTION OF SANITARY AND STORM SEWERS ASCE

Table 2.2

IOKJUIT COLTF1C1CUTS

FOR USE IIJ THE RATIONAL FORMULA

llydrolcxj IC boil Group / Slope kurKjK	A			B			C			D		
	0-2%	2-6 %	6%+	0-2-4.	2-ca	6;+	0-2-%	2-i/t	6%+	0-2%	2-6-i	»>...-
LAliU USi:												
Industrial	0 0 1/	0.6a	0.6b	U.68	0.6B	0.69	0.68	0.69	0.69	0.69	0.69	0.70
	O."8[7]5^	0.85	0.86	0.85	O.bb	0.86	0.H6	0.86	0.87	0.06	0.86	O.Srjl
Commercial	0.71	0.71	0.72	0.71	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
	0.88	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.90	0.89	0.89	0.90
Hig11 Density 3/	0.47	0.49	0.50	0.48	0.50	0.52	0.49	0.51	U.54	0.51	0.53	0.56
Kesidential	0.58	0.60	0.61	0.59	0.61	0.64	,0.60	0.62	0.66	0.62	0.64	0.69
Medium uensity 4/	0.25	0.28	0.31	0.27	0.30	0.35	0.30	0.33	0.38	0.33	0. J6	0.42
Residential	0.33	0.37	0.40	u.35	0. 39	0.44	0.3a	0.42	0.49	0.41	0.45	0.54
Low Density V	0.14	0^19	0.22	0.17	0.21	0.26	0.20	0.25	0.31	0.24	0.20	0.35
Kesldentlal	0.22	0.2b	0.29	0.24	0.2M	0.34	0.20	0.32	0.40	0.31	0.35	0.4ü
Ayricul Luial	O.Ou	0.13	0.10	0.11	0.15	0.21	0.14	0.19	U.26	0.18	0.23	U.31
	0.14	0.18	0.22	0. 16	U.21	0.28	0.20	0.25	0.34	0.24	0.29	0.41
Open Space	0.05	0.10	0.14	0.08	0.13	0.19	0.12	0.17	0.24	0.16	0.21	0.23
	0.11 '	0.16	0.20	0.14	0.19	0.26	0.18	0.23	0.32	0.22	0.27	0.39
Freeways and	0.57	0.54	0.0'l)	0. 58	O.60	0.61	0.59	O.bl	0.63	0.60	0.62	0.C1
L'xpresswayi;	0.70	0.71	0.72	0.71	0.72	0.74	0.72	0.73	0.76	0.73	0.75	0.78

1/ Lower runoff coefficients for use with storm recurrence intervals less than 25 years.
2/ Higher runotf coefficients for use with storm recurrence intervals of 25-years or more.
3/ Ltit.)h Density Residential - greater than 15 dwelling units per acre
4/ Medium Density Residential - 4 to 15 dwelling units per acre
5/ Low Density Residential - 1 to 4 dwelling uiuts per acre

SOURCE: STORM DRAINAGE DESIGN MANUAL, ERIE & NIAGARA COUNTIES REGIONAL PLANNING BOARD

TABLE 2.3

DRAIN.' E - SUMMAR/ OF CUT VERT DATA

IRESICK BROOK

CJLVLRT NO.	LOCATION	l^TERSHED AREA (ACRES)	DISCHARGE Q		EXISTING CULVERT		REQUIRED CULVERT SIZE		AVAIL. HEIGHT	REMAINS
			EXIST COND (cfs)	FUTURE COND (cfs)	SIZE	LENGTH	EXIST.	FJTURE		
II	Brookside Avenue	1922	793	1205	5'-6"x3'-0"	30"	11'x7' BC	I6'x7' BC	k.5'	
12	Riverdale Avenue	601	285	365	36" RCP	1+0'	66" RCP	72" RCP	6.8'	
13	Central Avenue	396	173	286	1-12" RCP 1+-27" CMP	1+8'	5k" RCP	66" RCP	8'	
Ik	Central Avenue	197	99	138	1-2U" RCP 5-18" CMP 1-12" RCP	42'	1+8" RCP	5I+" RCP	5-7'	
15	West Avenue	359	175	26k	2V RCP	32'	5k" RCP	53"x87"RCEP	U.3'	Culv.across West Avenue
16	West Avenue	190	95	133	18" RCP 2k" RCP	kk'	k2" RCP	5lt" RCP	)+.5'	
17	North Street	301+	128	21+1+	2-2V RCP	9'	1+8" RCP	l+8"x76"RCEP	2.0'	
ITA	North Street	350	175	260	2k" RCP	368'	1+8" RCP	l+8"x76"RCEP	l+.1'	
110	Dobson Road	131	73	10*+	1+8" RCP	50'	1+2" RCP	1+8" RCP	6'	
111	Pace Street	39	26	35	12" RCP	27'	30" RCP	30" RCP	2.5'	
112	Pace Street	82	55	66	18" CMP	38'	36" RCP	36" RCP	2.5'	
113	Pace Street	125	72	101	1+8" RCP	52'	42" RCP	1+2" RCP	6'	Leave Exist. Culvert
115	Oak Street	65	52	62	U8"x32"RCEP	129'	36" RCP	36" RCP	U.3'	Leave Exist, Culvert

" t

TABLE "c". 3 Continued

DRAINAGE - SUMMARY OF CULVERT DATA

IRESICK BROOK

JLVEkT NO.	LOCATION	WATERSHED AREA (ACRES)	DISCHARGE Q		EXISTING CULVERT		REQUIRED CULVERT SIZE		AVAIL. HEIGHT	REMARKS
			EXIST COND (cfs)	FUTURE COND (cfs)	SIZE	LENGTH	EXIST.	FUTURE		
lib	Oak Street	87	54	72	18" CMP	57'	36" RCP	1+2" RCP	1+•3[1]	
117	Hilliard Road	139U	598	1087	10'-0"xl+'-2"	50'	10'x6 'BC	Il+'x7' BC	7'	
[18	Birch Street	36	35	k2	18" CMP	36'	30" RCP	30" RCP	2.6'	
[19	Birch Street	29	25	37	15" RCP	32'	30" RCP	30" RCP	2.6'	
[20	Birch Street	32	23	31	l+2"x30"RCEP	66'	30" RCP	30" RCP	3'	Leave Exist. Culvert
[21	Birch Street	1375	620	1128	2-36" RCP	31'	10'x6 ' BC	15'x7' BC	8.1'	
'25	Pleasant Valley Road	260	21+6	291	36" RCP	37'	60" RCP	66" RCP	1+.2'	
.28	Pleasant Valley Road	3h6	181	3*1	36" RCP	3V	5V RCP	58"x91"RCEP	1+.6'	
-29	Pleasant Valley Road	108	58	130	36" RCP	30'	36" RCP	1+8" RCP	5.5'	
30	Greystone Road	1+0	29	29	2-21+" RCP	1+0' ±	30" RCP	30" RCP		
:3k	Greystone Road	15	16	25	18" CIP	1+0' ±	2l+" RCP	21+" RCP		
31	Riverdale Avenue	81+	75	85	36" RCP	I*.	1+2" RCP	1+2" RCP		
32	Central Avenue	61	52	67	6-18"x11" CMPA	1+0'	36" RCP	36" RCP		
33	West Avenue	1+8	1+0	1+0	2l+" RCP	1+0'	30" RCP	30" RCP		
26	South Street	568	—	605	—	-	-	"10'x6' BC		Future Crossing
21A	Maple Street	1300	-	-	-	-	-	15'x7' BC		Future Crossing

DRAiNAGE - SUr'.'lARY OF ~ULVERT DATA

TENNENT BROOK

:ULVERP NO.	LOCATION	WATERSHED AREA (ACRES)	DISCHARGE Q EXIST COND (cfs)	FUTURE COND (cfs)	EXISTING CULVERT Oo-Ziti	LENGTH	REQUIRED SIZE EXIST.	FUTURE	AVAIL. HEIGHT	REMARKS
Tl	Old Waterworks Road	5985	1700	3100	2-60" RCP	29'	21'x8' BR	38'x8' BR	7'	
T1A	Old Waterworks Road	20	15+_	25+_	30" CIP	45'	2l+" RCP	30"RCP	6.5'	
T2	Runyon-Cheesequake	253	ll+5	1+1+8	27" RCP 27" CIP	11+'	51+1" RCP	2-60" RCP	1+'	
T3	Runyon-Cheesequake	999	879	1297	36" RCP	21'	l6'x6' BC	18'x7' BC	3.1+'	
T»*	Old Waterworks Road	161+	201+	320	18" RCP	i+0 +	t+8"x76"RCEP	58"x9l"RCEP	3.6'	
T>	Perrine Road	515	582	750	3-l+2"x27" RCEP	65'	10'x6' BC	ll+"x6' BC	3.9'	
T5A	Old Waterworks Road	35	25+_	35+.	21" RCP	90'	21+" RCP	30"RCP	3.8'	
T6	Cheesequake Road	73	153	153	30" RCP 1.2"RCP	1+3'	51*"RCP	5l+" RCP	6'	
T7	Poor Farm Road	261+	3^5	1+36	3-36"x2l+" RCEP	97.'	i?-5l+" RCP	2-60" RCP	1+.3'	
T7A	Poor Farm Road	174	201	252	21" RCP	1+9'	60"RCP	66"RCP	3.1+'	
T8	Ehlers Lane	1+02	368	759	13'-0x5'-7" BC	27'	-	Extend Exist, with ll+'x6' BC	7'	Extend Exist. Culvert
T12	Cottrell Road	238	21+0	527	2-1+8" RCP	29'	60"RCP	2-66"RCP	5.6'	
TlU	Farrington Road	99	129	Ikf	1+8" RCP	80'	1*8" RCP	5l+" RCP	6'	
Tll+A	Farrington Road	[illegible]	6	10	12" CIP"	't 25'	18"RCP	18"RCP	3.8'	

TABLE 2. ^Fcntinned

DRAINAGE - SUMMARY OF CULVERT DATA

TENNENT BROOK

CULVERT NO.	LOCATION	WATERSHED AREA (ACRES)	DISCHARGE Q		EXISTING CULVERT		REQUIRED CULVERT SIZE		AVAIL. HEIGHT	REMARKS
			EXIST COND (cfs)	FUTURE COND (cfs)	SIZE	LENGTH	EXIST.	FUTURE		
T15	Farrington Road	186	199	25^	U8" CMP	kV	60" RCP	66" RCP	6.3''	
T16A	To Farrington Road	23	25	[illegible]5	18" CIP	25'	30" RCP	36" RCP	2.8'	
TIT	(Warnes Brook) Partridge Road	20	18	29	21" RCP	31'	30" RCP	30" RCP	5.8[1]	
Tl8	(Warnes Brook) Partridge Road	1U3	1U7	217	41"x30' CMPA	35'	5[1]*" RCP	60" RCP	3.8[1]	
T19	Gordon Place or Vanethel Road	5	6	12			18" RCP	18" RCP		
T20	Gordon Place or Vanethel Road	Hi	15	28			2k" RCP	30" RCP		
T22	Lambertson Road	162	-	231	-	-	-	66" RCP		Future Crossing

•rABLt; 2. 5•••'•'•

DTY.INA'IE •- SUMMARY OF CULVERT DATA

DEEP RUN BROOK

VLVEKT HO.	LOCATION	* WATERSHED AREA (ACRES)	DISCH7J3GE Q		EXISTING CULVERT		REQUIRED CULVERT SIZE		AVAIL. HEIGHT	REMARKS
			EXIST COND (cfs)	FUTURE COND (cfs)	SIZE	LENGTH	EXIST.	FUTURE		
Dl	Old Waterworks Road	101+30/2/ (22UI^)	1512/2 756	2316/2 1158	2k" RCP 5l)ııRCP	32'	Il'x7' BC	17'x7' BC	6.5'	Flow Split Between D1&D1R
DIB	Old Waterworks Road	10*+30/2 5215 (22U8TWP)	1512/2 756	2316/2 1158	29'-6"x6' Bridge	31+'	Exist.Ok	Extend Exist. Bridge	8'	Flow Spli L Between Dl&D1B
D1A	Old Waterworks Road	l68	97	97	3-27" CIP	62'	1+2" RCP	1+2" RCP	3'	Leave Exist. Culvert
D3	Green Street	185	111+	207	36"xl8" RCEP	33'	1»8" RCP	60" RCP	3'	
D5	Second Place(Extended)	120	96	197	7'x4' Woodbridge	11'	Exist 0k	60" RCP	H.5'	
D6	Green Street	66	69	105	2l+"CMP	20'	1+2" RCP	1+8" RCP	2.5'	
D8	Inverness Road	126	118	167	5I4"RCP	31'	1+8" RCP	5I+11 RCP	8'	
D9	Ferry Road	13	8	. 20	18"CMP	31'	18" RCP	2k" RCP	5'	
D10	Ferry Road	Ik	9	22	18"RCP	33'	18" RCP	2k" RCP	6.3'	
L11+	Ticetown Road	39	32	59	2l+"RCP	32'	30" RCP	36" RCP	3.1'	
Dll+A	Kerry Court	kl	35+	66	2-38"x2l+" RCEP	59'	30" RCP	36" RCP	U.8'	
D15	Cottrell Road	25	20	kl	15" RCP	33'	2k" RCP	36" RCP		
D22	Spring Valley Road	4934 (173TWP)	1359	2003	36'-6"x9' Bridge	39.	Exist.0k	Extend Exist. Bridge		
D31	Spring Valley Road	637 (1+7*4TWP)	270	930	1+8" RCP	30•	72" RCP	13'x7' BC	6'	
D32	Ti'ui^^Ld Bridge	198	-	196^	-	-	-	60" RCP		Future ^^fcssing

* ('IVF) l'ep^BR'nts ucreu(j;e ui' watershed in TownBhip

TABLE 2.6

DRAINAGE - SUMMARY OF CULVERT DATA

BARCLAY BROOK

CULVERT NO.	LOCATION	* WATERSHED AREA (ACRES)	DISCHARGE Q		EXISTING CULVERT		REQUIRED CULVERT SIZE		AVAIL. HT.	REMARKS
			EXIST COND (cfs)	FUTURE COND (cfs)	SIZE	LENGTH	EXIST.	FUTURE		
B1A	Werner Court	803 (518TWP)	366	686			72"RCP	2-72"RCP	U.8/	
B2	John Hall Road	731 (1+50TWP)	360	689	2-36"RCP	29'	72"RCP	2-72"RCP	5'	
B3	Union Hill Road	U60	185	307	36"RCP	18'	60"RCP	58"x91"RCEP	5'	
Bh	Union Hill Road	1449 (537TWP)	668	913	2U"RCP	20'	12'x6'BC	l6'x6' BC		
B7	Union Hill Road	172	—	108	-	-	-	>+8" RCP		Future Crossing

*(TWP) represents acreage of watershed in Township

'('A wr,F ? . 7

DRAINAGE - SUMMARY" OF CULVERT DATA
MATAWAN CREEK

-ULVEKT NO.	LOCATION	WATERSHED AREA (ACRES)	DISCHARGE Q		EXISTING CULVERT		REQUIPUD CULMZPT SIZE		AVAIL. HEIGHT	REMARKS
			EXIST COND (cfs)	FUTURE COND (cfs)	SIZE	LENGTH	EXIST.	FUTURE		
Ml	Morganville Road	87	49	115	2-214"RCP	37'	36" RCP	48" RCP	7.I[1] '	
M2	Morganville Road	66	ko	76	36"RCP	29>	36" RCP	42" RCP	3.5' .	
M3	Morganville Road	658	490	673	lack's[11] BC	26'	Exist.Ok	Extend Exist. Culvert	9.0'	Extend Exist. Culvert
M6	Morganville Road	119	-	270	-	-	-	66"RCP		Future Crossing

TABLE 2.8

DRAINAGE - SUMMARY OF COST DATA - IRESICK BROOK

CULVERT NO.	LENGTH		COST/L.F.		REQUIRED CULVERT COST ($)		COST DIFFERENTIAL		STREAM CLEANING COST ($)	TOTAL COST ($)
	EXIST.	FUT.	EXIST.	FUT.	EXISTING CONDITION	FUTURE CONDITION	CULVERT	HD'WALL		
11	30'	48'	B.C. -	B.C. -	15,972	37,171	21,199	-	832	23,031
12	40'	52'	108.90	125.25	4,356	6,513	2,157	960	640	3,757
13	48'	52'	69.60	108.90	3,341	5,663	2,322	1,560	976	4,858
14	42"	52'	66.70	69.60	2,801	3,619	818	640	-	1,458
15	32•	52^	69.60	108.90	2,227	5,663	3,436	1,560	-	4,996
16	44'	52'	56.00	69.60	2,464	3,619	1,155	1,200	-	2,355
17	9'	52'	66.70	90.14	600	4,687	4,087	1,360	7,200	12,647
I7A	368'	368*	66.70	90.14	24,546	33,171	8,625	1,360	2,336	12,321
110	50'	52'	56.00	66.70	2,800	3,468	668	560	1,280	2,508
111	27'	52'	35.70	35.70	964	1,856	892	-0-	1,510	2,402
112	38'	52'	43.45	43.45	1,651	2,259	608	-0-	720	1,328
113	52'	52'	56.00	56.00	2,912	2,912	-0-	-0-	1,760	1,760
115	129'	129'	43.45	43.45	5,605	5,605	-0-	-0-	—	—
116	57'	57'	43.45	56.00	2,477	3,190	713	320	—	1,033
117	50'	52'	B.C. -	B.C. -	21,175	33,880	12,705	-	1,984	14,689
118	36'	52'	35.70	35.70	1,285	1,856	571	-0-	304	875

TABLE 2.8 Continued

DRAINAGE - SUMMARY OF COST DATA - IRESICK BROOK

CUI,VERT NO.	LENGTH		COST/L.F.		REQUIRED CULVERT COST ($)		COST DIFFERENTIAL		S'IKhJAM CLEANING COST ($)	TOTAL COST ($)
	EXIST.	FUT.	EXIST.	FUT.	EXISTING CONDITION	FUTURE CONDITION	CULVERT	HD'WALL		
119	32'	52'	35.70	35.70	1,142	1,856	714	-0-	384	1,098
120	66'	66'	35.70	35.70	2,356	2,356	-0-	-0-	-	-
121	31'	52'	B.C. -	B.C. -	13,129	34,848	21,719	–	17,-856	39,575
125	37'	60'	90.14	108.90	3,335	6,534	3,199	840	2,880	6,919
128	34'	60'	69.60	125.25	2,366	7,515	5,149	2,520	11,200	18,869
129	30'	60'	43.45	66.70	1,304	4,002	2,698	800	-	3,578
130	40'	60'	35.70	35.70	1,428	2,142	714	-0-	-	714
TM	40'	60'	26.60	26.60	1,064	1,596	532	-0-	-	532
131	42'	52'	56.00	56.00	1,960	2,912	952	-0-	-	952
132	40"	52'	43.45	43.45	1,521	2,259	738	-0-	-	738
133	40'	52'	35.70	35.70	1,250	1,856	606	-0-	-	606
									TOTAL	$163,599
126 (Future)		COST :NCLUDED IN RQ'DWAY IMPROVEN!ENT COST					($27,622)			
I21A (Future)		COST :NCHJDED IN RQ£JWAY IMPROVE-ENT COST					($41,248)			

TABLE 2.9

DRAINAGE - SUMMARY OF COST DATA - TENNENT BROOK

CULVERT NO.	LENGTH		COST/L.F.		REQUIRED CULVERT COST ($)		COST DIFFERENTIAL		STREAM CLEANING COST ($)	TOTAL COST ($)
	EXIST.	FUT.	EXIST.	FUT.	EXISTING CONDITION	FUTURE CONDITION	CULVERT	HD'WALL		
T1	29'	52'	BRID. -	BRID. -	36,540	118,560	82,020	-	23,040	105,060
T1A	45'	60'	26.60	35.70	1,197	2,142	945	280	-	1,225
T2	14'	60'	69.60	180.30	974	10,818	9,844	1,456	-	11,300
T3	21'	52'	B.C. -	B.C. -	14,229	45,302	31,073	-	14,560	45,633
T4	40'	60'	90.14	125.25	3,605	7,515	3,910	1,800	10,112	15,822
T5	65'	SAME 65'	B.C. -	B.C. -	27,527	38,538	11,011	—	1,843	12,854
T5A	90'	SAME 90'	26.60	35.70	2,394	3,213	819	280	-	1,099
T6	43'	60'	69.60	69.60	2,993	4,176	1,183	-0-	-	1,183
T7	97'	SAME 97'	139.20	180.20	13,502	17,487	3,985	864	816	5,665
T7A	49'	60*	90.14	108.9	4,417	6,534	2,117	840	-	2,957
T8	27'	52'	—	B.C. —	-	EXTEND EXIST 12,450	12,450	-	16,352	28,802
T12	29'	60'	90.14	217.80	2,614	13,068	10,454	1,744	-	12,198
T14	80'	SAME 80'	66.70	69.70	5,336	5,576	240	640	2,160	3,040
T14A	25'	60'	19.15	26.60	479	1,596	1,117	280	-	1,397
T15	41'	60'	90.14	108.90	3,696	6,534	2,838	840	5,280	8,958
T16A	25'	60'	35.70	43.45	892	2,607	1,715	320	3,200	5,235

TABLE 2.9 Continued

DRAINAGE - SUMMARY OF COST DATA - TENNENT BROOK

CULVEKT NO.	LENGTH		COST/L.F.		REQUIRED CULVERT COST ($)		COST DIFFERENTIAL		STREAM CLEANING COST ($)	TOTAL COST ($)
	EXIST.	FLT.	EXIST.	- FUT.	EXISTING CONDITION	FUTURE CONDITION	CULVERT	HD'WALL		
T17	31'	60'	35.70	35.70	1,107	2,142	1,035	-0-	3,200	4,235
T18	35'	60'	69.60	90.14	2,436	5,408	2,972	720	1,600	'5,292
T19	35'	52'	19.15	19.15	670	1,149	479	-0-	. 320	799
T20	35'	52'	26.60	35.70	707	2,142	1,435	280	1,136	2,851
									TOTAL	$275,605
T22 Future	COST INCLUEED IN IOADWAY IMPROVMENT COST ($10,183)									

TABLE^T.10

DRAINAGE - SUMMARY OF COST DATA - DEEP RUN BROOK

CULVERT NO.	LENGTH		COST/L.F.		REQUIRED CULVERT COST ($)		COST DIFFERENTIAL		STREAM CLEANING COST ($)	TOTAL COST ($)
	EXIST.	FUT.	EXIST.	FUT.	EXISTING CONDITION	FUTURE CONDITION	CULVERT	HD'WALL		
D1	32'	52'	B.C. -	B.C. -	7,343	18,443	11,100	—	25,090	36,190
D1A	62'	SAME 62'	56.00	56.00	3,472	3,472	-0-	-0-	-	-
D3	33'	52'	66.70	90.14	2,201	3,472	1,271	1,360	1,600	4,231
D1B	32'	52'	BR. —	BR. —	EXIST. BRID. Ok	EXTEND EX. BR. 13,700	13,700	-	25,090	38,790
D5	•II'	52'	—	90.14	EXIST. Ok -	REPLACE EX.BR. 4,687	4,687	1,360	4,224	10,271
D6	20'	52'	56.00	66.70	1,120	3,468	2,348	560	2,534	5,442
D8	31'	52'	66.70	69.60	2,068	3,619	1,551	640	—	2,191
D9	31'	60'	19.15	26.60	594	1,596	1,002	280	—	1,282
D10	33'	60'	19.15	26.60	632	1,596	964	280	-	1,244
D14	32'	60'	35.70	43.45	1,142	2,607	1,465	320	1,184	2,969
D14A	59'	SAME 59'	35.70	43.45	2,106	2,564	458	320	1,120	1,898
D15	33'	60'	26.60	43.45	878	2,607	1,729	600	1,600	3,929
D22	39'	52'	BRID. —	BRID. —	EXIST. Ok -	EXTEND EXIST. 1,228	1,228	-	6,656	7,884
D31	30'	52'	124.20	B.C. —	4,476	24,345	19,870	-	13,120	32,990
									TOTAL	$149,311
D32 Future		COST INCLUDED IN ROADWAY IMPROVEMENT COST ($8,[illegible]67)								

TABLE 2.11

DRAINAGE - SUMMARY OF COST DATA ~ BARCLAY BROOK

CULVERT NO.	LENGTH		COST/L.F.		REQUIRED CULVERT COST ($)		COST DIFFERENTIAL		STREAM CLEANING COST (?)	[illegible]
	EXIST.	FLT.	EXIST.	FUT.	EXISTING CONDITION	FUTURE CONDITION	CULVERT	HD'WALL		
B1A	20'	52'	125.25	250.50	1,616	8,404	6,787	1,748	4,640	13,1[illegible]
B2	29'	60'	125.25	250.50	2,236	9,252	7,016	1,687	1,632	[illegible]
B3	18'	60'	90.14	125.25	1,623	7,575	5,952	1,800	20,160	27,511
B4	20'	60'	B.C. -	B.C. -	10,164	32,525	22,361	-	19,936	42,2[illegible]
									TOTAL	$93,7[illegible]
B7 (Future)		COST INCLUDED IN ROADWAY IMPROVEMENT COST					($5,788)			

