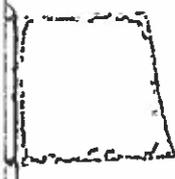


March 66
Article 52

COMPREHENSIVE REPORT



A PLAN FOR LEXINGTON CENTER



COMPREHENSIVE REPORT ON
A PLAN FOR LEXINGTON CENTER

prepared for the
LEXINGTON PLANNING BOARD

and the
TOWN COMMITTEE TO STUDY THE REVITALIZATION OF LEXINGTON CENTER

February, 1966

ECONOMIC DEVELOPMENT ASSOCIATES, INC., BOSTON, PLANNING CONSULTANTS
BEDNARSKI-FALCONER-STEIN, GREENFIELD, ARCHITECTS

CARY MEMORIAL LIBRARY
LEXINGTON, MASS.

LEXINGTON BOARD OF SELECTMEN

Lincoln P. Cole, Jr., Chm.
Levi G. Burnell
Robert Cataldo
Irving H. Mabee
George C. Sheldon

LEXINGTON PLANNING BOARD

Arthur E. Bryson, Chm., 1965
Joseph A. Campbell, Chm., 1966
Evert N. Fowle
Roland B. Greeley
Natalie H. Riffin

**TOWN COMMITTEE TO STUDY THE
REVITALIZATION OF LEXINGTON CENTER**

George Kolovson, Chm.
Otis Brown
Arthur E. Bryson
Lincoln P. Cole, Jr.
Richard A. Michelson
Mrs. Howard Scharfman
Raymond Scheublein
Lee E. Tarbox
Joseph Trani

**DESIGN ADVISORY GROUP
(Executive Committee)**

Norman Fletcher
Donald Graham
Walter S. Pierce
Hideo Sasaki

TABLE OF CONTENTS

	Page
FOREWORD	
SUMMARY REPORT	1
DESIGN AND DESIGN GUIDANCE	
Design Objectives	24
Existing Visual Conditions	33
Visual Guidelines	44
A Town-Wide Beautification Program	50
Design Review and Control	55
Sign Bylaw Revisions	63
ACTIVITY DEVELOPMENT	
1975 Activity Levels	66
Zoning Revisions	79
CIRCULATION	
Traffic Needs	88
Circulation Plan	98
PARKING	
Parking Needs	111
Merchant Survey	119
Parking Plan	123
RECONSTRUCTION OF MASSACHUSETTS AVENUE	133

I L L U S T R A T I O N S

	Following Page
Illustrative Plan - 1975 with Railroad	3
Illustrative Model - 1975 without Railroad	4
Purchases by Residents at Lexington Market Area	6
Proposed Zoning	7
Circulation Plan	9
Massachusetts Avenue Beautification	11-12
Massachusetts Avenue Alternates	13
Massachusetts Avenue Cross-Sections	14
Promenade View Towards Green	15
Parking Turnover	17
Parking Plan	18
Parking Structure Sketches	19
Parking Structure Cross-Sections	20
Visual Design Plan	22
Public Actions Schedule	23
Design in Lexington Center	32
Comparative Analysis - Business Centers	33
1985 Development	87
Regional Pattern	88
Traffic Volumes	89
Traffic Accidents	96
Minuteman Intersection	109
Parking-Floor Space Relationship	117

FOREWORD

This Comprehensive Report is a compilation of individual reports issued over the past year, revised and updated within the past month. It includes both the visual design studies sponsored by privately-donated funds, and the functional design studies sponsored by municipal funds.

This study program was suggested in 1964 by the Lexington Chamber of Commerce, which sponsored a preliminary study. At that time, the Board of Selectmen appointed a five-man committee to handle the study. Since augmented with four additional members, this group ("Town Committee to Study The Revitalization of Lexington Center"), usually called the Steering Committee, has had the primary responsibility for guiding the direction the studies have taken. The Planning Board, which gave vital support to initiation of the study, has also played an important role in review of and support for the work undertaken.

An early recommendation of this study was the formation of an advisory group of design professionals, which has resulted in formation of the Design Advisory Group, many of whose members have given generously of their time and talents, going beyond passive review to actively forward ideas and to help in implementing them. Among those involved have been architects, landscape architects, planners, transportation experts, an economist, and a few interested laymen. Establishment of that group is perhaps the first contribution of this program.

The Public Works Department, Police, Assessors, Planning Department and Cary Memorial Library all have given important help to this effort. The Board of Selectmen have given a major portion of their time over the past year to this study, and have patiently awaited the results of it before making commitments in the Center.

The Town Committee is misnamed, for "Revitalization" is hardly an issue in a Center as healthy as Lexington's. The issues are the continuation of vitality in the face of certain change, and the addition of service and symbolic excellence to economic vitality. By acting now, while economic strength abounds, these high objectives can be achieved.

SUMMARY REPORT ON
A P L A N F O R L E X I N G T O N C E N T E R

prepared for the
LEXINGTON PLANNING BOARD

and the
TOWN COMMITTEE TO STUDY THE REVITALIZATION OF LEXINGTON CENTER

LEXINGTON BOARD OF SELECTMEN
Lincoln P. Cole, Jr., Chm.
Levi G. Burnell
Robert Cataldo
Irving H. Mabee
George C. Sheldon

LEXINGTON PLANNING BOARD
Arthur E. Bryson, Chm., 1965
Joseph A. Campbell, Chm., 1966
Evert N. Fowle
Roland B. Greeley
Natalie H. Riffin

TOWN COMMITTEE TO STUDY THE
REVITALIZATION OF LEXINGTON CENTER
George Kolovson, Chm.
Otis Brown
Arthur E. Bryson
Lincoln P. Cole, Jr.
Richard A. Michelson
Mrs. Howard Scharfman
Raymond Scheublein
Lee E. Tarbox
Joseph Trani

DESIGN ADVISORY GROUP
(Executive Committee)
Norman Fletcher
Donald Graham
Walter S. Pierce
Hideo Sasaki

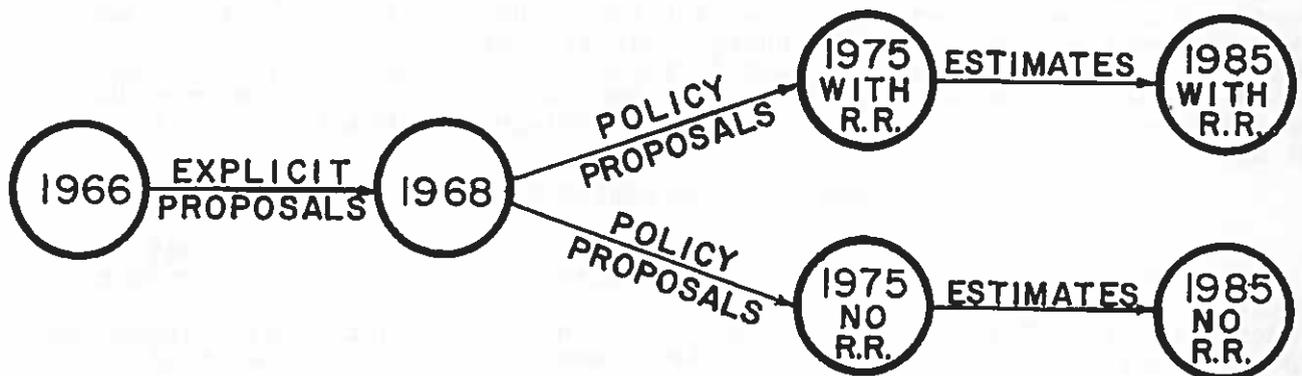
February, 1966

ECONOMIC DEVELOPMENT ASSOCIATES, INC., BOSTON, PLANNING CONSULTANTS
BEDNARSKI-FALCONER-STEIN, GREENFIELD, ARCHITECTS

NATURE OF THE PLAN

Motivated by impending development of a regional shopping center three miles away in Burlington, by a projected tripling of tourist visitors to the Minuteman National Park, and by dis-satisfaction with the rather ordinary appearance of Lexington Center, a privately-sponsored planning effort for the Center was initiated in early 1964. The March, 1965 town meeting gave impetus to the program by adding municipal funds to aid the planning, and by approving a major widening of the Massachusetts Avenue right-of-way, resulting in a need for guidelines for reconstruction of both the street and the private properties involved.

This report summarizes the results of that effort. This is a plan for actions to be taken before 1968, so designed and scheduled that whichever way the presently unanswerable question of railroad continuation is later resolved, there is a logical extension from the 1968 proposals to 1975, and reasonable expectation that those 1975 possibilities can be further developed during the increasingly vague future beyond that. The plan therefore contains explicit proposals for the next few years, policies for the next decade, and considers generalized estimates for the time beyond.



The goals of development in the Center must include business profitability, but also must go beyond that. Two equally important goals are service to residents and the development of the Center as an appropriate symbol to stand for the community, a Center which reflects what the community is, as well as what its heritage has been. The Center and this plan for it are for all of Lexington, not just for business interests, and the plan's objectives can be achieved only with the joint support of residents through town meeting and businessmen through their investments.

The future role of the Center will inevitably change, since the Center cannot provide breadth of choice comparable with the proposed Burlington Center, and it is increasingly disadvantaged by location, parking relationships, and rent structure for competition in convenience goods sales. The most likely avenue for retail growth in the Center is in specialty goods selected for the special market Lexington and its neighbors provide, a trend evident today, and inevitable in the future if the Center is to prosper.

To gain such business, circulation and parking improvements must be made, at the same time developing a quality in the exterior environment to match the

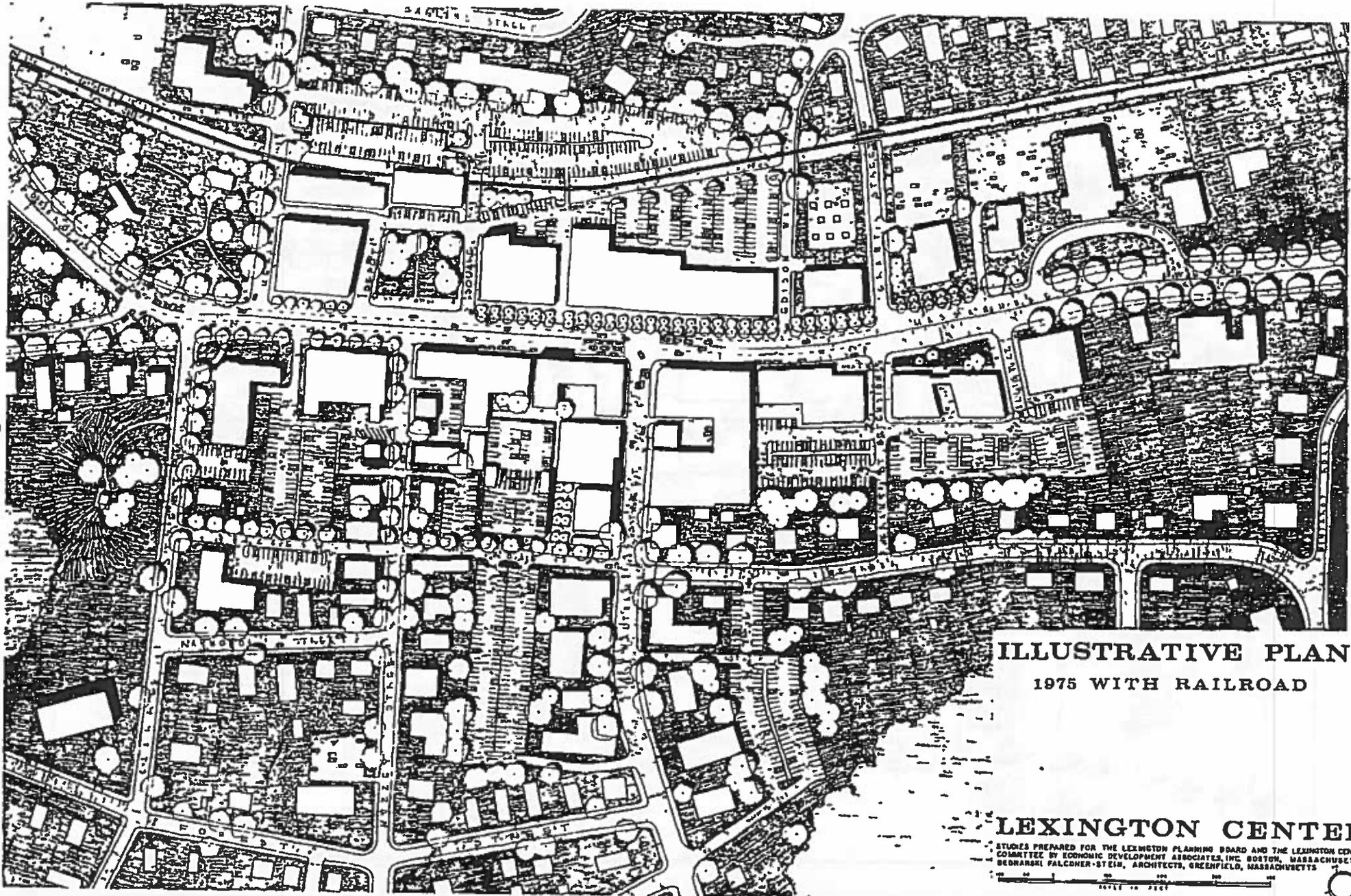
quality of the goods being sold. A dramatically landscaped promenade linking the Green, the commercial Center, and the civic area is proposed as a major component in developing this environment, to be complemented with careful guidance of new architectural development, and with development of pedestrian areas linking parking and commercial structures.

The Plan recommendations are that a staged program for landscaped beautification in the Center be undertaken; that the Massachusetts Avenue widening be used only in part for traffic, freeing the rest for pedestrians; that the present compact nature of the Center be maintained through use of multi-level parking structures where necessary; that parking access be improved through development of a loop-road system; and that building design be guided through agreement on a Visual Design Plan, dealing with the major elements of design, rather than with "style". Each of these recommendations is a major departure from what most small commercial areas are doing. These directions are recommended in the belief that only bold steps can rescue the Center from easy mediocrity, and that mediocrity is inadequate functionally or symbolically for a community of Lexington's aspirations and heritage.

Pages 3 and 4 are alternative illustrations of what might result by 1975 if the recommended public actions to 1968 and policies beyond that are followed. Since these illustrations combine recommendation and projection, many other alternatives could also be shown, illustrating different private responses to these public efforts, and different ways of implementing the suggested public policies on circulation and parking. The explicit recommendations and policies are illustrated through drawings on pages 7, 9, 11, 12, 18 and 22.

SUMMARY OF RECOMMENDATIONS

1968 PROPOSALS	1975 POLICIES	1985 EXPECTATIONS
CIRCULATION		
Widen Mass. Ave. 5 feet	Continue loop road develop.	Major diversion required
Open L. turn lane @ Waltham St.	Complete Mass. Ave. re-shaping	
Reshape Minuteman intersection		
Reverse Clarke Street		
Remove some Mass. Ave. parking		
Open loop road in parking lots		
PARKING		
Pave lot N. of railroad	Maintain 3½:1000 parking ratio	Higher ratio required
Build Waltham-Muzzey structure	(Probable structure N. of Mass. Ave.)	
Improve Clarke-Muzzey parking		
Rev. "fringe" zoning to require parking		
ACTIVITY		
Encourage specialty sales	Expand commercial area	Nearby apartment development
Expand commercial area		
BEAUTIFICATION		
Execute 1st stage promenade	Complete Center beautification	Beautification norm. municipal function
Execute 2nd stage improve.		
DESIGN GUIDANCE		
Control sign brightness	New design review method	Move extensive design review
Permit some overhanging signs		
Adopt "fringe" yard require.		
Adopt Visual Design Plan		
Expand approach town-wide		

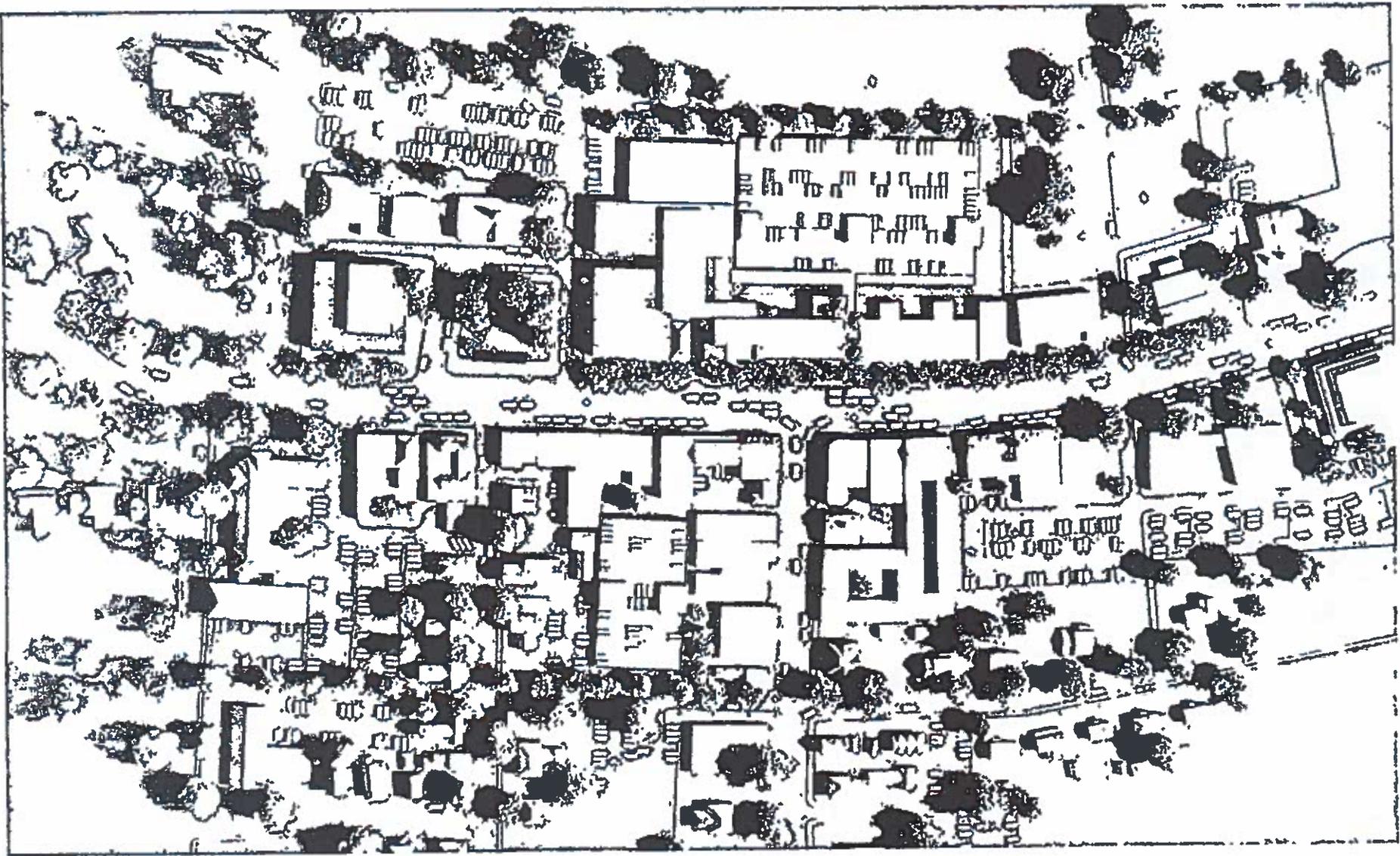


ILLUSTRATIVE PLAN
1975 WITH RAILROAD

LEXINGTON CENTER

STUDIES PREPARED FOR THE LEXINGTON PLANNING BOARD AND THE LEXINGTON CENTER COMMITTEE BY ECONOMIC DEVELOPMENT ASSOCIATES, INC. BOSTON, MASSACHUSETTS
BEDNARSKI, FALCONER-STEIN, ARCHITECTS, GREENFIELD, MASSACHUSETTS





ILLUSTRATIVE MODEL-1975 WITHOUT RAILROAD

ACTIVITY DEVELOPMENT

Projected Town growth from 31,000 residents in 1965 to an estimated 40,000 in 1975, coupled with steadily rising per capita incomes, means that retail purchases by Lexington residents is likely to swell from about \$53 million per year today to about \$75 million per year in 1975. (In all cases, figures are in constant-value 1963 dollars.) The new regional center at Burlington is likely to capture \$7 million of that potential, leaving \$68 million in purchases by Lexington residents to be divided between Lexington Center and all other locations. If the Center's share of the remaining \$68 million is the same in all broad product lines in 1975 as it was in 1963, (the most recent year accurate data are available for) the Center's sales would grow from a current annual level of \$10 million to \$14 million annually in the mid-70s. The million projected 1975 tourists might spend \$1 of their \$8 estimated daily expenditures in Lexington Center, adding another \$1,000,000 sales. On this basis, the potential for a 50% expansion in Center sales by 1975 can clearly be seen, despite Burlington, provided that the Center remains as attractive relative to its competitors as it is today, and provided that suitable location for this much growth can be provided. Similar analysis of non-retailing employment lead to the conclusion that such employment could rise from 550 persons in 1963 to 800 in 1975.

Conversion of sales and employment to floor space and acreage estimates, then to physical designs, clearly shows that appropriate space, not market, is the major constraint on growth in the Center, provided that efforts are made to make the Center attractive enough to meet its potential. Retailing demands high visibility, and few businesses are interested in upper-floor suburban locations, especially where parking is restricted. First-floor space and its requisite parking can't be provided for the entire 50% growth potential without danger of undesirable intrusion of business into residential areas. Accordingly, zoning, parking and circulation provisions are being scaled to 1/3 growth of commercial activity in the Center rather than 1/2, or expansion from about 290,000 s.f. of commercial space today to about 380,000 s.f. in 1975.

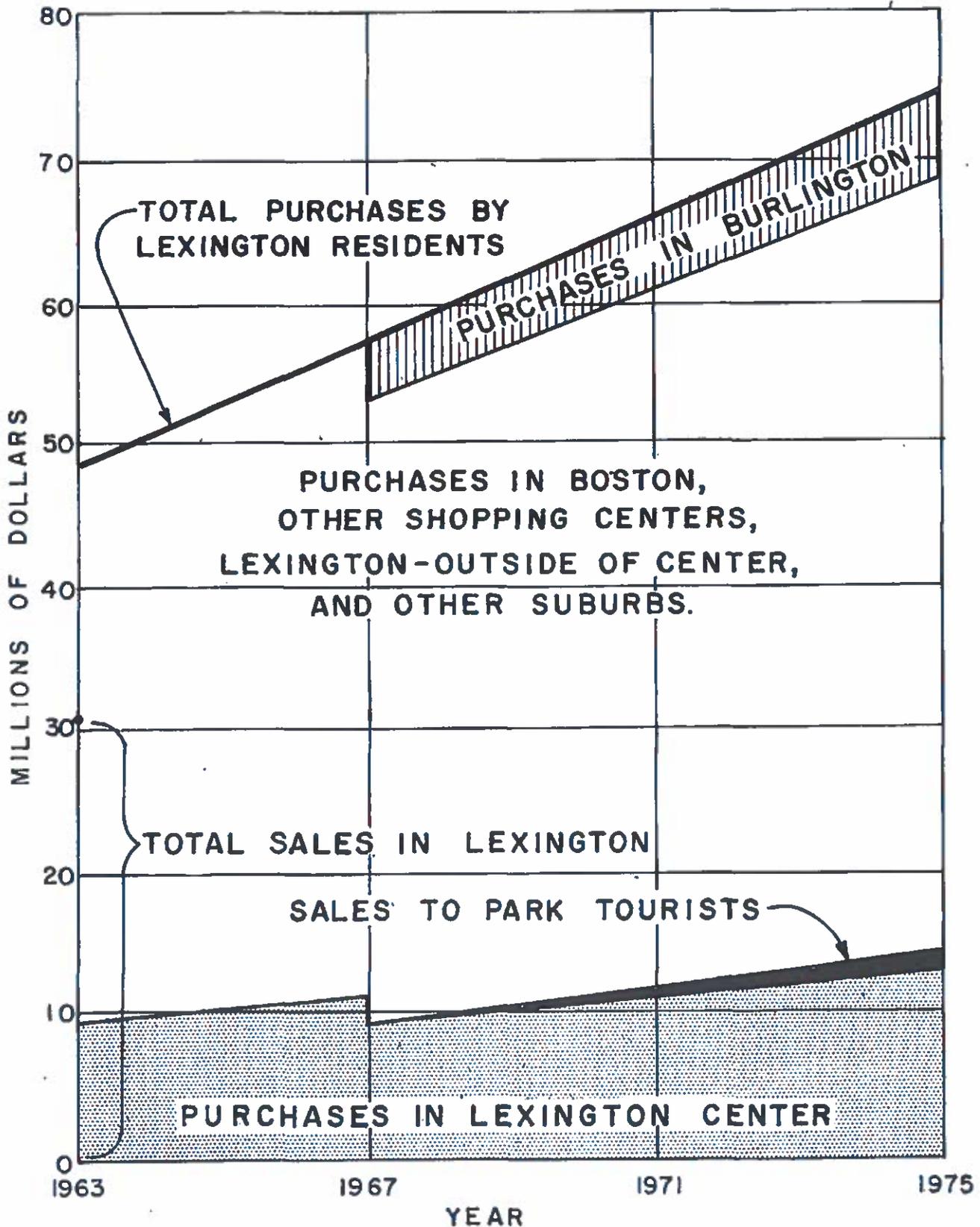
Some expansion of commercial activity will take place by infilling in present commercial zones, but commercial district extensions are also required to permit the programmed 1/3 growth. Re-zoning to the south is advocated, where a mixed pattern of activity and structural types already exists, and also to the east, where the present zone boundary is spatially irrational. Re-zoning to the north is proposed simply to rationalize the legal status of the existing municipal parking lot.

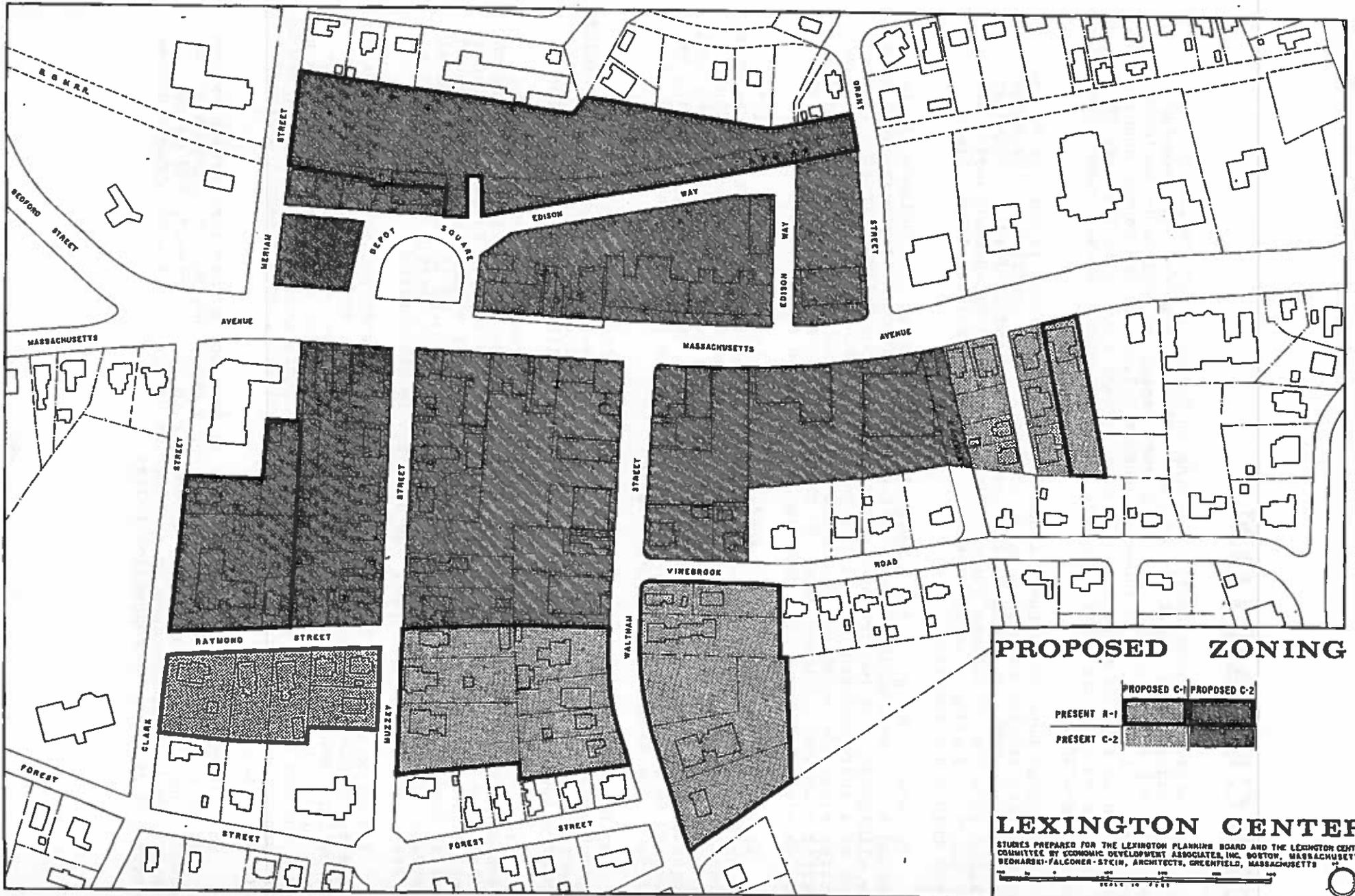
Two types of commercial zone are advocated, one unchanged from the present Center regulations, another similar to the present C-1 District, with yard space and off-street parking required for each structure.

Government, utilities, and other institutions also occupy space in the Center. Town offices and Police Headquarters are again cramped, suggesting probable expansion of provisions for those functions. Cary Memorial Library looks forward to expansion. None of these changes will involve large land areas, however. Both electric and telephone substations are located where they impose limitations on Center expansion; neither is realistically movable, and both can expand functionally without new land.

Residences in the heart of the Center have been debated and rejected, but population growth peripheral to the Center through development of apartments is both likely and, if carefully guided, desirable both for commercial support and to provide for an otherwise unobtainable housing choice.

PURCHASES BY RESIDENTS OF LEXINGTON MARKET AREA





PROPOSED ZONING

	PROPOSED C-1	PROPOSED C-2
PRESENT R-1	[diagonal lines]	[cross-hatch]
PRESENT C-2	[horizontal lines]	[vertical lines]

LEXINGTON CENTER

STUDIES PREPARED FOR THE LEXINGTON PLANNING BOARD AND THE LEXINGTON CENTER COMMITTEE BY ECONOMIC DEVELOPMENT ASSOCIATES, INC. BOSTON, MASSACHUSETTS
 EDWARDS-FALCONER-STYKIN, ARCHITECTS, GREENFIELD, MASSACHUSETTS



CIRCULATION

Like most old market centers, Lexington Center is at the hub of a system of radial routes, with about 85% of the traffic on weekdays just passing through. Population growth, growth in auto usage, and shifts in employment and shopping locations will increase present volumes in the Center despite efforts such as Worthen Road, but will not increase volumes in the next decade to such an extent that careful design of present rights-of-way cannot prevent undue congestion.

The Massachusetts Avenue-Waltham Street intersection is the key to reasonably free traffic movement, since it is the first location in the Center to become overloaded. When unable to cope with its traffic load, it backs up traffic into the "Minuteman intersection" at Bedford St.-Massachusetts Ave.-Clarke St., creating a second jam. To prevent the Waltham Street tie-up, three things are required:

1) Careful design of the intersection. Projected 1975 volumes can be handled by three fronting lanes eastbound, two westbound if parking conflicts are eliminated, and two fronting lanes northbound on Waltham Street. Provision of a third westbound traffic lane has no bearing on the intersection capacity, since the westbound lanes are "overdesigned" anyhow. They carry less traffic than the eastbound lanes in the evening peak, but must be given more time to give left turns into Waltham Street a head start.

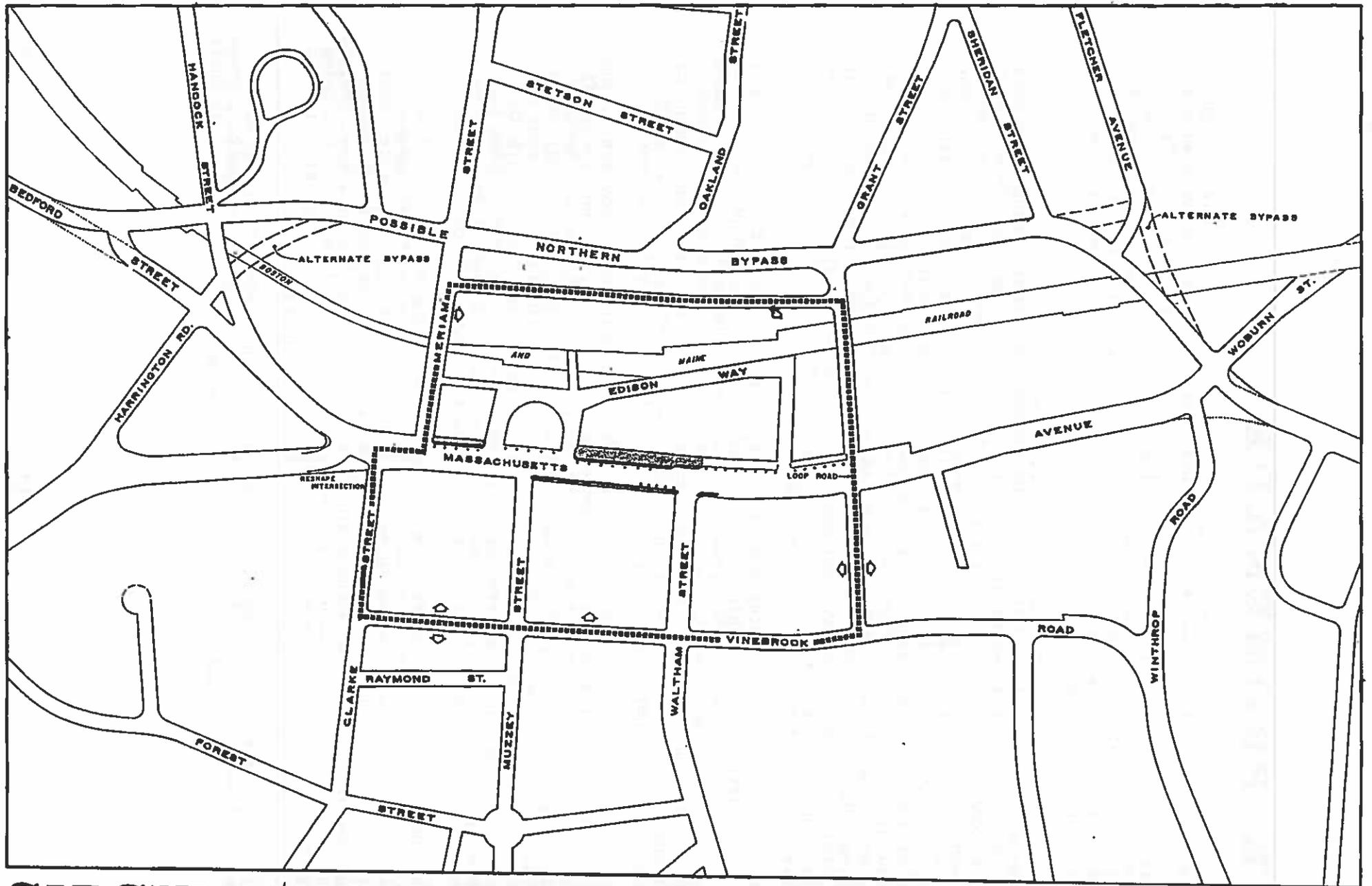
2) Careful design of lanes leading into the intersection to insure that the intersection is fed traffic smoothly. By computation, one lane on Waltham Street and two lanes each way on Massachusetts Avenue will suffice if their width is adequate. East of Waltham Street, Massachusetts Avenue has more than adequate width, West of Waltham Street the travelled lanes require widening by about 10 feet at their narrowest point in order to match the theoretical capacity of the Waltham Street intersection.

3) Diversion of as much traffic as possible from the central portion of Massachusetts Avenue. A loop road system would help achieve this, by providing direct access to the Center's parking areas from the radials leading to the Center without use of the Massachusetts Avenue-Waltham Street intersection.

Five moving lanes at the Waltham Street intersection, four lanes elsewhere on Massachusetts Avenue, and the loop road system should give Lexington Center less congestion in 1975 than it experiences today. No other configuration without massive land-takings can do better. Sometime after 1975, should traffic growth continue, a major effort may be required to provide a means of carrying through Bedford Street-Massachusetts Avenue traffic past the Center. Several feasible routes exist, one of which is illustrated.

The major costs of these circulation improvements are for the added Massachusetts Avenue right-of-way, already appropriated, and the cost of parking relocation, not only from along Massachusetts Avenue, but also from the portions of the loop road system passing through parking areas. Major landtaking costs for the loop road are not likely to be justifiable for some years, making its completion dependent upon fortunate opportunity, adroit detail design, or late stage programming.

The largest problem to be overcome in developing this circulation system is that of habits of mind in conceiving of a whole new way of approaching the Center, where the present "rear" is changed to the "entrance", and where "short-cuts" now discouraged by parking lot design and one-way streets become encouraged as means of congestion relief.



-6-

CIRCULATION PLAN

LEXINGTON CENTER STUDIES

-  SIDEWALK WIDENED
-  STREET WIDENED
-  PARKING REMOVED



THE PROMENADE

A 100 foot right-of-way on Massachusetts Avenue most of the way through the Center (90 feet at the Central Block) has been assured by recent town meeting actions. Of this, 56 feet will be required by 1975 for moving traffic and the traffic flexibility gained through a single on-street parking lane. To continue present sidewalks, a total of thirty-two feet are required for pedestrian movement, light poles, fire hydrants, etc. The remaining twelve feet are discretionary, for use either as on-street parking space, or to provide an extraordinary pedestrian promenade.

