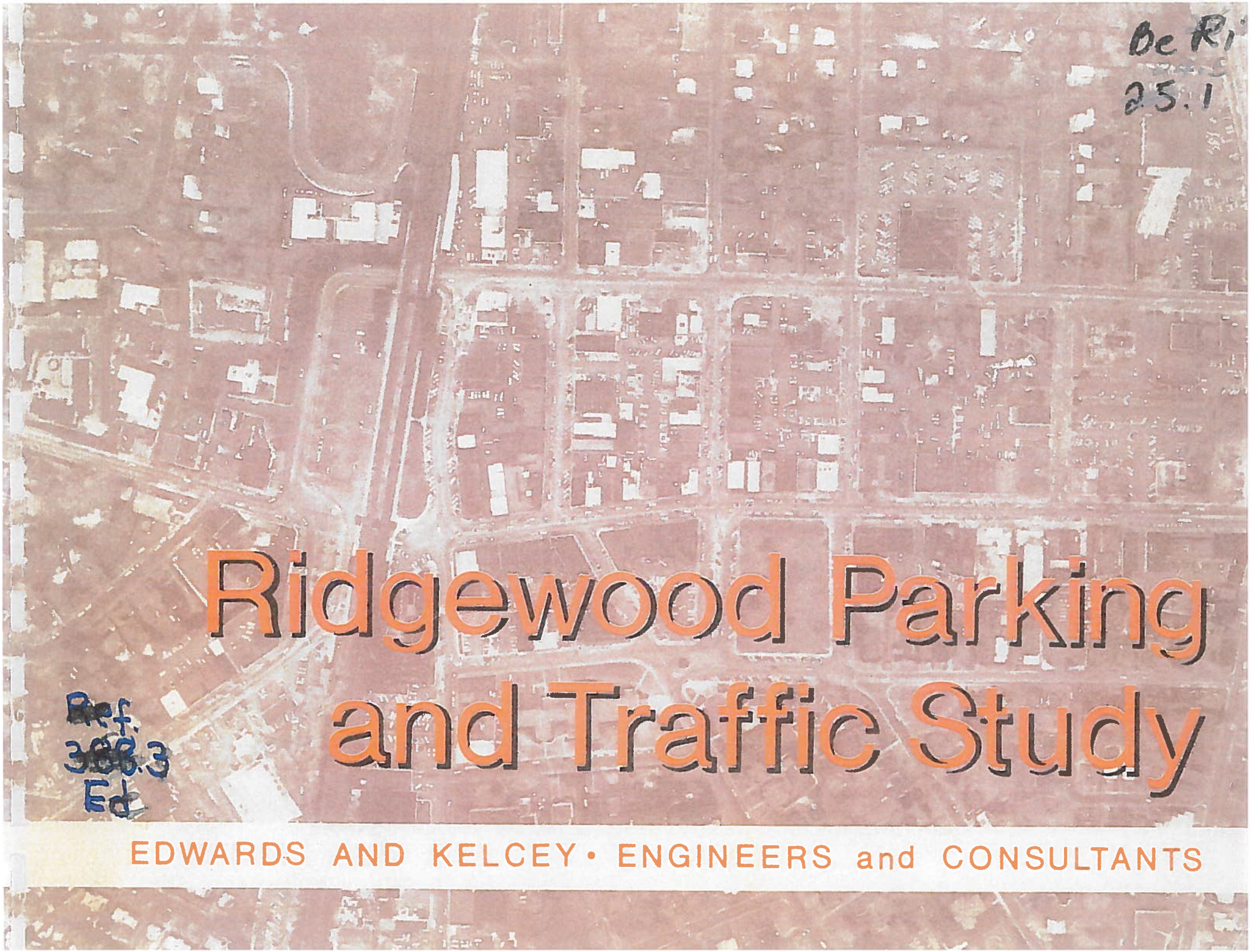

Ridgewood Parking and Traffic Study

EDWARDS AND KELCEY • ENGINEERS and CONSULTANTS

VILLAGE OF RIDGEWOOD
PARKING AND TRAFFIC STUDIES

JUNE, 1971

EDWARDS AND KELCEY • Engineers and Consultants

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June 1, 1971

Mr. John Paulus
Village Manager
Village of Ridgewood
131 North Maple Avenue
Ridgewood, New Jersey 07451

Attention: Mr. Robert Marshall, Director
Department of Public Works

Dear Mr. Paulus:

In accordance with our agreement of October 14, 1969, we are pleased to submit our report on parking and traffic in the Village of Ridgewood. This report contains descriptions of the inventories and surveys conducted and the analyses performed, and presents our conclusions and recommendations.

We believe that implementation of our recommendations will result in parking facilities adequate for the present and predictable future needs of the Central Business District, and will also result in operational improvements providing safe and expedient traffic flow. Both are vital to the welfare of Village residents and visitors.

We are grateful for the assistance received from staff members and residents of the Village in the conduct of this study.

Very truly yours,

EDWARDS AND KELCEY, INC.

Nathan C. Ficklin
Project Engineer

George H. Leland
President

GHL:NCF/lv
Enclosure

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

LIST OF ILLUSTRATIONS

LIST OF ILLUSTRATIONS (Continued)

IP = Improvement Plan

LIST OF TABLES

SUMMARY

SUMMARY

Parking and traffic problems in Ridgewood, most recently described in the 1964 Master Plan Study and the Mayor's Parking Advisory Committee Report of 1968, have become a major concern to the Village. Edwards and Kelcey was engaged in October of 1969 to independently examine these problems, determine present and future needs, and recommend a program of appropriate improvement.

Although the Village has a large number of privately owned customer and employee parking lots, municipally operated parking spaces convenient to the Central Business District (CBD) core were found to be insufficient to meet peak period demands. At present, there are large numbers of long-term parkers effectively pre-empting spaces intended for shoppers. Many of these parkers are "meter-feeding" to avoid citations with the practice most pronounced in the six block business core whose boundaries are the Erie Lackawanna Railroad, Franklin Avenue, Walnut and Hudson Streets. Removal of these violators by strict enforcement to free these parking spaces for shopper use requires the availability of suitable alternate parking facilities. Otherwise such enforcement will succeed only in arousing the ire of the local citizenry. The shortage of parking spaces contributes to traffic congestion and hazards as a result of motorists added travel in searching for parking space. The restriction of a single CBD crossing of the railroad on Franklin Avenue concentrates traffic volumes on Franklin Avenue and contributes to traffic problems. Serious deficiencies in traffic operations were found on East Ridgewood and North Maple Avenues.

Parking improvements recommended as a result of this study include development of four new surface parking lots, primarily as a service to long-term parkers, and construction of a 410 parking space garage on the site of the existing Walnut Street municipal parking lot. In making these proposals, full con-

sideration has been given to the factors of parking demand, design features, traffic impact and economics. Due to the high cost of construction in the New York-New Jersey Metropolitan Area, the garage facility cannot be expected to be self sustaining. As such a facility will benefit shoppers, the business community and the Village as a whole, however, detail design, financing, and construction should be undertaken at once. Various means of subsidies, including establishment of a parking assessment district, and/or "park-'n-shop" operations are recommended to ensure the economic feasibility of this badly needed facility.

Traffic improvements recommended as a result of this study principally involve the development of Franklin Avenue as the major carrier of westbound traffic and East Ridgewood Avenue together with Hudson-Dayton Streets as the major carriers of eastbound traffic. This requires a coordinated system of traffic signals for Franklin and East Ridgewood Avenues. Other proposals include channelization for a number of intersections. These improvements will reduce vehicular and pedestrian hazards and improve the efficiency of traffic flow and are fully eligible for Federal-aid participation in their implementation under the TOPICS (Traffic Operations Program to Increase Capacity and Safety) program. The Village is urged to apply to the State Department of Transportation for assistance.

INTRODUCTION

PURPOSE

Parking and traffic problems in the CBD of the Village of Ridgewood have become a major concern to Village officials and residents. The purpose of this study was to examine these problems, determine present and future needs and recommend a program of improvements appropriate to meet these needs.

BACKGROUND

Ridgewood's CBD is an attractive area of businesses providing high quality goods and services for the surrounding residential area and neighboring communities. It is generally acknowledged to be a local community center rather than a regional one. The maintenance of this business center in a healthy condition is vital to the economic welfare of the entire community. As evidence of this importance, the Mayor's Advisory Committee on Parking reported "--the CBD contributes approximately one million dollars annually in income to the Village." This sum represented 42 points of the Village tax rate structure at the time quoted (1967).

The importance of the CBD to the community and the existence of parking and traffic problems in that area have been acknowledged by all concerned. The problems were particularly evident during the peak period of shopping activity. Shoppers and those seeking business services entering the CBD area at these times currently experience considerable difficulty in locating parking space, particularly one convenient to their destination. For any business center to be successful, the supply of parking in the CBD area must be conveniently located and adequate to meet the demand. Where either one or both characteristics are lacking, as in Ridgewood today, traffic congestion increases as a result of motorists cruising in search of parking space. If not corrected, these conditions eventually can result in potential CBD

patrons going where parking is adequate and conveniently located, or appears so, to satisfy their needs. Highway shopping centers have been successfully designed to meet and satisfy this need.

The Village Master Plan Report of 1964 identified and measured a part of the parking problem and recommended a number of measures designed to relieve, or at least partially solve, the pressure for parking space. The Prospect Street municipal lot, which contributes 58 spaces to the current parking supply, was one of those measures implemented. Most of the remaining recommendations have not been realized.

In April of 1968, a report by the Mayor's Advisory Committee on Parking was submitted to the Village. The Committee concluded a lack of parking spaces for shoppers existed primarily due to employees of CBD businesses parking in municipal spaces intended for shoppers. This finding corroborated those presented in the 1964 Village Master Plan. The Committee also made recommendations intended to provide relief and ultimately solve the problem as they found it. These included establishment of selective parking regulations which would require expenditure of Village funds to insure their effectiveness.

In view of these facts, Edwards and Kelcey were authorized in October of 1969 to conduct an independent and comprehensive study of parking and traffic in Ridgewood which was to result in a defined and appropriate course of action. The study of traffic flow was considered essential to reflect accessability to parking and other CBD circulation needs.

SCOPE OF WORK

The study limits as defined by the Village are shown in Figure 1. These include the CBD, generally corresponding to the area defined in the 1964 Master Plan, and three additional locations outside the CBD. For study purposes, the CBD was subdivided into analysis zones, A, B, and C. For these areas, the following were done:

1. Assembly and review of available, pertinent data from Village files and other sources, including previous parking reports, the Village Master Plan, parking space inventories, parking meter receipt records, land use records, traffic counts, accident records, and records of traffic control devices and regulations.

2. Conduct of parking surveys to measure the present characteristics of parking supply, usage and demand.

3. Conduct of traffic surveys to measure present volumes and patterns of traffic flow.

4. Observation of deficiencies and hazards caused by parking and other traffic operations to result in subjective conclusions regarding their remedy.

5. Summarization and analysis of all assembled data to establish parking and traffic flow characteristics and additional needs of the defined study area.

6. Recommendation of a program to improve parking facilities and traffic controls appropriate for current and future needs.

7. Presentation of all analyses, conclusions and recommendations in a suitably documented report.

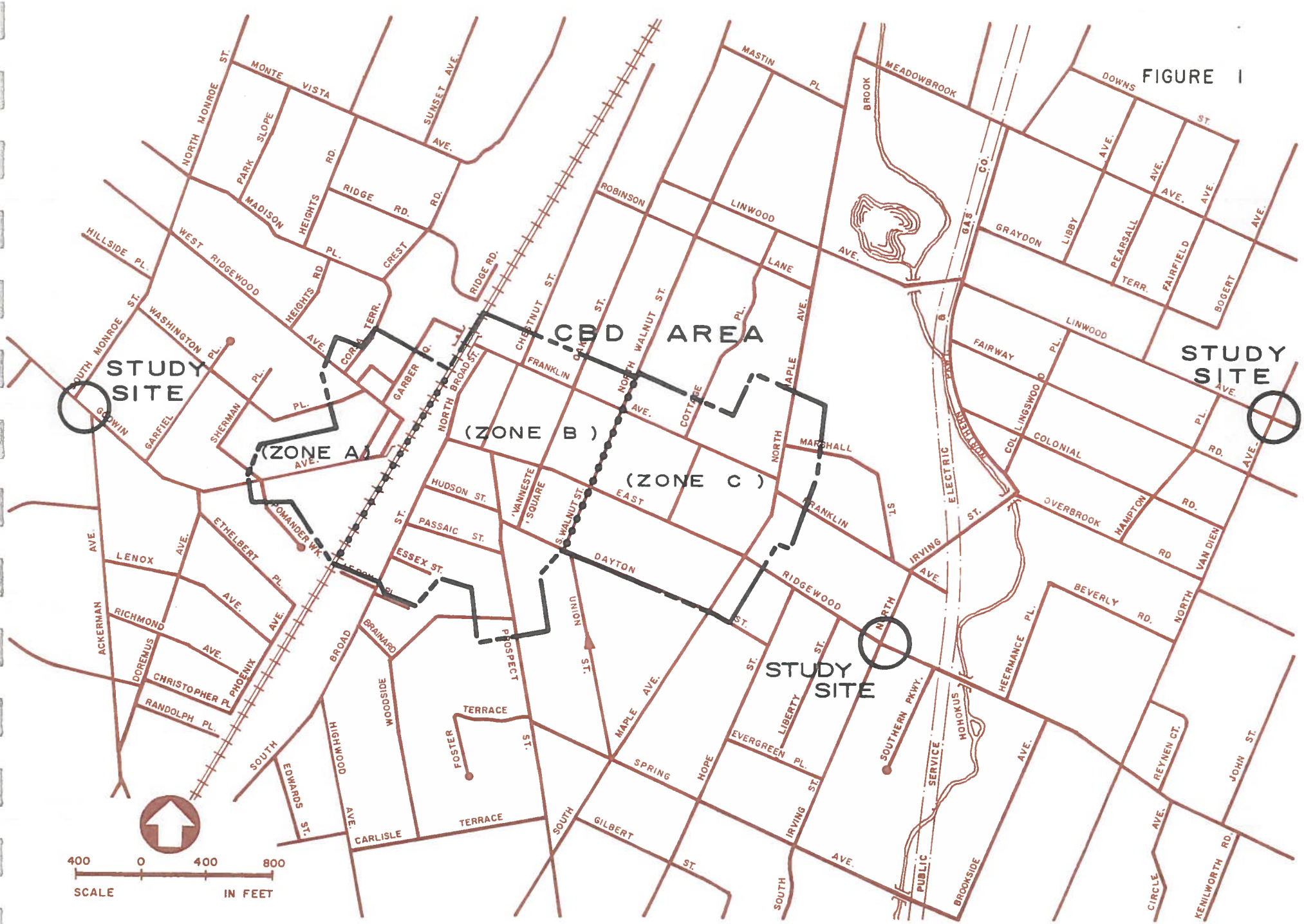
THE AVAILABLE DATA

The Village Master Plan

Adopted in July of 1964, this Plan concluded a more effective parking program was needed in the Village. Surveys of parking usage at that time indicate some 1,990 employees of CBD businesses were parking in the CBD area each day with about 1,700 parked at any given time. Of this total, 458 (27 percent) were believed to be using municipal parking spaces intended for shopper use. The parking demand presented in the Master Plan Report indicated a need for 590 additional parking spaces in the CBD. The provision of those spaces was proposed through better organization of existing private facilities and by establishment of additional municipal parking facilities. The proposed facilities included two new lots, one located between Van Neste Square and Prospect Street, and the second located in an area to the rear of business establishments on the north side of Godwin Avenue west of the Erie Lackawanna Railroad. The first, the Prospect Street lot, has become a reality and provides 58 parking spaces of the municipal supply. The Plan also recommended the establishment of angle parking in additional portions of the Station Plaza lot, and adjustments of parking meter limit regulations. The latter recommendations have yet to be realized.

The Plan also made recommendations relative to specific features of traffic circulation. It recognized a needed additional crossing of the Erie Lackawanna Railroad in the vicinity of the CBD could not be accomplished due to physical limitations. It proposed instead to assist the existing operation by improving the radius of the 90° turn required of all Garber Square traffic at the west end of Franklin Avevue, and by revising the existing traffic signal at Franklin Avenue and North

FIGURE 1



STUDY AREA

Broad Street to expedite the west to south right turn. The radius has apparently been changed, but has not been successful in achieving the desired two lanes of travel around this turn. The signal revision suggestions have not been implemented.

Advisory Committee on Parking

In April 1968, the Mayor's Parking Advisory Committee reported on parking conditions in the Village. This report was based on a parking usage survey conducted in a presumed period of minimum activity, on a November afternoon at 3:00 p.m. The findings of this study, however, indicate the period selected was one of above average parking activity, contrary to the Committee's intent. The Committee also identified the principal parking problem as employees of the CBD businesses competing with shoppers for municipal parking spaces and indicated the area of critical concern to be the several blocks of the CBD immediately east of the railroad.

Their recommendations included provision for employee parking on the fringe of the CBD, re-assessment of zoning ordinance parking requirements, and establishment of parking regulations to restrict use of municipal on-street parking spaces to shoppers. The Committee recommended the Village owned Ridge Road property be developed into a surface parking facility with free parking for commuters. They also, recommended a portion of the Grand Union parking lot be leased for CBD business employee parking as the Committee believed the parking provided by this store for customers and employees was more than ample. A portion of the Co-op store lot on the west side of the railroad was similarly recommended to be leased and used for commuter parking.

Their major recommendation was a parking garage for the CBD area using the air rights over the Ford Motor Company facilities on Franklin Avenue. The Committee concluded, a parking garage in this location could be self-supporting provided it

could be constructed for approximately $1,500 per parking space with all its revenue used for financing. In conjunction with this proposal, the Committee recommended a Parking Commission be formed to supervise all municipal parking.

With regard to traffic circulation, the Committee recommended all vehicular crossings of East Ridgewood Avenue be eliminated by restricting movements from cross street approaches to East Ridgewood Avenue to left or right turns only.

Other Sources of Information

File data from the office of the Village Engineer and other Village departments provided plans of the study area, including existing street and parking facilities, plans of proposed roadway improvements, traffic accident records, parking meter revenue statistics, some traffic volume information, which was supplemented by historical data published by the State Department of Transportation and maps and documents relative to CBD land use and property values. Discussions with the Village Engineer and other Village officials during the course of the study were very helpful in providing insight into existing conditions and the probable acceptance of various improvements by the community.

PARKING STUDIES

RECONNAISSANCE

Although specific parking survey data can indicate many parking characteristics and problems, some facts can only be obtained by field observations of parking activity. Throughout the fall of 1969, Edwards and Kelcey personnel were in the Ridgewood CBD and observed parking practices and activities. These observations were most useful during the analysis phase of the study and their value is illustrated by the following examples:

- Observations of parking practices in the CBD indicated considerable and consistent visible enforcement against illegal and indicated overtime parking by both officer presence and ticketed vehicles. Analysis of actual usage survey data revealed an absence of enforcement against "meter-feeding". Despite police activities, consistent double parking was observed at the west curb of Chestnut Street between East Ridgewood and Franklin Avenues. Most observed double parking was by trucks performing loading and unloading operations.

- The insufficient length of marked parallel spaces along East Ridgewood Avenue were observed to cause motorists difficulty in parking or unparking.

- The narrowness of angle parking stalls were observed to result in some stalls being unusable, due to adjacent parked vehicles, resulting in an apparent and false indication of available parking space. Angle parking stalls located on several streets were also observed to create hazards to passing motorists when parkers back their vehicles into the flow of traffic.

- Cars parking on the north side of East Ridgewood Avenue between Maple Avenue and Hope Street present additional and unnecessary hazard to passing motorists, and severely limit capacity.

- Signs directing shoppers to public lots were not of standard design. No signs were used to direct parkers to various, private customer lots.

- Marked parking stalls adjacent to crosswalks were observed in several instances. This practice increases hazards to crossing pedestrians by limiting sight distance.

- Observations of Saturday afternoon parking indicated parking problems on an average weekday are more severe. Evening shopper parking activities on Monday and Thursday were not observed to present the problems of the average weekday.

PARKING SUPPLY

Each block of the CBD study area was assigned an identification number for purposes of data collection, identification and analysis. Each individual block curb face and each off-street parking facility, public or private, of the 29 blocks so identified were also assigned identification numbers. Figure 2, "Parking Supply," illustrates the extent of the parking study and the identification system used.

For analysis purposes, the business district parking supply was divided into the three analysis zones shown in Figure 1. Observation indicated the study area west of the Erie Lackawanna Railroad had different parking characteristics than the study area east of the tracks. This latter area was divided into two parts, the core area of the CBD located between Broad Street and Walnut Street, and the remainder of the CBD area east of Walnut Street. Table 1 lists the total available parking spaces by these zones as determined from detailed field investigation,which were subsequently verified with aerial photography. A detailed

FIGURE 2

LEGEND

MUNICIPAL	PRIVATE
METERED	CUSTOMER and/or EMPLOYEE
UNMETERED	SPECIAL PURPOSE
SPECIAL ZONE	

100 0 100 200 300 400
SCALE IN FEET

PARKING SUPPLY

TABLE 1

STUDY AREA PARKING SUPPLY

Type of Facility	Zone A	Zone B	Zone C	Total	Percent of All Spaces
MUNICIPAL					
Curbs	125	440	142	707	20.8
Lots	74	215	111	400	11.8
Total - Municipal	199	655	253	1,107	32.6
PRIVATE LOTS					
Customer/Employee	407	193	966**	1,566	46.1
Employee Only	129	255	118	502	14.8
Other*	0	140	79	219	6.5
Total - Private	536	588	1,163	2,287	67.4
TOTAL SUPPLY	735	1,243	1,416	3,394	100.00

*Service Stations and Schools

**Includes 145 spaces on land proposed for redevelopment

list, by facility of parking spaces, is given in Appendix B. Elimination of certain categories of parked vehicles, such as auto dealers, leave an indicated total of 3,394 parking spaces available to satisfy the daily demand of employees, shoppers and those pursuing personal business needs in the CBD. Of this total, over two-thirds (2,287) spaces) are located on private property. As the Village exerts but limited control over these private parking facilities, study efforts were concentrated on the 1,107 municipal parking spaces, 999 of which were metered. All 400 municipal lot spaces were metered as were 599 of curb spaces as indicated in Table 2. This table also gives the distribution of municipal parking spaces, by analysis zones, by type of time regulation, and type of control. Note only 116 metered spaces are provided for all day type parking (12 hour time limit), 43 in the Station Plaza Lot and 73 in the Cottage Place lot.

PARKING USAGE

Parking usage studies provide information essential to evaluation of the adequacy and regulation of parking supply. Reflected in usage characteristics are the number of parkers desiring space, the peak periods of parking demand, the length of time parkers desire to remain parked and their observance of parking regulations. Measurements of space usage generally consist of the following:

- Occupancy, or the percentage of available time a space is used.
- Duration, or the average length of time a vehicle occupies a space.
- Turnover, or the number of times a space is occupied by a different vehicle during the survey period.

Facilities intended for shoppers ideally attract short duration parkers and are characterized by high turnover usage. Conversely, facilities intended for employees and commuters are characterized by long duration parkers and low turnover usage.

TABLE 2

MUNICIPAL PARKING SUPPLY

Type of Facility	Zone A	Zone B	Zone C	TOTALS
CURBS				
No Restriction	0	19	0	19
Posted: - 1 Hour	0	26	0	26
2 Hours	13	21	29	63
Sub-Total- Unmetered	13	66	29	108
Metered: - 1 Hour	112*	202	47	361
2 Hours	0	129	66	195
3 Hours	0	43	0	43
Sub-Total - Metered	112	374	113	599
Curb Sub-Total - All	125*	440	142	707
LOTS				
Metered: - 1 Hour	0	7	0	7
2 Hours	0	78	0	78
3 Hours	31	110	38	179
4 Hours	0	20	0	20
12 Hours	43	0	73	116
Lot Sub-Total (Metered)	74	215	111	400
Total - Metered	186	589	224	999
TOTAL - ALL	199	655	253	1,107

*Includes two (2) twelve (12) minute meters.

Surveys

Parking usage surveys were conducted to determine if the current use of parking spaces indicated a need for additional facilities and/or improved management and operation of existing facilities. Selection of a "typical" shopping day for the collection of base data was necessary for such data to be representative of varying conditions. Thursday, November 6, 1969, was selected as it included some evening shopping and could be reasonably assumed to exhibit average or above-average parking activity. On this date, "base day" usage of all municipal on and off-street parking spaces in the CBD were recorded at half hour intervals between 10:00 a.m. and 6:00 p.m. In appropriate areas, the survey was extended to 9:00 p.m. to permit an evaluation of parking activity during evening shopping hours. On the first half-hour interval observation,every vehicle parked, legally or illegally, was recorded. On subsequent half-hour intervals, the same vehicle, different vehicle or empty space was noted.

As indicated in Table 1 on page 12 , a significant portion of the present parking supply serving the CBD is privately owned. To account, for possible space needs due to overcrowding in private facilities, and insure proposals for changes in the municipal supply do not create unnecessary competition for private facilities. usage surveys were also conducted at periodic intervals in private, customer-employee lots. Selected facilities were surveyed at half-hour intervals to gather representative usage characteristics for the demand analysis, while total usage was again recorded during the postcard demand survey (see page 29). Usage data for all private facilities was also collected in the conduct of the origin-destination surveys (see page 53).

Several other studies were performed to verify that the Thursday, "base day" parking usage survey data was typical. A selected number of parking facilities were surveyed for parking usage on three separate days subsequent to the "base day". This data was compared favorably with the "base day" data. For this analysis, parking meter revenues were collected and tabulated for separate

facilities by Village personnel for all survey days. The correlation in parking meter revenue data to measured parking usage on the "base day" permitted accurate expansion of the subsequent, partial parking usage surveys to reflect total study area parking usage for comparison with the "base day" data.

Traffic volumes at two locations continually measured by automatic traffic recorders (ATR's) were also examined as shown in Figure 3. The comparative relationship between traffic volumes for different days of the week at each location revealed the significance of this data for the Chestnut Street location. The greatly reduced Sunday traffic volume clearly indicates this location as one used primarily for shopping and other CBD business as compared to the East Ridgewood Avenue location. The volumes recorded on Chestnut Street are, therefore, considered to reflect the activities of motorists entering and leaving parking areas or circulating in search of parking space.

As might be surmised, the highest volumes occurred on Monday and Thursday, days some businesses remain open in the evening. Variations in traffic volumes on the other business days, including Saturday, are not particularly different. From these data, the "base day" selected, Thursday, can be safely assumed to be representative.

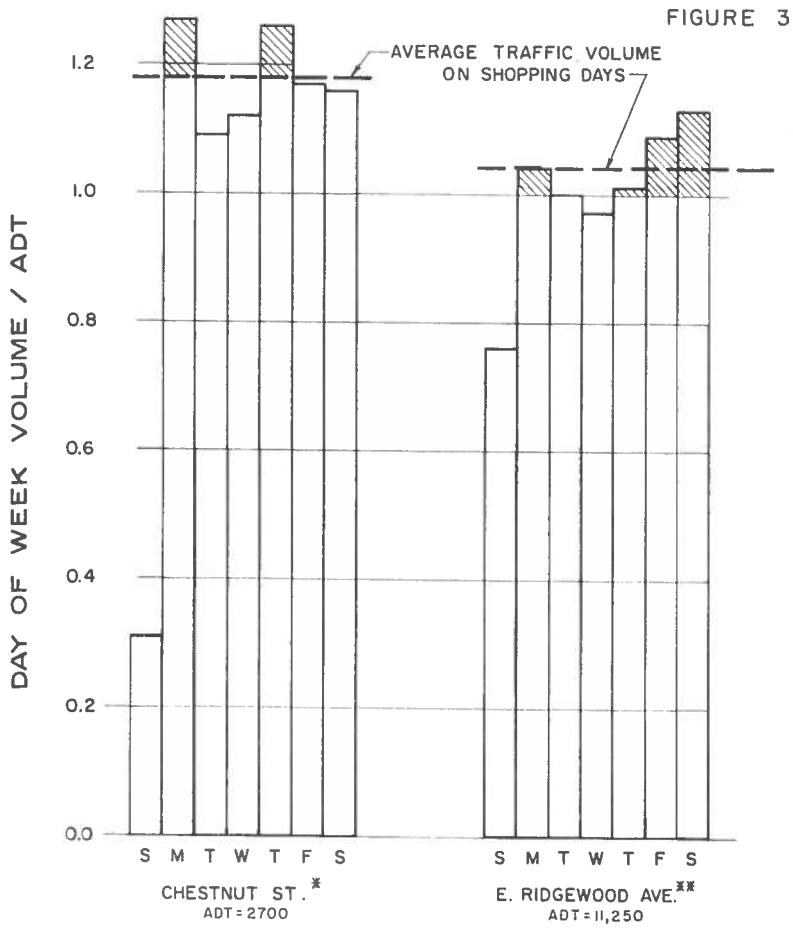
The fact that parking activities can vary by season is well known. To relate the November "base day" measured parking activity to such activity in other months another study of parking meter revenues was made. Parking meter receipts were compared by week and month over a consecutive, twelve-month period. The variations revealed are shown in Figure 4. With the exception of August, when vacations have an obvious impact on business activity, Village monthly parking meter revenues and their implied parking usage, vary only about plus or minus five percent over the entire year. From this data, November was considered to be representative of average parking activity even through slightly above average.

Considering the repeat parking usage surveys, the special parking meter revenue studies and the traffic volume variations analyses, we have concluded the "base day" data is reasonably representative and satisfactory for parking analysis purposes from all major viewpoints, including both daily and monthly parking fluctuations.

Findings

Present usage of municipal parking facilities, as represented by the number of parked vehicles by hour of day is illustrated in Figure 5. Vehicles parked in on-street spaces, vehicles parked in off-street spaces and total vehicles parked in all spaces are shown. The period of peak parking activity occurs between 12:30 and 3:30 p.m., followed by a shart decline after 4:00 p.m. with the departure of business employees and shoppers. Figure 5 also illustrates the amount of demand exceeding the "practical" capacities of municipal parking facilities, particularly those located off-street. This excess is represented by the portion of parked vehicle accumulation above a line designating 80 percent of the available parking spaces. As vacant parking spaces must exist at any

FIGURE 3



1969 DAILY TRAFFIC VARIATION

AVERAGE DAILY VOLUMES 10/21 TO 12/15

* BETWEEN E. RIDGEWOOD & FRANKLIN AVENUES.