TABLE ?12

DRAINAGE - SUMMARY OF COST DATA - MATAWAN CREEK

CULVERT NO.	LENGTH		COST/L.F.		REQUIRED CULVERT COST ($)		COST DIFFERENTIAL		STREAM CLEANING COST ($)	TOTAL COST ($)
	EXIST.	FUT.	EXIST.	FUT.	EXISTING CONDITION	FUTURE CONDITION	CULVERT	HD'WALL		
M1	37'	60'	43.45	66.70	1,608	4,002	2,394	880	9,408	12,682
M2	29'	60'	43.45	56.00	1,260	3,360	2,100	320	7,104	9,524
M3	26'	48'	B.C. —	B.C. —	—	EXTEND. EXIST. 15,840	15,840	-	14,256	30,096
									TOTAL	$52,302
M6 (Future)		COST INCLUDED IN ROADWAY IMPROVEMENT COST					($10,183)			

TABLE 2.13

1979 UMPEVULOPSJ 1 <D ,:JE •. .'AIL.M3.JE FOC FV i'URE DEVELOPMENT

IRESICK BROOK WATERSHED

JLLVEFT NO.	UNDFT.'EL. ACi^ES IN TWP.	LAND USE & RUNOFF COEFFICIENT (C)												* % OF TOTAL IANDS TO BE DrA'ELOPED
		WS 0.2		.R20,R15 0.30		R7,PD 0.40		AR,AF,TH 0.62		OG,SD,TCD,SD3 0.83		M5,CC,CR,CM 0.69		
		AC	%	AC	%	AC	%	AC	%	AC	%	AC	%	
11	1360	250AC	18%	HI	8%	903AC	66%	0				96AC	8%	58 .
12	338	98AC	29%	49AC	14%	191AC	57%							40
13	251	2AC	1%	75AC	30%	163AC	66%					8AC	3%	61
14	123	82AC	68%	0	0%	41AC	32%							19
15	245			75AC	30%	163AC	67%					7AC	3%	70
16	m	81AC	66%	0	0%	41AC	34%							21
17	228			55AC	24%	166AC	73%					6AC	3%	75
I7A	240			70AC	29%	165AC	69%					6AC	2%	73
110	69			53AC	77%	5AC	6%	11AC	17%					50
111	23			23AC	100%									59 •
112	37			35AC	95%	2AC	5%							45
113	69			53AC	76%	5AC	7%	11AC	17%					55
115	23			23AC	100%									35
116	48			38AC	79%			10AC	23,%	(				55
117	1046	181AC	17%	0	0%	767AC	73%	0AC	0%			98AC	10%	62

* TV LANDS TN TOraSHIP OIJD BRIDGE EXCLUDING WS T*V

1979 UNDEVELOPED LAND USE AVAILABLE FOR FUTURE DEVELOPMENT
IRESICK BROOK WATERSHED

Cn.VERI[1] NO.	UNDEVEL. ACRES IN TWP.	LAND USE & RUNOFF COEFFICIENT (C)												* % OF •lOT/vL LANDS ID BE DEVELOPED
		WS 0.2		R2O,R15		R7,PD		AR,AF,TH		OG,SD,TCD,SD3		M5,CC,CR,CM A OO		
		AC	%	AC 0.30	%	AC 0.40	%	AC 0.62	%	AC 0.83	%	AC	%	
118	7			**7AC**	**100%**									**19**
119	7	0AC		**0AC**				7AC	100%					24
120	16			13AC	81%			3AC	19%					50
121	1031	179AC	17%	**0AC**		757AC	73%	0AC				96AC	10%	62
125	234 '					234AC	100%							90
128	346	104AC	30%			242AC	70%							74
129	108					108AC	100%							70
130	40	40AC	100%											0
134	10	5AC	50%			**5AC**	50%							66
131	52	52AC	100%	**0AC**										0
132	48	48AC	100%	**0AC**										0
133	45	45AC	100%	**0AC**										0

* % OF TOTAL LANDS IN TOWNSHIP OLD BRIDGE EXCLUDING WS LANDS

TABLE - - 14

1979 UNDEVELOPED LAND USE AVAILABLE FOR FUTURE DEVELOPMENT

TENNENT BROOK WATERSHED

CULVERT NO.	UNDEVEL. ACRES IN TWP.	LAND USE & RUNOFF COEFFICIENT (C)												* % OF TOTAL LANDS TO BE DEVELOPED
		WS 0.2 AC	%	R20,R15 0.30 AC	%	R7,PD 0.40 AC	%	AR,AF,TH 0.62 AC	%	OG,SD,TCD,SD3 0.83 AC	%	M5,CC,CR,CM 0.89 AC	%	
T1	4650	1017AC	22%	96AC	2%	1862AC	40%	245AC	5%	840AC	18%	587AC	13%	60
T1A	20	20AC	100%											0
T2	228	50AC	22%					13AC	6%	58AC	25%	107AC	47%	70
T3	667	20AC	3%	0AC	0%	253AC	38%	46AC	7%	188AC	28%	160AC	24%	65
T4	129	-				36AC	28%			87AC	67%	6AC	5%	79
T5	249	-		0AC	0%	113AC	5%	46AC	18%	0AC	0%	90AC	36%	48
T5A	0	—				0AC	0%			0AC	0%			0
T6	0	—				0AC	0%			0AC	0%			0
T7	37	—		12AC	32%	19AC	51%					6AC	16%	51
T7A	85	-		31AC	36%	3AC	4%	45AC	53%	2AC	2%	4AC	5%	49
T8	292	-		0AC	0%	120AC	41%	8AC	3%	160AC	55%	4AC	1%	73
T12	226	-		0AC	0%	121AC	54%			105AC	46%			95
T14	27	—		13AC	4%							14AC	52%	27
T14A	6	-				6AC	100%							100
T15	113	52AC	46%	11AC	10%	39AC	35%			6AC	5%	5AC	4%	33

* OF TOTAL LANDS IN TOWNSHIP OLD BRIDGE EXCLUDING WS LANDS

19 79 UNDEVELOPED LA.iD USE AVAILABLE FOR FUTURE DEVELOPMENT
TENNENT BROOK WATERSHED

."JLVERT NO.	UNDEVEL. ACRES IN TWP.	LAND USE & RUNOFF COEFFICIENT (C)						* % OF TOTAL LANDS TO BE DEVELOPED
		WS 0.2	R2O,R15 AC ○-3○ ,	R7,PD AC ○-4○ •	AR,AF,TH 0.62	OG,SD,TCD,SD3 AC ○'83 %	K5,CC,CR,CM AC ○-89 %	
T16A	23			23AC 100%				100
T17	20			20AC 100%				100
T18	143			143AC 100%				100
T19	1		OAC 0%				1AC 100%	20
T20	10		7AC 70%				3AC 30%	71

* Or TOTAL LANDS IN TOWNSHIP OLD BRIDGE EXCLUDING WS LANDS

TABLE 2.15

1979 UNDEVELOPED LAND USE AVAILABLE FOR FUTURE DEVELOPMENT

DEEP RUN BROOK WATERSHED

SUBBASIN NO.	UNDEVEL. ACRES IN TWP.	LAND USE & RUNOFF COEFFICIENT (C)												* % OF TOTAL LANDS TO BE DEVELOPED
		WS [illegible]		R20,R15 .30		R7,PD .40		AR,AF,TH .62		OG,SD,TCD,SD3 .83		M5,CC,C?.,CM .85		
		AC	%	AC	%	AC	%	AC	%	AC	%	AC	%	
D1	1832	580AC	31.5%	250AC	14%	585AC	31.5%	11AC	.7%	399AC	22%	7AC	.3%	56
D1B	1832	580AC	31.5%	250AC	14%	585AC	31.5%	11AC	.7%	399AC	22%	7AC	.3%	56
D1A	168	168AC	100%											0
D3	102	15AC	15%	12AC	12%	57AC	56%	5AC	5%			13AC	13%	50
ns	79			17AC	22%	41AC	52%	7AC	9%	14AC	18%			66
D6	29			17AC	59%	5AC	17%	7AC	24%					44
D8	98			48AC	49%	50AC	51%							77
D9	13			13AC	100%									100
D10	14			14AC	100%									100
D14	29			4AC	14%	25AC	86%							74
D14A	33			8AC	24%	25AC	76%							70
D15	25					25AC	100%							100
D22	167	78AC	47%	72AC	43%	17AC	10%			0AC	0%			52
D31	452	62AC	14%			80AC	18%			310AC	68%			82

* LANDS IN TOWNSHIP OLD BRIDGE EXCLUDING WS [illegible]

1979 UNDEVELOPED LAND USE AVAILABLE FOR FUTURE DEVELOPMENT
BARCLAY BROOK WATERSHED

CULVERT NO.	UNDEVEL. ACRES IN TOP.	LAND USE & RUNOFF COEFFICIENT (C): WS 0.2 AC	%	R20,R15 0.30 AC	%	R7,PD 0.40 AC	%	AR,AF,TH 0.62 AC	%	OG,SD,TCD,SD3 0.83 AC	%	M5,CC,CR,CM 0.89 AC	%	* % OF TOTAL LANDS TO BE DEVELOPED
B1A	298					205AC	69%			93AC	31%			58
B2	230					205AC	89%			25AC	11%			51
B3	460	46AC	10%			414AC	90%							90
B4	537	58AC	11%			479AC	89%							89

* % OF TOTAL LANDS IN TOWNSHIP OIJJ BU1LGE EXCLUDING WS LANDS

TABLE 7

1979 UNDEVELOPED LAND USE AVAILABLE FOR FUTURE DEVELOPMENT
MATAWAN CREEK WATERSHED

ELEMENT no.	UNDEVEL. ACRES IN TWP.	LAND USE & RUNOFF COEFFICIENT (C)												* % OF TOTAL LANDS TO BE DEVELOPED
		WS 0.2		R20, R15 0.30		R7, PD 0.40		AR, AF, TH 0.62		OG, SD, TCD, SD3 0.83		M5, CC, CR, CM 0.89		
		AC	%	AC	%	AC	%	AC	%	AC	%	AC	%	
M1	85			4AC	5%	81AC	95%							98
M2	64	18AC	28%	3AC	5%	43AC	67%							74
M3	604	72AC	12%	66AC	11%	400AC	66%			66AC	11%			81

* % OF TOTAL LANDS IN TOWNSHIP OLD BRIDGE EXCLUDING WS LANDS

SECTION 3 TRAFFIC ANALYSIS

3.1 Scope of Work

The purpose of the traffic analysis was to investigate the impacts of future land development on Township roads, and determine the cost of the necessary improvements. The improvement costs are used as one of the input elements in the formula which will be used to assess the developers their fair share of the improvement costs. The condition for full development is shown in the Township Master Plan.

3.2 Procedure

The following were considered in determining the cost of improving the Township road system required by development:

1. The existing road network condition, capacity, and location.
2. Population Growth
3. Land Use Growth
4. Employment

Following is a brief description of how the above elements were utilized.

3.2.1 Existing Road Network

By investigating the present physical and operational characteristics, and usage patterns of the existing network, the existing traffic volumes, and the traffic volume capacities of each road link were estimated. This compiled data was used to evaluate the existing traffic network. It also provided a base upon which the future traffic volumes on the road links could be estimated by projection, according to population growth and land use growth.

3.2.2 Population Growth

The population growth was determined from census records, various population studies, and housing inventories within designated districts in the Township. The population growth rate was then used to determine the traffic growth rate on each link of studied roadway. Along with the data from Land Use Growth, the traffic volumes for each road link were then determined.

3.2.3 Land Use Growth

The amount of development in each land use category in both the present development condition, and the future full development condition according to the Master Plan was determined. From the comparison of both degrees of development a Land Use Growth Rate was determined for the various districts in the township. That growth rate along with the population growth rate was used in the projection to determine future traffic volumes on the township roadway links studied.

3.2.4 Employment Data

Employment data was used in a qualitative manner to aid in determining traffic usage trends on Township roads.

The following sections give the details of the traffic analysis.

3.3 Selection of Time Periods

Two time periods were used. The Base Year refers to the existing (1980) traffic, land use and population conditions. The Target Year refers to the year by which the development of the existing vacant land reaches its maximum holding capacity in accordance with the regulations set in the township Master Plan.

3.4 Land Development Alternatives

To assess the impact of further land development on the existing road network, two separate alternatives were considered. The first alternative assumes no further land development and consequently, no significant increase in the traffic volumes on the existing Township roads.

The second alternative assumes that all available vacant land will be used to its designated capacity.

3.5 Township Divisions

The township was divided into seven districts on the basis of the 1970 census tracts. For detail studies, the districts were then divided into 24 traffic zones. In defining the limit of zones, proposed land use as well as political and physical boundaries were generally used. Any information obtained or calculated was then arranged according to the defined districts and zones. Assumed districts and zones are shown in Figures 3.1 and 3.2.

For the final allocation of costs of traffic improvements supplied in the methodology, the seven study districts were combined into three allocation districts for the most equitable cost allocation determination.

3.6 Population Analysis

The Township of Old Bridge has been one of the fastest growing suburban areas of Middlesex County in the last two decades. After a period of very rapid development in the 1950's and 60's, which created a more than six-fold population increase, the Township seems to have entered a period of population stabilization.

Only a few townships of the same size and character as Old Bridge, have shown equal growth rates. The 1970 census data on the township population put the Township of Old Bridge as the third largest suburban community in the county, after Woodbridge and Edison townships. (Table No. 3.1)

Although there have been various population estimates made by different official authorities, the exact 1980 population of the Old Bridge Township has not yet been determined. These estimates along with some projections are shown in Table No. 3.2.

Population estimates for any given year beyond the 1970 census figure of 48,715 vary from one official agency to another. On the basis of the existing available information, on the number of housing units already built and expected to be completed throughout 1980, and the assumed average vacancy rate of one percent, township population was projected to reach 60,250 by the end of 1980. The maximum population capacity for the township has been projected to be in the neighborhood of 135,000 provided the existing Master Plan is implemented. The existing and projected population distribution pattern is shown in Table No. 3.3.

3.7 Land Use Analysis

The Township of Old Bridge occupies approximately forty square miles of land. Of that, nearly one-fourth has been reserved for wetland and watershed protection.- After the deduction of public lands and flood plains, the amount of available developable land is estimated to be 11,000 acres. On the overall basis, nearly half of the estimated developable land has already been used. Most of these developments have been sporadic and localized around certain activity centers throughout the township areas.

The intensity and pattern of land developments have closely followed the transport network. The variations of land use according to the Master Plan are summarized in Table No. 3.4. The pattern of land development determined by the land use plan and zoning regulations shows that nearly half of all available township land has been zoned for residential development. Most of these areas are located in the western part of the township, where the majority of developable vacant lands are located. The non-residential land use pattest! activities are anticipated to be localized along the Major County and State highways.

The study of existing and developable residential lands was made on the basis of the 1974 housing inventory and the collected information on the last decade's housing development trends. On the basis of this information, the existing number of housing units and consequently the existing population (1980) were estimated. The results are shown in Table No. 3.4. For non-residential uses, existing intensity of land development for each land use category was made and the results were compared to the estimated holding capacity. Differential figures between the existing and maximum use of land under each land activity codes were used in the estimation of traffic growth in each district. Comparative land use analysis is shown in Table No. 3.5 and 3.6.

3.8 Traffic Analysis

3.8.1 Road Network

Study of the road network and its operational characteristics were made on selected major Township road links (Figure III-6). The selected road links were assumed to represent the major Township collectors and arterial roads. Each selected road link was coded and identified. These road links were then used to study the impact of future land development and population increases.

---

(1) Township of Old Bridge Master Plan pp.5

To assess existing conditions, traffic data on selected operational and physical elements were collected by various field surveys. To obtain traffic volume data on each road link, traffic counting stations were set up and required data on the traffic stream characteristics were obtained. Evaluation of the Township road links and intersections were then made on the basis of the surveys conducted. Available traffic data on the County and State highways were obtained from Middlesex County and the New Jersey Department of Transportation (NJDOT) to supplement the conclusions. All the traffic data received were then updated to represent the 1980 base year traffic characteristics.

Existing operational characteristics were assessed by field observations and by reviewing information obtained from various Township, County, and State officials. The results were then used in the analysis of the existing road system and to determine the future traffic characteristics and needs. Evaluations of physical and operational characteristics for the existing and the assumed target year conditions are shown in Appendix No. 1.

3.8.2 Traffic Composition

Observations of traffic composition by vehicle type indicated that the majority of non-passenger vehicle traffic were using the County and State highways to cross the Township. Few truck-using Township roads were observed. Among these were Cheesequake, Poor Farm, and Perrine roads, which are among the Township roads connecting industrial and commercial centers.

3.8.3 Traffic Volume

Traffic volume countings were made and the results were expanded to represent the Average Daily Traffic (ADT). The calculated traffic volumes, were then used to evaluate the efficiency of each road links. The results of this analysis were derived only for this pro-rata study and we recommended that a more detail analysis be made for final design of roadway improvements.

3.8.4 Traffic Delay Studies

Most of the delays observed were along the major County and State highways, and in some cases, along the adjacent Township roads, and related intersections. This is due to the fact that the majority of trips are made on County and State highways.. Township roads, in most cases, are used for local purposes and intra-district movements.

3.9 Capacity Calculations

The capacity of the Township road links were calculated by considering such factors as running speed, roadway width, traffic control features, number of lanes and road layout characteristics.

Upon the collection of these data, capacity, and volume-capacity (V/C) ratios were calculated for each road link. The Highway Capacity Manual was used to estimate the selected road capacities.

The Volume-Capacity ratios calculated then were used as the main determining factor of the level of performance of each road link as defined by the "American Association of State Highway Officials (AASHO)" Standards.

Capacity of each road link was calculated on the basis of the existing physical and operational characteristics under the level of service assumed in this analysis. The level of service is described as the operating characteristics a driver will experience while traveling on a particular road link. Where roadway physical conditions are fixed, level of service on a particular road link varies with volume. To calculate the basic capacity of road links, a selected level of service "C" was assumed. The related capacities under the assumed conditions were then calculated. The result of the analyses and projections are shown in Appendices No. 2 and 3.

3.10 Traffic Volume Projections

Projections of future trip and traffic volumes were made by the use of a Grwoth Factor Rate method. The.results are shown in Appendices No. 3.2 and 3.3.

To arrive at the traffic growth rate for the year in which the Township population reaches its maximum capacity or target year, the following input was used:

1) Existing traffic volumes converted into Average Daily Traffic for each road link.

2) Both the rate of population growth in the last two decades and the assumed future growth rates.

3) Development potentials factor for each district in accordance with the Master Plan.

4) The anticipated annual growth pattern of land use in quantat-ive terms up to its maximum potential usage.

5) The existing and observed travel behavior and traffic distribution patterns.

6) Anticipated development of County and State roads within Old Bridge.

Traffic volumes were also projected for the no-development alternative.

3.11 Improvement Recommendations

Improvement recommendations are based on projected traffic volumes. Once the future traffic volumes on road links were estimated, the need for widening and improving the road links, and for improving the various roadway intersections were assessed. The improvements construction costs were estimated and cost results applied in the formula for assessing the developers their fair share of improvement costs. For the purpose of the study, only two major types of improvement were studied: road links and intersections. In the case of road links assumed improvements varied from the addition of shoulder or parking lanes to the existing road, to widening or adding more deriving lanes, as warranted by the projected traffic volumes. Road link improvement assumptions are shown in Figure No. 3.5/^55

For the impacted intersections where improvements of existing conditions was found necessary, three types of improvement were considered: channelization, signalization, or a combination of both. Assumed intersection improvements are shown in Figure No. 3.6.^-F^

3.12 Estimate of Improvement Costs

In this study, only major cost elements were taken into consideration. The selected cost elements included construction, right-of-way and engineering.

The cost estimates were based upon the 1979 New Jersey Department of Transportation (NJDOT) construction cost unit prices. Aggregation of overall road and intersection improvement costs within each individual district was made on the basis of assumed improvement programs.

3.13 Development of a Unified Cost Factor - Daily Vehicle Trip End

In assessing overall improvement costs due to future land development, a common unit was needed to evaluate the degree of traffic impact of each land development project,' and, consequently the related pro-rata share of improvement costs. To simplify the process of impact evaluation, "Daily Vehicle-Trip End" rates were used as the common unit. Selected Vehicle Trip Rates used in this study are shown in Table No. 3.1. The trip rate used in this analysis refers to the vehicle Trip End which is generally defined as "the total of all vehicle-trips entering or leaving a designated land use or building type over a period of 24 hours on an average weekday".

(The trip rates used in this analysis were derived from "Trip Generation Handbook" prepared by Institute of Transportation Engineers in 1979).

The trip rates selected and used in the analysis were based upon the types of activities and land use patterns, reflected in the township Master Plan and its zoning ordinance.

The vehicle trips calculated for each allocation district and under each land use category were based upon the remaining developable land under each zoning code. The results are shown in Table No. 3.7. It was also assumed that the township would have to pay for the total costs of township-county intersection improvements and 25% of total cost of Township-State intersections.

The Calculated Daily Vehicle Trip Ends, along with the total district-wide improvement costs were then used in the pro-rata cost sharing methodology developed in this study.

Detailed information on the location and costs of improvements are shown in Appendix No. 3.

TABLE NO. 3.1

HISTORICAL TRENDS OF POPULATION GROWTH IN SELECTED LOCALITIES WITHIN MIDDLESEX COUNTY, NEW JERSEY*

	Total Population				Percent of Oiange			
Nane Year	1940	1950	1960	1970	1940-50	1950-60	1960-70	1950-70
Cranbury Township	1,342	1,797	2,001	2,253	33.9	11.4	12.8	26.4
East Brunswick	3,706	5,699	19,965	34,166	53.8	250.3	71.1	433.0
Monroe	3,034	4,082	5,831	9,138	34.5	42.8	36.7	123.9
South Brunswick	3,129	4,001	10,278	14,058	27.9	156.9	36.9	251.4
North Brunswick	4,562	6,450	10,099	16,691	41.4	56.6	65.3	158.6
Vtoodbridge	27,191	35,758	78,846	98,944	31.5	120.5	25.5	176.7
South Antoy	7,802	8,422	8,422	9,338	7.9	0.0	10.9	10.9
Milltown	3,515	3,786	5,435	6,470	7.7	43.6	19.0	70.9
Old Bridge	3,803	7,366	22,772	48,715	93.7	209.2	113.9	231.3

•Source: General Statistics For Middlesex County,(Middlesex County Planning Board Publication, April 1978)

TABLE NO. 3.2
VARIOUS POPULATION ESTIMATE MADE BY
DIFFERENT SOURCES FOR THE TOWNSHIP OF OLD BRIDGE

SOURCE	YEAR ESTIMATE MADE	TARGET YEAR	TOTAL POPULATION
Nationwide Census	1970	1970	48,715
New Jersey Department of Labor & Industry	1975	1975	48,549
New Jersey Department of Labor & Industry	1976	1976	48,400
Middlesex County Planning Board	1977	1975	51,700
Middlesex County Planning Board	1977	1980	57,687
Middlesex County Planning Board	1977	1985	68,916
Middlesex County Planning Board	1977	1990	75,684
Middlesex County Planning Board	1977	1995	82,441
Middlesex County Planning Board	1977	2000	89,133
Old Bridge Master Plan	1978	1977	54,800
Old Bridge Master Plan	1978	1985	70,000
Old Bridge Master Plan	1978	2000	90,000 - 100,000
Old Bridge Township Planner	1978	1978	53,905
Louis Berger & Associates*	1980	1980	60,250
Louis Berger & Associates*	1980	1990	74,735
Louis Berger & Associates*	1980	2000	89,218
Louis Berger & Associates*	1980	Holding Capacity	135,665
Old Bridge Master Plan	1978	Holding Capacity	110,000

•Estimates are made on the basis of 1974 and 1978 Housing Inventories, Vacancy Rate and under construction housing inventories.

TABLE NO. *1.3*

POPULATION ESTIMATES AND DISTRIBUTION PATTERN

District No.	Population in 1970	Estimated Population aa of 1980	% of Holding Capacity	Proj.for the Year 1990	2000	Holding Capacity*
I	8,870	13,533	31%	19,0ia	24,504	43,785
II	1,936	4,553	54%	6,477	8,400	8,473
III	15,895	15,791	61%	16,699	17,606	25,881
IV	2,498	4,818	38%	5,727	6,636	12,661
V	2,741	3,579	22%	7,697	11,815	16,528
VI	10,060	11,391	71%	11,432	11,472	16,155
VII	6,715	6,585	54%	7,685	8,785	12,172
Total	48,715	60,250	44%	74,735	89,218	135,665

'Defined as the maximum number of persons expected to reside in the township according to conditions set in the Master Plan.