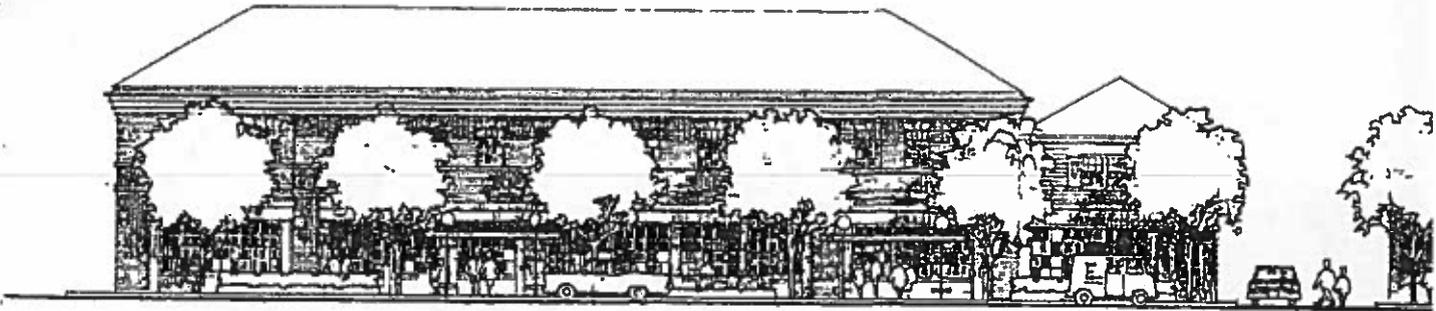
It is recommended that four feet of this discretionary space be used to widen the sidewalks on the south side of Massachusetts Avenue, enough to permit planting boxes and other pedestrian amenities (tree planting might require major utility relocation), as well as freer movement. The remaining eight feet of discretionary space should be used for a deeply landscaped pedestrian promenade on the north side of the Avenue, with a double row of trees, smaller plantings, benches, and other furnishings, giving the historic, commercial, and civic components of the Center a linkage strong enough to be comprehended at the speed and scale dictated by the automobile. At the same time, it allows creation of variety and interest at pedestrian scale, as well as "eddies" out of the streams of movement where one can pleasureably pause. This powerful element would help give a distinctive character to Lexington Center, helping differentiate it from the multitude of commercial areas now similar in appearance but representing communities far different in character and heritage.

The new buildings replacing the Hunt and Central blocks will be one story, rather than three. This, coupled with separation across the avenue by 100 feet rather than 75, will reduce the sense of enclosure of the Avenue. The promenade and its trees will help re-enclose it, as well as helping join the two sides, both physically and visually. Most important, however, is the establishment of an environmental character calculated to attract and sustain specialty goods enterprises, and a character appropriately symbolic of the entire community.

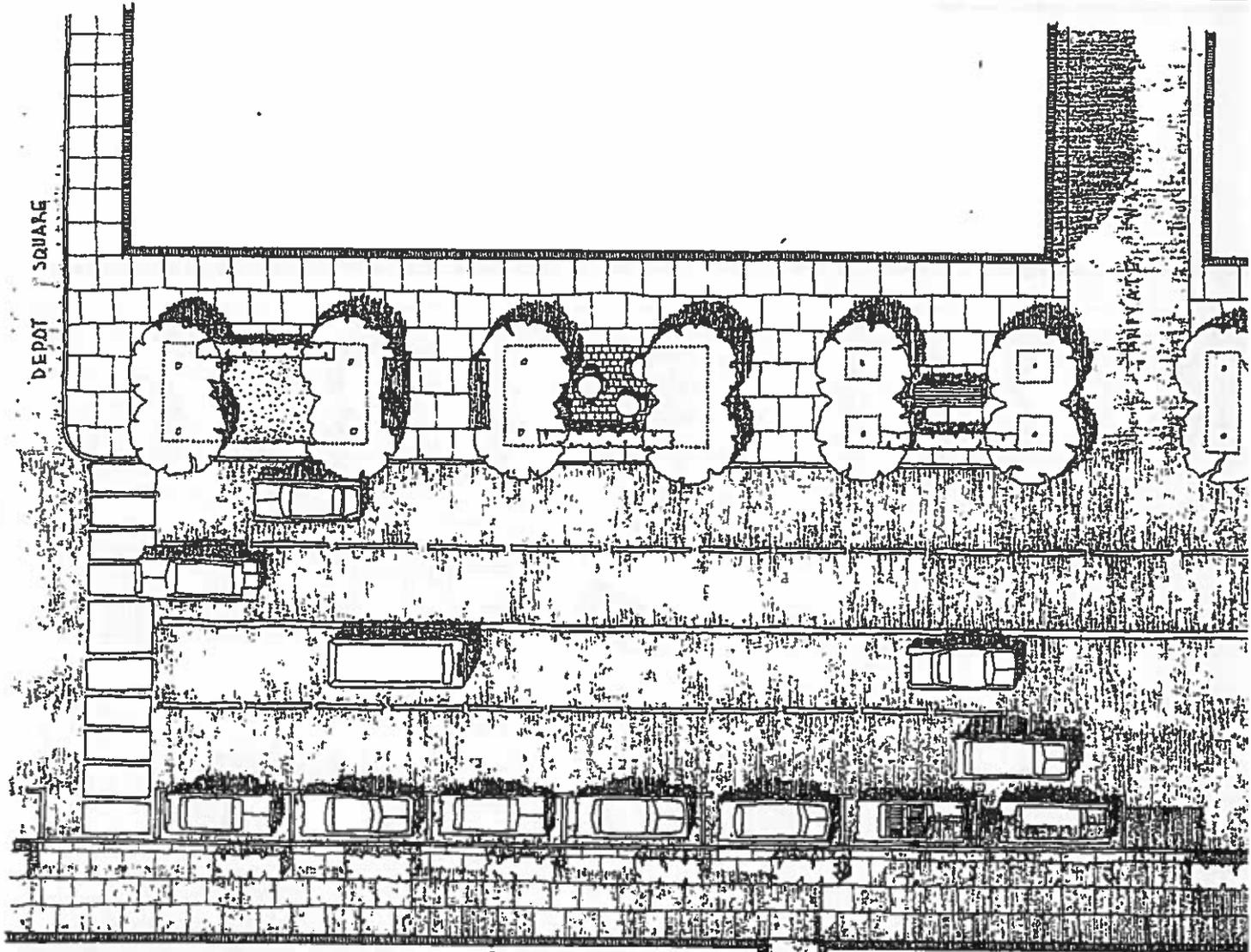
The thirty-four parking spaces which, but for pedestrian improvements, could be (and presently are) provided on-street on the north side, are not insignificant, but their replacement off-street is a small part of the overall parking expansion required over the next decade, and well justified by the benefits of pedestrian area improvements. For an interim period following development of the promenade, parking can be retained on both sides of the Avenue, with the north-side parking lane to be removed when replacement off-street parking has been developed. The space gained would then be divided between traffic space and the recommended widening of the sidewalk on the south side of the Avenue.

The complete landscaping program advocated, including both sides of the Avenue, work in Depot Square, and work in the parking area south of Massachusetts Avenue, will cost an estimated \$300,000, with strong probability that half of this will be supported through a federal grant under the Urban Beautification Program. The first stage beautification (see page 23) will cost \$60,000. On an annual cost basis, including the annual cost of the 34 necessary relocated parking spaces and an allowance for added snow removal and other maintenance efforts, this first step will cost less than \$15,000 annually.

Beautification of Massachusetts Avenue is but one component in a proposed program which would include efforts in Depot Square, in and between parking areas, and in outlying commercial centers as well, following a careful analysis of their needs.



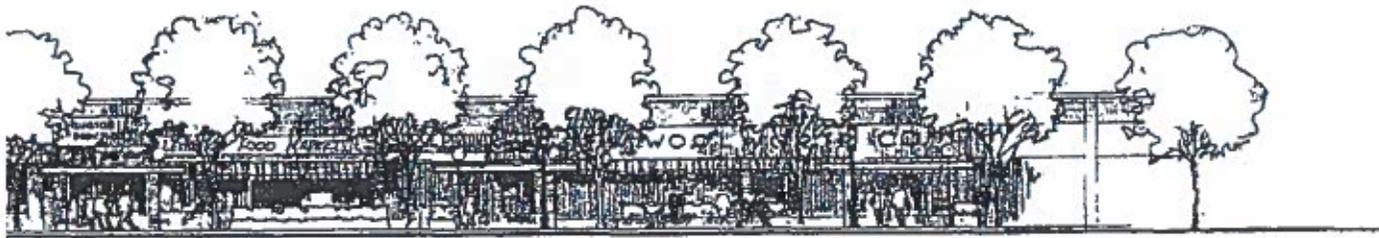
NORTH SIDE OF MASSACHUSETTS



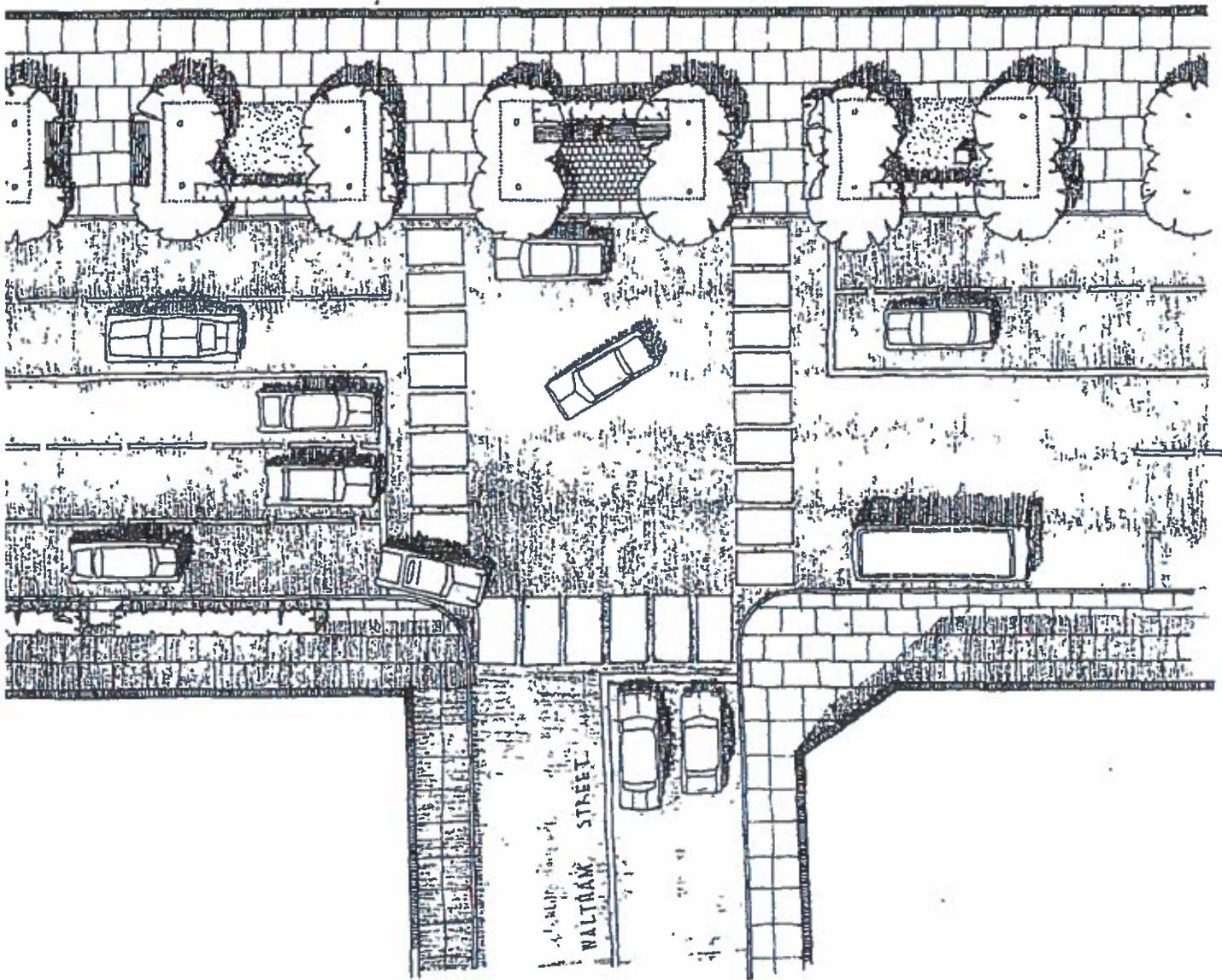
PEDESTRIANS

MASSACHUSETTS

ECONOMIC DEVELOPMENT ASSOCIATES, INC., PI



E. - ELEVATION

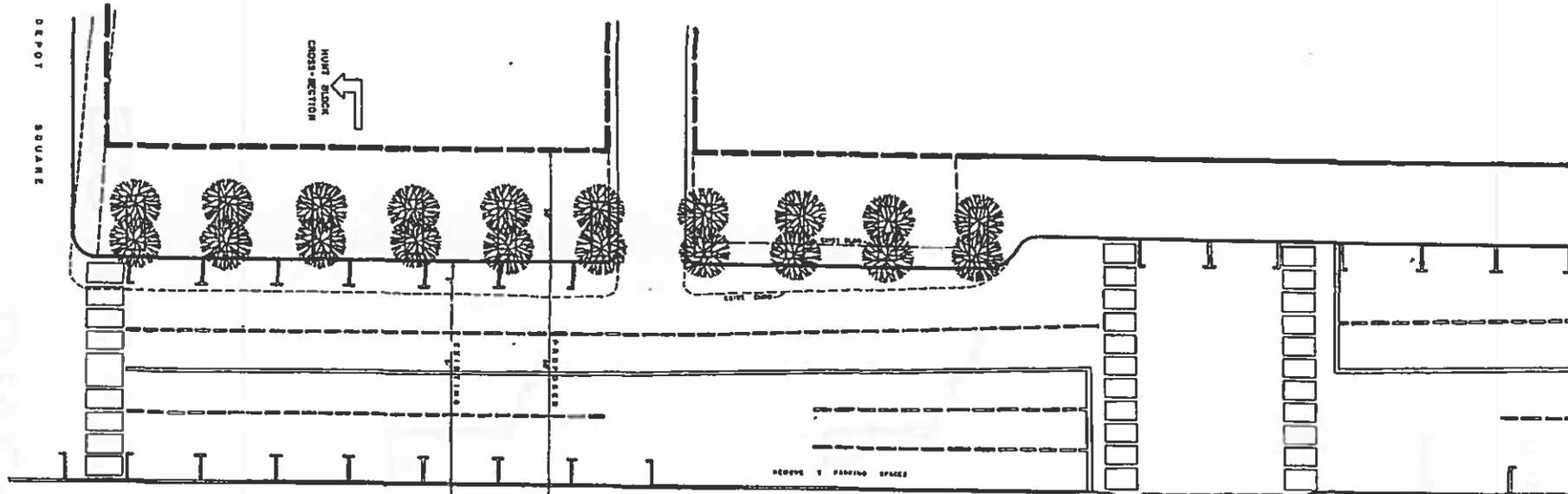


E. PROMENADE

I - FALCONER-STEIN, ARCHITECTS

DEPOT SQUARE

HAUT BLOCK CROSS-SECTION



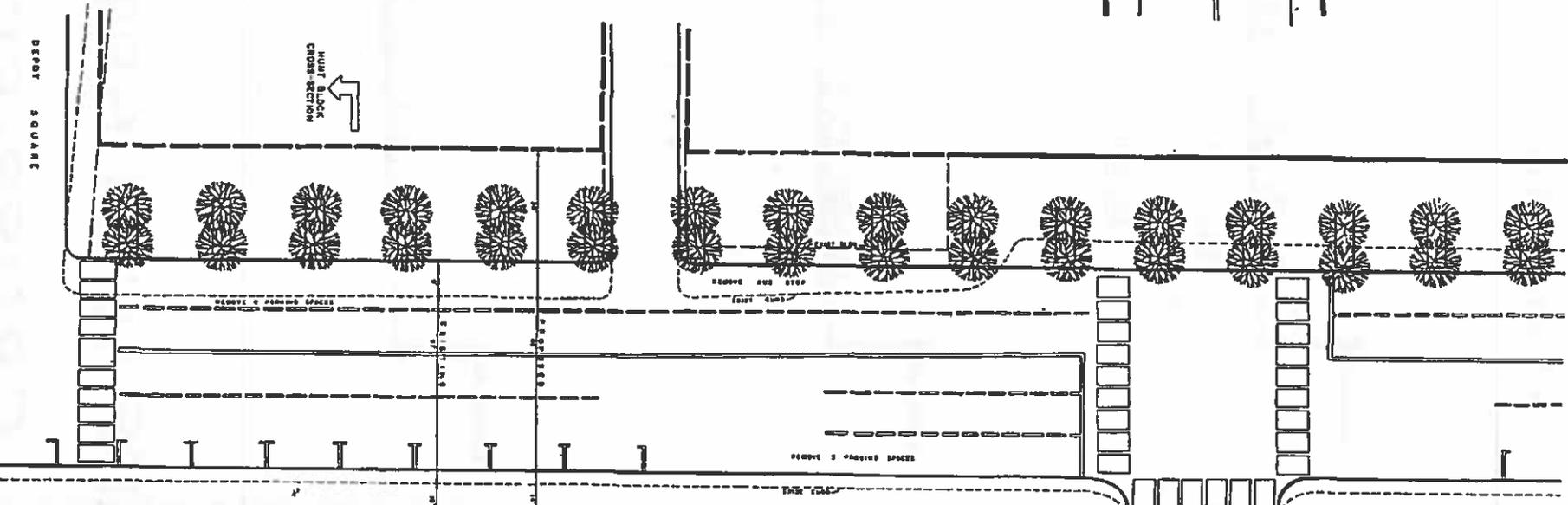
INTERIM STAGE
MASSACHUSETTS AVENUE



WALTHAM STREET

DEPOT SQUARE

HAUT BLOCK CROSS-SECTION

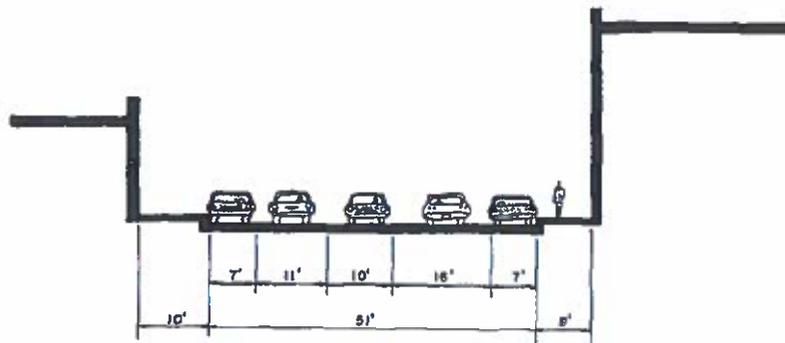


ULTIMATE DEVELOPMENT
MASSACHUSETTS AVENUE

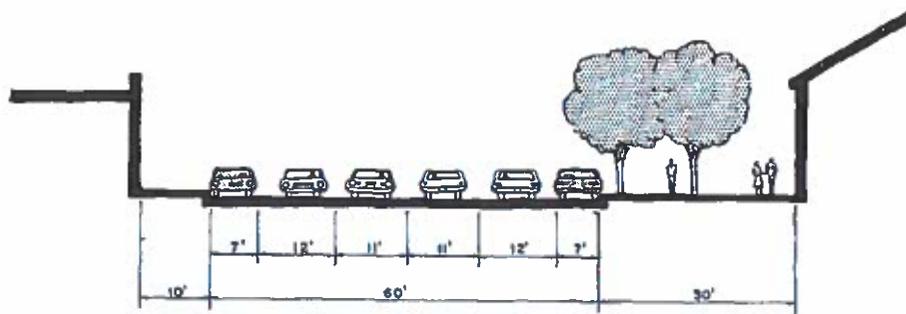
WALTHAM STREET

HAUT BLD CROSS-SEC

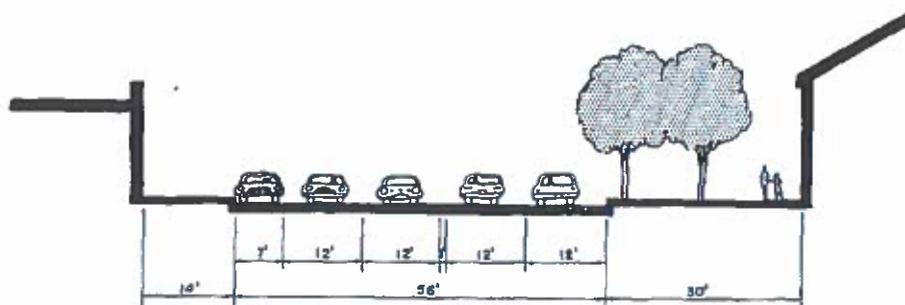
MASSACHUSETTS AVE. AT HUNT BLOCK



EXISTING (1964)



INTERIM



ULTIMATE

MASSACHUSETTS AVENUE
CROSS-SECTIONS



Rendering by George Conley

PROMENADE VIEW TOWARDS GREEN

PARKING

There are about $3\frac{1}{2}$ parking spaces available in the Center to service every 1,000 square feet of commercial floor space. In Belmont Center, there are 4 spaces per 1,000 square feet; in Burlington, the ratio will approach 9 per 1,000 square feet. In hard-hit Woburn, the ratio is 2:1000. It is conservative to say that in the future, at least the present parking/floor space relationship must be maintained to keep Lexington Center competitively convenient. In areas on the edges of the Center (proposed to be zoned C-1), this is a private responsibility, since parking there serves only the immediate abutters, and zoning change is proposed to ensure that the responsibility is observed. In the heart of the Center, however, parking is a public function, since each space is of general utility, serving many destinations.

Within the area of public responsibility, there are nearly 1,000 parking spaces today, half of them publicly provided. Programmed growth to 1975 will require net addition of nearly 300 spaces to maintain present parking-floor space relationships, and nearly 100 more to offset parking removal by private construction and by the proposed Massachusetts Avenue program.

Municipally-owned space north of the railroad should be paved and have both auto and pedestrian access improved as a first step. The chaos of private lots between Clarke and Muzzey Streets should be rationalized by municipal acquisition. If the abutters object, zoning should be changed so that adequate parking there will be provided in conjunction with any new construction.

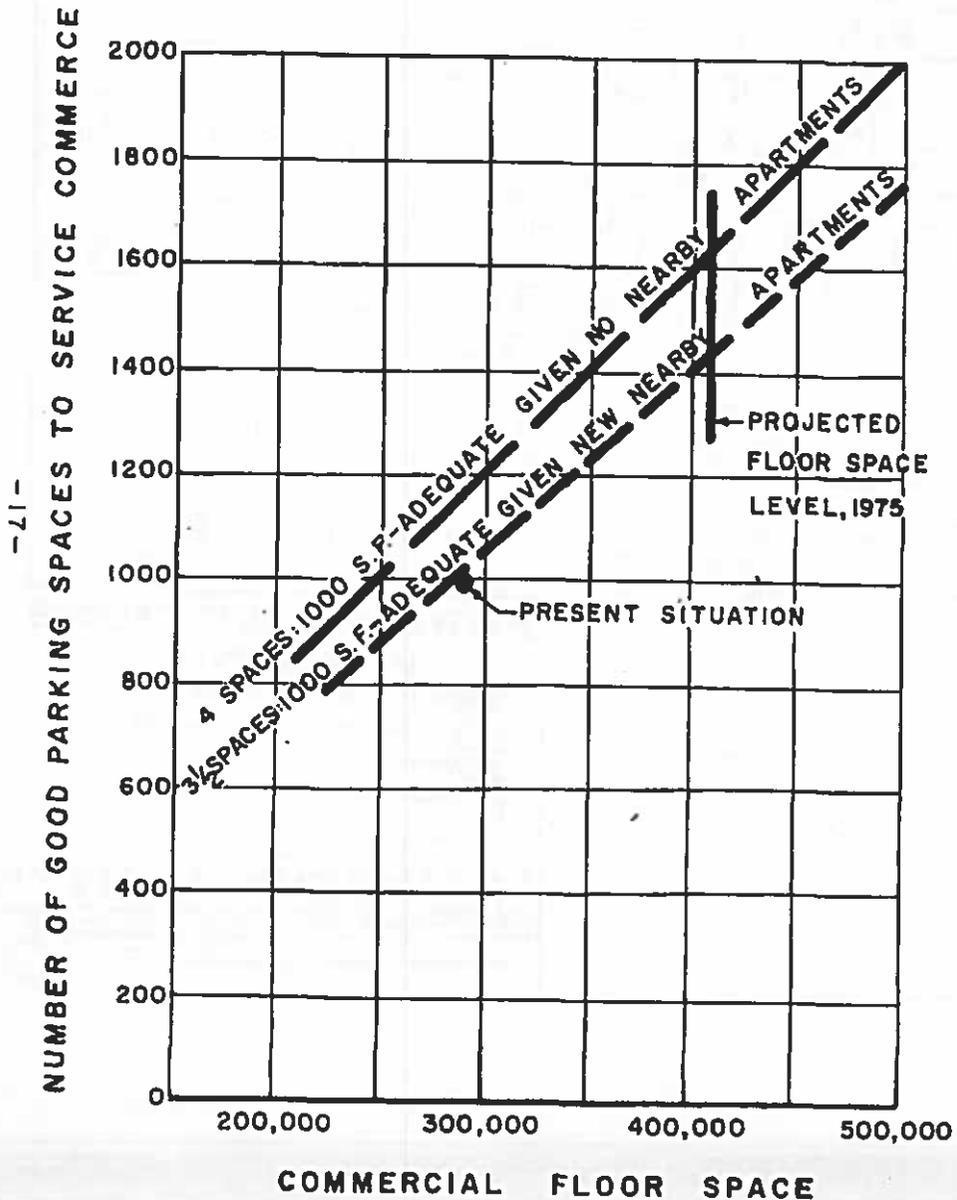
Following those two actions, improvements become more difficult, since they involve a choice among acquisition of sound commercial structures, development at great distance from the Avenue (few today will walk more than 500 feet in this scale of center), or vertical development, a startlingly new notion for a suburb. Simple cost analysis shows that with high-value land, as in the heart of Lexington Center, it is cheaper to go up than out. Two structures are advocated, one north and one south of Massachusetts Avenue. Since the size, shape, and location of the structure north of the Avenue depends upon the railroad future, that must wait, but detailed design of the structure advocated for the space between Waltham and Muzzey Streets should begin as soon as possible.

The capital costs involved in public provision of parking are very substantial, as high as \$1500 per space in a parking structure. At \$0.05 per hour, customers would pay about half the net cost of the proposed parking program over a 20-year period. The resultant annual subsidy of \$20-\$40 per space can perhaps be justified in terms of tax return on commercial structures and in terms of better service for residents, but need not be. An increase in meter rates to \$0.10 per hour would provide income sufficient to cover all costs of the parking program, with no burden on the tax rate, and with negligible effect on customer willingness to use the Center.

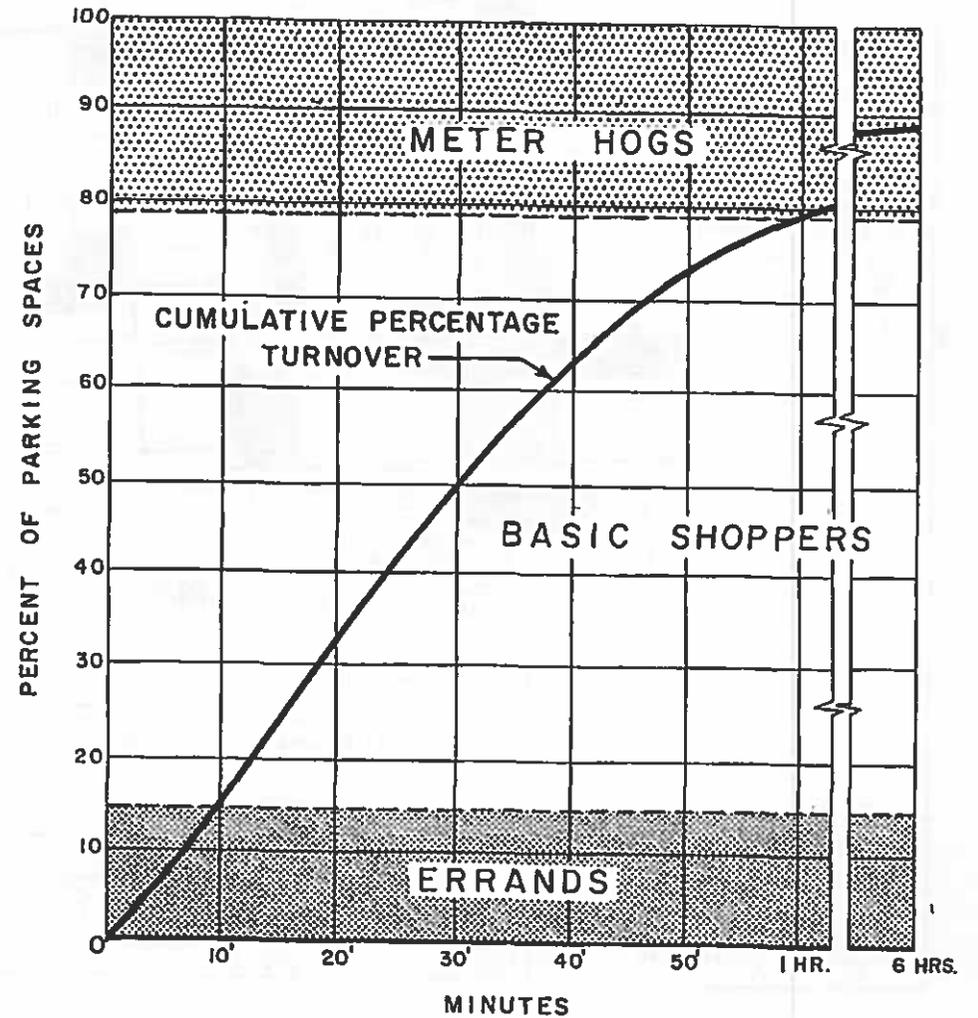
Parking turnover rates indicate needs for the various types of parking in the Center. Of critical concern is the proportion of quick-turnover spaces, since these are the most difficult to develop. Projected growth and shifts in the nature of business in the Center suggest net addition of about 20 such spaces, primarily in the "fringe" areas where convenience outlets are most probable.

Time limits on Massachusetts Avenue might reasonably be lowered to 30 minutes to ensure proper use of those spaces, while more distant parking areas and the top level of any parking structures might allow full-day parking for merchants and their employees. A two-hour limit for the bulk of spaces would make them most useful for the type of trade being encouraged.

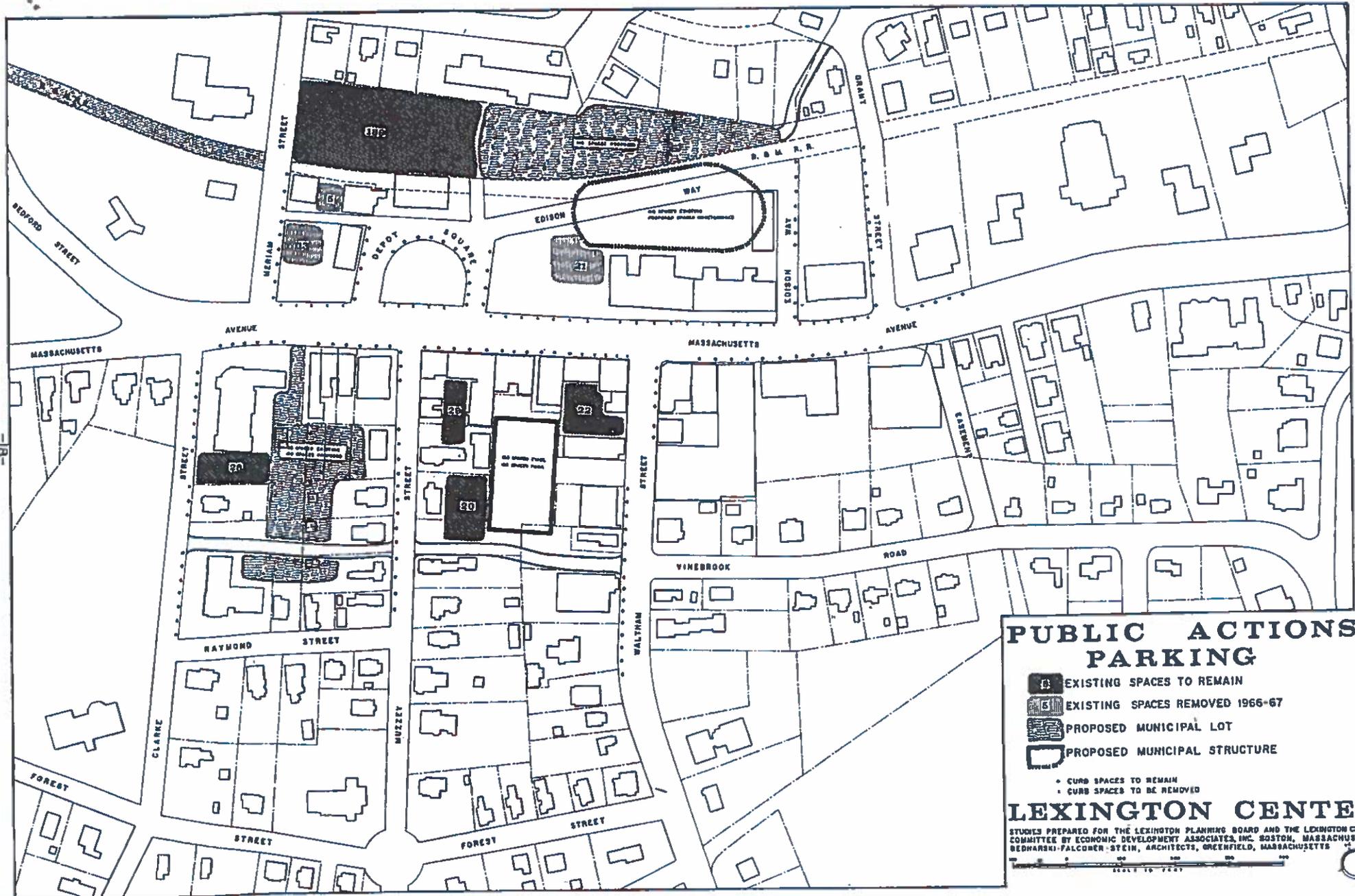
PARKING-FLOOR SPACE RELATIONSHIP



PARKING TURNOVER-MASSACHUSETTS AVE.