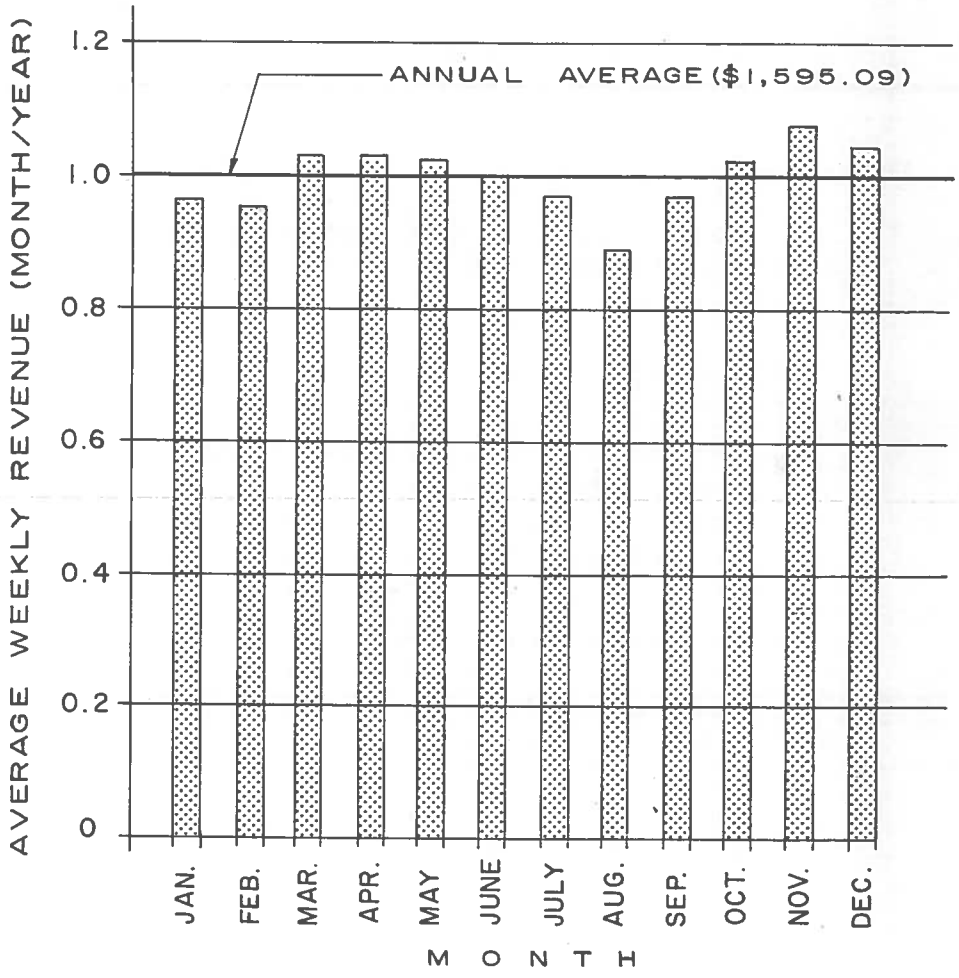
** BETWEEN WALNUT ST & COTTAGE PLACE.

given time as a result of parking maneuvers occurring with vehicle turnover, it is not realistic to expect all available parking spaces to be continually occupied. This "practical", or limiting capacity, is used to relate actual parking usage at any given time to a desirable number of parking spaces necessary to efficiently and effectively service the measured demand, represented by such usage.

Occupancy of CBD municipal spaces during the eight hour study period averaged 73 percent overall, rising to an 81 percent average between 12:30 and 3:30 p. m., with the peak 86 percent occupancy observed at 2:00 p. m.

While sufficient capacity apparently exists to adequately serve the observed eight hour space usage, peaking characteristics reveal a need for approximately 75 additional CBD spaces to provide a "practical" capacity above the present 2:00 p. m. usage level. This is a good indication of need but caution must be exercised in considering this number an absolute deficiency. As described elsewhere, needs are more pronounced in specific locations because businesses are concentrated,

FIGURE 4



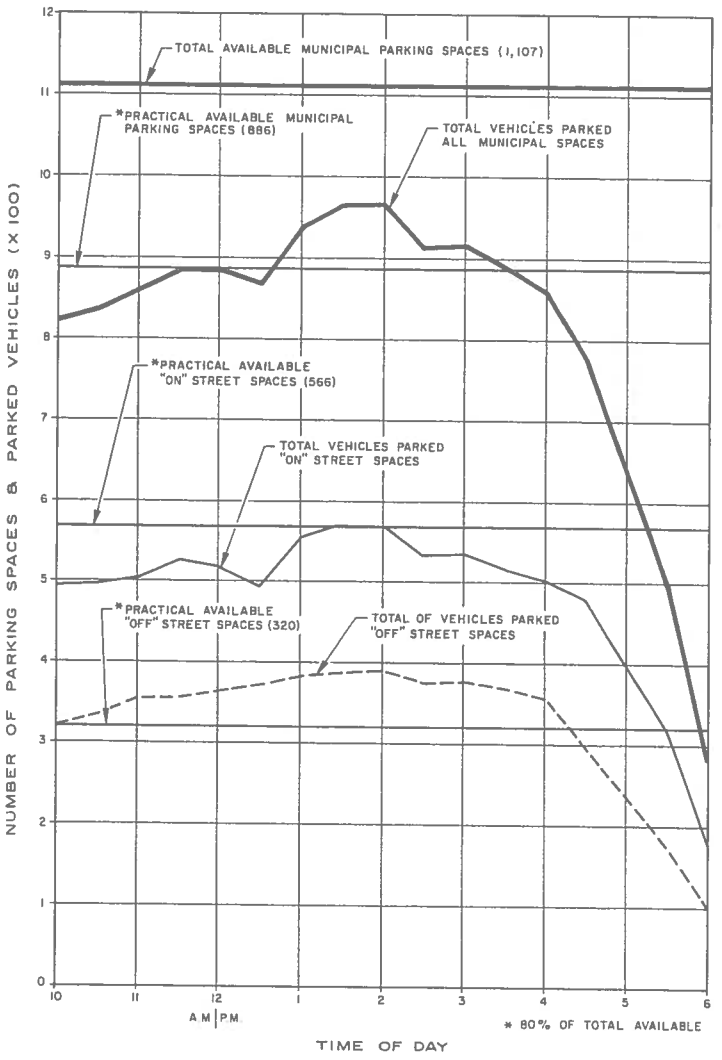
1969 MONTHLY PARKING VARIATION

(AS REPRESENTED BY WEEKLY PARKING METER REVENUE)

existing parking facilities are insufficient and parkers are willing only to walk limited distances. For these reasons, the usage of municipal parking spaces in the CBD was not distributed in the same manner as their availability. Figure 6, Parking Usage," illustrates usage of each municipal facility, comparing actual space hours used to total space hours available between 10:00 a.m. and 6:00 p.m. Occupancy rates for the eight hour period varied from 17 to 144 percent of the legal space hours available, with the highest usage occurring generally in the vicinity of the core shopping facilities along East Ridgewood Avenue and near Wilsey-Garber Square. Usage characteristics of those facilities exhibiting the highest occupancies are listed in Table 3. The high occupancy rates for many of the on-street facilities compared to the peak overall on-street occupancy of approximately 80 percent illustrated in Figure 5, are particularly representative of the uneven distribution of supply and usage.

Figure 6 also illustrates the proportion of vehicles who parked more than four hours in individual facilities. Such parkers, generally employees or commuters, used a relatively high proportion of the space hours available in some facilities while comprising less than seven percent of all vehicles, as indicated in Table 4.

FIGURE 5



MUNICIPAL PARKING ACCUMULATION

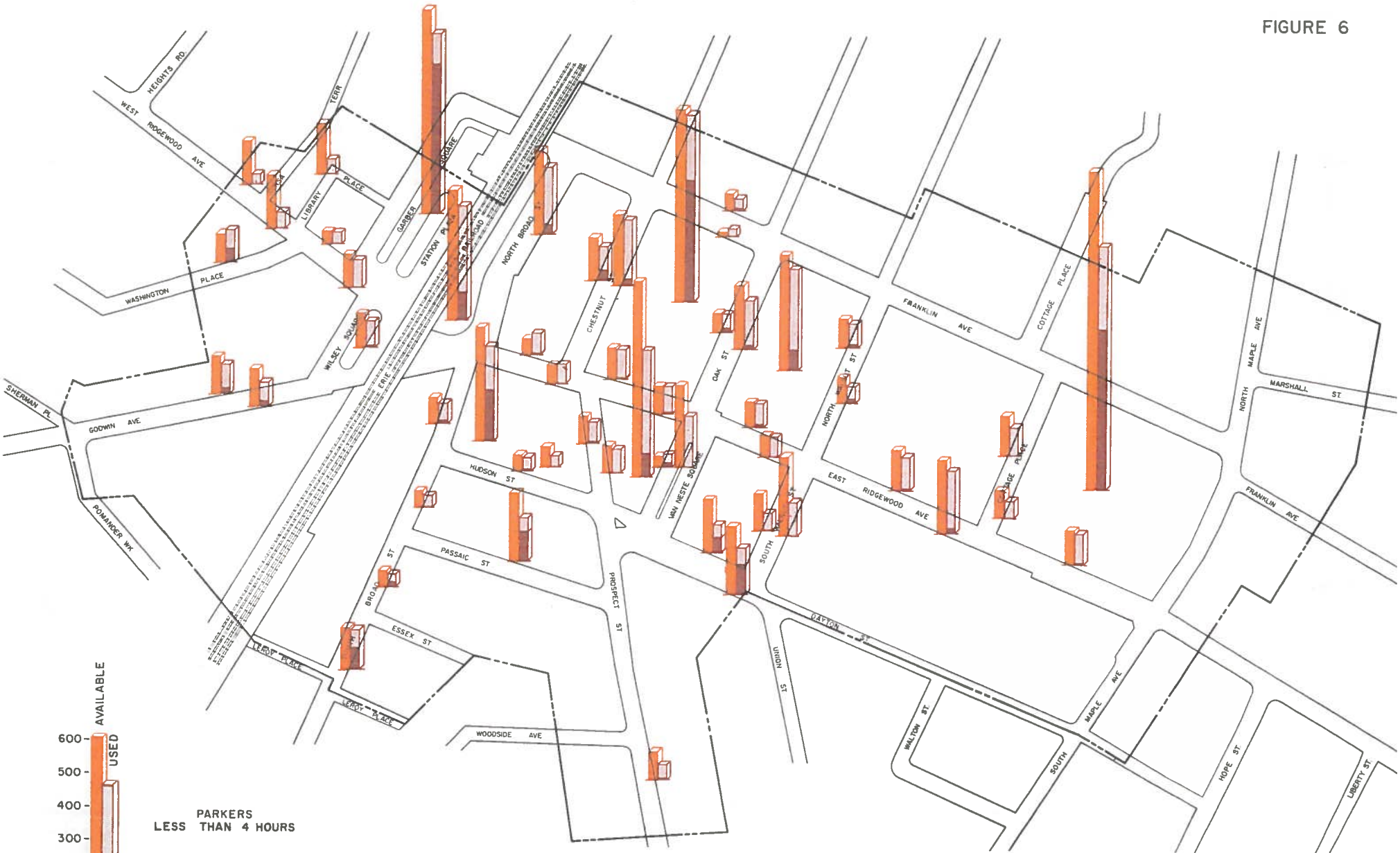
TABLE 3

MUNICIPAL PARKING CHARACTERISTICS

For High Occupancy Facilities

Location Code		USAGE - 10 A.M. to 6 P.M.				
		Spaces Available	Vehicles Parked	Average Occupancy Percent	Average Duration Hr.	Turnover Rate Veh./8 hr.
On-Street						
02-01	South side of Franklin Ave. W. of Oak	2	29	143.8	0.8	9.6
02-02	West side of Oak St. N. of Ridgewood	7	67	118.8	1.0	9.6
27-02	North side of Washington Place W.of Ridgewood	13	39	108.1	2.2	3.0
09-01	South Side of E. Ridgewood Ave. W. of Chestnut	7	90	107.1	0.7	12.9
01-02	West side of Chustnut St. N. of Ridgewood	15	99	102.5	1.2	6.6
02-04	East side of Chestnut St. N. of Ridgewood	25	202	97.5	1.0	8.1
01-03	North side of E. Ridgewood Ave. W. of Chestnut	6	57	95.8	0.8	9.5
10-01	South side of E. Ridgewood Ave. W. of Broad	6	27	95.8	1.7	4.5
02-03	North side of E. Ridgewood Ave. W. of Van Neste Square	11	104	93.2	0.8	9.5
13-06	Essex Street E. of Broad	19	45	92.9	2.5	2.4
03-03	North side of E. Ridgewood Ave. W. of Walnut	9	63	92.4	1.0	7.0
01-04	East side of Broad St. N. of Ridgewood	29	235	91.4	0.9	8.1
Off-Street						
02-05	Chestnut St. Municipal Lot	69	189	94.7	2.8	2.7
11-03	Station Plaza	74	111	83.5	4.4	1.5
09-05	Hudson Street Municipal Lot	40	126	80.0	2.0	3.2
08-05	Prospect Street - Van Neste Sq. Municipal Lot	58	340	75.6	1.0	5.9
05-05	Cottage Place Municipal Lot	111	224	74.8	3.0	2.0
03-07	No. Walnut Street Municipal Lot	41	143	68.4	1.6	3.5

FIGURE 6



MUNICIPAL PARKING USAGE

10 A.M. to 6 P.M.

Even though a portion of the long-term usage occurred in areas generally intended for such use, including sections of the Cottage Street and Station Plaza lots, the number of long-term parkers who occupied curb and lot spaces legally restricted to limits of three hours or less were substantial. As a result, the shopper and business client were effectively pre-empted from the short-term facility intended for their use.

The importance of maintaining an available supply of short term parking is shown in Table 4, which indicates over 75 percent of all CBD parkers desire a space for one hour or less, with little variation in the duration distribution among the three study zones within the CBD. A detailed summary of surveyed parking durations for each zone by type of facility and restriction is included in the Appendix. These data clearly reveal the extent of overtime parking in facilities with one, two and three hour limits. At the same time, they also demonstrate the use of longer term facilities by short-term parkers. Considered together, these observations indicate present restrictions are not compatible with actual parker desires. The resulting inefficient use of parking space, together with actual physical space deficiencies, contribute greatly to the parking problem in the CBD.

The impact of overtime and illegal parking was greatest during the peak parking period and included almost 30 percent of all parkers in both on and off-street facilities as shown in Figure 7. Over one-half the overtime parkers in curb facilities and almost all overtime parkers in municipal lots were maintaining an apparent legal status through the practice of "meter-feeding". This fact was determined during the survey by observing the parking meter violation flag position with respect to parking duration. The majority of such parkers, presumably CBD employees, involved in this practice we believe understand the intent and purpose of time restrictions, to permit more people to park in a given space. We surmise each also probably believes his individual violation is of small consequence. The net result, however, is a reduction in parking spaces available for shopper use.

TABLE 4

PARKING DURATION IN MUNICIPAL SPACES*

(Percent of Total Parkers)

Duration	Zone A	Zone B	Zone C	Total CBD
Up to 30 min.	63.4	58.9	58.0	59.3
30-60 min.	14.7	15.9	17.7	16.1
1-2 Hours	8.1	12.3	11.6	11.6
2-3 Hours	2.8	3.9	4.1	3.8
3-4 Hours	0.6	2.7	2.4	2.4
4 Hours & Longer	10.4	6.3	6.2	6.8
	100.0	100.0	100.0	100.0

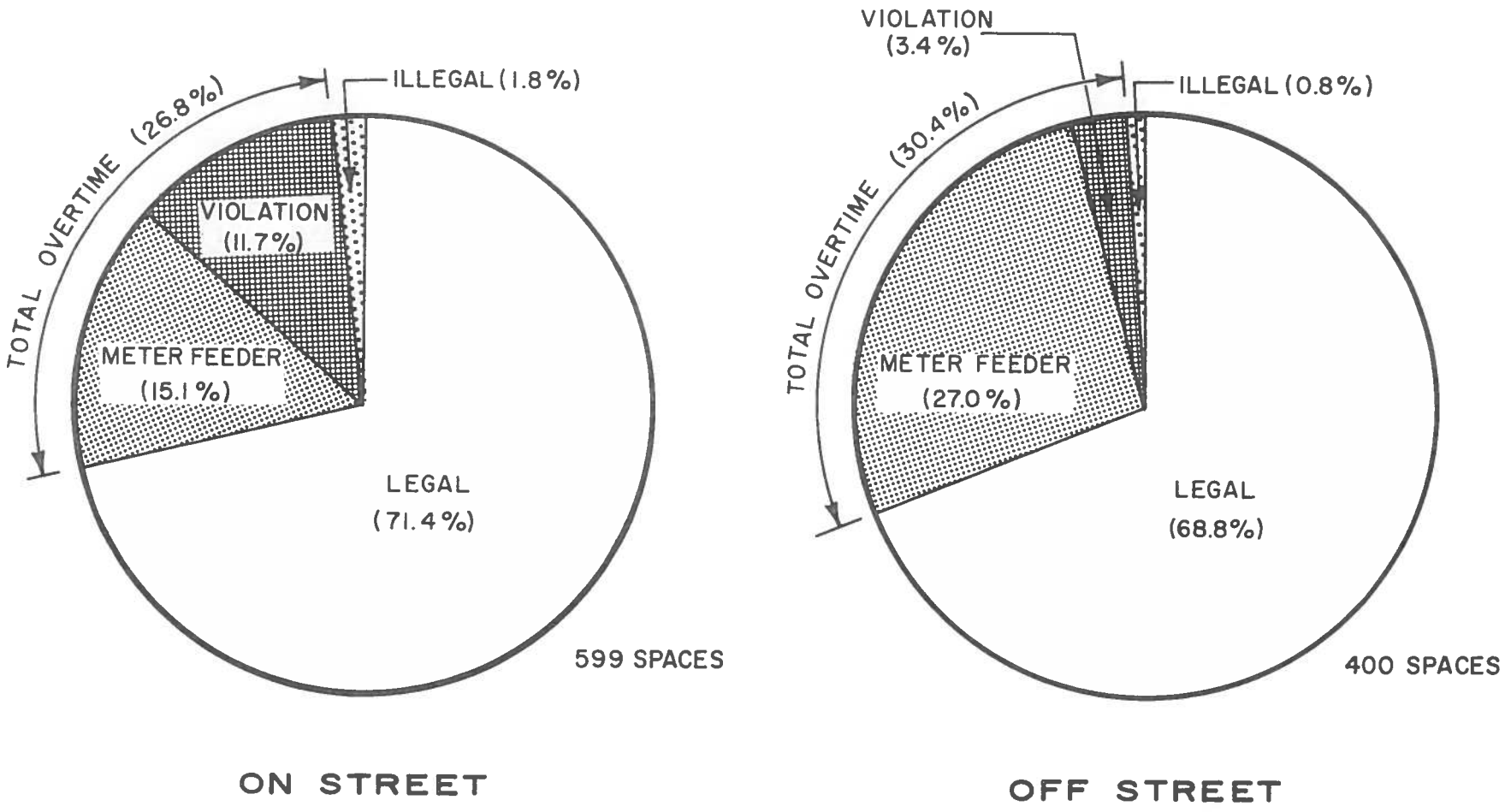
*"Base Day" data from Thursday, November 6, 1969. Includes loading zone, illegal and overtime parkers.

Our analysis also determined usage characteristics in each of the three parking analysis areas were not uniform. In Zone A, for example, there were 199 municipal spaces available, 125 on-street and 74 in the Station Plaza lot. Our inventory survey showed 43 spaces posted for more than four hour use, and our usage survey found 71 of 703 parkers in this zone parked over four hours. An undetermined additional number of potential long-term parkers, apparently discouraged by the lack of parking spaces, were observed to have resorted to "kiss and ride" transportation to the railroad station thereby contributing to traffic circulation problems in and around the station area.

Although posted for one hour parking, a number of curb spaces in Zone A along West Ridgewood Avenue near Heights Place and along Library Place are too far removed for effective short-term use. At the time of maximum demand, 2:00 p. m. on the "base day", only 14 of these 59 spaces were occupied. At the same time, 133 of the remaining 140 spaces were in use, a remarkably high occupancy rate of 95 percent. At this time, over 30 percent of all vehicles parked had exceeded their particular posted time limit. The combination of insufficient long-term spaces, a significant percentage of parkers in violation of posted limits and inefficient use of short-term spaces indicate the need for space reorganization in Zone A, rather than extensive additional parking spaces. Some additional long term commuter type parking is needed. These recommendations are presented in Chapter 4 of the report.

In Zone B where long-term parkers represent only 6. 3 percent of the total parkers, similar conditions were observed. Such parkers used nearly 40 percent of the total space hours available during the study period. With parking for over four hours legally permitted in only 39 of 655 municipal spaces in Zone B, a total of 216 vehicles parking for such duration were observed. The practice of "meter-feeding" was particularly evident in Zone B, with 149 of 216 long-term parkers, 26 percent of the total observed usage at the 2:00 p. m. peak hour, observed in this category.

FIGURE 7



STATUS OF PARKERS

IN METERED SPACES 12:30 P.M. TO 2:30 P.M.

The greatest single concentration of "meter-feeders" was found in the Chestnut Street lot with 49 of 69 vehicles parked in metered spaces posted for a three hour limit determined to be practicing this form of overtime parking.

The impact of this long-term parking becomes particularly significant because the average duration of all parkers who parked under four hours was less than an hour. For example, if the more than 200 long-term parkers can be assumed to have an average duration of six hours, their relocation to areas on the fringe of the CBD would open parking facilities in the core area to nearly 500 additional short-term parkers during the peak parking period of 12:30 to 3:30 p.m, or nearly 1,000 additional parkers over the entire eight hour study period. Unlike Zone A, however, existing fringe facilities are not available in Zone B in sufficient number to allow simple reorganization. This fact indicates the need for new long-term facilities in Zone B. A corollary of long term parking in the core of Zone B is the high occupancy observed during the peak parking hour. Of the 420 curb and 215 municipal lot spaces located within reasonable walking distance of the East Ridgewood Avenue shopping core, 88 percent and 95 percent, respectively, were occupied at 2:00 p.m. during the "base day" usage survey. The effect of this high occupancy was for the few unoccupied spaces to remain vacant for only short periods. The high demand and short supply also resulted in vehicles searching for parking space contributing to the congestion on the surrounding street network.

In Zone C overtime parking was not as pronounced. In fact, only 34 of 224 parkers during the peak hour were observed to be in violation of time restrictions, and only 14 of these were identified as "meter-feeders." The fewer overtime parkers can partly be explained by 73 metered spaces posted for a twelve-hour limit in the Cottage Place lot. The parking duration study for Zone C indicated only 68 vehicles were parked 4 hours or longer. Zone C was the only area in the CBD where long-term parking meters in use satisfied the demand for such space.

A peculiar circumstance was observed in the Cottage Place lot, which presently is the only off-street municipal facility in Zone C. Not until 2:00 p.m. on the

"base day" was this lot observed to be 100 percent occupied. The lateness of this condition compared to the municipal lots located in Zone B reflect the peak period parking demand overflow generated by the shopping core in Zone B. Other parking activity in Zone C, now on a temporary basis, is worthy of note. The People's Bank property, facility 18-05 in Figure 2, was being used for parking 85 vehicles of Berkeley School students. When this property is developed, these people can park to the east and north of the Municipal Building, as they did prior to using the bank property, resulting in the development of this property posing no particular parking problem. The vacant lot at the corner of East Ridgewood and Maple Avenues, facility 05-08 in Figure 2, was also being used for temporary parking by employees and/or shoppers. Between 23 and 45 vehicles were observed in this area. As this site may well be lost to development in the near future, alternate facilities must be made available. Creation of new off-street municipal lots in Zone C would satisfy this need, however, a more appropriate approach would be to expand the Zone B supply, thereby indirectly increasing space availability in Zone C by reducing overflow demands.

Table 5 shows the observed space occupancy of private lots in the CBD. Both the variation and overall low level of occupancy, as compared to municipal facilities, are indicative of the restrictions posted at most of these lots. With parking generally limited to customers or employees of specified businesses, the overall "practical" space usage of such facilities was low except for facilities provided exclusively or predominantly for the all day employee parker.

PARKING DEMAND

While space usage provides a relative indicator of the demand for parking, additional measures are necessary to an understanding of the nature of the demand, including where the driver came from to park, his trip purpose and his destination

TABLE 5

PARKING SPACE USAGE

IN

PRIVATE LOTS

Zone	All Private 9-10 A. M.*	Customer/Employee 11 A.M.*	All Private 2-3 P.M.*	Customer/Employee 3 P.M.**
A	48	63	49	82
B	55	51	81	30
C	80	56	78	34
Totals	66	56	72	36
Vehicles	1,518		1,647	

*Based on averages of three days observations of 2,287 spaces (O & D study).

**Based on postcard survey distribution.

after parking. Also significant is the frequency or repeat nature of the demand. To determine the places where people would like to park and the attractive power of the study area, a postcard survey of parkers was conducted.

Postcard Survey

Prepaid postage cards were left under the windshield wiper of all parked vehicles in the municipal and customer-employee type facilities in the CBD, at 11:00 a.m. and 3:00 and 7:00 p.m. on Thursday, November 13, 1969. Each parker was asked to indicate his (a) town of residence, (b) time of arrival and departure from the space (c) his destination; stores and/or other places visited while parked, and (d) days per week parked in Ridgewood. Combined with additional postcards distributed at 11:00 a.m., Wednesday, December 11, and 3:00 p.m., Thursday, December 12, this survey provided a sample of parking demand throughout the day. In addition, these surveys were used to supplement other parking usage survey data by tabulating where and how many postcards were distributed.

Findings

The number of parker destinations attracted to each business area, from both municipal and private customer-employee spaces, summarized by block face locations, is shown in Figure 8. The destination totals for specific block faces indicate where people would like to park. As the survey data was expanded to represent total parking usage for an eight hour period, the destinations of all parkers are indicated, regardless where they were parked when surveyed. Actual destinations should be considered essential information for the planning of new facilities. Parkers using municipal facilities reported an average of 1.72 destinations, while those using customer-employee facilities averaged 1.35 destinations, reflecting the greater versatility of municipal spaces.

Parking demand in the CBD centered about the intersections of East Ridgewood Avenue with Chestnut Street and Cottage Place. The block faces directly ad-

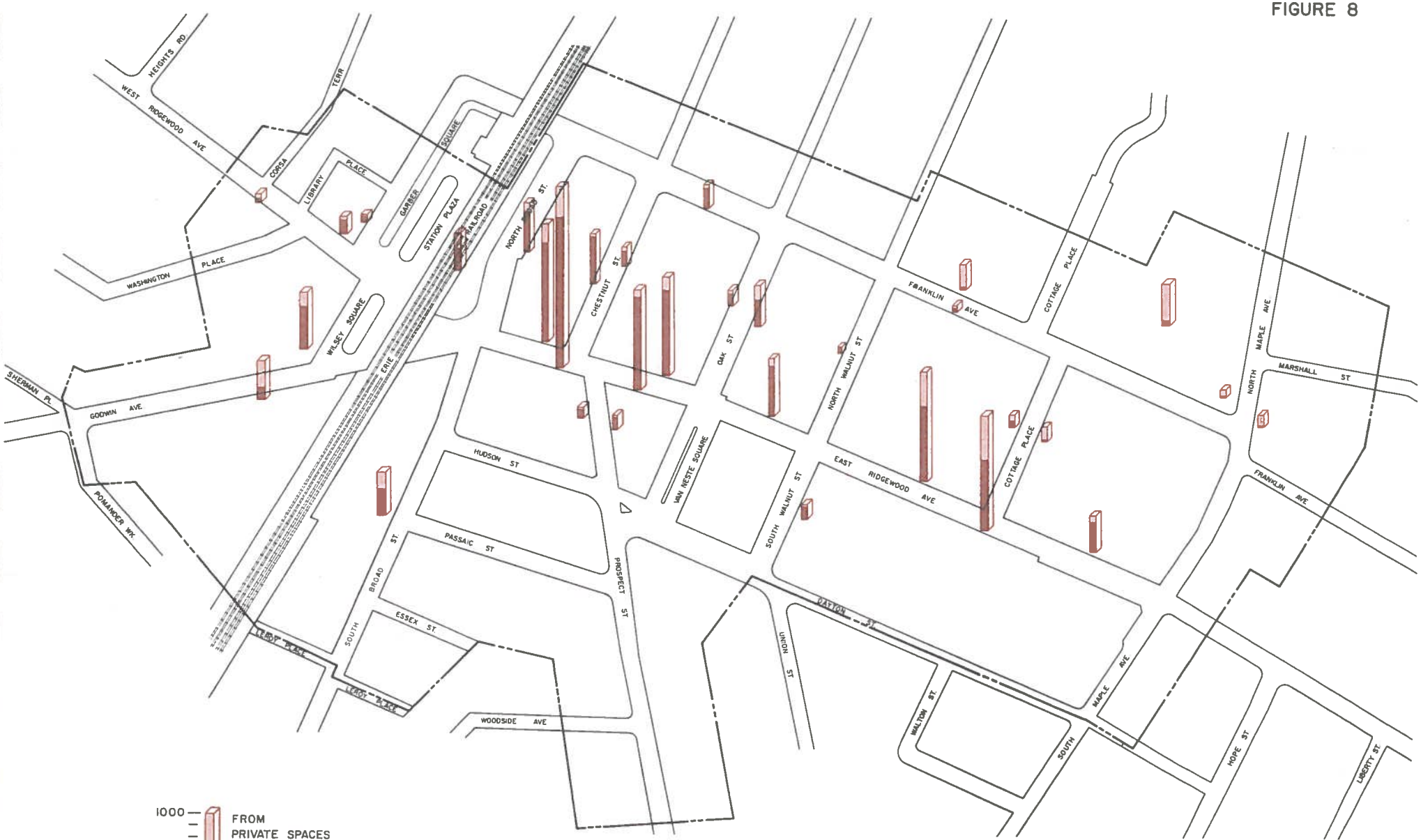
jacent to these intersections account for 40 and 20 percent, respectively, of the total destinations of all CBD parkers in municipal and customer employee spaces. Table 6 lists the major parking demand areas by block face in decreasing order of magnitude.

The effective service range of the existing CBD parking areas is illustrated in Figure 9, again indicating the concentration of demand on Ridgewood Avenue near Chestnut Street and Cottage Place. Most importantly, this figure indicates all major parking area to destination distances are two blocks or less in length, thereby suggesting a general desirable walking limit which should be considered in the location of new facilities. It also reflects the importance of interior (within block) facilities in providing service to business activity on their respective blocks.

Other than replacement facilities for on-street spaces removed for improvement of traffic operations, additional space demands will largely come from future growth in parking activity. Table 7 reflects the growth of parking activity over the past five years as indicated by parking meter receipts. These receipts, as already noted, provide a reliable measure of parking usage.

Comments in both the Village Master Plan Report and the Mayor's Committee on Parking Report indicated significant expansion of CBD business activity is not expected. Population studies indicate only minor expansion of activity will be necessary to meet the needs of the ultimate Village population. While the Ridgewood CBD, as a center for quality goods, does exert some regional attractions, its business activity is primarily dependent upon the local area and the surrounding communities in which little future population growth is anticipated. The importance of the local drawing area is emphasized by the fact that more than three quarters of all parkers come from Ridgewood or from a distance of not more than five miles away as shown in Figure 10. Also shown in Figure 10 is the distribution of trip purposes for CBD parkers, as reported in the postcard survey.

FIGURE 8



1000
500
0
FROM PRIVATE SPACES
FROM MUNICIPAL SPACES
NUMBER OF DESTINATIONS

100 0 100 200 300 400
SCALE IN FEET

PARKING DEMAND

Principal Parker Destinations

TABLE 6

MAJOR PARKING DEMAND AREAS

Location Code	Description	No. of Parkers Destinations*
091	South Side of E. Ridgewood Ave., Broad to Prospect	1505
043	North Side of E. Ridgewood Ave., Walnut to Cottage	984
013	North Side of E. Ridgewood Ave., Broad to Chestnut	962
061	South Side of E. Ridgewood Ave., Walnut to Maple	954
081	South Side of E. Ridgewood Ave., Prospect to Van Neste Sq.	833
023	North Side of E. Ridgewood Ave., Chestnut to Oak	824
033	North Side of E. Ridgewood Ave., Oak to Walnut	467
282	West Side of Godwin Ave., W. Ridgewood to Pomander	467
012	West Side of Chestnut St., Franklin to E. Ridgewood	421
014	East Side of N. Broad St., Franklin to E. Ridgewood	407
294	East Side of Godwin Ave., Wilsey Sq. to Pomander	317

*100 percent estimates from postcard survey data.