SOURCE: Louis Berger 6 Associates, Inc.

TA3LE NO. 3.4
OLD BP.IDGE MASTER PLAN
PROPOSED LAND USE DATA

Tvoe of Use	Acres	% of Total	Code
A. Residential Uses:			
Planned Development	8,701	34.61	PP
Family Detached House (20,000 sq. ft.)	1,316	5.23	R-20
Family Detached House (15,000 sq. ft.)	1,481	5.90	R-15
Family Detached House (7,000 sq. ft.)	2,052	8.16	R-7
Town House	184	0.73	TH
Family Apartment	627	2.49	AF
Retirement Apartment	67	0.27	AR
B. Non-Residential Uses:			
Nei^Tborhcod Connercial	113	0.45	CN
Carmunity Ccsmercial	525	2.10	CC
Regional Connercial	218	0.87	CR
Marine Ccnrercial	171	0.68	CM
Special Development	1,829	7.27	SD
Town Center District	328	1.30	TCD
Office General	371	1.47	OG
Heavy Industries	278	1.10	VS
C. Reserved Vfetlands and Watersheds	6,882	27.37	WS
Total	25,143	100%	

TABLE NO. 3.5
COMPARATIVE ANALYSIS OF HOUSING UNIT DEVELOPMENTS*
(Estimated 1980 V.S. Holding Capacity)

^^^^^ Zoning ^^^Code District No.^^^^	NO. of Housina Units						Holding Capacity		1980	
	PD	R20	R15	R7	TH	AF/AR	Total	% of Total	Total	% of Total
I	8062	888	382	2905	-	833	13070	30.4	3735	20.5
II	1653	-	19	-	-	2625	4297	10.0	2143	11.8
III	580	-	925	4993	38	329	6865	16.0	3758	20.6
IV	2160	1072	373	-	242	580	4427	10.3	1574	8.6
V	3220	455	994	-	-	-	4669	10.8	938	5.2
VI	93	350	1412	1203	181	2145	5384	12.5	3508	19.3
VII	185	-	-	3662	-	424	4271	10	2539	14.0
Total	15953	2765	4105	12763	461	6936	42983	100%	18195	100%
% of Total	37.1	6.4	9.6	29.7	1.1	16.1	100%			

SOURCE: LOUIS BERGER & ASSOCIATES, INC.

$

TABLE 3.6
COMPARATIVE LAND-USE ANALYSIS

TYPE OF USE		PLANNED DEVELOPMENT (PD)			F7\MILY RESIDENTIAL (R-20)			FAMILY RESIDKNI'IAL (R-15)			FAMILY RESinEOTIAL (R-7)		
District No.	Total & %	D	V	T	D	V	T	D	V	T	D	V	T
I	T(Acres)	325		457/		2?4		It	I 7 1		31fe	Tl	^<-7
	%	7-1	12.9	loo	36.5	^3.5	loo	13.3	ttn	loo	-	'5.1	IPO
11	T(Acres)	31		Sit	—	—	-	0-1	5-1	6	—	-	
	%	h	16	loo	-	-	-	2.		\OO	-	-	;
III	T(Acres)	S		X<\0	—	-	—	16?	/SI	311	7'12		
	%	3	<?7	too	—	-	—	52.6		loo		7i	loo
IV	T(Acres)	H5	•)35	1080		172	492	7't	5'l	IZ?	-	-	-
	%	-3%	<?/-2.	IOO	^s	35	loo	5"7.^	'17.6	loo	—	-	-
V	T(Acres)	Io6		17-76	30	135		an	51	3 ^	—		-
	%	(,	Vl		37.4 '		\oo	-mi	I5--3		-	:	-
VI	T(Acres)	5	41	^6	7g	"83		\n	283	437	/75	ig	113
	%	\o		IPO			IDO		-	1DO			loo
VII	T(Acres)		fb		—		—	—.	—	—	3«l		sgi
	%	10	<\0	loo	–	:	-	-	-	-		3i'<i	I0O
Total	T(Acres)		till	•g7OI	642		1316	75i	713	"*SI	\6<J({	3 5?	ZO52.
	%	7	73	100	49	5\	1 oo	SI		loc	?3	17	loo

D = Developed V = Vacant T = Total

SOURCE: Louis Berger & Associates, Inc.

TABU; 3.6 Continued
COMPARATIVE LAND-USE ANALYSIS

TYPE OF USE		FAMILY APAKIMtUT (AF)			RETII^EMENT AFr. (AR)			TOW HOUSE Cm)			TOTAL RESIDFNl'lAL		
District No.	Total & %	D	V	T	D	V	T	D	V	T	D	V	T
I	T(Acres)	57	0-i	H3	—	—	—	—	-	—	'If. 15		S7'-7
	%		3i	lop	—	—	—	—	—	—	'7	'33	(DO
II	T (Acres)	\z	151			—	—	-	-	-		/C3I	ir(; j
	%	\S	45.5	loo	:	—	—	—	—	—	A	16	1OO
III	T(Acres)	id	1	3J	-	-	-	1	14	15	944	5"16	
	%	7i-i	23.7	loo	—	—	—	7-7	92.3	loo	65	35	loo
IV	T (Acres)	10	%	12.		-4.6		4	93	<!-]	5"'i'<	(311	I i5S
	%	•gi	17	ICO	°[O	lo	loo	4.3	95.7	loo	2-1	71	[PO
V	T(Acres)	-		—	—	-	—	—	-	—	'177	1377	2354
	%	—	:	—	—	—	—	—	—	—	le	yc	100
VI	T(Acres)	202	13	3.15"	—	—	—	7	65	71			II 7<j
	%	13-%	6.1		—	—	—	1(7	90	1(70	i"7	^3	
VII	T (Acres)	•8	13	ai		13	21	—	—	—'	i|t»6	317	.
	%	3l.b	<3-1	100	37	63	100	—	—	—	56		lOO
Total	T(Acres)	3*H	3i3	iZ7	41	18	67	IX	172	184	4049	1037*?	I'l'li?
	%	SO	SO	[00	73	27	loo	7	13	100	28	72.	

D = Dcvclo[XKl V = Vacant T = Total

TABLE 3.6 Continued
COMPARATIVE LAND-USE ANALYSIS

TY1>E OF USE		NEianjoraiooo-COMEnClAL (CN)			COf-MUNITY COMMERCIAL (CC)			HEGICNAL 0OWEICIAL (CK)			MAKING COmElCIAl, (CM)		
District No.	Total & %	D	V	T	D	V	T	D	V	T	D	V	T
I	T (Acres)	IS.5	15.5	31	•3 5	IIS		1	90	91	-	-	—
	%	So	5o	loo	42.4	57b	\oo	1	99	loo	—	—	—
II	T (Acres)	x·S	35.5	33	3	1*2.	45	3-1	123·B	11-7		—	—
	%	6·a-	93.8	loo	6.6	93.4	loo	2.5	97.5	loo	:	—	—
III	T(Acres)	—	—	—	35"	3o	65	—	—	—	—		—
	%	—	—,	—	53.7	46.3	.loo	—	—	—	—	:	—
IV	T (Acres)	8	18	26	"30	107	IS7	—	—	—	—	—	-
	%	31.6	68.4	100	43	si	100	—	—	—	—	–	—
V	T(Acres)	_	—	—	6	5	II	—	—	-	—	-	-
	%	—	—	—	53-5	46.5		—	—	—	—	—	—
VI	T(Acres)	—	—	-	101	•Jo	Igl	—	—	—	—	—	—
	%	—	—	—	5b	44	100	—	—	—	—	—	—
VII	T (Acres)	a,	16	18	7	8		—	—	—	17		171
	%	10	So	loo	50	50	loo	—	—	—	10	90	\oo
Total	T (Acres)	28	•35	H3	341-5	2-335"	SiS	4.2	T	21?	17	'5H	171
	%	25	75	loo	kh	54	100	Z		\OO	10	10	|00

D = Developed V = Vacant T = Total

TABLE 3.6 Continued
COMPARATIVE LAND-USE ANALYSIS

TYPE OF USE		SPECIAL DEVELOPMENT (SD)			1OWN CENTER DISTRICf (TCD)			GENEiyVL O1T1CK (00)			IlEAW INDUSTOIAI, (M5)		
District No.	Total & %	D	V	T	D	V	T	D	V	T	D	V	T
I	T(Acres)	7	C'lO	6^7	•—	—	-	o.s	'J-S	ID	-	—	
	%	1	11	IDO	–	–	–	5		loo	–	–	:.
II	T(Acres)	7J	434	5°7	-	—	-	I3.S		'i 3	7	m	
	%	IV<i	75.6	li5O	–	–	–	31-b	63-5	I0P	25	17.5	lop
III	T(Acres)	I'l	II3	I32	—	—•	—		112.		—	—	-
	%	14		lot)	–	–	–	45. 3	SI.7	ID/7	–	–	–
IV	T(Acres)	3	SO	5"3		16		—	-	—	—	—	-
	%	6	<U	|©0	15	35"	loo	–	–	–	–	–	–
V	T(Acres)	11	IfeO		(,5	135	2.0<7	3	n		—	—	—
	%		12	IW	•5Z.(,	67.4	loO	12	sa	\oo •	–	–	–
VI	T(Acres)	ll	117	/ SS	33	IS	63	??	'•i	11	–	-	--
	%	7	^3		(,o	ho	loo			lot	—'	-	--
VII	T(Acres)	\(,	142	/5S		—	—	—	—	–	—	-	–
	%	10	90	loo	:	–	–	–	–	–	–	–	--
Total	T(Acres)		16-gt		152	176				371	7	2 7J	27i?
	%	3	12.	\oo	46	54	|oo	Si	til	too	2.6		ICO

D = Developed V = Vacant T = Ttatal

TABLE 3.6 Continued

District No.	total & %	NCN-KESIDENTIAL D	V	T	RESinonTAL D	V	T	WA'reisiiEn & WETLANDS Acres	%of total	TOTAL Acres	%of total
I	T(Acres)	32.	7*7	711		^711	57<7	1741	2?-^	5T3I5*	33.0
	%	4	It	loo	17	K3	loo				
II	T(Acres)	102	936	1038	44	IPS'!	l"15	1537	22.3	3670	[So
	%	\O	no	1so	4	16	\oo				
III	T(Acres)	IM6	255	<|01	1«<4	5TI6	1')tO	3^2	5".6	11'\3	3-8
	%	36	64	\00		35	loo				
IV	T(Acres)	I'lO	m	331	5'I1	"311	issr	1105"	16-0	32')1	no
	%	'10	60	100	21	7/	10(7				
V	T(Acres)	88	3l'l		'J77	1377	1354	6/3	•H.I	J 37H	'3-q
	%	22	7?	\oo	20	?0	100				
VI	T(Acres)		156		&u	50?	in'j	SSS	^•1	222.3	8.8
	%	A?	S"2	\oo	51	A3	loo				
VII	T(Acres)	43	320	363		317	723	'I'll	13-7	?H27	8.0
	%	IZ		loo	5(,	'Hi	100				
Ttotal	T(Acres)	T\o	3<3'<3	:?g33	<"|0<|1	1037']	I'|42?	6382	\oo	25143	|(9O
	%	21	7')	|D0		It	\oo				

D = Developed V = Vacant T = Total

TABLE 3.7

Trip Generation/Attraction Factors

Zoning Type	Trips Per * Residential Acre	Trips Per 1,000 Sq. Ft. of Floor Space
Planned Development (PD)	39.	-
Single Family Residential (R20)	20.	-
Single Family Residential (R15)	28.	-
Single Family Residential (R7)	46.	-
Townhouse Residential (TH)	50.	-
Aparbrent-Family Residential (AF)	90.	
Apartment-Retirement Residential (AR)	50.	-
Neighborhood Carmercial (CN)	1,000.	97.
Cannunity Commercial (CC)	800.	65.
Regional Commercial (CR)	590.	35.
Marine Cannercial (CM)	370.	34.
Special Development (SD)	280.	88.
Town Center (TCD)	100.	25.
General Office (OG)	240.	12.
Heavy Industrial (M5)	72.	8.

Source: Institute Of Traffic Engineers

* The Density of Dwelling Units' Per Residential Acre is as of 7/1/80.

TABLE NO. 3.8

TRAFFIC IMPACT PROJECTIONS FOR FUTURE LAND DEVELOPMENT

ALLOCATION DISTRICT NO. 1							
Zoning Code	Total Area		Developed	Vacant		Daily Vehicle Trip Ends	
	Acres	%		Acres	%	No.	%
PD	5687	53.85	6.4	5322	93.6	207550	23.33
R-20	448	4.24	36.6	284	63.4	5680	0.64
R-15	523	4.96	37.1	329	62.9	9212	1.35
R-7	1270	12.03	89.6	132	10.4	6072	0.68
AF	379	3.59	24.8	285	75.2	25668	2.89
AR	–	–	–	–	–	–	–
TH	15	0.15	6.7	14	93.3	700	0.08
CN	69	0.65	26.1	51	73.9	51100	5.79
CC	130	1.23	35.4	84	64.6	66800	7.50
CR	218	2.06	1.8	214	98.2	126732	14.24
CM	–	–	–	–	–	–	–
SD	1286	12.18	7.7	1187	92.3	334320	37.58
TCD	–	—	—	-	-	-	-
OG	257	2.43	41.20	151	58.8	36350	4.08
M5	278	2.63	2.5	271	97.5	19512	2.19
Overall	10560	100	21.2	8324	78.8	889696	100

TABLE NO. 3-6

TFAFFIC IMPACT PROJECTIONS FOR FUTURE LAND DEVELOPMENT

ALLOCATION DISTRICT NO. 2							
Zoning	Total Area		% Developed	Vacant		Daily Vehicle Trip Ends	
Code	Acres	%		Acres	%	No.	%
PD	2922	44.20	7.0	2716	93.0	105924	24.65
R-20	868	13.10	55.0	390	45.0	7800	1.82
R-15	958	14.5	59.0	394	41.0	11032	2.57
R-7	193	2.9	90.7	18	9.3	828	0.19
AF	227	3.4	93.4	15	6.6	1332	0.31
AR	46	0.7	89.1	5	10.9	230	0.05
TH	169	2.6	6.5	158	93.5	7900	1.84
CN	26	0.4	30.8	18	69.2	18000	4.19
CC	379	5.7	49.3	192	50.7	153600	35.74
CR	-	-	-	-	-	-	-
CM	-	—	-	-	-	-	-
SD	385	5.8	7.3	357	92.7	99960	23.2£
TCD	328	5.0	46.3	176	53.7	17600	4.1C
OG	114	1.7	79.8	23	20.2	5520	1.2E
M5	–	—	—	-	-	-	-
Overall	6615	100	32.5	4462	67.5	429726	100

TABLE NO. 3.6

TRAFFIC IMPACT PROJECTIONS FOR FUTURE LAND DEVELOPMENT

ALLOCATION DISTRICT NO. 3							
Zoning Code	Total Area		% Developed	Vacant		Daily Vehicle Trip Ends	
	Acres	%		Acres	%	No.	%
PD	92	8.46	10.00	83	90.0	3237	.2.42
R-20	—	—	—	—	—	_	_
R-15	-	-	-	-	-	-	
R-7	589	54.2	64.6	208	35.4	9568	7.15
AF	21	1.93	36.6	13	63.4	1170	0.87
AR	21	1.93	37.0	13	63.0	650	0.50
TH	—	_	_	—	_	-	—
CN	18	1.66	10.0	16	90.0	16000	11.96
CC	17	1.56	50.0	8	50.0	6400	4.78
CR	-	-	-	-	-	-	-
CM	171	15.73	10.0	154	90.0	56980	42.60
SD	158	14.54	10.0	142	90.0	39760	29.72
TCD	-	-	-	-	-	-	-
OG	-	-	-	-	-	-	-
M5	_	_	—	—	—	—	—
Overall	1087	100	41.40	637	58.6	133765	100

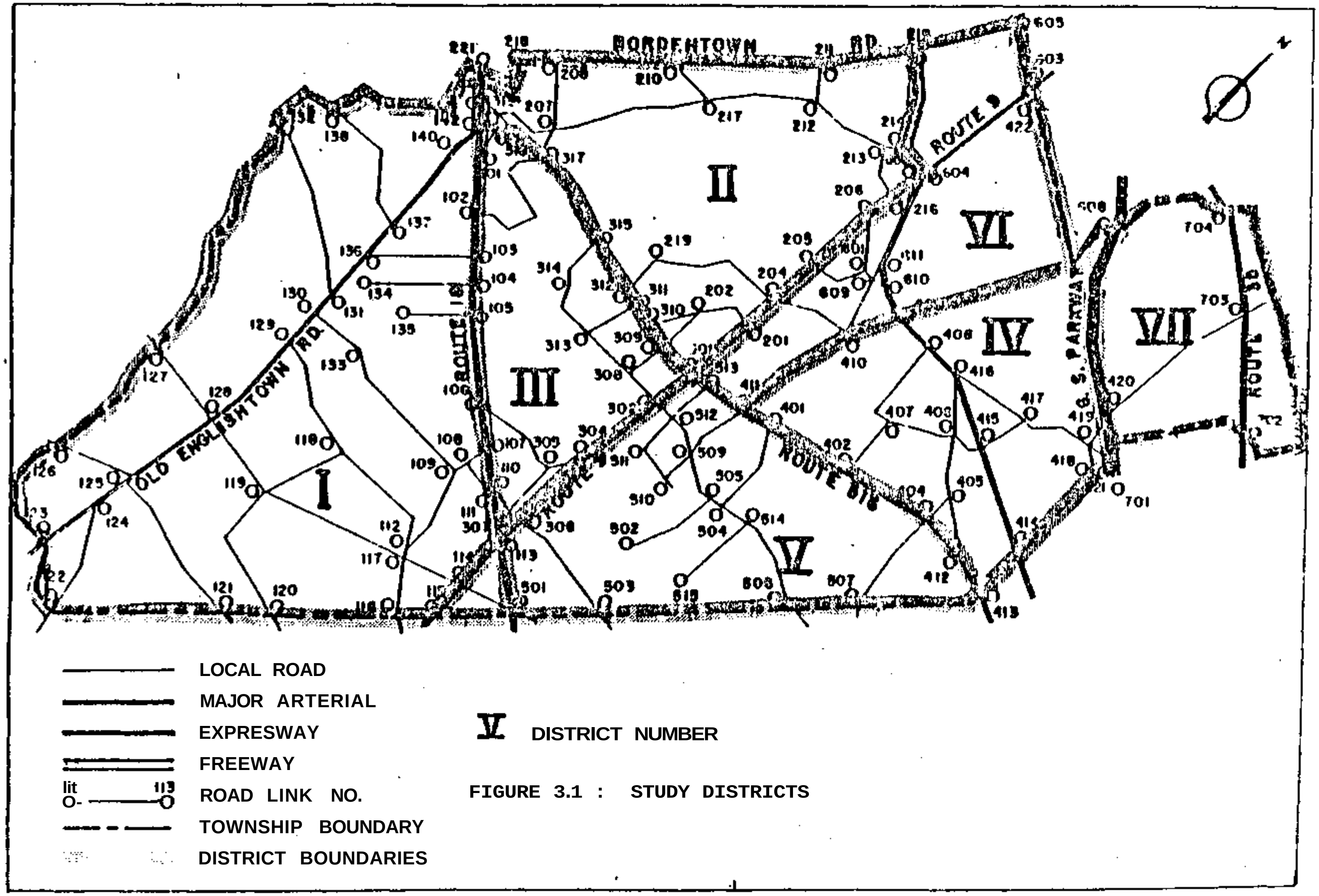


FIGURE 3.1 : STUDY DISTRICTS

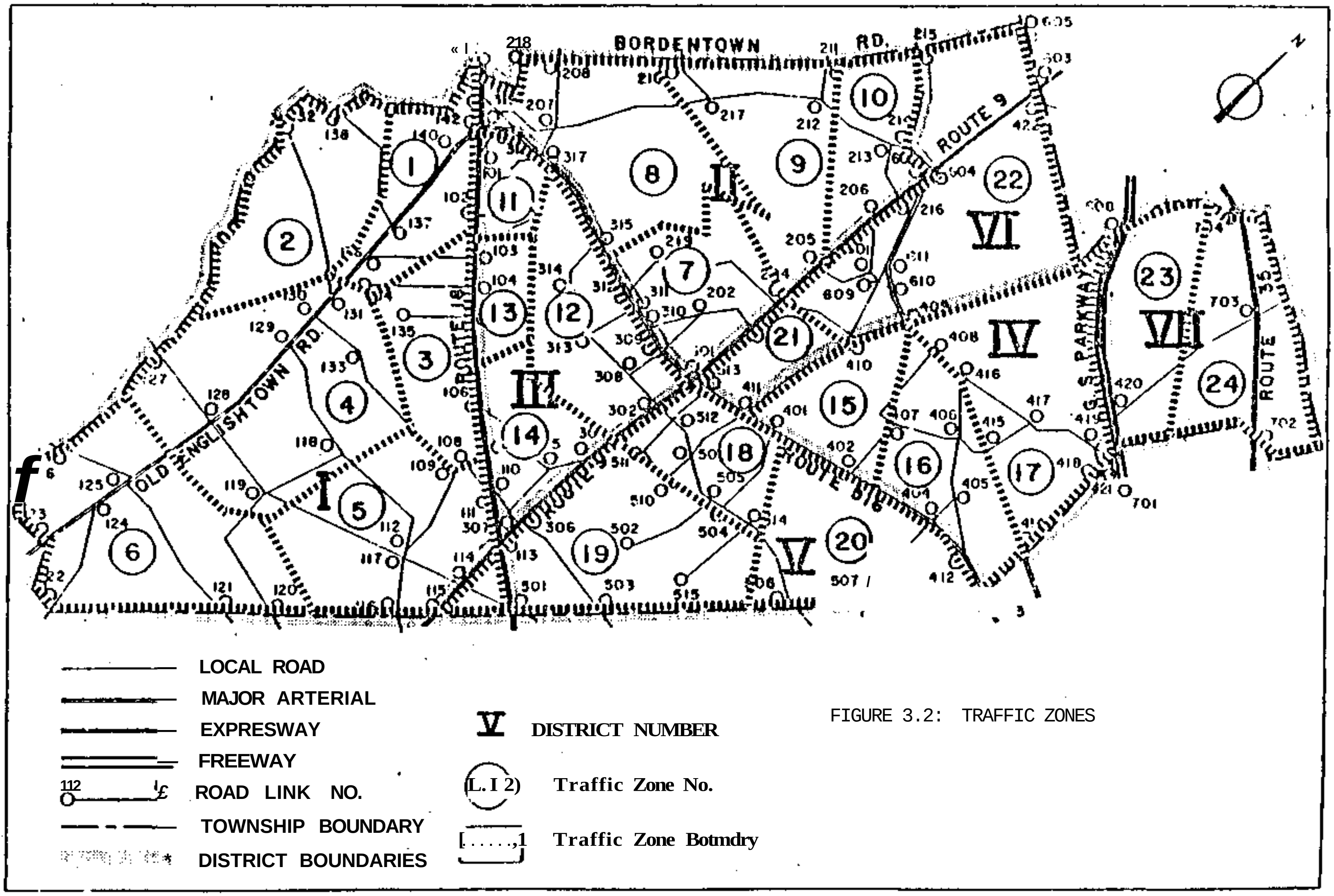
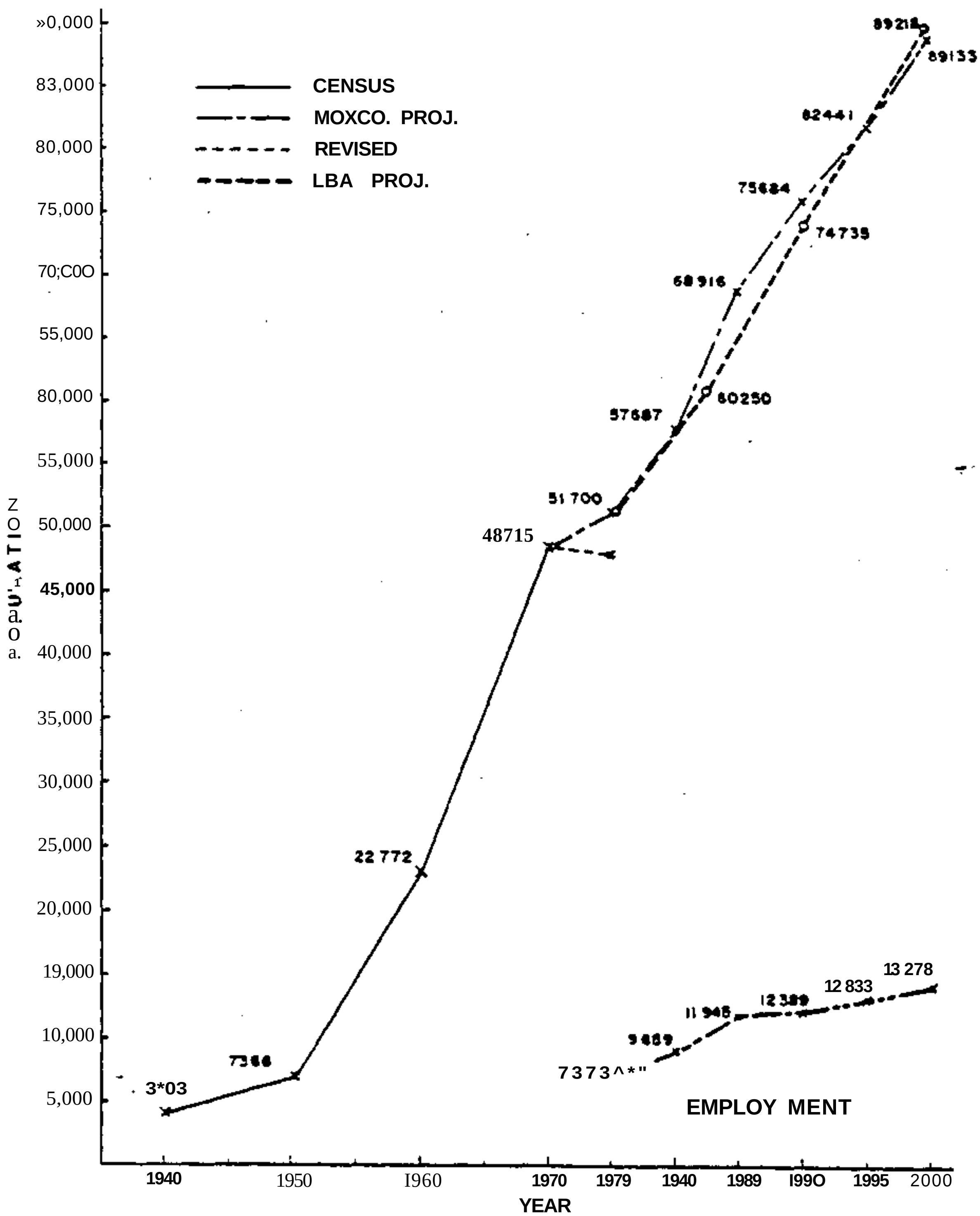
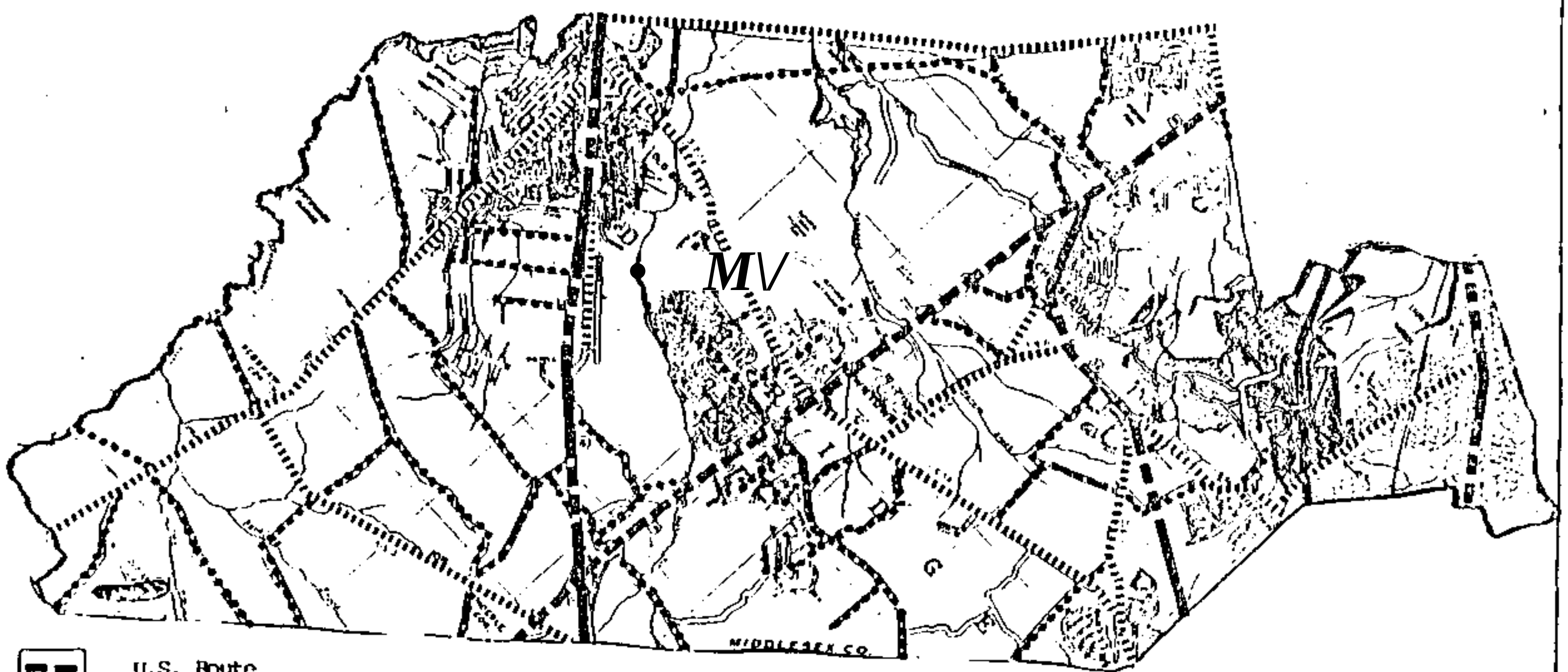