SOURCE:
E.D.A. FIELD SURVEYS, JUNE 11, 1965, NOV. 2, 1965 & NOV. 20, 1965
APPLICABLE DURING DAYTIME SHOPPING HOURS



PUBLIC ACTIONS PARKING

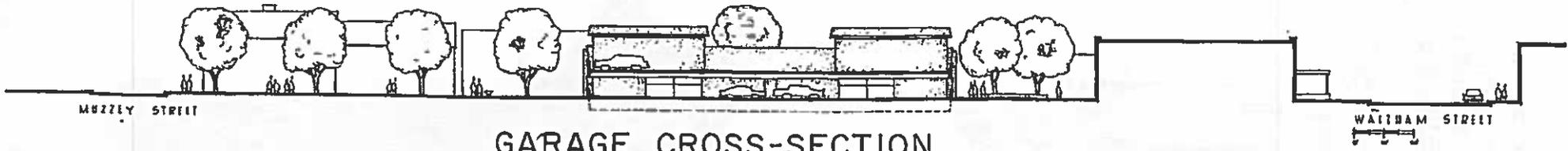
-  EXISTING SPACES TO REMAIN
-  EXISTING SPACES REMOVED 1966-67
-  PROPOSED MUNICIPAL LOT
-  PROPOSED MUNICIPAL STRUCTURE

- CURB SPACES TO REMAIN
- CURB SPACES TO BE REMOVED

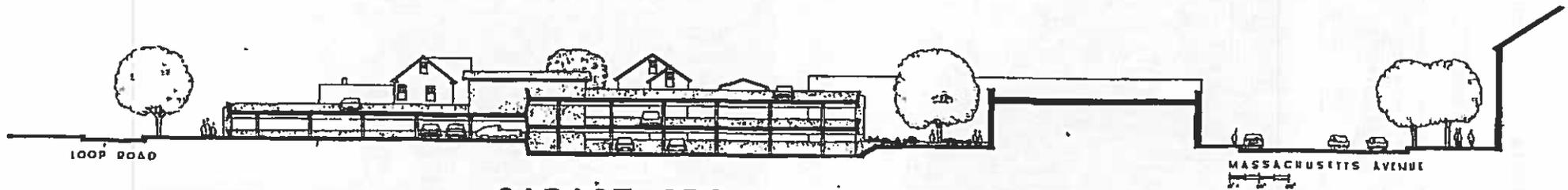
LEXINGTON CENTER

STUDIES PREPARED FOR THE LEXINGTON PLANNING BOARD AND THE LEXINGTON CENTER COMMITTEE BY ECONOMIC DEVELOPMENT ASSOCIATES, INC. BOSTON, MASSACHUSETTS
 REDHARSKI-FALCOWER-STEIN, ARCHITECTS, GREENFIELD, MASSACHUSETTS

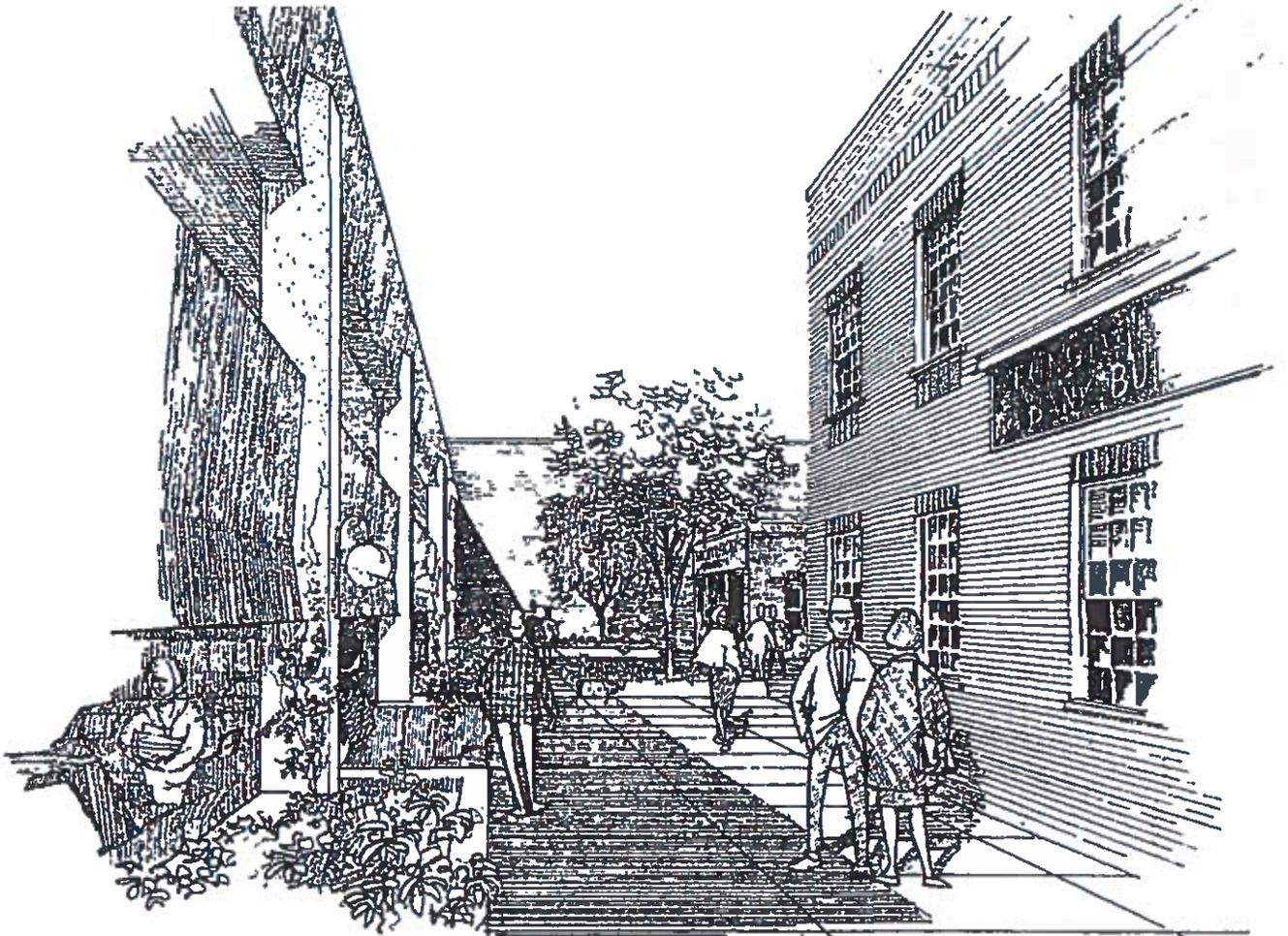




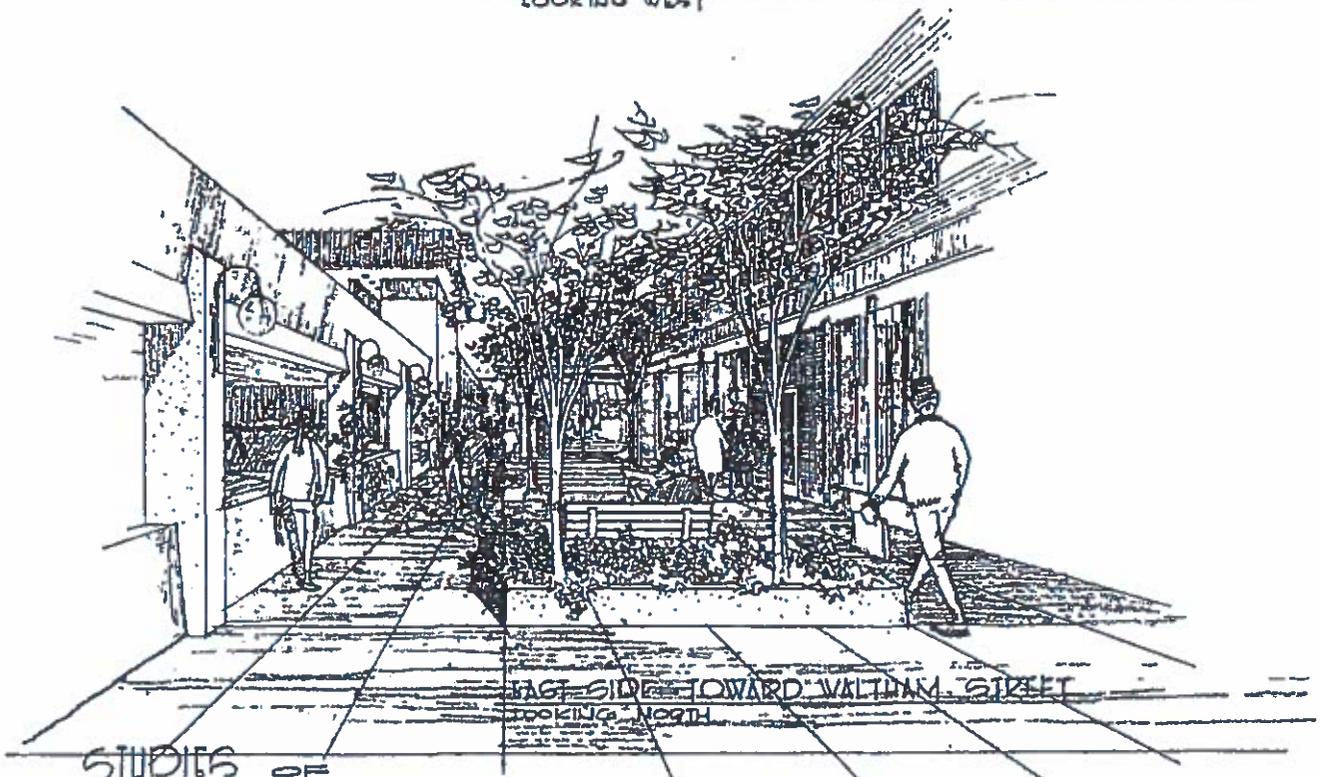
GARAGE CROSS-SECTION
LOOKING NORTH TOWARD MASS. AVE.



GARAGE CROSS-SECTION
LOOKING WEST TOWARD MUZZEY STREET



NORTH END TOWARD MASSACHUSETTS AVENUE
LOOKING WEST



EAST SIDE TOWARD WALTHAM STREET
LOOKING NORTH

STUDIES OF
PARKING STRUCTURE WITH RELATED COURTS
LEXINGTON, MASSACHUSETTS

ECONOMIC DEVELOPMENT ASSOCIATES - PLANNERS

BENJAMIN FALCONER-STEIN - ARCHITECTS

DESIGN GUIDANCE

Functional demands and economic realities have great bearing on what the Center looks like or can look like. There is little functional demand for upper-floor commercial space, so whether desirable or not, new structures along Massachusetts Avenue will generally be low. There is strong demand for ground floor commercial space, so new structures will largely fill their land area. Major traffic diversion is at present infeasible, so Massachusetts Avenue functionally must be about 60 feet wide, give or take four feet.

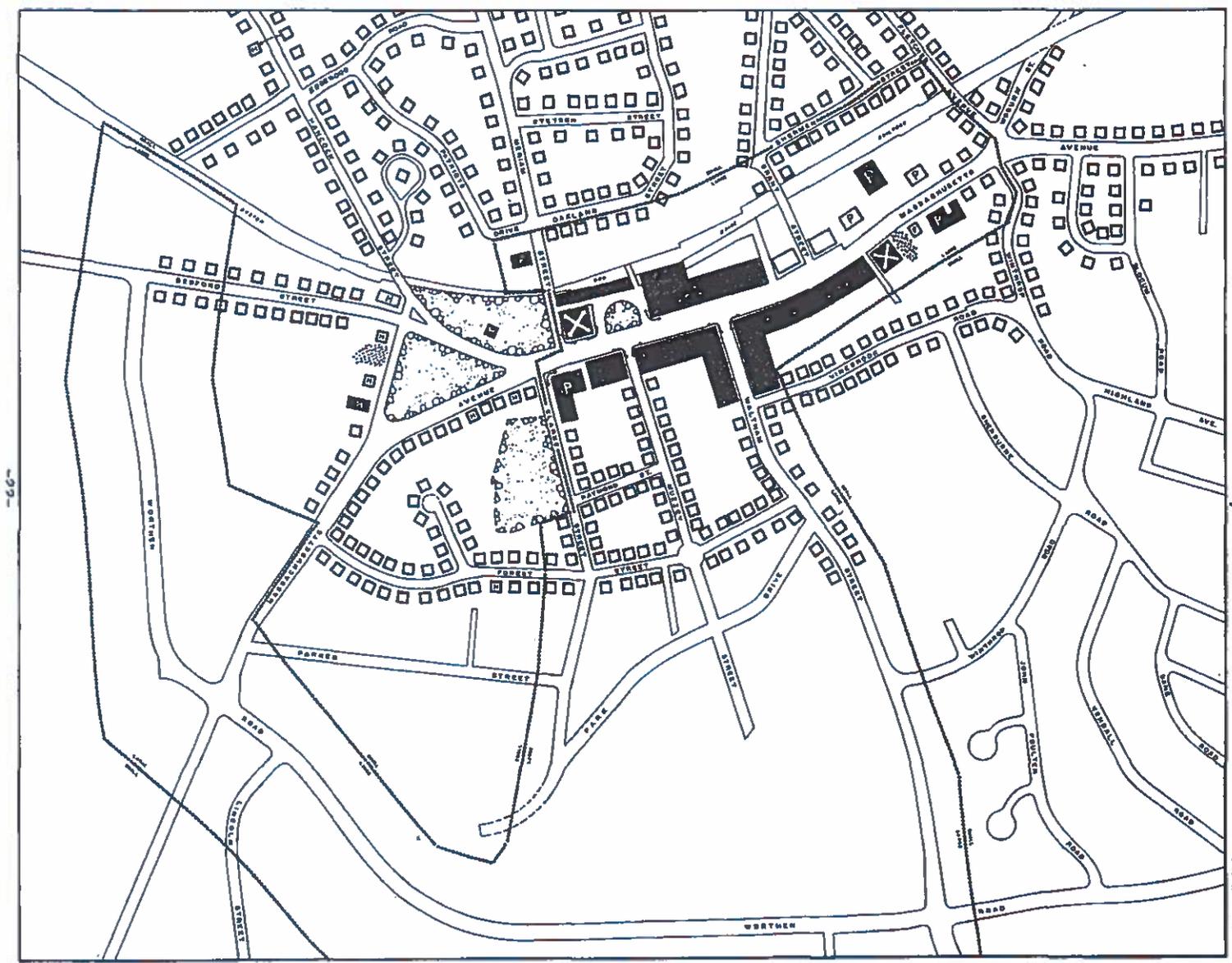
Within the constraints set by functional demands, however, there is a wide range of visual possibility. The "give or take four feet" on Massachusetts Avenue is, in fact, an issue of vital importance to the visual structure of the Center, as is just how the new low wide buildings are designed.

To effectively guide design in the Center, agreement should be reached among the many who regulate and influence design decisions there as to what is being sought. Discussion in the past concerning this has dwelled at a highly specific level, the style of architecture appropriate, on which there is sharp divergence of local opinion: should or should not Lexington Center's architecture be exclusively imitation colonial, or can a case be made for design which reflects the 20th Century reality of the place, without being disharmonious? Agreement at that level is far off in time, but actually may be less important than agreement on the more basic issues illustrated on the Visual Design Plan. Where should there be buildings, where are there spaces we care enough about to acquire if necessary? Where can large structures appropriately rise, where should only small structures exist? Where should buildings be stuck together, where separate? Which structures have function or location making an aggressively assertive design appropriate, which should be "background" structures? Which are the buildings with historic values of critical importance for preservation? Other broad questions, not shown on the plan, might be raised. Should all buildings have visible roofs? Should neon and porcelain enamel be banned?

If the Planning Board, Historic Districts Commission, Selectmen, the volunteer professional Design Advisory Group, and businessmen representatives could concur on the broad issues illustrated on this plan or some plan like it, implementation could be achieved without great expansion of present powers. Zoning controls some of these characteristics. For any structure involving purchase of public land (the Hunt Block, Central Block, and new Waltham St. building are all examples), provision requiring compliance can be placed in the deed. Persuasion through the Design Advisory Group and others can be highly effective, as can the exemplar of public construction. Until concurrence among the major groups involved is reached, extension of legal controls, either through Historic Districts expansion or through creation of an additional review agency, is likely to contribute little to the basic visual goals of the Center.

One of the strongest lessons of the visual design efforts in the Center is that, just as rational circulation design in the Center requires a town-wide circulation plan to relate to, so too visual design and beautification efforts in the Center should be related to similar efforts at the town-wide scale, based on a town-wide visual analysis to complement the current town-wide fiscal analysis. Such a study is proposed for 1967, as one element in a town-wide beautification effort.

Lexington has an extraordinary concentration of resident design professionals, for the first time in Town affairs formally involved in a public issue through this study. Future design guidance efforts should take full advantage of this rich resource of talent.



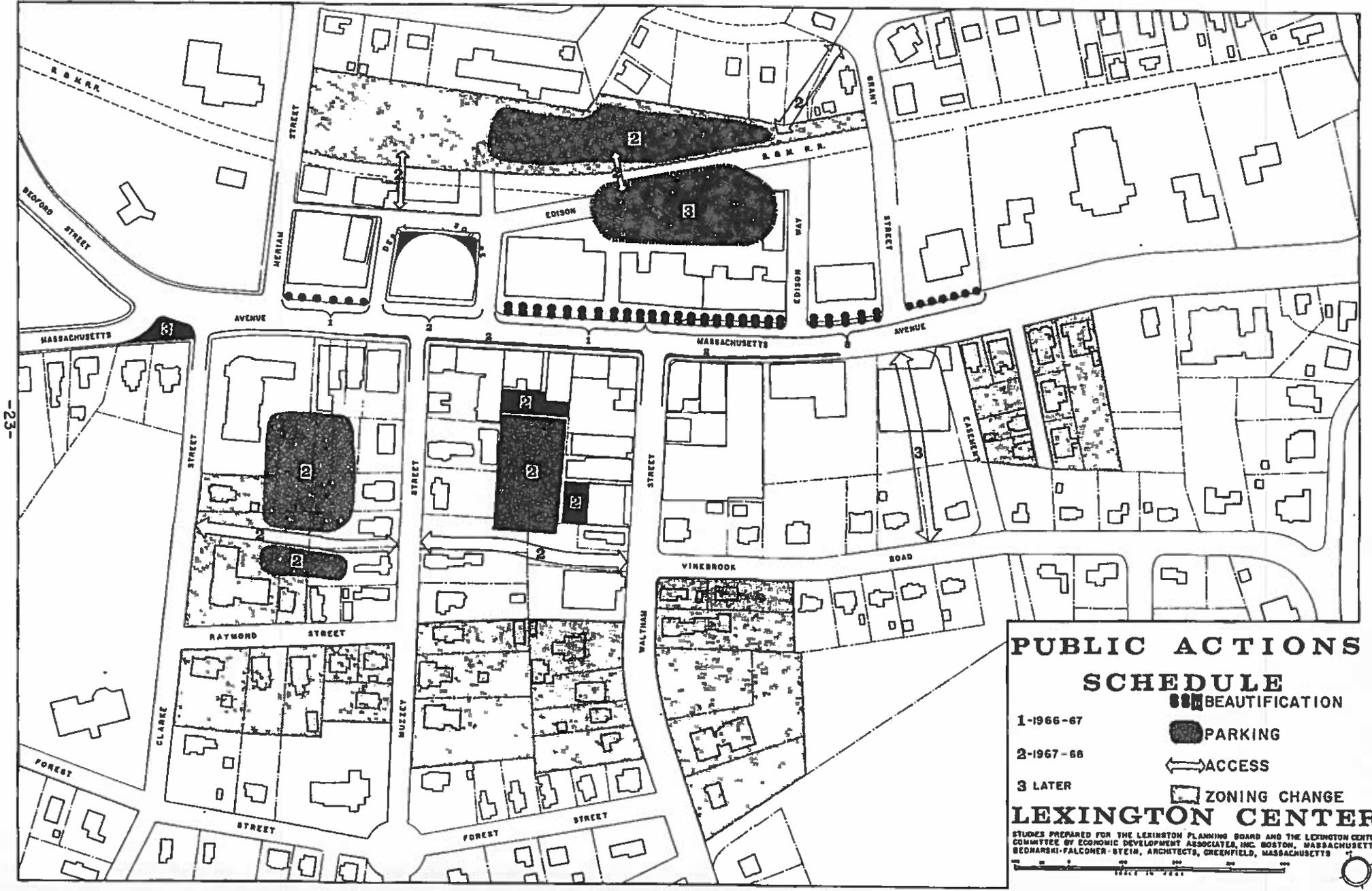
VISUAL DESIGN PLAN

- VISUALLY CRITICAL OPEN SPACE
 - PRIVATE
 - PUBLIC
- BUILDING DIMENSION DISTRICTS
 - LARGE BUILDINGS GENERALLY APPROPRIATE
 - LARGE BUILDINGS GENERALLY INAPPROPRIATE
- CRITICAL CORNER CONTINUITY.
- CONTINUOUS STRUCTURE
- DETACHED STRUCTURE
 - ADAPTIVE STRUCTURE
 - NON-ADAPTIVE STRUCTURE
- STREETS WITHOUT INDICATIONS NOT STUDIED

LEXINGTON CENTER

STUDIES PREPARED FOR THE LEXINGTON PLANNING BOARD AND THE LEXINGTON CENTER COMMITTEE BY ECONOMIC DEVELOPMENT ASSOCIATES, INC. BOSTON, MASSACHUSETTS
 EDWARD M. FALCONER - STEIN, ARCHITECTS, GREENFIELD, MASSACHUSETTS





-23-

**PUBLIC ACTIONS
SCHEDULE**

- 1-1966-67
 - 2-1967-68
 - 3 LATER
- BEAUTIFICATION
 - PARKING
 - ↔ ACCESS
 - ZONING CHANGE

LEXINGTON CENTER

STUDIES PREPARED FOR THE LEXINGTON PLANNING BOARD AND THE LEXINGTON CENTER COMMITTEE OF ECONOMIC DEVELOPMENT ASSOCIATES, INC. BOSTON, MASSACHUSETTS
BEDNARSKI-FALCONEY-STEIN, ARCHITECTS, GREENFIELD, MASSACHUSETTS



DESIGN AND DESIGN GUIDANCE

DESIGN OBJECTIVES

Four groups are involved in changes to Lexington Center, each group with its own objectives to be fulfilled. The businessmen concerned presumably have profit as a primary objective. Customers and other users of the Center are interested in better service, with "service" very broadly construed. Residents of Lexington, whether users of the Center or not, are interested in the role of the Center as a symbol of the community. Finally, the various designers involved in either individual structures or the overall scheme for the Center have, in addition to satisfaction of the above objectives, artistic goals to be satisfied.

Profit, service, symbol, and art are therefore proposed as the basic objectives to be fulfilled by the design of the Center. Fortunately, these objectives are largely self-reinforcing. The profitability of operations in the Center will be strengthened by improved services, will be further strengthened by greater symbolic congruence between the Center and the community it represents, and fulfillment of the designer's objectives should both result from and contribute to congruent symbolism, improved service, and higher profitability. *

THE CENTER AS A SYMBOL

A major element in the identity of any community is its non-residential focus; in the case of Lexington, this is the collection of historic, public, and commercial structures and spaces along Massachusetts Avenue roughly from Harrington Street to Woburn Street. In Lexington, symbolic identity is of particular significance because of the historical heritage involved. In the eyes of an estimated 1,000,000 annual visitors to the future Minute Man National Park, the Center and its immediate environs will represent the entire community. To the many thousands of more local passers-through, whether commuters or casual visitors, the Center similarly contributes heavily to the image of the community.

The typical resident of Lexington has reason to be proud of his town for many reasons, among them:

1) That it was the locus of a great moment in world history.

2) That it is widely respected for the present quality of its schools and other municipal services.

3) That it is a community with an extraordinary richness of professionally and technically talented residents (not just boosterism, but verifiable by cold Census data), and the locus of a number of great space-age technological centers.

4) That residence there suggests (but doesn't prove) attainment of an economic level well above regional averages.

The Center, if visually successful, should symbolize all of these qualities in which the community takes pride, and add to them another reason for community pride,

5) that it is a community with a singularly successful central area.

The first objective of design efforts in the Center, then, should be to enable that Center to symbolize all that is true of Lexington; that it is an historically hallowed spot, but also a very special and very active twentieth century one.

SERVICES OF THE CENTER

Residents look to the Center for a variety of services, from the Library at one end, through commercial services in the middle, to town administrative offices at the other end. In what way can the design of the Center contribute to those services?

If "amenity" can be considered a "service", certainly visual improvements will contribute to services rendered. A more measurable visual service would be to render the entire Center, each of its component parts, and their spatial relationships as clearly understandable as possible, so that all of the services offered are more easily known, as are the means of moving from one to another. This problem of sorting out complexity obviously gets more critical with larger central areas, and since one objective of these studies is to find ways of letting the Center grow, understandability will be increasingly important in Lexington if the plan proposals are carried out.

Functionally, the Center has traffic-handling and activity-supporting service roles. Both through traffic and internal movements, including parking and parking-store access, should be made as smooth as possible.

The Center's primary service role is that of an activity center. That role will be best served if the Center can be so designed as to support a range of activities which supplement, rather than duplicate, services available elsewhere, thereby broadening the range of shopping choice at convenient proximity.

DESIGN AND PROFIT

If the Center is made more attractive to residents of Lexington and the region around it, profits will almost certainly be improved. If at the same time the Center can be made more attractive to the many tourists drawn to the Green, so much the better.

The job of being increasingly attractive to tourists is the easier to discuss. Travellers are unlikely to delay their journey to visit a center just like the one back home, unless they have compelling service needs. On the other hand, a center with a distinctive character stands a far better chance of drawing them, and even more of a chance if that character is in some way related to the object of the trip, in the case of Lexington, a visit to an historical center. To draw tourists, then, the Center should be visually distinctive, with that distinctive character reflective of the town's history. There should be elements of visual continuity and linkage between the area of the Green and the rest of the Center. Finally, to be commercially attractive to tourists, the Center should be visually attractive, both in its individual buildings and in their relationships to each other.

For residents of the region near Lexington but within neither the town itself nor the "natural" trading area of the Center, much the same considerations apply as for tourists. If a day trip to Lexington can be made a pleasurable outing to a singularly interesting and even exciting place, the trade area of the Center can conceivably be expanded. A particularly critical consideration for this potential market is the indelibility with which the memory of a visit to Lexington is impressed, a memory often held in visual terms. If favorably and strongly recalled, such trips are likely to be repeated.

Making a visit to the Center an exhilarating visual experience cannot help but make such a visit a more enjoyable and often-repeated one, even for the "bread and butter" customers of Lexington's present market area, to the profit of all concerned. The means of accomplishing this for residents are largely those discussed earlier, and also those under alternate topics of symbol, service, and art.

THE CENTER AS A WORK OF ART

The aspirations of this study and design effort are high, higher than just profit and service and symbolism. Higher, too, than additionally tidying up the Center by replacing old facades with new ones and sprucing up the signs, though certainly including that. Higher, too, than inspiring those new facades each to be brilliantly designed, though hopefully including that as well. The aim of this effort is to guide development in such a way that the Center as a whole has artistic merit even beyond the sum of the merits of its individual buildings, as a result of the relationships among its buildings, movement channels, and furnishings.

The artistic aims of design at this scale are little different from those of design at any scale, and are little different from those cited earlier, such as to make clear the function of the Center, of each of its constituent parts, and of their relationships; to provide a symbolic representation of the unique nature of the community; in short to imbue the Center and its components with meaning.

BASIC OBJECTIVES

The basic objectives have now been stated in abstract terms. Those objectives are:

- a) To achieve a visually distinctive character for Lexington Center.
- b) To make that distinctive character a congruent symbol for the community not only as it has been but also as it is.
- c) To make the structure and contents of the Center as clear and understandable as possible.
- d) To establish visual connections between the Green and the commercial area.
- e) To make the recollection of the image of the Center as easy as possible.
- f) To make the Center as attractive as possible.
- g) To satisfy functional demands of circulation and parking well.
- h) To stimulate development of a unique range of activities in the Center.

DESIGN LIMITATIONS

Design at the scale of the entire Center is far different from designing a single building. First, there is not one client to be dealt with but rather many individual owners, not necessarily acting in concert. Second, change is likely to occur not all at once, but rather over a long period of time. Third, available control is far weaker at the town-scape scale than at the architectural scale. The architect can precisely specify his intent and be assured of compliance down to the finest detail. Neither existing nor any possible future laws are likely to permit this at the broader scale.

Because of these differences in client, timing, and control, the kind of plan appropriate for the Center is far different from an architectural blueprint. While an architect, through his plans, specifies an exact and unique solution, the town designer's plans should permit any number of solutions, as long as they fit the general concept he is advancing. That concept should be so presented that any solution possible within it is likely to promote the objectives stated earlier, or is at least unlikely to conflict with them.

Each new building event in the Center alters the web of relationships which should be considered in making individual building designs, so the problem is a dynamic one. Even if agreement could be reached on the "correct" solution for the specific and detailed design of all elements in the Center today, the very next new building or major alteration would require related revisions to the "correct" solution for the rest of the area, making a rigidly specific plan of the Center a practical impossibility.

This design effort, then, will not result in a blueprint purporting to tell each building owner exactly what he should do with his property, but rather will set general limits, suggest themes, and perhaps offer a palette of elements to be drawn on in specific design. It is important at this stage to define what elements are going to be dealt with in the design.

There is long experience in the definition of the elements of functional design, and of the public means of guiding them. Roads, sidewalks, utilities, activity patterns, and zoning controls are all familiar. A design aimed at public guidance of the visual environment, one component of the present plans for the Center, is a relatively obscure art. What should or should not be stated in the design must, therefore, be carefully clarified.

4
First, all of the public furnishings in the area are appropriately considered very specifically as part of the design, since these are under public control. Traffic signs, street lighting, plantings, fences, hydrants, trash bins, call boxes, and other appurtenances should be made to contribute to the design concept of the Center, and not be randomly organized as at present.

Second, the system of movements - roads, alleys, sidewalks and paths - can be specifically designed, since these too are in general publicly controlled. The esthetic experience of the Center has important movement aspects; the sequential relationships among elements at this scale is frequently found to be more important than their static composition. Not only is the way in which people move through the Center important, but so also are the pavement surfaces over which they move, and these, too, are subject to control and, in the present case, almost certain to presently face reconstruction even if not change.

Third, the space, mass, and void relationships in the Center are appropriate elements for design consideration. Here there is a measure of public control through zoning, which presently limits construction to certain height and set-back restrictions. In the Center, economics very nearly forces construction right up to those limits, so that they become in fact the bounding dimensions of new construction. Those limits, and the possible suggestion of "not less than" limits are clearly critical to the visual character of the Center, and are clearly appropriate for public design efforts.

Fourth, the pattern of type and intensity of activity is, in addition to being a critical functional consideration, also an esthetic one, and should be considered as such. The esthetic quality of an urban area is made up not only of inert physical objects, but also of human activity. Again, zoning is a tool commonly used to influence this, albeit in a crude way. A finer-scale design than is common in zoning studies is indicated in this case.

These four considerations - public furnishings, movement systems, mass and void relationships, and the activity pattern - are normally subjects for examination in planning studies, so their inclusion as design elements represents nothing new in private/public relationships. Their sensitive design could greatly assist in achievement of the previously stated visual objectives, all without specific reference to any other characteristics of the individual buildings involved. It could be held that this is as far as publicly-sponsored design efforts should go, leaving the design of building surfaces and other considerations other than the above completely in the hands of individual building owners and their architects. Yet it is perfectly clear

that most of what is accomplished through these four design elements could be destroyed through what is done on building facades.

It should be possible to provide guidelines for the design of building exteriors in such a way that there is assurance that each building will contribute to the overall design scheme, without tying the hands of the designers of individual structures and damping their creativity, as would be the case in any attempted "blueprint design" of all facades in the entire Center.

For example, physical elements intended to provide continuity to facades might be noted, if such prove desirable. Sign heights, base heights for show windows, or themes such as arched fronts or a canopy, or a selection of colors or materials could be stated. Continuity will not necessarily be desirable everywhere; in some locations staccato discontinuity may be more desirable, and should be indicated in the design.

Most buildings in Lexington Center are quite restrained in their form, color, and other elements which can be used to make a building assert itself. One handsome exception is the remodelled railroad station, perhaps the most strongly self-assertive structure in the Center. When all buildings try to call attention to themselves we have the sort of cacophony found along many highways, such as Route 2 in Cambridge. When no buildings speak loudly, the results may be, as perhaps in Lexington, so bland as to be inappropriate to a vibrant activity center. The degree of self-assertion which structures at various sites would ideally exhibit should be incorporated into the visual design scheme, as an important means of accomplishing the basic design objectives.

Similarly, at some locations, buildings would contribute to the visual scene most by asymmetrical composition, in others by establishing an axis through strongly stated symmetry. In some cases, buildings should be neutral "bridges", in other cases should provide visual termination. These elements, too, should be stated parts of the design.

Color is highly important; if possible, it should be incorporated into the design in some way, although this is highly complex to do in an abstract scheme, and may have to be generalized. Similarly, textural considerations such as whether walls are to be smooth, irregularly coarse, or regularly articulated should be studied, as should the degree of glazed openness of facade as against opaque closure.

Finally, "scale" will prove highly critical and again, if it proves possible to do so, its locational variations should be incorporated into the design. "Scale" in the sense of big

structures versus small will be affected by the mass/void relationships discussed earlier among elements traditionally controlled, but there is another aspect to scale. The Sheraton Plaza Hotel on one side of Copley Square has a far different scale from the group of stores on the opposite side, although in aggregate each bulks equally large. This "apparent scale" is affected by the relative size of doors, windows, and other elements useful in visually estimating size and distance. Commercial structures in highway-oriented shopping centers typically find a large apparent scale useful for rapid communication. Pedestrian arcades, just as centers of pre-automotive days, can effectively use a far more intimate scale. Where each is appropriate in Lexington should be made clear in the design.

STYLE

No mention so far has been made of "style" as a component in the design of the Center, yet this is one design element which is already being publicly controlled, through the Historic Districts Commission's authority over a large portion of the Center. There is, however, considerable doubt as to whether any stylistic control can succeed for all of this area, and virtual certainty that imposition of colonial, quasi-colonial, or pseudo-colonial trappings on all structures in the Center would do more harm than good.

The issue was well illustrated by the protracted controversy in 1958 over a church addition facing the Green. The many alternative facade treatments submitted by the church's architects demonstrated that the real problem lay not in whether the doors, windows and cornices had colonial, Georgian, Romanesque, or other styling. The real issues concerned space/mass/void relationships, building assertiveness, and scale. A Superior Court ruling that, in effect, the Historic Districts Commission is limited to consideration of the style of doors, windows, and cornices, rendered them impotent to control the most critical elements involved in "appropriateness".

The issue of "appropriateness" is not as simple as enforced imitation. In fact, a strong case can be made that the most appropriate companion structures for Lexington's excellent survivors of the Revolutionary War would be ones which resemble them in being esthetic as well as physical products of their own era, not soul-less hypocritical imitations. If the symbolic value of Lexington Center is really important, as maintained here, it is important that it symbolize a real and not a Disneyland place. Given this, and given sensitive handling of mass, scale, textures, and proportions, an appropriate 20th Century framework for Lexington's 18th Century heritage can

evolve. Even colonial Williamsburg, the archtype of stylistic reconstruction, wisely uses a complementary contemporary idiom for structures housing contemporary functions of administration, halls and operations.

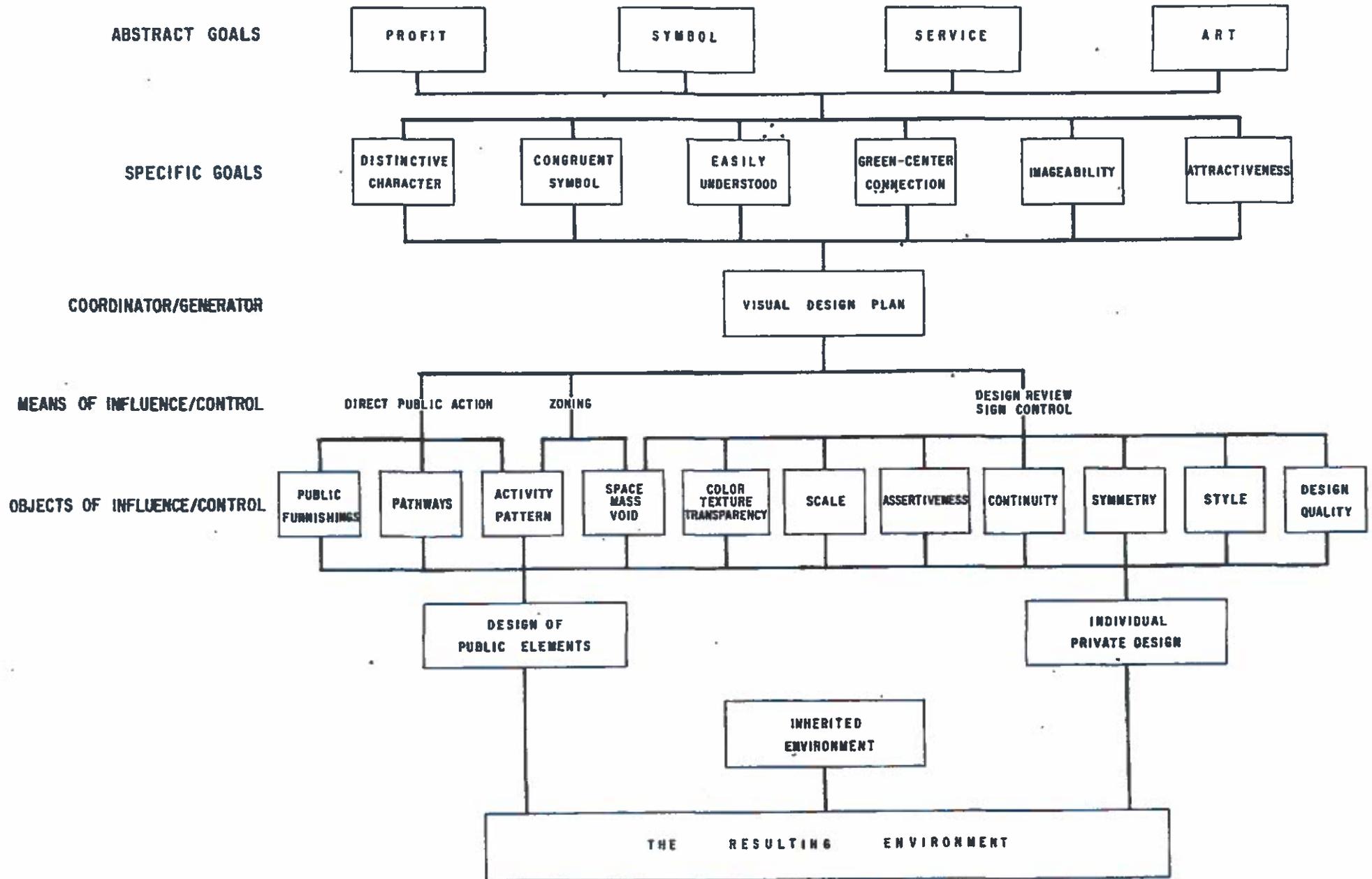
Stylistic control is not critical to attainment of the stated design objectives, but integrity of design is. If it were as simple to require a high level of design integrity as it is to require colonial trim, one aspect of the visual design in the Center would be solved.

Just as design integrity cannot be specified or required, neither can design quality be specified, required, or guaranteed. The success of the visual environment in the Center depends and will depend to no small degree upon the quality of design of individual structures.

★ The quality of design will depend upon the skill and effort of the designers of the structures involved. The skill obtained depends upon careful selection of designers by clients; the effort obtained depends upon making every commission in the Center an important artistic challenge, stimulated at least in part through interest by both the client and the community in insisting upon the highest level of artistic achievement.

★ It is a truism that beauty cannot be legislated. It is equally obvious that the broader achievement of good design cannot be abstracted, specified, and required. What can perhaps be achieved through this design effort is a situation in which good design is more likely to be achieved than otherwise, and in which irrespective of the quality of design of individual structures, the relationships among structures will be such as to add to rather than detract from the quality of the total environment.

DESIGN IN LEARNING CENTER



EXISTING VISUAL CONDITIONS

Any reasonable plan, short of one for complete reconstruction, must build onto what exists, protecting or enhancing strengths, and eliminating or minimizing weaknesses. This is just as true of visual conditions as it is of traffic conditions, or building space provisions. Accordingly, an analysis of existing visual conditions in Lexington Center has been conducted to determine how well the earlier derived visual design objectives are being met. To provide comparative examples, three other locally well-known examples of commercial centers of somewhat similar size were also studied: Concord, Nantucket, and Greenfield, Massachusetts.