FIGURE 9

600 500 400 300 200 100

DIRECTION & VOLUME OF PARKER DESTINATIONS

NOTE: LESS THAN 75 DESTINATIONS NOT SHOWN

100 0 100 200 300 400

SCALE IN FEET

PARKING AREA SERVICES

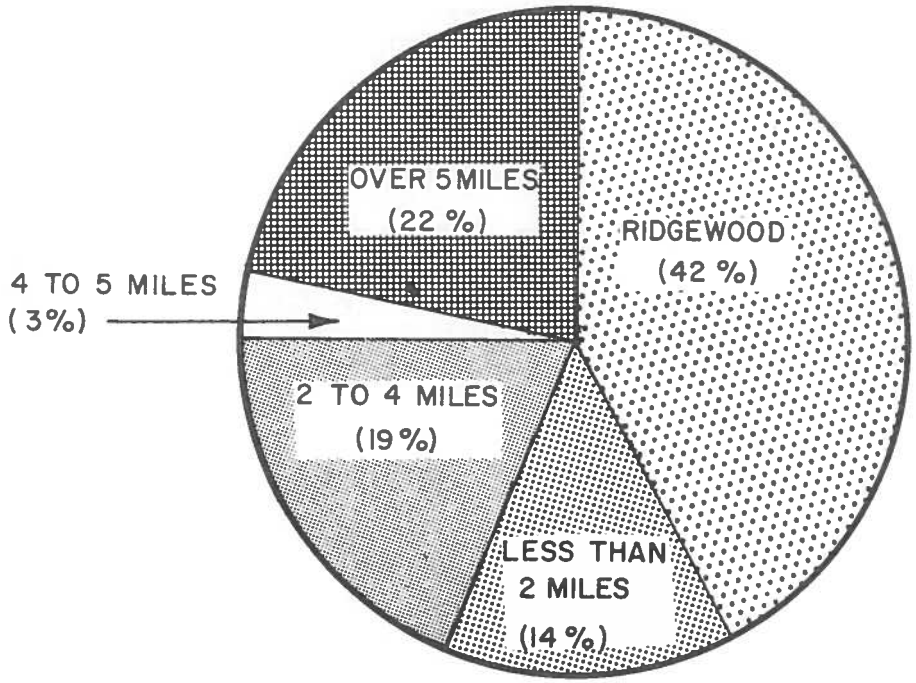
TABLE 7

ANNUAL PARKING ACTIVITY TREND

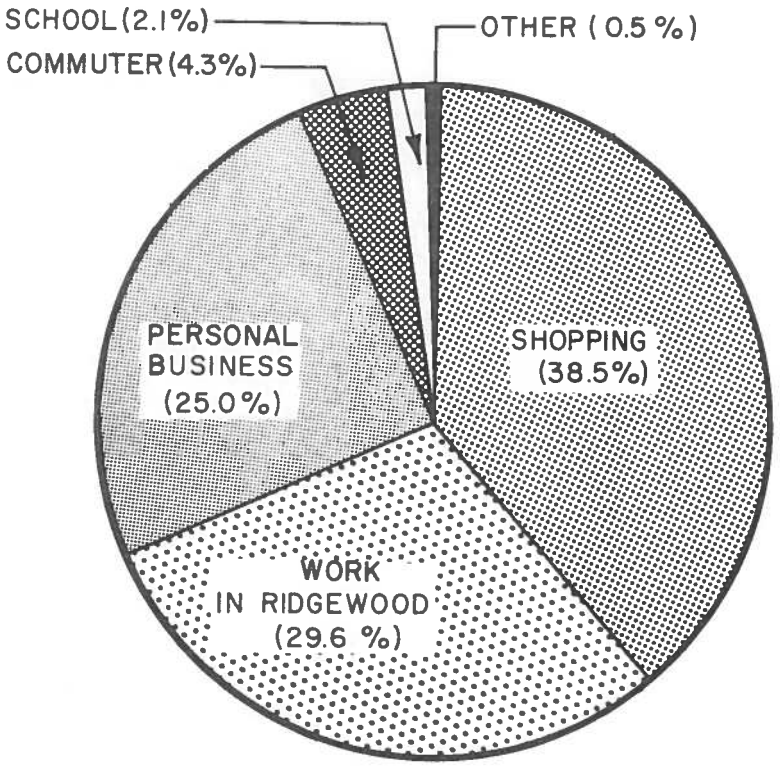
Based on Municipal Parking Meter Receipts

Year	Revenue	Number of Meters	Revenue per Meter	Percent Change in Meter Revenue
1965	$ 71,007	921	$ 77.10	
				+2.0
1966	72,355	921	78.60	
				-0.8
1967	75,237	964	78.0	
				+3.1
1968	78,430	975	80.40	
				+3.7
1969	82,944	994	83.40	
1965 to 1969 Average Change				+2.0

FIGURE 10



BY PLACE OF RESIDENCE



BY TRIP PURPOSE

DISTRIBUTION OF PARKERS

In consideration of these facts, it is reasonable to assume future demand for parking will experience a small normal growth rate of approximately two percent per year, as indicated in Table 7. Based on the existing supply, this would indicate an average yearly demand for 50 additional municipal or customer-employee type parking spaces above and beyond provision for current space deficiencies.

Relationship to Land Use

While parking activity growth rates indicate the anticipated overall demand for additional parking spaces, separate measures are required to define space needs arising from specific new or expanded business activities in the CBD. The Village zoning ordinance requires provision of one off-street parking space for every 300 square feet of floor area, 3.3 per 1,000, for the B-1, B-2 and P Zone Districts existing in the CBD.

To evaluate actual demand for parking space as generated by various business activities, results of the postcard demand survey were related to existing land use in the CBD. Table 8 shows the observed rates of trip attraction and resulting parking space requirements for the primary land use activities as related to municipal and/or customer-employee type parking. Space requirements are based on the total vehicle space hour demands (vehicles parked x average duration by land use category) for the 10:00 a.m. to 6:00 p.m. study period. Two space need figures are indicated, representing provision for the demand as municipal or as private customer-employee spaces, based on practical usage rates of 80 and 60 percent, respectively. Because of the exclusive nature of private facilities, the practical usage rate was observed to be and is assumed less than that for municipal facilities, and as a result, the number of required spaces must also be greater.

The great variation in trip attraction rates indicate the existing, single space requirement rate is inappropriate to actual demand conditions. Corresponding space

TABLE 8

SURVEYED PARKING SPACE NEEDS - SELECTED LAND USE ACTIVITIES

Category	CBD Floor Space (1000 SF GFA)*	Trip Attraction (Destinations/ 1000 SF GFA)*	Space Needs** (Spaces/ 1000 SF GFA)* Municipal-Private
Hardware	14.9	39.4	5.7 - 7.6
General Merchandise (Incl. Dept., Variety Stores)	16.9	46.7	4.4 - 5.9
Food	87.5	13.4	1.4 - 1.9
Automotive Dealers	74.5	2.5	0.7 - 1.0
Apparel	91.4	18.1	2.6 - 3.5
Furniture	55.1	7.5	1.1 - 1.4
Eating - Drinking	35.0	12.7	1.2 - 1.6
Miscellaenous Retail (Incl. Drug, Gift, Book Stores,etc.)	109.0	23.4	2.2 - 3.0
Finance, Real Est., Ins.	115.9	10.4	2.0 - 2.7
Personal Services (Dry Cleaners, Barbers, etc.)	72.8	9.9	1.4 - 1.9
Business Services	28.4	9.8	1.4 - 1.9
Professional Services	137.2	3.1	0.5 - 0.6

*Square Feet of Gross Floor Area

**Based on eight hour, practical occupancy rates of 80 percent and 60 percent for municipal and customer-employee facilities, respectively.

needs based on eight hour usage surveys support this conclusion. While indicative of the actual nature of demand generated by Ridgewood business, these "needs" were used primarily as guides in developing proposed parking space requirements.

SITE INVESTIGATIONS

With an indicated need for additional municipal spaces, studies were undertaken to identify and evaluate potential sites for new facilities. The usage studies indicated a deficiency of approximately 75 parking spaces for the CBD as a whole. Closer analysis, however, of the distribution of parking usage and parker desires indicated a greater parking space supply was needed to satisfy locational demands. Additional parking spaces in the primary demand area are also necessary to offset space losses which will result from proposed traffic operations improvements and from normal growth in parking activity.

Consequently, specific attention was given to (1) sites near the CBD fringe with development potential as all day commuter and employee lots, and (2) sites near the core of commercial activity to serve the present and growing demands of shoppers and business clients. A total of nine potential sites were identified, as illustrated in Figure 11. Because the air rights option was no longer available for the Ford property, that location was not included in the site investigations. Site A, B, C, and G were studied for parking garage feasibility and the remaining five, D, E, F, H, and I were considered for surface parking development.

Surface Lots

Because of recommendations made in the Mayor's Parking Committee Report, the Grand Union lot, Site D, was studied in detail. Although some usage survey data

PARKING FACILITY SITES

indicated available spaces in this lot, other survey data conflictingly indicated the facility was being used to its practical capacity. The latter condition was particularly underscored when we found over 150 of the available 193 spaces were usually filled on Saturday, which was classified as a day of high shopper activity and also a day with a great number of CBD employees. In view of these varying demands, its potential as a supplemental employee lot was considered minimal and the site eliminated from further consideration.

The vacant land at the corner of Union and Dayton Streets, Site E, was selected as a potential facility for employee parking. Although small in size, it could provide some relief to the employee parking problem. It is located within reasonable walking distance to the CBD in a professional rather than residential zone.

The "Zabriskie Lot", Site F, is currently operated as a private parking lot with a 35¢ daily charge regardless of the length of time parked. This facility can efficiently provide space for 85 vehicles, with the observed number of parkers approaching that total in periods of peak demand. However, as its favorable location adjacent to East Ridgewood Avenue businesses and its size permit adequate reorganization of space to municipal standards, and as it is currently used only when municipal facilities are congested, due to the rate differential, this site was favorable considered for redevelopment as a municipal facility.

The Village property at the end of Ridge Road, Site H, is ideally situated for commuter parking. Although the topography will require extensive construction, and access from the south and east will be circuitous, the additional spaces this site can provide are of positive value in an area in need of additional long-term parking.

Site I, the area bounded by the railroad, North Broad Street and East Ridgewood Avenue, is of limited value because of its size. However, it can be developed to provide additional space at minimum expense in an area of critical need and will be an integral part of a traffic operations improvement, Improvement Plan 4.

Garage Sites

The Hudson Street parking lot, the existing fire house site and other Village-owned property east of the fire house were all considered part of Site A. Although the site dimensions are serious restrains to developing a large and adequate facility, it is most favorably located from the viewpoint of serving actual parking demand. It was also understood the Village was considering relocation of the fire house. If the latter were to take place, the overall feasibility of Site A would be increased.

Site B, the Walnut Street lot and adjacent property, was first investigated as a larger surface lot in an attempt to organize the private, block interior parking areas. Several designs were tested, but few spaces could be gained. The site was then considered for garage feasibility. With property acquisition, a site of adequate dimensions to permit a satisfactory multi-level design within reasonable walking distance to major business generators, was found to be feasible.

The Cottage Place municipal lot, in combination with Board of Education lands, was evaluated as Site C. While the size of this site would permit a parking garage of ample dimensions, preliminary demand analyses indicated that the facility would be too far removed from the core of business activity to expect much use by shoppers. Some "contract", or employee parking could be developed for a garage at this site, however, without shopper parking and its accompanying revenue, the site would not be economically feasible. Because Site C cannot offer this potential, it was eliminated from further consideration of a garage location.

Site G, the existing Prospect Street municipal parking lot was investigated to determine if a multiple floor parking garage could be erected within the limits of this property. As in the case of Site A, the Site G location offers maximum service to the points of major business activity. While a parking garage type structure could be erected on this site, the ramp system required to permit vehicles

to transfer between floors would consume most of the space gained for parking with the result that the number of spaces gained per floor would be insufficient to make the cost of such a structure practical.

Although Site C and Site G were eliminated on the basis of these preliminary evaluations, the size and nature of investment involved in parking garage construction required detailed studies of Sites A and B be conducted.

GARAGE STUDIES

In order to assess the relative merits of Site A and Site B, for the construction of a municipal parking garage, each was evaluated on the basis of demand, design, traffic impact, and economic considerations.

Demand

Present space demand in the vicinity of each of the propcsed sites was developed from the parking characteristics determined in the usage and demand studies for the existing municipal and private customer-employee facilities. The primary demand analysis was based on an assumed influence area extending approximately two blocks in all directions from each respective site to reflect parker desires illustrated in Figure 9. By comparing vehicle space hour needs within the two block area of influence, as indicated by destinations reported in the post-card demand survey, to the corresponding "practical" space hours available, apparent parking space deficiencies were determined as tabulated in Table 9. These deficiencies include consideration for parking facilities removed by either proposed garage.

With a two block limit to the area of potential parker service, the high demand area along East Ridgewood Avenue between Broad and Chestnut Street falls only within the influence area of Site A. As a result, Site A appears to have an appa-

TABLE 9

EXISTING DEMAND - SUPPLY RELATIONSHIPS (EIGHT HR.)

2 Block Influence Area

	Hudson Street	Walnut Street
Destinations	6,870	4,870
Space Hour Needs	7,740	5,720
Practical Space[1] Hours Available	4,930	3,600
Space Hour Deficiency	2,810	2,120
Space Deficiency[2]	440	330
Long Term Space Demand[3]	115	70
Long Term Space Demand[4]	125	150

Notes:
1) Available space hours based on practical space usage of 80 percent and 60 percent respectively, for municipal and private spaces.
2) Space deficiency based on 80 percent practical space usage.
3) Demand based on current parking of six hours or greater in municipal spaces.
4) Total created by expansion from two to three block area of influence.

rent greater space need. It is reasonable to assume Site B would attract "overflow" parkers unable to find closer, available spaces even though less desirable than Site A from a service view-point. This opinion was not, however, considered in the comparison. Although the usage and demands studies indicated additional parking spaces near the shopping core are needed primarily to serve short term demands, special consideration was also given to the potential for attracting the all day parker to Site B, where the proposed garage capacity may initially exceed the demand for short term parking. Provision for such regular long term parking on an interim basis for the purposes of this study was presumed to be by a monthly contract basis rather than by an hourly rate. In addition only those parkers presently occupying municipal spaces in excess of six hours were considered as potential contract parkers. For these long-term parkers, the influence area was assumed to be three blocks. These estimated parking demands are used in the economic evaluation described elsewhere.

Design

Two distinctly different garage designs were considered for each site. One provides level floors connected by short ramps in a staggered arrangement. The second uses sloped floors for both ramps and parking. The sloped floor design provides one-way circulation with angle parking, the two features most desirable and attractive in self service, high turnover, shopper facilities. These features are contrasted with ninety degree parking and two-way circulation generally used in staggered floor garages. The staggered floor design is more appropriate for long term and low turn over parkers than for shoppers.

Difficulties in providing desirable ramp grades and maintaining access to an adjacent private lot eliminated the sloped floor design from consideration at Site A. Despite similar access problems, the staggered floor design was found feasible. Conversely, the sloped floor design was found to be most appropriate to the site characteristics of the Walnut Street location, Site B.

All property at the Hudson Street location, Site A, is presently owned by the Village. The choice of the Walnut Street location, Site B, would require acquisition of two gasoline service stations and purchase of the existing surface lot presently being operated under a lease arrangement. Exclusive of site cost, Site B is more advantageous due to the time required for relocation of fire department facilities presently occupying part of Site A.

Traffic Impact

Attraction of parkers to the Ridgewood CBD is primarily from areas to the north, east and west of the business area, as previously illustrated in the parking demand studies. Site B is advantageously located adjacent to the major east-west arterials in the CBD, and is situated between Oak Street and Maple Avenue, which serve as primary CBD access routes from the north. Site A, at the southern side of the CBD, is not as convenient to the major service roads. Travel requirements to Site A could result in increased traffic congestion during peak hours. The additional vehicle crossings and pedestrian conflicts along East Ridgewood Avenue would be particularly undesirable.

Capacity restrictions in the existing street system also pose problems for Site A. The staggered floor design selected as the best for this site would limit garage access to a single location on Hudson Street which is a relatively narrow facility of local, rather than major, traffic use. Conversely, a sloped floor garage at Site B would be accessible from both Franklin Avenue and Walnut Street, by comparison providing greater operational flexibility and peak period capacity.

Economics

Comparative cost economics for the two sites are summarized in Table 10. These estimated project costs represent the initial capital investment required for site acquisition and garage construction. For comparative purposes, fire house relocation costs have been assumed part of the site costs for the Hudson Street alterna-

tive. Financing of project costs were investigated on the basis of 30 year municipal revenue bonds, with equal yearly debt service payment at a seven percent annual interest rate.

The anticipated revenues were compared to the debt service requirements plus annual costs for facility operation and resultant property tax losses. Revenue estimates were based on rates of $0.10 per hour and $12.00 per month respectively, for meter and permit parking. These rates were assumed as maximums after considering existing and proposed rates and overall demand for other CBD parking facilities. The range in revenue reflects alternative parking usages assuming, a) initial use as indicated by influence area demand listed in Table 9, and b) potential use under full practical short term demand. As the proposed facilities are intended primarily for short term shopper and business parkers, the initial usage estimate assumes permit rate parking only for those spaces still available after the particular facility satisfies its short term demands. Based on the estimates of demand, a conservative revenue forecast shows Site A will initally be occupied by short term parkers while Site B will initially depend partially on long term permit parking. Actual revenues from Site B can be expected to exceed the demand estimated as space deficiencies in heavy demand blocks 01 and 02, which are located outside the assumed Site B demand area, will probably cause some "overflow" parking activity at this facility.

The economic analysis revealed a parking garage at either site cannot be expected to be financially self supporting. Additional revenues or subsidies of approximately $100,000 annually will be required for either site.

Overall, Site B, the Walnut Street location appears to be best for construction of a parking garage to serve the CBD business core. While immediate shopper demand and financial considerations favor Site A, Site B advantages of site access and the more appropriate sloped floor design for shopper parking are considered more significant. Additionally, the central location of Site B in the defined CBD area will allow more flexibility in satisfying future demand patterns resulting from growth or changes in CBD business activity.

TABLE 10
ECONOMIC COMPARISON
Alternative Parking Garage Sites A and B

		Site A[1] Hudson Street	Site B[2] Walnut Street
Project Costs:	Site (Land & Buildings)	$ 270,000[5]	$ 290,000[6]
	Construction	1,440,000	1,640,000
Annual Costs:	Operating	29,000	30,000
	Tax Loss	4,000[5]	9,000[5]
		33,000	39,000
Annual Revenue:[3]		81- 83,000	54- 94,000
Annual Surplus: (Before Debt Service)		48- 50,000	15- 55,000
Annual Debt Service: [4]		138,000	156,000
Annual Deficit Requiring Subsidy:		$90- 88,000	$141-101,000

Notes:
1) Site A - 360 Spaces - Staggered Floor Design
2) Site B - 410 Spaces - Sloped Floor Design
3) Assumed revenue rates: 10 cents/hour in meters with 6 hour limit; $12/month permit rate (for space availability in excess of short-term demand). Annual revenue range based on apparent current demand in influence area and on potential revenue assuming full practical shopper use.
4) Debt Service based on serialized bond issue covering projects costs, 30 years carrying 7 percent interest.
5) Site and tax loss estimates for Site A based on equivalent costs assuming relocation of fire house on a new site. Site includes city owned Hudson Street surface lot at no cost.
6) Site costs include purchase of leased Walnut Street surfact lot.

TRAFFIC STUDIES

TRAFFIC STUDIES

Studies of existing traffic operations were conducted to define problems, establish the interrelationships between traffic and parking activities and determine future traffic needs. They consisted of field reconnaissance, traffic safety and volume analyses, and determination of travel desires. These studies were principally conducted on the street network within the CBD, with three other intersections selected by the Village for special study. These three intersections, East Ridgewood Avenue at Irving Street, Linwood Avenue at Van Dien Avenue and Godwin Avenue at Ackerman Avenue and South Monroe Street and the area of CBD study are all shown in Figure 1.

RECONNAISSANCE

While specific data collection procedures may quantify many factors affecting traffic flow, observations of the operating roadway system are essential to fully appreciate special needs, operational limitations, identify the factors contributing to delay and/or hazard, and determine the feasibility of improvement. Prior to and during the course of field surveys, Edwards and Kelcey personnel observed the general movement of traffic, the impact of parking activity on that movement, truck and bus operations, the extent of parking and traffic regulations and the level of enforcement of those regulations.

Some of the major problems observed are particularly significant. The delay and congestion experienced along East Ridgewood Avenue can be attributed to a great extent to parking maneuvers and conflicts with pedestrians and vehicles crossing Ridgewood Avenue. The almost continuous use of police officer control at the Van Neste Square-Oak Street intersection with East Ridgewood Avenue to facilitate movement attests to this condition. Congestion on Maple Avenue at the Ridgewood and Franklin Avenue intersections is caused by a high number of turns from approaches of restricted width at both intersections. The single cross-

ing in the CBD area of the railroad at Franklin Avenue and the lack of more locations of positive traffic control in the business area contribute to the Maple Avenue problem by tending to exaggerate circulation patterns and concentrate traffic flow moving through the CBD. Because of the resultant delays at both intersections, a significant portion of the Maple Avenue traffic, particularly in the peak hour, used Irving Street as a bypass to avoid the difficult turns at the East Ridgewood Avenue and Franklin Avenue intersections.

Uncontrolled traffic at the intersection of Van Neste Square with Dayton and Prospect Streets was another problem observed. This traffic includes volumes generated by adjacent parking spaces and bus activity from the Ridgewood Terminal and must be reorganized for safe and efficient movement

Other observed cases of traffic congestion and hazard are described in the discussion of improvement proposals presented in Chapter Four.

TRAFFIC SAFETY

Vehicular and pedestrian safety and elimination of hazards are essential considerations in the development of a sound plan of traffic improvements. Past accident experience has been used as an index of unsafe conditions. A study of Ridgewood's accident records, maintained by the Police Department, in conjunction with reconnaissance observations identified several conditions needing improvement. The conditions were of two types: (1) physical and operating hazards directly contributing to accidents; and (2) lack of clear definiation in traffic flow combined with non-uniformity of control devices contributing to driver and pedestrian confusion.

The Police Department's accident file was researched for all accidents in the period 1967 through 1969. The total number of CBD accidents and locations of occurrence determined from this study are shown in Figure 12,"Traffic Accidents".

FIGURE 12

LEGEND

- 5 TO 10
- 11 TO 15
- 16 TO 20
- 21 TO 25
- 26 TO 30
- 31 TO 35

NUMBER OF ACCIDENTS

NOTE : LOCATIONS WITH LESS THAN 5 ACCIDENTS NOT SHOWN.

SCALE 100 0 100 200 300 400 IN FEET

TRAFFIC ACCIDENTS

1967 Through 1969

Almost every intersection along East Ridgewood and Franklin Avenues has had a high frequency of accidents, with the East Ridgewood Avenue intersection with Walnut Street experiencing the most accidents. These statistics confirm field observations of the frequent hazardous crossings of East Ridgewood Avenue traffic occurring at this location. With the accident experience recorded at the intersection of Franklin Avenue with North Walnut Street, both Walnut Street intersections should receive major consideration for improvement in traffic flow. Mid-block or non-intersection accidents in the CBD constitute a signficiant portion of all CBD accidents and can be related directly or indirectly to parking maneuvers.

Traffic accidents in Ridgewood have been growing at the same rate as traffic volumes. Between 1962 and 1969, both volumes and accidents have increased about three percent per year. As traffic growth throughout Bergen County gives no indication of reversing past trends, the number of traffic accidents will also probably continue to increase. Traffic improvements in Ridgewood are as essential to increasing safety as they are to providing for the travel needs of the CBD shopper/employee.

TRAFFIC VOLUMES

To quanfity the magnitude and direction of existing traffic flows, an extensive counting program was conducted during October, November and December of 1969. Manual turning movement counts were made by Village personnel at 18 intersections, including the three study sites outside the CBD, generally for the period of 7:00 a.m. to 7:00 p.m. with car, truck and bus volumes separately recorded by fifteen minute intervals. Where signficant, pedestrian counts were also recorded. The detailed manual count data was supplemented by automatic traffic recorder (ATR) counts at 50 selected locations within and adjacent to the CBD. The ATR counts included the maintenance of "control stations" on East Ridgewood Avenue and Chestnut Street throughout the survey period. This information, shown in Figure 3, was used to relate all specific parking and traffic data to average conditions.

Traffic volume studies provided part of the data necessary for decisions related to proper traffic control, such as the selection of principal streets, the required number of traffic lanes on these streets, the need to remove parking and/or change regulations to improve traffic flow and determination of the appropriate method of intersection control From various traffic count surveys, the 1969 p. m. peak hour flow was selected to be most appropriate for design. These volumes, shown in Figure 13, represent the traffic flows that must be accommodated by the street network during the period of maximum activity.

The installation of traffic signal control without regard to specific conditions can result in more intersection problems than solutions. The nationally accepted Manual on Uniform Traffic Devices for Streets and Highways (MUTCD), as published by the U. S. Bureau of Public Roads, has been consistently used in these traffic studies to insure proper control device application. Warrants for traffic signal control are a significant part of the MUTCD. They were developed to define traffic signal needs in relation to minimum levels of traffic volumes, availability of gaps in continuous traffic flow, pedestrian volumes, progressive through movement and accident experience. These considerations have been reflected throughout the study.

TRAFFIC CIRCULATION

Just as parking usage does not locate the actual areas generating parking demand, existing traffic flow does not necessarily represent the actual pattern or composition of travel desires. Present routes may be chosen for lack of desirable alternatives, and local flow cannot be readily distinguished from through travel. A limited origin-destination vehicle survey was conducted to effectively analyze circulation in the CBD and evaluate reasonable alternatives.

FIGURE 13

TRAFFIC SCALE

100 250 500 1000 500 250 100

SOUTH TO NORTH
EAST TO WEST

VEHICLES

NORTH TO SOUTH
WEST TO EAST

100 0 100 200 300 400
SCALE IN FEET

1969 TRAFFIC VOLUMES

P.M. Peak Hour

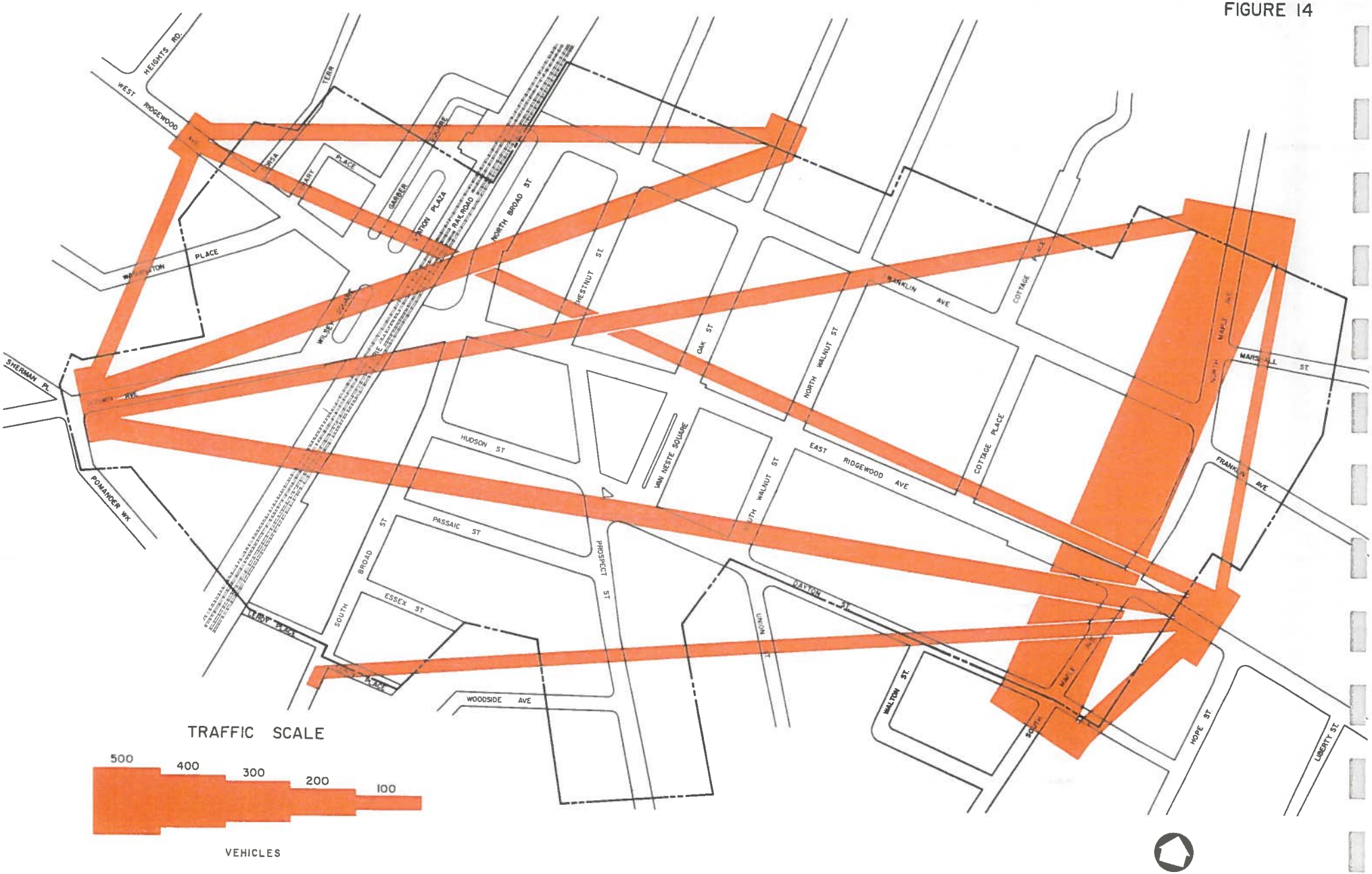
In this survey, the origin and ultimate destination of vehicles entering the CBD area from each of the eight major street access points was determined for three different time periods, 8:00 to 9:00 a.m., 1:00 to 2:00 p.m. and 4:00 to 5:00 p.m. Each entering vehicle during these periods was identified and associated with its point of entry by a colored tag placed under the windshield wiper by Village police officers at these points. Vehicles leaving the CBD area during each study period were identified at each of these locations and recorded by their associated entry point. Following the finish of each period of tag placement, a rapid survey of parked vehicles in the CBD was conducted and those tagged were identified and recorded as to both point of entry and parking destination. These surveys were conducted from December 4 to December 12, 1969. Vehicles actually tagged were adjusted to represent the average vehicular flow through each survey location. Traffic movements into and through the CBD at the three most important time periods were thereby effectively measured.

