

Newton Village Study

Nonantum Survey Report

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NEWTON COLLECTION

NEWTON VILLAGE STUDY

Prepared for the City of Newton, Massachusetts
Theodore D. Mann, Mayor
Barry C. Canner, Director of Planning and Development

January 1986

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NONANTUM SURVEY REPORT

2.2.0 INTRODUCTION AND SUMMARY OF FINDINGS

INTRODUCTION

The Newton Village Study is a two year effort to examine and prepare a comprehensive plan for the future of the City's fifteen village centers. The study was begun in response to the growing community awareness and concern of the land development pressures that are being experienced throughout the City, particularly in the village commercial centers.

The study was designed to have four phases, each phase building on the next so that effective input of all citizens of Newton can be obtained.

- I. A kickoff phase, in which the study was announced and its design publically presented in meetings before the Board of Aldermen, the Economic Development Commission, and a land use forum conducted by the Newton Conservators and the League of Women Voters. In cooperation with the Economic Development Commission, a full scale citizen participation process was also designed in this phase.
- II. A survey phase, to examine and discuss the development issues and problems from a city-wide as well as village perspective. The problems of traffic, parking, urban design, zoning and the economy are examined and presented in survey reports for each village center.
- III. An alternative plans phase, to examine and discuss a number of alternatives for the future of the village centers, and the impacts of the alternative futures on the City's quality of life.
- IV. A final plan phase, to prepare consensus plans and the necessary zoning amendments and other public actions necessary to achieve it.

An essential part of each phase is a full-scale public participation process consisting of city-wide and village meetings.

This survey report is one product of Phase II. It presents in detail the findings of four months of study, and is organized as follows: Section 1 highlights all important findings, Sections 2 through 8 present the results of the detailed studies in each subject area; a summary of findings is provided at the beginning of each section for ease of reading and understanding the whole.

OVERALL SUMMARY OF FINDINGS

- Nonantum's commercial center is largely neighborhood oriented, but has a number of businesses serving a wider market. The "community-wide" businesses also serve the traditional industrial base of Nonantum.
- The character of Nonantum is unlike most of the rest of Newton. It is a largely "working class" area and its environment is much like that of older northeast cities.
- The area has a good urban scale and atmosphere, with close in neighborhoods and working areas. Unfortunately, newer businesses with open parking lots have altered this scene in some locations. A number of business buildings are unkempt, giving the area a shabbier appearance than need be.
- The public park and library occupy an important location in the heart of Nonantum, yet seem hidden from view and lack the prominence they deserve.
- Streets are relatively narrow in Nonantum, and the main streets carry considerable traffic, particularly Watertown Street. Traffic carrying capacity is limited and problems are exacerbated by uncontrolled left hand turns and unsignalized intersections.
- While the area as a whole has a surplus of parking spaces, the core area along Watertown Street has a large deficit. Consequently, there is some parking intrusion in those neighborhoods abutting part of this area.
- The small public parking lots perform an important function serving the convenience shoppers. However, long-term parkers reduce the amount of spaces available in these lots.
- There is a very large amount of non-residential zoning in Nonantum, much of it in predominantly residential blocks. the amount of development allowed by this zoning is very high.
- The amount of new commercial/office space that could be built in Nonantum (1.6 million square feet) is far greater than what presently exists. (.36 million).
- Most of the development allowed is non-residential, and the number of dwelling units that could be built (81) is small. Consequently, Nonantum could, over time, become a large non-residential enclave. Intrusion of commerce into the area's residential blocks will continue and may grow.

NONANTUM SURVEY REPORT

2.2.1 MARKET ORIENTATION/THE ROLE OF THE CENTER

Most of Newton's retail business and service economy is located in the City's 15 village centers. While there are substantial activities elsewhere (e.g. Needham Street), these centers function in varying degrees as the centers of the City's economy. Newton's commercial pattern is unusual for a city of its size. Most medium size cities are characterized by a substantial "downtown" where retail and business services and governmental activities tend to be concentrated, and perhaps a number of smaller neighborhood convenience centers or strips. In Newton, there is no one center that can be called the City's "downtown", although Newton Centre comes closest.

An important aspect of the village study is to determine the present role of each village center in the City's economy and to forge a consensus on what roles each should play in the future.

Therefore, the "market orientation" of the retail businesses in each center was examined and categorized into three orientations: Neighborhood, community/city-wide, and city-wide/regional. These characterizations were made on the basis of the type of business and what is considered by market researchers to be its normal market area. For example, a small variety store or delicatessen normally serves a relatively small market and is considered a neighborhood convenience business. An automobile dealer, large plumbing supply outlet or discount store normally serves a wider community or city-wide market. Large shopping malls or office complexes and employment centers tend to attract shoppers, and business from throughout the metropolitan area. Although the Chestnut Hill Mall and shopping center may contain small shops, the area as a whole is a regional attraction.

There is a mix of businesses in all village centers, but some have a much wider range of goods and services than others. Most village centers also contain businesses whose market orientations vary, so that with the exception of Waban and Oak Hill, there are no centers which can be considered purely neighborhood, community-wide or regional in nature. However, it is possible and appropriate to estimate the amount of business floor area in each village center oriented in each of these ways.

FINDINGS;

Table 1.1 and figure 1.1 describe the present orientation of Nonantum. A majority of Nonantum is devoted to the neighborhood market, but a substantial portion is also oriented community or city-wide. To a great extent, this is the result of Nonantum's traditional role as an older urban industrial area for the city. Thus, many of its businesses were established to serve the industrial employees (restaurants, etc.). Also, business areas such as Nonantum attract wholesale or "outlet" businesses with a wider community-wide clientele.

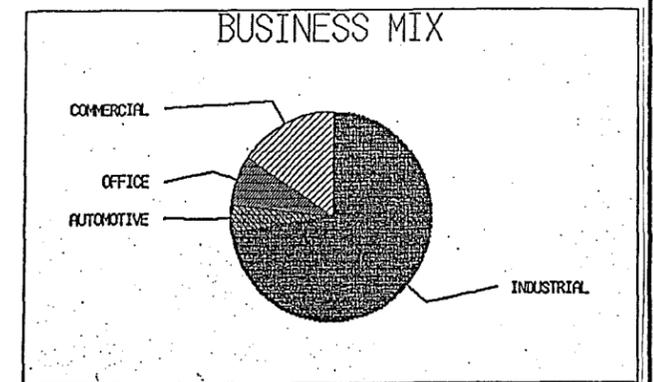
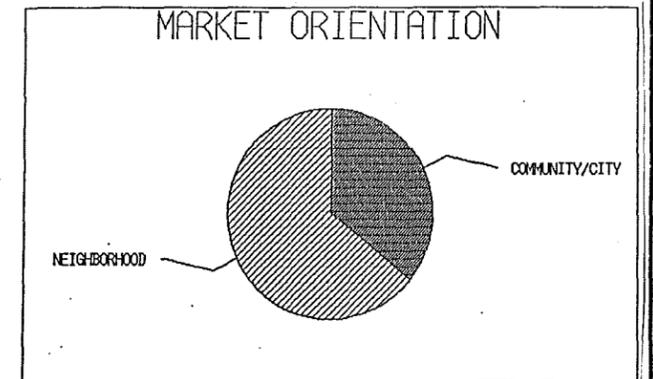
As Nonantum is primarily a "working class" area, it has not yet attracted the "upscale" retail outlets (boutiques, wine and cheese shops) found in a number of Newton's other village centers. In this sense, it retains a link with its past.

TABLE 1.1

MARKET ORIENTATION OF BUSINESS ACTIVITY IN NONANTUM
BY BLOCKS AND FLOOR AREA

	<u>Blocks</u>	<u>Floor Area</u>	
1. Neighborhood	11006	9428	
Convenience Shops	11007	23713	
and Services	11013	12623	
	11014	9282	
	14001	15472	
	14008	660	
	14009	2856	
	14011	5292	
	14012	34376	
	14014	27122	
	14015	38360	
		Sub Total	179184
2. Community-wide	14001	21092	
Business and	14008	28138	
Services	14014	41082	
	14016	28691	
		Sub Total	119003
		Total	303131

NONANTUM



-  NEIGHBORHOOD CONVENIENCE BUSINESS AND SERVICES
-  COMMUNITY/CITY-WIDE BUSINESS AND OFFICES
-  REGIONAL/CITY-WIDE BUSINESS CENTERS AND OFFICES
-  AUTOMOTIVE SERVICES

FIGURE 1.1 MARKET ORIENTATION OF BUSINESS USES

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 PREPARED FOR THE CITY OF NEWTON, MASSACHUSETTS
 THEODORE D. MANN, MAYOR
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NONANTUM SURVEY REPORT

2.2.2 URBAN DESIGN AND ENVIRONMENT

INTRODUCTION

In the visual survey we have endeavored to discuss the general environment of the Village Center with special emphasis devoted to those areas which are "perceived" as the "central core", (usually the central commercial block.) Within this discussion, emphasis is further placed on the quality and clarity of entry (gateways), "spatial definition" (the quality and continuity of the commercial edge and the space formed by the building massing scheme) and the effect of these elements on the perception of the viewer. Other positive and negative aspects specific to the center are also discussed. Considerations such as areas of negative residential/commercial interface, the role and extent of vehicular/pedestrian participation in the space, as well as facade/signage problems, are examined to provide insight into the many seemingly unrelated elements within the center which contribute to our perceptions of it as an environmental whole.

FINDINGS

Figure 2.1 presents the results of the visual survey.

Nonantum, while physically linked to both Newtonville and Newton Corner, is visually associated with Watertown. Route 16 (Watertown Street) links West Newton with Watertown while passing through Nonantum making for only transitory participation by most of this areas' visitors.

Here, entrances to the east and west on Route 16 are not clearly delineated and are, in addition, somewhat negative in appearance. Entering from the north and south on Adams Street provides the most distinct sense of entry, although again, largely negative in character.

The commercial block to the east of Adams Street is perceived as the "central core" of this village. In this area, low commercial buildings provide a consistent "hard edge" and a "sense of enclosure".

To the west of Adams Street this "sense of enclosure" is lacking. This space is linear (spread along Route 16), but areas of parking in front of buildings and the open appearance of the gas station (at the corner of Adams and Route 16) negate any possibilities for clear spatial definition.

Throughout the Nonantum commercial area a lack of facade and signage conformance and the plethora of above ground wires

and utility poles detract most from the streetscape appearance.