FIGURE 3.2: TRAFFIC ZONES

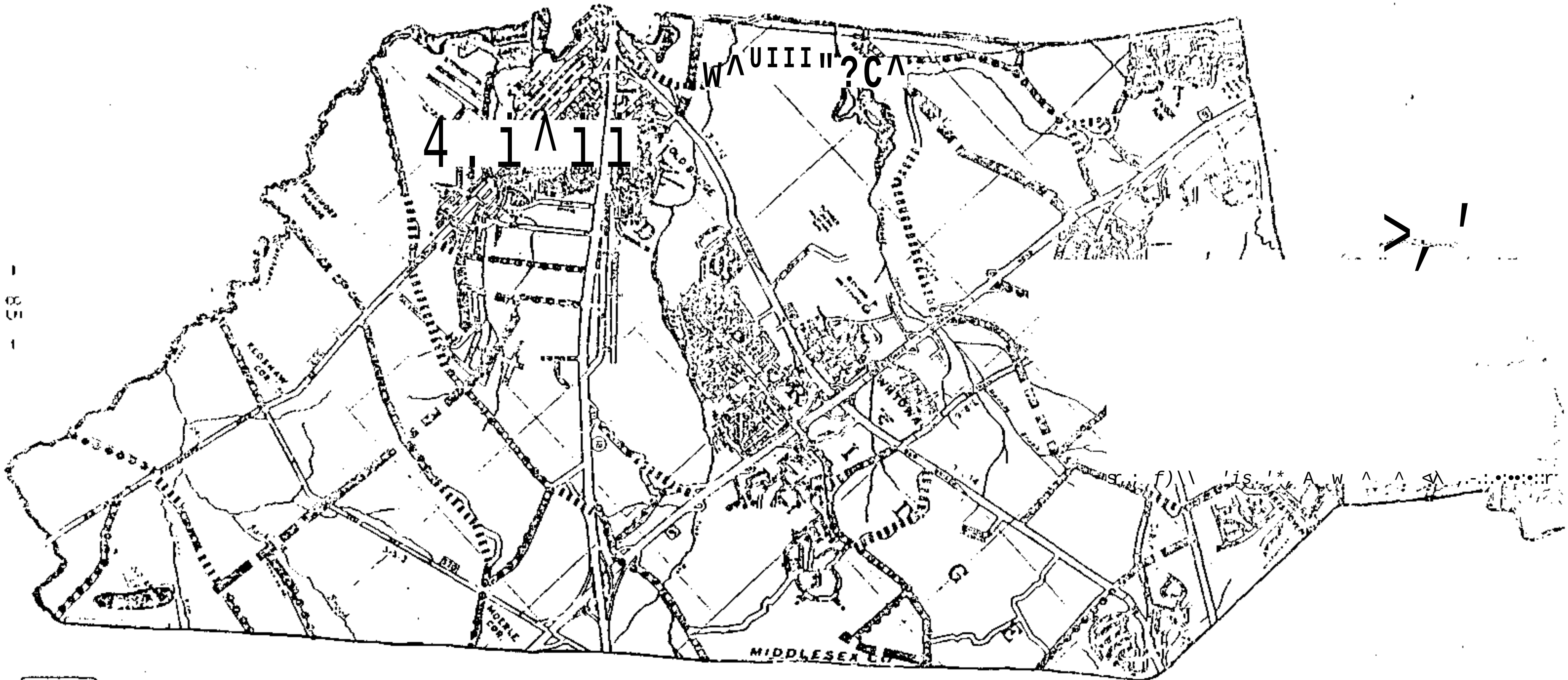


POPULATION a EMPLOYMENT GROWTH TREND

FIGURE 3.3



FIGURn 3.4: EXISTING ROAD NETWORK



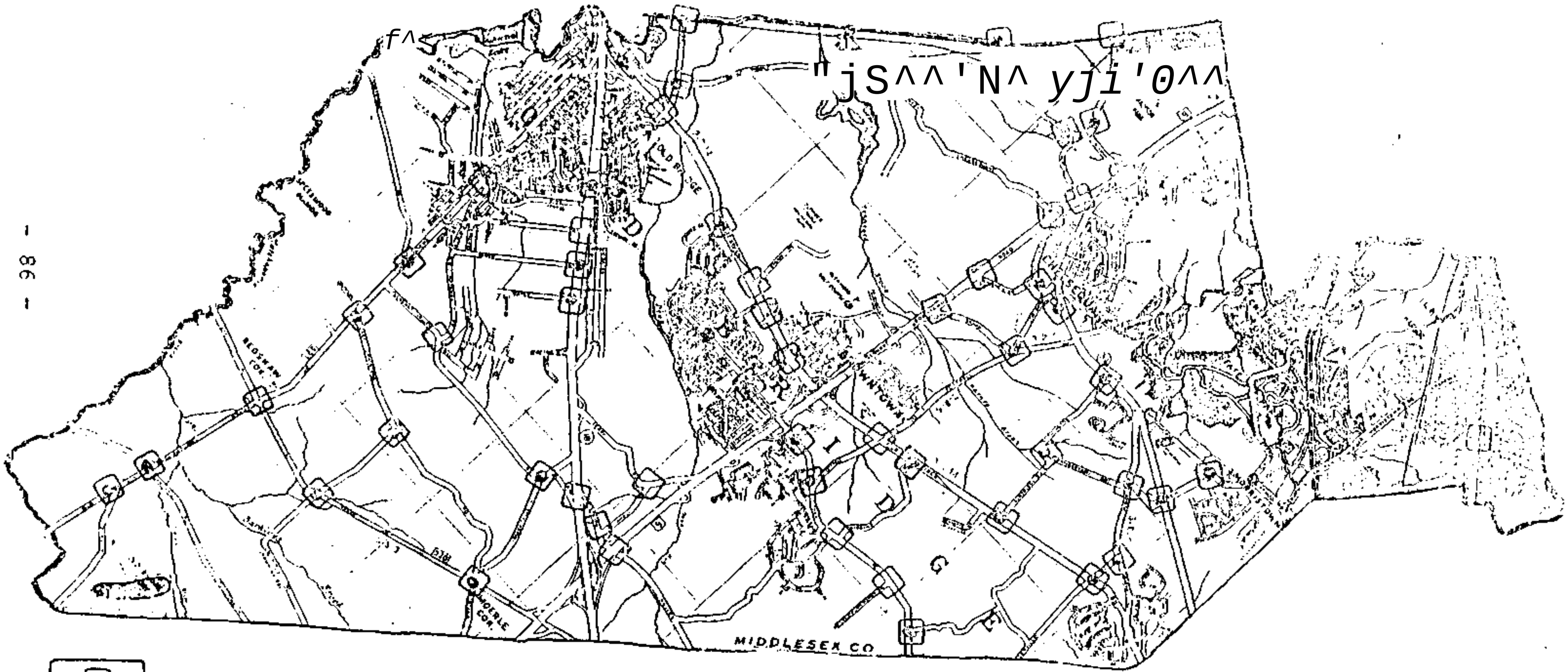
Widening or Improvement of Existing Roads

Realignment of Existing Sections

Construction of New Links

IMPROVEMENT ASSUMPTIONS FOR FULL DEVELOPMENT
(Road Links)

Figure 3.5



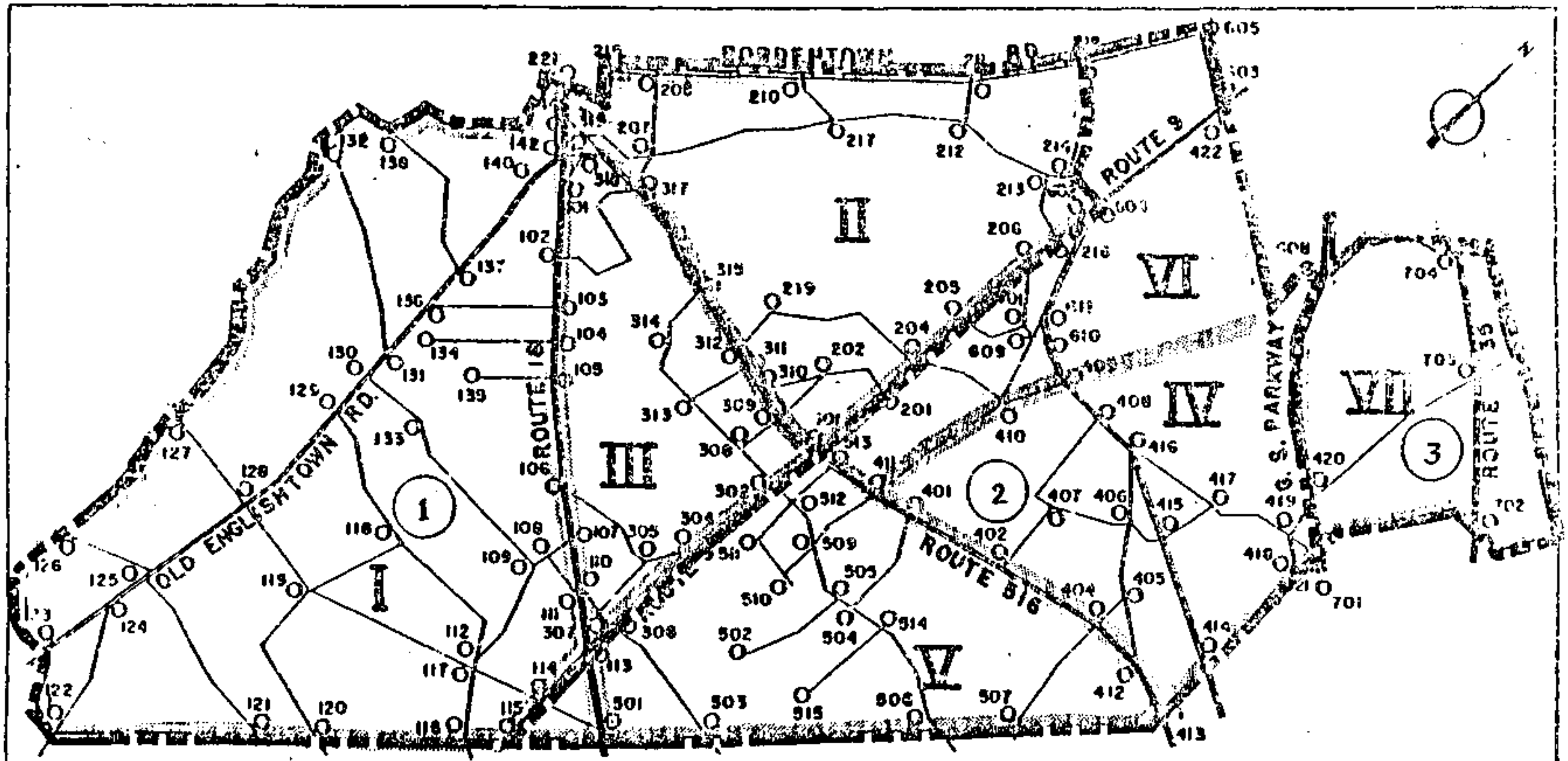
Channelization only

Channelization and Signalization

Signalization only

IMPROVEMENT ASSUMPTIONS FOR FULL DEVELOPMENT
(Intersections)

Figure 3.6



LOCAL ROAD
MAJOR ARTERIAL
EXPRESWAY
FREEWAY
112 113 ROAD LINK NO.
TOWNSHIP BOUNDARY
DISTRICT BOUNDARIES

3E DISTRICT NUMBER

FIGURE 3.7« ALUXTATION DISTRICT

tr Allocation District Doundry

0 Allocation District Number

P IGURE 3.7

APPENDIX 2·1 DRAINAGE COSTS

A. REINFORCED CONCRETE CLASS IV WITH GASKET JOINTS PIPE CULVERT COSTS - 1979

SIZE ROUND	EQUIVALENT ELLIPTICAL	COST $/LIN. FOOT
3o '	2«J'< i 6"	3^.70
34'	3^'V -/S"	Y3.VS"
		56.00
48"	38" x 60"	66.70
54"	43" x 68"	69.60
60"	vr x 7b"	90.14
66"	53" x 83"	108.90
72"	58" x 91"	125.25

ASSUMED LENGTHS OF PIPE UNDER IMPROVED COLLECTOR ROADS WITH 1' COVER

ASSUMED LENGTHS OF PIPE UNDER IMPROVED MINOR ARTERIALS WITH 1' COVER L = 60'

SOURCE: /97f t>DDC>c (âU(Od U/>E>/FT£& . T« 1979 COSTS FOR N.J INDEX

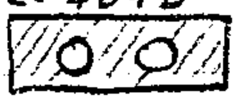
APPENDIX 2.1 CONT'D

B. STRAIGHT HEADWALL COSTS

SIZE	QUANTITY CONCRETE CUBIC YARDS	COST $/UNIT	COST 2 UNITS 1 AT EACH END
18"	1.4	280	$ 560
24"	2.1	420	840
30"		560	1120
36"	3.6	720	1440
42"	4.4	880	1760
48"	5.8	1160	2320
54"	7.4		2960
60"	9.2		3680
66"	11.3	2260	4520
72"	13.7	2740	5480

COST FOR HEADWALL FOR DOUBLE CULVERT

L = 4D + D



ASSUME 20% COST EXTRA FOR HEADWALL

2-54" = 2960 × 1.2 = $3552
2-60" = 3680 × 1.2 = $4416
2-66" = 4520 × 1.2 = $5424

SOURCE:
CONCRETE Quantities – N.J. D.O.T. STANDARD DETAILS
CONCRETE COST = $200/C.Y.

LB4/AJC.

APPENDIX 2.1

C. BOX CULVERTS AND BRIDGES [illegible]

CULV. NO.	LOCATION	EXISTING CONDITION: SIZE	EXISTING CONDITION: LENGTH (FT.)	EXISTING CONDITION: AREA (SF)	EXISTING CONDITION: UNIT COST ($/SF)	EXISTING CONDITION: COST ($)	REQUIRED FOR FUTURE CONDITION: SIZE	REQUIRED FOR FUTURE CONDITION: LENGTH	REQUIRED FOR FUTURE CONDITION: SURFACE AREA	REQUIRED FOR FUTURE CONDITION: UNIT COST	REQUIRED FOR FUTURE CONDITION: COST ($)
[illegible]	[illegible]	11'x7'	[illegible]	[illegible]	48.[illegible]0	15,972	[illegible]	48	768	48.40	37,[illegible]
117	[illegible]	10'x6'	50	50[illegible]	42.35	21,[illegible]	[illegible]	[illegible]	[illegible]	48.40	38,880
[illegible]	[illegible]	[illegible]	31	[illegible]	42.35	13,129	15'x7'	48	[illegible]	48.40	[illegible]
[illegible]	[illegible]	[illegible]	29	[illegible]	60.00	36,540	38'x8'	52	[illegible]	60.00	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	336	42.[illegible]5	[illegible],229	[illegible]	[illegible]	[illegible]	48.40	45,302
[illegible]	[illegible]	[illegible]	[illegible]	650	42.[illegible]	27,[illegible]	[illegible]	[illegible]	[illegible]	42.35	38,538
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]4	[illegible]	12,450
[illegible]	[illegible]	11	32	[illegible]	[illegible]	[illegible]	[illegible]	52	88	48.[illegible]	42,[illegible]5
[illegible]B	[illegible]	EXIST. BRIDGE					29'-6"x[illegible]	18	531	[illegible].00	[illegible]860
[illegible]2	[illegible]	EXISTING BRIDGE					38'-6"x 9'	[illegible]	500	70.00	35,035
[illegible]	[illegible]	72" RCP	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]7'	52	[illegible]	48.40	32,718
84	[illegible]	[illegible]	20	240	4[illegible].35	10,[illegible]	[illegible]	48	768	[illegible]35	32,525
M3	[illegible]	EXIST. B.C. OK					18'x5'	[illegible]	[illegible]6	40.00	15,840

NOTES:

* [illegible] D EXIST. [illegible] 7" BC WITH A 14'-[illegible]' B.C. FROM LENGTH 27' TO [illegible] = 21'
Δ EXTEND " [illegible] 6' BRIDGE FROM " [illegible]4' TO [illegible] 18'
[illegible] " [illegible] [illegible]' BRIDGE FROM " 39' TO [illegible] 13'
[illegible] D " [illegible] " B.C. WITH A 18'x5' [illegible] FROM " 2[illegible]' TO [illegible] 22'

APPEN' ONTD

Bo*. CJI-N/I COST. DERIVED FROM DODGE GUIDE
1978 PRICES

6' DEEP BOX CULV. UNDER 10' WIDE $55"/SF × 1.1 (NJ INDEX)
× 1.j INFLATION TO 1979 = $42.35

ÿ' t>C-Gt 6oK CwtV. Vh>DC 10 iutte ^P/re Kh.L:%J.</ = $48.40

DERIVED FROM ACTUAL CDST5 IN GUIDE
COST OF 6'×6' BC 210/6 /LF = $35/SF

" " 8'×8' BC 322/8 /LF = $40/SF

12' × 6' 615/12 /LF = $51.25/SF

APPENDIX 2.1 (CONTINUED)

D. COST OF FUTURE CULVERTS UNDER FUTURE ROADS

1. IRESICK BROOK WATERSHED
I 26 SOUTH STREET (EXTENDED)

FUTURE SIZE 10' X 6' BOX CULVERT

L = 52' UNDER SOUTH ST.
UNIT COST 42.35/S.F SURFACE AREA

SURFACE AREA = 10' X 52' = 520 SF X 42.35 = $22,022
HEADWALL COST : ~14 CY = $5,600
TOTAL $21,622

THIS COST IS INCLUDED IN ROADWAY IMPROVEMENT COSTS

2, BARCLAY BROOK WATERSHED

B 7 UNION HILL ROAD (EXTENDED)

FUTURE SIZE 48" RCP
L = 52'

CULVERT COST 66.70/ft X 52' = $3468

HEADWALL COST : 2 HDWLS = $2320
$5788

THIS COST IS INCLUDED IN ROADWAY IMPROVEMENT COST.

APPENDIX 2·1 (CONTINUED)

D. (CONT'D)
COST OF FUTURE CULVERTS UNDER FUTURE ROADS

3. IRESICK BROOK WATERSHED

I 21A MAPLE ST. (EXTENDED)

FUTURE SIZE
15' X 7' BOX CULVERT

L = 48' (ASSUMED MAPLE ST.)