Results indicated trips through the CBD outnumbered local trips by a two to one or greater margin during all three time periods, with the latter figure including both vehicles parked in the CBD and those which observed entering and leaving at the same survey point. Figure 14 illustrates the major through traffic desires influencing CBD circulation in the p.m. peak hour. While the largest through desires are in the Maple Avenue corridor, this figure also reveals the major through movements affecting CBD circulation are north to west and east to west flows. These movements are primarily between Godwin Avenue on the west, and Oak Street, Maple Avenue and Ridgewood Avenue on the north and east. Directionally, flow is heaviest from west to north and east during the morning peak, reversing itself during the afternoon peak.

Figure 15 illustrates the major movement of parkers into the CBD during the a.m. peak hour is comprised primarily of business employees. While the flows are distributed among all four approach directions, movements approaching from the west appear to be the most critical in terms of total volume and in circulation requirements of the CBD core.

Detailed point to point movement data for through travel and CBD parkers obtained from these surveys are included in the Appendix.

FIGURE 14



MAJOR THROUGH TRAVEL DESIRES

Two-way Volumes 1969 P.M. Peak Hour

FIGURE 15

MAJOR CBD TRAVEL DESIRES

Entry and Destination of CBD Parkers - 1969 A.M. Peak Hour

CONCLUSIONS AND RECOMMENDATIONS

PARKING

After consideration of the assembled parking studies data, review of previous reports, field observations and discussions with Village personnel, we have concluded:

1. The present CBD parking supply is nominally deficient in meeting the present typical peak period parking demand on the basis of total available spaces. The distribution of this supply is not compatible with the points of actual parking desires. As a result, parking congestion is severe in the core shopping area and other specific locations.

2. Problems caused by the unbalanced parking supply are aggravated by general misuse of existing facilities, principally by long-term parkers. This is evidenced by comparisons of posted time restrictions to parking durations observed, including the extent of both "meter-feeding" and obvious overtime parking.

Based on these findings and evaluations of potential sites for additional parking, a program of improvements designed to correct these conditions was formulated and is recommended. This program provides for:

1. Creation of new municipal facilities on the fringe of the CBD for long-term employee and commuter parking.

2. Major expansion of the present parking supply near the highest demand areas, particularly the shopping core along East Ridgewood Avenue.

3. Other additions to the parking supply to replace spaces which should be removed to improve access to and circulation within the CBD, and to provide some parking surplus for normal parking activity growth and peak seasonal demands.

4. Revision of present time regulations and parking rates with enforcement of all parking regulations, including "meter-feeding", to encourage more efficient parking facility use.

Changes in the municipal parking supply are recommended in detail in the following sections and are graphically represented in Figure 16. If fully implemented, they represent a net gain of 493 spaces in the CBD, as shown in Table 11. More important, they will provide a parking supply specifically designed to serve actual needs and desires of CBD parkers.

On-Street

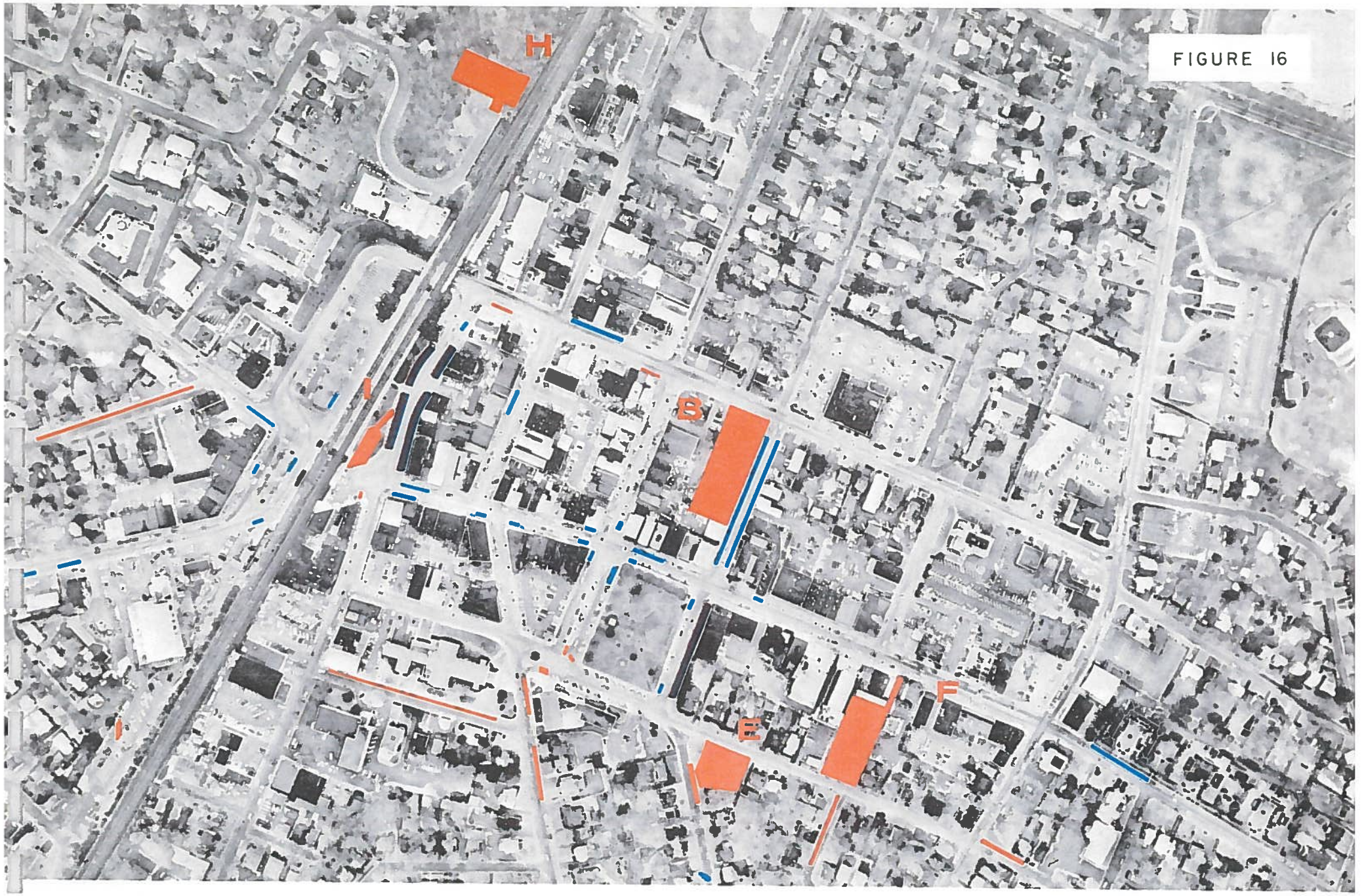
We recommend the following:

1. Revision of present time regulations for most facilities to correspond with observed parker characteristics, provide more efficient space usage, and achieve a more desirable balance between on-street and off-street facilities. As part of these changes, parking meter rates should generally be increased to ten cents ($0.10) per hour.

2. Elimination or modification of curb spaces at selected locations as part of recommended traffic operations improvements. These changes include, at various locations, elimination of angle parking, provision for, or modification of, bus stops and truck loading zones, roadway channelization and intersection clearance.

These recommendations are listed in detail, by analysis zone and facility in Table 12. Total cost of revisions, including meter relocation, signing, space marking and miscellaneous construction is estimated to be $21,000, exclusive of costs incurred in changing existing meter rates.

FIGURE 16



MUNICIPAL SPACES

- ADDED
- REMOVED
- REVISED - ANGLE TO PARALLEL
- REVISED - UNMETERED TO METERED

PARKING RECOMMENDATIONS

TABLE 11

PROPOSED MUNICIPAL PARKING SUPPLY

By Study Zone and Facility Type

	On-Street	Surface Lots	Garage	Total
ZONE A				
Existing	125	74		199
Proposed	108	167		275
Net Change	-17	+93		+76
ZONE B				
Existing	440	215	0	655
Proposed	373	200	410	983
Net Change	-67	-15	+410	+328
ZONE C				
Existing	142	111		253
Proposed	116	226		342
Net Change	-26	+115		+89
CBD TOTALS				
Existing	707	400		1107
Proposed	597	593	410	1600
Net Change	-110	+193	+410	+493

TABLE 12

ON - STREET FACILITIES - RECOMMENDED REVISIONS

Zone & Facility	EXISTING		PROPOSED		Net Change	Reason for Change
	Time Regulation* (Hours)	Number of Spaces	Time Regulation* (Hours)	Number of Spaces		
A-25-03	1	5	0.5	5	0	
25-03	0.2	2	0.2	2	0	
25-05	1	18	12	18	0	
26-03	1	15	12	15	0	
27-01	1	19	12	19	0	
27-02	2 Um	13	4	13	0	
28-01	1	7	0.5	3	-4	Clearance
28-02	1	18	0.5	17	-1	Load Zone Length
28-03	1	12	0.5	10	-2	Channelization
29-04	1	16	0.5	9	-7	Eliminate Parking
Sub-Total A		125		111	-14	
B-01-01		0	2	3	+3	Eliminate traffic lane
01-02	2	15	1	12	-3	Establish loading zone
01-03	2	6	0.5	3	-3	Clearance
01-04	1	29	1	18	-11	Angle to parallel
11-02 (N. Broad St.)	2	24	1	17**	-15	Angle to parallel
11-02 (Cul-de-sac)	2	16	1	18	+2	
02-01	1	2	2	4	+2	Eliminate traffic lane
02-02	2	7	1	7	0	
02-03	2	11	0.5	10	-1	Clearance
02-04	1	25	1	25	0	

*Metered unless otherwise noted: Um = Unmetered; Un = Unrestricted
**Includes eight spaces for taxis not included in existing supply.

TABLE 12 CONTINUED

Zone & Facility	EXISTING		PROPOSED		Net Change	Reason for Change
	Time Regulation* (Hours)	Number of Spaces	Time Regulation* (Hours)	Number of Spaces		
B- 23-03	1	6	-	0	-6	Establish travel lane
03-02	2	10	-	0	-10	Parking Garage Access
03-03	2	9	0.5	4	-5	Widen and Clearance
03-04	1	22	1	20	-2	Clearance
07-01	2	8	0.5	7	-1	Clearance
07-02	1	13	1	11	-2	Lengthen spaces
07-03	3	19	2	19	0	
07-04	1	25	1	22	-3	Clearance
07-05	1	29	1	31	+2	Channelization
08-01	2	10	0.5	8	-2	Clearance
08-02	1	4	1	3	-1	Clearance
08-04	1	10	1	10	0	
09-01	2	7	0.5	3	-4	Establish bus stop-clearance
09-02	1	10	1	10	0	
09-03	1	6	2	6	0	
10-01	2	6	1	7	+1	Channelization
10-02	1	9	1	9	0	
10-03	2 Um	5	2 Um	5	0	
12-03	1 Um	21	2	21	0	
12-04	1	6	2	6	0	
13-04	1	6	1	6	0	
13-04	1 Um	5	1 Um	5	0	
13-06	Un	19	Un	19	0	
13-07	2 Um	10	2 Um	10	0	
14-01	3	24	2	26	+2	
14-04	2 Um	6	3	10	+4	
Sub-Total B		440		395	-53**	

*Metered unless otherwise noted: Um = Unmetered; Un = Unrestricted
**Includes eight spaces for taxis not included in existing supply.

TABLE 12 CONTINUED

Zone & Facility	EXISTING		PROPOSED		Net Change	Reason for Change
	Time Regulations* (Hours)	Number of Spaces	Time Regulation* (Hours)	Number of Spaces		
C-04-02	2	14	1	14	0	
04-03	2	14	0.5	13	-1	Lengthen Spaces
04-04	1	9		0	-9	Parking Garage Access
05-03	2	12	0.5	12	0	
05-04	1	10	1	10	0	
06-01	2	26	0.5	26	0	
06-04	1	28	1	12	-16	Angle to Parallel
21-02	2 Um	10	2	10	0	
20-04	2 UM	10	2	10	0	
15-02	2 Um	5	2	5	0	
17-03	2 Um	4	2	4	0	
Sub-Total C		142		116	-26	
TOTAL		707		622	-93 **	

*Metered unless otherwise noted: Um = Unmetered; Un = Unrestricted
**Including eight spaces for taxis not included in existing supply.

Surface Lots

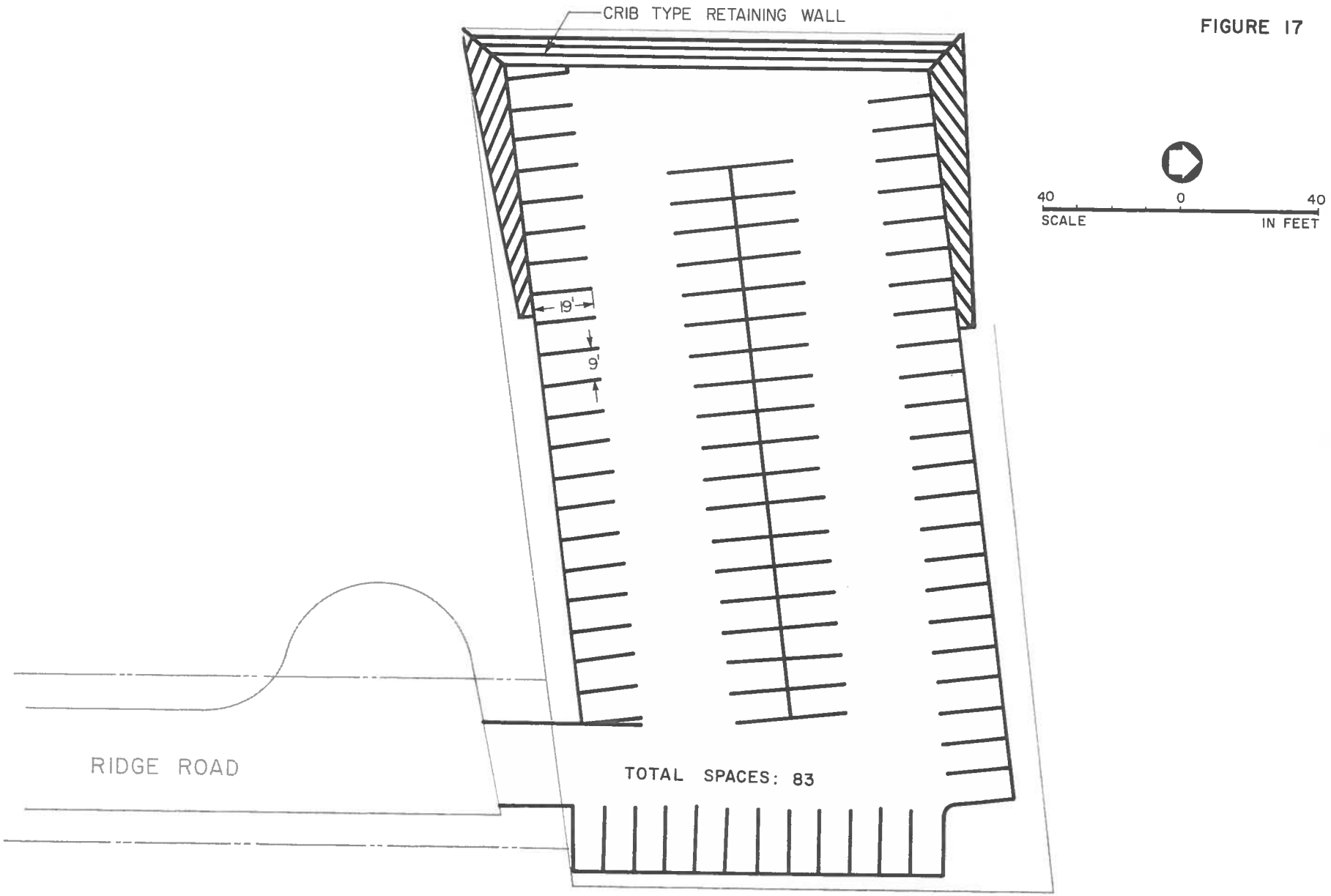
Revisions to the municipal surface parking lot supply are intended to:

- Provide increased capacity on the CBD fringe for long-term, low turnover employee-commuter and transit-commuter parkers.
- Provide time regulations more consistent with actual parker characteristics and needs.

As a result of site investigations described in PARKING STUDIES, preliminary plans were formulated for development of four new municipal lots, including upgrading one existing facility presently under private ownership, Site F. Plans for developing the Ridge Road, Site H, and Zabriskie, Site F, lots are shown in Figures 17 and 18, respectively. Proposals for the Union Street, Site E, and North Broad Street, Site I, lots are incorporated in the traffic operation improvement plans for the streets adjacent to each site, and are shown in Figures 34 and 29, respectively. Site E is shown in Improvement Plan No. 6B, and Site I is illustrated in Improvement Plan No. 4. Initial construction and site acquisition costs for these locations, estimated to be $320,000, are summarized in Table 13. Each lot can be expected to become self-sustaining if acquisition costs are excluded.

Table 14 lists our recommendations for time limits to be used both in the proposed surface lot facilities and in those existing surface facilities that are retained in the supply. The total municipal, surface parking lot supply resulting from our recommendations is also tabulated in this Table. The costs of revising existing meter rates and regulations, to conform to this table, is estimated to be $6,500, and is included in total parking improvement costs listed in Table 16.

FIGURE 17



PARKING SITE "H"

Ridge Road Lot

TABLE 13

PROPOSED MUNICIPAL SURFACE LOTS

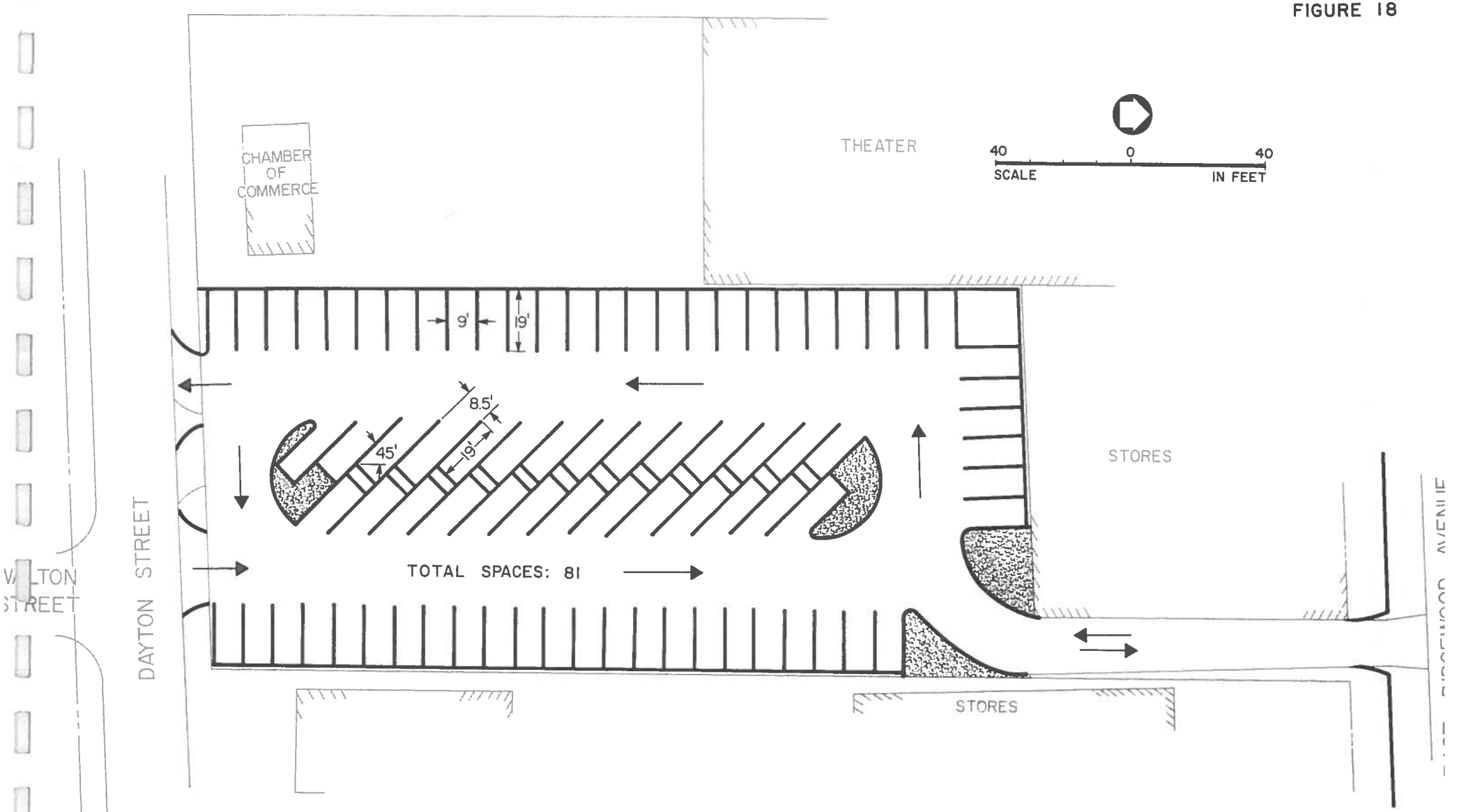
COST ESTIMATES

Item	Site H Ridge Road Lot (93 Spaces)	Site E Union Street Lot (34 Spaces)	Site I N. Broad Street Lot (26 Spaces)	Site F Zabriskie Lot (81 Spaces)	Total (234 Spaces)
	INITIAL				
Land	$ 0	$ 50,000	$ 0	$ 146,000	$ 196,000
Construction	75,000	20,000	17,000	12,000	124,000
COST	75,000	70,000	17,000	158,000	320,000
COST/SPACE	806	2,059	654	1,951	1,368
	ANNUAL				
Operational*	2,000	1,000	1,000	2,000	6,000
Tax Loss	0	2,000	0	6,000	8,000
COST	2,000	3,000	1,000	8,000	14,000
REVENUE	10,000	4,000	5,000	9,000	28,000
SURPLUS**	8,000	1,000	4,000	1,000	14,000

*Estimated $10 maintenance and $10 collection cost per space, total $20.

**Before Debt Service.

FIGURE 18



PARKING SITE "F"

Zabriskie Lot

TABLE 14

MUNICIPAL SURFACE LOTS - RECOMMENDED REVISIONS

Zone & Facility	EXISTING		PROPOSED		Net Change	Reason for Change
	Time Regulations* (Hours)	Number of Spaces	Time Regulation* (Hours)	Number of Spaces		
A-11-03	3	31	2	31	0	Parker Needs
11-03	12	43	12	43	0	
25-07	-	0	12	93	+93	New Ridge Rd. Lot
Sub-Total A		74		167	+93	
B-11-04	-	0	1	26	+26	New N. Broad Lot
02-05	3	69	3	69	0	
08-05	2	58	2	58	0	
09-05	2	20	2	40	+20	Parker Needs
09-05	4	20	-	0	-20	Parker Needs
09-08	1	7	2	7	0	Parker Needs
03-07	3	41	-	0	-41	Lost to Walnut Street Garage
Sub-Total B		215		200	-15	
C-05-05	3	38	2	38	0	Parker Needs
05-05	12	73	2	73	0	Parker Needs
06-08	-	0**	12	81	+81	Conversion of Private Lot (Zabriskie)
15-05	-	0	12	34	+34	New Union St. Lot
Sub-Total C		111		226	+115	
TOTAL		400		593	+193	

*All spaces metered

**85 Existing Private Spaces

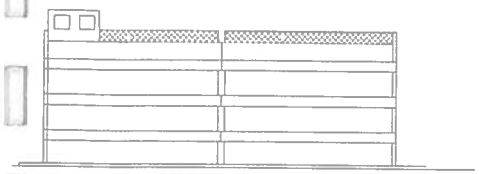
North Walnut Street Garage

Provision of a 410 space parking garage at the corner of North Walnut Street and Franklin Avenue is recommended to meet shopper parking needs and relieve parking congestion in adjacent areas due to overflow parking activity. The proposed facility uses a sloped floor design, technically known as a "Double Threaded Helix" ramp system, and is illustrated in Figure 19. This type design permits entrance and exit at both ends of the structure, one-way circulation, use of ramps for both circulation and parking, and allows motorists searching for a parking space to go up or down two stories on each complete circuit. A crossover at the middle of each floor permits motorists to change from going up to down resulting in a fast and convenient exit for departing motorists. This type parking garage is ideally suited to high turnover type parking usually associated with shoppers.

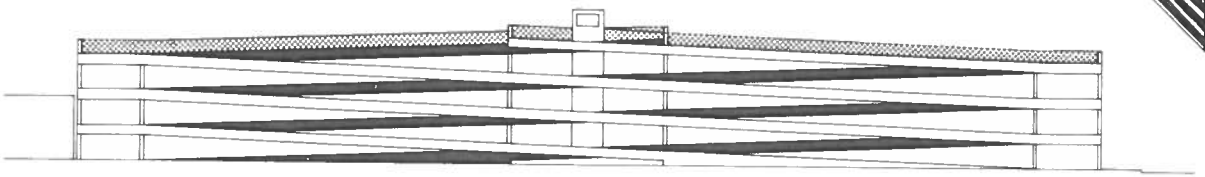
The "Double Threaded Helix" design results in an unenclosed, column free, clear span structure that perhaps can best be viewed as equivalent to layers of parking lots. Clear span construction is accomplished by using precast, prestressed posts and beams with a composite, cast-in-place, post-tensioned concrete deck. The open wall construction eliminates fire and ventilation problems and permits use of decorative exterior material, such as architectual aluminum grills. The structure can be designed to have a pleasing appearance, that will be harmonious with its surroundings. Clear span construction also permits parking stalls to be designed independently of the structure with little wasted space. Maximum use of this garage can be achieved by making it more attractive than alternate facilities. Measures of attractiveness include convenience of location, ease and safety in parking and competitive rates. Difficult parking experiences will not result in repeat usage by shoppers. The column free, spacious appearance provided by this type of design is appealing to parkers, particularly the woman shopper. Of all new self-service garages, 95 percent are currently clear span design. Total estimated cost of the proposed structure is $1,930,000 with $1,640,000 for construction and $290,000 for site acquisition.

The New York City Building Code should be used for its construction if the Village has not established a code regulation for open parking structures. The estimated construction cost of the facility is $4,000 per parking space. Architectural treatment, electrical and mechanical details, soil conditions and building code requirements will influence the final cost of the garage and their effect can only be estimated at this time.

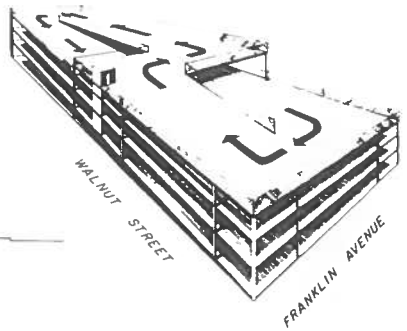
A shorter span design incorporating interior columns could reduce these construction costs. However, such a change would result in a loss of some parking spaces, provide less safe and less convenient parking and result in a loss of flexibility to change or revise parking space layout arrangements. The use of portable, steel framed garages also might reduce costs. Other construction methods, design, and materials may be employed individually or in combination to reduce costs. However, we believe our recommendation is the most appropriate design for present and future Village parking needs and in keeping with aesthetic considerations necessary to harmoniously blend a parking garage into the CBD. Care must be exercised when comparing lower building costs quoted from other areas of the country with costs for the New York-New Jersey Metropolitan Area. For example, one similar parking garage was recently advertised as costing about $1,570 per parking space. This garage was placed under contract in 1968 at lower prices. If built in New York City, by late 1969, this facility is estimated to cost about $2,900 per space. Considering the 20 percent annual cost escalation currently being experienced in this area, a comparable facility to be constructed in 1971 would approach $4,000 per space. The minimum time period in which a Ridgewood facility could be bid would be 1971-1972. Our estimated cost per space is further substantiated by our own experience. Edwards and Kelcey has completed plans for a parking garage for the New York City Department of Traffic. If contract bids were to be accepted in the next 60 days, this 600 space, prestressed concrete facility should be completed by late 1972 at an estimated cost of over $4,000 per space.

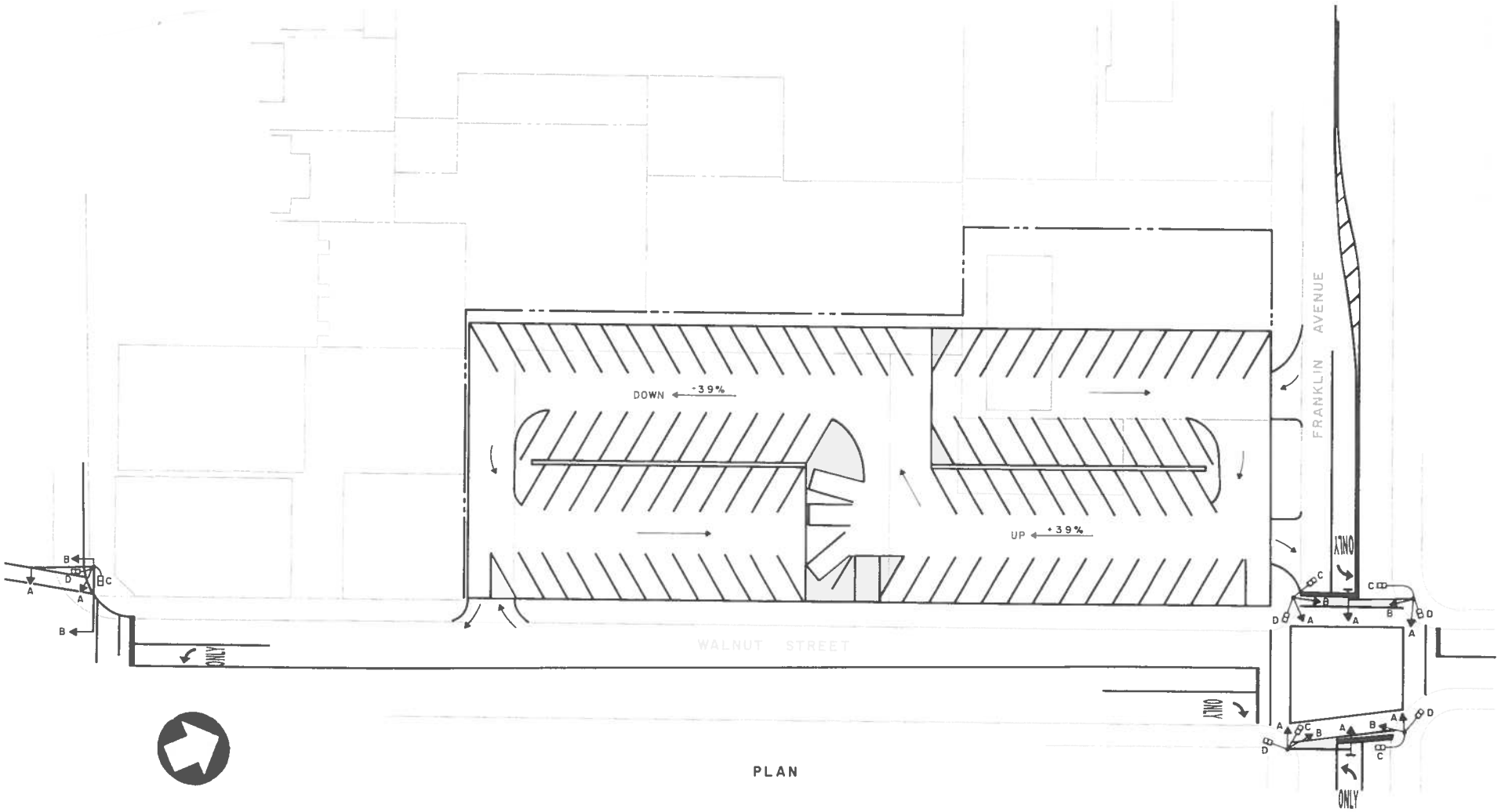


END VIEW



FRONT ELEVATION





PLAN

0 60 120
SCALE IN FEET

SITE "B"
North Walnut Street Parking Garage

With the cost of construction being a problem in the New York-New Jersey Area, an alternative economic study was made to determine if a parking charge rate could be established to make the proposed facility self-sustaining. The calculated $0.20 per hour rate we believe is unreasonable with respect to competing facilities in Ridgewood and surrounding shopping areas.