VISUAL DISCORDANCE-LINEAR

- LACK OF SPATIAL DEFINITION
- LACK OF ARCHITECTURAL CONTINUITY
- VEHICULAR DOMINATION

POSITIVE CONTEXTUAL INTEGRATION

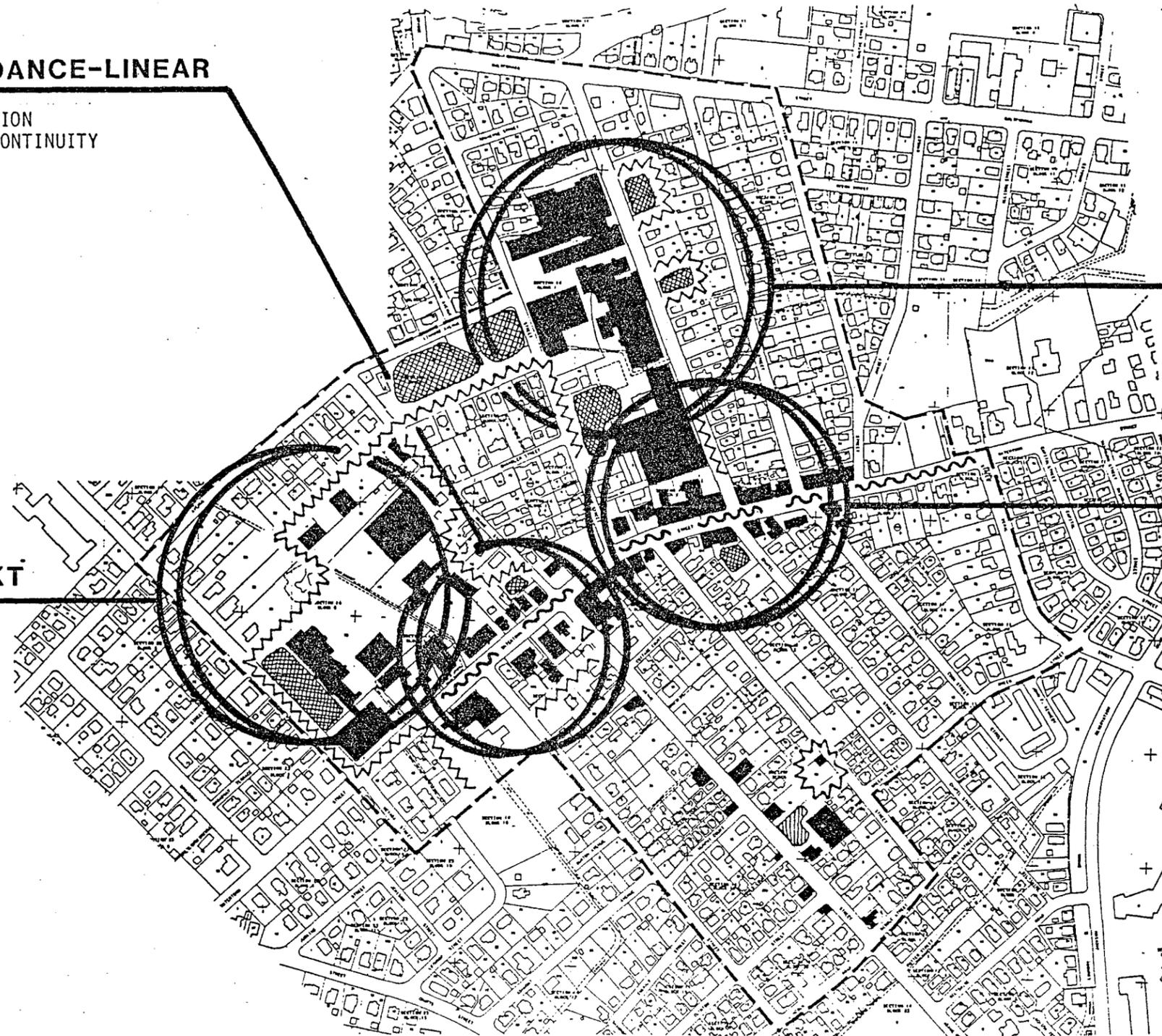
- MODERATE BUFFER PLANTING
- NEGATIVE VISUAL EDGE AND PARKING

VISUAL CORE

- THRU TRAFFIC
- POINT OF CITY-WIDE ACCESS/EGRESS
- MIXED VISUAL IDENTITY
- PEDESTRIAN PARTICIPATION

NEGATIVE VISUAL CONTEXT

- LACKS HUMAN SCALE
- DOMANANT INDUSTRIAL THEME



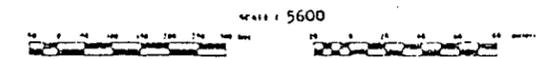
LEGEND

-  NON-COMMERCIAL STRUCTURE
-  BUILDING AT COMMERCIAL CENTER OR COMMERCIAL BUILDING
-  PERCEIVED POINT OF ENTRY (VISUALLY POSITIVE)
-  PERCEIVED POINT OF ENTRY
-  PARKING LOT REQUIRING IMPROVEMENTS
-  AREA REQUIRING STREETScape IMPROVEMENTS
-  AREA UNDER CONSTRUCTION
-  NOISE
-  AREA OR STRUCTURE OF HISTORIC VALUE
-  NEGATIVE AREA AT RESIDENTIAL/COMMERCIAL INTERFACE

FIGURE 2.1 URBAN DESIGN SURVEY

NEWTON VILLAGE STUDY

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FIGURE 2.1

URBAN DESIGN AND ENVIRONMENTAL STUDY

GLOSSARY

Area or Structure of Historic Value- Areas or structures (buildings) which are listed on the National Register of Historic Places.

Area Requiring Streetscape Improvements- An area which exhibits the potential to benefit greatly from one or more of the following improvements:

- Street trees
- New or an improved quality paving
- Defined limits (curbing, bollards, etc.)
- New lighting
- Street furniture

Area Under Construction- An area whose full visual condition cannot be determined at this time.

Asphalt Dominated Landscape- Area containing large expanses of unbuffered parking areas.

Buffer Planting- Plant materials arranged to screen or mollify the visual impact between contrasting or conflicting views.

Building at Commercial Center or Commercial Building- Any building at a commercial center usually, commercial or institutional (churches, etc.), which serves to define or delineate that center.

Cohesive Massing- An arrangement of buildings/structures and major components thereof which interrelate clearly providing a unified appearance.

Dominant Industrial Theme- Area of industrial or heavily commercial function and visual identity.

Exemplary Edge at Commercial/Residential Interface- Edge condition which should serve as a model where visually and functionally dissimilar structures/areas exist.

Facade/Signage Conformance- Existing or improved facades and signage which are visually attractive and contribute to a visual cohesiveness.

High Speed Vehicular Orientation- An area which accommodates high speed traffic while enduring all attendant nuisances (noise, vehicular/ pedestrian conflicts, pollution).

Intimate Streetscape- Streetscape with especially small scale elements, spatial relationships and structures.

Lack of Architectural Continuity- Dissimilar types of structures which relate poorly to one another.

Lack of Spatial Definition- Insufficient vertical elements or poor arrangement of those elements which result in a space without clear limits or enclosure.

Mixed Visual Identity- An image resulting from a combination of both positive and negative visual elements.

Negative Area at the Residential/Commercial Interface- An area lacking in sufficient buffer systems where conflicting residential and commercial uses meet.

Negative Streetscape Identity- A section of the streetscape where many components result in a visually unattractive whole.

Negative Visual Identity- An area whose many components result in a visually unattractive whole.

Non-Commercial Structure-Any structure (building) other than commercial.

Parking Lots Requiring Improvements- Parking lots which suffer either visually or functionally from a lack of the following typical components:

- Defined limits (curbing)
- Defined access/egress (curbing signage)
- Paving
- Sufficient planting buffers at the periphery
- Sufficient plantings within
- Poorly organized parking scheme

Pedestrian Orientation- Disposition toward functional accommodation of the pedestrian (alley ways, uninterrupted sidewalks, linkages to other areas, off street parking).

Pedestrian Participation- Abundant pedestrian activity.

Pedestrian Scale- Small in scale- of a size that relates to human scale visually and functionally.

Pedestrian Scale/Vehicular Participation- Small scale structures and spaces which appear accommodating to the pedestrian yet are dominated by the automobile.

Pedestrian/Vehicular Conflict- The result in areas where pedestrian and vehicular circulation meets unsafely.

Perceived Point of Entry- The point at which a sense of entry is defined and most clearly experienced, while eliciting a moderate to negative response from the viewer.

Perceived Point of Entry (Visually Positive)- The point at which a sense of entry is defined, most clearly experienced, and attractively enframed.

Point of City-Wide Access/Egress- The point at which the traveler (motorist) enters/exits the City of Newton.

Poor Contextual Relationship- Poor integration of conflicting uses.

Poorly Articulated Commercial Edge- Improper placement of commercial buildings and related elements resulting in a poor visual relationship with the street and poor visual linkage between the buildings themselves.

Poorly Utilized Pedestrian Linkages- Pedestrian linkages (alley ways, walks and desire lines) which remain under utilized and unrecognized.

Positive Commercial Identity- An area decidedly commercial in character yet visually attractive.

Positive Contextual Integration- The achievement of visually attractive interrelationships between visually and functionally dissimilar structures or areas (usually buffer systems)

Positive Historic Theme- Attractive identity of an area rich in history.

Positive Residential/Commercial Integration- Visual and functional harmony between residential and commercial structures or areas.

Positive Spatial Definition- Arrangement of vertical elements which result in a visually attractive space, or spaces within.

Positive Visual Identity- An area whose many components result in a visually attractive whole.

Sense of Enclosure- A sufficient number of closely spaced vertical elements which serve to enclose the space within.

Strong Linear Definition- Buildings and associated spaces arranged along a long straight street (longitudinal orientation)

Thru Traffic- Vehicular circulation through an area or center (transitory vehicular participation in the space)

Unique Sense of Place- Special character or imagery which defines and identifies an area while distinguishing it from other areas.

Vehicular Domination- An area containing much vehicular traffic and unbuffered parking areas.

Vehicular/Pedestrian Interface- An area where pedestrian and vehicular circulation meets.

Visual Core- The "perceived" center of a "commercial" area.

Visual Discordance- Without order and/or containing visually conflicting elements.

Visually Incongruous- Relates poorly with surroundings, unharmonious.

NONANTUM SURVEY REPORT
2.2.3 LAND USE

INTRODUCTION

Information on existing land uses in the village centers was obtained from the Newton Assessors. The information was aggregated into the categories shown in Tables 3.1 and 3.2 and figure 3.1. The table shows for each the amount of land area in acres for each use, the amount of commercial, office and industrial floor area in square feet, the number of dwelling units located within the village study boundaries, and the Floor Area Ratio (FAR) of the non-residential buildings. (The concept of FAR is illustrated in Section 2.2.8.)

FINDINGS

The land uses, density and general environment of Nonantum are characteristic of an older, working-class industrial city of the northeast. It is urban and contains a complex of older industrial buildings presently used for a wide variety of business ventures. Nonantum's downtown provides some convenience services for the surrounding neighborhoods but also serves the "lunch time crowd" from the nearby industries and offices.

The study area is necessarily large, as Nonantum has a large amount of non-residential zoning. This zoning has resulted in considerable commercial penetration into the residential neighborhoods. In fact, Nonantum is the only area where whole, predominantly residential blocks have been zoned for commercial use.