THE ELEMENTS THEMSELVES

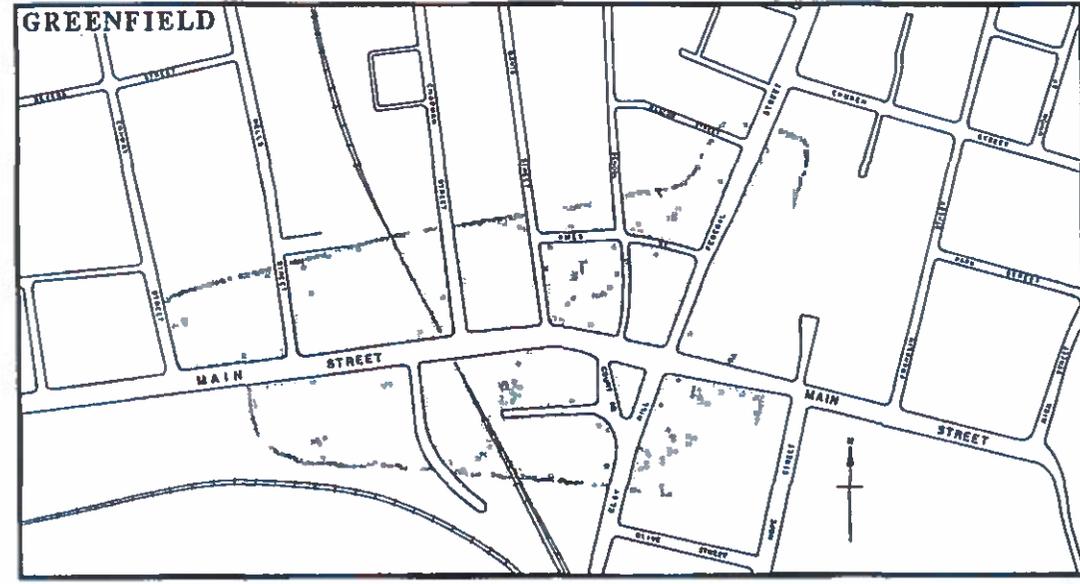
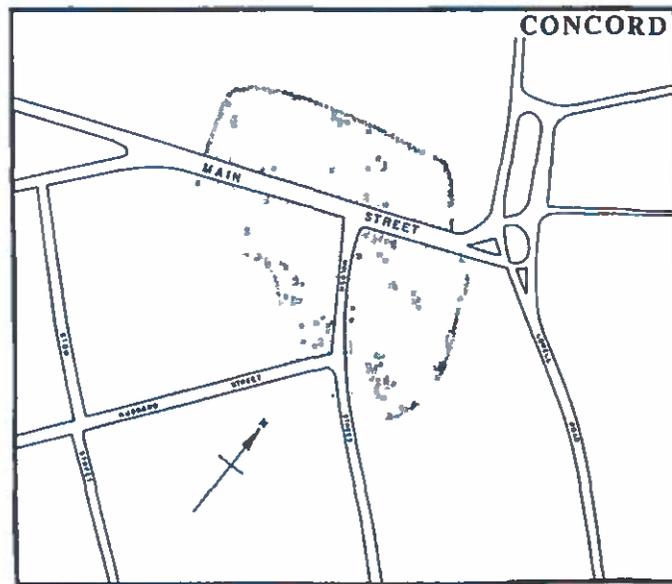
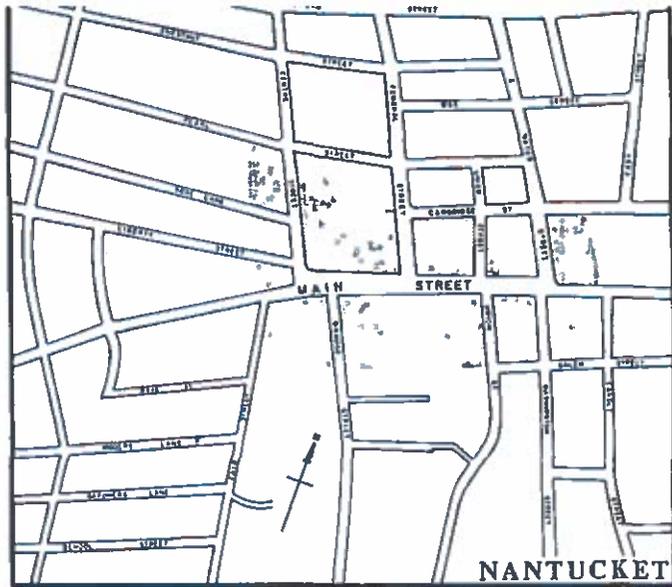
Two things determine the character of the visual environment: the character of the elements composing it, and the way those elements are related to each other. At the scale of Lexington Center, both are critical. 

The elements comprising the Center are its topography, structures, vegetation, roadways, and activity. This section examines in what way these elements individually contribute towards accomplishment of design objectives. A later section examines their interrelations.

Topography

There is little topographic variation in Lexington Center, and to the degree that such variation affects the visual environment, it is to place a few discernible limits to the Center, particularly to the north, where the beginnings of Meriam Hill demark the end of the Center. The gradients on Massachusetts Avenue, Waltham Street, Muzzey Street, and Clarke Street are so slight as to not be important perceptual elements.

In contrast, one end of Concord Center is elevated and backed by a hill, with the rest of the Center essentially flat, giving some sense of orientation to the Center. Greenfield's



COMPARATIVE ANALYSIS - BUSINESS CENTERS

PRIMARY BUSINESS AREA
 0 100 200 300 400 500
 FEET
 SCALE FOR ALL MAPS

"Massachusetts Avenue" (called Main Street) has a business and cultural center fairly well defined on three sides by topographic change, with the heart of the center itself occupying a level area. Nantucket's business district is built on the side of a gentle hill, where flatness defines the ends of the district. The slope of Main Street is a natural orientational boon to visitors, since it gives the street a clear sense of direction.

Nantucket's topography is an important asset, Concord's a minor one. Greenfield's topography is a problem, since it defines a topographic district too small for the current functional district, resulting in lack of congruence between the topographically perceived and functionally used "center". In Lexington, topography is "neutral", neither severely limiting nor strongly suggesting solutions.

Structures

The commercial center of Lexington is lacking in structures of unusual interest, either historically or architecturally. One small wooden structure on Waltham Street reputedly is the sole building in the commercial district having "long history". Perhaps destruction of history has been the price paid for commercial success, but in any event, the visitor looking for historic continuity through the commercial center of Lexington is likely to be disappointed.

The area surrounding the Center, of course, is quite another thing. A large number of structures of both historical and architectural interest are visible from the commercial center, while not in it. The strength and significance of those structures is a clear asset to the visual character of the Center.

Lack of historical structures in the business district is not true of any of the three centers chosen for comparison. Greenfield, the least "historic" of the four, has one eighteenth and several early nineteenth century structures surviving in its commercial center, along with representatives of virtually every period between then and now. Greenfield's era of greatest prominence and growth was the turn of the century, and its center reflects this in genuine architectural remains, as well as in the usual reproductions.

Nantucket, of course, is primarily characterized by structures inherited from its era of greatness in the early and mid nineteenth century. In Nantucket, the challenge is less to find historic structures than to find the new ones.

Concord's Milldam area exemplifies historical continuity. Virtually every architectural period from Colonial to Modern is represented with genuine examples. There are relatively few "pseudo" buildings in Concord Center. Victorian era buildings look Victorian; most twentieth century buildings look twentieth century; and with few exceptions, colonial-appearing buildings really are colonial.

Historical presence and interest is easily discussed and verified by construction dates; architectural quality and interest is far more subjective and difficult. Yet few are likely to disagree with these broad findings.

For reasons difficult to fathom, the Lexington Center business district has not been favored with a large number of individual building designs of unusual merit. The commercial structures of the Center are, almost without exception, of very ordinary design quality, and certainly none merit a special trip for examination. Perhaps the best structures in the Center are the side-street wood frame buildings, once residences, now becoming commercial and professional offices. Many of these are individually well proportioned, and collectively they establish a consistent "clapboard esthetic". The Cary Memorial Library, in its massing, scale, and siting, is an excellent transitional structure between the historic and commercial districts. A very few other structures rise above the ordinary.

It is perhaps equally true that neither Concord nor Greenfield has been favored with an unusual number of well-designed structures, though both of those centers have several older commercial structures of considerable design merit. Nantucket, on the other hand, has a large number of felicitously designed buildings in its Center worthy of individual attention.

Lexington has no barbarously bad structures, despite howls of anguish over new buildings in the letters column of the Lexington Minute Man over the years. There has been a restraint exhibited in new buildings which has prevented obtrusive eyesores. The most frequently objected-to buildings are objected to less because their design is unusually bad than because they are old, or because the function they house and express is now inappropriate for their location.

Concord and Nantucket also avoid eyesores; Greenfield is less fortunate. Several highly prominent and ineptly designed structures make sharp intrusions onto Main Street, well illustrating the damage that one or two strong but bad structures can make.

A Minor structures are also important - signs, light poles, hydrants, and other small objects help condition the character of an area. Of the four cases examined, only Nantucket avoids the ghoulish uniform blue light quality of mercury-vapor street lighting widely spaced on high standards. This efficient but unattractive lighting does nothing to enhance the night scene in Lexington, Concord, or Greenfield except in helping to define where the center is by variation in lighting type and intensity.

Only Nantucket and Greenfield provide "extra" street furnishings such as benches to sit on. There is no consistent esthetic to publicly placed and maintained signs in any of these communities; Concord perhaps makes the best effort.

Vegetation

* * The portions of Massachusetts Avenue and Waltham Street where building frontage is more or less continuous is either devoid of trees, or has been planted relatively recently with street trees still inadequate in scale or density to have a major impact. Outside of that area, the streets in and leading to the Center are generally characterized by large scale street trees.

The Center also generally lacks smaller-scale vegetation, such that the few examples of lawn or shrubbery have heightened impact, as does Emery Park (Depot Square).

The densely developed portion of Concord Center is devoid of trees, but is small enough that peripheral trees and other landscaping always present a visible contrast. Nantucket enjoys large scale trees not only surrounding it but also right through the commercial center. The strongest element on Main Street in Greenfield is probably the soaring elm trees arching forty feet or more over the street.

Roadways

It is difficult to abstract characteristics of roadways from their surroundings, since the qualities are so inter-related, but at this point it is worthwhile noting the differences among the major roads in these four centers.

Concord's Main Street measures about eighty feet, including sidewalks, between buildings, while Nantucket's Main Street places buildings about eighty to ninety feet apart. Greenfield's Main Street, on the other hand, separates buildings by about 100 feet, just as Massachusetts Avenue does now in Lexington east of Waltham Street, and shortly will do west of Waltham Street.

Nantucket's Main Street is sharply limited in visual length by buildings terminating the vistas at each end. Concord's two shopping streets are both "T" shaped, closed at one end, open at the other on Walden Street, terminated by a building in a "V" intersection at the other on Main Street. Greenfield's Main Street is terminated at some distance on one end only but gains some sense of enclosure through its curvature. While Massachusetts Avenue curves, it does so outside of the primary commercial area, and the "backdrop" for the curvature is now a number of small detached structures. At the Green, the termination is handsome but not large, so that the Avenue tends to go on and on at both ends.

Nantucket's cobblestone and brick road and sidewalk surfacing is famous and uniquely suitable to its situation. None of the other centers have road surfaces any more imaginative than asphalt roads and concrete sidewalks.

Activity

Nantucket caters to a relatively fashionable summer trade; activities there tend, therefore, to lend themselves to attractive and interesting display. Nantucket's movement system is still heavily non-automotive, encouraging design and display suitable for impact at a pedestrian rate of movement.

Median family income in Concord is about \$500 lower than in Lexington, but despite this, the type of store activity in Concord is, in many instances, aimed at a higher quality market than Lexington stores apparently aim for. Greenfield's market profile is significantly lower income than any of the other three.

Concord and Lexington have quite sharply segregated activity patterns, with shopping here, government and churches there. Greenfield has somewhat more central area intermixture of activity. Nantucket and Greenfield complement shopping activity with eating and drinking spots; especially in the case of Nantucket, this extends the period of central area activity well into the night.

STRUCTURAL INTERRELATIONSHIPS

The way in which elements of topography, structures, vegetation, roadways and activity relate to one another is at least as important to visual success as is the character of each of those elements taken separately. Both existing and potential issues are covered in the paragraphs which follow.

Massachusetts Avenue

Perhaps the greatest structural deficiency of the Center is the lack of clear relationships among the major components of the Center along Massachusetts Avenue. The historical area surrounding the Green abruptly meets the commercial area, with minimal reflection in the commercial area of the connection. The Cary Memorial Library helps bridge the two by its siting, scale, massing, and use; the north side of the Avenue should do as well. 

At the other end of the commercial area, there is an unsatisfactory transition as the Center "peters out" with an auto service station and a utility building blurring what should be a clear transition from the commercial area to the civic area. Relationships of building scale, color, siting, and assertiveness do nothing to help the transition, and there is no common thread to link the areas, let alone to link all the way from the Green to the town offices, as should be done.

Conditions on the eastern end of Massachusetts Avenue could easily deteriorate. Three of the five houses between the Colonial Garage and the First Baptist Church are in the commercial zone, so could be replaced by stores built to the street and lot lines. What the best relationship along the Avenue at that point should be is difficult to judge, but the best solution certainly isn't to leave two houses between storefront extension of the Center and the Church.

Nantucket's Main Street is handsomely terminated at both ends by street alignment shifts and by prominent structures. Concord's central area roads are terminated in three directions by structures, on the fourth by a sharp road bend and use change occurring together. Greenfield's "leaks" at both ends, much to its detriment. Lexington's Massachusetts Avenue goes to infinity on the east, and is terminated on the west by Captain Parker, The Green, and the Unitarian Church, all handsome, significant, and right on the axis, but not really strong elements viewed from as far away as, say, Waltham Street. Were, for instance, the Church and the statue to swap sites, the visual termination and provision of a visual goal for Massachusetts Avenue would be far stronger.

Massachusetts Avenue largely lacks the sense of orientation given to Nantucket's Main Street by its topography, and to both of Concord's shopping streets by their "T" intersections and terminal buildings. The width variation coupled with general height variation (as the street gets narrower the buildings generally get taller) gives some left v. right orientation at Waltham Street, but this is about to be at least

reduced by the road widening and by the possibility of relatively low structures replacing tall ones toward the west.

The height of buildings on Massachusetts Avenue is generally inadequate to give a sense of street enclosure. Greenfield's Main Street, equally wide, and Nantucket's Main Street, nearly as wide, are given a desirable sense of enclosure both by tall buildings and by tall trees.

Bland architecture, as is general in Lexington, is insufficient to ensure building compatibility. Concord's somewhat stronger individual buildings often sharply contrast with their neighbors in scale, color, materials, or style; this produces a bright staccato interest. Nantucket's architecture is drawn from a narrow palette of materials, scale, and styles, resulting in a general anonymous harmony broken only by buildings of locational and functional significance warranting such breaks. On Massachusetts Avenue nearly every building is either red brick or whitish stone or concrete, but somehow the mixture, in relatively long unbroken stretches of each material, produces neither bright contrast nor quiet harmony, nor do the variations reflect functionally significant events. For instance, by adroit use of an alley corner location and contrast of color and scale, a small frontage liquor store has become one of the most prominent objects in the Center. The bank in Depot Square occupies a building whose site and design imply a major focal activity. Another bank, by use of lawns and understatement, similarly attains visual prominence. None of these establishments can be criticized for these efforts, tasteful in each case. One can only wish that visual prominence related somehow to functional prominence (and one can also wonder if this visual problem isn't an accurate reflection of the lack of "focal activity" in the Center, a functional problem common to this type of complex).

Other Streets

From Worthen Road to Massachusetts Avenue, Waltham Street has a chaotic mixture of elements. There is a great uncertainty as to where the Center ends. The telephone exchange, exposing a massive brick sidewall to the axial view approaching the Center, announces the beginning visually, but functionally isn't a part of the Center. On the east side of the street, the Lexington Arts and Crafts building is the first non-residential masonry building encountered, but is six hundred feet before the shopping begins; its neighboring professional office building conflicts with the residential scale and character (as well as zoning) of the area.

In contrast, Muzzey Street manages the same transition, from intensive commercial to residential, from relatively bold to intimate scale, with a minimum of discord, by a gradual progression of intensity and scale, helped by superior street trees and by the unifying effect of relatively uniform front and side yards. This progression of intensity gives to Muzzey Street a clear sense of direction it would otherwise lack, aiding orientation.

Whereas Waltham Street can probably be improved only by new building, Muzzey, Raymond and Forest Streets may be upset by changes. Unless the present gradient persists, and unless scale relationships are handled as skillfully as at the Old Belfry Club, chaos similar to that on Waltham Street could develop in that area. On the other hand, the area has some mixture of use and scale now, so intensified use without disruption is clearly feasible. Clarke Street, with three large scale structures now, and with a major public open space, probably is immune to such disruption.

Vinebrook Road, Sherman Street, and Forest Street west of Clarke Street all serve areas of clear visual homogeneity and strength, through their single use, single scale, single type of construction, and the unifying effects of landscaped front yards and street trees. Introduction of change into any of those areas would cause visual disruption, a "cost" to be seriously weighed against any benefits to possibly be gained.

It is rare that the relationship between parking areas and the stores they serve is well handled. Lexington is no exception. Neatness and rear of building access is required for improvement, but this isn't sufficient, as illustrated by the large private lot back of the block housing Batemens and others. Here, the enclosing wall surfaces are neat and orderly, and rear entrances have been opened. Yet the area is "dead", unattractive, and seemingly a world apart from Massachusetts Avenue. Strong activity bridges and other means of visual connection and orientation are required. Poor parking lot - shopping street relationship is the one thing which Lexington, Concord, and Greenfield share, although Greenfield and Concord each have one parking area which avoids this problem by "fronting" onto the Main Street at the periphery of the shopping area, facing across the street to a major structure, thereby being made a part of the street.

RELATIONSHIP TO GOALS

Earlier, visual design goals for Lexington were derived. Based on this analysis, how well does Lexington meet them today?

Distinctive Character

The major road pattern and distribution of continuous building, detached building, and open space found in Lexington is unique, like a thumbprint, and on first impression, equally lacking in distinction from others. Once within the commercial center, one could be within Arlington, or Waltham (Main Street, not Moody Street), or any of a number of other places. There is perhaps more pseudo-colonial design in Lexington than in these other communities, but the difference isn't strongly felt. Activities within the Center are in no respect distinctive.

The distinctiveness of Lexington's Center, such as it is, lies in being completely surrounded by non-commercial development, rather than being the usual focal point in a more or less continuous string of commercial development. Blurred though they may be to the east and south, the limits of Lexington Center are clearer than those in most communities. Even this characteristic is shared by a number of other nearby centers, including Concord and Winchester. The first goal, distinctiveness, clearly isn't being met.

Symbolic Congruence

Looking like just another center, as discussed above, Lexington Center obviously fails to symbolize the distinctiveness of the community it serves. A congruent symbol of the community must inevitably be as distinctive as the community itself.

Green-Center Connection

A profit-serving goal of connection and continuity between the historical area and the commercial area was another sought-after goal. The connection barely exists; only the Cary Library makes an effort to provide a connection.

Easily Understood Pattern and Contents

The long-time resident finds it hard to believe that anyone could get confused in so simple a center as Lexington's, but in fact there are a number of persistent sources of disorientation for visitors and new residents, and occasionally even for long-term residents.

~~1,000~~ 3 1/2 to 4 18 to 22' height Prison
 350' no irrigation Linden
 \$ 800 2 1/2 to 3 14 to 16' height Elm
Houghton

The branching road system of Massachusetts Avenue, Bedford Street, and Hancock Street is probably the most common source of confusion. Another is the difficulty in distinguishing between Grant Street and Edison Way, and a related inability to recall the positions of the Post Office and the Edison sub-station. The one-way road system south of Massachusetts Avenue leads to confusion as to how to get into the Waltham Street-Muzzey Street parking lot, and how to reverse direction once having done so.

A lack of strong internal landmarks, a lack of major differentiation among the minor roads, lack of an orientation device such as Nantucket's topography, and a lack of clear district definition all contribute to the problem.

Imageability

Internal clarity is one aspect of imageability as discussed above. Another is the memorableness of the Center taken as a whole. A month after visiting here, how well does some kind of image of Lexington Center persist in the mind of a visitor? Here the distinction sought is not between Edison Way and Grant Street, but between Lexington and the mass of other suburban downtown areas.

Lexington would be well-remembered if it were distinctive. It would be even easier to recollect the Center if the visual image and the functional pattern reinforced one another, like a giant physical mnemonic. That is, if focal structures housed major activities; if colonial-appearing structures really were colonial; if any design "theme" reflected the essence of the place, and wasn't a meaningless veneer. ★

The image would also be stronger if the internal structure were clearer, so the Edison Way-Grant Street confusion isn't entirely irrelevant. In all of these ways, the imageability of the Center as a whole could be strengthened beyond its present ordinary level. ★

Attractiveness

The degree to which the previously-discussed objectives are satisfied is a measure of the success of the Center in achieving attractiveness. The elements which compose the Center were earlier noted as generally lacking design distinction, as is the structure of interrelationships which should connect them. The heavy private support for this study is evidence that not only does the Center lack outstanding attractiveness, but also that the people whose business is based there are well aware of that failing.

THE LESSON OF COMPARISONS

The three comparative centers chosen are all generally judged to be visually successful; all, with the possible exception of Greenfield, more successful than Lexington. Examination of them, however, reveals no simple rules for Lexington to follow.

An excessively wide street is feared in Lexington, yet Nantucket's widely hailed Main Street is nearly as wide, and Greenfield's is fully as wide as Massachusetts Avenue will ever be without suffering thereby, because the relationships of width to scale of enclosing elements, or to pace of movement, or to surface textures, are good ones in the successful examples.

Lack of clear district termination appears to be a problem in Lexington, but this is a "fault" which Nantucket turns to an asset, with gradual transition of use easily accommodated within a common esthetic of scale and materials. Clearly there can be more than one successful means of district transition; perhaps Lexington should use several.

A narrow range of materials and colors in use is successful in Nantucket, just as a wide range succeeds in Concord. Building heights vary little in Nantucket, widely in Greenfield, in each case without visual harm. Signs perpendicular to the face of buildings are found in all three comparative centers, but are prohibited on esthetic grounds in Lexington. Such signs positively add to the visual success of Nantucket, don't hurt in Concord, and probably are no worse than the flat signs in Greenfield.

On the other hand, each successful town center example provides a finite sense of enclosure to the main shopping street. Each employs the contrast of natural vegetation against building hardness. Each has an easily understood theme; Nantucket's narrow building vernacular, intimate scale, strong Main Street form; Greenfield's broad curving Main Street with arching elms; Concord's small-scale building contrast, and historical continuity.

The major lesson gleaned from looking at other centers is that hard and fast rules are difficult to make with any validity, except at the broadest level of stated interrelationships. The next report in this series, an extraction of visual guidelines for design in the Center, will be guided by this cautioning.

V I S U A L G U I D E L I N E S

The study of "Design Objectives" earlier noted aspects of building design and location which are appropriately incorporated in a plan. This report contains specific guideline recommendations on those aspects of design in Lexington Center.

Relevant design considerations can be divided into two types: those which apply equally to all structures in the Center under all circumstances, and those which vary in application from place to place, and are most easily described through a map. A visual design plan for the Center should deal with both types of consideration, and would be a guide to modifications in zoning, architectural controls, and the location and design of public improvements. (See page 22.)

ASSERTIVENESS

The first distinction made on the visual design plan is between assertive and non-assertive structures, a "black" and "white" generalization of a characteristic in reality having many fine shades of variation. As discussed in the "Design Objectives" report, "assertiveness" is increased by contrast, whether in building shape, scale, color, materials, or proportion, and is also affected by location. Lexington Center today has few self-assertive structures, providing a largely neutral background for change.

Structures which are prominent visually should also be outstanding in terms of the activity which they house, or should be so located that they serve an important visual function as a useful landmark, or district termination, or axis closure. The Depot building, one of Lexington's few highly assertive structures, once obeyed those rules well by both closing an axis and housing a function of unique public significance, no longer really the case.

The Central Block occupies a site of critical visual importance where, irrespective of function, a highly self-assertive structure would serve as a useful landmark and as

a distinct termination. A similar site and visual function could be created at Wallis Court. Based on our analysis, these are the only two new locations in the Center appropriately occupied by self-assertive structures. A number of existing assertive structures are now appropriately sited where they are of positive visual benefit. These are indicated for preservation of their present visual function, whether the present structure is preserved or not. Other locations presently occupied by self-assertive structures are not so-designated on this plan, indicating a long-range preference for a less-assertive building in the event of any changes.

In all locations designated for non-assertive structures, the designer's directive is to achieve close relationship with neighboring and nearby structures, but not necessarily duplication of their materials and scale and proportions and bulk and all other features. Variety without disruptiveness can be achieved through closely matching some design aspects, for example, scale, proportions and roofline, while varying others, say materials and color. Part of the visual success of Concord is due to just such building harmony without uniformity.

DETACHED V. CONTINUOUS STRUCTURES

A detached structure has yards separating it from all neighboring buildings, whereas continuous structures have common walls with each other. Again this is an over-simplification, since a long detached structure visually approximates a continuous one (is the Fresh Pond Shopping Center continuous or detached), but the distinction is a useful one anyhow.

Random intermixture of these two structural types is rarely visually successful. Until recent years, Massachusetts Avenue was disrupted by interruption of those structures designed for structural continuity by a few old detached structures. Only now, Waltham Street's west frontage is being joined, greatly improving visual cohesion.

On the other hand, the difference in spatial effect between these structural types can be a powerful tool in heightening contrast between streets or districts, and in expressing functional distinctions, as between the pedestrian-oriented and auto-oriented portions of the Center. Planning for this building characteristic is thus useful in two ways. By improving predictability of the extent of each structural group, disruptive intermixtures of types can be minimized. By positive use of the spatial contrast possible, a strong means of expression can be gained.

BUILDING DIMENSION

The notion of "assertiveness" provides a guideline for sudden changes in building size from the generally established size of buildings in any area, but gives no suggestion of the appropriate direction of incremental change from existing conditions. On Bedford Street, for example, new structures between Worthen Road and the Green could be un-assertive in terms of size whether quite bulky, as are many existing nearby structures, or quite small, as are the rest. The visual success of Bedford Street's approach to the Center hinges on the direction change actually takes. The appearance of the Green depends upon proximate small-scale structures. The Bedford Street sequence should therefore appropriately read as a sharply defined tripartite division from Worthen Road: large scale changing sharply to fine scale (including the Green) back to large scale again at Clarke Street and the commercial Center.

In general, large-scale structures should be oriented to large-scale arteries, making Massachusetts Avenue, Waltham Street, and Worthen Road appropriate frontages for large structures. Single family residence precincts should, in general, not include large-scale structures except at exceptional focal points or other sites of unusual significance. Had these guidelines been followed in the past, a number of present visual aberrations would have been avoided.

OTHER PLAN ELEMENTS

The Visual Design Plan indicates those corners where strong continuity around the corner is important, achieved through continuing display windows, common materials and architectural treatment, and other devices. At other corner locations, continuous pedestrian movement isn't anticipated or being encouraged, so the importance of a "strongly-turned" corner is reduced.

The plan indicates those structures suggested to be preserved largely as they are in those cases where outstanding public or institutional buildings serve their visual function exceptionally well. Historic structures are marked for preservation, the motivation being retention or restoration of at least fragments of the Town's historic past.

Open space which serves a critical visual function has been designated, whether public or private. Those spaces either have historic relevance, or are useful as aids to orientation, district definition or have other visual function above that of open space generally. A few present open spaces

(as at Fletcher Avenue) are not designated as such, indicating that their function could as well be served elsewhere if a use of the site for other than open space were important.

NON-PLAN ELEMENTS

Typically, architectural control schemes have relied on rules uniform throughout the area in question, or on consideration of non-plan elements. "All buildings must be of this or that material", and "All structures shall have this or that style", have been typical requirements. We have little of this nature to suggest for Lexington.

All buildings in the Center except churches ought to be low, not over three stories. There could be but few taller ones because of lack of demand, so those few would take on visual prominence beyond functional justification. Slick materials such as porcelain enamel, structural glass, and aluminum sheet ought probably to be avoided in favor of the rougher textures of masonry and traditional wood, but there may well be exceptions to this, which certainly shouldn't be a hard rule. Except for those, the important guidelines are all plan-related, as discussed earlier.

ELEMENTS NOT INCLUDED

Specific selection of a palette of appropriate materials has been avoided because it appears unnecessary. Virtually every new structure and most major alterations in the Center in the past two decades have been of red brick or clapboard. So long as the assertiveness rules are observed, this trend is likely to continue, with any variations being either at points where a strong "break" is desirable, or being on structures which conform to neighbors in other respects, such as scale, proportion, etc., and therefore don't disrupt the basic continuity.

Black and white signs are a similarly near-unanimous choice for new construction, so a sign color guide would be largely irrelevant. Actually, such muted tones are neither historically correct nor visually important. Strong hues need not be inappropriate, so long as lighting is not over-bright, and the scale of composition is in keeping with the district. A well-designed multi-hued sign could be a visual asset, while an over-bright or over-large black and white sign could be offensive.

"Scale" means more than just size of building, but also relates to size of elements, as discussed in an earlier report. Again, if the "assertiveness" guidelines are followed, scale is bound to be appropriate, either close to that of neighbors, or possibly departing from them in the few sites designated for assertive structures.

One of the earliest devices for architectural control was establishment of a uniform cornice line. More recent efforts have added notions about window head or sill heights, sign heights, or other pre-selected lines. To define these as "musts" is to straitjacket the design of buildings whose functional needs vary widely. The designer of every new facade in the Center should take account of these lines in the vicinity of his structure, and reflect them in some way appropriate to the visual role of the structure being designed, whether assertive or not. In some cases, continuity will be appropriate, in others, it will not. Without advance functional information, it is impossible to forecast and set explicit guides.

IMPLEMENTATION

This visual design plan should go through a number of steps in becoming a useful guide. Hopefully, it is useful to at least a limited degree already; the notions contained herein have indirectly influenced one or perhaps more of the new structures now being planned for the Center.

To be further useful, this Plan should be reviewed in detail, extended, and revised by the Design Advisory Group, whose suggestions can surely improve it, and whose endorsement will give it further weight. The Planning Board might then officially adopt it as a part of the Town's Master Plan. This has no legal bearing on private construction, but some federally-assisted public improvements can only be made in conformance with a Master Plan.

The Plan might then be a guide for future zoning changes, which have direct bearing on some of the qualities involved. It would be a guide to the location of public structures, important elements in the visual environment. The Board of Appeals, Historic Districts Commission, and any other public review agencies might then use this plan as one means of explaining requirements in advance of application, and as a partial basis for determinations. A visual design plan is a new tool, not found elsewhere. It could be a powerful one. 

It is clear that this Plan is only a fragment of a plan. Boundaries of the area studied kept expanding, as edge conditions repeatedly required study outside the assigned area.

Just as an activities plan for the Center should be a component of a town-wide activities plan, a visual design scheme for the Center should be only a component of a town-wide visual design plan. Preparation of such a plan should be high on the Planning Board's list of studies to be carried out.

TOWN-WIDE BEAUTIFICATION PROGRAM

The current planning effort in Lexington Center is a "crash program", whose timing in relation to other planning efforts has been dictated by pragmatic concern over opportunities to guide the large-scale changes now taking place in the Center. Just as it would have been preferable, had time permitted, to do circulation studies for the Center in the context of a previously prepared town-wide circulation study, so too would it have been preferable to prepare the recommendations for Center beautification in the context of a previously prepared town-wide beautification study. The relationship of beautification efforts in the Center to efforts throughout the town is just as close as the relationship of Massachusetts Avenue traffic to Worthen Road traffic. Because of this, some consideration has been given here to a beautification program for the town as a whole.

WHAT IS BEAUTIFICATION?

Webster's relates beautification to embellishment, and among many in the environmental design professions, the word "beautification" has acquired a pejorative connotation because of that usage. Visual objectives are rarely achieved by simple embellishment. Many well-intentioned beautification schemes involving new paint, signs, and landscaping have utterly failed to make any worthwhile improvement because these embellishments were only superficial, making no change in the basic visual and perceptual relationships which are the primary elements by which visual objectives may be achieved.

In the design for the Center, five specific visual objectives are being sought:

- 1) A distinctive character for Lexington Center, to distinguish it from the mass of similarly sized and located centers.
- 2) A symbolic congruence among the Center's appearance, its functions, and the community it serves.
- 3) Clear visual relation between the Green and the Center.
- 4) An easily understood pattern.
- 5) A memorable Center.

"Beautification" in the Center is achieved by achieving these goals. This involves far more than embellishment. It involves relationships among structures and activity, it involves the design of roadways, and it involves the use of landscaping less as embellishment than as a structural element in achieving the above objectives.

Beautification efforts for Lexington as a whole should similarly be based on a set of relatively concrete objectives, and not be a simple program to willy-nilly plant trees and put wires underground. Town-wide objectives should be established only following an analysis such as that carried out for the Center, but as a point of departure, the more general objectives used for the Center would serve well. Distinctive character might not be sought exclusively for the town as a whole, but rather also for its several parts, helping to create a clear perceptual hierarchy from identification with a house and a block, to identification of position within a district, to a position within Lexington, to a position within Greater Boston. A valid objective for the region is surely the development of an environment rich in visual choices and contrasts at a scale broader than that of individual structures. Lexington can help the region achieve this by development of distinctive internal character.

Congruence is an important visual objective at all scales. How things look should bear relation to what they are. Visual prominence should be associated with functional or symbolic significance. Visual distinctions between areas should coincide with social or functional distinctions. The Center should look like the center, outskirts should look like outskirts. Municipal boundaries, if they are really significant, should be visible through more significant means than highway signs.

A pattern which is easily understood is even more important at the community scale than at the scale of the Center, since the problem of confusion inhibiting full use and enjoyment of the environment is greater at the larger scale. Few residents can confidently find their way around all parts of the town; efforts should be made to make it easier for them to do so, again with devices more meaningful than signs.

Later studies are likely to add further objectives, but the above should form an adequate basis for initial design of a beautification program.

The scope of a beautification program as defined here is far broader than just sweep-up and tree planting programs. Geographically it must include the entire town. Activities would include studies, adoption of regulations, and execution of development programs, as well as exhortive efforts to guide developmental choices in a way which serves the goals selected.

THE PROPOSED PROGRAM

Present efforts in the Center have focussed attention on the public role in community appearance, have resulted in organization of a Design Advisory Group of skilled professionals, and are providing an example of the interrelationship of functional and visual components of design, and of how studies, regulations, public development, and exhortation can combine to help achieve visual objectives. This Center effort needs only another year before its lessons can be fully developed; therefore a major town-wide effort is appropriately considered only a year away. That in large part conditioned the following proposed beautification outline.

BEAUTIFICATION PROGRAM

<u>Year</u>	<u>Studies</u>	<u>Possible Regulations</u>	<u>Public Improvements</u>
1966	Continue in Center	Revised Center zoning	Center Phase I
1967	Townwide visual analysis and plan		Center Phase II
1968	Neighborhood Centers	New architectural controls	Residential area effort
1969	Underground wiring	New sign, zoning regulations	Neighborhood centers
1970	Mass. Ave.- Bedford St.	Underground wiring	Center Phase III

In 1967, the design approach used in the Center should be applied to the town as a whole. By then, the Long-Range Financial Study will be far along but not complete, a good stage for meaningful interaction with a visually-based approach to many of the same questions. The lessons of the Center program should by then be clear. The town-wide visual analysis and plan would include redefinition and clarification of visual objectives, analysis of present visual conditions, identification of problems where existing conditions and objectives are at odds, and design of means for achieving improvements. Included might be specific analysis of the perceptual implications of the proposals being made in the Long-Range Financial Study.

Later studies would be made of the specific problem areas identified in the overall plan. The listed studies are just a suggestion of those which might emerge from the 1967 town-wide analysis.

Revisions to the Zoning Bylaw have major bearing on beautification, as the Center studies have shown. Revisions in the Center are due this year, and for the rest of the town, if indicated by it, following the town-wide visual plan. Architectural controls are a relatively old story in Lexington now, dating back nearly a decade within Historic Districts. Given a new basis and rationale by a visual plan, architectural controls might well be extended, as discussed in other phases of the Center Plan. The town-wide effort might well suggest controls over areas or building types other than the coverage suggested only by analysis of the Center situation.

Sign regulations in Lexington also date back many years, although the current set are only 8 years old. As mentioned elsewhere, these are in need of revision, but that revision should reflect needs not only in the Center, but in the entire community, so should follow further studies.

Underground wiring is a probable means of assisting community beautification. At present, the utilities are less than enthusiastic about it in this region, but attitudes and techniques are rapidly improving. Five years from now it may well be feasible to plan for both requirement of underground wires in new construction and relocation to underground of some existing overhead wires.

Public investment in landscaping, street furnishings, and wire relocation is tentatively programmed for this five-year period to allow work in the Center to be executed in three steps, and to allow at least first efforts in a demonstration residential area and in some neighborhood commercial centers.

AVAILABLE RESOURCES

Municipal expenditures in Lexington are approaching the \$15 million per year mark; beautification in the Center is estimated to cost the town less than \$15,000 per year for both capital and operating costs, or less than one-tenth of one percent of town expenditures. The fiscal situation in Lexington is indeed serious, but even discounting fiscal benefits accruing from this program, beautification is clearly within the Town's financial capabilities.

Median incomes in Lexington exceed those in all but a handful of Massachusetts communities, so the possibilities of private financial contribution to beautification efforts shouldn't be overlooked. The program for the Center explicitly suggests private subscription of perhaps \$25,000; smaller private contributions might aid efforts in other areas.

Even more important than fiscal resources, Lexington has the human resources to organize, design, promote and execute a beautification program. Community appearance is important to Lexington, as evidenced by the generally high level of home maintenance, the Town's long-standing controls over signs, soil removal, junk yards, and architecture within historic districts, and by strongly supported municipal programs of tree planting and improvements to public areas, which annually cost in the vicinity of \$50,000. 

Resident in the community are many skilled design professionals who have demonstrated in this program their willingness to participate in community improvement. This nearly unique concentration of design talent is a major resource to be drawn on.

Finally, the present environment in Lexington is a resource well-suited to a beautification effort. Lexington is not ugly, and it has few eyesores. It has a perceptible form, distinguishable from neighboring development. There is, however, no strong "inherited" form which seriously limits future possibilities, and few will deny that the community could be more attractive than it is.