On the basis of this economic analysis, we have concluded the facility cannot be expected to become financially self-supporting. A subsidy of a deficit resulting from a more practical and lower parking charge rate could make the garage, as proposed, economically feasible. With both the Village and business interests benefiting from the garage, it seems appropriate both should participate in such a subsidy, possibly on an equal basis. Obvious benefits to nearby businesses include increased patron accessibility. The Village could benefit directly through increased revenues from more business activity and increased real property values resulting from improved CBD accessibility, safety and convenience.

The Village portion of the subsidy should be drawn from parking meter revenues. These are expected to increase as a result of the proposed rate changes. Any remainder required could be from general Village funds. Business participation could be organized through creation of a parking assessment district, and/or a "park-'n-shop" type subsidy arrangement. A number of alternative formulas would be available for determining assessments, including the establishments of concentric benefit zones of decreasing assessment within the district. The area nearest the facility, which would tend to gain the greatest benefit, would thus carry the greatest portion of the total assessment. The "park-'n-shop" subsidy arrangement could be provided in any of several ways. We recommend a system of token reimbursement by participating merchants. These tokens purchased by the participating merchants from the Village could be used in Village parking meters. Their rate of distribution could be determined by the individual merchants.

Zoning Requirements

Surveys of current demand for municipal and customer-employee facilities in the Ridgewood CBD clearly demonstrate the generation of parking demand varies by type of associated land use with indicated apparent space needs arranging from 0.5 to 7.6 spaces per 1,000 sq. ft. of floor area for various selected land use activities. These surveys also indicated overall parking activity in relation to the character and density of Ridgewood business activity.

The current zoning ordinance requires one off-street parking space per 300 sq. ft. of floor area for all types of CBD land use. Comparison of rates calculated from our survey data with parking generation and zoning requirements of other similar CBD areas, and review of generally accepted planning standards, resulted in recommendations for off-street parking space requirements as shown in Table 15. These requirements are minimum standards applicable to the CBD as the whole, with selected land use activities formed into minimum groupings for clarity and utility. Specific developments may require additional parking space to meet their individual needs, particularly if located near the core of the CBD where shopper attraction rates are high.

In most instances, the recommended rates are in close accord with rates determined from the postcard demand survey. For food and service categories, however, the rates are higher than observed in consideration of special usage characteristics and survey underreporting. The recommended parking space requirement for the eating and drinking land use category is given in terms of seats, rather than floor area, a measure considered more applicable to parking demand for this activity. A rate of one parking space for each two seats is recommended based on the relatively low observed floor space per seat characteristic of establishments in the Ridgewood CBD.

Additional consideration must be given to existing or potential municipal facilities in establishing requirements for private off-street parking. Duplication of services, as well as deficiencies, can adversely affect the desirable balance between parking supply and demand and, subsequently, the efficient use of the CBD land resources. Effective land development should be of concern to both the individual land owner, who seeks maximum economic use of his holdings, and the community, which wishes to maintain the attractive character and economic basis of the business district. To promote desirable demand-supply relationships, we recommend provision be made for private participation in the development of municipal parking. Such participation would be in the form of optional financial contributions for municipal parking space development, equivalent to the cost that would be incurred otherwise in providing the private spaces required by zoning ordinance. Participation would require the demand for all or part of the required private spaces be satisfied, either directly or indirectly, by new or existing municipal facilities. Such a provision would assist in meeting needs of high parking demand areas, while allowing more efficient site development of private properties.

Financial Program

An estimate of annual costs for implementing all parking recommendations proposed in this report are listed in Table 16. These include capital costs for construction of new facilities and revision of existing facilities,and the costs of maintaining these facilities at an acceptable level of service. Table 16 also lists revenue estimated to be provided by all facilities using our recommended rates and the measured usage observed in this study.

For all parking facilities, the total meter revenue estimated for 1972 is $178,300. This was calculated by doubling the 1969 meter revenues of $84,000 in anticipation of the rate increase after providing for an annual growth of two percent

TABLE 15

OFF-STREET PARKING

RECOMMENDED ZONING REQUIREMENTS

SPACE REQUIREMENT 1 Space Per:	Land Use Category
200 SF GFA*	Hardware Food General Merchandise
300 SF GFA	Apparel Miscellaneous Retail Finance, Real Estate, Insurance Business Services Personal Services
400 SF GFA	Professional Services
600 SF GFA	Furniture Automotive
2 Seats	Eating and Drinking

*Square feet of Gross Floor Area.

derived as shown in Table 7. This estimate does not include potential growth generated by improved parking facilities, nor has it been reduced in anticipation of lesser usage due to the increased rates. The proposed, relatively inexpensive, ten cents per hour charge for parking is not believed to be a deterrent to parking usage in the Village. The same is true for the proposed rate of $12.00 per month for long-term, contract parkers. During the study, fees for long-term parking in the Station Plaza lot were raised from 25 to 50 cents daily without any apparent decrease in usage.

The revisions in time limit regulations proposed for on-street facilities in Table 12 and for off-street facilities in Table 14 are not expected to adversely affect parking usage. The proposed limits are intended to increase parking turnover at prime on-street locations to increase their availability for the majority of parkers, those parking for short durations as shown in Table 4. The most evident is the change from a two hour to a 30 minute limit for parking on East Ridgewood Avenue. The revised limits in off-street facilities are intended to be compatible with the type parking usage measured by our surveys in these facilities or otherwise anticipated.

A rate of five cents for 15 minutes of parking with a 30 minute time limit for 21 prime parking spaces in facilities 01-03, 02-03, 08-01 and 09-01, which are all those spaces at both curbs of East Ridgewood Avenue between Broad Street and Oak Street, as shown in Figure 2, is proposed to reduce competition with the parking garage. No increase in revenue from this revision is included in the estimate.

The use of "meter maids" for enforcement of parking regulations as initiated during the study is recommended to be continued. These "meter maids" should also cancel unused meter time observed at vacant parking spaces. This action will require modification of the existing parking meters, but should otherwise result in an increase in meter revenue without added expense.

The most reasonable method of estimating the deficit for the proposed parking garage, if meter revenues are used for subsidy, is to balance revenue received

TABLE 16
ESTIMATED COSTS - PROPOSED PARKING IMPROVEMENTS

Item	Garage	New Lots	All Other	Totals
Metered Spaces	410	234	956	1,600
CAPITAL COSTS				
Land and Buildings	$ 290,000[2]	$ 196,000	$ 0	$ 486,000
Construction	1,640,000	124,000	27,500[5]	1,791,500
Sub-Totals	1,930,000	320,000	27,500	2,277,500
Debt Service [1]	155,600	25,800	2,200	183,600
OPERATING COSTS				
Payroll & Maintenance	$ 30,000[3]	$ 6,000[4]	$ 18,600[4]	$ 54,600
Tax Loss	9,000	8,000	0	17,000
Sub-Totals	39,000	14,000	18,600	71,600
REVENUE				
Per Meter	195+	119+	73+	111+
Sub-Total	80,000	28,000	70,300	178,300
NET COSTS				
Surplus (Before Debt Service)	$ 41,000	$ 14,000	$ 51,700	$ 106,700
Balance (After Debt Service)	(-) 114,600	(-) 11,800	(+) 49,500	(-) 76,900

1) 30 year serialized bonds at 7 percent annual interest (Debt Service = 0.080586 x capital required)
2) Includes purchase of existing leased Walnut Street lot.
3) Estimated at $75 per space
4) Estimated at $20 per space ($10 maintenance plus $10 collection). Published Budget figures of $40 to $50 per meter include non-parking items. National averages for 1968, $15 per space for cities with populations of 25,000 to 50,000.
5) Includes $6,500 for revising meter rates and regulations in existing surface lots.

with expenses incurred. Table 16, prepared with these stipulations, indicates an annual deficit of $76,900 for Village parking facility operations incorporating all our recommendations. Part of this deficit could be recovered if parking violation fines were dedicated to a Parking Authority. In 1969, such fines amounted to $18,000, a 22 percent increase over 1968. The enforcement aspect of parking violation fines could be paid for by Parking Authority funds and even a portion of the judicial expense could be provided through Parking Authority supervision of uncontested parking fine collections.

Consideration was given to providing tax ratables on the ground floor of the parking garage to assist in subsidizing the costs of its parking spaces. With the 44 foot height limitation of structures in the Village, the loss of potential spaces on the ground floor of the garage to commercial use, together with the added demand created for those remaining spaces by such use, made this proposal counter-productive to solving the overall CBD parking problem. Only about 75 percent of the ground floor of the structure could be returned to commercial use because of the space required garage for garage ramps and structural framing

The debt service figure for the parking garage of $155,600, shown in Table 10,is the approximate amount required annually to retire 30 year serialized bonds bearing a seven percent interest rate for a capital investment of $1,930,000. A serial issue is redeemable in reasonably uniform amounts at uniform intervals during the life of the issue with part of the principal being paid each year. For an interest rate of seven percent over a 30 year period the Capital Recovery Factor is 0.080586. This factor, multiplied by $1,930,000 of capital required,provides the amount of annual debt service payment.

A more accurate definition of construction costs can be made prior to determining the actual amount of bonding required to underwrite costs by preparing preliminary design plans and consulting with prospective contractors and suppliers. These preliminary plans would be a necessary first step in the design of a parking garage.

TRAFFIC OPERATIONS

System Considerations

The Bergen County plan for widening North Maple Avenue from East Ridgewood Avenue north to Marshall Street together with improvements in traffic signals at both the East Ridgewood Avenue and Franklin Avenue intersections should adequately provide for the high volume, north-south traffic movements on North Maple Avenue within these limits.

Adequate provision for efficient traffic flow through the CBD, including east-west movements, cannot be obtained on any individual facility as long as a single location is required to accommodate all crossings of the railroad. The continued existence of this limitation as a result of physical conditions has been acknowledged.

Our recommendations, therefore, provide for a number of improvements, the combination of which are intended to result in safer and more expeditious traffic movements in and through the CBD. The through movement west on East Ridgewood Avenue will be made more easily via a high capacity, widened, East Ridgewood Avenue to either Cottage Place, North Walnut Street or Oak Street for a right turn north to a signal controlled entry onto Franklin Avenue than by turning left onto Franklin Avenue from North Maple Avenue against high volume, conflicting traffic. North to west and west to north movements will continue to circulate as they do today with improved safety resulting from intersection improvements and added signal control at points of hazard and congestion. Through movement from west to east or south will be encouraged to use North Broad Street and both East Ridgewood Avenue and Hudson-Dayton Streets.

The proposed traffic signal operations will provide preferential, progressive traffic movement westbound on Franklin Avenue from North Maple Avenue to Oak Street and eastbound on North Broad Street and East Ridgewood Avenue to encourage these intended flow patterns. As a result, widening of Franklin Avenue from Oak Street to North Maple Avenue does not become necessary.

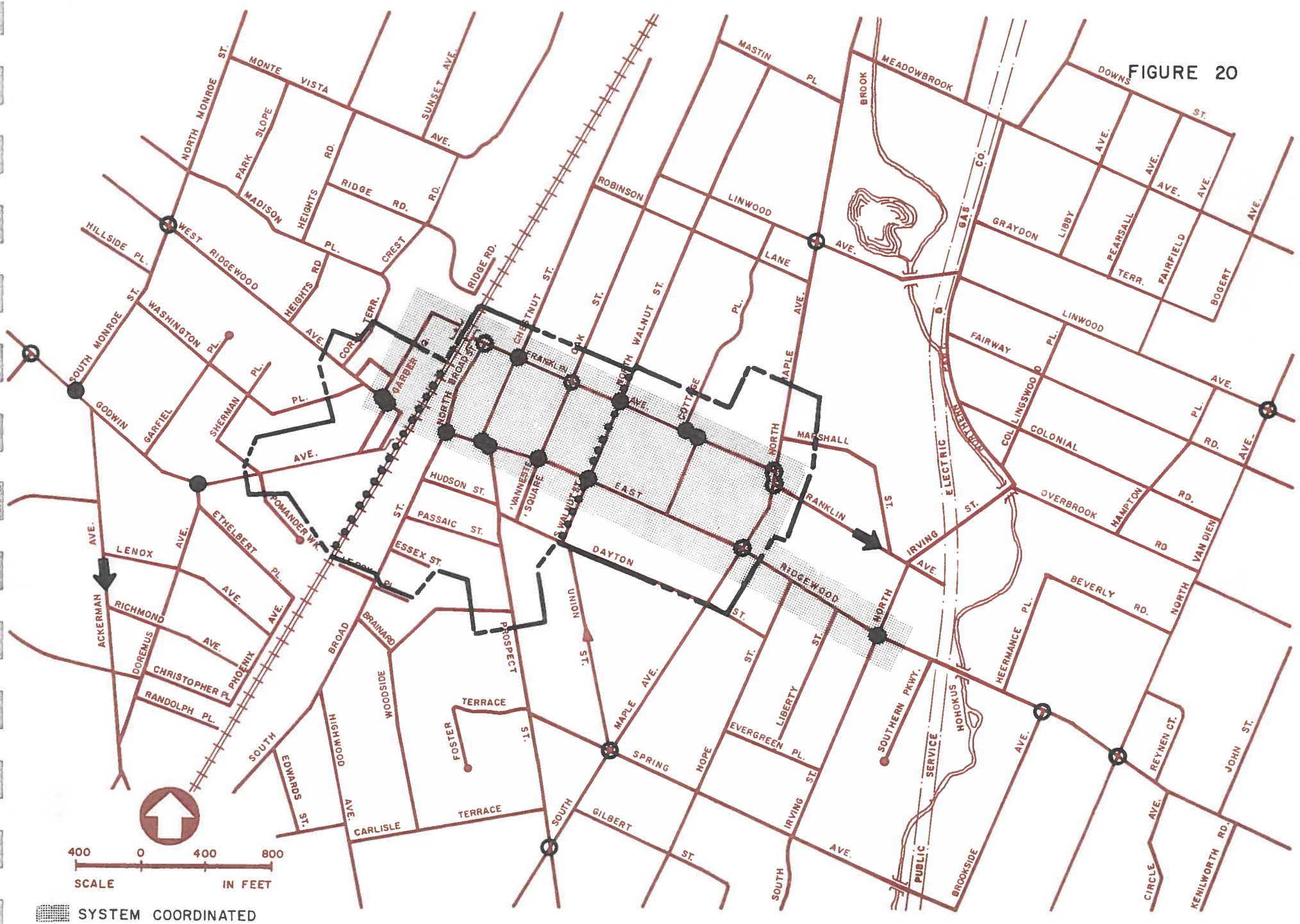
Traffic from the south destined west of the railroad will be encouraged to use Ackerman Avenue and Doremus Avenue south of the CBD. Other traffic from the south destined for the business area will be encouraged to use Prospect or Union Streets to Dayton and Hudson Streets.

An alternative plan involving one-way street operation for most CBD streets was also studied. This type operation was believed inappropriate for the Village requiring, as it would, drastic revisions in circulation patterns.

For the recommended circulation strategy to be effective, eight new traffic signals are recommended to be installed in the CBD and three more installed outside. These signals are in addition to those presently in operation, as shown in Figure 20. While this number of new traffic signal installations may seem excessive, they are essential for smooth flow, efficient circulation and reduced congestion and hazards. Traffic signal warrants, as discussed in Chapter 3, were considered in forming these recommendations. The degree of intersection control proposed is essential for coordination between traffic movements at adjacent intersections to insure smooth traffic flow. For these reasons, a coordinated signal system is recommended to include the area shown in Figure 20.

This traffic signal system is to be supervised by a separate master controller capable of providing a minimum of four distinct programs of operations. These programs would include a) flashing operation for those periods when traffic

FIGURE 20



TRAFFIC SIGNAL CONTROL

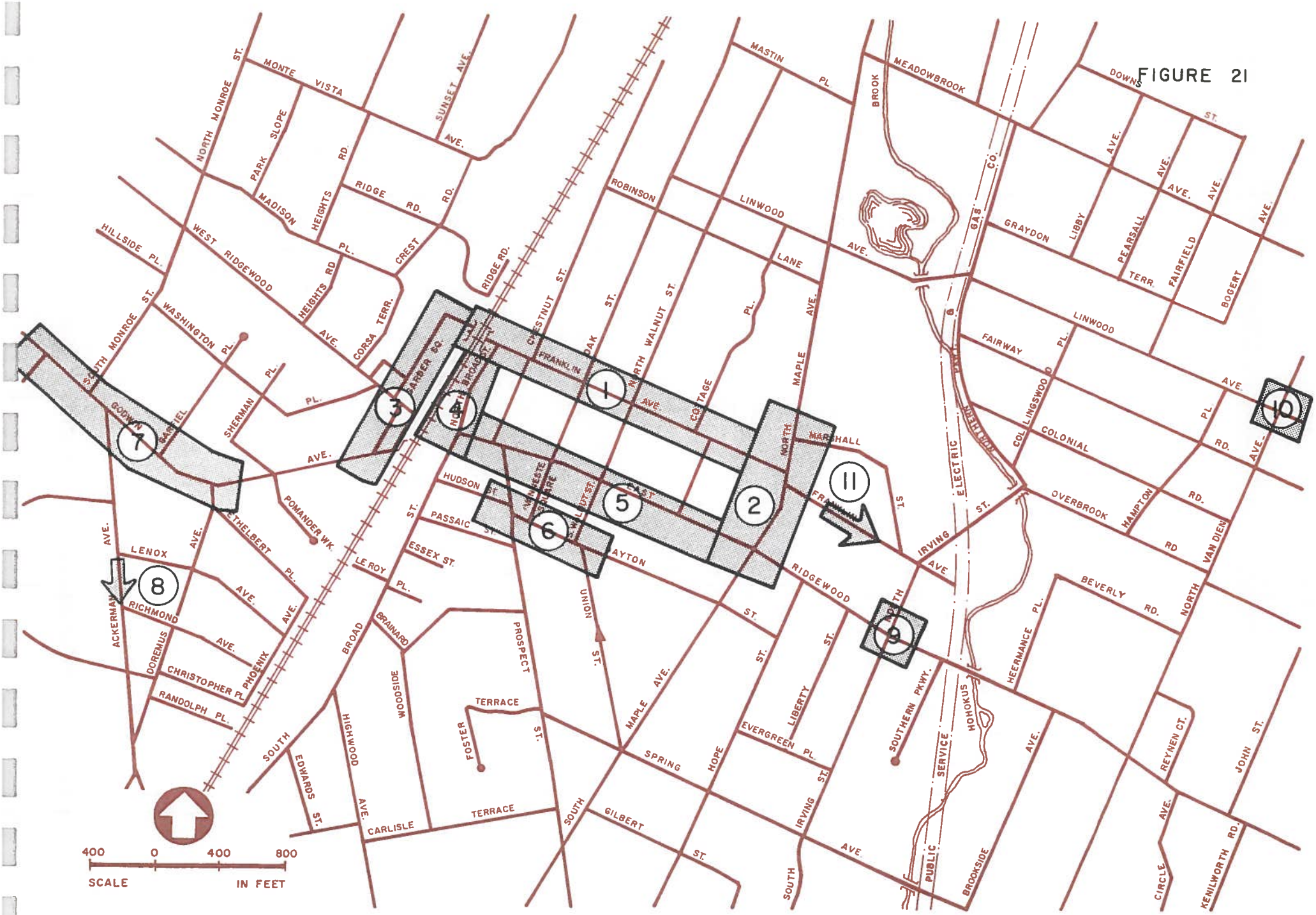
signal control was not required or warranted, b) inbound progression for the morning peak period when traffic is moving into and through the CBD area, c) a comparable progression for the afternoon peak period with traffic basically moving through and out of the CBD area, and d) an average operation for those remaining periods when traffic signal control is needed and specific directions of traffic flow do not need to be favored.

In addition to the system proposed for the CBD, the traffic signal installation proposed for the intersection of South Monroe Street with Godwin Avenue is to be interconnected and coordinated with the existing signal on Godwin Avenue at Lincoln Avenue. The traffic signal proposed for the intersection of Doremus Avenue with Godwin Avenue and the existing traffic signal at North Van Dien and Linwood Avenues are to be installed and modified, respectively, to provide full traffic actuated operation, totally responsive to varying traffic demands. Both are to operate independently of all other signals for maximum flexibility and efficiency.

Site Improvements

Eleven separate traffic improvement sites or areas were considered in this study and all are shown in Figure 21. Included are one-way proposals for Ackerman Avenue, Improvement Plan 8 (I. P. 8) and Franklin Avenue, I. P. 11. Because these proposals are integral parts of Improvement Plans 7 and 2, respectively, a discussion of their merits is included with the descriptions of the latter. As Improvement Plan 10 at the Van Dien Avenue intersection with Linwood Avenue consists only of revisions in traffic operations, a sketch plan was not provided for this location. Functional sketch plans for all other sites are included in this report. Estimated costs for all proposed Improvement Plans are listed in Table 17.

FIGURE 21



KEY MAP - TRAFFIC IMPROVEMENTS

(Improvement Plan 1 - Franklin Avenue, Garber Square to North Maple Avenue)

Recommendations for Franklin Avenue from North Broad Street to near Maple Avenue are illustrated in Figures 22, 23 and 24. These improvements primarily consist of organizing east-west traffic flow through the use of standard markings and signs, the providing of traffic signal control at the intersection of Chestnut Street, North Walnut Street and Cottage Place, and modification to the existing traffic signal control at the intersections of North Broad Street and Oak Street so these latter installations are compatible with and similar to those proposed. The general design and the location of all traffic signals are to a standard that satisfies national requirements. These proposed designs will result in maximum signal visibility for both motorists and pedestrians.

As illustrated in Figure 22, the North Broad Street intersection with Franklin Avenue is to be modified by the addition of a channelizing island, lane use signs, appropriate pavement marking, and revision of the existing sequence of traffic signal operation. Non-conflicting right turn movements are to be released on both the west and south approaches as shown, and the channelizing island will require eastbound motorists in the south lane on Franklin Avenue to turn south on North Broad Street, resulting in a gain of five curb parking spaces on block faces 01-01 and 02-01, as shown in Figure 22 and 23.

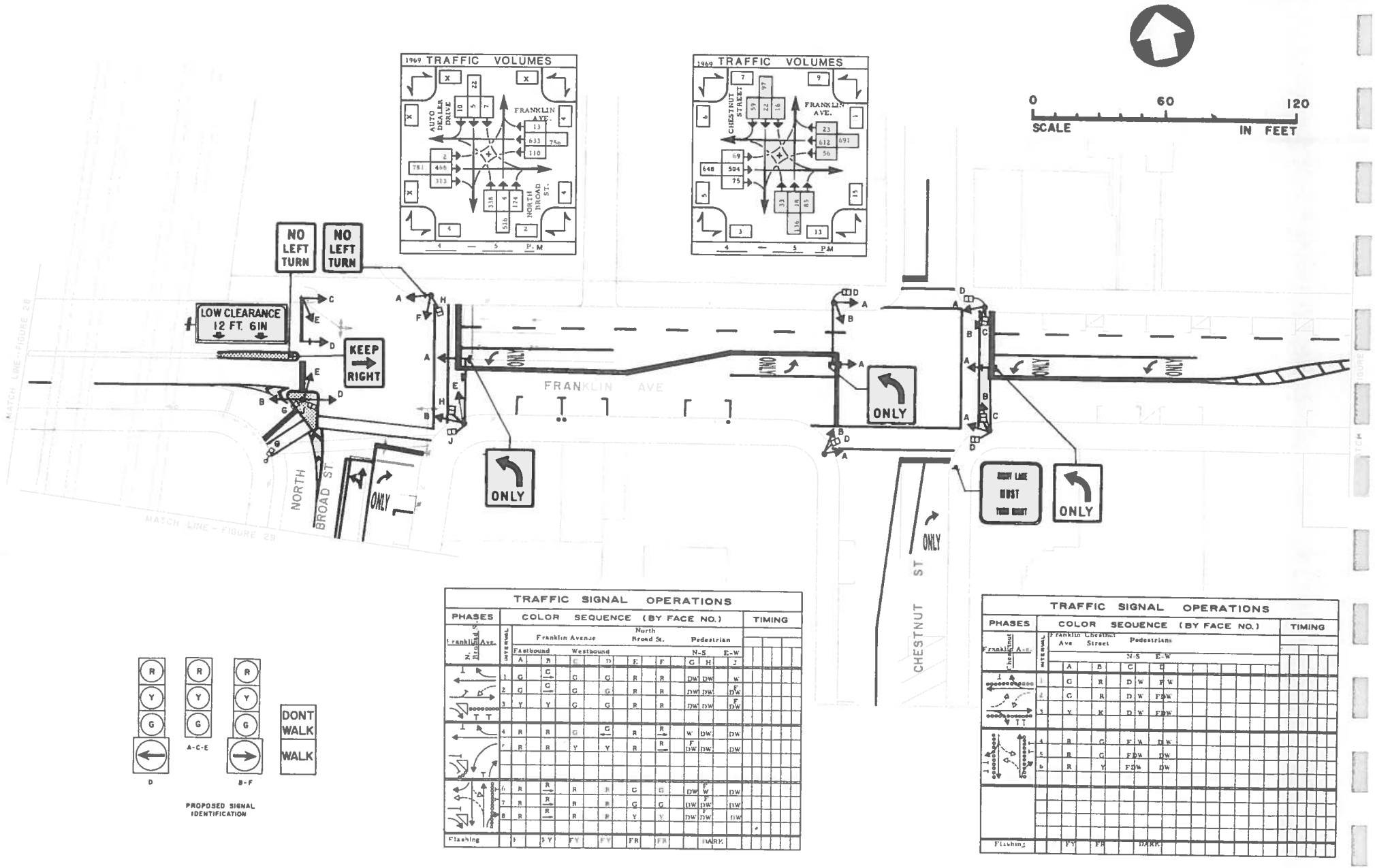
Elimination of the on-street parking spaces on block face 23-03, as shown in Figure 23,permits safe, smooth, high capacity westbound traffic flow in this block. Signals, markings and signs are proposed for both the North Walnut Street and Cottage Place intersections as shown in Figures 23 and 24, respectively.

TABLE 17

ESTIMATED COSTS - PROPOSED TRAFFIC IMPROVEMENTS

Location		Signal Equipment	General Construction	TOTAL
1	Franklin Avenue	$ 93,000	$ 10,500	$ 103,500
2	Maple & E. Ridgewood Avenues	22,000	2,500	24,500
3	Godwin & W. Ridgewood Avenues	18,500	28,000	46,500
4	E. Ridgewood Ave. & N. Broad St.	18,000	12,000	30,000
5	E. Ridgewood Avenue	58,500	9,500	68,000
6	Hudson & Dayton Streets	-	20,500	20,500
7-8	Godwin, Ackerman Ave. & Monroe Street	42,500	33,000	75,500
9	E. Ridgewood Ave. & Irving St.	14,500	4,500	19,000
10	Linwood & Van Dien Avenues	3,500	1,500	5,000
11	Franklin Ave. (N. Maple Avenue & Marshall Street)	-	-	-
TOTAL		$ 270,500	$ 122,000	$ 392,500

Note: Does not include costs for E. Ridgewood Avenue widening and Franklin-Maple improvements previously proposed by others.