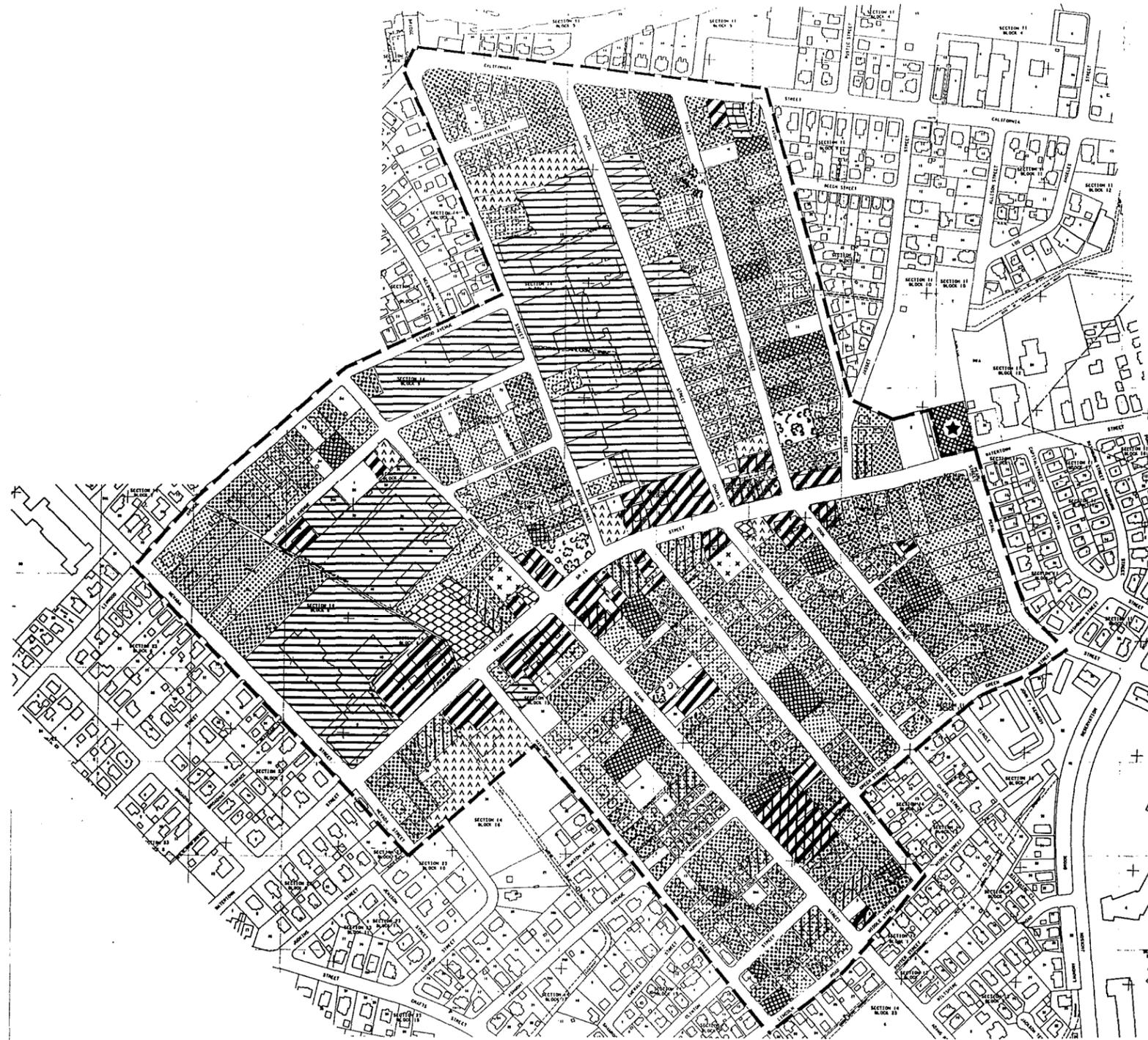
The public park and library at Watertown and Bridge Sts. are in the heart of the Nonantum and are very important symbolically - they are the only civic identity and link to the larger Newton community on this center's main street.

There are a large number of residences (724) within the study area, and the density (12 units per acre) is relatively high for Newton. The residential areas are intimately a part of the fabric of the traditional, older industrial nature of Nonantum. If these older uses are altered - become more dense office complexes - the potential for serious disruption to the residential areas is high, for beyond what presently occurs.

TABLE 3.1

EXISTING LAND USE CHARACTERISTICS IN NONANTUM

<u>CATEGORY</u>	<u>LAND AREA IN ACRES</u>	<u>FLOOR AREA IN SQ. FT.</u>	<u>FAR</u>	<u>DWELLING UNITS</u>
Residential:				
Single Family	26.10	--	--	177
2 and 3 Family	29.54	--	--	385
Apartments/Condos	5.56	42,802	.568	162
Commercial	6.54	188,932	.662	--
Office	1.15	81,023	1.653	--
Industrial/Manufacturing	23.37	715,709	.703	--
Mixed Use - mostly Commercial	2.05	90,697	1.010	--
Mixed Use - mostly Residential	3.13	96,553	.706	--
Transportation/Parking	NA	--	--	--
Institutional	NA	--	--	--
Open Space/Recreation	NA	--	--	--
Vacant Land	4.92	--	--	--
TOTAL		1,076,359	.68	724



-  RESIDENTIAL—SINGLE FAMILY
-  RESIDENTIAL— 2 and 3 FAMILY
-  RESIDENTIAL—APARTMENTS/CONDOS
-  COMMERCIAL
-  OFFICE
-  INDUSTRIAL/MANUFACTURING
-  TRANSPORTATION/PARKING
-  MIXED USE—MOSTLY RESIDENTIAL
-  MIXED USE—MOSTLY COMMERCIAL
-  INSTITUTIONAL
-  OPEN SPACE/RECREATION
-  PROPOSED OR UNDER CONSTRUCTION

FIGURE 3.1 EXISTING LAND USES

NEWTON VILLAGE STUDY

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2.2.4 TRAFFIC CONDITIONS

The enclosed reports cover each of the Newton villages included in the current study, and document existing traffic conditions at key intersections in each village center.

Essentially, this report conveys the results of the manual and automatic traffic counting program initiated in October 1985, together with pre-existing traffic count data, from previous City counts and consultant studies, made available to us by the Newton Planning and Public Works Departments.

The objective of assembling available information on traffic volumes, intersection geometrics, and existing traffic control was to create a "Base Case" traffic scenario against which alternative future scenarios can be compared in later phases of the study. Since the principal traffic impact of additional development in any center will be the generation of added volumes, it was important to have reasonable estimates of existing volumes on key streets.

In conducting the traffic surveys, we noted existing intersection geometry and traffic control, pointing out where these create or accommodate present-day bottlenecks. We also tried to identify parallel routes most likely to be used as bottleneck bypasses by drivers familiar with existing traffic conditions.

We used the Level of Service methodologies for analyzing signalized and unsignalized intersections to characterize existing operations, with one important caveat related to signalized intersections: signal phasing and timing patterns assumed at such intersections were not those in current operation. We deemed it more useful to analyze an optimal allocation of signal green time based on existing traffic volumes, in order to be able to compare operations given potential capacity and existing volumes, with future operations when these volumes can be assumed to increase with different development scenarios. This approach corresponds to the "planning" approach to traffic operations analysis, compared with the more fine-tuned "engineering" approach which is appropriate when one is actually involved in intersection design. Thus, the reported Levels of Service may not correspond with current daily experience at existing signalized intersections operating with less-than-ideal phasing and timing.

NONANTUM

Traffic Conditions

The principal street traversing Nonantum is Watertown Street (Route 16), roughly from Crafts Street to the Watertown line and, ultimately, Watertown Square. The street is lined with commercial uses, and some residences; behind Watertown Street to the north and south, land use is mainly residential. Watertown Street is nominally 4 lanes wide, but on-street parking serving commercial uses effectively narrows the street to 2 traffic lanes in the sections near Adams and Chapel Streets.

Automatic traffic counts will be conducted in this area during the next study phase.

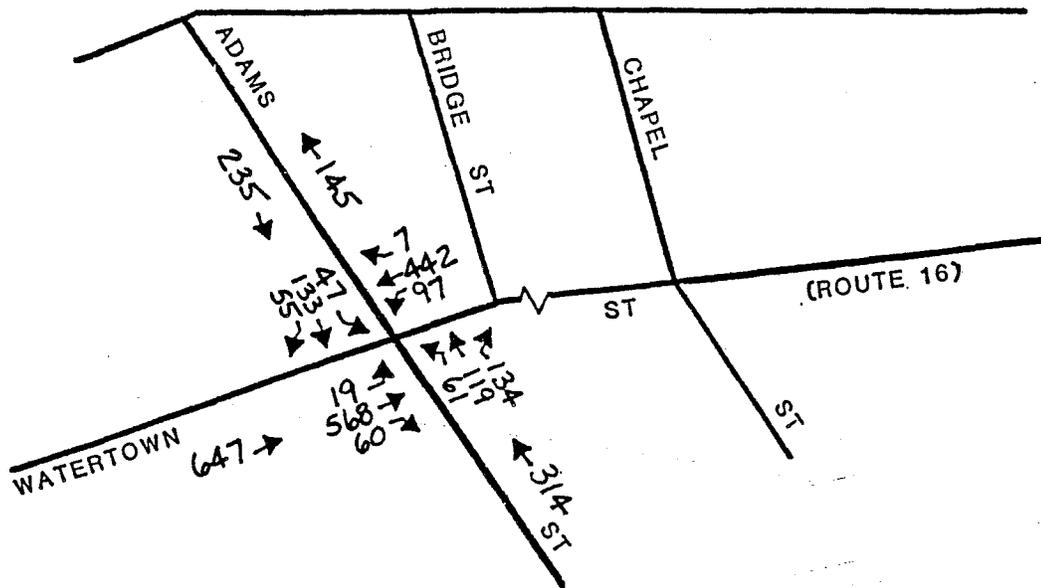
A peak hour turning movement count of the Watertown/Adams Street intersection was conducted in November 1985. The count was adjusted to represent average annual existing peak hour traffic volumes, which are depicted in Figure 4.2. The results are indicative of volumes along the Watertown Street corridor throughout Nonantum; but cross street volumes are likely to be lower at other points along the corridor than they are on Adams Street. Peak hours observed along Watertown Street during these counts were 7:45-8:45 AM and 4:45-5:45 PM.

Existing operations at Watertown /Adams Street were analyzed using Level of Service analysis procedures for signalized intersections. The purpose of the analysis was to determine how well this intersections could function, given its present geometric design and ideal or desirable signal timing, and existing traffic volumes, as a measure of how much potential capacity at the intersection is presently utilized. At a later phase of the study, projected volumes can be compared against present volumes, assuming an optimal traffic throughput at the existing intersection.

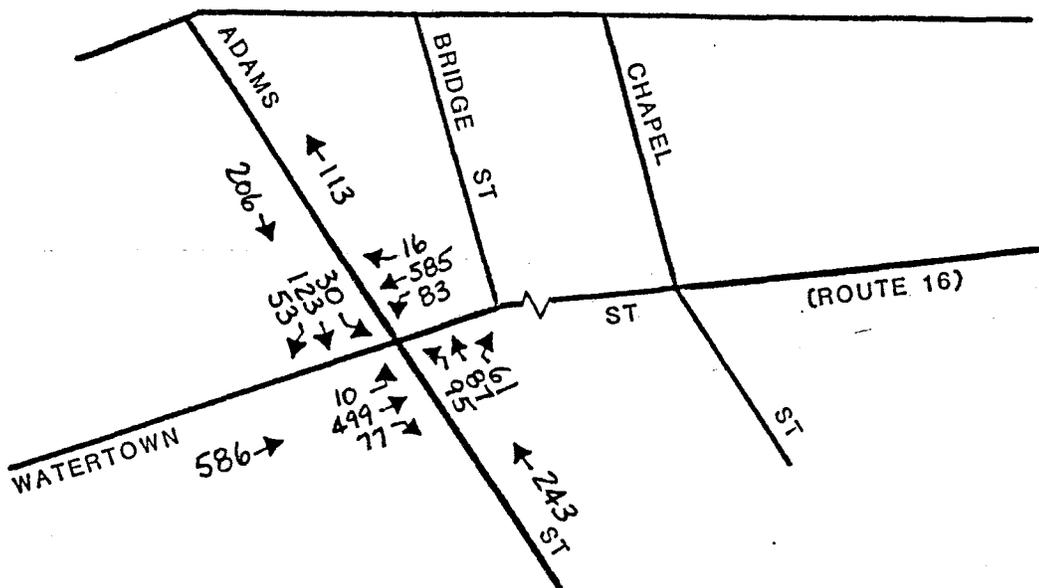
The results of this analysis are illustrated on Figure 4.3. As can be seen, this intersection can currently function at a high level of service, principally because cross-street volumes are not extremely high. A similar level of service would probably be found at any other signalized intersection in the corridor with similar cross-volume characteristics: delays are experienced only by vehicles queued at red signals, but traffic can clear in a single cycle.