Responsibility for initiating the broad town-wide program logically lies with the Planning Board, since the next steps required are planning ones, and must be coordinated with other current planning efforts. The Planning Board should enlist the aid of the Design Advisory Group to help guide design and execution efforts, just as they are doing for the Center. Also enlisted in an advisory role should be such groups as the Historic Districts Commission, the Lexington Garden Club, the Chamber of Commerce, and other organizations likely to be able to contribute leadership and ideas. 

Concrete execution steps will largely be carried out by departments under jurisdiction of the Selectmen; their participation should be sought right from the initial stages.

The resources of existing environment, people, and finance are all rich enough to permit Lexington to conduct an exemplary beautification program, in which the current effort for Lexington Center is but one element.

DESIGN REVIEW AND CONTROL

In a landmark decision in 1954, the Supreme Court held that:

"The concept of the public welfare is broad and inclusive... The values it represents are spiritual as well as physical, aesthetic as well as monetary. It is within the power of the legislature to determine that the community should be beautiful as well as healthy, spacious as well as clean, well-balanced as well as carefully patrolled."¹

In the years since then, the legitimate concern of government for beauty has expanded dramatically, until today it is one of the major elements in national domestic policy. Lexington has not lagged in its involvement. Aesthetically-based bylaws covering soil removal, signs, and Historic Districts enacted in Lexington were among the first of their kind in Massachusetts. Substantial public expenditures are annually made for street trees and other beautification efforts. Current proposals before the town meeting include a beautification effort in the Center, and extension of the areas within Historic Districts Commission control.

Few in Lexington today will argue with the appropriateness of public efforts to achieve beauty as long as they involve generally accepted concepts of beauty - more trees, fewer billboards. Deliberate public guidance of the design of individual buildings has no such general acceptance, despite (or because of) nearly a decade of experience with one form of it, and despite generally broadening concepts of the appropriate role of government in the quest for beauty.

The aim of this report is to re-examine the question of design guidance, and to see if it might legitimately be used in Lexington Center as a positive means of gaining a more satisfactory environment, and not just a means of preventing seriously detrimental change.

¹Berman v. Parker, 348 U.S. 26 (1954).

THE RATIONALE FOR PUBLIC INVOLVEMENT

The reasons for public involvement in environmental change in the vicinity of historical monuments have been fully explained in Lexington many times. There are, in reality, very few structures in Lexington which are survivors of the Revolutionary War (only two of the structures around the Green, for example). These therefore deserve extraordinary efforts at preservation. It would be wonderful if the visitor to the Green could sample the character of the 1775 environment; it is too late for that, but at least distractions from the surviving remains can and should be minimized. This is the task assigned to the Historic Districts Commission when it was established by town meeting acceptance of 1956 state enabling legislation.

There are disagreements within the community as to method in these areas: is stylistic imitation "appropriate" for construction in the controlled districts or not? The adopted legislation requires "appropriateness" without defining it, so the Historic District Commission is free to make its own determinations in each case before it. While this philosophical disagreement exists, there is general concurrence on the desirability of controls to ensure appropriate settings for the town's historical heritage.

Outside of the immediate environs of historic structures, the rationale for design control is quite different. Lexington is in reality a dynamic twentieth-century community whose environment appropriately should reflect that reality. It also should reflect the reality that the community is uncommonly concerned with its appearance. Beauty is no less important in North Lexington than near the Green; if design guidance can help achieve beauty, then it is in the public good everywhere that it can reasonably be applied, and not just in isolated spots. The objectives, however, would be those of the town-wide beautification effort - distinctive character, symbolic congruence, and an easily understood pattern - not simply those of historic preservation.

Quite distinct, then, are two bases for design guidance: historic preservation, and achievement of general visual objectives. The two are not antagonistic, and can readily overlap, as they clearly do in the Center. The vital questions are those of what should be done in non-historic areas, and what should be done in the areas of overlap.

DESIRABLE GUIDANCE CHARACTERISTICS

Experience is rapidly accumulating in the public guidance of private design. Historically-motivated control districts are proliferating, and few urban renewal programs now fail to include some type of design review and control. The "new towns" being built normally include a design control mechanism. Many of the lessons of these efforts can be applied to Lexington in fashioning a guidance program for extension beyond present limits.

First, the basis for control decisions should be made explicit. Even in the relatively simple case of historic districts, accusations of arbitrary action arise. Outside the area of direct historic relevance, the issue becomes sharper. The aims of the control effort should be made as explicit as feasible, so that the control is done through application of stated criteria, reducing the likelihood that a different set of reviewers would reach different conclusions. If no building lacking a pitched roof will be acceptable, the rules should state this in advance. If flat roofs are acceptable here but not there, the rules should be supplemented with a map.

Adoption of explicit rules would serve three functions. First, it would allow clear public expression on what the rules should be. Second, it would minimize issues concerning arbitrary action. Third, it would enable designers to fruitfully direct their efforts right from the start, and not have to learn what is wanted through rejection of their design efforts.

These explicit rules and their application should retain flexibility, which almost seems self-contradictory, but isn't. Rather, it means that not all aspects of design should be included in the rules, and therefore not all aspects of design should be controlled. For example, EDA's visual analysis of the Center clearly points to the desirability of a tall structure to replace the present Central Block, but a design control which required such a structure would be pointless, since the economics of the location dictate that any new building be a low one. Analysis suggests that most (but not all) structures in the Center should quietly harmonize with their immediate neighbors. It is enough to state in the rules where such quiet harmony is sought. To spell out the means of achieving it through material, color, height, or other limitations would straight-jacket design, possibly encounter absolute programmatic impossibilities, and in any event is unnecessary.

Flexibility also involves the issue of appeal. Zoning decisions can be appealed to a local Board of Appeals quite simply, at minimum cost, and normally without need for legal



help. Appeal from Historic District Commission decisions is to the Superior Court, a complex and costly undertaking. It could be said, therefore, that zoning, despite its precise rules, is more flexible, at least on appeal, than is Historic District Zoning, despite its lack of explicit guidelines.

The design guidance rules are to be applied to professionally designed structures. Their application should involve the highest level of professional design competence available. While there is a role for the layman in design review, it is important that the designer respect the reviewer, a principle widely employed. The Boston Redevelopment Authority has drawn from the entire metropolitan community to staff its design review panel with professionals of generally recognized excellence, while Washington, D.C. draws design reviewers from across the entire nation.

Finally, there is a self-evident need for administrative reasonability in design review, which becomes more critical as the area encompassed grows larger. About 200 homes are built every year in Lexington: elaborate confrontation of designer and reviewer for all of them doesn't seem reasonably feasible. The geographic area of design review must be restricted, or the rules must be such as to permit the mass of new structures to pass without great effort by either the builder and designer or the review group.

CONTROL METHODS

Deed Restrictions

There is a far broader range of design guidance possibilities than is commonly realized. For example, the method of using deed covenants is widely used in urban renewal, and could be widely used in Lexington. For example, the new Hunt Block, the new Central Block, and the new structure on Waltham Street adjoining Anthony's all involve private acquisition of public land. In each such case, deed restrictions can be inserted, whereby the purchaser covenants to observe whatever design conditions are specified, or to follow specified review procedure.

Much of the expected growth of the Center will similarly have at least some involvement with public land, opening the possibility of this means of guidance, certainly an equitable technique, since it involves restrictions willingly accepted by the purchaser at the time of purchase and not subsequently imposed.

Public Example

Each time the municipality constructs a building, it has an opportunity to guide by example. A library addition and a new police station are likely public building projects in or near the Center in the next decade, with public parking structures also advocated. These buildings could contribute significantly to the design objectives established for the Center by demonstrating how a building can express its twentieth century functional and technological basis, while remaining appropriate to an historic setting. Too seldom has Lexington demonstrated design excellence in its public building efforts.

Persuasion

At present, a certain amount of design guidance is being exerted in the Center through persuasive efforts by the Design Advisory Group, an informal group of local designers. Many meetings have been held with building investors in an effort to make clear what the overall visual objectives being sought for the Center are, and to lend whatever assistance possible in the selection of designers, and in the fitting of functional requirements of individual structures to the visual objectives for the Center.

Persuasion sounds weak but shouldn't be under-rated. For at least one new structure in the Center, these persuasive efforts of this highly respected group of designers will probably have more impact on the final design than will the legally binding strictures of the Historic Districts Commission. The energy expended per case is enormous, and clearly must be limited to critical cases, however.

Police Power Controls

Lexington uses three types of police power control to guide design: the zoning bylaw (whose esthetic bases are all indirect), sign regulations, and the Historic Districts Commission. No permit to build can be issued until the requirements of all three are met (in districts where the Historic Districts Commission has jurisdiction). The zoning and sign bylaws have explicit rules stating criteria for approval or rejection, while the laws establishing the Historic Districts Commission (Ch. 447, Acts of 1956, amended by Ch. 105, Acts of 1958) gives only vague guidelines.

This police-power approach is far more generally applicable than covenants, guidance by example, or persuasion. It applies whether public land is involved or not, whether structures are public or private, whether owners are sympathetic or not. It

is because of this sweeping applicability that use of police-power controls as a means of esthetic guidance has been resisted, and any extension of existing controls must be carefully weighed.

Mandatory Review

There is an intermediate step between the type of control exerted through the Historic Districts Commission and the informal persuasion used by the Design Advisory Group. With this procedure all design proposals would be required by law to be submitted to a review body, whereupon the review body would employ persuasive but not binding arguments to guide design. Given a highly skilled review board and an interested public opinion to appeal to, this intermediate type of guidance can be effective, as demonstrated in Annapolis and a number of other communities where this type of control has existed.

GUIDANCE FOR LEXINGTON CENTER

Lexington Center needs all the design help it can get; more than just one of the above approaches to guidance could appropriately be used, and more than one public body is likely to be involved. At present, the Historic Districts Commission, the Selectmen, the Planning Board, the Center Revitalization Committee, the Design Advisory Group, and a variety of consultants are involved in the Center. There may be fewer agencies involved later, but there will always be more than one. Because of the multiple types of guidance appropriately used, the multiplicity of agencies involved, and the desirability of pre-stated explicit criteria for design guidance, agreement should be reached on a general guide for design. The Visual Design Plan has been drafted to assist in reaching that agreement. It has been discussed in an earlier report ("Visual Guidelines").

The visual design plan would not have the legally binding power of a zoning bylaw, but would serve many functions, in addition to its coordinative one. There remains considerable feeling that judgement of design quality is purely subjective, so design shouldn't be publicly guided. Discussion of a visual design plan is likely to reveal that there are quite a number of aspects to design which are not "one man's meat, another man's poison", as in the recent Lexington Minute-Man debate over the relative merits of the Prudential Center and the Harvard married students' housing.

The design of individual buildings is relevant to the public interest only as it affects the broad visual environment. Just as one cannot say categorically that one design of window

is good, another bad, without reference to the context of the entire building the window is a part of, from a public point of view one cannot say this or that building is good or bad except with reference to the context of the environment. By advance public statement of the desired context, the designer is enabled to design with reference not only to the present environment but also with reference to a probable future.

With no change in legal structure, but given agreement upon a Visual Design Plan, a great deal of effective guidance could be achieved, using the Historic Districts Commission controls in the areas where they now apply, covenants where possible, good public design in every case, and persuasive efforts by the Design Advisory Group in all cases not adequately handled by other methods. This would call for close cooperation between the Design Advisory Group and the Historic Districts Commission, and suggests that a few from each group should, whenever possible, sit in on the meetings of the other group when dealing with the area of common interest.

Even this, however, would give inadequate public control, in the view of many. A proposal has been advanced to extend the area of Historic Districts Commission control to include all of the Center, and substantial areas east of it. Such expansion at this time is of doubtful merit for a variety of reasons. First, the rationale of design control outside the immediate environs of historic structures is quite different from that of Historic Districts, as discussed earlier. To extend the District into areas of only remote historical relevance is to stretch the Historic Districts rationale beyond reasonability.

Second, the Historic Districts Commission and its procedures, as now constituted, fail to meet the criteria for an optimum guidance program, again as discussed earlier. The bases for control decisions have never been made explicit as an advance guide for design. Reasonable flexibility of application has not been exhibited. The review body itself has not yet earned the general respect of the design community. Finally, there is the administrative issue of how the Commission can find time to fairly deal with all exterior changes in all structures in a vastly enlarged district.

The emergency of the voluntary Design Advisory Group marks a major change in the potentials for design control. This group includes many extremely talented individuals, whose contributions could be great. Until the role of that group has been better clarified through experience, it seems unwise to make regulatory changes in the area of design controls.

Another future potential with great bearing on extension of regulatory controls is the town-wide visual analysis and plan proposed for execution in 1967. This study would analyse the visual structure of the entire community, and would allow a community-wide perspective based on careful plan analysis for the recommendation of district limits. Once out of sight of the few primary historical nodes, the simple historical perspective is an inadequate basis for establishment of controls. The town-wide study would supply an adequate basis.

It may be that the Historic Districts Commission should in time be enlarged to include members explicitly drawn from the design professions. That step, plus recognition of the different bases for determining "appropriateness" proximate to and further from historic monuments, plus adoption of explicit plan-based criteria for design guidance, would remove most objections to district extension. At that time, the question might be reopened.

The order in which things are done is of vital importance. Just as there is need for spatial coordination in the Center, there is a need for temporal coordination of organizational efforts. Our recommendation is as follows:

DESIGN GUIDANCE EVOLUTION

1966

No changes in Historic Districts Commission or district boundaries. Endorsement of a Visual Design Plan for the Center by the Planning Board, Design Advisory Group, Historic Districts Commission, Selectmen, Chamber of Commerce(?).

Develop Historic District Commission - Design Advisory Group coordination.

1967

Prepare town-wide Visual Design Plan (see "A Town-Wide Beautification Program").

Based on town-wide plan, prepare recommended guidance program.

1968

Endorsement of town-wide Visual Design Plan by various groups. Enactment of revised design guidance program, or initiation of new legislation, if required.

S I G N B Y L A W R E V I S I O N S

Signs are one of the primary elements in the Center's visual environment. These are carefully regulated through a complex bylaw, which limits sign height to three feet, requires attachment parallel to the building wall, and prohibits moving or flashing signs.

The results of application of these regulations over many years are not dramatic, but significant. Experience in the Center indicates the appropriateness of two changes in the bylaw, one to ease an existing restriction, one to impose a new one.

Signs perpendicular to the building face have been prohibited presumably because they would be obtrusive, which of course is what a sign is supposed to be, and leading to clutter, a little of which the over-tidy Center could use. To be sure, Central Square, Moody Street, or many other places have ugly perpendicular signs, but they are no uglier than the flat signs, just more obtrusive. On the other hand, the visual characters of Concord, Nantucket, or any of numerous other examples are enhanced by well-designed perpendicular signs.

The "ale-house" flat board sign, perpendicular to the building face, has historic relevance long preceding Lexington's great moment in history. Sturbridge Village, Williamsburg, and other historic centers widely employ them. For location of a store along the length of a long one-street center such as Lexington's, perpendicular signs have no peer, even considering their tendency to block one another out.

A first step toward permitting perpendicular signs is suggested in a proposed bylaw revision, which would permit such signs so long as they use neither lettering nor interior illumination, limiting them to graphic symbols - a steaming teakettle at the lunch spot, a boot at the shoe store, and so on. Boston and Cambridge have a few such signs, European centers typically have more. Such signs could add sparkle, interest, and perhaps contribute to the unique flavor being sought for Lexington.

In time, other types of perpendicular signs might be allowed, but only on approval using some review procedure, and a suitable review group doesn't exist today. In the meantime, this "unbalanced" regulation should stimulate development of the sought-for type of sign by giving it special privilege.

Added restriction is suggested concerning brightness. Several recently erected signs have been widely criticized, largely on grounds that they are too bright.

Brightness controls are rare in sign regulations because the subject is so complex. The real issue is the brightness range, or contrast. By assuming a minimum background brightness based on street lighting, maximum allowable brightness can be set, measured in foot-lamberts, an unfortunately obscure measure which doesn't readily translate into watts or other easily determinable guide. By giving approximate equivalents in watts, conformity of the vast majority of signs can be easily determined. For the occasional exception, a simple meter reading can determine compliance after the fact, but only an engineering appraisal (1/2 hour job) can pre-determine brightness.

This review of the sign bylaw raises a number of other questions about the regulation of signs outside of the Center: for example, are the regulations set for the Center equally appropriate in industrial areas? They apply with equal force. Once again this suggests the desirability of a town-wide visual analysis on which to base a revision of this town-wide code.

PROPOSED SIGN BYLAW AMENDMENTS

ARTICLE III REGULATIONS AND RESTRICTIONS

Section 2. Business Areas

A. Accessory Signs

1.a Location

Amend the third sentence to read as follows:

"If affixed to a wall, it shall be parallel with and not project more than twelve (12) inches from the face of such wall; except that if such sign employs neither lettering of any kind nor internal illumination, it may be perpendicular to the wall and project up to thirty-six (36) inches from the face of the wall."

1.f Illumination

Insert between the first and third paragraphs a new paragraph to read as follows:

"Brilliance of illuminated signs shall at no point, except in the stroke of illuminated letters, exceed 150 foot-lamberts, which is the approximate brightness of a light-colored sign illuminated by incandescent flood-lights totalling 35 watts per square foot of sign area, or of an interior-illuminated sign with fluorescent light totalling 5 watts per square foot of sign area."

ACTIVITY DEVELOPMENT

1 9 7 5 A C T I V I T Y L E V E L S

Grand plans cannot be fulfilled if there is insufficient market demand to turn paper buildings into real ones. For that reason, estimation of future levels of space demand in Lexington Center is a critical preliminary step to preparing spatial designs.

In October, 1964, E.D.A. completed an analysis of 1975 space demands for the Center. Since that time, new information from the 1963 U.S. Census of Business has provided more accurate sales information; the 1965 Decennial Census of Population has provided another population benchmark; employment data two years more current has become available, and more has been learned about plans for expansion or new construction in competitive centers.

In briefest summary, the 1964 estimate suggested that, if space were available, activity levels in the Center might increase about 50% between 1963 and 1975. A study of the more recent available information suggests no changes in that estimate, but only increases confidence in it. Whereas retail sales in Lexington Center are estimated to have been less than \$10 million in 1963, they are projected to be capable of rising to \$15 million by 1975, despite some \$7,000,000 annual purchases by Lexington residents at the future Burlington Shopping Center. Whereas in 1963 perhaps a little over 500 persons were employed in the Center in businesses other than retail trade, by 1975 this may have risen to over 800 persons.

There is, however, nothing certain about this growth. First, little sales growth is likely to occur unless additional "prime" frontage can be created, since there is no such frontage vacant today. Simple incremental growth cannot, in Lexington's situation, create such frontage. Second, employment growth in services other than retail trade also depends upon creation of first-class space; there is no presently evident great demand by such activities for ordinary space on side streets or on upper floors, but rather great selectivity is evidenced by them.

Neither is there any amount of growth in the Center "necessary" to provide services to a town projected to grow from 30,000 persons in 1963 to 40,000 in 1975. The service needs of the Lexington population will in any event be met only partially in the Center; what proportion "should" be met there is a complex judgement, and far from a determinate one.

Finally, the activity levels projected above need not be upper limits, any more than they are necessarily lower limits. A great deal depends upon the quality of environment which is conceived and developed for the Center; a strong enough plan may well create its own demand, and in that sense, become self-fulfilling.

At present there are about 180,000 square feet of floor space devoted to retailing in the Center. Judging that sales per square foot of floor space may rise 10% or so by 1975, an increase of some 70,000 square feet will be required to accommodate the projected \$15 million in retail sales in 1975. Judging that floor space per non-retail employee won't change much over this period, about 50,000 square feet of additional floor area will be required to accommodate employment growth from 550 employees to 800 employees over this period.

At present there are about sixty dwelling units in the Central District; whether that number will increase, decrease, or stay the same depends less upon market considerations than upon town policy, which now excludes apartments, and upon how commercial growth is to be accommodated, that is, to what extent it will supplant dwellings.

It is clear that at this time there is a market demand for centrally located dwellings in Lexington, since several developers have found quick tenant interest in new building proposals which were ultimately blocked by the zoning. Since there is perhaps a shortage of "upper floor" non-residential demand for as much space as might prove visually and economically desirable in the Center, this question will prove to be one of the truly critical ones in this study.

Two utilities occupy locations in the Central District. Neither can rationally be expected to go away, in fact, a certain amount of expansion may well take place. It is assumed that no change in land consumption will result from utility company changes over the next decade.

Governmental activities take place at each end of the Center; the Cary Library, the newly-enlarged Post Office, and the town offices complex. Activity at each of these will surely grow with growth in population, but it is judged

that this will not necessitate large amounts of additional land area. A much-discussed Public Facilities Building has just been built near Buckman Tavern. No other new public structures are anticipated in this area during this period.

Several clubs and similar organizations occupy space in the Center. Addition of new clubs, especially close to the "prime area", would be symptomatic of weakness of commercial demand, which should make central location too costly for non-commercial organizations. No expansion is anticipated. Other activities, such as manufacturing and warehousing, are inappropriate to the Center, and are not anticipated there.

To recapitulate, physical development of the Center should be designed with the following potential as a basis:

Retail Trade: Sales level up from \$10 million in 1963 to \$15 million in 1975; floor space up from 180,000 sq. ft. to 250,000 sq. ft., virtually all of which must have first-class location.

Other Businesses: Employment up from 550 in 1963 to 800 in 1975; floor space up from 110,000 s.f. in 1963 to 160,000 s.f. in 1975.

Residences: Change dependent upon policy and design choices; demand for easily 100 units in highly developed portion of Center, perhaps several hundred more in nearby areas now developed for single-family homes.

Utilities, Government, and Clubs: Some increases in activity, but no major increase in land area occupied.

TECHNICAL METHODOLOGY

The remainder of this report is an updating of the previously published outline of the methods used in arriving at the various estimates used herein, and is probably of technical interest only.

Sales Projections

The question being examined in these projections was whether, given the sales impact of the Burlington Shopping Center, sales in Lexington Center could possibly be assumed to rise sufficiently to justify major changes, and if so, to what extent.

There will be a fairly well predictable amount of purchases made in Burlington by residents of the Lexington Center market area. It was held in this analysis that after deducting those purchases from the total of purchases by market area residents, the share of the remaining total captured by Lexington Center could remain at the 1963 level through 1975, provided that optimum improvements to the Center were made. Steps in the analysis were:

- 1) Define the market area.
- 2) Estimate total purchases by its residents in 1963.
- 3) Estimate the share of that total sold in Lexington Center.
- 4) Estimate total purchases by residents of that same area in 1975.
- 5) Deduct estimated sales in Burlington to those residents.
- 6) Apply the 1963 percentage share of the market to the total of 1975 non-Burlington purchases.
- 7) Add increased sales to tourists.
- 8) Compare with the 1963 level.

Market Area Definition (1)

There are in reality no precise lines defining market areas but it is important in this study to define an area whose growth and change characteristics parallel those of the majority of families using the Center. A survey was made of cars parked in Lexington Center to determine their place of garaging, with the results shown in Table 1. While this suggests the presence of a fair number of out-of-town shoppers, it also shows that the vast majority are from Lexington, and that to equate the market area of Lexington Center and the Town of Lexington is a fair approximation, though for some goods this is too large an area, and for some too small.

Total Purchases by Market Area Residents (2)

Purchases were estimated by first estimating the number of market area residents, and then estimating per capita purchases. In the 1964 study, three basic methods were used to estimate how many people lived in Lexington in 1963, the base year being used. As shown in Table

TABLE 1

Parking Survey - Lexington Center

Friday Evening, July 24, 1964

<u>Place of Registration</u>			<u>Number of Cars</u>
Lexington			203
Contiguous Towns,			63
Arlington	23	Lincoln	3
Bedford	10	Winchester	2
Belmont	4	Waltham	7
Burlington	8	Woburn	6
Nearby Towns,			23
Acton	4	Sudbury	1
Billerica	5	Newton Centre	3
Carlisle	2	Newton Hglds.	1
Wayland	1	Watertown	3
Concord	3		
Distant Locations,			52
Andover	1	Marblehead	1
Boston	3	Marlboro	1
Brookline	1	N. Quincy	1
Canton	1	Northampton	1
Cambridge	2	Peabody	1
Danvers	2	Salem	1
Gloucester	1	Somerville	4
Hinsdale	1	Walpole	1
Kingston	1	Winthrop	1
Longmeadow	1	Watertown	3
Lowell	3	Worcester	1
Lawrence	1	Westwood	1
Lynn	1	Out of State	16

TOTAL... 341

Lexington % of Total = 60.0%

Source: EDA Field Survey

TABLE 2

Population Estimates, Town of Lexington

	1960	1963	1965	1970	1975	1980
U.S. Census	27,691					
Planning Board ¹ High				42,853		
Low				38,561	43,996	
Planning Board 1964 Est. ²				35,717	40,153	44,518
GBESC ³				38,000		
Mass. D.P.W. ⁴					34,000	
Boston College ⁵						45,800
Economic Devel. Assoc.						
From Bldg. Permits		30,070				
From Water Services		29,410				
Based on All Above		30,000			40,000	
Mass. Census of Popula- tion (prelim.) ⁶			31,388			

¹Lexington Planning Board, Phase 1, Summary Report, Lexington, Mass., 1963.

²Lexington Planning Board, "Population Projection" type-written mss., Sept., 1964.

³Greater Boston Economic Study Committee, The Population of Boston Projected to 1980, Boston, 1962.

⁴Haydn, Harding and Buchanan and Charles A. McGuire Assoc., Mass. Belt and Expressway System, Boston, 1962.

⁵Boston College Seminar Research Bureau, Travel in The Boston Region, Vol. II, Boston College, Boston, 1961.

⁶Town Clerk's Office.

2, these various methods agree on a mid-1963 population of about 30,000, up from 27,700 in 1960. Preliminary figures from the 1965 Census gave further confidence in that figure.

Data on sales in various locations are generally available, but data on purchases by residents of given areas can only be estimated. Column 1 of Table 3 is the amount of sales per resident of the Boston Standard Metropolitan Area in Massachusetts in 1963. Column 2 is estimated from Column 1, based on the known difference in income between Lexington and metropolitan averages, and based on the estimated effect that income difference has on purchases. Multiplying purchases per person by the 30,000 persons resident in the market area gives Column 3, total purchases by Lexington residents at all outlets, whether in Lexington or not. The resulting \$50 million purchases estimate is 10% lower than the total estimated independently by the Planning Board.¹ The difference is small and for present purposes, unimportant.

Lexington Center's Share (3)

Sales in Lexington as a whole are quite reliably estimated by the 1963 U.S. Census of Business. No sub-area figures are available, so a field survey was undertaken to estimate what percentage of outlets in each category are found in Lexington Center (Column 5). Applying that percentage to the total retail sales in Lexington produced an estimate of \$10 million sales in Lexington Center in 1963 (Column 6), and comparison of those sales with total purchases by Lexington residents gives the percentage shares of Column 7, which indicates that there is about one dollar in sales in Lexington Center for every 5 dollars spent at all outlets by Lexington residents, with the percentage varying from category to category; drug store sales in the Center equal 30% of residents' purchases, food sales equal 10% of residents' purchases.

¹Lexington Planning Board, untitled mss., page 7.

TABLE 3 RETAIL SALES PROJECTIONS AND ESTIMATES

Type of Store	1963						Both Years	1975						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Boston Metro. Sales per Cap.	Per Cap. Purch. by Lexington Residents	Total Purch. by Lexington Residents (1000)	Total Sales in Lexington (1000)	% Lex. Outlets in CBD. As- sumed % Sales	CBD Sales (1000)	% CBD Sales to Resident Purchases	Per Cap. Purch. by Lexington Residents	Total Purch. by Lexington Resi- dents (1000)	Resident Purchases @ Burlington	Purch. Other Than @ Burlington (1000)	CBD Sales @ 1963 Share of Purch. (1000)	Potential Tourist Sales	Potential CBD Sales (1000)
Food	356	360	10,800	5,694	15	900	8	400	16,000	400	15,600	1,300	0	1,300
Drug	50	50	1,500	1,322	40	500	33	60	2,400	100	2,300	800	200	1,000
Lumber, Hdwe	52	60	1,800	918	30	300	17	70	2,800	400	2,400	400	0	400
Sub Total	458	470	14,100	7,934		1,700		530	21,200	900	20,300	2,500	200	2,700
Gen'l Merch.	213	250	7,500	705	70	500	7	310	12,400	2,300	10,100	700	100	800
Apparel	100	120	3,600	1,415	90	1,300	36	130	5,200	1,400	3,800	1,400	200	1,700
Furn. Appl.	64	80	2,400	807	60	500	21	100	4,000	800	3,200	700	0	700
Automotive	221	250	7,500	8,746	20	1,800	24	290	11,600	0	11,600	2,800	0	2,800
Sub Total	598	700	21,000	11,673		4,100		830	33,200	4,500	28,700	5,600	300	6,000
Gas Service	76	80	2,400	1,916	0	0	0	90	3,600	100	3,500	0	0	0
Eating, Drink	130	130	3,900	1,571	30	500	13	150	6,000	200	5,800	800	300	1,100
Sub Total	206	210	6,300	3,487		500		240	9,600	300	9,300	800	300	1,100
Other	233	240	7,200	7,794	50	3,900	54	270	10,800	1,300	9,500	5,100	200	5,300
TOTAL	1,495	1,620	48,600	30,888		9,700		1,870	74,800	7,000	68,800	14,000	1,000	15,000

Column

1. Sales per person in Boston S.M.S.A. (U.S. Census)
2. Estimate by EDA based on Column 1.
3. Col. 2 x est. 1963 population (30,000).
4. From U.S. Census of Business, 1963.
5. Field survey.
6. Col. 5 x Col. 4.
7. (Col. 6/Col. 3) x 100.

Column

8. Estimate by EDA based on rate of increase 1958-63.
9. Col. 8 x est. 1975 population (40,000).
10. Total est. as % of Burlington total, then distributed.
11. Col. 9 - Col. 10.
12. Col. 7 x Col. 11.
13. Total est. @ \$1.00 per visitor, distributed.
14. Col. 12 + Col. 13.

Total Purchases in 1975 (4)

It is estimated that there will be 40,000 residents of Lexington in 1975, based on previous growth experience, projections made by others, and knowledge of shifting regional trends and land availability. This figure has been corroborated by a concurrent Planning Board study, which estimates a 1975 population of 40,100², and by the 1965 Census results.

Per capita purchases are likely to rise along with rising incomes, though not in a simple proportionate way: food expenditures will increase less than auto expenditures, for example. Total per capita purchases were estimated to rise to 1975 at the same rate as from 1958 to 1963, with the results of Columns 8 and 9, Table 3, expressed in non-inflated 1963 dollars.

Deduct Burlington Sales (5)

Lexington's population has about 1/4 of the total purchasing power of communities adjacent to the proposed Burlington shopping center, but considering the broader region which the Burlington center will serve, Lexington residents are likely to contribute not more than 10-15% of its support (see Table 4). The exact sales level anticipated at Burlington is unknown, but can be estimated at about \$40,000,000, based on released information concerning floor area and number of stores. To estimate that by 1975 Lexington residents will purchase \$7 million annually in Burlington is probably conservatively high. This estimate agrees fairly closely with that of the Lexington Planning Board, based on an altogether different approach.¹

The Burlington purchases were broken down by category of store based on the store types found at the North Shore Shopping Center in Peabody, and on the sparse information released concerning this center (Column 10).

Market Share in 1975 (6)

Column 12 of Table 3 gives the sales which would result if Lexington Center holds its 1963 share of all sales outside of Burlington. It indicates a healthy \$4 million growth over 1963.

¹Lexington Planning Board, "Population Projection", type-written mss., September, 1964.

²Lexington Planning Board, untitled mss., pg. 8.

Add Tourist Sales (7)

The U.S. Department of the Interior believes that as many as 1 million tourists per year will visit the Minute-Man National Park when it is completed. Given the present structure and appearance of Lexington Center, this would mean little in retail sales. Given a more attractive and interesting center, it could mean a great deal.

The Massachusetts Department of Commerce estimates that the average tourist spends \$8.50 per day while visiting Massachusetts¹. If the million tourists spent 1/8th of that in Lexington, it would mean \$1 million in annual sales, perhaps broken down as estimated in Column 13 of Table 4.

Compare with 1963 Level (8)

Column 14 of Table 3 is the final estimate of what 1975 sales could be if optimum conditions were provided. Total sales are more than 50% higher than in 1963, and at least somewhat higher than in 1963 in every category. There is, however, no assurance that this will happen, only assurance that it could.

OTHER COMMERCIAL ACTIVITY

About a third of the commercial space in Lexington Center is used for business activities other than retailing, such as banking, insurance, real estate offices, motel, barber shops, amusements, and professional offices, among others. These activities are expanding as the population expands, in some cases more rapidly. For example in 1958 there were 60 persons employed in Lexington in medical services covered by the Massachusetts Division of Employment Security (DES). In 1963 there were nearly 130. Clearly there is strong growth in Lexington in the activities which fill non-retail commercial space. Employment within Lexington covered by the DES rose from 2400 persons in 1950 to 3600 in 1962. Jobs in categories likely in the future to be strongly drawn to the Center rose from 230 to 290 over the same period; others which possibly might be attracted rose from 940 to 1160 (see Table 5).

¹Massachusetts Department of Commerce, 1962 Massachusetts Vacation-Travel Survey, Boston, 1963.

TABLE 4

Burlington Market Area

Primary Zone	<u>Population</u>	
Billerica	17,867	
Bedford	10,969	
Burlington	12,852	
Woburn	31,214	
Winchester	19,376	
Lexington	<u>27,700</u>	
	120,100	Lexington = 23%
Secondary Zone		
Lowell	92,100	
Chelmsford	15,100	
Tewksbury	15,900	
Carlisle	1,500	
Wilmington	12,500	
Reading	19,300	
Stoneham	17,800	
Medford	65,000	
Arlington	50,000	
Belmont	28,700	
Waltham	55,400	
Lincoln	5,600	
Concord	<u>12,500</u>	
	391,400	$\times 1/2 = 196,000$
		+ 120,000
		<u>320,000</u> Effective Population
		Lexington = 8.7%

TABLE 5

Employment in Lexington Industries*

Industry	Year				
	1958	1960	1962	1963	1964
Non-Center Oriented					
Construction	573	738	460	498	453
Manufacturing	214	235	689	628	538
Transportation	51	72	103	80	92
Wholesaling	55	62	115	92	101
Research & Development	1	9	700	554	620
Food Retailing	98	132	112	111	120
Auto Retailing Service	211	219	210	192	213
	1203	1467	2389	2155	2137
Possibly Center Oriented					
Retailing					
Hardware, Lumber	41	39	51	51	53
Furniture	9	8	14	13	22
Eating & Drinking	491	513	489	445	758
Misc. Retail	179	189	243	215	215
Hotels, Motels, etc.	21	50	54	36	37
Personal Services	66	84	94	97	133
Misc. Business Services	1	9	33	33	37
Misc. Repair Services	11	10	28	23	45
Commercial Amusements	25	32	38	40	50
Medical, Health Services	61	75	120	127	129
Misc. Services	30	46	75	80	108
	935	1055	1230	1160	1587
Strongly Center Oriented					
Retailing					
Gen'l Merch.	66	66	72	73	54
Apparel	41	47	53	65	70
Banking	74	92	97	94	93
Insurance & Real Estate	45	64	59	57	68
	226	269	281	289	285
Lexington Total*	2364	2791	3900	3604	4009
% Center Oriented	9.6	9.6	7.2	8.0	7.1
% Non-Center Oriented	50.9	52.6	61.3	59.7	53.3

*Covered by Division of Employment Security Regulations

Source: Massachusetts Division of Employment Security.
 Figures are total employees in the middle two weeks of November for each year.

TABLE 5 (Continued)

	<u>Employment Estimates</u>					
	<u>1947</u>	<u>1957</u>	<u>1959-60</u>	<u>1970</u>	<u>1975</u>	<u>1980</u>
Town of Lexington ¹		3,600	3,000		9,700	4,700-
Town of Lexington ²			3,000			5,700
Industrial only, 128 Region ³	29,000	46,000		39,000		118,000
Retail only, Town of Lexington ²			884			1,400

¹Hayden, Harding et al. Op. Cit. Total employment, covered and non-covered.

²Seminar Research Bureau, Boston College, Travel in The Boston Region, 1959-1980, Vol. II.

³Levin, Melvin R. and David A. Grossman, Industrial Land Needs Through 1980, GBESC, Boston, 1962.

It is estimated that about 550 persons were employed outside of retailing in Lexington Center in 1963, and that this might easily increase to 800 by 1975 if recent trends continue and are accommodated.

ACCOMMODATING THE MARKET

The projected expansion of purchasing power and employment potential in the Lexington market area only gives assurance that, if attractive enough accommodations were made for it, activity in the Center could increase by about 1/2 through 1975. It gives no assurance that such will be the case, or in fact, that there might not be decline in the Center.

To house all of the commercial growth made possible by market expansion would call for over 100,000 square feet of additional floor space, and the replacement or upgrading of much existing space. The investments which this calls for will be made only where profitable, basically in "prime locations" with good visibility, high pedestrian flows, and either nearby public parking or land price low enough for parking to be provided privately. The present physical configuration of Lexington Center provides few opportunities for such investment, except in the replacement of existing commercial buildings.



Z O N I N G R E V I S I O N S

There are no unoccupied parcels in the commercially-zoned portion of Lexington Center. While more intensive use of land is both possible and probable, some outward expansion of the Center is a virtually inevitable concomitant of growth. This report explores the recommended extent, direction, and type of such growth.

Analyses of activity levels in Lexington have indicated a reasonable expectation of demand for an additional 120,000 square feet of commercial floor space above the 1964 level in the Center by 1975, the bulk of the growth in one-story buildings (see "1975 Activity Levels"). This amount of growth was used as the basis for exploration of a number of design alternatives for the Center, the very most compact of which required commercial expansion onto some nine acres of land now residentially zoned, the most expansive of which commercially occupied some twelve acres of residentially zoned land.