TRAFFIC SIGNAL OPERATIONS

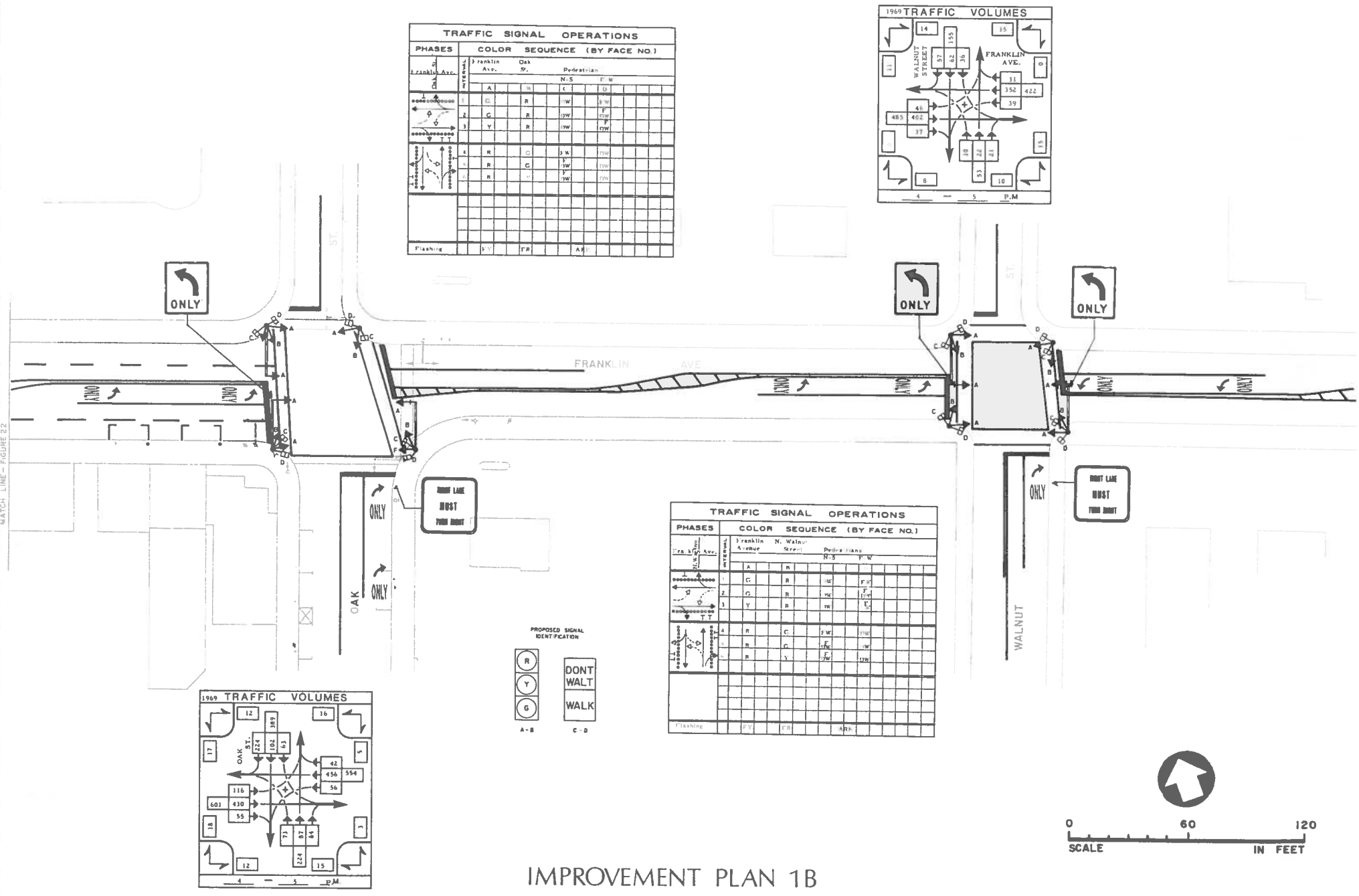
PHASES	COLOR SEQUENCE (BY FACE NO.)												TIMING
		Franklin Avenue				North Broad St.			Pedestrian				
		Eastbound		Westbound					N-S		E-W		
	INTERVAL	A	B	C	D	E	F		G	H	I	J	
1	1	G	G	G	G	R	R		DW	DW		W	
2	2	G	G	G	G	R	R		DW	DW		F DW	
3	3	Y	Y	G	G	R	R		DW	DW		F DW	
4	4	R	R	G	G	R	R		W	DW		DW	
5	5	R	R	Y	Y	R	R		F DW	DW		DW	
6	6	R	R	R	R	G	G		DW	F W		DW	
7	7	R	R	R	R	G	G		DW	F DW		DW	
8	8	R	R	R	R	Y	Y		DW	DW		DW	
Flashing		FY	FY	FY	FY	FR	FR		DARK				

TRAFFIC SIGNAL OPERATIONS

PHASES	COLOR SEQUENCE (BY FACE NO.)						TIMING
		Franklin Ave	Chestnut Street	Pedestrians			
	INTERVAL	A	B	C	N-S D	E-W	
1	1	G	R	D W	F W		
2	2	G	R	D W	F DW		
3	3	Y	R	D W	F DW		
4	4	R	G	F W	D W		
5	5	R	G	F DW	DW		
6	6	R	Y	F DW	DW		
Flashing		FY	FR	DARK			

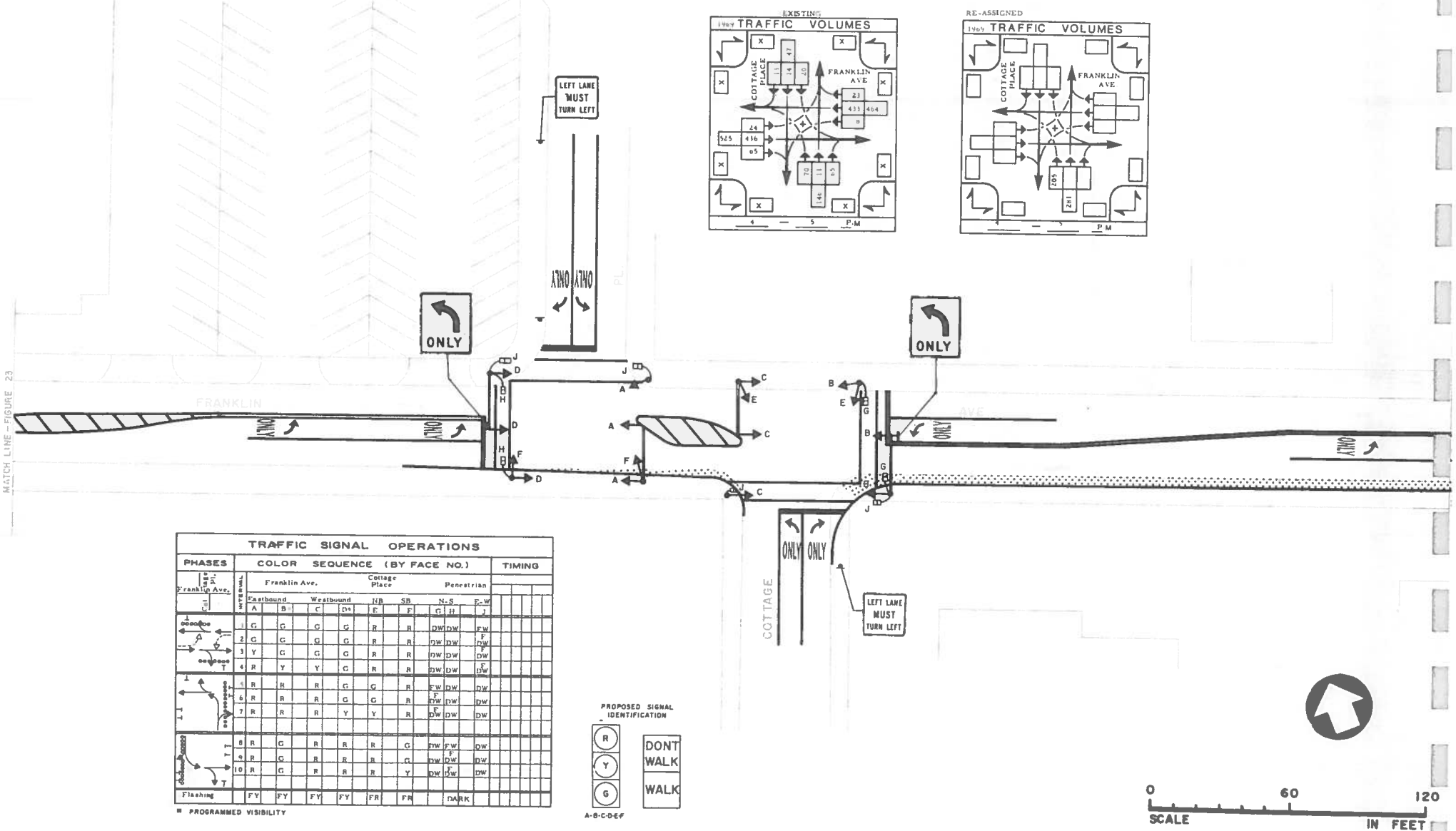
IMPROVEMENT PLAN 1A

Franklin Avenue At North Broad And Chestnut Streets



IMPROVEMENT PLAN 1B

Franklin Avenue at Oak and North Walnut Streets



TRAFFIC SIGNAL OPERATIONS

PHASES	COLOR SEQUENCE (BY FACE NO.)												TIMING
		Franklin Ave.				Cottage Place		Pedestrian					
	INTERVAL	Eastbound		Westbound		NB	SB	N-S		E-W			
		A	B	C	D*	E	F	G	H	I	J		
1	1	G	G	G	G	R	R	DW	DW	F DW			
2	2	G	G	G	G	R	R	DW	DW	F DW			
3	3	Y	G	G	G	R	R	DW	DW	F DW			
4	4	R	Y	Y	G	R	R	DW	DW	F DW			
5	5	R	R	R	G	G	R	F DW	DW	DW			
6	6	R	R	R	G	G	R	F DW	DW	DW			
7	7	R	R	R	Y	Y	R	F DW	DW	DW			
8	8	R	G	R	R	R	G	DW	F DW	DW			
9	9	R	G	R	R	R	G	DW	F DW	DW			
10	10	R	G	R	R	R	Y	DW	F DW	DW			
Flashing		FY	FY	FY	FY	FR	FR	DARK					

* PROGRAMMED VISIBILITY

IMPROVEMENT PLAN 1C

Franklin Avenue At Cottage Place

(Improvement Plan 2 - Maple Avenue, East Ridgewood Avenue to Marshall Street)

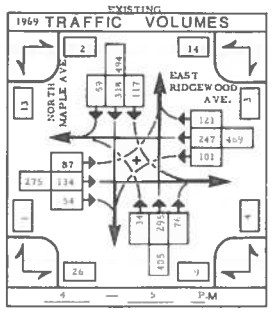
Recommendations for the improvement of North Maple Avenue from just south of East Ridgewood Avenue to just north of Marshall Street are shown in Figures 25 and 26. These improvements are generally compatible with Bergen County's proposal for the widening of North Maple Avenue at Franklin Avenue. The work proposed by Bergen County includes:

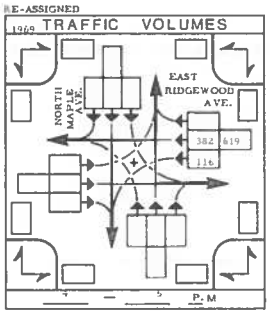
- Acquisition of right-of-way along both North Maple Avenue and Franklin Avenue.
- Widening of both streets.
- Replacement of the existing traffic signals.
- Revision of traffic signal control from pretimed to a form of semi-traffic actuation.
- Revision of two-way Franklin Avenue between North Maple Avenue and Marshall Street to a one-way eastbound operation (Improvement Plan 11).

We generally concur with all these proposals except for the suggested form of traffic signal control. We have recommended all intersections within the CBD use a pretimed form of control, to permit a precise system type of coordinated operation. This cannot be achieved if the semi-traffic actuated control proposed by Bergen County is installed.

As indicated in Figure 26, our detailed recommendations for physical channelization and widening of this intersection and the physical location of traffic signal

FIGURE 25



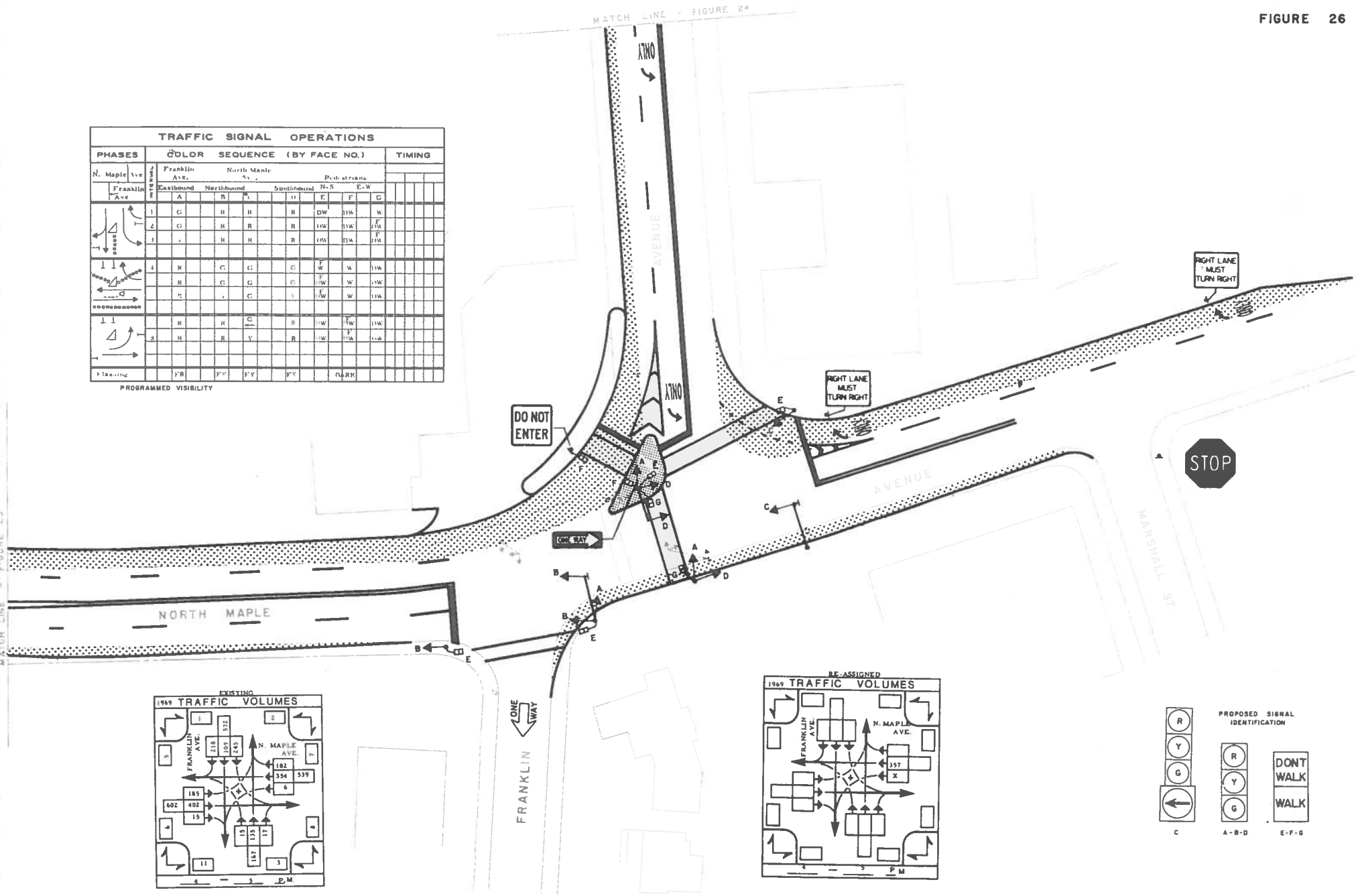


TRAFFIC SIGNAL OPERATIONS

PHASES	COLOR SEQUENCE (BY FACE NO.)															
E. Ridgewood / Maple Ave.	INTERVAL	East Ridgewood E-W		Maple Ave. N-S		Pedestrians E-W		Pedestrians N-S								
		A		B		C		D								
1		G		R		F DW		DW								
2		G		R		F DW		DW								
3		Y		R		F DW		DW								
4		R		G		DW		F W								
5		R		G		DW		DW								
6		R		Y		DW		F DW								
Flashing		FY		FR		DARK		DARK								

IMPROVEMENT PLAN 2A

Maple Avenue at East Ridgewood Avenue



TRAFFIC SIGNAL OPERATIONS

PHASES	COLOR SEQUENCE (BY FACE NO.)															TIMING
N. Maple Ave / Franklin Ave	INTERVALS	Franklin Ave. Eastbound			North Maple Ave. Northbound				South Bound			Pedestrians N-S		E-W		
		A			B				H			E		F	G	
	1	G			H			H			R	DW		DW	W	
	2	G			H			R			R	DW		DW	F DW	
	3	-			H			R			R	DW		DW	F DW	
	4	R			G			G			G	W		W	DW	
		R			G			G			G	F DW		W	DW	
		R			-			G			-	F DW		W	DW	
	5	R			H			C			R	DW		W	DW	
		H			R			Y			R	DW		F DW	DW	
Flashing		FR			FY			FY			FY			DARK		

PROGRAMMED VISIBILITY

IMPROVEMENT PLAN 2B

North Maple Avenue at Franklin Avenue and Marshall Street

SCALE 0 60 120 IN FEET

appurtenances do not entirely coincide with the County proposal. Our recommended traffic signal configuration will, however, be basically uniform with other traffic signals being proposed for the CBD, from the standpoint of both physical location and traffic signal indication display.

Special traffic signals are proposed for this intersection which will use signal displays programmed to be visible only to the specific traffic movements for which they are intended. This is necessary to insure the intersection area is clear of conflicting traffic movements prior to the release of waiting vehicles on the other approach. In addition, standard "WALK-DONT WALK" signal indications are used to signal pedestrians of the appropropriate time to cross either street and to warn when insufficient time remains to begin crossing before release of conflicting cross street traffic movements.

As noted, Franklin Avenue is recommended to be made one-way eastbound from North Maple Avenue to Marshall Street. This change should be imposed only when Improvement Plans 1, 5 and 9 are implemented. This qualification is necessary as these improvements form an integrated operation in which the absence of any one part will result in failure of the other parts. For example, Franklin Avenue as a one-way eastbound operation would make the traffic signal installation at North Maple Avenue more effective by removal of one approach volume requiring service. At the same time, traffic formerly approaching from the east destined west will be rerouted to East Ridgewood Avenue. Without the other traffic improvements to promote westerly movement via Cottage, Walnut and/or Oak Street, this traffic will turn north on Maple Avenue at East Ridgewood Avenue and then continue westerly on Franklin. The additional left turning volume at Franklin Avenue is considered prohibitive to effective operations. The isolated improvement of Franklin and Maple Avenues, therefore could be self-defeating. Adoption of the proposed circulation plan for traffic controls is essential if additional congestion is to be avoided.

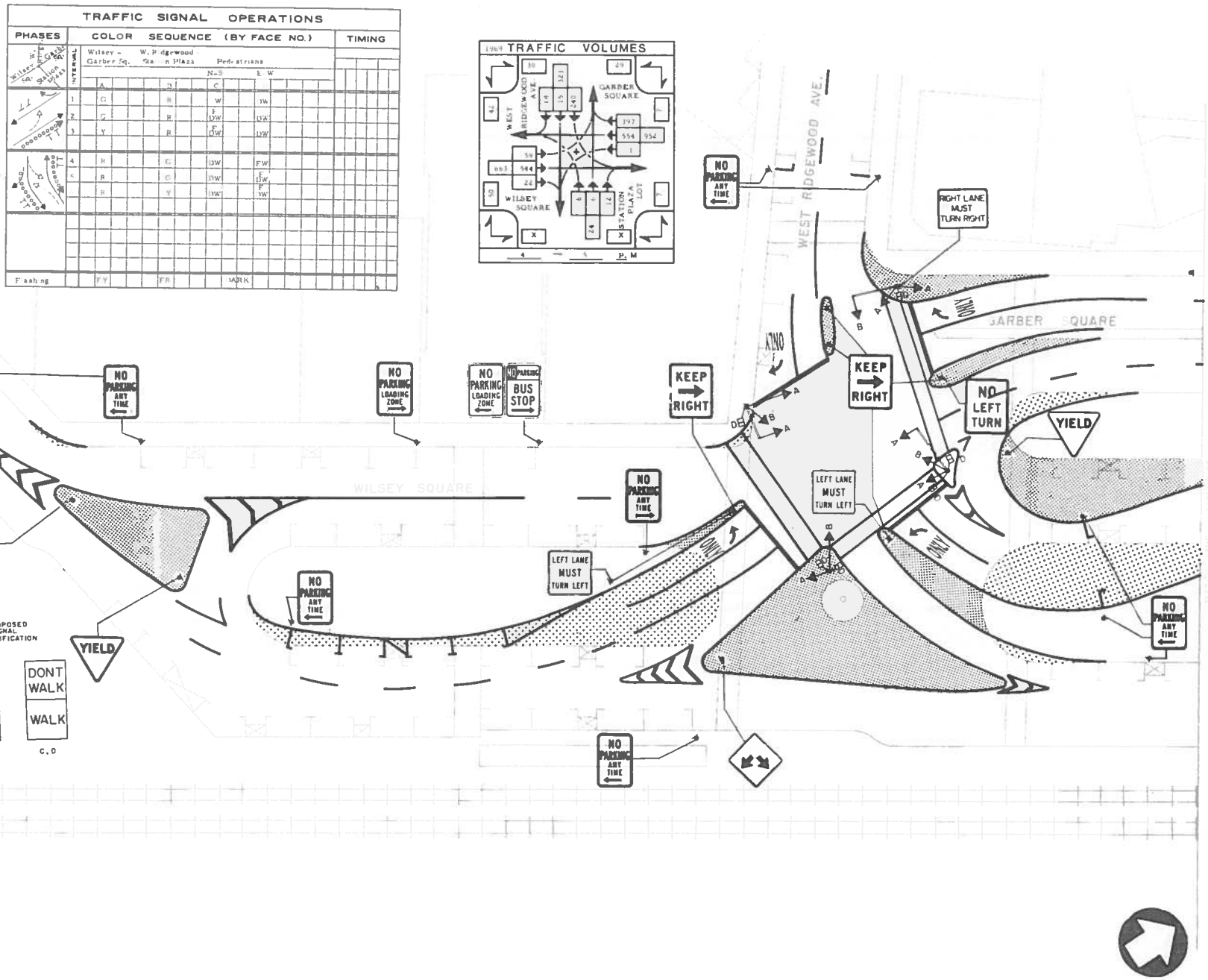
The extension of a widened North Maple Avenue to the East Ridgewood Avenue intersection requires the modification to the existing physical layout of this intersection and the traffic signal control. Recommendations for these changes are indicated on Figure 25, which also shows the proposed widening by others of East Ridgewood Avenue west of Maple Avenue. This widening is a vital part of our circulation recommendation.

(Improvement Plan 3 - Wilsey and Garber Squares at West Ridgewood, Godwin and Franklin Avenues)

This area, between Franklin Avenue and Godwin Avenue, is confusing and hazardous to motorists. As illustrated in Figure 27, extensive channelization and realignment of the Wilsey Square and Garber Square approaches to West Ridgewood Avenue are proposed, the new alignments being more compatible with natural traffic flow movements.

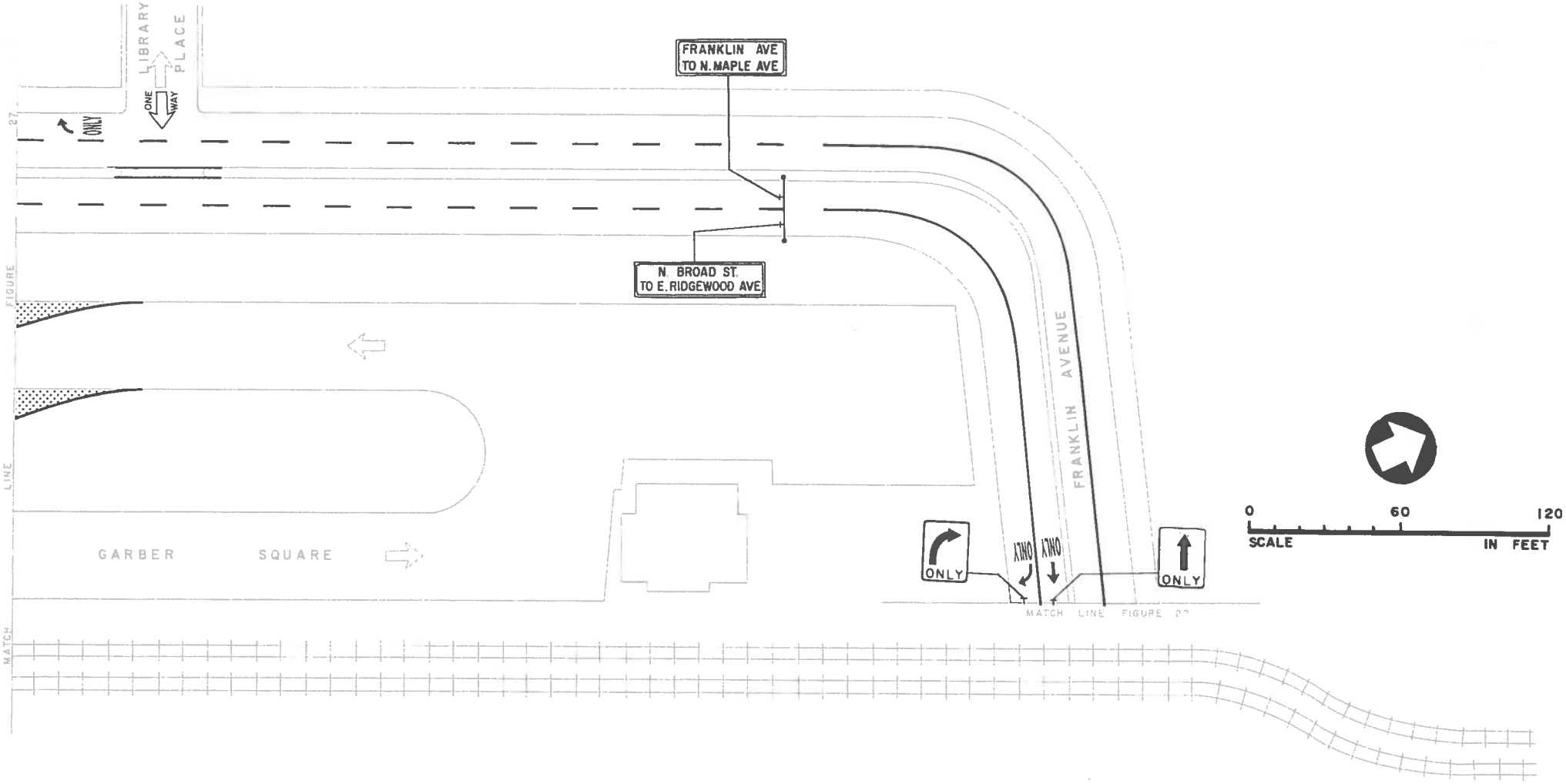
The entrance and exit for the Station Plaza municipal parking lot, facility 11-03, are also proposed to be modified as indicated. The combination of these changes results in a compact intersection area with clearly defined vehicular and pedestrian paths which reduce the potential conflict area. Traffic signals are also proposed to be installed, as shown in Figure 27, to safely and efficiently control conflicting vehicular and pedestrian movements.

The continuation of Garber Square into Franklin Avenue from West Ridgewood Avenue, as shown in Figure 28, is recommended to be provided with clear lane definition and overhead lane-use control signs to expedite smooth flow around the right-angle turn and to properly organize eastbound traffic into the lane which will ultimately provide a path to their destination. In view of the mandatory lane usage at the intersection of Franklin Avenue with North Broad Street, the recommended guide and regulatory signing becomes mandatory for smooth and safe operation.



IMPROVEMENT PLAN 3A

Wilsey and Garber Squares at West Ridgewood and Godwin Avenues



IMPROVEMENT PLAN 3B

Garber Square at Franklin Avenue and Library Place

The restricted use and accident potential resulting from permitting south to west left turns into Library Place, as illustrated in Figure 12, could be eliminated by prohibiting such turns. Under this circumstance, users of the Library living west of the railroad would be forced to enter the CBD area east of the railroad and return in order to enter Library Place.

As most users of this street facility are believed approaching from the west, their access is more favorable if the existing Library Place one-way westbound operation were reversed. We, therefore, recommend this change and the closing of the median in front of Library Place on Garber Square, as shown in Figure 28, for maximum utility and safety.

Traffic flow and safety were determined to be the major consideration in the Station Plaza, Wilsey-Garber Square area.

Our recommendation is designed to solve the traffic operations problems with a minimum amount of damage to existing greenery or changes in circulation patterns. Improvement Plan 3 could be revised to provide additional parking within either the Wilsey Square or the Station Plaza islands, but we do not believe the need or demand exists with the providing of Lot "H", the Ridge Road Lot, and our proposed reorganization of existing parking regulations in Zone A. We also believe few shoppers will use this area. To reach the CBD core from Station Plaza, shoppers must use the pedestrian underpass of the railroad, which involves steps and concern for personal safety. Improvement Plan 3, therefore, retains as much greenery as possible.

Added safety for pedestrians in the Wilsey Square area could be achieved through the elimination of the remaining parking spaces along the east curb adjacent to

the railroad which would result in high pedestrian visibility. Expediting traffic flow on Godwin Avenue west of Wilsey Square, as indicated in Figure 27, requires elimination of the infrequently used five curb parking spaces west of the Co-op Store, block facility 29-04.

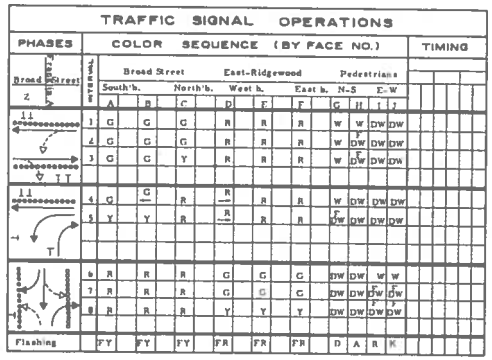
(Improvement Plan 4 - North Broad Street, East Ridgewood Avenue to Franklin Avenue)

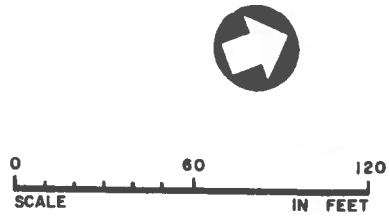
Angle parking is permitted on both sides of this facility. The North Broad Street intersection with East Ridgewood Avenue has a high accident record of 25 accidents in 1967-1969, as shown in Figure 12, with the right-of-way assignment requiring through movement on Broad Street to stop for turning traffic to and from Ridgewood Avenue,an unusual control, unexpected by non-local motorists.

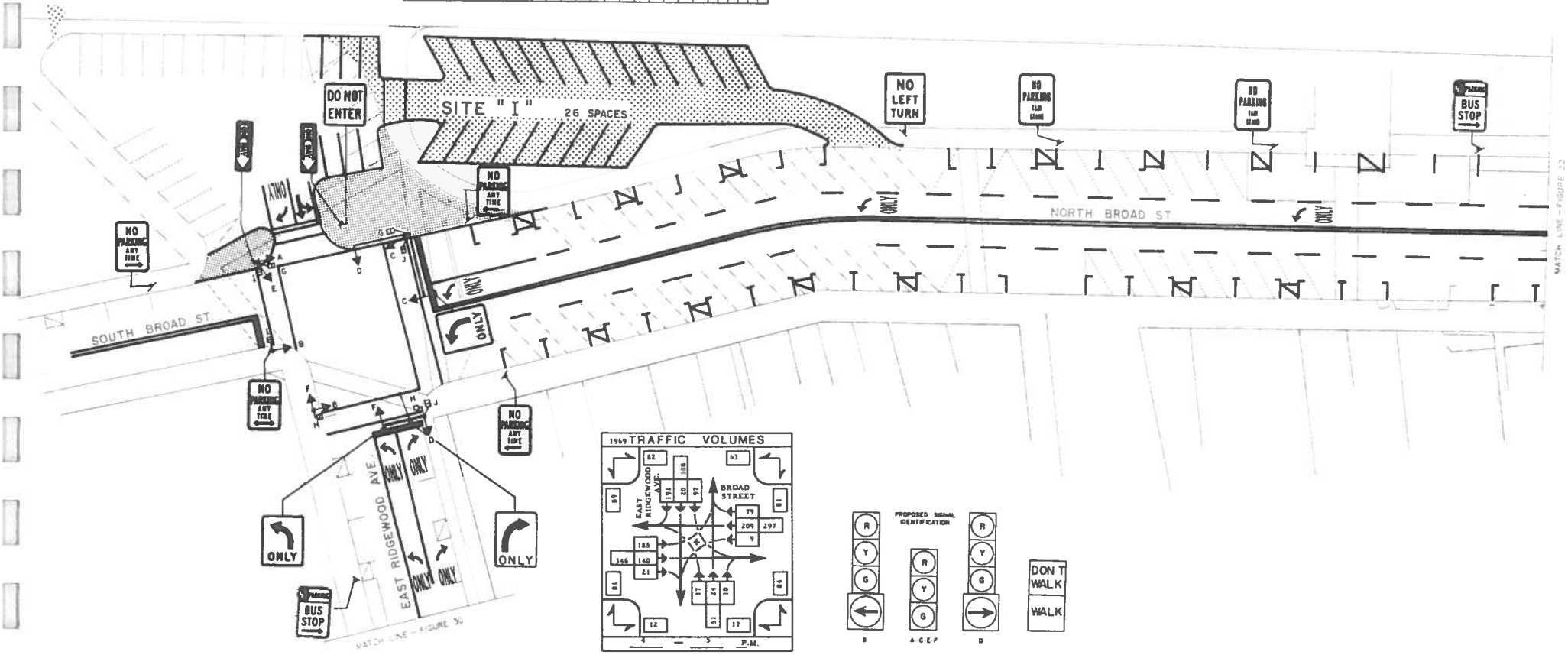
With parking currently permitted on both sides of East Ridgewood Avenue to the crosswalk, motorists on Broad Street wishing to continue through the intersection or turn into East Ridgewood Avenue must frequently encroach into the intersection to obtain safe sight distance, even through arriving westbound traffic on East Ridgewood Avenue does not have to stop. As illustrated in Figure 29, the intersection should be made compact to reduce the conflict area and traffic signal controls installed to safely assign right-of-way alternately to North Broad Street and East Ridgewood Avenue traffic. The cul-de-sac on the west adjacent to the railroad is proposed to be converted to one-way operation providing for exit movements only into the intersection. Entry will be permitted only to southbound traffic passing through, or from the proposed,Site I, municipal parking lot developed from the presently unused area of land in the northwest quadrant of the intersection.