Unsignalized intersections along this stretch of Watertown Street probably present somewhat more difficulty to cross-street traffic, particularly to left turns and cross-street through movements.

A.M.



P.M.



(NOT TO SCALE)

**NEWTON VILLAGE
STUDY**

**PEAK HOUR TRAFFIC VOLUMES -
NONANTUM**

FIGURE

4-2

KEY TO INTERSECTIONS

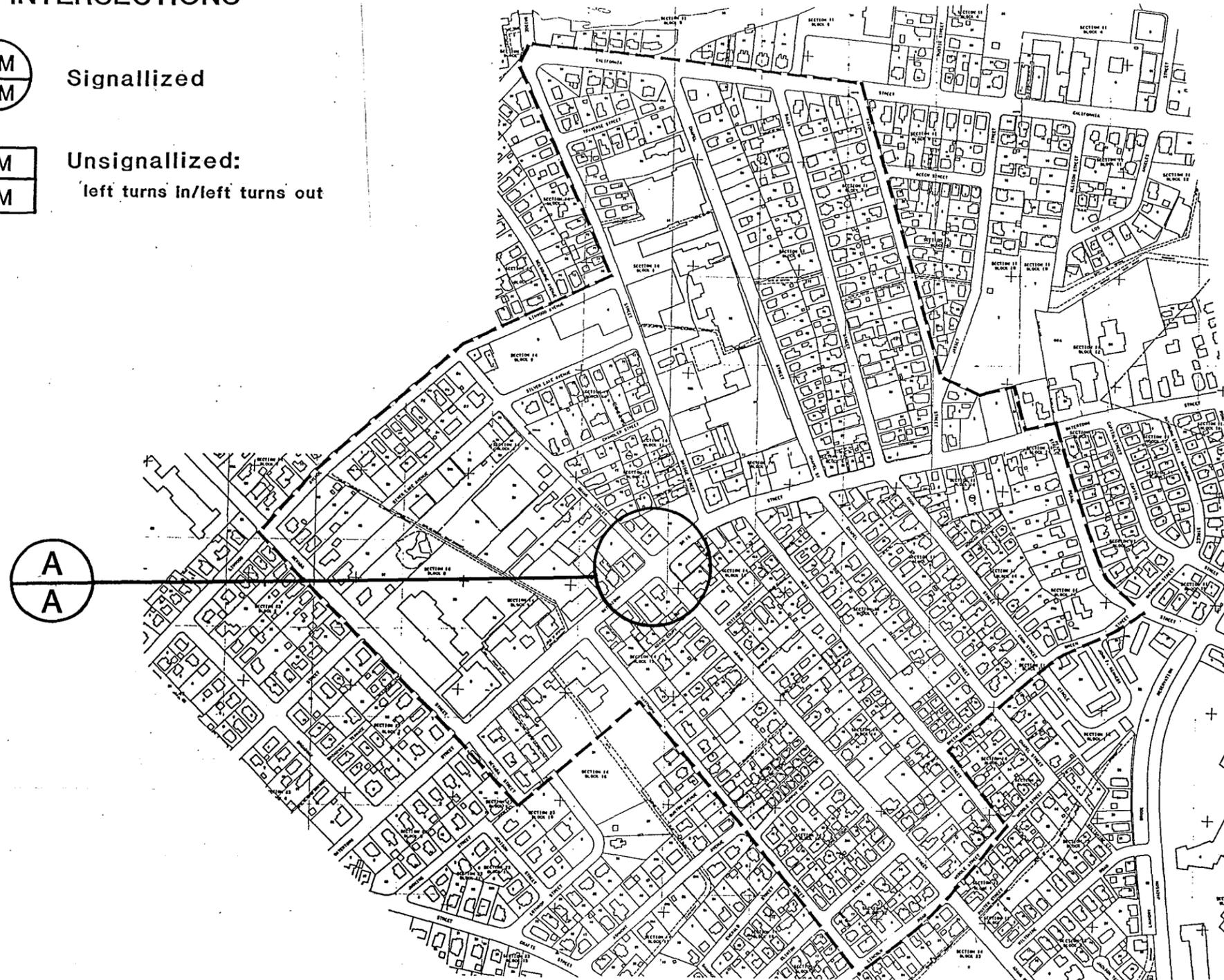
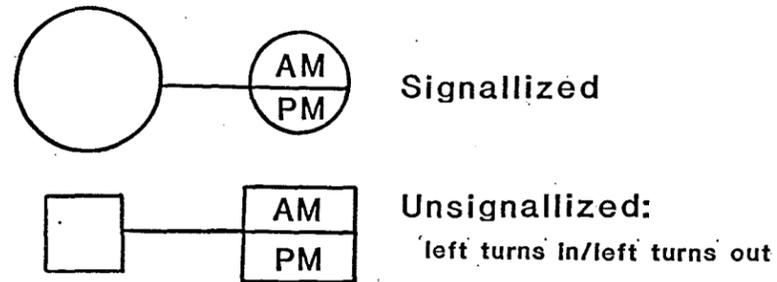


FIGURE 4.3 OPTIMAL INTERSECTION LEVEL OF SERVICE

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INTRODUCTION

This report presents the results of the following parking studies and analyses performed for the Newton Highlands study area.

- A parking inventory (figure 5.1)
- A parking supply/demand analysis (figure 5.2)
- A parking use survey

The parking inventory was prepared from field survey and from information provided by the Newton Departments of Public Works and Planning and Development. The inventory identifies all available public and private, on- and off-street, posted and metered, parking spaces in the study area.

The parking supply/demand was performed using computerized land use data provided by the Newton Assessors, and the above parking data. This analysis provides a measure of the difference between an assumed business parking demand and actual supply.

A parking use survey was conducted on Friday, November 8, 1985, between the hours of 8 a.m. and 2:30 p.m., and Wednesday November 13, between 2 and 3 p.m. The areas surveyed included all the public metered and posted on-street parking spaces on Watertown Street from Nevada to Pearl Street; Adams Street south of Watertown Street to Murphy Court; West Street to Green Street; Chapel Street south of Watertown Street to lot number 27, Chapel Street north of Watertown street to lot number 90, Bridge Street to Linwood Avenue, and the public parking lots on Adams Street and Chapel Street.

The purpose of the survey was to measure the actual level of use (as a percent of capacity) and the turnover rate, or parking duration, of all metered spaces and, in many cases, posted spaces. Friday was chosen as the day of survey since it is traditionally the busiest day, combining end-of-week convenience shopping and local employee and commuter parking.

SUMMARY OF FINDINGS:

- a. Supply vs Demand
 1. Nonantum has a small overall parking surplus; supply exceeds demand by 109 spaces.
 2. The retail core area along watertown Street exhibits a large parking deficit (271) spaces while large parking surpluses are evident in the industrial areas north of Watertown Street
 3. Private parking spaces comprise the large majority of the

parking supply (82%)

4. Public parking is located mostly on street; public off-street parking comprises only 4% of the total parking supply.
5. Except for the three-hour public lots, there are no long-term public parking spaces to accommodate parking needs generated by employees. Most employee parking occurs off-street in private lots, but these opportunities do not generally exist for businesses fronting on Watertown Street.
6. The major intersecting streets (Adams, Bridge, Chapel and West Streets) were not heavily used for parking and there was little, if any, business related parking on abutting residential streets on the days surveyed. Bridge and Adams Streets are too narrow and/or trafficked for safe parking. Chapel Street south of Watertown and West Streets are residential where business-related parking should be discouraged in any case.
7. The regulatory system of parking meters and posted parking spaces cannot be easily enforced. The metered spaces are enforced, but the posted spaces are generally not. The geographical distribution and total number of parking spaces involved make effective management of the parking areas very difficult with the manpower now assigned.

b. Parking Use Survey

1. For the Nonantum study area as a whole, the overall use of on-street spaces was not high, except at the peak use hours, 12 to 2 p.m. That is, there were a considerable number of spaces available in certain parts of the area throughout the day, except at the peak period when the area appeared full. Parking was heavier in the afternoon hours.
2. The core area, Watertown Street from Cook Street to Adams Street, appeared full throughout most of the day and reached capacity at the peak period.
3. The efficiency of on-street parking in Nonantum is reduced by a significant amount of "Meter feeding." The one hour and twenty-six minute average duration rate is high, not consistent with the generally convenience oriented nature of the majority of businesses.

SUPPLY VS DEMAND

Table 5.1 shows that Nonantum has 1608 available parking spaces and an overall parking demand of 1499 which results in a parking surplus condition for the entire area. The parking supply and demand analysis is consistent with the parking use data which indicated a significant number of available parking spaces throughout the entire day.

Similar to other village centers in Newton, the distribution of parking supply and demand is uneven. Specifically, the area comprising the retail core (Watertown street from Adams Street to Chapel Street) has a theoretical parking demand for 897 spaces and a supply of 606 spaces resulting in a deficit of 291, while the industrial blocks north of Watertown Street exhibit a parking surplus of over 350 spaces. This imbalance in parking supply and demand is also consistent with the parking use data which shows high use along Watertown Street and significantly lower use along Bridge and Chapel Streets which border the industrial uses. Private parking plays a major role in Nonantum: fully 82% of the total supply is provided by private off-street spaces as compared to 4% in public off-street lots. Public on-street spaces account for the remainder of the total supply. Figure 5.1 and Table 5.1 indicate that in Nonantum, parking supply is primarily a private responsibility, and that in most cases the areas served by private off-street lots have no parking problems. The commercial areas primarily serviced by public parking spaces are the locations of the largest parking deficits.

PARKING USE CHARACTERISTICS -- ON STREET

The 106 metered spaces on Watertown Street and Adams Street allow one hour parking. The average level of use for the period 8 a.m. to 2 p.m. was 67%, which is not high. The peak level of use occurred between 12 noon and 2 p.m. and attained 87% of capacity. During the peak period the study area gave the appearance of being full. After 2 p.m. there was a slight decline in use but the area maintained a relatively high level of use throughout the afternoon business hours, 75-80%.

Average parking duration for the study area was one hour and twenty-six minutes, significantly above the one hour legal limit. However, if the Watertown Street spaces from Cook to Pearl Streets on the east side, and from Hawthorne to Nevada Streets on the west side are deleted, the average parking duration rate declines to fifty-three minutes in this core area. Most of the longer term meter parking is occurring at the eastern and western ends of Watertown Street.

Nonantum has very narrow roadway rights of way, and in instances this fact can restrict parking. Bridge Street is the example of a narrow street where parking is allowed, but goes almost completely unused, due in part to perceived safety problems.