UNIT COST 48.40/SF SURFACE AREA
SURFACE AREA = 48 X 15 = 720 SF
COST = 720 X 53.40 = $38,848

HEADWALL COST
15 CY CONCRETE X 2 = 32 CY X $200/CY = $6400

TOTAL COST = 41,248

THIS COST IS INCLUDED IN ROADWAY IMPROVEMENT COSTS

4. MATAWAN CREEK WATERSHED

M 6 MORGANVILLE RD. (EXTENDED)
66" RCP
L = 52'

CULVERT COST
COST 2 HDWLS = 4520

TOTAL COST ^ A?/'83

THIS COST IS INCLUDED IN ROADWAY IMPROVEMENT COSTS

APPENDIX 2.1 CONT'D

D. CONT'D
COST of FUTURE CULVERTS UNDER FUTURE ROADS

5. TENNENT BROOK WATERSHED

T 22 LAMBERTSON RD. (EXTENDED)

FUTURE SIZE 66" RCP
L = 52' UNDER LAMBERTSON RD
UNIT COST = $108.90
CULVERT COST = 108.9 X 52 = $5663

HEADWALL COST - 2 HDWS. = $4520
TOTAL = $10,183

THIS COST IS INCLUDED IN ROADWAY IMPROVEMENT COSTS

6. DEEP RUN WATERSHED

D 3Z TRANS OLD BRIDGE (FUTURE ROAD)
FUTURE SIZE 60" RCP
L = 52'
UNIT COST : $90.14
CULVERT COST = 90.14 X 52 = $4687

HEADWALL COST : 2 WLS = $3680

TOTAL = $8367

APPENDIX 2.2

STREAM CLEANING LENGTHS AND COSTS

APPENDIX 2'Z

COST: $4/LIN. FT. AS PER TWP OLD BRIDGE 1979

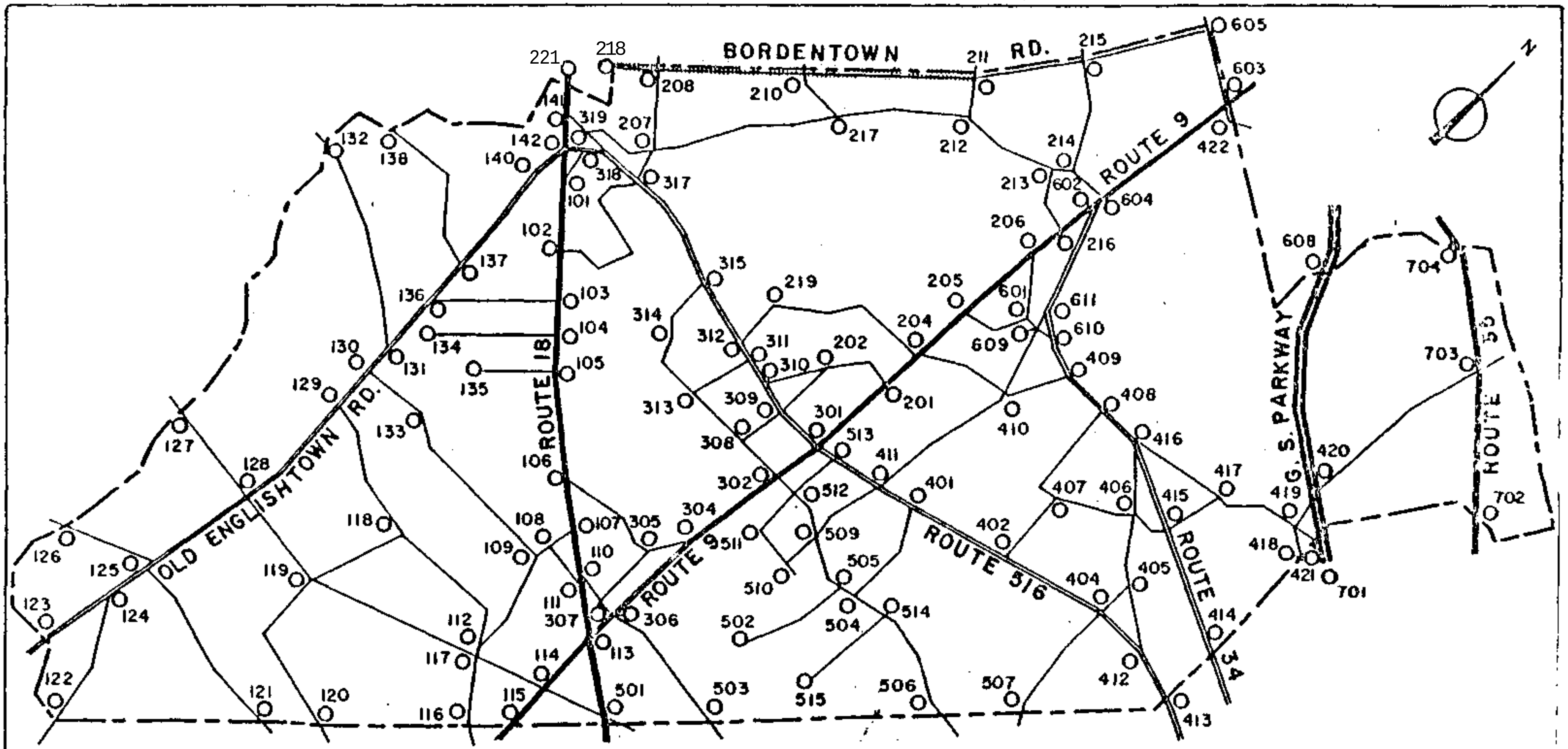
STREAM CLEANING /Leog-r/fs i Cosrrs

(FOR MAJOR STREAMS DEFINED ON TOWNSHIP TOPOGRAPHY MAP)

LOCATION A-T U-	LENGTH OF STREAM //^Cr?£/>1£oT ^LLcCAJSQ To Dcwwir^c^n CVL.V£/IT (>r:)	COST ($)	COST X % LAND TO BE DEVELOPED (X %) (COST $)
I 1	400	1600	X .52 = $832
I 2	400	1600	.40 = 640
I 3	400	1600	.61 = 976
I 7	2400	9600	.75 = 7,200
I 7A	800	3200	.7 ^ = 2336
r / i	^c-o	/6<?o	ys' = 72-0
X 13	^^c	3 2-oc	.?< = /76o
r '7	?^c>	3200	.fci = 1,984
			= 304
I /7	tj<ro	{(so**	-i^ = 384
J i«	7 2-ot?	22-jS-ro	6z - /7,856
		3200	.90 = 2,880
T 28	4000	16000	> 7O = 11,200
T I	f^^o	3SV*o	'to = 23040
			,560
+ ^	3ioo	/^r*&	.77 r~ i.on 2.
7" r	"?^o	3?Vo	.*/? = 1,843
T 7	4000	/60-0	<S7 = 816
T 8	5600	2L*4&o	.73 = 16,352
			= 2,160
T 15	4000	16000	-33 = V^280
T 16A	VCZ?	4 VJ^TS	I, nO = ?Z SV

APPENDIX 2.2 CONT'D

T'T	S^o-o	3200	x .hQ.	= $3,200
ns	400	1600		= 1,600
T ^	400	1600	.71	= 1,136
T^-o	400			
D 1	22,400/2	44800	.56	= 25,090
D 1 8	21; , 400/2	44800	.56	= 25,090
D 1 A	2000	8000		
D3	800	3200	• SP	= 1,600
D5"	\(S<TO	6400	. «6	= 4,224
D£	1440	5760	..HHi	= 2,534
D 14	400	1600	.74	= 1,184
D 14A	400	1600	.70	= 1,120
D 15	400	1600	1.00	= 1,600
D 2 1	3200	12800	.52	- 46s*
0 31	L+GOO	tbe&c	.82	= 13,120
B \A	2000	8000	•5-.r-	= *,640
B 1	800	3200		,632
03	5600	22 Hot?:		- 20,160
B 4	{(.<*>	22400	.89	= 19,936
1') 1	2400	9600	.98	= 9,408
r'1 L	2400	9600	ni	= 7,104
M3	4400	17600	.81	= $14,256



SCALE 1" = 1 MILE (APPROX.)

- LOCAL ROAD
- MAJOR ARTERIAL
- EXPRESWAY
- FREEWAY
- 112 — 113 ROAD LINK NO.
- TOWNSHIP BOUNDARY

ROAD LINKS USED IN TRAFFIC ANALYSIS

TOWNSHIP OF OLD BRIDGE

TRAFFIC DATA ANALYSIS - FULL DEVELOPMENT

YEAR	CODE	Oak St.	Maple St.	Malboro Rd.
			:05.;75i»«	:•)•?. :c? *<*
;.-::?. ill	1.		t".ti >•*	c..i -fit
	2.	^5,*»•	-.'7.*'<	t5. >»*
	3.	7c"»3. •**	:'-. «»»	5:'J. m
	4.	i.'s.>»•	i-i. i>'	cc. »»*
	5.	P.??••»	L'.i'? »t<	i.l? *'•
ici0. »/i	1.		t.4i *»J	C.iT »*»
	2.	ii?. •.....	4j4. 4*v	fcT. »*•
	3.	lit:. *»*	37.'i. i'i	-535.**/
	4.		135c. r<f	771. •»•
	5.	6.55 m	f.S4 «*k	':.i? t*»
		Birch St.	Malboro Rd.	Malboro Rd.
		.'t'J. 1J4 ,.»».	:t7.1?8 4»f	:??.112 m
!?:C. 1(1	i.	t.oo 4-««	i .it- nf	
	2.	51. »*•	5c. tt-t	:J.**»
	3.	-••:?. <»»	44J.•»»	5->4. 1»*
	4.	75?. *»»	?V. i't	•J52. »»f
	5.			?.H m
iiMO. <»i	i.	e.fi *»«	c.:i- »•<.	?.c3 »»*•
	•	JiO. *»»		St.*. *»»
	3.	ifSO. «*	ru »<.	•S55fl. »»r
	4.	i575. ***	?i3. *>'	."3~.7 . tt»
	5.	(.73 **^	i H "i	!.!e ••«*

YEAR	CODE	Malboro Rd,	Hillsboro Rd.	Pleasant Valley
		HZ.nr >»«	:.'£.ii8 iw	
;.-:•. M*	1.	1.i.e. »•»	;,45 1*1	l.jj <»*
	2.	.'4. *»»		5c. **t
	3.	:52. •**	c5t>. r**	
	4.	45. #>•	ill. ***	6>?3. »**
	5.	C.JJ *»«	i.a **•	0.12**f
2t-"0. »»•	1.	tf.Os »»*	1.45*»«	I. it **•*
	2.	;"70. **•	ft'5. »"4*	fr'35. *«
	3.	olc'tt. »**	51?£. *•*!•	4e3t. •»"*
	4.	3i"3. *»«	rsi?. •»»	c"2o7. »t*
	5.	1.57 •*»	1.56<»r	1.23 *»»
		Malboro Rd.	Hillsboro Rd.	Pleasant Valley
		:i6.;ir i»t	;.'5.:23 t.r	:53.13a »»*
1.::-C. •<»"	1.	I".45->»»	b'.i.- »»•	
	2.	i:5. M*	tT. •»*	55. m
	3.	:'C'24. **•	53c. i>i	44t. tn
	J.	4w. »**	•*:?. >«.	US. »*•
	5.	C.24 »»»	O.li ...	e.n *»«
	!.	6.i5 *»*	i.,"? »«.	e.ci f»»
	2.	55?.. »«•	.-2f. »*•	c'l3. »l«
	3.		5r?p. »«<	4?ei. *•»
	4.	3f?l. .'»	•.5r?. »<i	2.--JS. •»*
	5.	;.c'4 »»*	•1.45<..	1.23 ***

1 - Link Distance
2 - Peak HR Volure (DHV)
3 - ADT
4 - Vehicle miles/day •
5 - VC Ratio

TOWNSHIP OF OLD BRIDGE

TRAFFIC DATA ANALYSIS - FULL DEVELOPMENT

Y1AR	CODE	Greystone Road 131.13Z •»	W. Texas Road 12". .25 «»•	John Wall Road J-21.:25 i.i
'.?:"'. m	1.	^.50 <»*	£-.72 t»*	1.52 *>>
	2.	125. <»»	1:";. ••»»	11. **»
	:'.	:t00. <»*	1512. »••••(	Si. i>'
	4.	i500. »?*	[illegible]	J22. n*
	5.	0.21 m	6.32 *»*	6.3£ J»*
5C'a'. ti<	1,	;.5t"' •»••	t.72 t"	,:2 n»
	2.	T Z~.* » •	12. «<»	[illegible]
	3.	s"i?2. *'»	T£?2. •«•*	4e.3e. "«
	4.	.-2T4. *»••	5ff4. *K	B22'6. *»•
	5.	1.25 MI	l.t'4 **#	J.04 .'if
		Spring Valley Road ios.::i */*	Matchaponix Raad :25.12o »it	Pension Road :22.12c ut
1.^10. ii*	i.	f.33 *<*	f-.J5 tt*	1.17 ?**
	£,	J5. *«'	t l i . >f i	:5. »*•
	3.	eSP. *»»	544. tf*	312. ttt
	4.	224. w*	£02. »»•	3i'. »»r
	5.	C-.:r »*»	0.21 t»*	0.0c m
2i2C-. •»•	1.	6.:3 **»	c.55 Ul-	i.ir *«••
	2.	544. »**	tra, *'*	304. «»»
	3.	J75O. *•*	5521. *•<•	2433. »T*
	4,	1-'3r. »»•*	4e"?3. *»<	2$47, •••
	5.	J.i>? ***	j.25 »»*	f.o-2 .('

YEAR	CODE	Brookside Ave. i:.;3£ J«*	Waterwork Rd. 2i3.2N *•<*	Poor Farm Rd. 2j4.c:e4 ,,f
;.:;!?. tit	1.	O.c4 ••**	0.2; i*»	C.J3 .M
	2.	rr. »<«	r.^5. n<	3O'l. i*»
	7.	fic. •»•	t*2itf. *»*	246$. ft*-
	4.	??4. *f»	[illegible]	J15. *»»
	5.	e.i3 >>t	;.3i »«	e.rt »«>
2C1C'. *»i	1.	C.t-t ttt	f.21 **:	e.:'s *t*
	It	5yJ. «>•	1522. »r»	?3f. *»*
	3.	4C21. »r»	I2J.T. *>•	:'455. **t
	4,	25:4. **»	2:5". *»*	2t'-4. *.*
	5.	&.£4 *tt	2.54 «»*•	1.S" *t*
		Waterwork Rd. 212.213 in	Perrine* 113.216 *»*	Cheesequake Rd. 2:4.215 «»•
19-C. in	1.	£.55 '*•	0.55 »<•*	O.ST »rt
	2.	455. *»'	t-2fc. •'•» '	.:25. »(»
	!*	Jc'40. *•»	6C24. ***	7i»e. *i«
	4.	[illegible]	[illegible]	[illegible]
	5.	6.'6 t-i*	i.27 *<*	
JO:O. •»<	i.	e.55 m	0.55 »i»	f.o? •»»
	2.	:452. »M	:c'42. ««•*	i6te. >«»
	3.	;;??4. »*t	[illegible]	:-1.-30'. »»»
	^,	^C41. »»T	r2-1. «»•	125SS. »»*
	5.	2.4? i»*	2.53 *•»•	2.33 H*

1 - Link Distance
2 - Peak HR '^olune (DHV)
3 - ADT
4 - Vehicle niles/day
5 - VC Ratio

TOWNSHIP OF OLD BRIDGE

·PRAFFIC DATA ANALYSIS - FULL DEVELOPMENT

YEAR	CODE	rt'aterworks-Bordsntown Road :!7.:1: ***	Jake Bravn W. Road :.'.-. 2i2 •M	ThrockirDrton Lane -oi.-;-s ...
;?:.'. tu	1.	0.0." •»<	f.-i? •ff	o.ir f*»
	?	:!1. 41^	?48. ***	:!5:. -•*
	V	1588. ***	J?;-i. «>>	52c4. \'u
	.	us. <«•»	i3c"4. » "	2501. tu
	5. •	:•.•<: i»«	f'.7tj i11	i.ic »/»
2C1J. tu	j.	0.07 m	0.45 .ft	6.27 if
	2.	751. 11*	?54. 11<	207-;. ttt
	T.	t'f'Jó. »*•	t'355. »«?	lo"5tS. tit-
	^.	420. *»«	3.M2. «»»	4475. tit
	5.	1.53 **»	1.5? ***	2.8? lit
		Waterworks-Bordentown Road :12.:11 ***	Red Oak Road 262.20? ><*	ThrocknDrton Lane 2i-i.313 ttt
1>:.0.. til	i.	c.i3 tif	0.50 ***	c. Ot m
	2.	419. ut	247. <•»•	f5o. ..<
	2,	32*2. tit	157c'. ***	etc*'*. ***
	4.	•tjô. »'*»	Til. ***	45??. ttt
	5.	O_=3 *it	0.35 »!•	ij.br ....
2020. '11	1.	C. 13 *>»	0.3c <*»	^.(57 *M
	2.	11.':'. ***'	.«t. »»f	i5;5. '1•
	3.	f?i4. *tt	•iOJO. tM •	:25J7. ftt
	4.	Hit. til	14.72. tit	i3So. t>*
	5.	2.4$ tti	0.72 '*'	:.5B itt

YEAR	cone	Old Arnboy Road 305.2^7 **•'	Spring Valley Road 307.;:a ***	Old Matawan Road !ic\ 3J? ***
;?;"•. tu	j.	o.c'o •*"•*	i'.4f M1	e. it. tu
	2.	32. *if	52. ttt	550. "•
	3.	2Jô. tt'	4it". tti	4-JCO. >•!
	4.	Hi. tti	it'. tt*	7S2. **»
	5.	e.ss tu	f.12 it*	6.76 t>4
2C19. ***	I.	e.se *y*	e.45 itf	P. IS *t*
	£*	373. *»*	505. i»r	10?4. tt*
	3.	2?S4. ttt	-?4t. itt	Stic-. ift
	4,	'.?i~-. ttt	if21. ttt	15c?. t$i
	z*	('.93 *t*	1.12 itt •	1.4? m
		Spring Valley Road 30e'.3?7 at	Southwood Drive 7::.1c: 1*1	Old Matawan Road 31?. :•»; »•>
1*50. u>	i.	i'.v'c »•*	... f »»f•	t. i: M«
	2.	5e". #*•*	;?o.	tf-;. *»•
	3.	454. ***	iC40. tf	5222. •»•
	4.	37. ••»	J.-oJ. <•»	f?7. j.J
	5.	e.n •».	f.2< (<>	0. ?J «•*
2(2C.. :'ft	l.	f.i1? •**	1.79 ,ii	t\ :i tf
	2.	55£. *»:	475. »••»	1225. f0
	7.	•*:5t. **«	7"ii. Hi	iO7l4. if
	<.	372. **?	6435. *>/	lc'5C. if*
	F	1.25 *»*	C.?i ***	i.".S ttt

1 - Link Distance
2 - Peak HR Volume (DHV)
3 - ADT
4 - Vehicle niles/day
5 - T Patio

TOWNSHIP OF OLD BRIDGE
TRAFFIC DATA ANALYSIS - FULL DEVELOPMENT

YEAR	CODE	Throckmorton Z'.l.'i- <•'•	Bushnell 308.785 •••	Ferry Rd. •Q-. ;C5 ••»
i-.--2. a*	1. 2. 3. 4.	f.55 ttt t''~5. -•»» 5472. *** i'fii. »••• f.t'S »»•	< 7[C] «.• i:-5. *-»• iJtV. »»' 825. *** 0.42 ***	e.ii **t ;2426. '*** 331. •»*
2020. ***	1. 2. 3. 4. 5.	6.55»** !£i''. *»* 2733. «»v 5553. *«•* 1.22 ***	f.35 «*> 54 iT. »•> 1256. *** 0.97 ***	C.-C|H 71231 t*** 1238. *** 1.75 *M
		Owens Road 314.315 ***	Gaub Road 713.31! **»	Ferry Road
1990. ***	i. 2. 3. 4. 5.	3.To *»v 161. *** 1268. *** T4''. *»* V.27 •»»*	t'.45 *#* 363. *** JCc-t. **t 1375. *** .6.4$ it*	i.O3 »•» 2*6. lit 1578. ***
2626. »»<	1. 2. 3. 4. 5.	f.56 *** . >7i. tit 3876. *** 2225. *** ti.S? »»•	0.45 *** 528. *** 7424. *** 3341. *** 1.16 ***	1.«3 »*« Soi. tit 7651. *** '7f21. t)t 1.-2 *»*

YEAR	CODE	Marsad Road 712.101 ***	Lairbertson Road "li , rt-C- •*»*	Farrinqton Road 407.403 ***
1990. ***	i. 2. 3. 4. 5.	0.50 *** 216. *** 532. *** 0.44 ***	41. »** 338. *** 316. ***	4i.**» 326. *** 2S3. *»t 0.69 ***
J-1.O. tti	1. 2. 3. 4m 5.	0.30 *** 622: *<• 4976. *** '.4i3. tft 1.27 <•*»	f'.c'e' »»<f 437. *** 3494. *** i'306. *t*	0.96 *** 4w?, **•* oi'sS. <«<• iS16. 4»* 0.69 ***
		John Partridge Road 402.407 ***	E. Jake Brown Road 410.204 ***	Disbrow Road 406.415 ***
1990. ***	J. 2. 3. 4. 5.	6.55 »•** IS. ci(364. *u 167. *** >!.O S »».*	0.66 *** >o. «'** tf. *»* t>.MJ.f<»	Jtfl. ttt 1443. *** 4i3. >»» 6.3? »•<
2626. »»»	1. 2. 3. 4. 5.	e.55 .•* 4S3. »»* J*5e. *»» i''5f. m 0.92 ***	O.cs »<#• 231. *** 2246. *** 1528. *** ti.ro «>»	0.32 *** 7-'.?, »t» 55?*. *•. ;5iv. •»« 1.56 ***

1 - Link Distance
2 - Peak HR Vtolixe (DKV)
3 - ADT
•1 - Vehicle miles/day
5 - VC Ratio

TOWNSHIP OF OLD BRIDGE

TRAFFIC DATA ANALYSIS - FULL DEVELOPMENT

YEAR	CODE	Disbrow Road 415.-J7 u.	Spring Valley Road 5f7.3?t **»	Ticetown Road :ü5.5¿4 ▴▴▴
:?:0. ▴▴▴	j.	i. 7c <•>«	J:.i7 «»»	0.52 *r/
	2.	1:5. »•*+	IC3. itt	I2ȯ. 'i*
	7.	1400. ▴▴▴	SI 4. *»»•	IOC:. »»»
	4.	ft'4. !*>•	:'if. »»»	?2P. *«*
	5.	0.34 ▴▴▴	0.21 ▴▴▴	0.27 ▴▴▴
:i:1L' t i l	i.	0.36 ▴▴▴	!'of !!!	2.52 ▴▴▴
	2.	603. ▴▴▴		Si 3. ••*••
	3.	5511. ▴▴▴	45'-5. **T	7546. i»*
	4.	;.°74. •»•«	2J55. »•**	dS37. it*
	5.	1.72 «•«»•	1.14 **»	1.7: »•»•»
		Morganvilie Road V4.^5 ·„	Prest's Mill Road 5d2.5i55 **t	Ticetown Road $3-i.ľi5 *»*
t.'.'c i l l	i.	0.23 tin	ft. It; »v»	i^.35 *»*
	2.	27. ▴▴▴	ii. »"«*	l}i. i-tt
	3.	504. *•»	ť4ȯ. »**	15DȰ. **•
	•».	liė. **»	130. »*<•	54;. MV
	5.	0.:2 •»*	.ė. i; *n	f.33 *»i
lilC. »»«	i.	f.23 «r	C.20 J»f '	e.35 *M
	£.*	t'c'7. •**»•	475. *r*	1:55. »»»
	3.	53"i. '•••	3C"L2. <>*	?;;&. at
	T·	llli. *tf	TeO. »t*	3233. *»«
	5.	1:2$ »»'*	1.00 **••	1.?2 ***

YEAR	CODE	Ticetown Road ZZ'4Z'i •»»»	Ticetown Road 512.702 ▴▴▴	Valley Vale Drive 512.511 ttt
i.·-:?. i*r	1.	F.-i' -1*	6.J" »»*	'?.•>: *»*
	2,	301. ••'	5l32. «**	125. ▴▴▴
	3.	24i:S. *»»	-fic'. »»•	1420. ▴▴▴
	ť*	1p.'2. ll v	cc'3. */•	060. ***
	5.'	P.55 •»*	1.33 »*»	?.37 **«
2C1C<. *»*	1. '	f..42 *'»	O.i." *»*	f.-5 *f«
	I.	:2S2. ***	!"?'. tn	5t\c. •»»
	3.	10256. ▴▴▴	:i>(zz. *•**	4072. **»
	4.	4708. ▴▴▴	lses. i't	if32. *r*
	5.	2.33 ***	2.6"o *•«	1.«2 *^»
		Ticetown Road 50?.512 ,.*	Valley Vale Drive 5:2.513 m	Norman Lane 510. ft? »J»
:'•:'. " .(i ·	1.		f.42 »»*•	r.3." 111
	2.	3J1. »»<	i?2. »>•	t"3. #n
	3.	24JS. *•*	fiť. •«»	S£i. '*,*
	J.	^re. **>	7J3. <**	2?-i. <*»
	5.	0.52 ▴▴▴	e.z* u,	C.j4 %>i
Icli. •'«	- 1.	0.37 ▴▴▴	0.41 ▴▴▴	*•£ ••*
	1.	1257. ▴▴▴	i'lt". **»	
	3.	10024. ▴▴▴	17-17. •»*	3455. .•'•
	4.	3505. ▴▴▴	774. ▴▴▴	1072. ▴▴▴
	5.	2.51 *»«	0.44 #'•»	0.72 ▴▴▴

1 - Link Distance
2 - Peak KR Volume (DHV)
3 - ADT
4 - Vehicle miles/day
5 - VC Ratio