The removal of angle parking, construction of Site I as a municipal surface parking lot and the providing of signal control at the intersection of East Ridgewood Avenue with Broad Street are essential elements in our recommended program of improvements. The graphic representation of peak hour traffic volumes shown in Figure 13, and through travel desires shown in Figure 14, together with our proposed circulation plan are indicative of North Broad Street between East Ridgewood Avenue and Franklin Avenue being a vital connecting link in the Village arterial street system. In addition, implementation of TOPICS improvements requires establishment and approval of a primary, Type II, Federal-aid system. Streets on this Type II system cannot have angle parking permitted in recognition of the hazards involved and the greater width of parking lane required. Failure to remove angle parking from North Broad Street means TOPICS funding of traffic operational improvements cannot be used and would require further study of circulation to accommodate all major east-west movements on Franklin Avenue.

Angle parking on North Broad Street is unnecessary if Site I is provided. Facilities 11-02, 10-01 and 01-04 today contribute 75 parking spaces to the supply. Removal of angle parking without providing Site I, results in a loss of 26 spaces including eight reserved for taxis. Removal of angle parking with Site I provided results in a supply of 75 parking spaces for facilities 11-02, 10-01, 01-04, and Site I with eight additional spaces provided for taxis. In addition, one in seven parkers in this area were observed to be "meter feeding", including 10 of 69 in facilities 01-04 and 11-02 combined. Removal of these parkers to the upper floor of a North Walnut Street garage will not result in any loss of parking space for shoppers.







c 2

IMPROVEMENT PLAN 4

Broad Street at East Ridgewood Avenue

The efficiency of the proposed signal control, shown in Figure 29, partially results from traffic flowing one-way through Site I and the East Ridgewood Avenue cul-de-sac. This intersection plan also permits reducing the conflict area for safety and replacing some of the grass area required to be removed for Site I. With the high demand for shopper parking in this area it would be unfortunate if Site I is not built as only a portion of the existing green area is required for this lot. Taxi freedom to leave in any direction from the proposed taxi stand at the west curb of North Broad Street without undue hazard to other traffic movements is predicated on their ability to use Site I to reverse direction. As a rail commuter-oriented service, any other location for these taxis would not be as suitable. The presence of this service may also help serve to reduce the number of commuter parkers in the CBD area. Operationally, existing taxi operations should be better controlled for safety and this is provided in I. P. 4. Elimination of hazards on North Broad Street includes removing the existing mid-block, marked pedestrian crosswalks.

Buses southbound on North Broad Street turn left into East Ridgewood Avenue. During the study, buses were observed stopping and parking in the north crosswalk on the west side of the North Broad Street intersection with East Ridgewood Avenue. These buses were then observed to turn left across all lanes of traffic. This bus stop should be relocated to the southeast corner as shown in Figure 29.

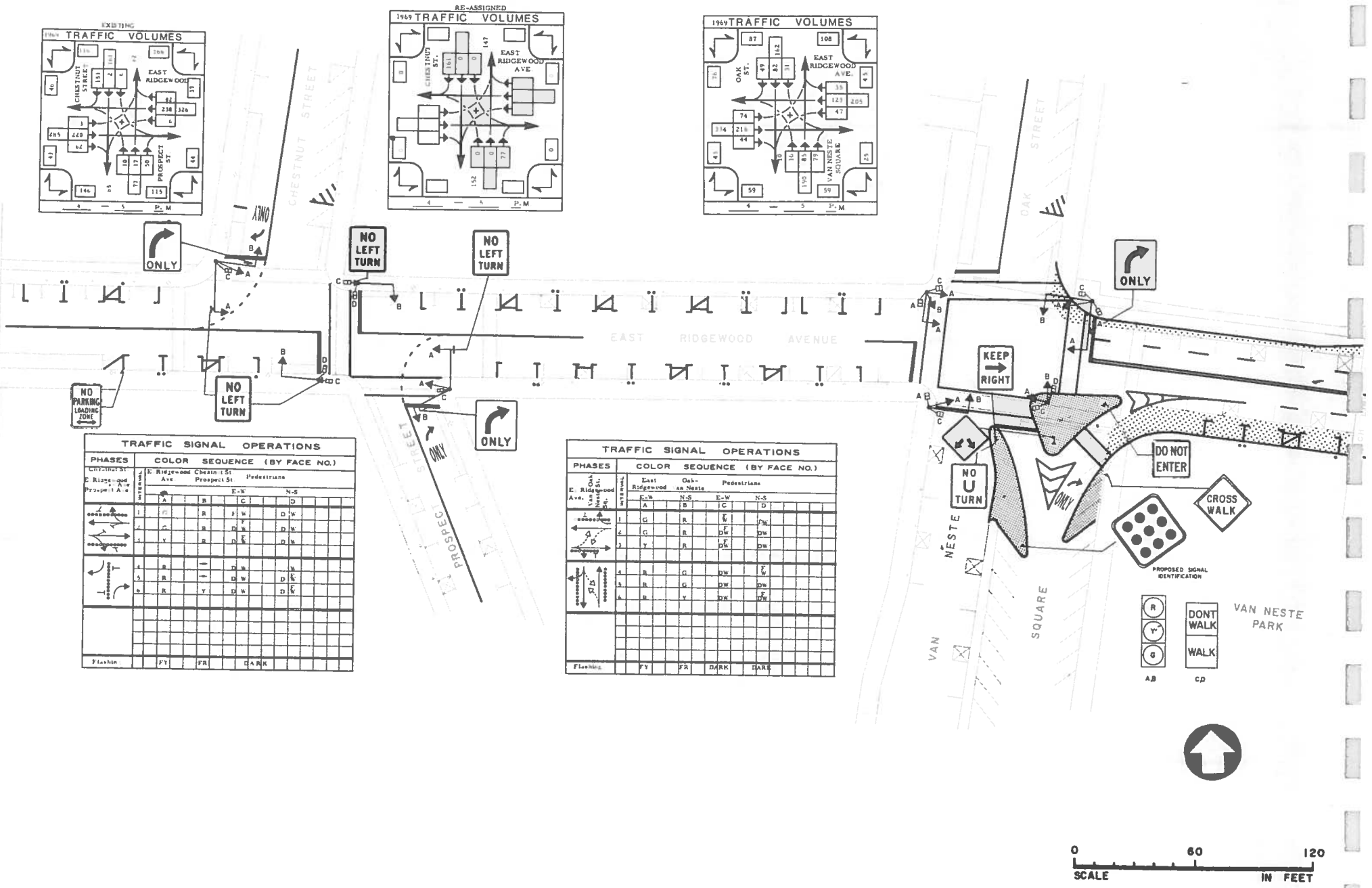
While the proposed traffic signal is designed and will be timed to provide operations which satisfy peak period traffic demands, enforcement of traffic regulations of any type require police action. This is as true of traffic signal as it is true for parking regulations. Police duties during such time, if required, should be limited to securing driver and pedestrian compliance with the automatic signal controls

(Improvement Plan 5 - East Ridgewood Avenue, Broad Street to Maple Avenue)

Recommended improvements illustrated in Figures 30, 31 and 32, for this facility include widening from Maple Avenue to Oak Street and installation of traffic signals at the Prospect Street, Van Neste Square - Oak Street, and Walnut Street intersections as indicated in Figure 20.

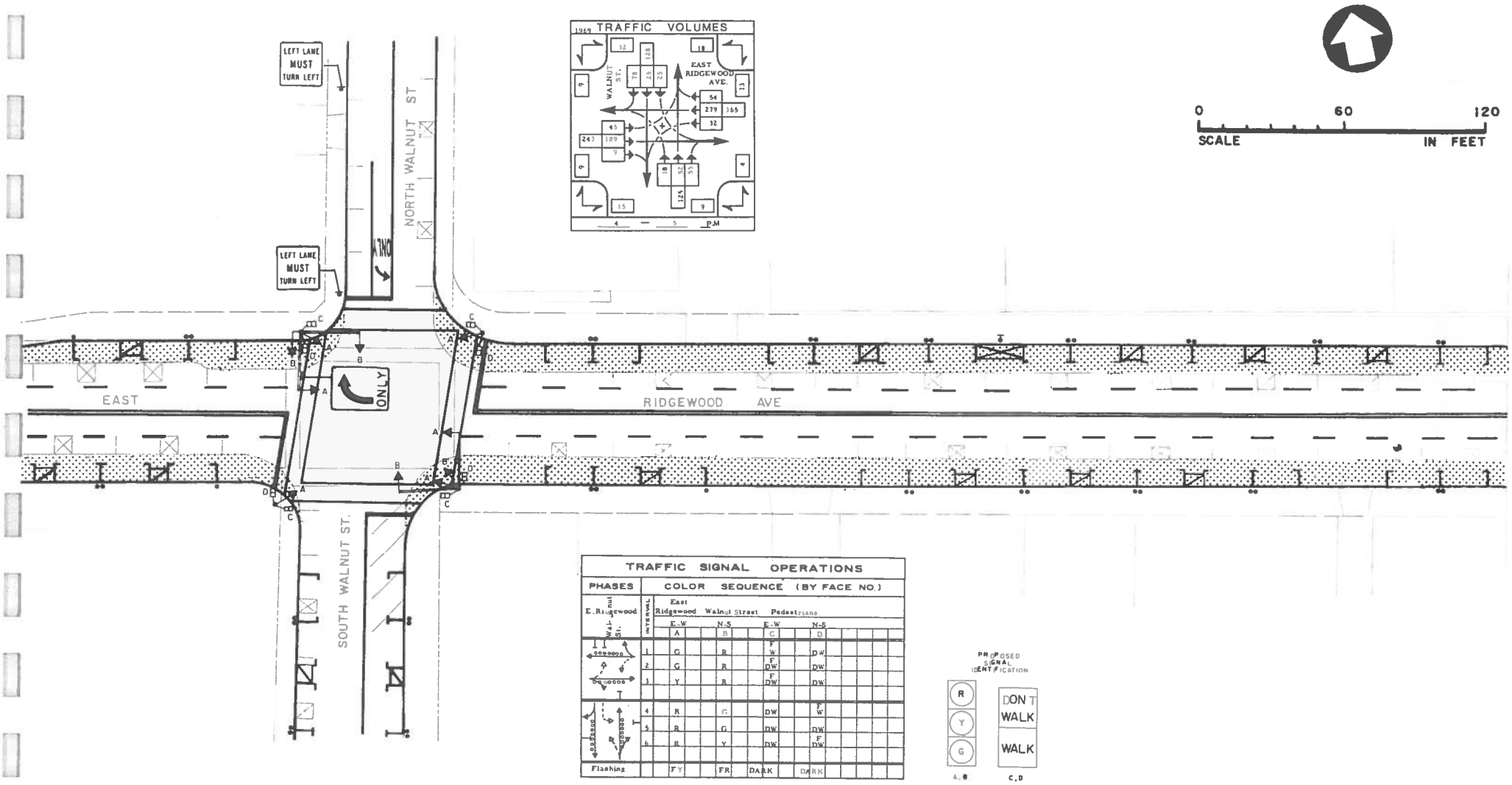
Widening is necessary for East Ridgewood Avenue to provide satisfactory service for anticipated traffic volumes and to retain parallel parking spaces at both curbs. Prohibition of parking, stopping or standing in the curb lanes theoretically could also result in providing the needed additional roadway capacity. Total prohibition against use of the curb lanes for parking, stopping or standing would require continual and consistent enforcement to be partially effective as a result of passenger drop-offs and pick-ups and the ever-present temptation to park in that lane to accomplish errands requiring but a few minutes. This fact, coupled with the doubtful support of a business community which has a policy of paying parking violation fines for customers, necessitates consideration of widening if East Ridgewood Avenue is to continue as a combined major traffic artery and shopper street. The alternative of curb lane restrictions of doubtful effectiveness compared with the retention of extra-width sidewalks results in our support of the Village plan for widening between Maple Avenue and Oak Street.

The recommended traffic signals are also essential to improve traffic flow. As noted in Chapter 3 and as shown in Figure 12, the Oak Street - Van Neste Square and Walnut Street intersections are among the most hazardous in the Village CBD. Field observations of extensive police officer control at Van Neste Square and serious pedestrian and vehicle delays at the Walnut Street intersection attest to the imperative need of developing more positive traffic control procedures.



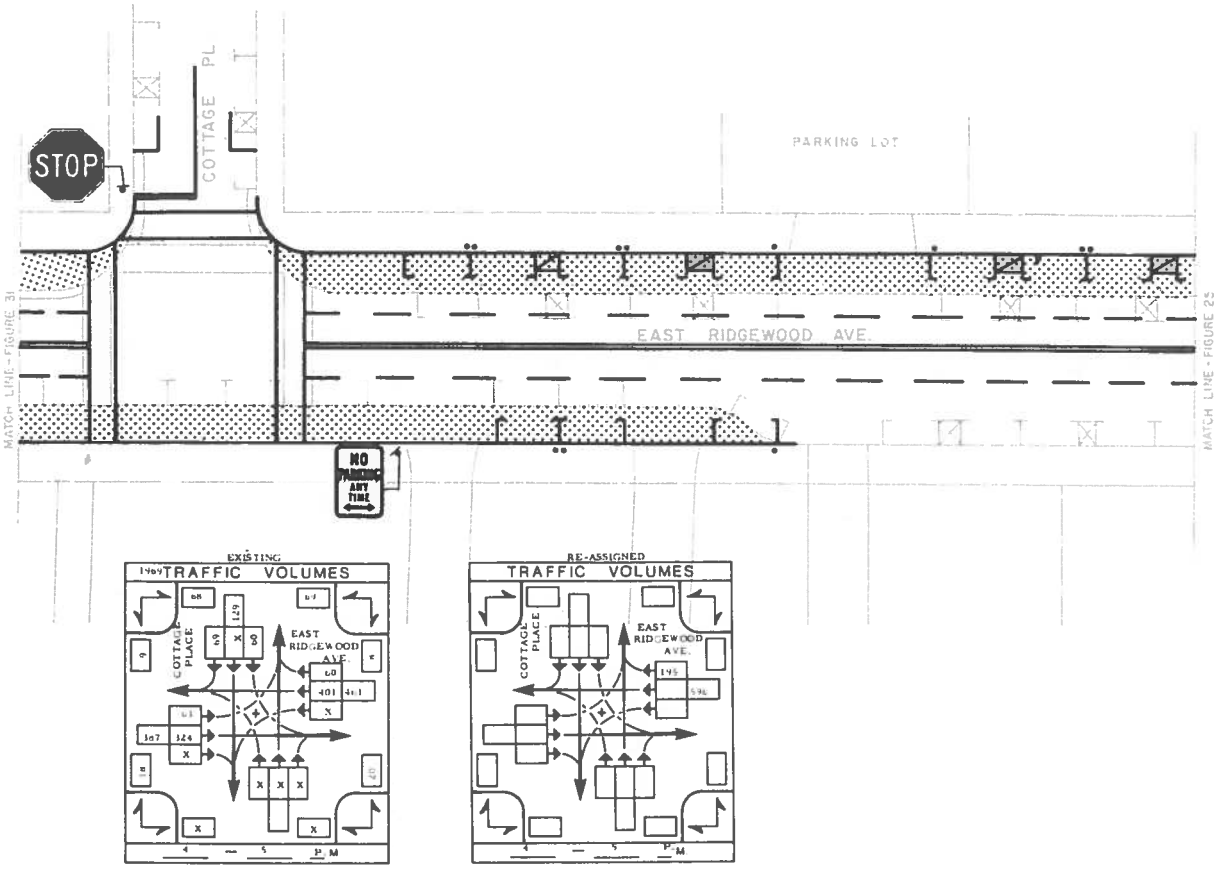
IMPROVEMENT PLAN 5A

East Ridgewood Avenue at Chestnut, Prospect and Oak Streets and VanNeste Square



IMPROVEMENT PLAN 5B

East Ridgewood Avenue at Walnut Street



IMPROVEMENT PLAN 5C

East Ridgewood Avenue at Cottage Place

Signal control at the Chestnut and Prospect Street intersections permits combining pedestrian crossings of East Ridgewood Avenue into one location from three. Considerable added safety is achieved with little loss in convenience when compared to existing conditions. The proposed operation and layout are shown in Figure 30.

Considerable physical channelization at the Van Neste Square intersection permits safer, more efficient vehicular and pedestrian operations. The recommended channelization, traffic signal coordination, pavement marking of traffic lanes and parking spaces and required regulatory signing are also shown in Figure 30. The proximity of this and similar intersections proposed for traffic signal control may cause some concern.

Enforcement against illegal blocking of intersections when traffic congestion occurs is more effective if traffic signal control is provided. In addition, the greater safety provided by warranted signal control outweighs the inconvenience that may result from delays due to congestion.

The reason for revising existing parking practices at the Walnut Street intersection, as shown in Figure 31, are evident upon examination of the alignment of Walnut Street approaching the intersection. The existing angle parking on the east side of South Walnut Street, if permitted to continue, would result in a severe, and unnecessary offset for through north-south traffic and hinder the efficiency of the proposed traffic signal. Elimination of angle parking on South Walnut Street and replacement with parallel parking to insure safe and efficient operations is recommended to be implemented when the garage is in service. This is particularly necessary because most outbound buses are to be routed northbound on South Walnut Street to eliminate the existing bus "U"-turn at Van Neste Square and Dayton Street. All parking in the block on North Walnut Street between East Ridgewood and Franklin Avenues is recommended to be removed to facilitate safe and efficient ingress to and egress from the garage.

The improvements illustrated in Figure 32 for the Cottage Place intersection, which are in addition to the Village proposed widening, are concerned with reorganization of

parallel parking spaces into a tandem arrangement similar to that presently employed,but having more generous dimensions to insure easy and safe parking maneuvers which result in the least amount of conflict with adjacent traffic lanes. Proper intersection clearance for safe sight distance, as indicated, is also vital for safe operations.

(Improvement Plan 6 - Hudson-Dayton Streets, Prospect Street to Union Street)

Hudson-Dayton Street between Prospect Street and Union Street should be improved as shown in Figures 33 and 34. Concentrated traffic volumes, produced by vehicles entering and leaving adjacent parking spaces and frequent bus operations in the area all dictate a need for reorganizing traffic to insure safe and efficient flow. With the proposed improvement, traffic will be channelized and properly directed at the Prospect Street intersection, and positive right-of-way will be assigned at the Union Street intersection, a condition presently absent. The design is intended to discourage the practice of U-turns at the Van Neste Square intersection with Dayton Street, particularly those involving buses leaving the bus station.

These buses are to be rerouted east on Dayton Street to north on Walnut Street. At the East Ridgewood Avenue intersection, the proposed traffic signal control will insure safe crossings of and turns into East Ridgewood Avenue.

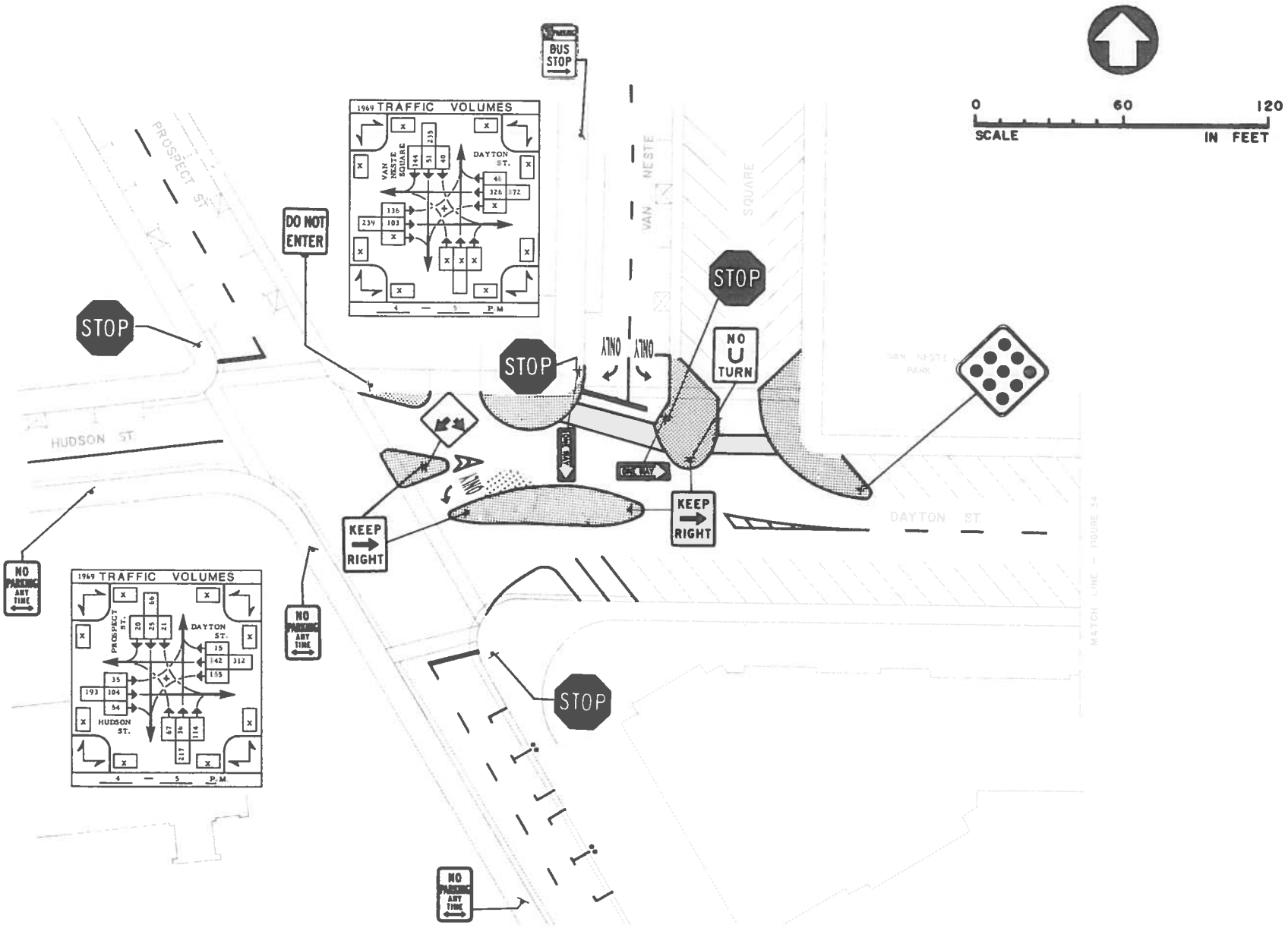
The providing of Site I as a municipal surface parking lot,as shown in Figure 34, is recommended to add to the supply for long-term parking. Development of this unimproved lot should be accomplished as soon as rights to the property are acquired.

(Improvement Plan 7 - Godwin Avenue, Lincoln Avenue to Doremus Avenue)

Improvements for the intersections of Lincoln Avenue and South Moroe Street, and Doremus Avenue are shown in Figures 35 and 36, respectively. Also indicated in Figure 36 is the establishment of Ackerman Avenue as a one-way southbound facility, I. P. 8.

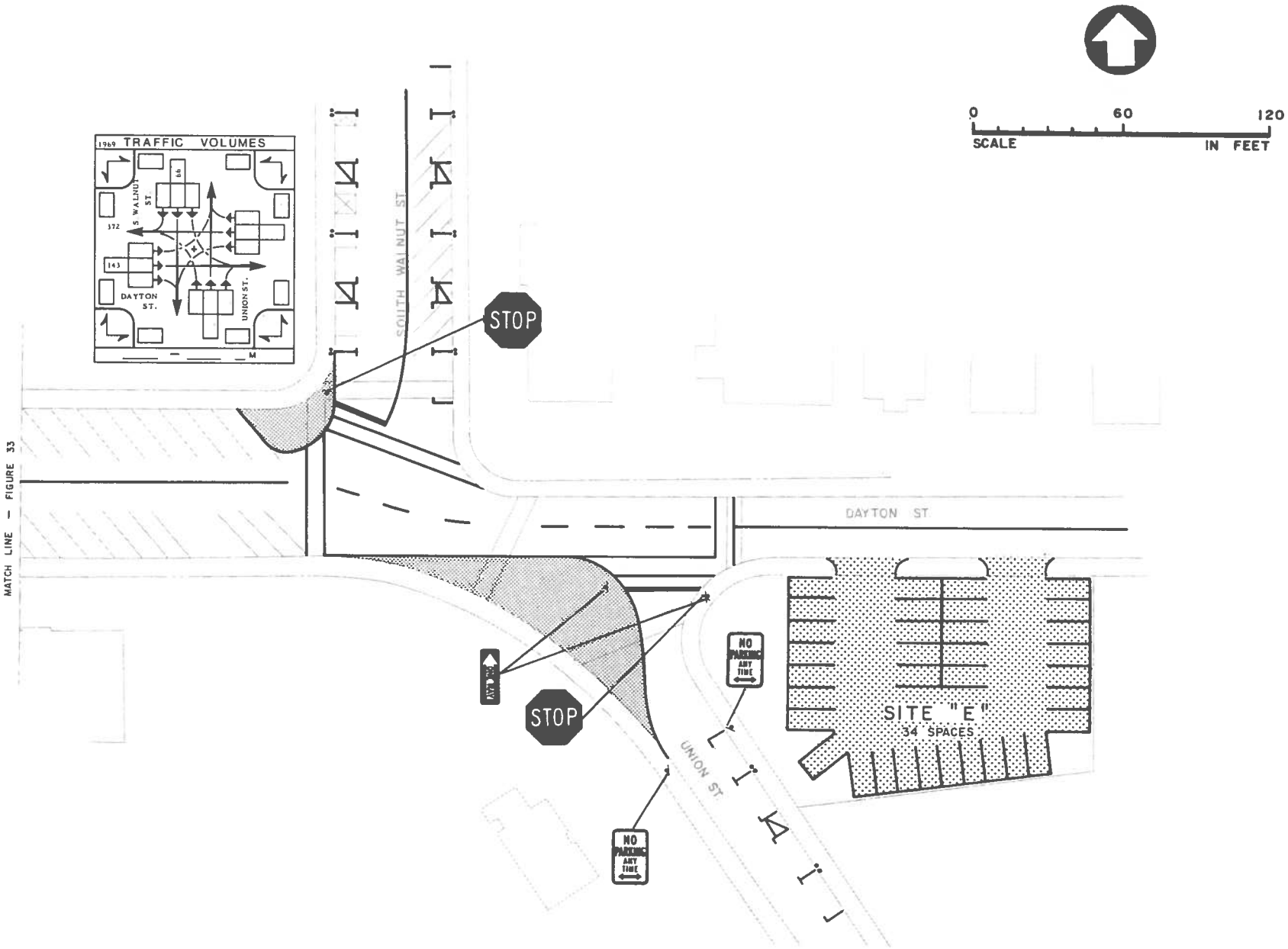
As indicated in Figure 35, widening, channelization and new signal control proposed for the South Monroe Street intersection results in similar channelization and widening at the Lincoln Avenue intersection, together with signal modification to achieve unformity in signal face placement and display. The proximity of these two locations requires their coordinated operation to insure efficient operation. As a part of this improvement, Ackerman Avenue is to be made one-way away, southbound, from Godwin Avenue to Doremus Avenue to reduce intersection complexity and conflicts. Traffic operations without a one-way Ackerman Avenue would be chaotic due to the successive proximity of Lincoln Avenue, South Monroe Street and Ackerman Avenue. The operation of Ackerman and Doremus Avenues as a one-way couplet, even though Doremus Avenue remains two-way,provides the best solution to Godwin Avenue traffic problems in this area without relocation of South Monroe Street to intersect Godwin Avenue at Lincoln Avenue.

This provision will eliminate much of the current conflict and congestion caused by traffic entering Godwin Avenue from Ackerman Avenue. In accomplishing this change, however, additional traffic will be rerouted to Doremus Avenue. The increase can be safely accommodated by installation of traffic signal control at the intersection of Doremus Avenue with Godwin Avenue as shown in Figure 36.