In other instances, the narrow roadways cannot effectively accommodate parking on both sides, and where it is presently allowed such as on Adams Street near Larry's Superette, a safety problem and traffic bottleneck occur. Parking generated by this commercial use is a problem, but the data indicates that overall Nonantum business parking has little or no impact on the surrounding residential areas.

Nonantum has a number of long north/south streets intersection Watertown Street that are posted for one or two hour parking, and were surveyed as part of the parking study.

Adams Street north of Watertown Street is very narrow and no parking is allowed. Adams Street south of Watertown Street has ten 1 hour metered spaces and 17 posted spaces on the east side to Murphy's Court, and four 15 minute posted spaces on the west side. While the Adams Street metered spaces have been included in our core area definition because of their geographical proximity to the traditionally recognized main intersection of the center, they are the metered spaces with the highest parking duration, 1 hour and forty minutes. This high duration rate indicates a significant amount of meter feeders, and the data shows that the abuse of the meters occurs mostly within the first five metered spaces. The remaining five metered spaces are not heavily used until 11:30 a.m. and then remain at a high level of use until mid afternoon.

Of the 17 posted spaces surveyed, the average level of use was below 25% and what parking did occur for long term (greater than 2 hours) appeared related to the abutting residential uses.

Along West Street, 30 spaces posted for two hour parking were surveyed. Only the first seven were used, and they had a 92% level of use, and an average parking duration of 3 hours and 40 minutes, and the portion of West Street closest to Watertown Street functioned as a long term parking area, while the remaining 23 posted spaces in the residential area were not used.

Bridge Street is posted for one hour parking and the first 20 spaces closest to Watertown Street were included in the survey. For the entire survey period no parking was recorded along Bridge Street. While parking is legal and clearly designated, the lack of overall parking demand and the narrowness of the street combine to make Bridge Street a completely unused public parking area.

Chapel Street is also posted for 1 hour parking, and the survey included 20 spaces closest to Watertown Street. As was the case with all the north/south streets in the project area, the level of use was low. Only the first 9 spaces were consistently used, and the average overall level of use was 21%. Average parking duration was 2 hours and 50 minutes, indicating almost exclusive use as a long term parking area.

The survey data indicates that during the peak on-street parking period of 12 noon to 2 p.m., there were 70 public on-street parking spaces not used (Adams, West, Bridge and Chapel

Streets). Thus, the business parking demands in Nonantum do not appear to affect those streets.

PARKING USE CHARACTERISTICS -- OFF STREET

The Adams Street parking lot has 27 spaces (including 2 handicapped spaces) all posted for three hour parking. The average use for the lot was 75%. The peak period of use was between 1:30 p.m. and 2 p.m. when the lot was at 100% capacity. This is a much shorter peak period than found on street.

Our discussions with local police determined that employees using the lot for long term parking leave the lot by 12 noon because they are aware that the 3 hour parking limit is enforced. Our data indicates that by 1 p.m. most employees return to the lot. However, for one hour during the start of the on-street peak, the lot is at 80% capacity, and spaces are available for people coming into the center but are not necessarily used. The lot reaches maximum capacity only when the employee parking returns between 1 and 1:30 p.m.

Average parking duration in the Adams Street lot is one hour and fifty-five minutes, well below the three hour posted maximum. If the 7 to 8 long term vehicles are deleted from the duration analysis, the duration rate drops to 1 hour and 10 minutes which is a faster turnover rate than the average for all on-street spaces in the project area. Therefore, the Adams Street lot is serving short term as well as long term parking needs. Most of the short term needs are related to the adjacent bank and the nearby Dunkin' Donuts store. The long term parking is essentially local employee and business owners.

The Chapel Street parking lot has 25 spaces, all posted for three hour parking. The average level of use is 82% and it reaches 100% during its peak at 12:30 p.m. Similar to the Adams Street lot, this lot does not have a consistent relationship with the on-street peak period; by 1 p.m. the utilization declines to 72%, and returns to 97% by 2 p.m. The movement of long term parkers from the morning hours, and their return after 1 p.m. is shown by the survey data. This lot also serves short term as well as long term parkers.

CORE AREA PARKING CHARACTERISTICS

The parking use characteristics of Watertown Street from West to Hawthorn Streets, including the 10 metered spaces on Adams Street are significantly different than the remainder of the project area. This "core" area has an average level of use of 95% in contrast with the 67% for the project area as a whole. The peak use is 95% in this core in contrast to 87% for the area, and average duration is only 49 minutes vs 1 hour, 26

minutes.

The intersection of Adams and Watertown Street and immediate vicinity is the area of highest parking use. As one focal point of the center, its high parking use gives the perception that parking is heavy in all of Nonantum for long periods of time. The survey indicates that this is not the case. Parking characteristics in Nonantum are consistent with a convenience oriented center: the parking spaces immediately adjacent to the businesses are in highest demand and show the highest turnover rate. Due to the type of goods and services offered, people are generally not willing to walk relatively long distances. Thus, it is normal to see heavy parking and high turnover in the core area; and low turnover rates and level of use on the periphery, particularly on side streets such as Bridge and Chapel.

PARKING IN RESIDENTIAL AREAS

As indicated earlier, there appeared to be little or no commercial parking spilling over into the residential neighborhoods, even in instances where the streets were posted for one or two hour parking and within 300 feet of the commercial areas. At 12:30 p.m. during the on-street peak, and when the Chapel Street lot was at full capacity, only two vehicles were parked on Chapel Street, indicating minimal parking pressure on this abutting residential area.

PARKING MANAGEMENT

The parking meter is the major parking management tool in Nonantum. The overall duration rate, and duration rates in selected areas such as Adams Street, indicate significant meter feeding. This practice is very difficult to control, and the problem is compounded given the distances over which the parking meters are dispersed in the project area. The posted on-street spaces were not enforced on the day of our survey.

Our findings indicate that the high parking duration rate which occurs in the entire study area, and for selected sections such as the core area, is a function of parking management practice as well as a function of user demand and parking patterns. Our experience indicates that for centers like Nonantum, shopping trips rarely exceed one hour except for personal service visits such as a hairdresser. The overall duration rate is high due to the existence of long term employee parking on the peripheral streets, and by meter feeding at almost all locations, particularly along Adams Street.

Parking management practices are effective in the two public parking lots. In both instances, all license plate numbers are recorded by 9 or 9:30 a.m. By 12 or 12:30 p.m., people who have been using the lots all morning move their cars out

of the lot or in some instances to another location within the lot. The recorded noon time parking turnover is directly related to enforcement practices.

TABLE 5.1

NONANTUM

PARKING SUPPLY AND DEMAND BY BLOCK

SEC/BL	DEMAND	PRIV	OFFST	ONST	PUBL	SPPLY	SURPLUS
11006	30	190	0	7	7	197	167
11007	42	6	0	18	18	24	-18
11010	4	3	0	8	8	11	7
11013	42	0	0	6	6	6	-36
11014	12	0	0	13	13	13	1
14001	686	313	0	50	50	363	-323
14008	349	191	28	36	64	255	-94
14009	9	300	0	7	7	307	298
14011	17	11	0	5	5	16	-1
14012	31	28	0	12	12	40	10
14014	164	158	0	29	29	187	23
14015	102	114	0	15	15	129	27
14016	1	0	0	17	17	17	16
14018	7	0	0	2	2	2	5
14022	4	0	0	6	6	6	2
11012	0	0	25	10	35	35	35
TOTAL	1499	1314	53	241	294	1608	109

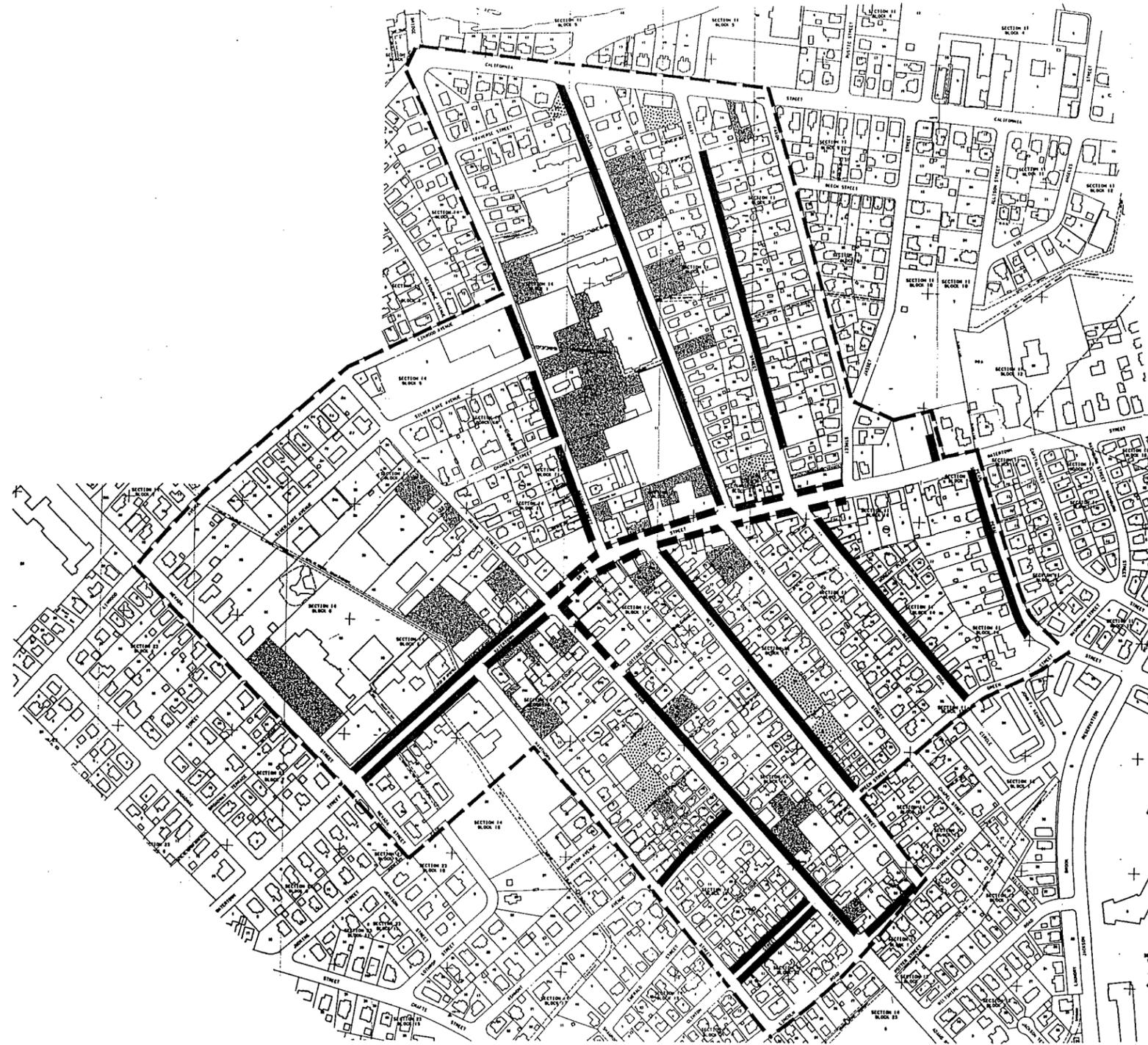
PRIV: Private off-street spaces

OFFST: Public off-street spaces

ONST: On-street metered and posted spaces

PUBL: Total off-and on-street metered and posted spaces

SPPLY: Total public and private spaces.