TOWNSHIP OF OLD BRIDGE

TRAFFIC DATA ANALYSIS - FULL DEVELOPMENT

YEAR	a -	Old Mill Koad st'i.c-..- r>'	Old toll Road if?. c':9 ••»•	Ejneston Road ?07.-11 '•'
[illegible]	1.	i. i 4 ». t	f. I 3 -f»-	t'.Ci*<»
	?	Sf. •>»	[illegible]	t"-i. tit
	V.	[illegible]	[illegible]	[illegible]
	[illegible]	73. *•*	[illegible]	[illegible]))))
	F.•	?. 13 »•*	C.17 t»t	C.?4 •**
2C10. '»•	i.	f.;4 ,<<	i.'.j- vi»	1.6$ >tt
	2.	[illegible]	575. li<	1253. fti
	3.	4T-U. **»	4f?7. *»'	;oc-i. its
	4•	t"3e. »**	55f. »**	$C<2. tn
	5.	!.;e •!••	;.J7 i**	'i?0 .**#
YEAR	CODE	S. Cottrell Road 5C.:41J »**	Morganvilie Road f07.-,tf4 .»»	Schulmeister Road t'C'i. IC5 <•*•
i?:'?. *'•	1.	6.62 ii?	t*.S5 At*	P.4f «*»•
	?.	2v5. •**	[illegible]	2c. <••«
	3.-	[illegible]	[illegible]	f24. t*»
	[illegible]	1414. *»t	3 '. **•	JOS. rrt
	5.	0.4J irt	0.6o ***	f.ee" *«»
2C10. tU	1.	3.62 ttt	f'.So >*•?•,.	?.4S *»*
	2.	1443. si>	537. *»•	fil. ***
	3.	;;5S2. •**	4£>7. t*t	41BC*. tit
	4.	7it'7. **»	2TS1. n*	-t'S6. **»
	;.	2.67 **T	(i.c-6 »«	[illegible]
		Higgins Road 504.40! u»	Erneston Road ti\-.te5 *»*	Old Mill Road £il.21£ ft*
1550. i/(	I.	c. [illegible] •>*	£.5? *<•	C-4C *•»
	£.	75. »»*	?ss. »•**	75. *»«•
	3.	3;£. »»«	756-J. *»'•	t'i4. *»*
	-.	i7o. **t	46*3. *»*	c50. «**
	5.	f.Co «>»	i.51[5] »*»	0. Ji **»•
[illegible]	1.	[illegible]	V'f »I!	>.\jb »»»»
	£.	3?J. *••	[illegible]	[illegible]
	3.	[illegible]	[illegible]	475?. t»f
	4.	£7vo. t»i	54^6.l»*	;?;i. »»*
	5.	"e.78 »n	3.05 »*•	[illegible]

1 - Link Distance
2 - Peak HR Volume (DHV)
3 - ADT
4 - Vehicle miles/day
5 - VC Ratio

TOWNSHIP OF OLD BRIDGE

Traffic Data Analysis - KC DEVELOPMENT

Year	Code*	Road: Oak St. Section: 103/136 Length: 0.60	Road: Birch St. Section: 104/134 Length: 0.88	Road: Maple St. Section: 105/135 Lenath: 0.41
.'?*?. •<»	I.	1.00 •4»	;.00 Hi	1.00 tit
	2.	"rip **•	51. »»«	43. »•*•
	3,	366. m	4'3?. tfi	244, i n
	.'.	21^i t»r	7=3. tf*	1-;. •»f
	5.	0.05 ir»	0.10 rf	8.6? »**
i?.-C. •»*	1.	i.20	l.ii ttt	1.2C *»»
	2'.	jti ...	61. «*t	52. »i*
	3.	432. tit	43i. <*/	413. u i
	4,	»«*	431. ttt	165. ***
	5.	e.ii */»	e.u u»	0.11 <»»
Jt'OO. *u	1.	i.;4 **	1.:4 f*i	1.14 tti
	2.	»«. ***	70. •ft*	5?. a*
	3.	4?2. tit	55S. t»t	471. ttt
	4.	2.C5. »il	4?1. **»	193. ttt
	5.	a.13 l*»	e.i4 ».i	6.12 ttt
illv. »»'	I.	MS **»	MS »**	MS tti
	2.	73. ***	S2. »«»	iS. JK
	3.	5?;. *»*	fr?. **«	555. »»»
	4.	34?. »«t	550. ***	226. tit
	5.	e.;5 ***	0.17 **»	0.14
2020. •»•	1.	M4 •t»	1.14 ***	M4 ttt
	2.	j-3. ***	34. *»*	73. tft
	3.	662. **»	751. *f*	632. ttt
	4.	797. ftt	661. *i<	zei. ttt
	5.	e".i7 t*t	e.i9 »•*	8.16 ttt

Year	Code*	Road: Marlboro Rd. Section: 107/108 Length: 0.20	Road: Marlboro Rd. Section: 108/109 Length: 0.17	Road: Marlboro Rd. Section: 109/112 Lenath: 0.83
i990. «t•	1.	1.05 tit	I.t9 ttt	1.00 **t
	2,	50 fit	Z~. ttt	66. ttt
	3.	44?. itt	504. ttt	544. •»»
	4.	93. tit	So. fit	452.- tti
	i-	e'.ii *>i	e.!7 ttt	C.14 ttr
i*?a. ttt	1.	1.26 **»	1.26 tti	l.li itt
	2.	71. ttt	75. m	U. *tt
	3.	564. ttt	6Z5. ttt	6iZ. ttt
	4.	113. tti	US. ttt	%•}, tit
	c	0.14 ttt	0.1c ttt	C.I7 ttt
2'0OC. ttt	I•	1.'7 if	MS ttt	Mi ttt
	1.	S3. **»	34. ttt	101. ttt
	3.	660. t»r	74S. ttt	SC^. ttt
	4.	132. **»	12". ttt	67]'. »*»
	5.	e.i7 *>*	CIS itt	6.21 til
i(\i. \>t	1.-	:.2C •••	1.21 t,«	1.21 ft-i
	2.	SS. »•»	113. *»*	12~. ti»
	3.	723. it.'	S67. tit	S'i, ,,,
	4.	155. »>>	'.54. ttt	SlV. itt
	5.	e.20 ttt	e.i: ttt	f.2Z »t«
2??2. ttt	1.	S.I ti>	•1.13 ttt	1.1S »»»
	f,	!li. *»»	134. ttt	144. ttt
	3.	a7. »*«	1070. tti	11:5. •*i
	4,	165. • it	If2. ttt	?55. »f»
	5.	&.:3 IT*	&.:~ tit	el2? tt>

''Code

1 - Growth Factor

2 - Peak Hour Volune

3 - Average Daily Traffic (ADT)

4 - Vehicle Miles

5 -"v/C Ratio

TCVv-NSHI? OF CLD 3P.IECE

Traffic Eata Analysis - NO DEVELOPMENT

Year	Code*	Road: Marlboro Rd. Section: 112/117 Lenath: 0.06	Road: Marlboro Rd. Section: 116/117 Lencth: 0.45	Road: Hillsboro Rd. Section: 112/118 Length: 1.45
	:.	J.OP. i»<	1.39 *»•	1.00 tit
	^.	H' it*	12S. ttt	•?2. ttt
1?60. •t t	3.	752. »*»	I$24. •**•	656. *u
	-.	45. ttt	461. l i t	951. *»•
	ç.	a. is t»»	Q.24 r*t	e.ie » t j
	:.	!.IS *t*	1.26 tt$	1.25 •t*
	2.	US. »»J	lil. *t$	1C3. ***
1?5C. •t t	3.	:-4?. **>	125*. ttt	S2?. **•
	4.	5r. If*	531. *tt	USS. ***
	5.	e.2-) **T	8.31 Alt	e.ii ***
	J.	1.18 *«t	1.1? *»*	1.17 ***
	2.	1-fS. **•	IS?. ***	12l?. ***
2000. •t t	3.	:1:9. *»*	1511. *>^»	S5c.
	-.	o7. *»*	679. ***	1391. tit
	ç.	8.29 ***	t.36 ***	S.24 *tl
	i.	1.21 **l	1.20' »**	1.26 tit
	l.	16?. */*	226. *»<	144. ttt
2ni\ *»>	3.	1353. »XH	Ifli. •>i	1151. trt
	4.	SI. m	S!5. **»	1€SS. ttt
	5.	6.35 **«	t.43 **f	e.zs ttt
	1.	:.12 ***	1.17 tti	1.1? tti
	2.	2se. m	265. ***	lt'S. ttt
2Ditf. **•	3.	1556'. tti	2119. i n	1347. m
	4.	Se. $ti	55-). ••r	1953. tit
	5.	8.41 tti	6.50 **»	1.34 >it

Year	Code*	Road: Hillsboro Rd. Section: 118/129 Length: 0.79	Road:Pleasant Valley Section: 109/133" Lenoth: 1.30	Road:Pleasant Valley Section: 133/130 Length: 0.61
	i.	l.iB, ***	l.C'8 **4	1.08 •*»
	2.	67. at	5$. tt*	55. *»i
1980. •t t	3.	536: tit	'eU. ttl	4i'0. ***
	4.	423. ttt	£03. itt	csS. *»»
	:.	e. i3 *:«	M£ tt*	e.n m
	1.	1.25 *•»	1.25 tit	1.24 **»
	2.	64. tit	'3. tti	6S. •!•
1990. •t t	3.	670. * »	5?e. ttt	546. tit
	4.	525.	'54. ttt	333. ***
	Z.	0.1?	e.'.5 ttt	6.1* *rt
	1.	1.1?	1.17 tti	1.1* *»t
	2.	iS.	Vv'• tit	79. *»•
200;;. o<	3.	78*.	(79. tit	673. *«*
	4.	619.	(S2. t't •	3se. ***
	5.	fl.20 •f*Ji	e.i? tit	8.16 *»*
	i•	1.26 rti	1.20 tit	1.19 *t*
	Z.	Hi. »«'	!02. *u	94. »<i
it-it'. >'<	3:	941. »»•	S14. •*•	753. tM
	f•	743. »^i	JCfj. tit	459. »*I
	5.	0.24 »i»	8.21 »•*	C.19 tt*
	* :.	1.1? t»«	i.ir it>	1.16 ttt
	:.	12S. t*%	115. #»•	10?. tn
2026. *»t	J.	liil. ti*	553. »»»	e?4. ttt
	t.	6f?. ttt	123?. »»*	533. tli
	ç.	(.26 »«t	f.24 i»»	0.22 •••

•Code 1 - Growth Factor 4 - Vehicle Miles

2 - Peak Hour Volume 5 -'V/C ratio

3 - Average Daily Traffic iADT)

TOWNSHIP OF OLD BRIDGE

Traffic Data Analysis - NO DEVELOPMENT

Year	Code*	Road: Brookside Ave. Section: 137/138 Length: 0.64	Road: Water Works Rd. Section: 212/213 Length: 0.59	Road: Water Works Rd. Section: 213/214 Length: 0.21
	1.	:.ec tfx	:.C-8 lit	1.V*s tt*
	2.	'77 tit	455. ft	781. >« t
1980. ***	3.	Hi. ttt	3t'4f.. tit	if2}. ttt
	4.	734. ***	214S. tt»	jjIS. »»»
	5.	6.13 ***	e..-ê »»*	1.31 */*
	1.	l.iS **t	l.J? i-tt	J.1? tti
	2.	31. ttt	541. \>t	934. it*
1990. ***	3.	T27. ttt	4J32. ttt	7173. ttt
	4.	4£5. ttt	2555. tit	1569. ***
	5.	e.15 ttt	3.?8 tit	1.5c ***
	I.	i.15 ttt	1.13 tit	i.i; ttt
	2.	104. ttt	f!2. ttt	1046. <M
2000. ***	3.	835. ttt	4S55. tf*	63TD. tti
		535. ttt	2SSS. ttt	1"5S. ***
	5,	C.I7 ttt	1.32 ttt	i.74 t»>
	1.	1.IS ttt	l.lo" tt*	1.16 r.t*
	2.	133. ***	rip. ttt	1214. tit
2t"J0. ***	3.	936. ***	5tTS. ttt	9TC-2 ttt
	4.	fli. ***	3359. ttt	2t3i. ttt
	5.	C.21 • ttt	1.16 Itt	2.02 •*T
	1.	1.15 ***	1.13 ttt	1.12 ttt
	2.	142. ttt	£02". It*	1359. ttt
2020. ***	3.	1134. ttt	6416. tti	1CS74. tti
	4.	726. ttt	37S5. tt*	22S4. fit*
	-.	0.24 ft*	1.34 ttt	2.2*' t*t

Year	Code*	Road: Perrine Rd. Section: 213/216 Lenath: 0.55	Road: Poor Farra Rd. Section: 214/604 Length: 0-38	Road: Cheesequake Rd. Section: 214/215 Length: 0.87
	1.	1.06 ttt	1.CO ttt	1.60 tti
	2.	SIS. ttt	301. ttt	?25. **•
1980. ***	3.	i£24. ttt	248$. ttt	74ib. t*t
	4.	3643. Kl	$15. ttt	643S. ttt
	5.	1.27 ttt	B.6Q ttt	1.16 »*»
	I.	1.25 tti	1.20 ttt	1.25*»*
	2.	1035. ttt	361. ttt	115t". »»*
1990. ***	3.	S2S0. ttt	2890. ttt	ytjf. itt
	4.	4554. ttt	109S. ***	S84S. tt*.
	5.	1.55 ttt	0.72 ***	1.45 •**
	1.	1.12 ttt	1.11 ttt	1.14 ttt
	2.	1155. ttt	401. ttt	1318. ***
2000. ***	3.	5274. ttt	32CJ. ttt	10545. ***
	4.	5100. ttt	1213. -ttt	9174. ***
	5.	1.7S ttt	e.ss ttt	i.65 **>
	1.	1.15 tu	1.13 **•	1.15 ttt
	2.	1333. ttt	453. ***	1516. »»*
2£]?. »'»	3.	18665. ttt	3C24. ttt	13127. ***
	4.	5tC5. »**	13::. »*«	10550. i*»
	5.	2.C5 ttt	0.91 ***	1.89 in
	1.	1.12 *tt	l.n »**	1.14 ***
	2.	14S3. it*	503. **»	1738. tti
:::e. ***	3.	11.-44. ttt	4823. ttt	13S?4. ft
	4.	6563. ***	1.2S. ttt	12(2'. n*
	5.	2.36 tti	i.il ttt	2.If *t>

*Tode

1 - Growth Factor

2 - Peak Hour Voluaie

3 - Average Daily Traffic (A2T)

4 - Vehicle Miles

5 -'V/C Patio

TCo";SHIP OF OLD Ef.IDGE

Traffic Data Analysis - KO DEVELOPMENT

Year	Code*	Road: Matchaponix Rd. Section: 125/126 Length: 0.85	Road: John Wall Rd. Section: 121/125 Lenath: 1.52	Road: Pension Rd. Section: 122/124 Length: 1.17
	i.	i.es,- • it	i.ee >u	1.03 »>«
	2.	J13- ttt	12. •tt	35. ttt
i95?. •••	3.	544;	e.7. *•*	3'.2. tjr
	A.	882. t**	122. **t	36Z. tt*
	0.	6.21 **r	e.ei *•**	(i.i'S *>»
	1.	1.20	1.2S tt*	1.26 **»
	2.	142. *tt	13. ttt	49. ttf
i99?. •••	3.	1f33. tit	1»2. »H	393. »»r
	4.	56"3. tt*	156. *t*	4c;1?. ttt
	5.	e.2£ *»•	e.0S l».'	e.ie ttt
	1.	1.14 tti	1.1b f»».	1.16 ttt
	2.	161. ttt	!5. **t	57. t"
2?0i.-. tt*	3.	1291. ttt	11f. ***	45C. l|r
	4.	16?$.	is:. *««	534. ttt
	5.	6.25 •t*	tl. 93 **»	6.12 ttt
	1.	1.16 **«	J. 15 tti	1.19 m
	2.	IS?. ----	JS. at	6S. <ti
Hi-:, t"	3.	149?. ----	141. tt*	---- ttt
	4.	1273. ...	215. <*t	635. ttt
	5.	6.34 iif	6.1*4 *»*	e.N ttt
	1.	i.;« i>«	i. JO m	1.i* rtt
	2.	213. **«	20. *»*	75. tit
2? 26. »if	3.	ires. *»t	Jt'4. ***	625. ttt
	4.	1452. r*.«	245. ***	7J7. tt'
	5.	9.39 tit	0.04 ttt	e.is m

Year	Code*	Road: Greystone Rd. Section: 131/132 Length: 1.50	Road: Spring Valley Section: 108/111 Length: 0.33	Road: Texas W. Rd. Section: 127/128 Lenath: 0.72
	1.	1.00. ttt	1.00 ttt	I.t'O tit
	2.	125. tt*	35. ttt	IS?. ttt
1960. •••	3.	1600. ttt	t'S3. »>>	1512. tti
	4.	isee. tit	224. •tt	103.?. ftt
	5.	0.21 ttt	P. 17 ttt	0.32 ttt
	1.	1.2S tt*	1.21 ttt	1.26 rtt
	2.	15?. ttt	103. tt*.	227. ttt
;5K. >it	3.	1266. ttt	S23. ttt	1£14. ttt
	4.	1SS0. ttt	2f2* ttt	!30f. ttt
	5.	0.25 ttt	0.21 ttt	0.3f tit
	1.	1.16 ttt	1.15 ttt	1.14 ttt
	2.	174. fit	US. ttt	255. ttt
2to:. ••••*	3.	1352. tit	246. tit	2fc"S. ttt
	4.	283$. tti	212. •••	14?5. ttt
	5.	6.29 itt	0.24 « *	C.43 ttt
	1.	1.19 ttt	1.17 »t»	i. Jo tt*
	2.	207. itt	13S. ttt	380. ft
ci'U. *»'.	3.	if5c". tt':	1197. tit	23?: ttt
	4.	24S5. ttt	3f5. ttt	1i0s• tti
	5.	6.35 tit	6.25 tt*	6.56 tit
	1.	1.1£ ttt	i. i: ttt	I. N tl»
	2.	2»0. ttt	155. ttt	3^2. •ttt
2030. **t	3.	1522. ttt	1273. itt	2735. tti
	4.	2JJ2. t»r	420. ttt	15*?. ttt
	5.	e.4O ttt	0.J2 ttt	6.57 tr»

*Code 1 - Growth Factor
2 - Peak Hour Volume
3 - Average Daily Traffic (ADT)
4 - Vehicle Miles
5 - 'v/C Ratio

TOWNSHIP OF OLD 3P.IDCE

Traffic Data Analysis - N'C DEVELOPMENT

Year	Code*	Road: Red Oak Section: 202/309 Length: 0.36	Road: Trockjnorton La. Section: 302/308 Length: 0.27	Road: Trockmorton Rd. Section-.. 308/313 Lenath: 0.67
;?5C. ti»	1.	1.06, trt	1.60 ttt	1.00 tt*
	2.	2414 ttt	115S. ttt	S5S. tf
	3.	1976. ttt	3264. ttt	6CE4. t»»
	4.	711. tit	2501. ttt	455?. ft*
	i.	8.35 ttt	l.lo ttt	f.t-p tit
:55c. Mt	J.	1.20 ttt	i.lS ttt	l.iS tt*
	2.	2S6. tit	1266. at	1012. ttt
	3.	2371. ttt	10572. ttt	EIC0. itt
	4,	854. ttt	2552. ttt	5-*27. ttt
	[illegible]	6.42 ttt	1.37 ttt	;.oi t».
200C. tt*	j.	1.12 tit	1.12 ttt	1.12 tt.
	2.	332. ttt	1536. at	1134. ttt
	3.	2656. ttt	12243. ttt	3071. tt*
	4.	956. ttt	3306. tt*	6C7S. #•«
	5.	0.47 ttt	1.53 ttt	1.13 ttt
201!?. >*t	1.	1.12 ttt	1.12 ttt	1.12 ttt
	2.	372. ttf	1714. tit	1270. xii
	3.	2574. ttt	17.'12. ttt	WHS. Hi
	4.	1C71. ttt	3762. tti	cJt'7. tt»
	S.	e.53 tit	1.71 tit	1.27 f**
-S2&. *it	1.	1.10 ttt	;.ia .·>.	1.10 ttt
	2.	403. it*'	:$$5. ttt	1357. tt*
	3.	3272. ttt	15384. ttt	111·'C. tt»
	4.	U7S. tti	4073. ttt	74-SS. tit
	S.	8.5$ itt	1.? ^ ttt	;. -J0 tt.

Year	Code*	Road: WaterW.-Boro. Section: 217/210 Length: 0.07	Road: WaterW-Boro. Section: 212/211 Length: 0.13	Road: Jake Brown Rd. Section: 219/312 Length: 0.49
.'??». »*l	1.	1.00 ttt	1.06 tit	1.63 t»t
	2.	211. ttt	415. tt'	34$. *t»
	3.	16S3. ttt	3252. »»«	27S4. tit
	4,	US. ttt	43b. ttt	1264. tit
	5.	C.43 ttt	8.53 ***	C.70 ttt
19-i ttt	1.	1.21 ttt	1.21 lit	[illegible] *«
	2.	255. ttt	507. ttt	-li. t«J
	0.	2042. ttt	405c. ttt	3741. tt>
	4.	143. tti	527. ttt	U17. ttt
	[illegible]	e.52 ttt	1.13 itt	e.st »•*
2i'?i. <**	i.	1.14 rtt	:.14 ttt	1.15 tti
	2.	2?!. ttt	57S. tt*	4f3. ttt
	3.	232S. itt	4c24. ttt	3542. ttt
	4.	1B"3. tit	en. fit	ISf?. <*»
	5.	0.59 itt	1.2S ttt	?.50 ttt
:cio. »i»	1.	1.16 ttt	1.16 r*t	1.15 ttt
	2.	73S. tit	673. tti	[illegible] tit
	3.	2731. ttt	5364, ttt	441^. tir
	4.	1S5. ttt	£S7. ttt	21i5. tit
	L.	0.65 ttt	1.4: tti	1.10 ttt
2028. ttt	1.	1.14 Ut	1.14 ttt	!.15 tt*
	2.	355. tti	7B"4. tit	o'35. ttt
	3.	3075. ttt	6114. tit	5051. ttt
	f.	216. tti	795. ttt	2450. tti
	5.	£.79 ttt	1.70 ttt	1.27 itt

•Code
1 - Growth Factor
2 - Peak Hour Volume
3 - Average Daily Traffic (ADT)
4 - Vehicle Miles
5 -'v/C Ratio

TOWNSHIP OF OLD BRIDGE

Traffic Data Analysis - ,JC DEVELOPMENT

Year	Code*	Road: Trockmorton La. Section: 313/314 Length: 0.55	Road: Owens Rd. Section: 314/315 Lenath: 0-58	Road: Bushnell Rd. Section: 308/309 Length: 0.35
1990. ***	1.	i.ye •if	1.18 tit	Lit tf
	2.	67? ti*	Hi. nt	2?5. «»»
	3.	5432. ttt	!2??. *»*	2350. ttt
	4.	29S3. tu	747. ttt	82B'. ttt.
	5.	0.63 ttt	0.27 ft*	0.42 ttt
1990. ***	1.	l.lS trt	1.13 ttt	1.2ti lit
	2.	S01. t»*	190. tit	354. tfr
	3.	f410. tit	152ÿ. tn	2SZ2. ttt
	4.	3525. ttt	8S2. U»	5S1. ttt
	5.	0.S0 tt*	0.32 ***	0.51 ?**
^t'V'j. »'l	1.	1.12 ttt	1.12 »t»	1.15 ft*
	2.	S57. tt*	213. ***	4«7. ttt
	3.	717?. ttt	17C2. »»*	3257. ttt
	4.	3S4S. ttt	SS7. ***	Ii40. ttt
	5.	0.50 ttt	8.35 **»	0.53 ttt
Zfl0. **•	1.	1.12 ttt	1.12 %ti	1.15 ttt
	2.	J6i?r. ftt	238. ttt	46S. ttt
	3.	8840. ttt	l?B6. ttt	3745. Jttt
	4.	4422. ttt	im. ttt	1311. ttt
	5.	1.01 ttt	e.46 ttt	i.67 ttt
2020. ***	1.	i.ie ttt	i.n ttt	1.13 ttt
	2.	1106. ttt	262. ttt	525. ttt
	3.	8S44. ttt	20J7. ttt	4232. ttt
	4.	486*4. tit	122S. tu	1431. ttt
	5.	1.11 in	8.4-! ttt	0.7»' tit