Those design alternatives made clear that only with careful design and use of multi-level structures for both business and parking could the projected 1975 level of 410,000 square feet of commercial floor space be accommodated without undesirable intrusion into uniformly residential districts; and should the railroad continue to disrupt development north of Massachusetts Avenue, even greater efforts would be required to accommodate that much growth without serious commercial/residential conflict.

There is, however, nothing obligatory about providing for 410,000 square feet of space. Presently planned commercial structures will result in expansion from 290,000 square feet of commercial floor space in the Center to about 340,000 square feet. How much space there will be at any point in time in addition to the 340,000 square feet not only conditions public actions on zoning, parking, and traffic control, but also is conditioned by those actions. With no changes in zoning or public parking areas, very little net growth above the 340,000 square foot level can be or need be expected. The amount of development between the nearly certain minimum of 340,000 square feet and the projected possible level of 410,000

square feet by 1975 is a matter of public policy choices; there is at this writing the possibility that public inaction might even result in less than the 340,000 square foot level being attained.

The 1964 reconnaissance study prepared for the Lexington Chamber of Commerce and leading to this effort, explored alternative directions for commercial development at the community-wide scale, contrasting policies of no change, development on arterials, and development in the Center. By concentrating much of the commercial growth supported by Lexington's population and income growth in the Center, rather than encouraging it to occur in outlying areas or outside of Lexington, shoppers' "one-trip" convenience is well served, as is community appearance, and the minimization of residential-commercial activity conflicts. For these reasons, growth in the Center was advocated, and the present study recommended. For those same reasons, zoning to permit commercial growth beyond 340,000 square feet is justified, but not growth to the point that public costs or neighborhood interferences become excessive. For these reasons, about 380,000 square feet of commercial space is being used as a guideline for changes in zoning, parking, and circulation.

The guideline means a third more trips destined for the Center. This means an increase by one third in the volume of demand for parking. Exploration of a variety of physical configurations reveals that this means an increase by ten acres in the amount of land which should be commercially zoned. Rezoning, insuring provision of the parking, and making the circulation improvements required to handle the resultant traffic are the primary public means by which this growth can be attracted and directed.

DIRECTION OF COMMERCIAL EXPANSION (See page 7)

The general direction for commercial expansion in Lexington Center over the next decade is quite clear. Public or institutional development sharply limit possible east-west expansion along Massachusetts Avenue to a relatively small increment in the vicinity of Wallis Court. To the north, the topography of Meriam Hill provides a natural stop, as does the present uncertainty over the future use of the railroad right-of-way. The next decade is likely to bring decisive transportation changes, resulting in either the confirmation of the use of the right-of-way for transport use, or its release for development. In either case, more intensive development of land below Oakland Street will be possible, but the shape of such development very much depends upon the railroad future, so prudence suggests no heavy investment in that area, nearly all publicly owned, until the railroad question has been resolved.

Expansion to the south is physically possible, generally anticipated, and if carefully guided, a desirable means of strengthening the Center. Commercial growth in that direction need not invade areas now strictly used for single-family residences. Two large and many smaller professional office structures are already located in the residentially-zoned area south of the present commercial Center, along with a variety of other non-residential activities. Zoning change in this case can follow, rather than precede, such initial land-use change.

Waltham Street, Lexington Center's "second" commercial street, visually extends the Center beyond the commercially-zoned area because of the location on it of several masonry non-residential structures. Further commercialization of the area between those structures and the limits of the present commercial zone could improve a presently awkward visual and functional arrangement. This forms the rationale for establishment of district limits in that vicinity, along with the potential "buffer" provided by a publicly-owned easement crossing Massachusetts Avenue.

Muzzey Street is generally lined with residential structures now gradually being converted to commercial use, such that further commercialization would represent no sharp change. Raymond Street has nearly half its northern frontage occupied by professional offices; again, further commercial development will bring change of degree, not kind. Clarke Street, residentially zoned, hasn't a single residence fronting on it north of Forest Street; the limited changes possible there given more permissive zoning are unlikely to cause any type of disruption.

On the other hand, Forest Street, despite several non-residential fronting activities and a fair share of through traffic, has a handsomely consistent residential character deserving of continued zoning protection. Vinebrook Road is solidly residential and should remain so, as is the case with everything near the Center west of Clarke Street.

The municipal parking lot north of Massachusetts Avenue is really an adjunct of the commercial center, so reasonably should be commercially zoned, even though this will result in no change in the way the area is used. This would, however, remove the present unreasonable twenty-foot zoning "buffer" south of the railroad, required since properties there abut a residential zone.

The shape of development in the vicinity of Wallis Court off Massachusetts Avenue is a critical issue. The present development pattern in that vicinity, whether judged successful

or not, is unlikely to persist indefinitely, so the question of change must be met. The present commercial zone termination one lot east of Wallis Court arbitrarily interrupts a row of four similar properties, while one lot further east a major spatial, topographic, and use discontinuity exists, providing a better opportunity for zone change. Extending the commercial district to that point would provide a large enough area between Wallis Court and the end of the commercial district to make possible a major structure able to provide the visual termination the commercial district needs at that point.

DISTRICT TYPES

The Lexington Zoning Bylaw makes different requirements for yard space, allowed uses, and required private parking in each of the several commercial district types. All commercial zoning in the Center today is of the C-2 type, one of the most permissive in range of allowed uses, the least restrictive spatially, and one requiring no private off-street parking. The nature of some areas recommended for commercial zoning are such that greater spatial and use restrictions than those of the C-2 district would be reasonable, and off-street parking, by precedent and by function, should be a private rather than public function. It is therefore recommended that such areas be rezoned C-1, and that the provisions of the C-1 district be modified as they apply to the Center.

The most significant departure suggested from either the present C-1 or C-2 provisions for these areas is in off-street parking requirements. The very heart of the Center has a pedestrian's scale, which every effort is being made to preserve and enhance. Shoppers drive to the Center, park once, and can on foot range throughout the area, visiting many destinations without relocating their cars. Multiple trips from a single parking space make that parking space of general benefit, rather than a benefit assignable to the most proximate property. This is the ultimate rationale of public parking provision.

On the other hand, parking at the professional office building on Waltham Street serves that building alone, not just because the parking is private, but also because development there is not now and is unlikely ever to be compact enough to give it a pedestrian's scale. Development at Wallis Court, or south of Vinebrook Road and the rest of the loop system, will be the object of specially-oriented trips. When finished shopping at Wallis Court, customers can be expected to drive, not walk, to their next Center destination, making parking at Wallis Court appropriately a private function, not a public one.

Private off-street parking tends to be wasteful, as the chaos between Clarke Street and Muzzey Street attests. In the heart of the Center, this inevitable wastefulness of private parking lots would exact an intolerable cost in terms of lost compaction and convenience, where all space counts heavily since shoppers are moving on foot. In the more outlying areas, however, a little efficiency loss isn't serious. Land is worth less, and people are moving about in cars. In the long run, perhaps a design review process for private parking areas can minimize waste by coordinating lot design.

The Parking Needs study examined how much off-street parking is "enough", and the exploration of alternative design schemes further developed the spatial implications of the overall ratios. Lexington's present C-1 zoning requires 10 spaces for each 1,000 square feet of commercial floor space, which is what most highway-oriented commercial centers provide. Amounts presently provided by offices and others in the area proposed for rezoning range up to 8 spaces/1,000 s.f., reflecting dependence upon public transport and pedestrian traffic for some users, and on-street spaces for some others. A requirement of 5 spaces/1,000 s.f. as currently proposed by the Planning Board for C-N districts elsewhere would suffice, when added to on-street parking, to assure adequacy without turning the area into a vast parking lot, and without requiring of future development parking ratios in excess of those voluntarily provided in the past. A requirement of 6 spaces/1,000 square feet would relieve ultimate dependence on curb parking, and might therefore be preferable.

The areas proposed for rezoning are characterized today by detached structures surrounded by small yards, yet with structures visually enclosing the street. Where pedestrian proximity isn't important, this is an excellent arrangement; its retention is advocated. The C-1 district now requires 20 foot front yard and rear yard, both reasonable for the area to be rezoned (C-2 requires no front yard). In addition, a 10-foot sideyard should be required to preserve the present pattern and assure rear access, light, and air. Building heights in the C-1 district are limited to 2½ floors or 40 feet (C-2 permits three stories), entirely reasonable for the areas in question.

The C-1 district prohibits liquor stores, commercial amusements, billboards, and lumber and fuel sales, all permitted (in some cases on Special Permit) in the C-2 district. The C-1 areas proposed around the Center serve as "transition districts", and as such shouldn't contain such activities; the present regulations need no revision in this respect.

Apartments are prohibited in both the C-1 and C-2 districts. Wherever permitted, apartments should have privately provided off-street parking, and should either have private open space or direct access to public open space.

In the C-2 district, economics rules out provision of apartments meeting these criteria, so zoning for them is unnecessary. In the C-1 district as proposed, apartments might be economically feasible and, if they provided their own parking and open space, could prove an asset to the Center. They would help maintain some "life" when stores are closed, supply customers within walking distance, and a housing choice not now available in Lexington, and rarely available in suburban Boston.

To the extent that apartments are actually developed around the Center, they would divert space from commercial use, and reduce the compaction of the Center, but probably not to a serious extent. They would blur the transition between the commercial Center and abutting residential areas; an assist in achieving the visual form sought for the Center.

One provision not found in the current Lexington Zoning Bylaw would be desirable in both the Center's C-1 and C-2 districts. Parking should be prohibited within twenty feet of the street line. This has both safety and esthetic justification, and is voluntarily observed by all private interests in the Center today. Such zoning would simply insure continuation of the present pattern, and require the municipality to be as respectful of pedestrian safety and amenities as are private developers.

TIMING OF ZONING CHANGE

Zoning change at Wallis Court has urgency to insure that it precedes any major new investment in the area. Zoning change north of the railroad is minor, but that minor change will be of most benefit if quickly enacted.

Between Clarke and Muzzey Streets, zoning is tied to municipal action on parking. If land is to be acquired for municipal parking, such acquisition should precede zoning change. If such acquisition is rejected, a zoning change of the entire area to C-1 (with off-street parking requirements) should be immediately enacted, to prevent private building from usurping space needed for parking.

Below Raymond Street, zoning change has little urgency, since there is little present pressure for physical change there. All areas not mentioned above fall into an "intermediate urgency" category: no immediate necessity for change, but also no reason to delay.

TABLE Z-1

LEXINGTON CENTER ZONING COMPARISONS

Item	Present C-1 Req.	Planning Board Prop. C-N Req.*	EDA Prop. C-1 Req.**	Present C-2 Req.
Off-street parking	10 spaces per 1000 s.f.	5 spaces per 1000 s.f.	6 spaces per 1000 s.f.	None
Front yard	20 ft.	30 ft.	20 ft.	None
Rear yard	20 ft.	20 ft.	20 ft.	10 ft.
Side yard	None	20 ft.	10 ft.	None
Building height	2½ stories	2½ stories	2½ stories	3 stories

*Proposed for neighborhood shopping areas.

**Proposed for the expansion areas of the Center.

SUGGESTED ZONING AMENDMENTS

- 1.) Revise SECTION 5. PERMITTED BUILDINGS AND USES, Paragraph (c) C 1 Districts, by adding subparagraph 6d to read as follows:

"d. Apartments, subject to the conditions of Section 5(g) A 1 Districts, sub-paragraph 1."

- 2.) Revise SECTION 8. AREA, FRONTAGE AND YARD REQUIREMENTS, paragraph (b) C 1 Districts, to read as follows:

"1. In C 1 districts there shall be provided:

- a. For each permitted principal building and for each accessory building, other than those permitted in A.1, R 1 or R 2 districts:

(1) A front yard of not less than 20 feet in depth on each street on which the lot abuts, within which there shall be no parking areas.

(2) A side yard of 10 feet, or, if a boundary of the lot abuts on land in an R 1 or R 2 district, a side yard adjoining such boundary of not less than 20 feet in width, which may be used for parking area if otherwise lawful.

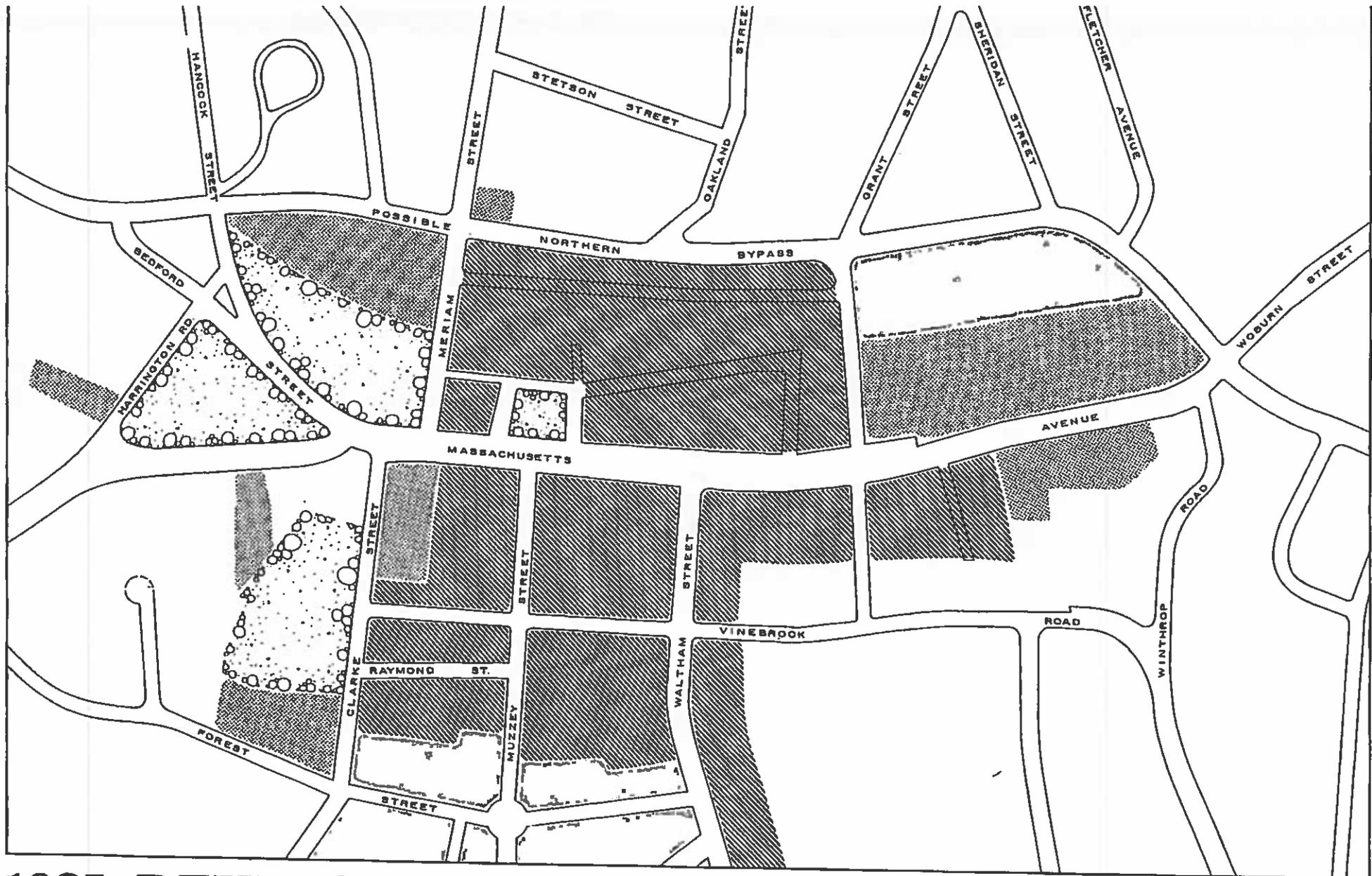
(3) A rear yard of not less than 20 feet in depth, which may be used for parking area if otherwise lawful.

- b. For each permitted principal and accessory building, other than principal buildings permitted in an R 1 or R 2 district, a parking area on the lot containing not less than six parking spaces, as hereinafter defined, for each 1000 square feet or fraction thereof of floor area in said buildings. As used herein the term "parking space" shall mean an area available for parking one motor vehicle and having a width of not less than 9 feet and an area of not less than 180 square feet, exclusive of passageways and driveways appurtenant thereto, and with free and unimpeded access to a street over unobstructed passageways or driveways. Loading areas shall not be considered to be part of the parking area. The term "floor area", as used herein, shall mean the aggregate horizontal area in square feet of floors within the walls enclosing the building, exclusive of cellar or basement areas used only for storage or services incidental to the operation or maintenance of the building.

c. For each principal building permitted in R 1, R 2, or A 1 districts, the same lot area and frontage, and for each such building and accessory building the same front, side and rear yards as would be required if the lot were situated in an R 1, R 2, or A 1 district.

3.) Revise SECTION 8. AREA, FRONTAGE AND YARD REQUIREMENTS, paragraph (c) C 2 Districts, by adding subparagraph 1(c) to read as follows:

"c. No parking areas shall be located within 20 feet of the street line."



1985 DEVELOPMENT LEXINGTON CENTER STUDIES

ECONOMIC DEVELOPMENT ASSOCIATES, INC., BOSTON, MASSACHUSETTS
 BEDNARSKI-FALCONER-STEIN, ARCHITECTS, GREENFIELD, MASSACHUSETTS

-  COMMERCIAL
-  INSTITUTIONAL
-  OPEN SPACE

-  SINGLE FAMILY RESIDENTIAL
-  MULTI-FAMILY RESIDENTIAL



C I R C U L A T I O N

T R A F F I C N E E D S

The circulation system in and around Lexington Center must service three traffic demands:

a) Through movements of vehicles from outside the Center destined for other points outside the Center. In the 1956 traffic study conducted by the League of Women Voters and the Lexington Planning Board, this was found to comprise 88% of all traffic in the Center. With Worthen Road diverting some through traffic, the proportion of through traffic in 1965 is likely to be a little lower, but probably still in excess of 80% on a workday.

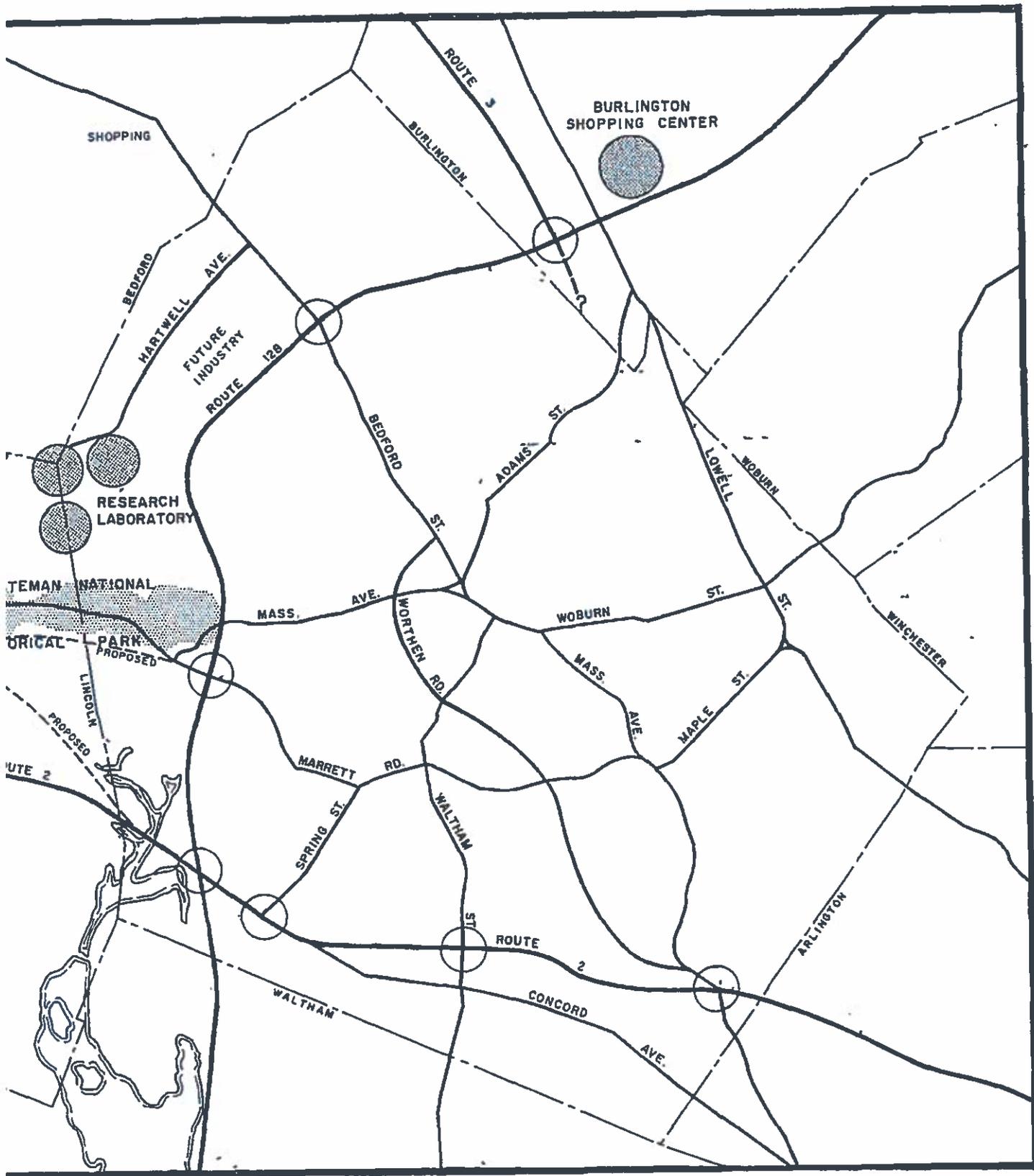
b) Movements of vehicles between a point outside the Center and a point within it. In 1956, these trips comprised nearly 12% of the total traffic movements.

c) Movements of vehicles from within the Center to another point within the Center. Such moves were rare in 1956, a little more frequent today, and likely to grow substantially as and if the Center grows and disperses its parking areas.

The circulation system does a reasonably good job of handling these demands most of the time today, but any event which reduces capacity or increases traffic peaks over their normal levels produces congestion which is a portent of what would be the future normal condition unless improvements are made.

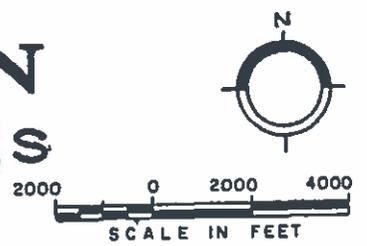
In the nine years since the last traffic study of Lexington Center was made, many conditions have changed. The population has grown nearly 50%, auto usage even more. Massive growth in employment north and west of Lexington Center has occurred, shifting the pattern of job to home trips. The Center itself has added commercial activity, but even more commercial growth has occurred to the north and west. Public transportation usage has declined.

The only relieving factors have been the construction of Worthen Road from Bedford Street to Waltham Street and the



REGIONAL PATTERN WASHINGTON CENTER STUDIES

ECONOMIC DEVELOPMENT ASSOCIATES, INC., BOSTON, MASSACHUSETTS
 NARSKI-FALCONER-STEIN, ARCHITECTS, GREENFIELD, MASSACHUSETTS



improvement of some alternative routes such as Concord Avenue, of minor benefit to the Center. The result has been massive increase in the traffic to be handled, as well as shifts in its relative distribution.

TABLE 1. PEAK EVENING TRAFFIC

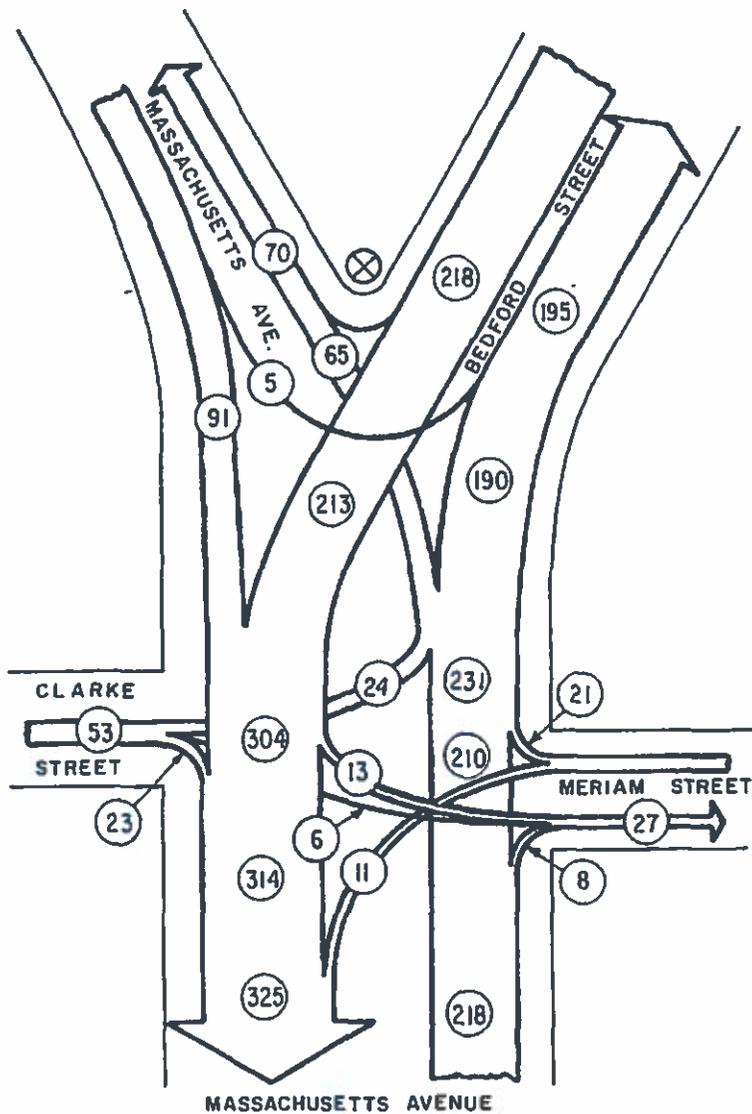
	Vehicles per Hour		% Inc. 1956-1965
	1956*	1965**	
Bedford St. @ Minuteman			
Eastbound	440	720	60
Westbound	590	650	10
Total	1030	1370	30
Massachusetts Ave. @ Waltham Street			
Eastbound	600	1000	70
Westbound	740	820	10
Total	1340	1820	40
Waltham Street			
Northbound	250	330	30
Southbound	180	330	80
Total	430	660	50
Overall	2800	3850	40

*Source: Estimated from 1956 Traffic Study.

**Source: EDA field survey and estimate.

The trend illustrated by these comparisons is corroborated by other data as well as by general experience. For example, data from the Massachusetts Department of Public Works traffic counts indicate a growth in daily average traffic on Waltham Street from 5700 vehicles in 1956 to 8000 vehicles per day in 1963; on Bedford Street from 11,500 vehicles in 1956 to 14,000 vehicles in 1963; on Massachusetts Avenue from 10,600 vehicles per day in 1956 to 17,000 in 1963, while Lexington D.P.W. figures indicate subsequent growth to over 19,000 vehicles per day through the Center.

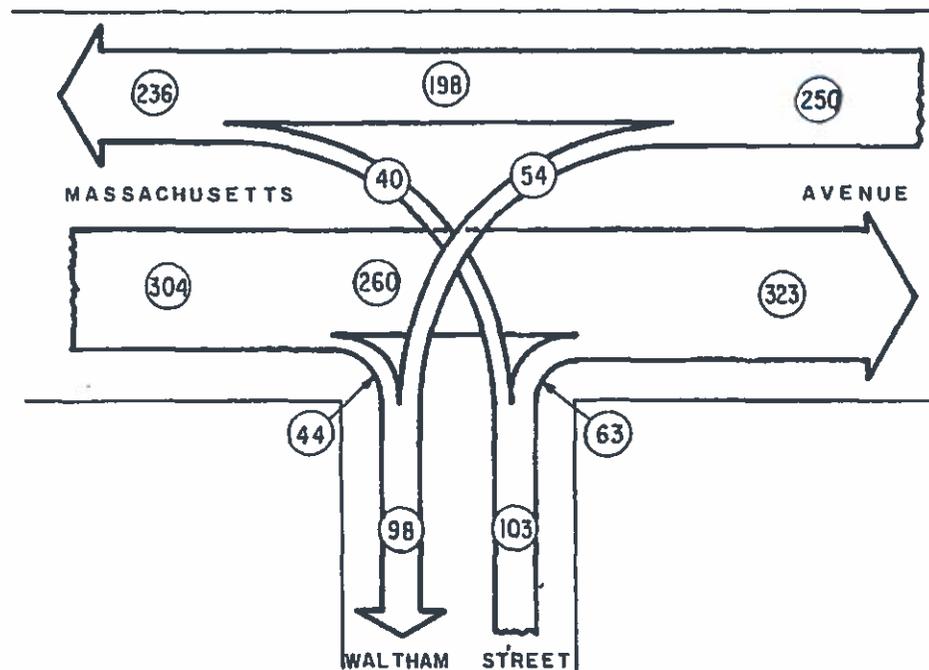
The developmental changes mentioned earlier are clearly reflected in the pattern of traffic change. For example, whereas in 1956 the evening peak-hour traffic eastbound



TUESDAY-NOV. 2, 1965
 4:15 TO 4:35 P.M.
 APPARENT TWO WAY
 VOLUME=1,629 V.P.H.
 COUNTS BY E.D.A. STAFF

TRAFFIC VOLUMES
 MASS. AVE. AT BEDFORD ST.

COUNTS BY E.D.A. STAFF



TRAFFIC VOLUMES
 MASS. AVE. AT WALTHAM ST.

TUESDAY-NOV. 2, 1965
 4:40 TO 5:00 P.M.
 APPARENT TWO WAY VOLUME= 1,620 V.P.H.

towards Boston exceeded that westbound towards Route 128, today the relative volumes are reversed. Waltham Street volume southbound has grown despite Worthen Road, reflecting the pattern of access to parking lots in the Center and growth in activity in Waltham.

Continuation of past growth will require improvements to satisfy the traffic demands of the typical day, not just the extraordinary one as at present. The following sections examine the elements involved in estimation of traffic needs to be serviced, while later reports cover design suggestions for servicing those needs.

POPULATION GROWTH

The Lexington Center study is keyed to a growth of Lexington from 31,000 persons today to 40,000 persons in 1975. If growth is slower or faster than that, then all of the developmental suggestions of the study will be valid sooner or later than projected. The number of households has been projected by the Planning Board to increase at a slightly lower rate than the population, but the average auto ownership per household will increase so that the amount of automobile usage will increase at a rate in excess of the rate of population growth, or by more than 1/3 over the decade.

Forecasting ten-year population growth by subarea requires more detailed examination than possible here, but it can be said that the areas most likely to receive new growth are those outside of the area primarily serviced for through trips by the radial road system converging on the Center, so population growth will have an impact of less than 1/3 on traffic through the Center.

SHIFTING THROUGH-TRIP DESTINATIONS

Within Lexington, the greatest potential for employment growth probably lies in land served by Bedford Street. Looking at the region more generally, it is clear that growth in job opportunities to the north and west of Lexington will exceed that to the south and east, further aggravating the existent "imbalance" of commuting trips on Massachusetts Avenue and on Bedford Street.

Opening of a new shopping center in Burlington will shift trip patterns somewhat, but will have little effect on the peak-hour problem. Few persons will find a route through Lexington Center the most convenient way to get to Burlington, though many may combine trips to the two centers.

Other social trips also are likely to increasingly find their destination on the far side of Lexington. Consistently, these trip destination shifts will tend to increase evening peak traffic headed through the Center away from the Minuteman more than the reverse.

CENTER DESTINATIONS

In the next several years, anticipated new buildings and enlargement of parking facilities will bring more trip destinations in the Center to parking areas north of Massachusetts Avenue, with space growth south of the Avenue being more gradual. No matter how strong efforts to the contrary are taken, growth of the Center will result in greater dispersion of stores and parking, so that more frequently the shopper will relocate his vehicle within the Center at least once while shopping, adding significantly to traffic demands.

Projections of activity levels for the Center indicate a potential for a 50% increase in shopping and employment; this in turn suggests a 50% increase in trips destined there. The actual design for the Center is being made for a slightly more modest growth, so the 50% increase in Center-destined trips can be taken as a maximum.

ALTERNATE ROUTES

Worthen Road, even in its incomplete state, diverts a major amount of traffic from the Center. It now carries in excess of 500 vehicles per hour during the evening rush period, many of which vehicles would otherwise be added to the nearly 2000 squeezing through Massachusetts Avenue. Completion of Worthen Road to Route 2 will greatly increase its usefulness to commuters, and will relieve a major flow of traffic from the Center.

Improvement of Route 2 will also aid the Center. Many trips, now slightly faster by using Massachusetts Avenue will, after the completion of Route 2 improvements, be faster on that road. For example, from the Route 3 "dead-end" at Route 128 to the Arlington line takes about as long through Lexington Center as it does via Route 2 and Route 128, and a considerable number of commuters use the Center route. Completion of Route 3 to the east would, of course, divert that traffic, but even Route 2 improvements alone will do so.

Emerson Road is no longer thought of as a major bypass road, but to a limited extent, when completed, will relieve some persons of having to use the Center as a means of access elsewhere.

CAPACITY CONSTRAINTS

The Center need serve no more traffic than can reach it; that amount is constrained by the roads feeding the Center, particularly those to the north. Boston Regional Planning Project data indicates that in 1963, Bedford Street at peak hours was carrying 90% of its practical capacity (its capacity without congestion). Unless it and its intersections are improved, Bedford Street is likely to deliver only 10% more traffic to the Center at peak hours than it does now, since volumes increased more than that amount imply congestion which is likely to influence traffic to use other routes.

Similarly, Massachusetts Avenue west of the Center carries at peak hours 80% of its practical capacity, Waltham Street and Woburn Street 70% of their capacities, Massachusetts Avenue east of the Center 60% of its capacity. Overall, this allows for an increase in traffic into the Center of not more than about 1/5 over present volumes.

PUBLIC TRANSPORT

The Boston and Maine Railroad relieves a minor part of the evening west-bound traffic load by carrying a few dozen commuters to Lexington, North Lexington, and Bedford. Only a radical change in operations could render it a significant help in relieving traffic, and then only given careful attention to station location and access.

Virtually all users of any possible future rapid transit will use their auto to get to the line. This could add to rather than relieve Center traffic if a major station were located there. If, on the other hand, stations were located outside of the Center where provision of access and parking can more readily be handled without conflict, each passenger gained would represent an easing of Center traffic.

Busses using local streets to collect passengers and expressways to move to destinations are talked of and perhaps more likely for Lexington than rail transit. Local busses offer a critically important service, one which must be accommodated with stops, but not one likely to have major impact in reduction of traffic flow.

TOURISM

Visitors to the Minuteman National Park are expected to triple to 1,000,000 per year by 1975. If the redesign of

Lexington Center is successful, this means more than tripling tourist trips to the Center. This is a not insignificant volume of traffic which must be accounted for in the design of circulation around the Green. Fortunately, peak visitor flows do not coincide with peak commuting or shopping flows; a circulation system which serves peak commuting demands will, in its major parts, satisfy off-peak tourist demands as well.

SATURDAY

Saturday is market day in suburbia, and presents a traffic situation altogether different from Monday-Friday. Peak flows are in the mid-day, are largely Center-destined, and are the Center's commercial bread and butter.

Saturday congestion is comparable to evening peak congestion in effect, but not in cause. On Saturday, there are far more turning movements onto side streets to reach off-street parking, more curb parking turnover, more "irrationality" of double-parking to pick up packages, pedestrian crossings, etc. Since traffic volumes don't reach weekday peaks, the physical system which serves the weekday adequately will also serve Saturday adequately if the access to parking can be arranged in a way which minimizes turns, especially left turns, off and onto Massachusetts Avenue through its central portion.

THE RESULTANT PATTERN

<u>Item</u>	<u>Change, '65-'75</u>	<u>Resultant traffic effect</u>
Population	30% increase	1/3 increase overall, less in Center
Employment Shopping	Shift N-W Burlington Center	Increase "imbalance" Small traffic increase in Center
Other trips Center destin.	Shift N-W Disperse, grow 50%	Increase "imbalance" Increase intra-Center traffic
Alternate routes	Complete Worthen Rd. Improve Route 2	Lighten Bedford-Mass. Ave. Lighten Bedford-Mass. Ave.
Cap. constraints Public transport	Assume none ?	Limit traffic inc. to 1/5 ?

All of these shifting factors taken together suggest that roads leading into the Center are likely by 1975 to be used to nearly their practical capacity at peak hours, but not over that, with a general increase of nearly 1/5 in the traffic to be handled by the Center, or less than the increase population growth alone would simply suggest (from 1956 to 1965 traffic peaks in the Center have similarly grown less than has the population). Because of the use of alternate routes for through traffic, a larger share of traffic in the Center will be Center-destined, and a larger share of it will be traffic moving within the Center.

The tendency for the evening peak to be heaviest east-bound will be increased, while greater use of the Center's roads for shopping and tourist activity and (relatively) less use for commuting implies daytime volumes more nearly equalling peak volumes. While the mid-afternoon volume reaches 2/3rds the evening peak now, by 1975 it may reach 3/4ths of the peak, giving fuller urgency to road adequacy, since inadequacy will affect more than just a few hours.

The figures of Table 2 indicate projected volumes to be satisfied on the major road network in the Center. It indicates volumes as they would be handled by the existing configuration; bypass routes within the Center could redistribute some of this, but in so doing, would make the Center easier to travel and more attractive to through traffic, thereby perhaps inducing more traffic, wiping out some but not all of the gain.