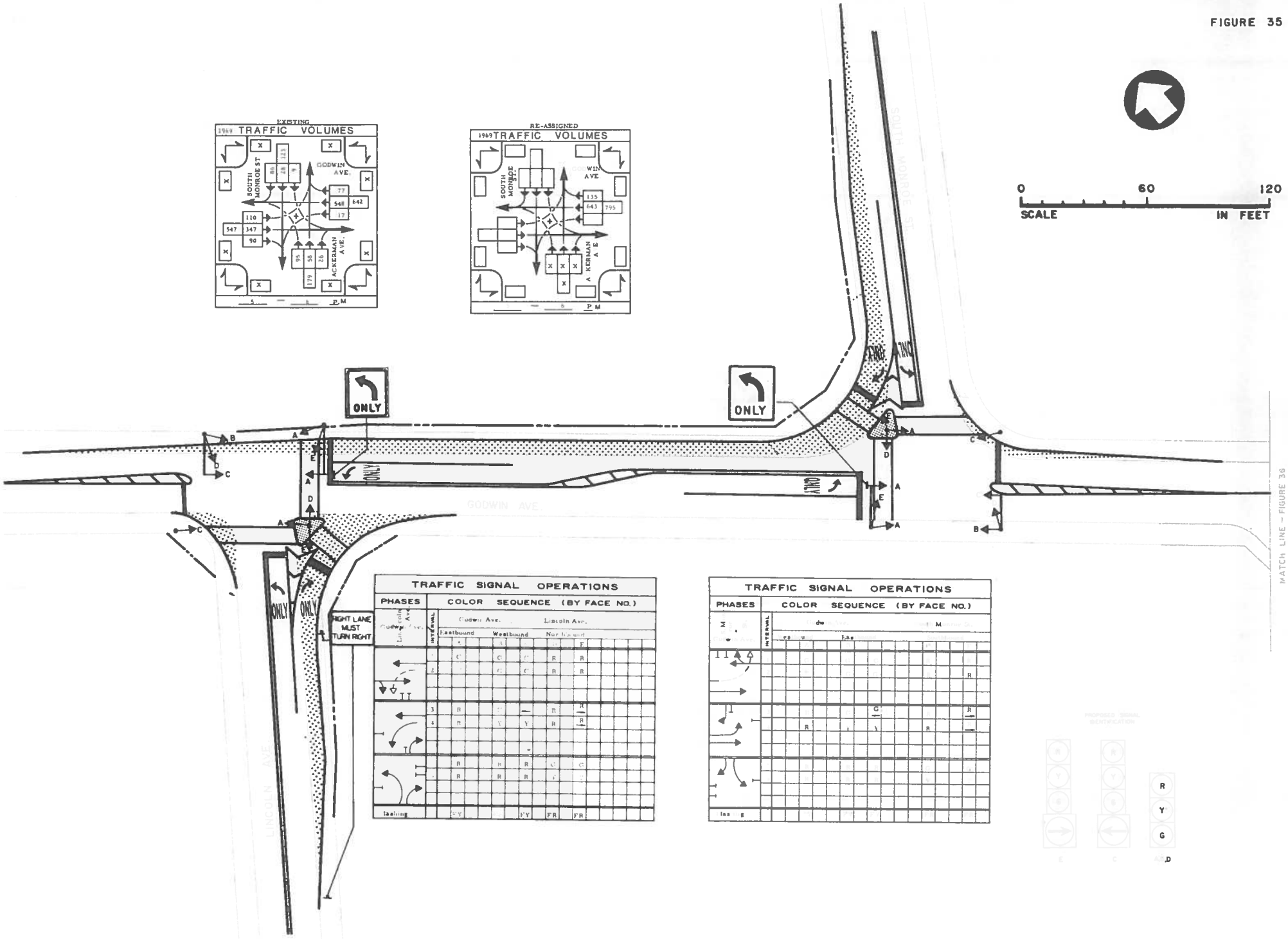
IMPROVEMENT PLAN 6A

Hudson and Dayton Streets at Prospect Street and VanNeste Square



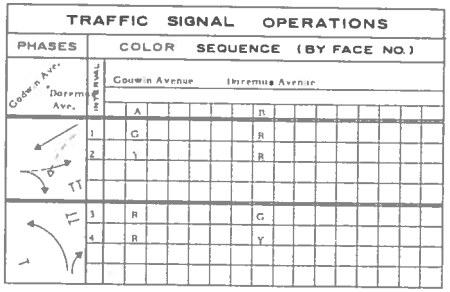
IMPROVEMENT PLAN 6B

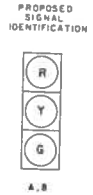
Dayton Street at South Walnut and Union Streets



IMPROVEMENT PLAN 7A

Godwin Avenue At Lincoln Avenue And South Monroe Street





IMPROVEMENT PLAN 7B

Godwin Avenue at Ackerman and Doremus Avenues

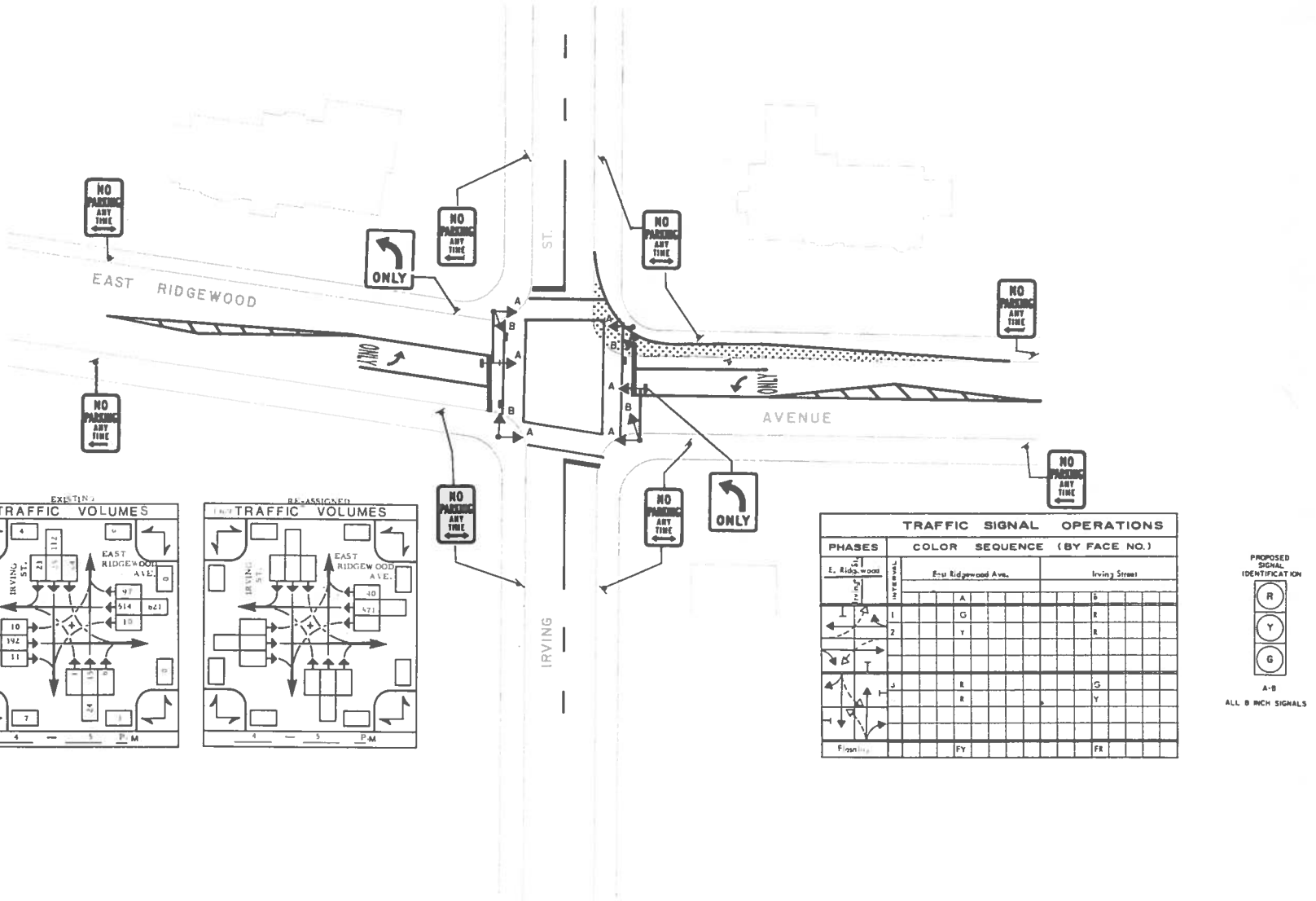
(Improvement Plan 9 - Irving Street at East Ridgewood Avenue)

Traffic signal control, as shown in Figure 37, is proposed for this location. Analysis indicates this control is fully warranted and becomes even more essential with the change of Franklin Avenue, from Maple Avenue to Marshall Street, to one-way operation, I. P. 11. The design recommended is uniform with other recommended traffic signal installations and is proposed to be controlled by a full traffic actuated controller for maximum traffic responsiveness and efficiency.

(Improvement Plan 10 - Linwood Avenue at North Van Dien Avenue)

This location was analyzed for capacity restrictions and operational deficiencies in the existing traffic signal control. The existing streets were determined to have sufficient capacity for the current and expected traffic demand. The present signal timing, however, was highly inefficient and produced unnecessary delays, particularly to North Van Dien Avenue traffic. As the closest adjacent signal at the intersection of Linwood Avenue with Pleasant Avenue, is almost 1,200 feet away, synchronized and coordinated signal operations for most periods of the day are not warranted. Imposition of these measures by the existing semi-traffic actuated controller produces delays on North Van Dien Avenue. The signal control at the North Van Dien Avenue intersection is proposed to be modified to provide full traffic actuated control on a full time basis. The equipment required includes a two-phase, full traffic-actuated controller with variable initial and gap reduction features and two indication loop vehicle detectors for the Linwood Avevue approaches.

Subsequent analysis of the resulting operations should be performed to determine if coordination with the adjacent signal is warranted at any time of day. Estimated costs for all of the above improvements are listed in Table 17.



IMPROVEMENT PLAN 9

East Ridgewood Avenue at Irving Street

PLAN IMPLEMENTATION

The estimated costs for accomplishing all recommendations for improving both parking and traffic operational facilities is $2,670,000. For an improvement program of this scope and magnitude an orderly schedule must be followed which reflects both capital expenditures and the value of potential services they provide. Otherwise, escalating costs, ineffective spot improvements and/or public apathy will result. To avoid these conditions, we recommend the various parking and traffic improvements be implemented over the next three or four years as follows:

Phase I

1. Accept Bergen County proposal for Maple Avenue, with the provision that Village recommendations, outlined in this report, will be incorporated in the contract plans.

2. Request TOPICS funding from the New Jersey Department of Transportation for the traffic improvements recommended by this study. This study report generally meets the Areawide TOPICS Plan requirements for the area studied as specified by the Federal Highway Administration in their Policy and Procedure Memorandum 21-18 of May 28, 1970. As a result, Ridgewood is in an advantageous position to obtain Federal, State and/or County funds for this work. The TOPICS improvement program, if approved for the Village of Ridgewood, is intended to be a short range program implemented over a period of several years.

3. Acquire the North Walnut Street properties proposed for additional parking purposes and prepare and use the area for temporary surface parking.

Phase II

1. Widen East Ridgewood Avenue as proposed.

2. Install the recommended traffic control devices in the CBD with County and/or TOPICS funding assistance. The Village's minimum contribution to this work should be the relocation of all parking meters and the marking of curb parking stalls, crosswalks, stop lines, center and lane lines, as recommended. All short-term parking meter rates should be revised to the recommended ten or 20 cent/hour rate, as appropriate, in conjunction with this work.

3. Develop the Ridge Road, Site H, and North Broad Street, Site I, parking areas.

4. Remove "meter-feeders" from facilities intended for shoppers by increased police surveillance, increased fines and multiple tickets for violators, and by publicizing facilities available and intended for long-term parking. The latter include the private Ridgewood News facility, the new Ridge Road and North Broad municipal surface lots and, on a temporary basis, the added spaces in the expanded North Walnut Street surface lot.

5. Complete detailed engineering studies for the North Walnut Street garage and establish the financial formula for sustaining this facility. This will define the expected costs in detail and will also define the required cost participation by users, CBD businesses and the Village.

The increase or decrease in parking meter revenue resulting from implementation of the recommended rate changes should generally indicate the amount of remaining subsidy the Village and CBD businesses will be required to provide to operate the proposed garage. If the recommended course of action is followed, the amount of this subsidy will be known prior to the Village becoming obligated for the large capital investment required by the proposed municipal parking garage.

The fact that implementation of the recommended parking meter rates and time changes without corresponding and evident improvement in the parking supply could create public opposition to the total plan by antagonizing shoppers, should be kept in mind. Following the course of action outlined and keeping the public advised of plans and progress should result in public cooperation and support for the total program.

As all of Phase II obviously cannot be realized overnight, an orderly and logical approach to implementing the revisions in parking meter rates and time regulations is required. Drastic measures used to remove "meter feeders" from specific areas, if used, must be considered temporary expedients until all proposed facilities are available for use, including the garage. Such enforcement on a continuing basis without suitable, alternate employee parking facilities as proposed, could ultimately make difficult the retention or employment of employees in the CBD.

Phase III

1. Develop the Union Street, Site E, and Zabriskie, Site F, municipal surface lot parking areas.

2. Close the North Walnut Street temporary surface parking lot and construct the proposed parking garage on this site. Long-term parkers

using this surface lot will use the new municipal Union Street and Zabriskie surface lots, or other available space, until the garage is opened.

3. Complete the remaining traffic improvements with County and/or TOPICS funding assistance.

APPENDICES

GLOSSARY OF TERMS

GLOSSARY OF TERMS

Adapted from National Committee on Urban Transportation (NCUT), PROCEDURE MANUAL, "Conducting a Comprehensive Parking Study", Department of Commerce, Bureau of Public Roads, July, 1957.

Central Business District (CBD)	The downtown business area as defined in the 1964 Village Master Plan (see Figure 1).
Commercial Vehicles	Trucks and Buses.
Core	That section of the Central Business District having the greatest demand for parking space and the greatest deficiency in parking space.
Demand	The need for parking space as indicated by the destinations of the drivers now parking in the Central Business District. Expressed in both spaces and space hours.
Destination	The location to which a driver first goes after parking.
Efficiency Factor	A factor for converting theoretically available space-hours into "practical" space-hours.
Fringe Area	That portion of the city immediately surrounding the Central Business District.
Generator	An office building, store, theater, etc., which creates a demand for parking space.
Illegal Parking	Parking in any place where prohibited by ordinance or police regulations. In this report this does not include overtime parking.

Informal Parking	Parking, whether legal or illegal, on offstreet areas (not established lots) such as front lawns, planting strips, between buildings, behind stores, on vacant lots, or at any other places not listed in the inventory.
Legal Parking	Parking at curbs or in lots intended and designated for that purpose and where permitted by ordinance.
Municipal Lot	A lot owned or controlled by the municipal government.
Occupancy	The percentage of the total space-hours available which are occupied during the study period.
Offstreet Facilities	Lots and garages intended for parking and entirely off public streets and alleys.
Origin	The place where a trip begins. For parking study purposes, a trip is the one-way travel between important stops.
Overtime Parking	Parking for periods longer than allowed by ordinance or as indicated by meter violation flags, but not including "meter feeding".
Parking Facility	A curb, lot or garage intended for parking vehicles.
Peak Period	The three hours during which there is the greatest accumulation of parked vehicles in the Central Business District.
Private Lot or Garage	A lot or garage intended for use by certain groups or individuals and not for the general public. A strictly private facility is one in which this restriction is actually enforced, through the use of tickets, fences, guards, etc., as opposed to those which actually may be used by anyone.
Prohibited Curb	Curb faces where all parking is prohibited during the business hours or the study period.

Public Lot or Garage	Those lots or garages open to the general public, regardless of purpose or destination.
Space-Hour, Practical	Applied only to space-hours of supply. The theoretical space-hours as reduced through the loss of time in each turnover of space and through the fact that supply and demand are not parallel throughout the day. It is the product of the theoretical space-hours multiplied by the efficiency factor.
Space-Hour, Theoretical	One space for one hour. Used to measure supply, usage and demand on a comparable basis. For example, the following are both equivalent to one space-hour: 6 vehicles parked for 10 minutes each, 1 vehicle parked for one hour.
Special Permit Space	Curb parking space officially reserved for use by a designated person or group.
Supply	The number of spaces (or space-hours) legally available for parking.
Truck Loading Zone	Curb space reserved (by ordinance) for use by trucks engaged in loading or unloading.
Truck Loading Berth or Dock	Offstreet space provided (usually on private property) for trucks loading or unloading.
Turnover	The rate of usage of a facility, measured by dividing the number of vehicles parked in that facility in an hour, or the 8-hour study period, as indicated, by the number of spaces available.
Usage	The number of vehicles parked, or the number of space-hours used by the vehicles parked.
Weekday	Monday through Friday, from 10:00 a.m. to 6:00 p.m., excluding holidays.

PARKING INVENTORY

PARKING INVENTORY

Zone	Block	Facility	MUNICIPAL SPACES																	PRIVATE SPACES					Total Parking Spaces	Misc. ***
			Metered Curbs					Unmetered Curbs				Total Curb	Metered Lots						Total Municipal	Customer-Employee		Employee Only	Other**	Total Private		
			12 min.	1hr.	2hr.	3hr.	Total	1hr.	2hr.	NR*	Total		1hr.	2hr.	3hr.	4hr.	12hr.	Total		Pay	Free					
A	11	03													31		43	74	74						74	
A	11						0				0	0			31		43	74	74					0	74	0
A	25	03	2	5			7					7							7						7	
A	25	05		18			18					18							18						18	
A	25	06																			19			19	19	
A	25		2	23			25				0	25						0	25		19			19	44	0
A	26	03		15			15					15							15						15	
A	26	05																			8			8	8	
A	26			15			15				0	15						0	15		8			8	23	0
A	27	01		19			19					19							19						19	
A	27	02							13		13	13							13						13	
A	27	05																					5	5	5	
A	27	06																			10			10	10	
A	27			19			19		13		13	32						0	32		10		5	15	47	0
A	28	01		7			7					7							7						7	
A	28	02		18			18					18							18						18	
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A	28	05																								
A	28	06																				33		33	33	
A	28	07																				56		56	56	
A	28	08																			60			60	60	
A	28			37			37				0	37						0	37		60	89		149	186	20
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A	29	05																			50			50	50	
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A	29	09																								
A	29			16			16				0	16						0	16	60	250	35		345	361	25
A	Totals		2	110	0	0	112	0	13	0	13	125	0	0	31	0	43	74	199	60	347	124	5	536	735	45

PARKING INVENTORY

Zone	Block	Facility	MUNICIPAL SPACES																PRIVATE SPACES					Total Parking Spaces	Misc.***
			Metered Curbs					Unmetered Curbs				Total Curbs	Metered Lots						Total Municipal	Customer-Employee		Employee Only	Other**	Total Private		
			12 min.	1hr.	2hr.	3hr.	Total	1hr.	2hr.	NR*	Total		1hr.	2hr.	3hr.	4hr.	12hr.	Total		Pay	Free					
B	01	02			15		15					15							15						15	
B	01	03			6		6					6							6						6	
B	01	04		29			29					29							29						29	
B	01	05																			7	2		9	9	
B	01	06																				18		18	18	
B	01	07																			20			20	20	
B	01			29	21		50				0	50						0	50		27	20		47	97	0
B	02	01		2			2					2							2						2	
B	02	02			7		7					7							7						7	
B	02	03			11		11					11							11						11	
B	02	04		25			25					25							25						25	
B	02	05													69			69	69						69	
B	02	06																				2		2	2	
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B	07	02		13			13					13							13						13	
B	07	03				19	19					19							19						19	
B	07	04		25			25					25							25						25	
B	07	05		29			29					29							29						29	
B	07			67	8	19	94				0	94						0	94					0	94	0
B	08	01			10		10					10							10						10	
B	08	02		4			4					4							4						4	
B	08	04		10			10					10							10						10	
B	08	05												58				58	58						58	
B	08			14	10		24				0	24		58				58	82					0	82	0

PARKING INVENTORY

Zone	Block	Facility	MUNICIPAL SPACES																	PRIVATE SPACES					Total Parking Spaces	Misc. ***
			Metered Curbs					Unmetered Curbs				Total Curbs	Metered Lots						Total Municipal	Customer – Employee		Employee Only	Other**	Total Private		
			12 min.	1hr.	2hr.	3hr.	Total	1hr.	2hr.	NR*	Total		1hr.	2hr.	3hr.	4hr.	12hr.	Total		Pay	Free					
B	09	01			7		7					7							7						7	
B	09	02		10			10					10							10						10	
B	09	03		6			6					6							6						6	
B	09	05												20		20		40	40						40	
B	09	06																				3		3	3	
B	09	07																				34		34	34	
B	09	08											7					7	7			7		7	14	
B	09	09																				3		3	3	
B	09			16	7		23				0	23	7	20		20		47	70			47		47	117	0
B	10	01			6		6					6							6						6	
B	10	02		9			9					9							9						9	
B	10	03							5		5	5							5						5	
B	10	05																			57			57	57	
B	10	06																				34		34	34	
B	10	07																							0	40
B	10	08																							0	70
B	10	09																							0	50
B	10			9	6		15		5		5	20						0	20		57	34		91	111	160
B	11	02			40		40					40							40						40	
B	11				40		40				0	40						0	40					0	40	0
B	12	03						21			21	21							21						21	
B	12	04		6			6					6							6						6	
B	12	05																					25	25	25	
B	12			6			6	21			21	27						0	27				25	25	52	0
B	13	04		6			6	5			5	11							11						11	
B	13	05																					50	50	50	
B	13	06								19	19	19							19						19	
B	13	07							10		10	10							10						10	
B	13	08																							0	30
B	13			6			6	5	10	19	34	40						0	40				50	50	90	30
B	14	01				24	24					24							24						24	
B	14	04							6		6	6							6						6	
B	14	05																				30		30	30	
B	14					24	24		6		6	30						0	30			30		30	60	0

PARKING INVENTORY

Zone	Block	Facility	MUNICIPAL SPACES																	PRIVATE SPACES					Total Parking Spaces	Misc. ***
			Metered Curbs					Unmetered Curbs				Total Curbs	Metered Lots						Total Municipal	Customer-Employee		Employee Only	Other**	Total Private		
			12 min.	1hr.	2hr.	3hr.	Total	1hr.	2hr.	NR*	Total		1hr.	2hr.	3hr.	4ht.	12hr.	Total		Pay	Free					
B	22	05																				31		31	31	
B	22	06																				22		22	22	
B	22	07																			12			12	12	
B	22						0				0	0						0	0		12	53		65	65	0
B	23	03		6			6					6							6						6	
B	23	05																				30		30	30	
B	23	06																			10			10	10	
B	23	07																					35	35	35	
B	23	08																					18	18	18	
B	23			6			6				0	6						0	6		10	30	53	93	99	0
B	24	05																				20		20	20	
B	24	06																							0	120
B	24						0				0	0						0	0			20		20	20	120
B	Totals		0	202	129	43	374	26	21	19	66	440	7	78	110	20	0	215	655	0	193	258	140	588	1,246	367
C	04	02			14		14					14							14						14	
C	04	03			14		14					14							14						14	
C	04	04		9			9					9							9						9	
C	04	05																			10			10	10	
C	04	06																				15		15	15	
C	04	07																			5			5	5	
C	04	08																			5			5	5	
C	04	09																				16		16	16	
C	04	10																				10		10	10	
C	04	11																			65			65	65	
C	04	12																			30			30	30	
C	04	13																			50			50	50	
C	04			9	28		37				0	37						0	37		165	41		206	243	0

PARKING INVENTORY

Zone	Block	Facility	MUNICIPAL SPACES																PRIVATE SPACES					Total Parking Spaces	Misc. ***
			Metered Curbs					Unmetered Curbs				Total Curbs	Metered Lots						Total Municipal	Customer-Employee		Employee Only	Other**	Total Private		
			12 min.	1hr.	2hr.	3hr.	Total	1hr.	2hr.	NR*	Total		1hr.	2hr.	3hr.	4hr.	12hr.	Total		Pay	Free					
C	05	03			12		12					12							12						12	
C	05	04		10			10					10							10						10	
C	05	05													38		73	111	111						111	
C	05	06																					39	39	39	
C	05	07																							0	60
C	05	08																			50			50	50	
C	05	09																				3		3	3	
C	05	10																			10			10	10	
C	05	11																		30				30	30	
C	05	12																			14			14	14	
C	05	13																				10		10	10	
C	05	14																							0	35
C	05			10	12		22				0	22			38		73	111	133	30	74	13	39	156	289	95
C	06	01			26		26					26							26						26	
C	06	04		28			28					28							28						28	
C	06	05																			13			13	13	
C	06	06																				45		45	45	
C	06	07																		23				23	23	
C	06	08																		85				85	85	
C	06	09																			20			20	20	
C	06	10																			15			15	15	
C	06	11																			35			35	35	
C	06	12																			4			4	4	
C	06	13																				6		6	6	
C	06	14																				9		9	9	
C	06	15																				4		4	4	
C	06			28	26		54				0	54							54	108	87	64		259	313	0
C	15	02							5		5	5							5						5	
C	15						0		5		5	5							5					0	5	0
C	17	03							4		4	4							4						4	
C	17	05																							28	
C	17	06																							30	
C	17								4		4	4						0	4					0	4	58

PARKING INVENTORY

Zone	Block	Facility	MUNICIPAL SPACES																	PRIVATE SPACES					Total Parking Spaces	Misc. ***
			Metered Curbs					Unmetered Curbs				Total Curbs	Metered Lots						Total Municipal	Customer-Employee		Employee Only	Other**	Total Private		
			12min.	1hr.	2hr.	3hr.	Total	1hr.	2hr.	NR*	Total		1hr.	2hr.	3hr.	4hr.	12hr.	Total		Pay	Free					
C	18	05																			95			95	95	
C	18	06																			9			9	9	
C	18	07																			8			8	8	
C	18						0				0	0						0	0		112			112	112	0
C	19	05																			8			8	8	
C	19	06																					40	40	40	
C	19						0				0	0						0	0		8		40	48	48	0
C	20	04							10		10	10							10						10	
C	20	05																			182			182	182	
C	20						0		10		10	10						0	10		182			182	192	0
C	21	02							10		10	10							10						10	
C	21	05																			200			200	200	
C	21						0		10		10	10						0	10		200			200	210	0
C	Totals		0	67	66	0	113	0	29	0	29	142	0	0	38	0	73	111	253	138	828	118	79	1,163	1,416	153
Study Totals			2	359	195	43	599	26	63	19	108	707	7	78	179	20	116	400	1,107	198	1,368	500	224	2,287	3,397	565

* Not Restricted
**Service Stations, Schools
***New and Used Car Sales – Rentals, Funeral Homes

PARKING DURATION - MUNICIPAL FACILITIES

PARKING DURATION

IN MUNICIPAL SPACES IN ZONE A

Types of Spaces	Number Spaces	Up to 30 min.	30 min. to 1 hr.	1-2 hr.	2-3 hr.	3-4 hr.	4 Hours & Longer	Total Parkers
Illegal	-	22	4	0	2	1	0	29
Loading Zone	-	9	4	0	0	0	0	13
No Restriction	0	-	-	-	-	-	-	-
Sub-Total	0	31	8	0	2	1	0	42
Posted - 1 Hour	0	-	-	-	-	-	-	-
2 Hours	13	8	4	14	[5]	0	[6]	37
Sub-Total	13	8	4	14	5	0	6	37
Metered - 1 Hour	112*	392	83	[35]	[6]	[2]	[4]	522
2 Hours	0	-	-	-	-	-	-	-
3 Hours	31	12	8	7	6	0	[21]	54
4 Hours	0	-	-	-	-	-	-	-
12 Hours	43	4	1	1	1	1	42	50
Sub-Total	186	408	92	43	13	3	67	626
TOTAL	199	447	104	57	20	4	73	705

*Includes 2-12 minute meters.

[ ] Overtime parkers, including "Meter-Feeders"

Base Day - data Thursday, November 6, 1969.

PARKING DURATION

IN MUNICIPAL SPACES IN ZONE B

Types of Spaces	Number Spaces	Up to 30 min.	30 min. to 1 hr.	1-2 hr.	2-3 hr.	3-4 hr.	4 Hours & Longer	Total Parkers
Illegal	-	49*	4	2	3	1	3	62
Loading Zone	-	48	3	2	1	1	0	55
No Restriction	19	9	9	11	4	1	11	45
Sub-Total	19	106	16	15	8	3	14	162
Posted - 1 Hour	26	13	5	[9]	[2]	[3]	[14]	46
2 Hours	21	1	0	2	[1]	0	0	4
Sub-Total	47	14	5	11	3	3	14	50
Metered - 1 Hour	209	942	248	[127]	[25]	[11]	[19]	1372
2 Hours	207	864	208	184	[49]	[51]	[42]	1398
3 Hours	153	138	65	84	42	[26]	[112]	467
4 Hours	20	8	5	2	6	0	[15]	36
12 Hours	0	-	-	-	-	-	-	-
Sub-Total	589	1952	526	397	122	88	188	3273
TOTAL	655	2072	547	423	133	94	216	3485

* Includes five (5) trucks "double-parked" for loading-unloading in facility 01-02

[ ] Overtime parkers, including "Meter-Feeders"

Base Day - date Thursday November 6, 1969

PARKING DURATION

IN MUNICIPAL SPACES IN ZONE C

Type of Spaces	Number Spaces	Up to 30 Min.	30 min. to 1 hr.	1-2 hr.	2-3 hr.	3-4 hr.	4 Hours & Longer	Total Parkers
Illegal	-	31	3	3	1	0	1	39
Loading Zone	-	-	-	-	-	-	-	-
No Restriction	0	-	-	-	-	-	-	-
Sub-Total	-	31	3	3	1	0	1	39
Posted - 1 Hour	0	-	-	-	-	-	-	-
2 Hours	29	4	1	1	[1]	0	[2]	9
Sub-Total	29	4	1	1	1	0	2	9
Metered - 1 Hour	47	194	54	[16]	[2]	[3]	[4]	273
2 Hours	66	345	89	65	[16]	[4]	[1]	520
3 Hours	38	42	31	21	18	[14]	[3]	129
4 Hours	0	-	-	-	-	-	-	-
12 Hours	73	35	21	24	8	6	58	152
Sub-Total	224	616	195	126	44	27	66	1074
TOTAL	253	651	199	130	46	27	69	1122

[ ] Overtime parkers, including "Meter-Feeders"

Base Day - data Thursday, November 6, 1969.

PARKING DURATION

IN MUNICIPAL SPACES IN STUDY AREA

Types of Space	Number Spaces	Up to 30 min.	30 min. to 1 hr.	1-2 hr.	2-3 hr.	3-4 hr.	4 Hours & Longer	Total Parkers
Illegal	-	102	11	5	6	2	4	130
Loading Zone	-	57	7	2	1	1	0	68
No Restriction	19	9	9	11	4	1	11	45
Sub-Total	19	168	27	18	11	4	15	243
Posted - 1 Hour	26	13	5	[9]	[2]	[3]	[14]	46
2 Hours	63	13	5	17	7	0	8	50
Sub-Total	89	26	10	26	9	3	22	96
Metered - 1 Hour	368*	1528	385	[178]	[33]	[16]	[27]	2167
2 Hours	273	1209	297	249	[65]	[55]	[43]	1918
3 Hours	222	192	104	112	66	[40]	[136]	650
4 Hours	20	8	5	2	6	0	[15]	36
12 Hours	116	39	22	25	9	7	100	202
Sub-Total	999	2976	813	566	179	118	321	4973
TOTAL	1107	3170	850	610	199	125	358	5312

*Includes 2-12 minute meters.

[ ] Overtime parkers, including "Meter-Feeders"

Base Day - data Thursday, November 6, 1969.

POINT TO POINT MOVEMENTS CBD STUDY AREA

POINT TO POINT MOVEMENTS

CBD STUDY AREA

(8 a.m. -9a.m., 1 p.m. -2 p.m., and 4 p.m. -5 p.m.)

Location of Observation Stations:

1. Maple Avenue north of Marshall Street
2. Oak Street north of Franklin Avenue
3. Ridgewood Avenue west of Costa Terrace
4. Godwin Avenue west of Wilsey Square
5. Broad Street south of Leroy Place
6. Prospect Street south of Woodside Avenue
7. Maple Avenue south of Dayton Street
8. Ridgewood Avenue east of Maple Avenue

8 a.m. -9 a.m.

from \ to	STA 1	STA 2	STA 3	STA 4	STA 5	STA 6	STA 7	STA 8	CBD
STA 1	31	18	16	24	26	5	279	25	88
STA 2	17	32	39	61	37	24	9	14	100
STA 3	33	63	81	32	24	26	8	96	81
STA 4	110	61	29	52	14	22	20	108	142
STA 5	53	4	29	16	51	8	6	39	64
STA 6	11	25	25	13	15	11	2	40	63
STA 7	232	37	0	3	3	0	14	35	84
STA 8	62	13	37	49	34	19	74	44	125

Based on observations Thursday, December 4; Friday, December 5; and Friday, December 12, 1969.

1 p.m. -2 p.m.									
from \ to	STA 1	STA 2	STA 3	STA 4	STA 5	STA 6	STA 7	STA 8	CBD
STA 1	52	18	29	45	27	10	208	38	49
STA 2	24	26	34	69	24	14	5	21	64
STA 3	31	17	39	45	22	9	11	42	39
STA 4	79	53	50	62	42	7	30	88	86
STA 5	16	10	18	26	42	24	14	13	45
STA 6	13	7	15	19	25	25	13	13	36
STA 7	144	22	12	8	2	4	31	52	41
STA 8	44	14	49	75	26	8	83	55	65

4 p.m. -5 p.m.								
from \ to	STA 1	STA 2	STA 3	STA 4	STA 5	STA 6	STA 7	STA 8
STA 1	112	5	28	45	29	10	330	17
STA 2	42	45	87	101	40	28	11	17
STA 3	23	32	89	44	18	16	14	28
STA 4	82	65	65	92	50	14	34	65
STA 5	41	7	22	24	52	29	12	38
STA 6	13	38	29	20	7	51	4	31
STA 7	311	22	6	11	3	10	30	50
STA 8	58	23	80	94	55	26	120	51