Year	Code*	Road: Gflub Rd. Section: 313/311 Length: 0.45	Road: Ferry Kd. Section: 304/305 Lenath: 0.18	Road: Ferry Rd. Section: 305/106 Lenath: 1-03
;?SC *»*	1.	1.66 t*t	1.00 ttt	i.W ttt
	2.	3S3 ttt	23S. tit	240. «»»
	3.	3064 ***	1840. ttt	i?2e. tu
	4.	1379. ttt	331. ttt	157S. ***
	5.	e.4S ttt	0.46' ttt	3.48 **<
1990. ***	1.	l.i? ttt	1.21 ttt	1.25 ttt
	2.	45B". tt*	2SS. tt*	360. ***
	3.	3646. ttt	23m. ttt	2400. ttt
	4.	1641. ttt	414. ttt	2472. ttt
	5.	0.57 ttt	e.5? ttt	e.Se ttt
2000. ft*	1.	1.12 t»*	2.15 ttl	1.15 ttt
	2.	510. ttt	342. tt*	357. t»f
	3.	40?4. tit	2737. tt*	285é. ttt
	4.	1838. »»*	453.' tt*	2542. ttt
	5.	0.6*4 ttt	0.c"S (tt	0.71 tu
iCiO. »>•	1.	1.12 ttt	1.25 tt*	1.15 %tt
	2.	572. ttt	407. tu	425. ttt
	3.	4574. tt*	3257. *i»	3359. fit
	4.	2C5S. ttt	58e'. tt*	3501. tt*
	5.	e.~i '*»	e.f: ttt	6.S5 ttt
2020. ***	1.	1.1: M<	1.15 ttt	1.15 tit
	2.	640. ttt	434. tt>	506. ttt
	3.	5123. tt*	367c". ttt	4f44. ttt
	4.	2305. ttt	6'53. ttt	4JS6. ttt
	5.	0.S? ttt	0.57 ttt	l.'ei tit

•Code

1 - Growth Factor

2 - Peak Hour Volume

3 - Avc: sge Daily Traffic (ADT)

4 - Vehicle Miles

5 -'v/C Ratio

TUWNSHI? CF OLD BRIDGE

Traffic Sata Analysis - NO DEVELOPMENT

Year	Code*	Road: Old Amboy Rd. Section: 305/307 Lencth: 0.66	Road: Spring Valley Section: 306/307 Lencth: 0.08	Road:Spring Valley Section: 307/110 Length: 0.45
1986. ttt	1.	Lie i»»	1.03 *t»	1.80 *»»
	2.	1Z. tit	56. »»»	52. ttt
	3.	256. tit	464. #..	4i6. ttt
	4.	165. »*.	jr. ttt	1ST. ***
	5.	e.e? »J1	8.13 tt*	0.12 tti
1990. ttt	1.	1.21 ttt	1.25 ttt	1.25 **»
	2.	35. tti	70. itt	»5. ***
	3.	310. u«	5se. ttt	520. ttt
	4.	204. ***	46. tti	234. tt*.
	5.	8.13 m	8.16 ttt	8.14 ttt
2000. ttt	1.	1.IS **»	1.15 ttt	1.19 tit
	2.	46. ttt	S6. ttt	77. tti
	3.	266. ***	650. *t*	619. tit
	4.	241. it*	55. t*»	278. ttt
	5.	8.11 it*	0.15 itt	6.17 tti
4t"jo. <»»»	1.	1.18 *t*	1.1? ttt	1.15 ttt
	2.	5-i.	133. ttt	52. ttt
	3.	431. ttt	£21. ttt	726. ttt
	4.	2SZ. ttt	66. ttt	331. ttt
	5.	8.13 ttt	8.23 tt*	8.28 ttt
2S21U- ttt	1.	l.ir ttt	1.18 ttt	1.1$ ttt
	2.	63. ttt	121. ttt	189. tit
	3.	505. ttt	369. ttt	869. ttt
	4.	333. ttt	78. tit	391. itt
	5.	8.16" ttt	8.27 ttt	8.24 ttt

Year	Code*	Road: Southwood Rd. Section: 317/102 Length: 1.70	Road: Old Matawan Rd. Section: 318/319 Length: 0.18	Road: Old Matawan Rd. Section: 319/141 Length: 0.16
1990. ttt	1.	1.68 *t*	1.00 tif	1.03 ttt
	2.	138 ttt	550. ttt	654. ttt
	3.	1040. ttt	44*8. itt	5232. tt*
	4.	1768. ttt	752. ttt	837. ttt
	5.	8.26 ttt	8.76 ttt	8.S3 ttt
1992. tit	1.	1.15 ttt	1.22 tit	1.22 ttt
	2.	150. m	£71. tit	79S. ttt
	3.	1156. ttt	5366. ttt	6ZS3. tt*
	4.	2033. m	966. ttt	1021. tit
	5.	6.33 *»»	e.93 ttt	1.10 tit
2000. tt*	1.	1.13 ttt	1.14 ttt	1.14 tit
	2.	164. ttt	765. *it	?10. tit
	3.	1116. ttt	6129. ttt	7277. tit
	4.	2237. t»«	1162.- ttt	1164. ttt
	5.	0.33 ttt	1.66 ttt	1.25 ttt
2iii. *'»	1.	1.10 t»+	1.14 ttt	1.14 tit
	2.	131. *>»	S72. tit	1C37. ttt
	3.	1447. tit	6576. *«	£255. itt
	4.	2466. »*»	1256. ttt	1327. ttt
	5.	0.56 iti	1.28 ttt	1.43 tit
2C26. •»*<	1.	I.:P «»*	1.13 tti	1.13 ttt
	2.	155. ttt	5Sf. tn	1172. tt*
	3.	1552. ttt	?£J. ttt	5374. ttt
	4.	2706. ttt	141.-. ttt	1588. ttt
	5.	0.4M tit	1.36 t»i	1.62 ttt

•Code

1 - Growth Factor

2 - Peak Hour Volume

3 - Average Daily Traffic (ADT)

4 - Vehicle Miles

5 -'V/C Ratio

TOWNSHIP OF CLQ BRIDGE

'fraffic Data Analysis - NC DEVELOPMENT

Year	Code*	Road: Marsad Section: 31S/101 Lenath: 0.30	Road: John Partridge Section: 402/407 Length: 0.S5	Road: John Partridge Section: 407/406 Length: 0.66
'.9c-:. *tt	;.	1.08 *ti	;£•<} tit	1.86 ***
	2.	213. tit	3c. ttt	41.. **»
	".	1744. tit	304. ttt	32t\ »»t
	-.	523. til	167. ttt	216.. t.t.t.
	s.	6.44 ttt	8.US ttt	e.es itt
;?.'c. •»*	j.	1.22 itt	1.2$ ttt	1.2$ ttt
	2..	2DO. ttt	4$. ttt	52. ttt
	3.	2i2S. ttt	33S. ttt	426.. ift.
	4.	63S. tti	214. ttt	277. itt
	?.	6.54 ttt	8.16 ttt	6.11 tti
2ii~C. **	J.	1.12 ttt	1.21 ttt	1.2: tti
	2.	2-?S. ttt	59. ***	6*. ftt
	3,	23S3. ttt	471. ttt	56S. ti;
	J.	715. ttt	259. ttt	375. ttt
	9.	e.e'l ttt	8.12 ttt	6.13 ttt
2tlO, <»»	i.	1.12 ttt	1.21 ttt	1.21 ttt
	2.	334. ttt	71. ttt	77. itt
	3.	2e'e'5. ttt	570. itt	615.. tti
	4.	.881. ttt	313. ttt	486, ttt
	t.	6.6S ttt	8.15 ttt	8.16 ttt
2C2P. *r»	1.	1.13 ttt	1.19 ttt	1.19 tti
	2.	377. ttt	S5. tti	91. t*i
	3.	3816. ttt	€76. ttt	731.. ttt
	4.	98Z. ttt	373. *tt	433. ttt
	5.	0.?' ttt	8.17 ttt	6.1? ttf

Year	Code*	Road: Jake Brown Section: 410/204 Length: 0.68	Road: Farrington Rd. Section: 407/408 Lenath: 0.86	Road: Disbrow Rd. Section: 406/415 Length: 0.32
;?sc.»)'	1.	1.30/ tit	1.06 ttt	l.ti ttt
	2.	12. ttt	41. ttt	181. tti
	3.	5c. tit	32f. ttt	1448. tit
	4.	65. ttt	2S2. tit	40+. til
	c.	8.03 ttt	8.89 ttt	0.3S tti
l.55i. *»»	1.	1.25 ttt	1.25 ttt	i.2r tit
	2.	15. ttt	51. ttt	230. ttt
	3.	120. ttt	410. itt	1S3?. tti
	4.	82. ttt	353. ttt	53S. ttt
	J.	0.04 ttt	e.n itt	8.4S ttt
2Cyti. '•'	i.	1.22 *•»	i.i? ttt	1.1? ttt
	2.	16. ttt	el. ttt	274. ttt
	2.	Ho". tit	4SS. .ttt	21S6. ttt.
	4.	180. tti	420. ttt	706. tit
	5.	8.05 tu	8.13 ttt	e.5r tti
2019. •••	1.	1.22 tu	1.1? ttt	I'.I? n*
	2.	22. ttt	?3. tu	32f. tu
	3.	173. tti	551. Hi	2604. ttt
	i,	121. tti	4??. tti	,S33. ttt
	e.	8.66 itt	8.16" tit	6.6S ttt
202i. at	1.	l.ir ft	1.16 tit	1.13 tt*
	£.	26". ttt	86. ttt	354. ttt
	3.	28?. ttt	6S5. ttt	3873. tit
	4.	142. Hi	5? i. ttt	963. tit
	5.	8.67 fit	0.1? lit	0.t'0 tit

•Code

1 - Growth Factor

2 - Peak Hour Volume

3 - Average Daily Traffic (ADT)

4 - Vehicle Miles

5 -'V/C Ratio

TOWNSHIP OF CLD BPIDGE

Traffic Data Analysis - *xc* DEVELGP.KENT

Year	Code*	Road: Pres't. Mill Section: 502/505 Length: 0.20		Road; Ticetovn Rd. Section: 506/504 Length: 0.92		Road: Ticetown Rd. Section: 504/505 Length: 0.35	
;5sc. * i *	1.	1.00	ttt	1.80	ttt	1.08	ttt
	2.	81.	tti	126.	tit	196.	ttt
	.3.	648.	ttt	1888.	ttt	1568.	ttt
	4.	138.	ttt	927.	ttt	549.	ttt
	5_	CIS	itt	Y.z'i	tit	e.33	ttt
153C. m	I. '	1.30	ttt	1.3f	itt	1.30	tti
	2.	105.	tti	164.	ttt	255.	tit
	3.	S42.	tti	I?30.	ttt	2838.	ttt
	4.	16S.	ttt	1286.	ttt	713.	ttt
	5.	8.23	ttt	0.36	ttt	8.42	ttt
2C00. «»	1.	1.24	ttt	1.22	Sti	1.22	ttt
	2.	131.	tit	2?8.	tti	311.	ttt
	5.	1845.	ttt	1533.	tit	24S7.	ttt
	•1.	20S.	ttt	1471.	ttt	676.	tti
	5.	8.23	ttt	8.36	ttt	0.52	ttt
itU0. »**	1.	1.24	ttt	1.22	ttt	1.22	ttt
	2.	162.	ttt	244.	tti	375.	tit
	0.	12S5.	ttt	1350.	ttt	3034.	ttt
	t»	259.	ttt	1734.	ttt	1062.	tti
	5.	e.Z6	tti	0.44	ttt	e.63	* «
2tl?0. «r	1.	1.20	tti	I.JS	ttt	1.19	***
	2*	1S4.	ttt	250.	ttt	451.	**«
	3.	1554.	ttt	£321.	ttt	361e.	t*t
	4.	311.	ttt	2135.	ttt	1264.	ttt
	6.	0.43	ttt	0.53	itt	8.75	*»«

Year	Code*	Road: Disbrow Rd. Section: 415/417 Length: 0.36		Road: Morganville Rd. Section: 404/405 Length: °-23		Road: Spring Valley Sections 503/306 Lengthi °-87	
;?S0. *««	I.	1.00	ttt	1.00	ttt	1.00	*tf
	2.	175.	ttt	63.	tit	103.	***
	3.	1403.'	ttt	584.	ttt	224.	ttt
	4.	584.	ttt	lie.	itt	717.	ttt
	5.	8.34	ttt	8.12	ttt	8.21	ttt
i?SC. »»«	1.	1.27	ttt	1.27	ttt	1.23	ttt
	2.	222.	ttt	88.	ttt	133.	tit
	3.	1778.	ttt	£40.	ttt	1063.	ttt
	4.	648.	ttt	147.	ttt	325.	ttt
	5.	8.43	ttt	8.15	ttt	8.27	ttt
zeac. «*<	1.	1.21	ttt	1.21	tit	1.21	ttt
	2.	269.	ttt	97.	ttt	161.	ttt
	3.	2151.	ttt	774.	ttt	12S6.	ttt
	4.	774.	ttt	I7S.	ttt	1115.	ttt
	5.	3.52	ttt	8.1?	ttt	8.32	ttt
2P10. H*	1.	1.21	ttt	1.21	ttt	1.Z1	itt
	2.	325.	ttt	117.	ttt	155.	ttt
	3.	2633.	ttt	937.	itt	1556.	ttt
	4.	937.	ttt	216.	ttt	1354.	ttt
	5.	8.63	ttt	6.23	ttt	8.35	ttt
2030. ***	I.	1.1?	ttt	J.I?	ttt	1.19	tti
	2.	3S7.	ttt	133.	ttt	231.	ttt
	3.	3898.	ttt	1115.	ttt	1852.	ttt
	4.	J1J5.	ttt	256.	ttt	1611.	ttt
	5.	8.74	tit	8.27	ttt	0.4e	tit

•Code

1 - Growth Factor

2 - Peak Hour Volume

3 - Average Daily Traffic (ADT)

4 - Vehicle Miles

5 -'v/C Ratio

rov.i.-SHIF CF *ZLZ* BRIDGE

Traffic :ata Analysis - No DEVELOPMENT

'ear	Code*	Road: Cottrel Rd. Section: 509/411 Length: 0.62	Road: Hiejins ! i. Section: iO4/4(1 Length:).89	Road: Morganville Rii Section: 507/404 Length: 0.B8
.'5t0. »**	1.	1.06 »»»	1.00 tit	1.00 ttt
	2.	2?5. ttt	35. tti	53. ttt
	3.	22SB. ttt	312. ttt	424. itt
	4.	1414. ttt	27S. ttt	373, ttt
	5.	0.4J tit	8.08 ttt	0.0S ttt
/:.^L-. ***	1.	1.30 ttt	1.25 ttt	1.26" ttt
	2.	371. ttt	49. ttt	67. ttt
	3.	2564. ttt	39C. ttt	534. tit
	4.	1£3S. ttt	347. m	470. ttt
	5.	0.53 tt*	0.10 tit	B.U ttt
2i?6. ttt	1.	1.20 ttt	1.19 ttt	1.21 ttt
	2.	445. ***	58. ttt	SI. tti
	3.	3557. ttt	*64. ttt	646. ttt
	4.	2265. ttt	413. ttt	569. ttt
	5.	8.64 ttt	0.12 ttt	6.13 ttt
ZilO. tu	1.	1.20 ttt	1.15 ttt	1.21 ttt
	2.	534. ttt	69. ttt	58. ttt
	3.	4268. ttt	552. ttt	782. ttt
	4.	2646'. ttt	452. tti	6SS. ttt
	5.	6.76 ttt	0.14 ttt	e.i6 ttt
2020. ttt	1.	1.1S ttt	1.18 fit	1.19 tt*.
	2.	638. tti	81. ttt	lie. ttt
	3.	5036. ttt	652. tit	531. ttt
	4.	3123. ttt	580. ttt	£!•>. ttt
	5.	0.50 tti	0.1B ttt	6.19 tit

'ear	Code*	Road: Erneston Rd. Section: 603/605 Length: 0.59	Road: Schu'lmei:ter Section: 601/.05 Length: n.48	Roid: Old Mill Rd. Section: 601/206 Length: 0.40
19 0. ttt	1.	1.30 ttt	1.06 ***	1.00 ttt
	2.	9iS. ttt	28. tit	78. ttt
	3.	7504. ttt:	224. ttt	624. tit
	4.	4663. tit	165. tit	250. ttt
	5.	1.56 ttt	e.SS ttt	0.16 tti
15.-0. ttt	1.	1.21 ttt	1.20 ttt	1.22 ttt
	2.	1155. tt*	34. ttt	55. ttt
	3.	5564. ttt	269. ttt	761. ttt
	4.	5643. ttt	125. ttt	3*5: ttt
	5.	I.SJ itt	0.07 ttt	8.19 ttt
2080. **«	1.	1.18 ttt	1.15 ttt	1.19 ttt
	2.	1411. ttt	40. ttt	113. tti
	3.	112S5. ttt	320. *»*	506. ttt
	4.	6658. tn	154. ttf	262. ttt
	5.	2.14 tti	0.05 ttt	0.23 itt
2CJ'. »>»	1.	MS tit	1.15 ttt	1.19 ttt
	2.	1665. ttt	48. ttt	135. ttt
	3.	13717. ttt	3S1. tit-	1876. itt
	4.	7857. ttt	183. ttt	431. itt
	5.	2.52 itt	0.11 ttt	8.28 ttt
202-'. »«r	1.	1.15 ttt	1.17 ttt	1.16 ttt
	2.	1514. ttt	56. ttt	156\ ttt
	3.	15314. ttt	445. ttt	1251. tti
	4.	5035. tti	214. ttt	500. tti
	5.	2.50 ttt	e.i2 ttt	e.32 tti

*Code

1 - !'rowth Factor

2 - Peak Hour Volume

3 - .'.verage Daily Traffic (ACT)

4 - Vehicle Miles

5 - v/C F itio

TOWNSHIP OF OLD BRIDGE

Traffic Data Analysis - ;jO DEVELOPMENT

Year	Code*	Road: Ticetown Rd. Section: 505/509 Length: 0.42	Road: Ticetown Rd. Section: 509/512 Lenath: 0.39	Road: Ticetown Rd. Section: 512/302 Lenath: 0.17
	I.	!.?3 tit	1.88 ttt	use ttt
	2.	381. ttt	311. ttt	582. ttt
1988. **»	3.	2468*. ttt	"4S6. ttt	4ei6. ttt
	4,	leu. ttt	578. tit	6S3. ttt
	5.	8.55 ttt	0.52 ttt	i.ee ttt
	1.	1.30 ttt	1.30 ttt	i.?e ttt
	2.	3?1. ttt	4S4. ttt	653. itt
1990. ***	3.	3138. t%t	3234. ttt	5221. ttt
	4.	1315. ttt	1261. ttt	ESS. ttt
	5.	8.71 ttt	e.si ttt	1.31 *»*
	1.	1.22 ttt	1.22 ttt	1.22 tit
	2.	477. ttt	493. ttt	755. ttt
2000. ***	3.	3S15. ttt	3346. ttt	£363. tit
	4.	16S4. ttt	1539. ttt	1BS3. ttt
	5.	8.87 ttt	0.59 ttt	1.55 tit
	1.	1.22 ttt	1.22 ttt	1.22 tt*
	2.	532. ttt	6S2. ttt	571. ttt
2010. ***	3.	4659. ttt	4£14. ttt	7771. ttt
	4.	1957. ttt	1S77. ttt	1321. ttt
	5.	1.00 ttt	1.26 ttt	1-54 ttt
	i.	1.19 ttt	l.li ttt	1.15 ttt
	2.	eSS. ttt	716. ***	1156. ttt
2l?20. ttt	3.	5545. ttt	5725. ***	9247. ttt
	4.	2329. ttt	2234. m	1572. ttt
	5.	1.26 ttt	1.43 ttt	2.31 ttt

Year	Code*	Road: Valley Vale Dr. Section: 512/513 Length: 0.42	Road: Valley V.-le Dr. Section: 512/"-13 Length: 0.45	Road: Valley Vale Dr Section: 510/509 Length: 0.31
	1.	1.60 ttt	1.20 ttt	1.88 ttt
	2.	182. ttt	1S5. ttt	S3. ttt
1980. *»*	3.	616. ttt	I486. ttt	664. ttt
	4.	343. ttt	666. tit	286. ttt
	5.	0.28 *»*	8.37 ttt	6.14 m
	1.	1.25 ttt	1.25 tit	1.25 tti
	2.	12S. ttt	231. tt*	106. ttt
list, ttt	3.	1628. ***	1850. ttt	858. m
	4.	425. ttt	633. ttt	263. ttt
	5.	8.26 ttt	8.46 ttt	0.13 4**
	1.	1.15 ttt	1.19 ttt	1.21 ttt
	2.	152. ttt	275. ttt	129. «»
2000. m	3.	1214. ttt	2282. ttt	ie28. ttt
	4.	518. ttt	591. ttt	315. ttt
	5.	8.38 ***	0.55 ttt	6.21 ttt
	1.	1.13 ttt	1.15 ttt	1.21 tit
	2.	I SI. ttt	327. ttt	156. ttt
£PJ?. »•»	3.	1444. ttt	2629. ttt	1244. ttt
	4.	t'87.	1179. ttt	3S6. ttt
	5.	8.36 ***	0.65 ttt	8.26 ttt
	1.	1.15 ttt	1.15 ttt	1.1S ttt
	2.	28S. ttt	377. ttt	1S4. ttt
1S29. at	3.	1661. ttt	3013. ttt	146S. ttt
	4.	S°S. ttt	1355. ttt	455. ttt
	5.	e.42 ttt	8."* ttt	6.31 ttt

•Code

1 - Growth Factor

2 - Peak Hour Volume

3 - Average Daily Traffic (ADT)

4 - Vehicle Miles

5 - V/C Ratio

TOVMSHIP OF OLD BRIDGE

Traffic Data Analysis - NC DEVELOPMENT

Year	Code*	Road: Old Mill Rd. Section: 601/609 Length: 0.14	Road: Old Mill Rd. Section: 609/610 Length: 0.13	Road: Emeston Rd. Section: 603/422 Length: 0.08
	2.	1.60 m	1.00 ttt	1.00 ttt
	2.	65. tit	82. t*t	621. ttt
.'?£•$. *tt	3.	528. ***	664. ttt	496S. ttt
	4.	73. « *	66. ttt	3$7. ttt
	5.	0.13 ttt	0.1? ttt	d.34 ttt
	1.	1.22 ttt	1.22 ttt	1.21 ttt
	2.	79. ttt	ie:. ttt	751. ttt
ii.-C. »'*	3m	634. m	8 lti. ttt	6011. ttt
	4.	69. ttt	105. ttt	48U ttt
	5,	0.16 m	0.21 *«»	.1.14 ttt
	1.	1.26 m	1.20 *»*'	1.13 ttt
	2.	35. ***	122. ttt	SSV.
Jt'Où. »»»	3.	761. *•*	S72. ttt	70*3. tt*
	4.	187. ***	12f. ttt	567. ttt
	5.	0.1? ttt	0.25 ttt	i.:^ ttt
	1.	l.2% *tt	l.ze tit	1.1S tit
	2.	114. ttt	146. ttt	1046. ttt
21-10. !•**	3.	314. ttt	1167. ttt	8370. ttt
	4.	US. ttt	152. ttt	670. ttt
	5.	0.23 *U	0.38 ttt	1.53 ttt
	l.	1.16 ***	1.16 ttt	1.14 ttt
	2.	132. ***	16S. ttt	1153. ttt
2020. *»»	3.	1060. ttt	1353. ttt	5542. ttt
	4.	14fi. ttt	176. tti	763. ttt
	5.	0.27 ***	0.35 ttt	i.ei ttt

•Code

1 - Growth Factor

2 - Peak Hour Volume

3 - Average Daily Traffic (ADT)

4 - Vehicle Miles

5 - V/C Ratio

FACTORS CONSIDERED	EXISTING PROPOSED	ROAD				
		Jake Brown Road (West)	Jak[illegible]own [illegible] ( )	John Partridge Road	[illegible]ll Road	Spr[illegible] Valle[illegible] ( )
Jbad Ler-gch (it.)	Exxst.	2(oo	3600	2880	6000	kizo
	Prop.	icco	3600	2330	8080	4720
Ptad Suriace Condition (1)	Exist.	c-t-e	E	D	D	C
	Prop.	A	B	B	B	B
Awumd Functional Class (2)	Exist.	C	L	C	L	MM
	Proo.	MA	MN	MN	MN	MN
Pavssnsnt Width (ft.) (Total)	Exist.	24-40	–	20	XO	20
	Prop.	63	40	40	40	40
Paved Shoulder Width (Or Parking Lanes)	Exist.	4-10	–	–	–	–
	Prop.	0.0	16	It	\t	16
Average Daily Traffic (Overall Length Average)	Exist.	17?")	96	30<<	•yo	824
	Projected	6350	2246	3196	4096	4546

FACTORS CONSIDERED	EXISTING PBCCEED	ROAD				
		Matchaponix [illegible]	Mimi Road	Morganville Road (East)	Morganville Road (West)	Amboy Road
Boad Length (ft.)	ExUt.	4440	–	lilt?	A720	3480
	Prop.	4440	4640	1120	4720	3480
Foad Surface Cmritricn (1)	Exist.	C	–	B	C	B
	Prop.	B	B	B	B	B
Assumd Functional CLasa (2)	Exist.	MN	–	C	MN	C
	Prop.	MN	C	MN	MH	C
Pavecent Width (ft.) (Total)	Exist.	21	–	20	20	20
	Prop.	40	36	40	40	36
Paved Shoulder Width (Or Parking Lanes)	Exist.	–	–	–	–	–
	Prop.	16	ik	16	16	14
Average Daily Traffic (Overall Length Average)	Exist.	944	–	504	424	256
	Projected	5521	N/c	5338	4297	2984