- PRIVATE BUSINESS PARKING SPACES**
- IN SURFACE LOTS
 - IN PARKING GARAGES/PROPOSED
- PUBLIC PARKING SPACES**
- OFF-STREET METERED
 - OFF-STREET NON-METERED
 - ON-STREET METERED
 - ON-STREET POSTED
- SPACES IN RESIDENTIAL LOTS**
- SPACES IN INSTITUTIONAL LOTS

FIGURE 5.1 EXISTING PARKING INVENTORY

NEWTON VILLAGE STUDY

DATE _____
 PREPARED FOR THE CITY OF NEWTON, MASSACHUSETTS
 THEODORE D. MANN, MAYOR
 BARRY C. CANNER, DIRECTOR OF PLANNING AND DEVELOPMENT

Connelly Associates
 25 Washington St., Boston, MA 02108 (617) 552-1844



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NONANTUM

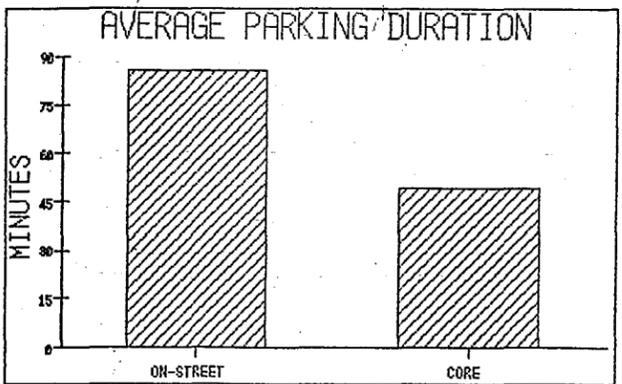
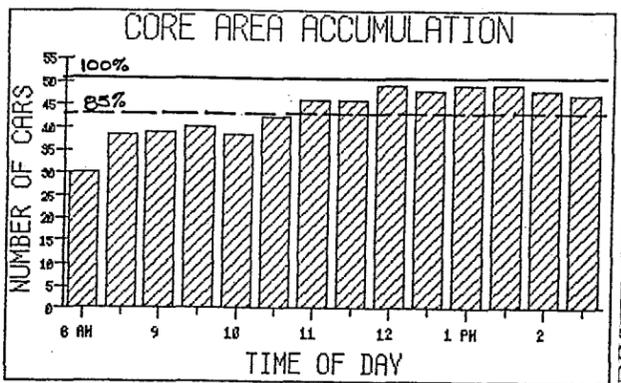
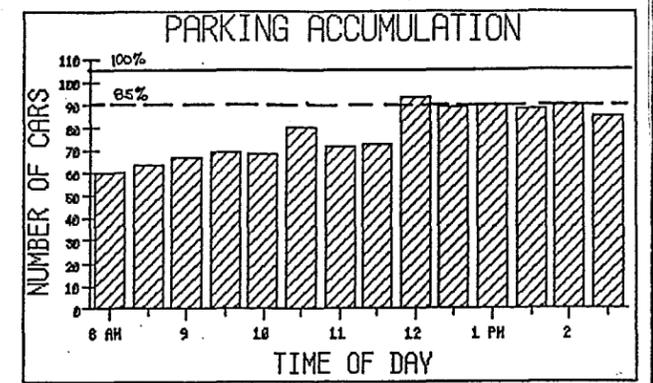
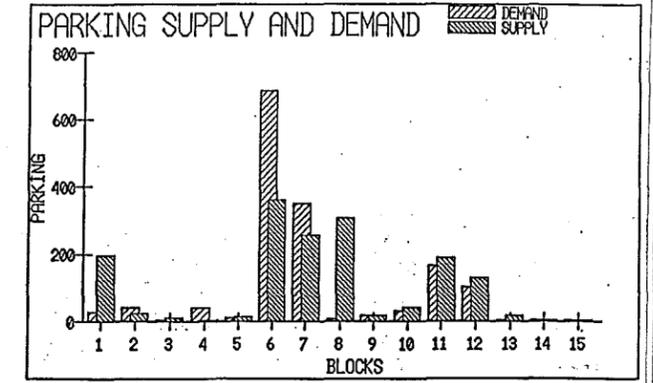
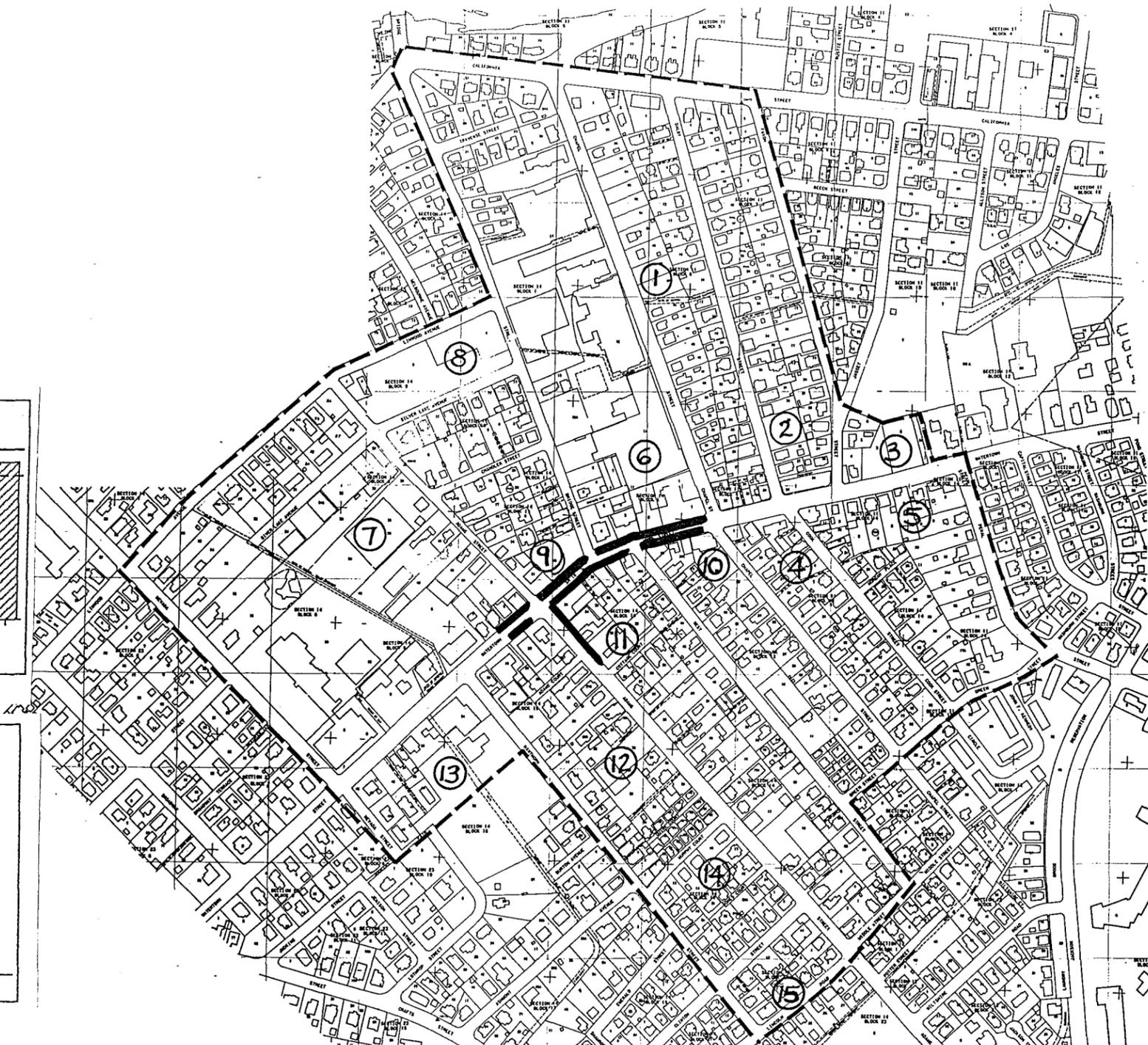


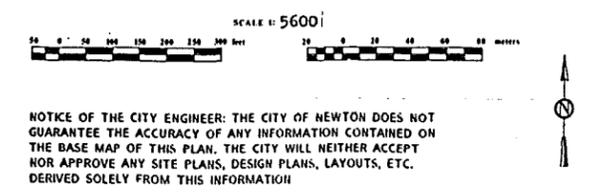
FIGURE 5.2 PARKING CHARACTERISTICS

CORE AREA PARKING

NEWTON VILLAGE STUDY

DATE _____
 PREPARED FOR THE CITY OF NEWTON, MASSACHUSETTS
 THEODORE D. MANN, MAYOR
 BARRY C. CANNER, DIRECTOR OF PLANNING AND DEVELOPMENT

Connelly Associates
 24 Winchester St., Worcester, MA 01090 (508) 721-1964



NONANTUM SURVEY REPORT 2.2.8 ZONING/THE DEVELOPMENT
ENVELOPE

INTRODUCTION

This report presents the results of the analysis of existing zoning in Nonantum. The purpose of the analysis is to provide an understanding of the present and future development environment of the study area, or to answer several basic questions:

- 1) How much growth is allowed by present zoning?
- 2) How much of this growth could most likely occur in this village center?
- 3) What will this development most likely consist of and look like?

A fourth, and equally important question, (what will be the impact of this growth?) will be examined in the next phase of the study.

In order to answer these questions, the following analyses or estimations were performed:

The Zoning Envelope: This estimates the total amount of residential, commercial and office development that is presently allowed by the zoning ordinance on each parcel of land and for the study area as a whole. This represents the "as-of-right" capacity of zoning as if every parcel of land were developed to the fullest extent allowed by present zoning.

The Development Envelope: This is an estimate of the amount of development that could and is more likely to occur when existing and recent development is considered along with present zoning. This development envelope, or umbrella, combines the concept of zoning "right" and the realities of the marketplace to produce a more reasonable estimate of long term development that could occur "as-of-right" or without special permit.

A Development Model: This is a simple representation of the kind of development that exists, has been recently built, or proposed in the area, and is most likely to be built in the foreseeable future.