TABLE T-2
TRAFFIC GROWTH, 1965-75

	VEHICLES IN AVERAGE DAY PEAK HOUR		
	1965	1975	% Increase
Bedford St. @ Minuteman			
Eastbound	720	900	25
Westbound	650	720	10
Total	1370	1620	18
Massachusetts Ave. @ Minuteman			
Eastbound	300	350	15
Westbound	220	240	10
Total	520	590	13
Massachusetts Ave. @ Waltham St.			
Eastbound	1000	1250	25
Westbound	820	900	10
Total	1820	2150	18
Waltham Street			
Northbound	330	400	20
Southbound	330	400	20
Total	660	800	20
OVERALL	4370	5160	19

Source: EDA survey and projection

ACCIDENTS

The circulation system should not only carry traffic flows without congestion, but also should do so with a reasonable degree of safety. The Traffic Accident map graphically suggests locations where the system in the Center is failing in that latter respect today.

Relatively few of the accidents involve injury, and fatalities are extremely rare, since traffic moves slowly, if not well. It is interesting to note that a bypass such as Worthen Road is an ineffective accident prevention device. By creating new intersection conflicts, such a road at best relocates accidents, but doesn't reduce them.

Comparison with similar maps for previous years suggests that this year's pattern is fairly representative, except at the Waltham Street-Massachusetts Avenue intersection, where abnormally few accidents have occurred this year.

The Harrington Road-Bedford Street intersection has more accidents than any other in or near the Center (with the exception most years of the Waltham St. corner and its traffic back-up). Stop signs recently erected didn't immediately stop accidents, but should reduce the number. The intersection at the Minuteman also accounts for many rumpled fenders as well as frayed nerves, but few injuries. At Grant Street, Post Office traffic poses a problem.

Most of the scattered accidents through the Center on Massachusetts Avenue are rear-end collisions triggered by the lights at Waltham Street. This, the larger accident map of Lexington (not reproduced here), and the experience of other communities attest that traffic signals are useful devices to increase intersection capacities, but in general cause as many accidents as they prevent.

With over 20% more traffic anticipated in the Center, some increase in accidents must be expected, but the physical design of the Center should relieve existing problems wherever possible, and in any event not aggravate them.



TRAFFIC ACCIDENTS

JAN. 1, 1963 TO DEC. 1, 1963
 SOURCE: LEXINGTON POLICE DEPT. ACCIDENT MAP
 □ ACCIDENT INVOLVES PERSONAL INJURY
 ○ OTHER ACCIDENT

LEXINGTON CENTER

STUDIES PREPARED FOR THE LEXINGTON PLANNING BOARD AND THE LEXINGTON CENTER COMMITTEE BY ECONOMIC DEVELOPMENT ASSOCIATES, INC. BOSTON, MASSACHUSETTS
 BERNARDI-FALCONER-STEIN, ARCHITECTS, QUENSETT, MASSACHUSETTS



TRAFFIC COUNT

	<u>Mass. Ave. at Central Block 9/28 to 9/29/65</u>	<u>Mass. Ave., Hunt Block between Waltham St. and Depot Square 9/29 to 9/30/65</u>
10:30 AM to 11:00 AM	526	700*
11 to 12	1200	1109
12:00 PM to 1:00 PM	1287	1113
1 to 2	1220	1000 (Approx.)
2 to 3	1193	1027
3 to 4	1538)	1289)
4 to 5	1770) Peak	1505) Peak
5 to 6	1571)	1470)
6 to 7	1145	1023
7 to 8	1153	1060
8 to 9	863	823
9 to 10	599	578
10 to 11	432	471
11 to 12	306	300
12:00 AM to 1:00 AM	129	138
1 to 2	56	50
2 to 3	8	21
3 to 4	16	14
4 to 5	23	21
5 to 6	52	55
6 to 7	362	390
7 to 8	1304)	1270) Peak
8 to 9	1512) Peak	1406) Peak
9 to 10	1187	1045
	<hr/>	<hr/>
TOTAL	19,452	17,878

*Actual hours: 10:15 AM to 11:00 AM.

Source: Lexington Dept. of Public Works

C I R C U L A T I O N P L A N

At most times of the day and at all times on many days, traffic moves to and through Lexington Center without undue delay or hazard. On some days, however, serious congestion occurs, and those days are becoming more frequent. With 20% more traffic in the Center anticipated by 1975 (see "Traffic Needs" study) improvements must be made if Lexington Center's predominant image isn't to become that of an intolerable traffic jam.

Immediate improvement in the traffic-handling capacity of Massachusetts Avenue and later provision of a loop-road distributor are the major efforts recommended for handling traffic needs in Lexington Center over the next ten years. More radical alternatives, such as complete diversion of traffic from Massachusetts Avenue, were examined and discarded after having been found either unworkable or in violation of one of the basic design objectives for the Center plan as a whole; in any event, they are unnecessary for at least the ten years covered by this plan.

The loop road is intended to facilitate movement into and between off-street parking areas with minimum use of Massachusetts Avenue by such traffic. Generally, cars bound for the Center would turn off Massachusetts Avenue before getting deep into the Center and proceed via some portion of the loop system in reaching a parking area. Through traffic would not be expected to make much use of the loop with its numerous turns, but would be benefitted by removal of some of the volume through the Center, and by relocation of conflicting turning movements. Still, improvements are required for Massachusetts Avenue itself as the primary means of carrying traffic through the Center.

DIVERSIONS (See page 9)

In the long run, even with the new wider Massachusetts Avenue right-of-way and the loop system, it may become necessary to divert some of the 85% of traffic in the Center which

is just passing through. Some diversion is possible with a route linking Massachusetts Avenue at the Green, and Woburn Street at Massachusetts Avenue via Harrington Street, a new right-of-way to Meriam St., Oakland St., a new right-of-way to Grant St., Sherman St., and Fletcher Avenue. Peak hour volumes travelling between Massachusetts Avenue at the Green and Woburn Street are less than 25% of the Massachusetts Avenue volume at the Green*, or about 150 vehicles in the peak hour at the projected 1975 volume. Most of those vehicles would use the diversion, as would some of the 200 or so vehicles going straight through on Massachusetts Avenue, for a total diversion of about 200 vehicles in the peak hour (when Massachusetts Avenue through the Center would otherwise handle about 2200 vehicles). This 10% improvement isn't negligible, but might be considered less valuable than the costs, property disruptions and required changes around the Green would warrant.

A more dramatic diversion is possible by bending the flow of Bedford Street over to much that same route described above. This involves far larger cost and disruption (although avoiding historic areas) but also brings larger benefit. Nearly all traffic moving between Bedford Street and Massachusetts Avenue east of the Center would use this route, diverting nearly 1000 vehicles in the projected 1975 peak hour, well over 40% of the total otherwise to be handled on Massachusetts Avenue through the Center.

Such a sweeping change would cost more than Lexington alone is likely to be willing to pay. Even given financial support to make this route feasible, some might believe this to involve non-fiscal costs exceeding benefits, so the diversion cannot be assumed as an element in handling problems within the time horizon of this study, 1975. The design of Massachusetts Avenue and the loop system is therefore based on the following considerations:

- 1) The traffic projections of the Traffic Needs Study, which assume no diversion, should be used for design of Massachusetts Avenue and the loop road system to 1975.

*1956 Traffic Study, following pg. 21.

2) Most highway authorities informally expect a major federal-aid program for secondary roads such as Routes 4 and 225 through Lexington, following expiration of the Interstate Highway Program in 1972. This means that either the illustrated diversion or some alternative to it (such as one using the railroad right-of-way) may well be available shortly post-1975, so that reserve capacity in the Center for through-traffic growth beyond 1975 is not necessary in current designs.

3) The Massachusetts Avenue-Woburn Street diversion should be held in reserve as a feasible improvement for town execution should the more sweeping change be for any reason impossible when needed.

MASSACHUSETTS AVENUE

Adequate right-of-way and authority for change on Massachusetts Avenue exists, and needed construction funds are relatively minor, so reconstruction of the Avenue is well assured. On this basis, its improvement is an obvious first step in Center traffic improvement, preceding completion of the loop system, some of which involves costly land-takings and complex construction efforts.

There are three capacity constraints on Massachusetts Avenue: the basic width of the Avenue itself between intersections, the Massachusetts Avenue-Waltham Street intersection, and the tangle at the Minuteman. Observation of traffic movement, verified by capacity computations, indicates that the three components of the problem are tightly interrelated, but that the Waltham Street intersection is the key.

On the typical evening rush hour, Lexington Center handles traffic without quite using the full capacity of its parts. However, a greater-than-average traffic surge, bad weather or construction interference results in breakdown starting at Waltham Street. No matter how skillfully the intersection is managed by the police officer controlling the lights, traffic eastbound on Massachusetts Avenue and traffic on Waltham Street start to back up. When the Massachusetts Avenue queue reaches the Minuteman, it badly constricts the capacity of that intersection which, until the back-up reaches it, handles its traffic load without creating back-up of its own. Once tangled with traffic waiting for the Waltham Street light, the Minuteman intersection becomes the worst spot in the system.

The basic Avenue width and design affect this picture by affecting the flow of traffic reaching the Waltham Street intersection. Precious seconds of green light for the eastward

flow are often wasted when one or both lanes feeding it are blocked by cars stopped to park, drop off passengers, turn, or (apparently) daydream. The intersection would carry more vehicles if the road feeding it carried cars to it more smoothly.

These same conclusions could be reached without personal observation, relying only on traffic counts and empirically derived capacity relationships. Table C-1 illustrates a "design" using "standard" capacity figures for the existing roads and the actual flow rates measured on November 2, 1965 (before the free right turn arrow was installed). The design indicates that the capacity of the intersection to handle eastbound Massachusetts Avenue traffic and Waltham Street traffic were just about reached (which they were) with a little slack westbound on Massachusetts Avenue, an inevitable result of relatively low flow westbound combined with the necessity to give westbound traffic a head start to clear the left turns into Waltham Street. The feeding lanes weren't taxed to capacity, but stopping one lane eastbound for any reason rendered the road unable to carry its load, whereas westbound that was neither theoretically nor actually the case.

To determine the future configuration, ideally we would experiment with Massachusetts Avenue and watch how traffic works, but this is too costly. However, since a mathematical description of the existing condition faithfully reproduces the reality, use of those same mathematical relationships for future flows and alternative designs should give a sound basis for physical changes.

A "balanced" design for Massachusetts Avenue should provide enough capacity at Waltham Street to handle the 1975 typical evening rush hour, preferably with a small amount of extra capacity to handle random upward variations. The occasional extraordinary evening rush is normally not the basis for highway design, which normally does not provide congestion-free capacity for the 29 highest traffic hours during the year, or roughly one hour of one day every other week. On the same basis, the basic width of the Avenue should be able to feed the intersection and carry traffic away from it at a rate in excess of the intersectional capacity in order to allow for the inevitable blockages of one or more lanes which will sometimes occur.

Waltham Street already has narrow sidewalks and banned parking at the intersection, so no physical change can be anticipated, and its capacity can be taken as fixed as is. This means that Waltham Street will require a green light showing at least 20% of the time to carry its projected 1975 volume, leaving 72% of the time for pedestrians (say 6%,

TABLE C-1

1965 MASSACHUSETTS AVENUE CONDITIONS

WALTHAM ST. INTERSECTION

	<u>Approach Width</u>	<u>Capacity* Veh/Green Hour</u>	<u>% of Time Green</u>	<u>Capacity Veh/Elapsed Hour</u>	<u>Actual Flow</u>
Massachusetts Avenue					
Eastbound	32'	1380	67	920	920
Westbound	31'	1270	73	930	750
Waltham St. North	20'	1500	21	310	310
Pedestrians	--	--	6	--	--

LANES AT HUNT BLOCK

Westbound**	24'	2760	73	2020	600
Eastbound	27'	1960	67	1310	920

*Based on Table 6, Highway Research Board, Highway Capacity Manual, G.P.O. Washington, 1950.

**Not including Waltham St. traffic, and with parking banned.

a slim figure reflecting relatively low peak-hour movement) and for Massachusetts Avenue (66%). The eastbound traffic must be given less time than the westbound in order to give the westbound turns into Waltham Street a head start. Eastbound traffic, then, must be able to clear the intersection with a green light not more than 56% of the time.

The "maximum traffic" configuration for Massachusetts Avenue is to use the widest roadway proposed, 64 feet from curb to curb, and use it all for moving traffic: no parking on either side near the intersection, and six lanes of movement. As shown on Table C-2(A), this would meet the 1975 projected traffic demand and exceed it by about 10%, with a great deal of "waste" capacity westbound on Massachusetts Avenue.

If parking is retained on the north side of Massachusetts Avenue (Table C-2(B)), the westbound capacity fails to equal the flow anticipated, both because of less space fronting the light, and because of reduced capacity due to parking movements. This makes clear that no matter how the widths are manipulated, during peak hours by 1975, parking cannot be maintained on either side of the Avenue in the vicinity of the Waltham Street intersection if that intersection is to meet peak traffic demand.

With a basic width of 56 feet from curb to curb and with no parking on the north side, the Waltham Street intersection can carry virtually the same traffic load as the six-lane "maximum" solution, with the exception of the non-critical westbound evening traffic. Either configuration can meet a peak traffic demand 10% in excess of the 1975 projections.

Table C-3 clearly indicates that for the basic Avenue width, two westbound lanes, whether bordered by parking or not, can easily handle all the traffic the intersection can pass. Eastbound, this is also true if the lanes are a full 12 feet wide. Four moving lanes of traffic, then, can bring to and take from the Waltham Street intersection all the traffic which it can handle even if the intersection is six lanes wide. There is no need, therefore, to consider more than 4 twelve-foot lanes for traffic movement other than at the intersection.

TABLE C-2

MASSACHUSETTS AVENUE - WALTHAM ST. INTERSECTION

(In all cases, no parking on south side at intersection)

	<u>Approach Width</u>	<u>Capacity Veh/Green Hour*</u>	<u>% of Time Green</u>	<u>Capacity Veh/Elapsed Hour</u>	<u>Proj. Vph</u>
A. 64 ft. curb to curb					
No parking north side					
Massachusetts Avenue					
Eastbound	32'	2480	55	1360	1250
Westbound	32'	2480	65	1610	900
Waltham Street					
North	20'	1500	29	440	400
Pedestrians	-	-	6	-	-
B. 64 ft. curb to curb					
Parking north side					
Massachusetts Avenue					
Eastbound	33'	2560	56	1380	1250
Westbound	31'	1270	66	840	900
Waltham Street					
North	20'	1500	28	420	400
Pedestrians	-	-	6	-	-
C. 56 ft. curb to curb					
No parking north side					
Massachusetts Avenue					
Eastbound	33'	2560	54	1380	1250
Westbound	23'	1700	64	1090	900
Waltham Street					
North	20'	1500	30	450	400
Pedestrians	-	-	6	-	-

*Tables 17 and 18, Highway Research Board, Highway Capacity Manual, U.S.G.P.O., Washington, 1950.

TABLE C-3

MASSACHUSETTS AVENUE AT HUNT BLOCK

A. Westbound, no parking on north side

FOR FLOW FROM MASS. AVE. E. ONLY

	<u>Practical Capacity/Hr*</u>	<u>% of Time Used</u>	<u>Capacity</u>	<u>Proj. Flow</u>
2-12' lanes	3000	64	1920)	
2-11' lanes	2560	64	1640)	900
2-10' lanes	2300	64	1470)	

B. Westbound, parking on north side

2-12' lanes	2540	66	1680)	
2-11' lanes	2180	66	1440)	900
2-10' lanes	1950	66	1290)	

C. Eastbound, parking on south side

2-12' lanes	2540	54	1370)	
2-11' lanes	2180	54	1170)	1250
2-10' lanes	1950	54	1050)	

*Table 6, Highway Research Board, Ibid.

A choice of roadway width depends upon more than peak-period traffic capacity; if dependent upon that factor alone, the 56 foot width would clearly be the choice. Other concerns, however, have been raised. One is space for snow removal; obviously less with 56 feet than with 64 feet, but more from Meriam Street to Waltham Street than exists today. Similarly, there is concern over flexibility when the road is disturbed for construction; again, while 56 feet gives less maneuverability than 64 feet, it gives more than the present width through most of the Center.

Trucks discourteously but legally stopping where there is no parking on the north would sometimes block one westbound lane, but the westbound lane capacity will be double expected volumes, and therefore able to temporarily handle the burden. Similar consideration applies to illegal auto parking on the north side.

These "irrational" problems can't be quantified, but are quite real, and argue against reducing the basic Avenue width to the 48 feet which is theoretically adequate. Retention of an 8 foot parking lane in addition to the 4-12 foot travel lanes gives an extra emergency margin for operations removing snow, making repairs, or dealing with other contingencies.

On the other hand, provision of the 64 foot configuration will still necessitate a north-side parking ban at the Waltham Street intersection during peak hours by 1975, which like all temporary regulations, would be difficult to enforce.

The remaining concerns over the configuration of Massachusetts Avenue have to do with parking adequacy and esthetics, not circulation. For traffic handling, the 56-foot cross section is equal to the 64-foot one, and adequate to readily handle peak rush-hour loads with a 10% reserve for all but about an hour every other week by 1975, a performance superior to the present configuration's handling of present traffic. The decision on basic roadway width, therefore, should be based on the relative importance of parking provision and the pedestrian promenade.

LOOP ROAD SYSTEM

The proposed loop road system consists largely of existing roads or roads through municipal parking areas, with only one portion requiring new right-of-way not otherwise required.

TABLE C-4

LOOP ROAD COMPONENTS

COMPONENT	TYPE	LENGTH USED	WORK REQUIRED	STAGING
CLARKE STREET	EXISTING ROAD	340 ft.	TRAFFIC CONTROL	EARLY
CLARKE-MUZZEY LINK	IN PROP. MUN. LOT	300	ACQUIRE, DEVELOP	EARLY
MUZZEY-WALTHAM LINK	IN EXIST. MUN. LOT	300	IMPROVE ALIGNMENT	MIDDLE
VINEBROOK ROAD	EXISTING ROAD	500	TRAFFIC CONTROL	LATE
GRANT RD. EXTENSION	NEW ROUTE	360	ACQUIRE, DEVELOP	LATE
GRANT ROAD	EXISTING ROAD	500	TRAFFIC CONTROL	EARLY
GRANT-MERIAM LINK	IN MUN. PARKING	1020	DEVELOP	EARLY
MERIAM STREET	EXISTING ROAD	400	NONE	-

For full effectiveness, the entire loop system should be two-way, with 10 foot lanes unencumbered by parking movements. This cannot reasonably be achieved at all locations. Clarke Street must be one-way. It intersects Massachusetts Avenue at a point where turning movements are particularly difficult to handle, so has correctly been made one-way, but with the evolution of traffic movements in Lexington, is now one-way the wrong way.

When Clarke Street was two-way, just over 1/4 of the traffic turning into it from the intersection was making the difficult left turn across traffic; nearly three quarters were turning right, with relatively little conflict with traffic on Bedford St. and Massachusetts Avenue*. With the shifting balance of traffic, it can be expected that over 3/4ths of the cars using Clarke Street if it were one-way south (away from Massachusetts Avenue) would use the easy right turn.

In contrast, nearly half of the traffic now exiting from Clarke Street turns left on emerging, a difficult and hazardous move across the main stream of traffic, and one which interferes with the smooth operation of the intersection. The most difficult move of all, from Clarke Street to Meriam Street is attempted by few, but with seriously detrimental effects on the eastbound flow, the most critical flow in the Center. Reversing the one-way provision wouldn't stop the reverse cross-Avenue movement, but the movement would then interfere primarily with the less critical westbound movement.

It is hoped that the loop road system will be used by some traffic to bypass the traffic light at Massachusetts Avenue and Waltham Street, relieving that point of at least a little of its burden. If the loop road is to serve this function, it must go reasonably straight, and for safety it should not have parking backing onto it, as at present. To redesign in this way results in some loss of parking spaces, but makes a major difference in the ultimate value of the loop road system.

The portion of the system from Vinebrook Road to Massachusetts Avenue was shown more easterly on the earlier Planning Board Center Plan, utilizing an existing public easement. This would be less costly than the now-chosen alignment, but would reproduce the Meriam Street - Clarke Street jog at the other end of town. To extend the line of Grant Street as illustrated must reasonably wait for some time, but the wait is worthwhile if it results in the correct solution instead of another compromise.

*1956 Traffic Study

Similarly, the earlier plan illustrated use of Raymond Street for much the same function as the new way illustrated between Clarke Street and Muzzey Street. The new way is more direct and therefore superior. However, the reasonableness of the preferred route depends upon town meeting action on parking. If municipal acquisition of parking between Clarke and Muzzey Streets is approved, this link of the road can be made an integral part of the parking system. If such acquisition is disapproved, it is planned to require private off-street parking in the area through zoning controls. The cross-lot route would take away land now used for private parking, and limit the ability of others to provide it, making the zoning requirements unreasonable. Therefore, Raymond Street would be the recommended route if parking between Clarke and Muzzey Streets is to be privately provided.

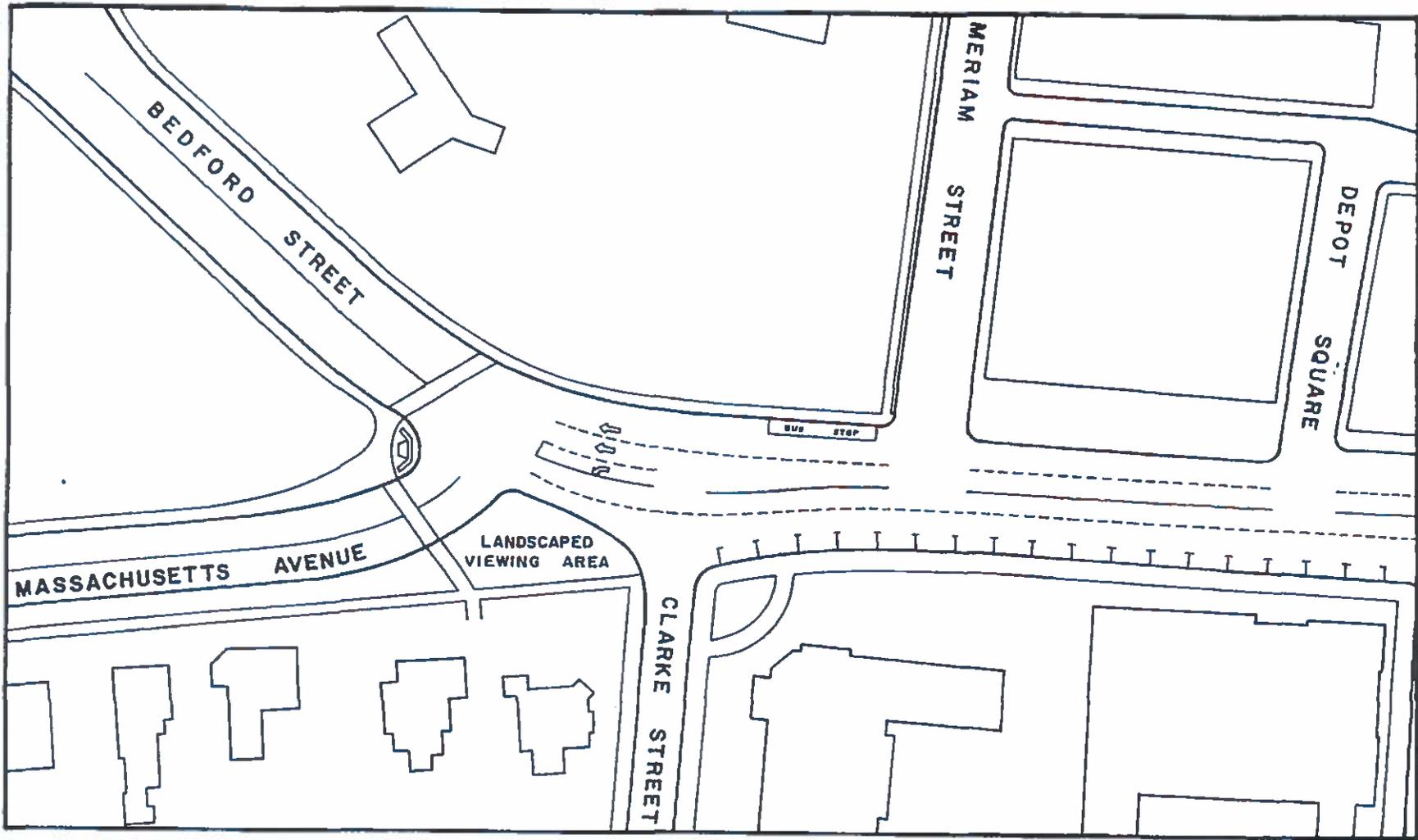
OTHER SYSTEM COMPONENTS

The intersection at the Minuteman, discussed earlier, is perhaps the most harassing in Lexington. If it were any other intersection, its improvement could be simply accomplished with traffic islands and signals, but because it forms such a critical setting, the visual competition of traffic control devices should be minimized.

Reversing the direction of Clarke Street as recommended would aid the intersection, as will recommended improvements at Waltham Street to prevent back-up. The effects of those changes are unlikely to be sufficient to solve the problem, but should be observed before further changes are made at the Minuteman.

The next step, in order of severity of effect, would be painted directional aids on the pavement. These can be highly effective, and need not be esthetically offensive. A paint scheme to provide a left-turn storage lane and to clarify the place where left turns occur would aid the intersection without visual intrusion. Next in order of severity, might be slight realignment of Massachusetts Avenue to make all turns from or into it at right angles, further gaining clarity and also gaining space for Minuteman photographers.

Streets other than those mentioned should require no major physical changes to accommodate anticipated traffic. Reshaping of Depot Square is called for to facilitate pedestrian movements. Edison Way can, if the railroad is abandoned, also be abandoned, permitting the visual "closing" of Depot Square. The Square itself serves a valuable "U-turn" function, and is retained as a traffic element for that, among other purposes.



MINUTEMAN INTERSECTION

ILLUSTRATING MINOR RELOCATION OF MASSACHUSETTS AVENUE AND PAINTED CHANNELIZATION



Completion of these recommended changes in the circulation system should make Lexington Center easier to visit and pass through in 1975 than it is today. Few centers are likely to cope with their growth so well.

P A R K I N G N E E D S

Lexington was one of the early leaders in Massachusetts in providing large-scale off-street parking areas. Having done so no doubt has been at least partially responsible for the continuing commercial health of the Center, and for the continually increasing tax revenues derived from it. At issue now is what actions need be taken to insure that Lexington's standards of parking space adequacy remain competitive.

PARKING RATIOS

A survey of parking space in Lexington Center was undertaken in June, 1965, with the following results within the zoned Central District plus a few adjacent parcels:

Municipally-provided parking	
Curb metered.....	127
Curb unmetered.....	54
Off-street metered.....	217
Off-street unmetered.....	222
Subtotal	620
Privately-provided parking	
Open to general use.....	405
Special reserved.....	118
Subtotal	623
<hr/>	
Total parking available	1243

Not all of these spaces are equally effective, and some shouldn't really be counted at all. This count includes some parking on Raymond Street so distant as to be little utilized today. It includes spaces occupied by cars awaiting sale, and underground spaces reserved for motel guests. It includes unpaved space on the far side of the railroad. Eliminating those "marginal" spaces reduces the total of "good" spaces to about 1060.

There is a degree of non-commercial demand placed on these spaces by library users, residents of the Center, and a few others. This means that just about 1000 well-located spaces are available to service commercial employees and customers. There are about 290,000 square feet of commercial floor space in this same area, which means that there are just under $3\frac{1}{2}$ good available spaces to service each 1000 square feet of commercial floor area. The following comparisons suggest the relative adequacy of this provision.

Zoning requirement, C-1 District...	10 spaces:1000 s.f.
Probable ratio, Burlington	
Shopping Center*.....	9 spaces:1000 s.f.
Belmont Center**.....	4 spaces:1000 s.f.
Greenfield downtown*.....	$3\frac{1}{2}$ spaces:1000 s.f.
LEXINGTON CENTER*.....	$3\frac{1}{2}$ spaces:1000 s.f.
Cushing Sq., Belmont**.....	3 spaces:1000 s.f.
Athol downtown*.....	$1\frac{3}{4}$ spaces " "
Milford downtown*.....	$1\frac{1}{2}$ spaces:1000 s.f.

Greenfield, Athol and Milford are used for comparison because they are communities with commercial centers of size comparable to Lexington's, and because EDA has intimate familiarity with them. Belmont is an interesting neighbor, with Belmont Center outstandingly successful in adaptation to automotive pressures, Cushing Square far less so. If vacancy rates are an indication of commercial "health", the correlation between parking and health is a good one. Milford and Athol have extremely high vacancy rates, Cushing Square is in some trouble, while Lexington and Belmont Centers are solid, virtually without ground floor vacancy except for turnover. Considering the stable, low-income population it serves, Greenfield has a low vacancy rate, though not comparable with Lexington, illustrating that parking adequacy is an important element in success, but is not the sole ingredient.

To some extent, the figures are deceptive. An unusually large share of Lexington's $3\frac{1}{2}$ spaces per 1000 s.f. is provided privately, is more than adequate for its purpose, and is in many cases fenced off such that the "surplus" isn't useful to

* EDA estimates.

** EDA computation, based on Adams, Howard and Greeley, "Traffic Circulation and Parking, Technical Report #2, Belmont General Plan", December, 1962.

the Center as a whole. Thus, at the same time that the municipal lot between Waltham and Muzzey Streets may be jammed, adjacent private lots may be virtually vacant.

The store vacancy rate of nearly zero in Lexington also enters in; many of the communities used for comparison have relatively large amounts of vacant space, especially on upper floors. If comparisons of parking in relation to occupied space were made, Lexington's relative standing would be substantially lowered.

OTHER MEASURES OF ADEQUACY

One objective measure of actual usage of provided spaces is parking meter receipts, tabulated below:

PARKING METER RECEIPTS BY YEAR

	On-Street Meters(134)	Off-Street Meters(217)	Total
1955	\$7,690		\$ 7,690
1956	6,890		6,890
1957	7,430		7,430
1958	7,060		7,060
1959	6,640		6,640
1960	7,550		7,550
1961	7,280		7,280
1962	7,050	1,620*	8,670
1963	7,620	7,850	15,470
1964	6,940	9,820	16,760
1964 per meter	\$51.00	\$45.30	\$47.70

*Meters installed in November
Source: Lexington Town Clerk's Office.

PARKING METER RECEIPTS BY MONTH
(curb parking only)

May, 1964	\$714	November	\$622
June	643	December	542
July	595	January, 1965	524
August	635	February	468
September	726	March	555
October	531	April	539

Receipts show no long-range trend, but just random fluctuation based on vagaries of weather and circumstance. Monthly variations show little easily explained pattern, responding as much to weather as to seasonal sales patterns. What these figures don't show is peak period demand, the most critical issue. However, a great deal can be gleaned from them.

A 1960 study¹ revealed a national average of \$74 income per meter at curb, and \$66 off-street, but with wide variations among communities. EDA's experience in communities of this size in this region suggests that the curb meter revenues in Lexington are surprisingly low, but that the off-street revenues are closer to normal. This indicates one of four things: there is a low demand, or the demand extends over an unusually short interval during the week, or there are meters extended beyond high-demand areas, or enforcement is not as stringent as in "average" communities.

Visual observation suggests that the answer lies largely in the last two factors. The extreme outlying meters get very little use, pulling down the at-curb average. Turn-over studies showed a substantial proportion of the parkers to be violating time limits, which rigid enforcement would prevent. An additional consideration is the banning of parking at the highest usage locations during evening peak hours.

The lack of a rising trend in annual meter receipts despite rising sales activity illustrates the inability of the Center to increase its off-peak period usage, and effectively demonstrates that there is no super-abundance of municipal parking spaces. All of the well-located spaces were used at peak periods in 1955, just as they are now. Had they not already been so used in 1955, receipts would have increased over this period.

Monthly receipts confirm this picture. Even Christmas buying doesn't pull enough people into the Center during off-peak periods to swell meter receipts sufficiently to offset weather set-backs.

¹ John R. Kerstetter, "Mechanized Hitching-Post, 1960", Traffic Quarterly, October, 1960.

Parking turnover was observed on Friday, June 11, 1965, with these results:

	% Turnover 10 AM-4 PM	% Turnover 4:30 PM-5:30 PM	% Turnover 10 AM-5:30 PM
Municipal Lot "A" (North of Mass.Ave.)	85	81	91
Municipal Lot "B" (South of Mass.Ave.)	85	80	94
Metered at curb	89	79	97
Municipal Lot "C" (North of Railroad)	47	57	75
Municipal Lot "D" (Old Fire Station site)	54	-	-

This understates the length of stay, especially in off-street areas. The method used was to record registrations by exact location, then to check again at a later period, counting the car as having "turned over" if it was no longer at the same place. Many cars simply shuffle around in the lots, whether as a result of lunch or business trips, or to evade detection.

Another survey was made on Saturday, November 20, differentiating between sides of Massachusetts Avenue. No significant difference was found in turnover rates between sides of the Avenue, or between the Saturday experience and the weekday experience.

The results are strikingly uniform for metered areas. Apparently not less than 15% of the metered spaces in off-street areas are held by meter-hogs, as are 10% of the on-street spaces. Except for these people, parkers move in and out quite rapidly, with few staying beyond an hour except those staying well beyond. The presumably "all-day parkers" lot north of the railroad clearly caters to a significant number of shorter-term shoppers as well, with a turn-over rate far higher than might be supposed.

The real issue, of course, is how often customers are inconvenienced by inability to find a well-located space. Discussion with shoppers suggests that, in general, parking spaces are readily found during the daytime, even on most Saturdays. Thursday and Friday nights, however, there is frequently difficulty in finding space not only during holiday shopping

seasons, but quite generally throughout the year. These subjective comments tend to corroborate the objective statistical findings: parking acts as a constraint on trade during the busiest periods, but not otherwise. More parking would unquestionably be of assistance to business, but at a diminishing rate of return, since the shortage is only of relatively short duration. More parking more distant from primary attractions than the furthest reaches of the Muzzey-Waltham lot would be of almost no value, except for employees if provision of such space were coupled with rigid meter enforcement.

Adequacy of parking is not uniform throughout the Center. Given present activity patterns, adequacy of provision seems to follow this order, based on observation, parking ratios, and customer comment.

LEAST FREQUENT SHORTAGE OF SPACES
↓
Meriam - Depot Square
East end, Massachusetts Avenue
Depot Square - Edison Way
Muzzey - Waltham St.
↓
Clark - Muzzey St.
MOST FREQUENT SHORTAGE OF SPACES

The most severe problem, between Clark and Muzzey Streets, is largely caused by the presence there of two banks, which typically create enormous parking demand for short turn-over parking.

FUTURE PROVISIONS

The sizing and location of parking will be an element in the design plan for Lexington Center, and isn't something which can be specified separately. However, certain relationships can be outlined as a guide for that design.

The amount of parking required will depend upon how much of it is in general-use areas. As noted earlier, the individually-controlled lots are often wasteful of capacity, so the more parking which is provided for common use, the less the total amount need be. Parking required also depends somewhat upon the specific "mix" of commerce. Parking demand for movies overlaps almost not at all with parking demand for professional offices; both these overlap retail trade parking demand to some degree. Consideration of the activity "mix" may cause some detail adjustment of ratios.

The amount of "walk-in trade" is critical. Relatively few walk to Lexington Center today, but if the Center contained or was surrounded with high density apartment units, walk-in trade

would be greatly increased, reducing the amount of parking necessary to service any given amount of commercial trade. (The apartments themselves, of course, would require parking facilities.)

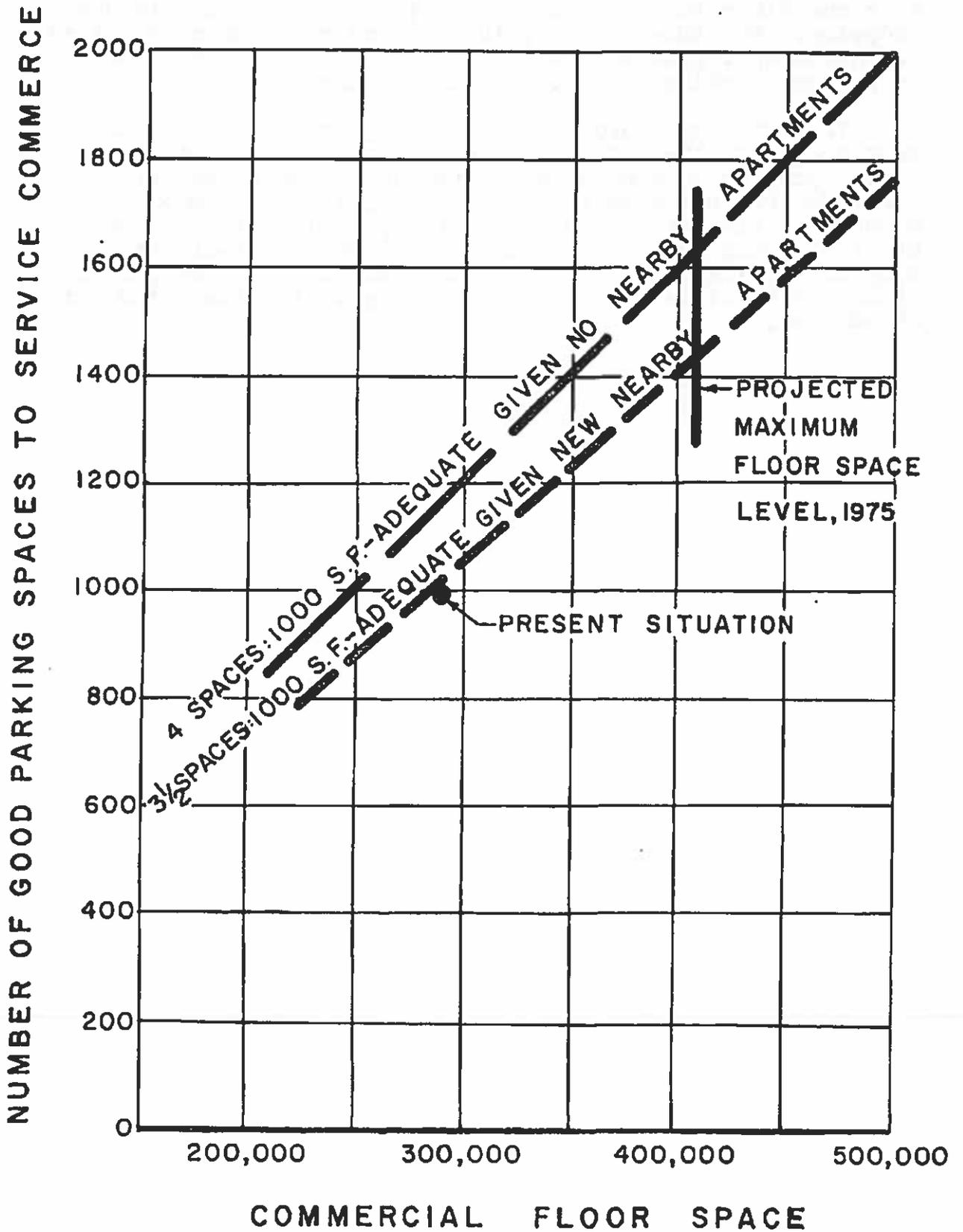
The accompanying diagram illustrates the general expectation of parking needs over the next decade. Something on the order of 160 additional spaces could be well justified today (half again the total provided in the Waltham Street - Muzzey Street lot) to bring Lexington Center up to the standard of Belmont Center. To optimally serve commercial growth to the projected potential level of 410,000 square feet of commercial space without nearby apartments would require adding 630 net spaces to present parking facilities. Given the walk-in trade of 3-500 nearby apartments, this requirement might be reduced to an addition of 440 net spaces.