1) A - Excellent B - Good
C • Fair D - Poor
E - Not Paved

2) Major Arterial = MA Minor Arterial - MM
Collector = C Local - L

Traffic Net Calculated » S/C

FACTORS CONSIDERED	EXISTING PROPOSED	ROAD: Schulmeister Road	South St.	ji	S. cetown	
Road Length (ft.)	Exist.	4530	-	7860	11«|0	
	Prop.	JiDO	16720	7860	\\1%o	
Road Surface Condition (1)	Exist.	£	-	B	C	
	Prop.	B	B	B	/}	
Assumed Functional Class (2)	Exist.	u	-	MN	MN	
	Prop.	MN	MN	MN	m	
Pavement Width (ft.) (Total)	Exist.	-	-	^0	10	
	Prop.	40	^0	40	68	
Paved Shoulder Width (Or Parking Lanes)	Exist.	-	-	16	—	
	Prop.	...	16	.6	20	
Average Daily Traffic (Overall Length Average)	Exist.	224	—	7187	2298	-
	Projected	4166	N/C	.««	9538	

FACTORS CONSIDERED	EXISTING PROPOSED	ROAD: Spring Valley (Central)	Kearney	Lambertson Road	Maple Avenue	Marlboro Road
Road Length (ft.)	Exist.	XkPO	2472	30^0	2140	23ao
	Prop.	2400	2400	8430	1400	2370
Road Surface Condition (1)	Exist.	B	D	C	e	c
	Prop.	B	B	B	B	*
Assumed Functional Class (2)	Exist.	MM	C	c	c	MM
	Prop.	HH	c	MN	wN	MH
Pavement Width (ft.) (Total)	Exist.	20	JO	20	a^	30
	Prop.	40	36	ho	^0	40
Paved Shoulder Width (Or Parking Lanes)	Exist.	-	-	-	2	-
	Prop.	16	14	1.	It	It
Average Daily Traffic (Overall Length Average)	Exist.	440	N/C	328	34-	1024
	Projected	4351	N/C	3494	3312	6869

1) A - Excellent B - Good
C - Fair D - Poor
E - Not Paved

2) Major Arterial - MA Minor Arterial - MN
Collector - C Local - L

Traffic Not Calculated - N/C

FACTORS CONSIDERED	EXISTING PHCPCSED	ROAD: Industrial Road	Brown Road	[illegible] Road	Phillips Drive	Van T5- Road
?Cad Length (ft.)	Exist.	1815	320	–	–	–
	Prop.	2400	320	3600	560	272
Head Surface Condition (1)	Krist.	C	C	–	–	C
	Prop.	B	B	B	B	B
Assumed Functional CUw (2)	Exist.	L	C	–	–	C
	Prop.	C	C	C	C	C
Psvensnt Width (ft.) (Total)	Exist.	30	24	–	–	N/c
	Prop.	36	36	36	36	2G
Paved Shoulder Width (Cr Parking Lanes)	Exist.	6	–	–	–	N/c
	Prop.	14	14	14	14	"t
Average Daily Traffic (Overall Length Average)	Exist.	"/c	163?			N/c
	Projectad	N/c	6c06	N/c	X	N/c

ITCXOBS CONSIDERED	EXISTSX: PICPGSEO	ROAD: Vale	a, rworks Road	Westly S.	Woodland Avenue	Waterworks Road
Road Longtb (ft.)	Exist.	3635	16970	4227	3.(1.0	16980
	Prop.	3635"	16300	4227	6000	15680
Road Surfac* Condition (1)	Exist.	B	etc	C	C	D
	Prop.	B	B	B	B	B
Assumed Fmcricnal Hun (2)	Exist.	C	MN	C	C	C
	Prop.	C	A1N	C	C	MN
Pavement Width (ft.) (Total)	Exist.	36	25+0	20	24+0	24
	Prop.	36	40	36	36	40
Paved Sbouldaor Width (Or ParJciag Ianaa)	Exist.	14	–	–	2	2
	Prop.	14	16	14	14	16
Average Daily Traffic (Overall Length Average)	Exist.	1480	4960	N/c	N/c	33SZ
	Projectad	4072	12055	N/c	N/c	8924

1) A - Excasll^nt   B - Good
C » Fair   D » Poor
E - .Sot Paved

2) Major Arterial - MA   Minor Artarial - MI
Collector - C   Local - L

Traffic Met Calmlatad - N/C

FACTORS CONSIDERED	EXISTING PROPOSED	Sandfield Road	South Wood Drive	Spring Valley Road (West)	Texas Road (West)	Union Hill Road
Road Length (ft.)	Exist.	2200	9000	3600	3800	2280
	Prop.	3690	9000	2280	3900	2840
Road Surface Condition (1)	Exist.	E	B	C + E	O	D
	Prop.	B	B	B	A	B
Assumed Functional Class (2)	Exist.	L	O	L	MA	L
	Prop.	MN	C	MN	MA	MN
Pavement Width (ft.) (Total)	Exist.	–	36	20+0	21	21+0
	Prop.	40	36	40	68	40
Paved Shoulder Width (Or Parking Lanes)	Exist.	–	14	–	–	–
	Prop.	16	14	16	20	16
Average Daily [illegible] (Overall Length Average)	[illegible]	N/C	1040	N/C	15[illegible]	N/C
	[illegible]	N/C	3821	N/C	6192	N/C

FACTORS CONSIDERED	EXISTING PROPOSED	Cindy Street	Cottrell [illegible] (South)	Disbrow M. (East)	Disbrow M. (West)	Farrington Road
Road Length (ft.)	Exist.	12800	3230	1680	1935	4540
	Prop.	12800	3230	1680	1600	4540
Road Surface Condition (1)	Exist.	–	B	C	C	C
	Prop.	B	A	B	B	B
Assumed Functional Class (2)	Exist.	–	MN	C	C	C
	Prop.	C	MA	MN	MA	MN
Pavement Width (ft.) (Total)	Exist.	–	20	20	20	24
	Prop.	36	68	40	40	40
Paved Shoulder Width (Parking Lanes)	Exist.	–	–	–	–	2
	Prop.	14	20	16	16	16
[illegible] Daily (Overall Length Average)	Exist.	–	2230	1400	1448	328
	Projected	N/C	11592	5511	5900	3268

1) [illegible] Excellent B = Good D = Poor

2) [illegible] = MA [illegible] = MN [illegible] lated

FACTORS CONSIDERED	EXISTING PROPOSED	Old Mill 1U.	Owens toad	Pension fU.	Perrine M. (North)	Perrine Ri. (South)
Road Length (ft.)	Exist.	3520	2165	5800	2920	400
	Prop.	3520	2165	5800	2560	400
Surface (1)	Exist.	C	B	C	D	C
	Prop.	B	B	B	A	A
Assumed Functional Class (2)	Exist.	C	C	MN	MN	C
	Prop.	MN	C	MN	MA	MA
Pavement Width (ft.) (Total)	Exist.	20	36	21	25	22
	Prop.	40	36	40	68	68
Paved Shoulder Width (Or Parking Lanes)	Exist.	–	14	–	I	–
	Prop.	16	14	16	20	20
Daily (Overall Length Average)	Exist.	93	1288	312	6624	N/C
	Projected	4597	3836	2433	13138	N/C

FACTORS CONSIDERED	EXISTING PROPOSED	Pleasant Valley toad (Existing)	Pleasant Valley toad (New)	Poor Farm toad	Prest Mill toad	Itobertflville toad
Road Length (ft.)	Exist.	10080	–	2000	1055	3920
	Prop.	5840	4000	2320	5860	4340
Surface (1)	Exist.	O	–	C	Ô	C
	Prop.	B	B	B	B	B
Functional Class (2)	Exist.	MN	–	n	C	MN
	Prop.	MN	MN	MN	MN	MN
Pavement Width (ft.) (Total)	Exist.	20	–	20	36	20
	Prop.	40	40	40	40	40
Paved Shoulder Width (Or Parking Lanes)	Exist.	–	–	–	14	–
	Prop.	16	16	16	16	16
Daily (Overall Length Average)	Exist.	464	–	2409	649	544
	Projected	4936	4901	7485	3802	4550

1) A = Excellent B = Good
C = Fair D = Poor
E = Not Paved

2) Major Arterial = MA Minor Arterial
Collector = C Local

Traffic = V/C

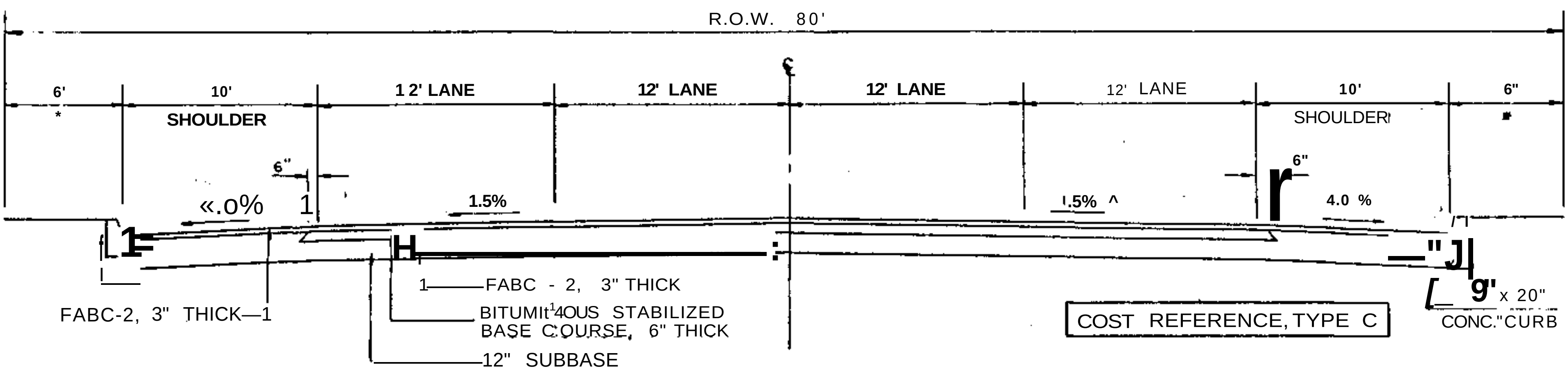
FACTORS CCNSHEHTO	EXISTING PJCPCSED	ROAD: Perry Road	Gaub Road	Greystone Rd (West)	Greystone Rd (East)	Higgins Rd.
Road Length (it.)	Exist.	5420	2370	7900	11820	4680
	Prop.	5400	2370	7900	11360	4240
Road Surface Condition (1)	Exist.	C	B	B	C	D
	Prop.	A	B	B	B	B
Assumed Functional Class (2)	Exist.	MN	C	MN	MN	C
	Prop.	MA	C	MN	MN	MN
Pavetent Width (ft.) (Total)	Exist.	20	36	25	20	20
	Prop.	68	36	40	40	40
Paved Shoulder WiAh (Or Parking Lanes)	Exist.	–	14	3	–	–
	Prop.	20	14	16	16	16
Average Dally Traffic (Overall Length Average)	Exist.	1920	3064	1000	536	312
	Projected	7691	7424	6182	5796	3130

FACTORS CONSIDERED	EXISTING PROPOSED	ROAD: Birch Street	Brookside Avenue	Bushnell Rd.	Cheesequake Road	Cheesequake Runyon Road
Road Length (ft.)	Exist.	4635	3450	1715	4600	–
	Prop.	5635	3450	1715	5440	9600
Road Surface Condition (1)	Exist.	C	B	B	C	–
	Prop.	B	B	B	A	B
Asaxzad runcticnal Class (2)	Exist.	C	C	C	MN	–
	Prop.	C	C	C	MA	MN
Pavement Width (ft.) (Itotal)	Exist.	20	24	30	26	–
	Prop.	36	36	36	68	40
Paved Shoulder Width (Or Parking Lanes)	Exist.	–	-	8	2	–
	Prop.	14	14	14	20	16
Average Dally Traffic (Overall Length Average)	Exist.	408	616	1360	7400	–
	Projected	2880	4021	5417	14930	N/c

1) A - Excellent B = Good
C - Fair D = Poor
E - Not Paved

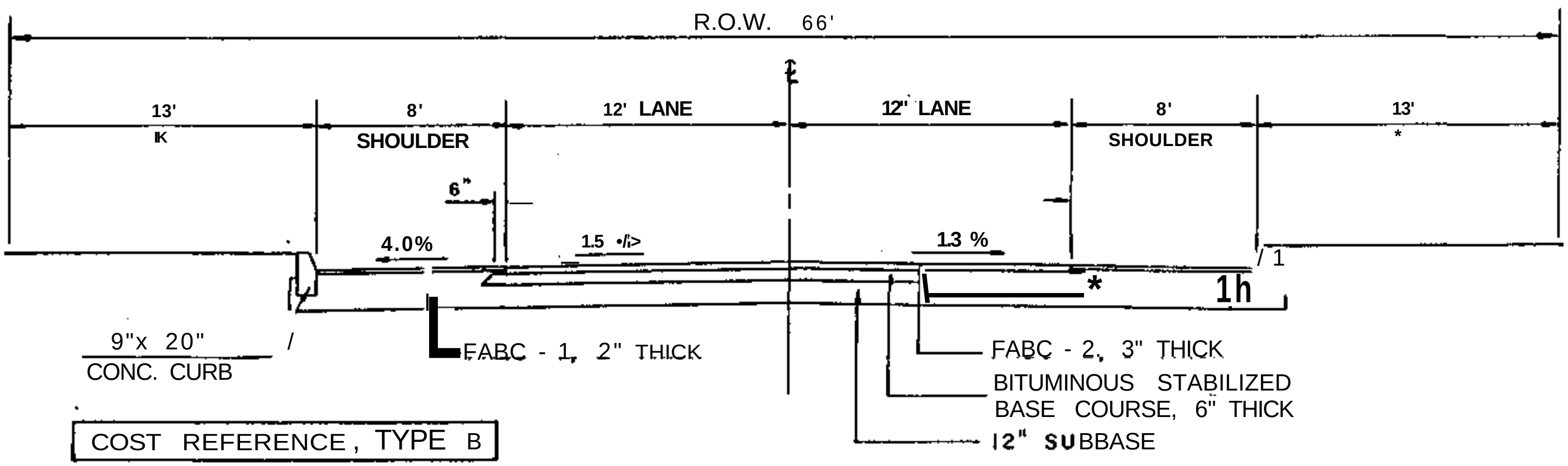
2) Major Arterial - MA Miner Arterial = MN
Collector » C Local - L

Traffic Not Calculated - N/c



MAJOR ARTERIAL ROAD

SCALE • 3/16" = 1.0"



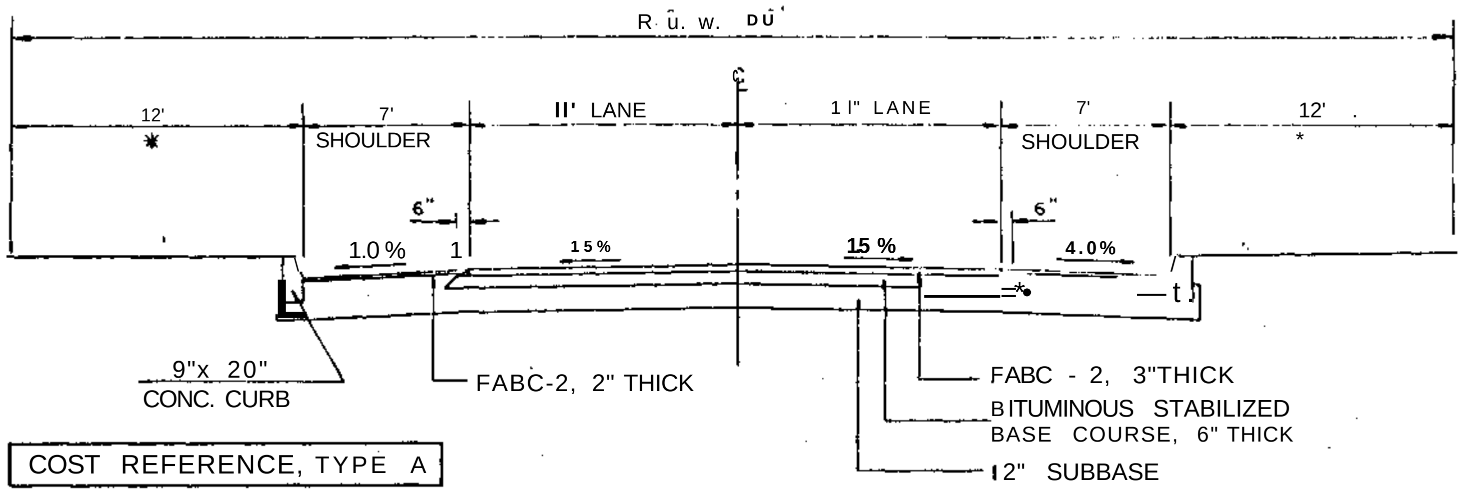
MINOR ARTERIAL ROAD

SCALE • 3/16"= 1.0'

NOTE •

- SIDEWALK **PAVEMENT** OR TOPSOIL AND SEEDING BY OTHERS.

ASSUMED TYPICAL SECTIONS

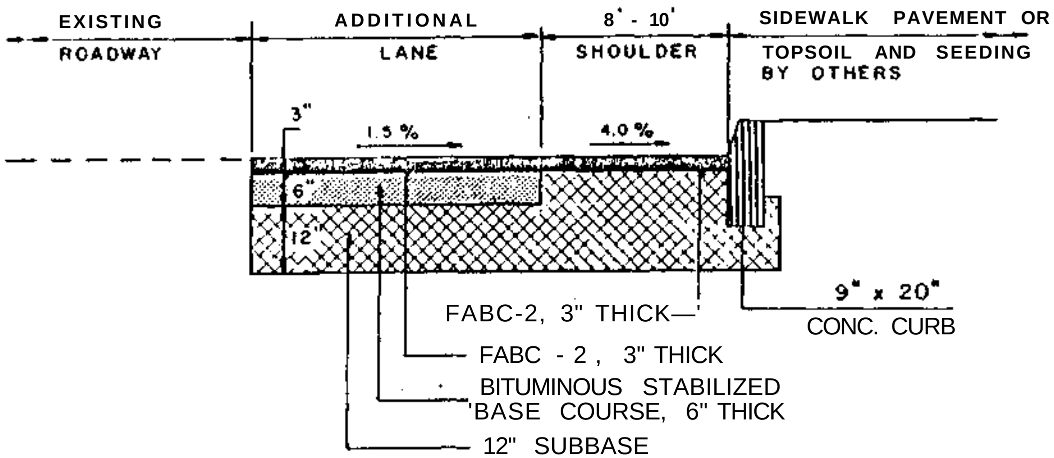


NOTE '

* SIDEWALK PAVEMENT OR
  TOPSOIL AND SEEDING
  BY OTHERS.

COLLECTOR ROAD

SCALE > 3/16" = 1.0'



ROAD WIDENING DETAIL

ASSUMED TYPICAL SECTIONS

APPENDIX 3.3 ROADWAY IMPROVEMENT COSTS

SUMMARY

DISTRICT NO.	IMPROVEMENT COSTS				TOTAL DOLLARS
	INTERSECTIONS	ACCEL/DECEL LANES	MAIN LINES	•DRAINAGE CULVERTS	
I	830,693	8,125	12,654,040	74,658	13,567,516
II	657,524	59,312	4,937,116	-	5,653,952
III	285,660	14,625	1,299,412	-	1,599,697
IV	431,693	-	2,755,774	20,366	3,207,833
V	352,062	9,750	3,588,127	8,367	3,958,306
VI	241,607	47,938	1,600,571	-	1,890,116
VII	17,349	—	1,229,076	-	1,246,425
				TOTAL	31,123,845

* Culverts Under New Roads Only

ALLOCATIONS DISTRICT	DISTRICT NOS.	TOTAL COST DOLLARS
1	I,II,III	20,821,165
2	IV, V, VI	9,056,255
3	VII	1,246,425
	TOTAL	31,123,845

APPENDIX 3.3 ROADWAY IMPROVEMENT COSTS

DISTRICT I

ROAD	IMPROVEMENT COSTS CONSTRUCTION	R.O.W.	TOTAL COST (DOLLARS)
Spring Valley-Pleasant Valley Road	238,317	300,960	539,277
Existing Pleasant Valley Rd.	328,816	-	328,816
Tobertsville Road	254,158	42,240	296,398
yalboro Road	130,625	-	130,625
Mimi Road	421,671	556,800	978,471
Van Tines Road	237,299	326,400	563,699
Texas Vfest Road	426,679	-	426,679
East Greystone Road	832,497	528,000	1,360,497
Vfest Greystone Road	449,946	211,200	661,146
New Pleasant Valley Road	418,100	264,000	682,100
Birch Street	298,278	120,000	418,278
Brookside Avenue	135,851	-	135,851
Maple Street	364,850	205,920	570,770
Union Hill Road	286,397	205,920	492,317
South Street (All Sections Corrtoined)	1,864,726	2,022,240	3,886,966
Matchaponix	240,186	-	240,186
Pension Road	333,928	52,800	386,728
John Wall Road	555,236	-	555,236
TOTAL	$7,817,560	$4,836,480	$12,654,040

APPENDIX .1.3 ROADWAY IMPROVEMENT COSTS
(Continued)

DISTRICT II

ROAD	IMPROVEMENT COSTS CONSTRUCTION	R.O.W.	TOTAL COST (DOLLARS)
Cheesequake Road (50% of Cost)	322,065	147,200	469,265
Poor Farm Road (50% of Cost)	70,775	21,120	91,895
Perrine Road (N.)	304,365	102,400	406,765
Water Works Road	1,529,833	204,800	1,734,633
Water Works/Bordentown Ext.	30,397	-	30,397
Sandfield	384,652	195,360	580,012
Browns Ct.(Rd.)	26,755	-	26,755
Runyon Road	963,302	-	963,302
Kearney Avenue	121,888	48,000	169,888
Jake Brown Extension	464,204	-	464,204
TOTAL	$4,218,236	$718,880	$4,937,116

APPENDIX 3.3 ROADWAY IMPROVEMENT COSTS
(Continued)

DISTRICT III

ROAD	IMPROVEMENT COSTS CONSTRUCTION	R.O.W.	TOTAL COST (DOLLARS)
Spring Valley Central	135,130	—	135,130
Old Amboy Road	155,718	-	155,718
Ferry Road	654,878	332,800	987,678
Bushnell Roac	20,886	-	20,886
TOTAL	$996,612	$332,800	$1,299,412

APPENDIX 3.3 ROADWAY IMPROVEMENT COSTS
(Continued)

DISTRICT IV

ROAD	IMPROVEMENT COSTS CONSTRUCTION	R.O.W.	TOTAL COST (DOLLARS)
John Partridge	162,156	—	162,156
Disbrow East	94,591	-	94,591
Morganville East	128,231	-	128,231
Morjanville Extension	224,570	217,600	442,170
Disbrow West	169,330	213,840	383,170
Lambertson	697,972	665,280	1,363,252
Farrington	182,384	—	182,384
TOTAL	$1,659,054	$1,096,720	$2,755,774

APPENDIX 3.3 ROADWAY IMPROVEMENT COSTS
(Continued)

DISTRICT V

{OAD	IMPROVEMENT COSTS CONSTRUCTION	R.O.W.	TOTAL COST (DOLLARS)
'\ icetc .n Road	1,360,165.	-	1,360,165
Cottrc 11 South	371,547	64,000	435,547
! '.prixi(Valley East	265,754	-	265,754
f'Orgar.yille Vfest	340,079	-	340,079
}iggin•>	345,472	242,880	588,352
:tans Jld Bridge	303,830	294,400	598,230
TOTAL	$2,986,847	$601,280	$3,588,127

APPENDIX 3.3 ROADWAY IMPROVEMENT COSTS (Continued)

DISTRICT VI

ROAD	IMPROVEMENT COSTS CONSTRUCTION	R.O.W.	TOTAL COST (DOLLARS)
Phillips Drive	65,431	86,400	151,831
Schulmeister Road	220,757	63,360	284,117
Jake Brown East	361,238	-	361,238
Perrine Road South	44,035	-	44,035
Old Mill Road	198,190	-	198,190
Chaesequake Road (50% of Cost)	322,065	147,200	469,265
Poor Farm Road (50% of Cost)	70,775	21,120	91,895
TOTAL	$1,282,491	$318,080	$1,600,571

APPENDIX 3.3 ROADWAY IMPROVEMENT COSTS
(Continued)

DISTRICT VII

ROAD	IMPROVEMENT COSTS CONSTRUCTION	R.O.W.	TOTAL COST (DOLLARS)
Woodland Avenue	290,808	—	290,808
Industrial Drive	113,109	66,000	179,109
Parkview Apt. Road	327,159	432,000	759,159
TOTAL	$731,076	$498,000	$1,229,076