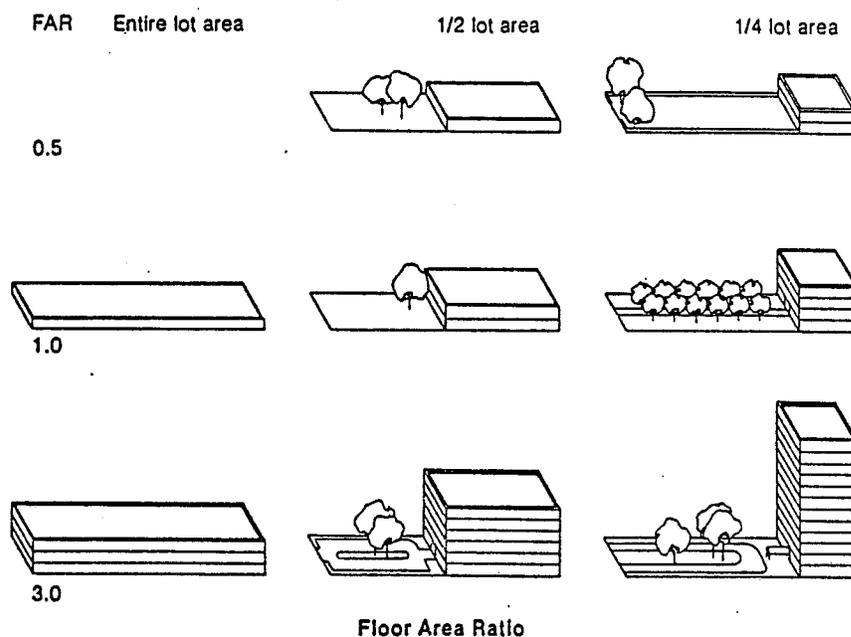
SUMMARY OF FINDINGS

1. The development capacity of present non-residential zoning in Nonantum is very high. The amount of new commercial/office development that could be built (1.6 million square feet) is far greater than that presently existing in the area. (.36 million)
2. The number of dwelling units that could be built is relatively small compared to the total amount of development that could take place (81 new units). These new units represent a moderate 11.6% increase over existing units in the study area.
3. New development in Nonantum will be characterized by construction of surface parking garages as part of commercial/office building complexes. That is, entire building sites will be covered with combined office/retail buildings and parking garages.

WHAT IS FAR?

The Floor Area Ratio (FAR) is a simple measure of development intensity. It expresses the ratio of a building's total floor area to the size of its site. A one-story building covering its entire site or parcel has an FAR of 1.0. A three story building of 100% coverage has an FAR of 3.0. The same building covering 50% of a site has an FAR of $3 \times .50$, or 1.50.

FLOOR AREA RATIOS ILLUSTRATED



WHAT IS THE ZONING ENVELOPE?

The zoning envelope is a measure of the amount of development allowed by the provisions of the existing zoning ordinance. This allowable development is expressed as total non-residential floor area and number of dwelling units that can be developed on each parcel of land and for an area as a whole. The floor area is determined by translating the provisions of the zoning ordinance into effective maximum allowable FAR's, or number of dwelling units for typical development that might occur in each zoning district. The estimated FAR's are shown in Table 8.1.

TABLE 8.1

EFFECTIVE MAXIMUM AS-OF-RIGHT FLOOR AREA RATIOS ALLOWED BY THE EXISTING ZONING ORDINANCE

<u>Typical Development</u>	<u>Zoning Districts/FARs</u>				
	<u>BAA</u>	<u>BA</u>	<u>BB</u>	<u>LM</u>	<u>M</u>
1. Retail-surface prkg					
. 1 story	0.25	0.40	0.40	0.25	0.40
. 2 stories	0.50	0.62	0.62	0.44	0.62
. 3 stories	0.62	0.70	0.70	0.60	----
. 4 stories	----	----	----	0.70	0.81
2. Office-surface prkg.					
. 1 story	0.25	0.40	0.40	0.25	0.40
. 2 stories	0.50	0.59	0.59	0.41	0.59
. 3 stories	0.58	0.69	0.69	----	----
. 4 stories	0.61	----	----	0.60	----
3. Retail Ground floor, offices above-surface prkg.					
. 2 stories	----	0.59	0.59	0.44	0.59
. 3 stories	0.58	0.69	0.69	----	----
. 4 stories	0.60	----	----	0.58	----
4. Office-Ground floor prkg. or 1 prkg. level under building					
. 2 stories	0.50	0.98	0.98	0.50	0.98
. 3 stories	0.75	0.98	0.98	0.50	0.98

5. Retail Ground Floor office above - all prkg underground					
. 3 stories	0.75	2.70	2.70	0.75	2.70
. 4 stories	1.00	-----	-----	1.00	-----
6. Retail Ground Floor above - surface parking garage					
. 3 stories	0.75	1.41	1.41	.75	1.41
7. Retail Ground Floor, offices above - 90% prkg. underground, 10% in surface garage					
. 3 stories	0.75	2.34	2.34	.75	2.34
. 4 stories	1.00	-----	-----	1.00	-----
8. Storage Warehouse					
. 1 story	-----	-----	0.42	0.25	0.89
. 2 stories	-----	-----	1.67	0.50	1.61
9. Wholesale, manufacture, R&D labs - surface prkg.					
. 1 story	-----	-----	0.80	0.25	0.76
. 2 stories	-----	-----	1.27	0.50	1.25
. 3 stories	-----	-----	2.32	0.75	2.32
. 4 stories	-----	-----	-----	1.00	-----

Based upon analysis of the existing zoning ordinance and most recent non-residential development in Newton, the following FAR's were used to determine the total floor area of commercial/office development that can be built as-of-right in each zoning district. (The Zoning Envelope)

<u>ZONING DISTRICT</u>		<u>FAR ALLOWED</u>
Business	(BAA)	1.00
Limited Manu-		
facturing	(LM)	1.00
Business A	(BA)	2.70
Business B	(BB)	2.70
Manufacturing	(M)	2.70

Estimation of an allowable dwelling unit envelope for parcels in residential zoning districts is relatively straight-forward. The residential zoning districts control density either through lot size or lot square feet per unit controls. Maximum allowable dwelling units for each zoning district are as follows:

<u>ZONE</u>		<u>DWELLING UNITS PER ACRE</u>
Residence A	(RA)	1.74
Residence B	(RB)	2.40
Residence C	(RC)	4.36
Private		
Residential	(FR)	8.72
Residence D	(RD)	8.72
Residence E	(RE)	27.20

The allowable floor area ratios and unit densities are now applied to the actual zoning in the study area as shown on Figure 8.1. The results, the zoning envelope are as follows:

The Zoning Envelope in NONANTUM

. TOTAL COMMERCIAL FLOOR AREA ALLOWED	714,344 sq.ft.
. TOTAL NEW OFFICE FLOOR AREA ALLOWED	3,192,307
. TOTAL NEW DWELLING UNITS ALLOWED	81

PRESENT AND RECENT DEVELOPMENT

The above estimates assume that all properties will be redeveloped to the maximum allowable. Therefore, as estimates of actual possible development, the figures are very high and do not represent a realistic picture of the amount and type of development that could actually occur. Market forces and resulting rent levels, economic constraints, construction costs and site constraints must also be considered. These factors greatly temper the amount and density of development that does and will most likely occur in many of the village centers.

Therefore, allowable FAR's must be compared with those obtained from recent development, or development that has been proposed or is under construction.

Table 8.2 shows the FAR's of commercial projects most recently proposed or under construction that have been or may be permitted as-of-right under present zoning. Many of these projects include surface parking structures so that the resulting FAR's, or actual office building floor areas, are less than allowable. That is, despite the intensity of the 5 story office development under construction at 29 Crafts Street, Newtonville, (FAR 2.23) it would have been built to an even greater intensity had all parking been planned to be

underground. Based on Newton's strong office and retail market and the resulting high land values, it is expected that development of underground parking will become the rule rather than the exception in areas such as Newton Corner, Chestnut Hill and Newton Centre.

TABLE B.2

FLOOR AREA RATIOS (FAR) FOR DEVELOPMENT PROPOSED OR UNDER CONSTRUCTION

<u>DEVELOPMENT</u>	<u>ADDRESS</u>	<u>FAR</u>	<u>ZONE</u>
AUBURNDALE			
1. 3 story offices, surface parking	11 Bennett St.	0.56	BB
2. 2 story offices, surface parking	73 Lexington St.	0.48	BB
CHESTNUT HILL			
1. 3 story offices, parking garage	300 Boylston St.	2.38	BA
NEWTON CENTRE			
1. 4 story offices, parking garage	1320 Centre St.	2.59	BB
NEWTON CORNER			
1. 4 story offices, parking garage	1 Newton Pl.	2.12	BA
2. 3 story offices, parking garage	2 Newton Pl.	2.45	BA
3. 4 story offices, parking garage	31 Washington	2.67	BA
NONANTUM			
1. 5 story offices, surface parking	459 Watertown	0.55	MFG
NEWTONVILLE			
1. 5 story offices, parking garage	29 Crafts St.	2.23	MFG

UPPER FALLS

1. 3 story offices, surface parking	75 Oak St.	0.34	BA
2. 4 story offices, surface parking	138 Needham	0.77	MFG
3. 4 story offices, surface parking	118 Needham	0.57	MFG

NEWTON HIGHLANDS

1. Offices		0.53	BA
------------	--	------	----

Average FAR for Office Development with parking in surface lots	0.54
--	------

Average FAR for Office Development with parking in a mix of underground and surface garages	2.41
--	------

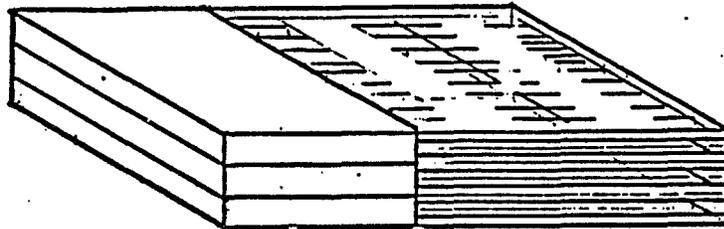
In other village centers, recent development has occurred at considerably less density. Surface parking lots are more the rule than the exception in these centers. Land values and marketable rents result in an economic environment in which the "suburban style" development is feasible and economically desirable.

It should also be noted that a number of these developments have had the benefit of the parking credit, so that the actual floor area ratio obtained was higher for the particular type of development that actually took place than would have been possible if the full parking requirements had been met. On the other hand, the popularity of areas such as Newton Centre and Newton Corner for office development may have justified the provision of the additional parking underground.

A MODEL OF RECENT DEVELOPMENT

The possibilities allowed by the zoning ordinance and a view of actual development resulting from market forces leads to an estimate of a type or model of development that may occur in a particular center. For Nonantum, the following non-residential development type is expected to continue to be built for the foreseeable future:

Figure 8.2 A MODEL OF RECENT OR EXPECTED DEVELOPMENT



3 STORY BUILDING - SURFACE PARKING GARAGE

FAR = 1.41

This type of development is now matched with the requirement of the present zoning ordinance to obtain its allowable floor area ratio:

DEVELOPMENT TYPE	ZONES/ALLOWABLE FLOOR AREA RATIO				
	BA	BB	M	BAA	LM
Surface Parking Garage					
. 3 Story Office/Retail	1.41	1.41	1.41	----	----
. 4 Story Office/Retail	----	----	----	1.00	1.00

THE DEVELOPMENT ENVELOPE

The estimate of total development allowable under present zoning (the Zoning Envelope) is now tempered with a more realistic view of the economic environment of the study area, and results in an estimated development envelope shown in Table 8.3.

The estimated residential development envelope is the same as the residential zoning envelope. The number of units allowed is relatively small and there is no reason to assume that housing will not be built to the maximum allowed by zoning.

TABLE 8.3

THE PRESENT DEVELOPMENT ENVELOPE:
GROWTH THAT COULD OCCUR IN NONANTUM

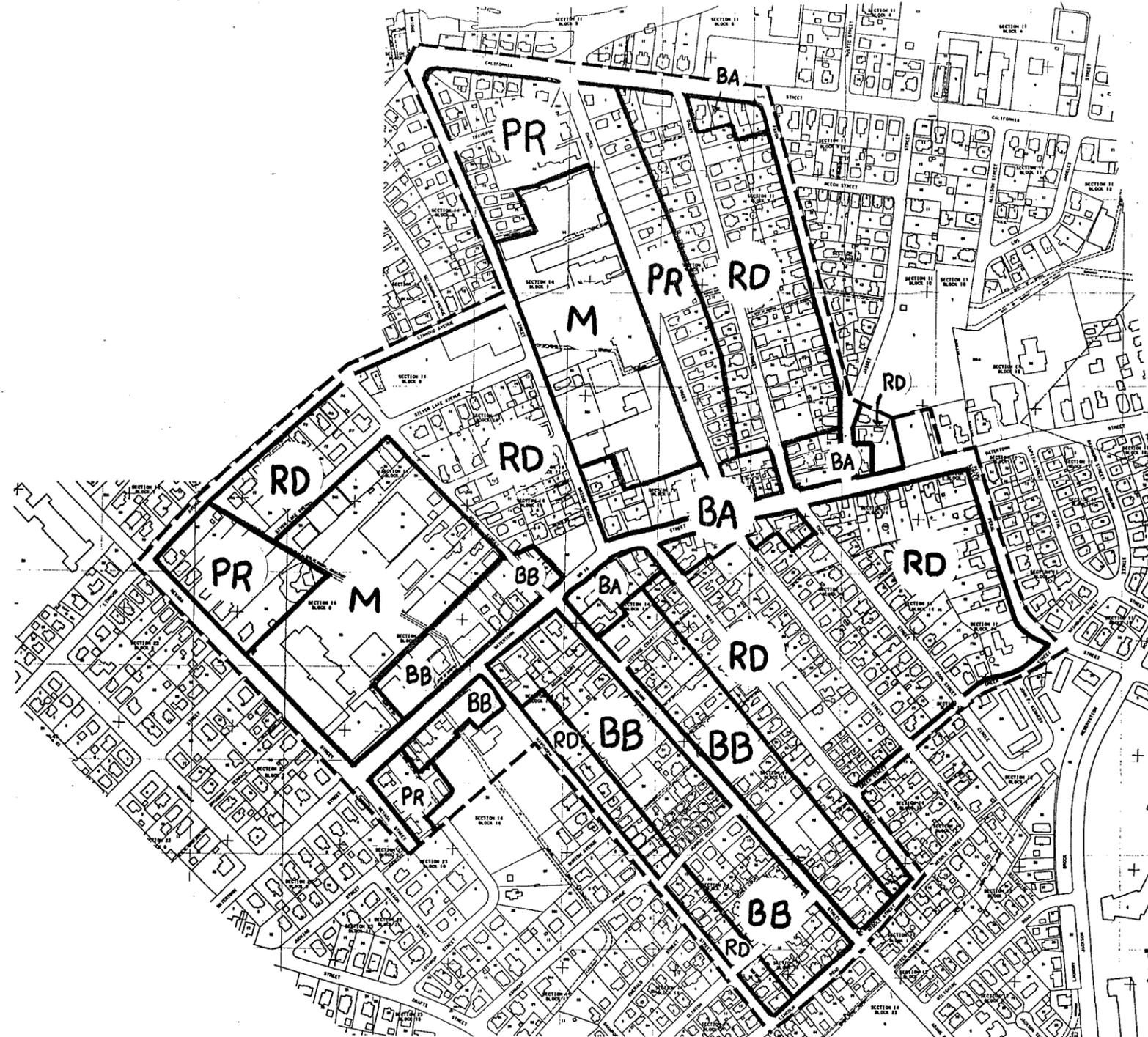
• New Commercial/Retail Floor Area that could be added	217,811 sq.ft.
• Existing Commercial/Retail Floor Area	279,629
• Percent Added	78%
• New Office Floor Area that could be added	1,403,788
• Existing Office Floor Area	81,023
• Percent Added	1732%
• New Dwelling Units that could be added	81
• Existing Dwelling Units	724
• Percent Added	11.2%

THE PATTERN OF POSSIBLE NEW DEVELOPMENT/REDEVELOPMENT

Figures 8.2 and 8.3 show the amount and probable pattern of possible new development or redevelopment.

Figure 8.2 indicates the present intensity of use in the study areas, those parcels that are presently vacant, and those that are presently underused. The underused parcels are those whose present density is less than that allowed by existing zoning. While this map does not and cannot show which parcels will be developed to greater density, it provides a good indication of where new development activity might occur.

Nonantum has a large amount of land zoned for non-residential uses and quite a few large parcels whose present density is less than 50% that allowed by zoning. (Figure 8.2) The result of this is that there is a very large amount of redevelopment that could take place (Figure 8.3). That is, present zoning is no constraint on growth. Whether or not this amount of growth would occur is dependent on market forces. Clearly, it will be some time before the retail and office market could absorb growth of this magnitude. However, individual parcels could be developed as Newton Corner and Newtonville continue to grow and attract development. The 5 story building under construction on Crafts Street just south of the Nonantum study area is an indicator that development occurs wherever particular opportunities exist.



- RA RESIDENCE A
- RB RESIDENCE B
- RC RESIDENCE C
- PR PRIVATE RESIDENCE
- RD RESIDENCE D
- RE RESIDENCE E
- RF RESIDENCE F
- BAA BUSINESS AA
- BA BUSINESS A
- BB BUSINESS B
- LM LIMITED MANUFACTURING
- M MANUFACTURING

FIGURE 8.1 EXISTING ZONING DISTRICTS

NEWTON VILLAGE STUDY

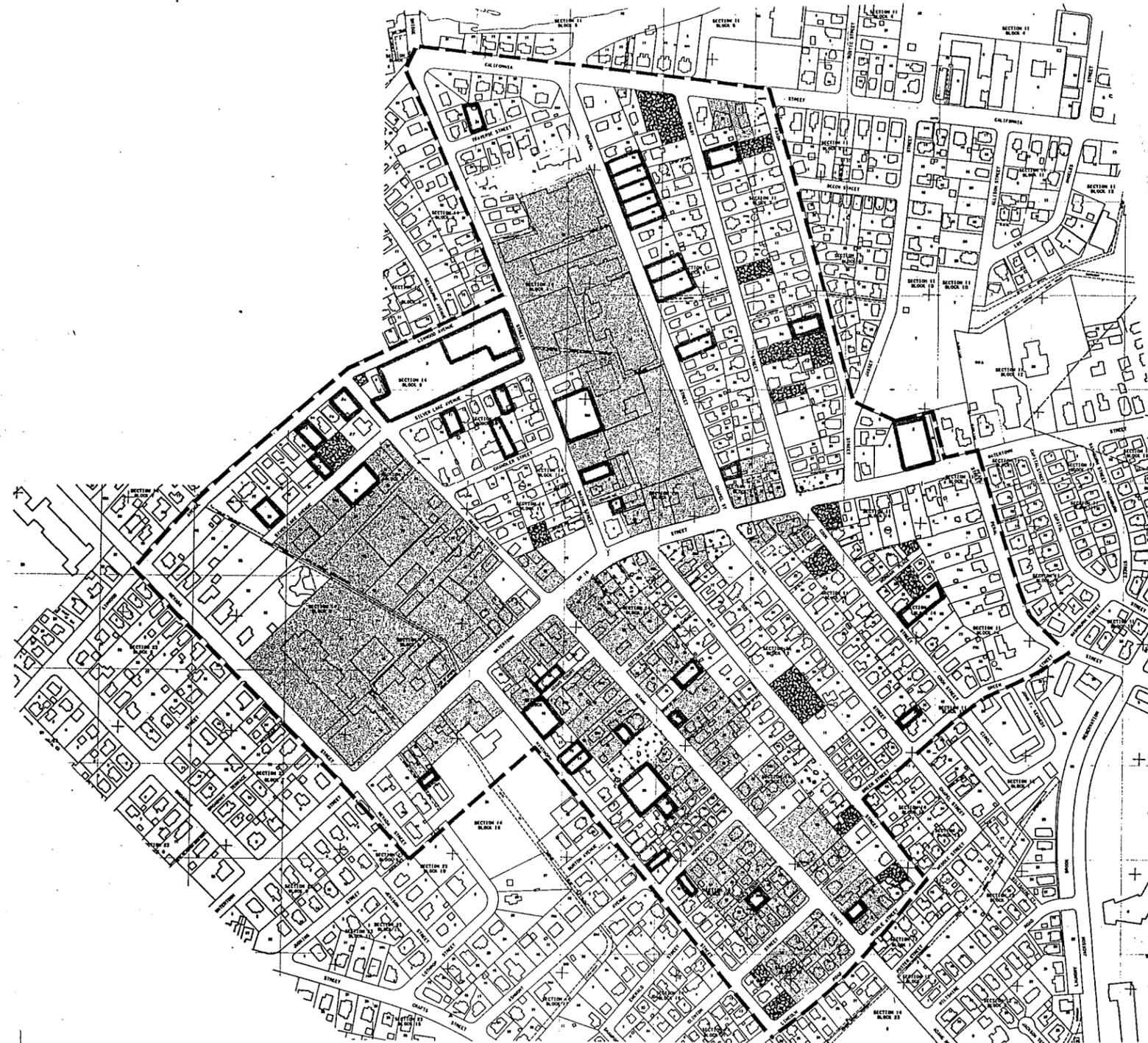
DATE _____
 PREPARED FOR THE CITY OF NEWTON, MASSACHUSETTS
 THEODORE D. MANN, MAYOR
 BARRY C. CANNER, DIRECTOR OF PLANNING AND DEVELOPMENT

Connery Associates
25 Washington St., Boston, MA 02108 (617) 731-0664



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-  PRESENT DENSITY EXCEEDS THAT ALLOWED BY ZONING
-  PRESENT DENSITY IS 50% TO 90% OF THAT ALLOWED BY ZONING
-  PRESENT DENSITY IS LESS THAN 50% THAT ALLOWED BY ZONING
-  VACANT LAND

FIGURE 8.2 EXISTING INTENSITY OF DEVELOPMENT

NEWTON VILLAGE STUDY

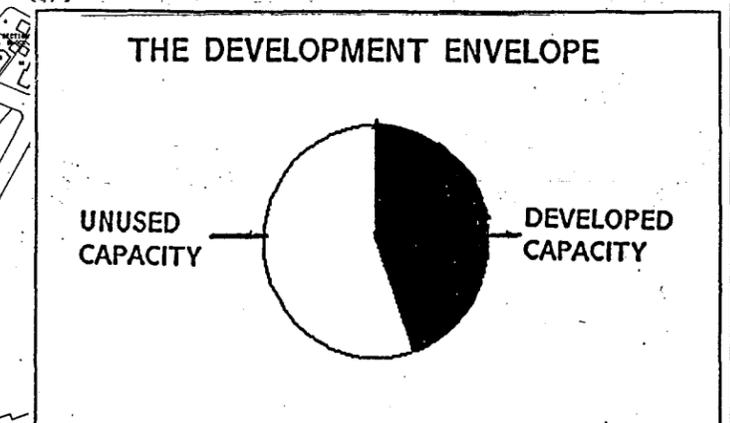
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24 Winchester Turnpike, Woburn, MA 01890 617 231-1866



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NEW COMMERCIAL/OFFICE
FLOOR AREA THAT
COULD BE BUILT
(IN SQUARE FEET)

FIGURE 8.3 THE DEVELOPMENT ENVELOPE

NEWTON VILLAGE STUDY

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24 Washington Street, Framingham, MA 01901 (508) 221-1944



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