The utility of spaces drops off sharply as they become more difficult to drive into and out of, are at different elevation from the destination, or are more than 500 feet from the destination, unless the attraction of shopping in Lexington is made far stronger than it is today. Ten spaces 1000 feet away don't substitute for one 200 feet away.

The types of spaces required fall into three distinct categories. First, there are spaces for long-term occupancy by downtown employees or long-term visitors. About 30% of the present spaces are so allocated, and perhaps 20% of the present spaces are so used. If the Center is to grow commercially in competition with highway-oriented centers, it too will have to use retailing methods involving fewer employees, so that future employee and long-term parking provision certainly need not exceed the present 20% of total usage. These spaces can be distant, or elevated, or underground, or difficult to get into and out of, and should not, as many of them now do, usurp the very best locations close to the stores.

Second, there are spaces for the people who are doing just a single quick errand. The only space now regulated for this use is at two banks, whose need for such space is unusually high. Others also depend on this quick service trade, which is easily discouraged by inability to park quickly and close to its destination. It is for these customers which curb parking has extraordinary value, and accordingly at least some of the curb parking should perhaps have even shorter time regulations than it now has, or a new physical configuration devised to provide for these shoppers. Eighteen percent of downtown sales are now in "convenience goods", a share likely to decline if rebuilding of the Center is highly successful, since convenience goods sales is typically a relatively low-rent operation. Accordingly, only about 10% of all spaces downtown need be designed for quick turnover.

PARKING-FLOOR SPACE RELATIONSHIP



SOURCE: EDA ANALYSIS

Third, there are spaces for the usual shopper with more than one place to go to, but not often with a full half-day of shopping. For those people, the one and two hour meter limits are quite appropriate, and the amount of inconvenience involved in present parking lot location is not excessive.

Tourists have very special parking needs. First, they want access to the Green, so want to park nearby, at present a real problem on nice summer days, and an even greater problem a decade from now when the volume of visitors has swollen. Second, if they are to use the Center, it is likely to be for brief shopping only, and a stranger's fear of disorientation, even if nothing else, will prejudice him against any parking areas difficult to reach, or out of sight of primary tourist objectives.

M E R C H A N T S U R V E Y

In November, 1935, a survey of merchants was taken to gain insight into their judgement of the importance of curbside parking. Thirty-seven responses were received following door-to-door interview efforts by merchant volunteers.

The question asked was "Are you in favor of No Parking on Massachusetts Avenue in the Center provided Off Street Parking is provided?" To avoid distorting results through interviewer interpretation, no further elaboration of the question was allowed. Some but not all respondents were fully informed on the issue being considered: whether or not the value of a landscaped pedestrian promenade would justify relocation of curbside parking. Some interpreted the question as meaning that each choice provided an equal number of parking spaces, and the only distinction was as to location. Others interpreted it to mean that removed parking would not or could not be fully replaced in number. Despite these interpretational variations and the relatively small number of respondents, the results do, as hoped, give a good guide to merchant judgement on curbside parking.

Prior to the survey, a meeting of Center merchants had been held to discuss the issues, but was not heavily attended. One descriptive article in the Lexington Minuteman was the only other source of information for merchants on plans for the Center before the survey. Despite this lack of prior explanation, and despite long tradition, nearly half of the merchants favored giving up curbside parking in response to a question which, as stated, offered no compensating feature, such as improved traffic flow or amenity.

Analysing responses by type of enterprise and location gives predictable results. "Convenience goods" retailers, selling food, drugs, or liquor, responded 5-0 against parking relocations. These businesses largely sell standardized goods, have competitors in many neighborhoods, and service primarily "quick trips", so that even minor inconvenience of car-store access looms large in the minds of customers, and amenities are probably of relatively minor consequence, or at least this appears to be the judgement of this group of retailers.

MERCHANT SURVEY

"Are you in favor of No Parking on Massachusetts Avenue in the Center provided Off Street Parking is provided?"

TYPE OF BUSINESS

(Merchant Location)	Convenience Shoppers'			Total
	Goods Sales	Goods Sales	Service Est.	
FAVOR PARKING REMOVAL				
(Massachusetts Ave. North)	0	5	1	6
(Massachusetts Ave. South)	0	3	1	4
(Other Locations)	0	4	4	8
TOTAL	0	12	6	18
FAVOR PARKING RETENTION				
(Massachusetts Ave. North)	3	1	2	6
(Massachusetts Ave. South)	2	6	4	12
(Other Locations)	0	0	1	1
TOTAL	5	7	7	19
GRAND TOTAL	5	19	13	37

In sharp contrast, the general merchandise, gift, and apparel stores, grouped as Shoppers' Goods Sales, responded 12-7 in favor of parking relocation. These stores sell less standardized goods, and goods for which persons will spend substantial time to enjoy comparison shopping. A few seconds difference in car-store access is obviously less important to a dress-buyer than to a newspaper-buyer, and "atmosphere" is more important; merchant response reflects these relative values. Service establishments - banks, restaurants, etc., share characteristics of both convenience and shoppers' goods outlets; the 7-6 vote for parking retention is therefore much as would be expected.

Those not directly on Massachusetts Avenue clearly benefit least from location there of parking, but stand to benefit if a powerful design concept brings increased activity to the Center as a whole. These merchants voted 3-1 in favor of parking relocation. A strong difference in attitude is exhibited between the north and south sides of Massachusetts Avenue, explainable only in part by the different distribution of business types between sides of the road. Respondents located on the north side of Massachusetts Avenue split 6-6 on the issue; the south side respondents favored retention of curb parking 12-4.

Such survey results can be used to guide policy only with great caution. Not surveyed, for instance, are the future merchants of Massachusetts Avenue. What is done will condition who they are, and would therefore influence any future poll on the question. If Lexington Center is to prosper, and serve a valuable service function for residents, it will have to grow in shoppers' goods outlets; clothing, gifts, and general merchandise. The collective advice of the Center's established shoppers' goods stores indicates that to attract more of the same to the Center, parking should be relocated.

The scheme being proposed for Massachusetts Avenue parking actually involves no such simple "either-or" as the survey posed. Some parking is proposed to be removed on both sides of Massachusetts Avenue, some is proposed to be retained, primarily on the south, where most of the merchant objectors to parking relocation are established.

Viewed at the simplest level, the survey of merchants shows that the merchants are split on the issue of the best location for parking. Upon analysis, the survey reveals:

a) To best satisfy shoppers goods stores, the Center's prime attractions now and in the future, parking should be relocated off Massachusetts Avenue.

b) Some curb parking is important for convenience stores. Although numerous, these stores account for less than 20% of the Center's sales; if properly regulated, relatively few parking spaces can service their demand.

c) To satisfy the present merchant distribution, parking on the south side of Massachusetts Avenue is far more important than that on the north.

All of these conclusions can be viewed as supporting the design being proposed for the reconstruction of Massachusetts Avenue to provide a broad pedestrian promenade, and to retain parking on one side of Massachusetts Avenue only.

P A R K I N G P L A N

Harvard Square and Downtown Boston provide examples of the fact that, if the attractiveness of shopping is high enough, business can prosper even if parking is inadequate in numbers, costly, or inconvenient. Downtown Waltham, Woburn, and numerous other centers in trouble provide examples of the perils of overestimating attractiveness and underproviding parking.

Lexington Center's present commercial health suggests there is reasonable balance between parking and commercial space and attractiveness, and the "Parking Needs" study quantified a basic need to maintain that balance, providing approximately $3\frac{1}{2}$ parking spaces for each 1,000 square feet of commercial floor space. If the Center is made more attractive in other respects, lower parking adequacy would be tolerated; if the attractiveness of the Center's businesses and physical conditions deteriorates, even $3\frac{1}{2}$ spaces/1000 will be judged inadequate parking support, since it is traditionally the "goat".

Where the Center has its greatest compactness, parking spaces are of broad usefulness, many destinations being served from a single parking location. Provision of these spaces is logically a public responsibility, and in the past, a responsibility Lexington has been ready to accept. Towards the periphery of Lexington Center, however, commercial activities are not compactly arranged, and parking tends to serve only its single most proximate activity. This parking, rather than being of general or public benefit, benefits only the users of the single activity it serves, so is logically a private responsibility.

It is proposed that the job of providing the additional parking required for the planned development of Lexington Center be divided between private and public bodies in accordance with its usefulness, whether private or public, using off-street parking requirements in the zoning bylaw to insure that the private obligation is carried out. The "Zoning Revisions" report discusses the regulations required to achieve this.

The public responsibility, given the proposed zoning changes, is to insure adequacy of parking provisions within the area from 500 feet north of Massachusetts Avenue to 500 feet south of Massachusetts Avenue, between Clarke Street and Meriam Street on the west and Grant Street and its proposed extension on the east.

Five hundred feet is not arbitrarily selected; it is based on the present pattern of activities, and long experience of many communities which indicates that, except under extraordinary conditions, customers won't walk over 500 feet to their destination even at Christmas. Massachusetts Avenue is now and is designed to remain the primary customer destination, so parking more than 500 feet from it will be of questionable public utility, except possibly as employee parking.

THE IMMEDIATE FUTURE

Changes in Lexington Center anticipated over the next several years all move in the direction of increasing the need for additional public off-street parking spaces. Four new buildings and an addition are planned or already under construction within the "primary zone", or area designated for public parking responsibility. Three of these projects result in the elimination of some existing parking spaces, for a loss of about forty spaces in all. Up to forty more are recommended for removal from Massachusetts Avenue to smooth traffic flows and to make possible a pedestrian promenade (the provision of which somewhat reduces parking needs by increasing the Center's attractiveness).

At present, there are $3\frac{1}{2}$ parking spaces per 1,000 s.f. of commercial floor area in the primary zone; this ratio will drop to $2\frac{3}{4}$ spaces per 1,000 s.f. within two years if no public actions to expand parking are taken. Over 200 additional parking spaces are immediately required to offset lost spaces and to provide for already programmed commercial expansion. Optimally, these should be not over 500 feet from Massachusetts Avenue, shouldn't open "gaps" by removing structures visually enclosing the Center's streets, and shouldn't displace existing businesses. In an area having virtually no vacant land, this clearly isn't easily done.

An obvious and long-anticipated first step is the development of the municipally-owned land north of the railroad tracks and east of the present paved area. Even this isn't easy, since the spaces have limited utility without improved pedestrian access between them and Massachusetts Avenue, and access across the railroad tracks is likely to be gained, if at all, only following petition to the D.P.U. and installation of expensive automatic warning gates.

TABLE P-1

PRIMARY ZONE PARKING

	Parking Spaces*	Commercial Floor Area Sq.Ft.	Ratio Spaces/1000 Sq.Ft.
Summer, 1965 situation	975	282,000	3.46
Anticipated changes by 1968			
New construction (net)	- 39	44,000	
Massachusetts Avenue Changes	- 39		
Resultant if no new parking	897	326,000	2.75
North of railroad lot	+145		
Clarke-Muzzey lot	+ 26		
Muzzey-Waltham structure	+ 50		
Resultant with parking program	1128	326,000	3.48
Projected growth to 1975	140	40,000	
Planned 1975 situation	1268	366,000	3.48

*Available to service commerce.

By acquiring a single house and portions of a number of residential parcels, enough spaces could be developed north of the railroad to statistically satisfy all immediate needs, but some of those spaces would be so inconveniently located that their value would not justify the difficulties of land-taking. Using only the municipally-owned land, plus land-takings to gain access to Grant Street, about 145 spaces can be gained, leaving nearly 100 to be gained elsewhere within the immediate future.

Between Clarke and Muzzey Streets, a great deal of space is devoted to parking, but the use is inefficient. The number of spaces can be increased, their usefulness augmented, and assurance gained that present parking space won't be usurped for new structures, by public acquisition of open land in the middle of the block, and by development there of a unified parking area. Fewer than 30 spaces would be added, but existing spaces now reserved for infrequent use would become available for general use, making the functional impact more dramatic than mere addition of 30 spaces.

Those are the last "easy" spaces in the Center. The remaining spaces required must either violate one of the earlier stated guides (by opening gaps onto street frontages, by condemning existing businesses, or by location more than 500 feet from Massachusetts Avenue), or must be gained in the third dimension by using multi-level structures. Multi-level structures are advocated, with the space between Muzzey and Waltham Streets the logical first location for such development.

Parking structures are still strangers in suburbia, but are unlikely to be so for long. As land costs climb and alternative means of maintaining parking-destination proximity dwindle, multi-level parking is increasingly used outside of metropolitan centers. The alternative, acquiring sound commercial properties, in Lexington would be just as costly as parking structures, perhaps more so, and would damage the compact fabric of the Center which gives it its character and pedestrian scale.

Between Waltham and Muzzey Streets, use of a multi-level structure can provide sufficient parking spaces to meet the remaining immediate parking needs of the primary zone, and also allow reduction of the land area covered with parking, making possible development of landscaped plazas between the parking and surrounding commercial structures, and also making possible development of the Muzzey-Waltham link in the proposed loop road to the advocated standard, twenty feet wide, with no abutting parking.

PARKING TO 1975

The development potential of the primary zone of Lexington Center, beyond the substantial development already programmed and discussed earlier, is quite limited until the question of the railroad right-of-way is settled. No matter how the question of the railroad is resolved, the major post-1968 opportunities for commercial development in the Center lie north of Massachusetts Avenue. Whether or not the railroad (or some other form of transit) remains will determine the shape and extent of such development, so that it would be unwise to invest major public funds or encourage private investment in the area until the question is settled.

Public land is the key to development of the north of Massachusetts Avenue area, so its planned and controlled development can be assured.

Sale of land now used for public parking and for Edison Way must inevitably precede any major commercial expansion in the area; funds so realized can help offset costs of the expanded parking made necessary by the commercial growth.

Because of the uncertainty of development in the vicinity of the railroad, any present plans for the area north of Massachusetts Avenue must be illustrative only. Shown is one of the possibilities; development around a controlled-environment mall, adding perhaps 40,000 square feet of commercial space, and requiring net addition of 140 parking spaces. The parking solution illustrated, use of a multi-level structure just north of existing buildings, has advantages of proximity and possible integration with multi-level mall development. The same number of spaces could be acquired further north by surface parking expansion to Oakland Street, but at excessive distance, and with unfortunate visual impact.

FINANCING

Computation of the municipal cost of off-street parking is far from simple, although the initial capital outlays can be estimated with fair accuracy. Public investment in off-street parking presumably reinforces commercial values, which in turn are a base for taxes helping to pay for the parking, but a precise relationship between parking and assessments can't be drawn.

Table P-2 illustrates the direct costs and revenues involved in the next three recommended steps in off-street parking, but omits indirect revenues. Development of all of these facilities, with the present meter rates continued, would mean

TABLE P-2

20-YEAR PARKING COST ANALYSIS

	N. OF RR (Surface)		CLARKE-MUZZEY (Surface)		MUZZEY-WALTHAM (Structure)	
	Per Space	Total	Per Space	Total	Per Space	Total
Number of spaces		125		156		180
Land acquisition	\$ 16	\$ 2,000	\$ 550	\$ 85,000	\$ 0	\$ 0
Development Cost	\$ 320	\$40,000**	\$ 160	\$ 25,000	\$1,500	\$270,000
Assumed 20-yr bonds	\$ 336	\$42,000	\$ 710	\$110,000	\$1,500	\$270,000
Annual						
Principal		\$ 2,100		\$ 5,500		\$ 13,000
Int. (Ave. @ 3%)		\$ 600		\$ 1,700		\$ 3,900
Maintenance	\$ 20	\$ 2,500	\$ 20	\$ 3,100	\$ 20	\$ 3,600
Lost taxes*		\$ 100		\$ 1,300		\$ 0
Income	\$ 25	\$ 3,100	\$ 25	\$ 3,900	\$ 35	\$ 6,300
Annual cost - income		\$ 2,200		\$ 7,700		\$ 14,200
20-yr gross cost		\$44,000		\$154,000		\$284,000
Residual Value						
Land @ 100%		\$ 2,000		\$ 35,000		\$ 0
Structures @ 50%		\$ 8,000**		\$ 0		\$130,000
Net 20-yr cost		\$ 34,000		\$ 69,000		\$154,000
Net annual cost per space		\$ 14		\$ 22		\$ 43

*On acquired land @ \$40/1000 Assessed Value.

**Includes 2 crossing gates.

an annual "subsidy" of about \$10,000, over half the anticipated tax increment from the new commercial development which creates the need for the parking program. Also gained, however, would be space for most of the loop-road system, and space for landscaped plazas.

These figures allow evaluation of a number of policy alternatives. The direct cost of relocation of 34 parking spaces along Massachusetts Avenue to allow development of a pedestrian mall can be computed by using the cost of the most costly spaces to be provided, \$43 per space, plus \$52 per meter removed in lost income, or not over \$3,200 per year for the 34 spaces relocated. Assignment of responsibility for parking in the Clarke Street-Muzzey Street area to private interests would sacrifice much of the area's potential usefulness, and make provision of the loop-road more difficult, but would "save" \$1,200 per year (before considering the effect of changed zoning requirements upon land values and tax assessments).

Doubling meter fees would make the parking program more than self-supporting; fee elimination would almost double the projected annual "deficit". The demand for shoppers' parking has been found to be insensitive to price variation; the results of parking meter removal have been uneven in those communities attempting it, while doubling fees where parking pressures are great has had negligible effect.

If the meters (or gates at a garage) will accept any of a variety of coins, minimizing the "wrong change" problem, \$0.10 per hour for parking should not be a significant customer deterrent. It is vital to the health of Lexington Center that adequate parking be provided; to secure that parking, it is important that it can be provided without ultimate cost to the taxpayer; therefore both the parking program and the higher parking rates it suggests are recommended.

SPECIAL PARKING NEEDS

Quick-turnover parking is required for convenience goods stores. The "Parking Needs" study estimated a reasonable demand for such spaces amounting to 10% of total parking provision, or about 110 spaces in the immediate future, 130 by 1975. Forty of these are proposed to be provided on Massachusetts Avenue, forty at the curb on other streets in the Center, and the remainder in private lots such as those at several of the banks.

TABLE P-3

MASSACHUSETTS AVENUE PARKING

LOCATION	NUMBER OF SPACES				
	1965 Spaces	1966 Spaces		1975 Spaces	
		Recom- mended Plan	Alternate Plan	Recom- mended Plan	Alternate Plan
SOUTH SIDE					
Clarke to Muzzey	12	12	12	12	12
Muzzey to Waltham	16	11	11	11	11
Waltham to Wallis	12	12	12	12	12
Total South	40	35	35	35	35
NORTH SIDE					
Meriam to Depot	5	0	5	0	5
Depot to Depot	5	5	5	0	5
Depot to Waltham	7	0	7	0	7
Waltham to Edison	11	8	11	0	11
Edison to Grant	6	6	6	0	6
Grant to Town Offices	5	5	5	5	5
Total North	39	24	39	5	39
GRAND TOTAL	79	59	74	40	74

The present uniform pattern of distribution of convenience-oriented parking spaces would be altered by proposals for relocation of some curb parking from Massachusetts Avenue. It can be expected that, in time, the pattern of tenure will also alter, with the convenience goods outlets tending to locate where there is quick turn-over parking, shoppers' goods outlets tending to prefer the environment provided by the pedestrian promenade. This organization of the pattern of activity should ultimately improve the convenience and usefulness of the Center.

Employees and merchants have the best parking in Lexington, just as they have in most commercial centers of this size. The top and most distant portions of any proposed parking structures and the most distant portions of surface parking lots should be regulated to permit all day parking, and merchants and their employees should be encouraged to use those spaces, releasing their present "back-door" spaces for customer use, especially for quick trips.

The anticipated commercial expansion on the north side of Massachusetts Avenue is certain to place new pressures on the present parking north of the railroad, requiring metering for the first several rows of spaces to insure their best use.

Tourists visiting the Green already have some parking difficulties. If, as expected, tourist visits triple by 1975, positive provisions will have to be made for their parking. For a variety of reasons, it would be desirable for tourist parking to be near the joining of the historic and commercial centers, but commercial demand for parking there is likely to squeeze out tourists at least on Saturdays. Space primarily designated for tourist use should supplement signs guiding visitors to the municipal lot off Meriam Street. Should the railroad right-of-way be abandoned, it could be used to park perhaps 50 cars, nicely screened, with visitors then being led past Buckman Tavern to the Green on foot. The post-1975 development of a Bedford Street traffic diversion (see Circulation Plan) may result in creation of an alternate or more adequate area for tourist parking.

A handful of cars now park in the Center all day while their drivers take the train to Boston. By 1975, these auto/transit users will either have been eliminated or greatly increased in number. Their parking is "dead", their driver's contribution to the Center's economy consisting largely of newspaper purchases and banking. At the present level this is no problem because of the small numbers, but a successful transit operation would create parking demand which cannot reasonably be handled at the Depot. The location of a transit

stop or stops near the Center will require careful analysis when and if such stops are required. Few would use the transit with Lexington Center as ultimate destination, but many would want to leave their space-consuming cars near the stops, so location should be outside of the compact Center. Optimal would be a location, say near Grant Street, where commuter parking needn't compete for space with Center shopper parking, but station-Center proximity is good enough that mid-day combined Lexington/Boston shopping trips would be easily serviced.

RECONSTRUCTION OF
MASSACHUSETTS AVENUE

R E C O N S T R U C T I O N O F M A S S A C H U S E T T S A V E N U E

Previous reports on Lexington Center have dealt with Massachusetts Avenue along with other considerations. This report deals only with Massachusetts Avenue, and is intended to answer the questions which have been raised concerning the proposed development of the newly-widened right-of-way.

EXACTLY WHAT IS PROPOSED?

The Lexington Center Steering Committee, the Design Advisory Group, and Economic Development Associates concur on a plan which would use some of the new right-of-way on Massachusetts Avenue for added street width, the rest for a pedestrian promenade on the north side of the Avenue, and for widening the sidewalk on the south side of the Avenue. Space for moving vehicles would also be gained by relocation of most of the parking on the north side of Massachusetts Avenue, and traffic flow would be smoothed by relocation of some spaces from the south side.

The intent of this plan is to provide a "front yard" for Lexington Center no less thoughtfully developed than the front yards of the Town's residents, while at the same time serving the functional demands placed on the roadway. The intent is to provide an element of continuity joining the presently divided historic, commercial, and civic components of the Center. The intent is to develop an environment in Lexington Center expressive of the kind of community Lexington is, not just "Anywhereville".

To this end, a landscape element strong enough to be understood at automotive speed is required; a double row of trees would provide this, running a continuous ribbon of green from the town offices to the Green. Detail at finer or pedestrian scale should consistently support the theme of a unique Lexington, with smaller plantings, benches, even lawns developed in the spaces between pairs of trees, with variety and individuality in the detail development. This design would give continuity viewed from the auto; contrast, variety and surprise from the pedestrian side. This is consistent with the scale of the

historical town center which is being lost as commercial units get larger and increasingly are designed for the eye of the autoist, not the pedestrian. By the control of scale in the public space, historic relevance can be preserved despite private changes, and can perhaps influence those private changes to adopt a more sympathetic scale.

With buildings separated by the widened 100 foot right-of-way, and reconstruction resulting in lower buildings than in the past, Massachusetts Avenue will lose some of its sense of enclosure, and there is a danger that, as in many communities, the dominant visual feature will become the road. The proposed scheme would restore some of the former sense of enclosure to the Avenue, and reduce the travelled way to only that functionally required for traffic. In addition to visually reducing separation, the proposed plan would put the curbs about 4 pedestrian steps closer together to the benefit of both pedestrian and the motorist, who would thus be delayed less for pedestrian crossings.

Eventually, the themes of greenery, provision for pedestrian comfort, and carefully textured surfaces would extend beyond Massachusetts Avenue, tying the Avenue with Depot Square and the off-street parking areas. In time, the other commercial centers of the Town should receive complementary design efforts, as should the development of visual coherence for the whole of the Town's Massachusetts Avenue-Bedford Street axis.

Decisions on the development of Massachusetts Avenue will be made at the March, 1966 town meeting. These reports are designed to aid in that decision, as have been the numerous public meetings held to discuss these proposals. As a further aid, an experimental banning of parking in accordance with the first-stage recommendations was made.

March

The five spaces removed on the south side of Massachusetts Avenue provide, in conjunction with the new traffic signals, a free right turn at Waltham Street. The value of this change was immediately evident.

Fourteen spaces removed on the north side of the Avenue were intended to test three things. Circulation improvement can be imperfectly tested because pavement markings were unchanged, and because the ultimate proposal calls for curb relocation to provide 5 feet of additional width. Despite this limitation, flow improvement was observed, although not capable of being statistically proven.

Inconvenience caused customers can fairly well be evaluated by all who use the Center, so long as they keep in mind that the ultimate plan calls for improved rear parking. Impact on sales

can be tested least accurately of all, because of the short time period, snow, a missing building, and the lack of beautification designed to put the "plus" into the situation.

1966 Action

Article 52 in the 1966 Annual Town Meeting calls for an appropriation for beautification along Massachusetts Avenue at a total cost of \$60,000, of which half should be covered by a federal grant. This article will provide an opportunity for explicit public expression on the broad issues involved in Avenue reconstruction.

The precise location of 1966 public construction depends upon the speed with which private building changes are made. At this writing, the most probable opportunity for permanent construction in 1966 lies between Depot Square East and Waltham Street. Accordingly, it is recommended that in the above portion of Massachusetts Avenue, curbs be relocated to provide 60 feet of travelled way, increasing the space for moving vehicles from the present 38 feet to 46 feet. A double row of trees, other plantings, benches, and a carefully designed sidewalk surface would also be constructed along that portion of the Avenue if this recommended plan is approved at the town meeting. These funds will also permit landscaping in front of the Central Block if private development makes that feasible.

At this stage, relocation of five spaces from the south side of the Avenue for traffic improvement is recommended, a desirable step irrespective of ultimate action on the north side. During this same period, it is anticipated that the largest increments of private building anticipated for the Center for many years will be underway. Also being considered will be recommendations for rezoning, development of parking north of the railroad, rationalization of parking between Clarke and Muzzey Streets, initial steps in developing the loop road system, and other smaller circulation changes. Also being prepared during this period will be Lexington's long-range financial study, which should help place later Center proposals into a better-articulated town-wide set of guidelines.

Post 1966 Actions

As soon as off-street parking has been improved to allow it, the parking spaces on the north side of the Avenue in this same area would be relocated off-street, permitting the portion of the Avenue used for circulation, previously raised from 38 feet to 46 feet, to be further raised to 49 feet, the width ultimately required to meet circulation demands; and also permitting widening the south sidewalk from its present 10 feet to

14 feet. This sidewalk widening makes possible development of small-scale landscaping and furnishings to complement development on the north side, and provides sufficient space for tree planting. Tree planting at that location is made difficult by utility location, so hasn't been illustrated, but is feasible if the effort is made.

Final implementation of this plan for Massachusetts Avenue involves continuation of the pedestrian promenade to the west as far as Meriam Street, and to the east as far as the town offices. Curb parking would be retained on the south side of Massachusetts Avenue, in front of the Post Office, and on side streets. Concurrent action will call for further off-street parking development, dependent upon the pace of commercial development, and for beautification efforts elsewhere in the Center; at Depot Square, and to the rear of commercial structures.

WHY SHOULD THIS BE DONE?

Three basic goals were selected to guide the Lexington Center Plan: profit to the businessmen, development in the Center of an appropriate symbol to represent this unique community, and service for residents. Every one of these basic goals is better served by the recommended development of Massachusetts Avenue than by its more conventional alternate.

If the Center fails in its function of providing a successful environment for profitable enterprise, it will also fail in its symbolic and service roles, so fulfillment of this function is an absolute need. One of the fundamental issues involved is the question of the appropriate future commercial role of Lexington Center: in the face of new shopping-center competition, should it develop towards a reliance on convenience goods sales, or should the emphasis be on specialty goods? This plan is predicated on the latter direction.

Lexington Center cannot imitate or directly compete with highway-oriented shopping centers, whether they be the projected Burlington colossus, or the Great Road convenience goods complex. Lexington Center must develop a role of its own, consistent with its locational and physical characteristics. Economic analyses and the judgement of a number of businessmen associated with this study point to a future for Lexington Center as a specialty center, with a role relative to the Burlington Center analagous in many ways to the role of Harvard Square relative to Downtown Boston, or of Andover relative to Lawrence and the North Shore Center. In each case, the smaller center serves a complementary function, concentrating on relatively low-volume highly specialized goods aimed at a particular, rather than mass, market.

The alternative, expanding convenience goods sales, could not support the existing rent structure of Lexington Center, let alone any higher level. The pattern of access and parking is not now well-suited for a convenience-goods center, and future traffic diversions will make the Center even less well-suited.

To successfully attract special customers, a special environment is required. An attractive and distinctive treatment of Massachusetts Avenue is an important step in drawing such customers and the stores which will serve them. This judgement is reinforced by responses of merchants in similar businesses in the Center today. In a recent survey, shopping-goods merchants favored relocation of parking off Massachusetts Avenue, 12-7.

Service convenience for Lexington residents will be served by, in this way, encouraging location in Lexington of stores unique in the area, stores which might not exist anywhere in the region if the particular environment of Lexington Center didn't exist, just as some of the enterprises succeeding in Harvard Square couldn't exist anywhere in the region if the mutual attractiveness of that unique set of businesses weren't there.

In merchandising as well as in physical terms, this is a bold proposal: to make Lexington Center serve more than just Lexington; to make Lexington Center a regional facility complementary to Burlington, perhaps the object with Burlington of dual-destination trips. Residents will be among the greatest beneficiaries, through having a distinctive range of merchandise locally available.

The recommended treatment of the Center would give to Lexington a distinctive symbol representative of the community for which it stands: verdant, spacious, concerned with visual amenity, and with highly specialized economic function. It would be a symbol of a community which cares enough about excellence to make the extra effort of attaining it.

WHAT WOULD BE THE EFFECT ON TRAFFIC?

The Circulation Plan demonstrates in substantial detail that the proposed Avenue width, 56 feet, can adequately serve projected traffic needs for as long as can the conventional alternative (64 feet with an additional lane of parking), or until sometime after 1975. Following that, traffic diversion in addition to Worthen Road will be required if congestion is to be avoided, no matter which configuration is selected.

One (but not the only) major purpose in widening the Massachusetts Avenue right-of-way was to gain congestion relief. Either the proposed plan or its conventional alternative would serve that purpose well by insuring less congestion by 1975 than exists today. Few centers will be so well-served.

WHAT ARE THE PARKING CONSEQUENCES?

The Parking Plan report points out the need for major expansion of parking within the central portion of the Center if the Center isn't to prosper at the periphery and deteriorate at the core, as many centers have. A net increase of about 290 spaces is required by 1975 to maintain the present floor area to parking spaces relationship. Loss of off-street spaces to provide the loop road, landscaped areas back of buildings, traffic improvement, and building sites will probably require not less than 100 replacement spaces by 1975, or a minimum demand for about 400 additional and replacement spaces. Parking relocation to make this plan workable would add 35 spaces to the demand, or less than 10%. The Parking Plan explores means of providing those spaces: it is entirely feasible for them to be developed in any of several alternative ways, whether the railroad right-of-way becomes available or not.

Proximity of parking spaces to stores would inevitably be reduced by relocation of spaces into off-street facilities. The consequences of this depend upon the length of shopping trip services. A few seconds isn't critical to an hour's trip, but it is to a two-minute trip. Curb parking turnover was recorded and analysed on a rainy Saturday, when pressure for convenient location is highest. Through the middle of the day, only about 15% of the curb spaces were held by cars making trips shorter than 10 minutes, 33% by cars (including the above) making trips shorter than 20 minutes. For the rest, the degree of displacement required for the recommended plan should prove inconsequential. Careful design of meter time limits can insure that equally convenient spaces can be reserved for the relatively few quick turn-over spaces affected by parking relocation. In any event, shopping for the specialty goods in which the Center should concentrate, is certainly less dependent upon differences of a few seconds in access than upon differences in visual environment.

WHAT WILL THIS PLAN COST?

The net cost of this or any town undertaking, is the annual excess of municipal costs occasioned by it over revenues accruing as a result of it. The cost side can be fairly well defined, but the revenue results are highly problematical. However, order of magnitude estimates can be made to illustrate the range of probability.

Two independent cost estimates were prepared for the first stage work on Massachusetts Avenue, somewhat imprecise because detailed construction drawings have not been made. These estimates were compared by EDA, and a single estimate produced, using the higher unit prices whenever they differed. These costs are for beautification, not road construction, and all should qualify under the federal Urban Beautification Program. These estimates do not include inevitable road construction costs, money for which was allocated in the 1965 street widening appropriation. These are the added costs because of beautification proposals (Table 1).

These figures are comfortably high for use as budget estimates. For example, each tree has been estimated to cost \$400, which allows a fine tree. Smaller trees could be installed for far less if necessary. Sidewalk paving is estimated to cost \$1.10 per square foot, assuming special treatment. An ordinary walk could be constructed for half that figure.

These costs come to about \$175 per front foot of treatment in the area with double trees. At that same rate, the entire Massachusetts Avenue program would cost \$220,000. Allowing another \$80,000 for other areas in the Center, a total outlay of \$300,000 is indicated for beautification only. This includes sidewalks, benches, plantings, supplementary lighting, trash receptacles, and associated utilities and roadway costs (Table 2).

The federal Urban Beautification Program is being designed to aid just such projects as this. Preliminary review of this recommended plan with federal officials indicates that it will qualify for aid. Normally, grants will be for 50% of the increase in town expenditures for beautification above the base of an average of the previous two years' expenditures. Such expenditures have fluctuated widely in Lexington, averaging about \$50,000 per year in recent years. The size of the grant for Center beautification would depend upon the level of expenditures in other areas of Lexington for shade trees, playground improvements, and other eligible expenditures. Given the incentive of 50% aid, it seems unlikely that future expenditures for beautification will fail to exceed the average outlays of this year and last year, the base years, so it seems fair to assume 50% aid for the entire amount of Center beautification, or \$125,000 over the ten-year period.

Given the example of the first-stage improvements, we believe that beautification will have broad support in the community, and believe it is not unreasonable to expect private financial support for some of the costs involved. This has been set at \$25,000, well below amounts raised by merchants in other communities for similar program. This leaves \$100,000 in municipal costs for the program, or \$5,000 per year over a 20-year amortization.

TABLE 1

CAPITAL COSTS, 1966 CENTER BEAUTIFICATION(From Depot Sq. East to w. crosswalk at Waltham Street,
and Meriam Street to Depot Square.)

Removal and Demolition	\$ 1,600
Construction	24,900
Furnishings	7,000
Planting	13,200
	<hr/>
	\$51,700
Fees, contingency (15%)	7,800
	<hr/>
TOTAL	\$59,500

Estimates by E.D.A.

TABLE 2

CAPITAL COSTS, 1975 BEAUTIFICATION PROGRAM(Massachusetts Ave. from town offices to the Green,
Depot Sq., off-street parking areas)

EXPENDITURES:

Massachusetts Ave., Stage I	\$ 60,000
Massachusetts Ave., Stage II & III	160,000
Depot Square, parking areas	80,000
	<hr/>
TOTAL	\$300,000

SOURCES OF INCOME:

Federal grant (50%)	\$150,000
Private subscription	25,000
Tax levy	125,000
	<hr/>
TOTAL	\$300,000

Assume municipal cost amortized in 20 years, tax levy cost =
\$6,250 per year.

TABLE 3

ANNUAL COSTS, 1975 BEAUTIFICATION PROGRAM
 (Massachusetts Ave. from town office to the
 Green, Depot Sq., off-street parking areas)

BASED ON 20-YEAR COST AMORTIZATION

	<u>Annual Municipal Cost</u>
Parking Relocation	\$ 3,700
Beautification	
Capital Costs	6,300
Maintenance	5,000
<hr/>	
Gross Annual Cost	\$15,000

Required offsetting assess-
 ment increase @ \$50/\$1000 A.V. = \$300,000 in mid-year of period,
 or \$ 30,000 per year growth

If entire increase based on
 commercial development, re-
 quired floor area increase
 (@ \$10 per s.f. A.V.) = 3,000 s.f. per year
 Sales increase @ \$50/s.f.
 floor area = \$150,000 per year

If entire increase based on
 residential development @
 200 dwellings per year, re-
 quired average value increase = \$150 per dwelling unit

The annual cost of the beautification program will be the imputed cost of parking relocation (the highest "deficit" of new parking, plus lost meter revenues), plus the capital cost of the improvements, plus maintenance costs (extra snow removal costs, plant care). These are estimated to total \$15,000 per year over the 20-year period (Table 3), assuming a pay-as-you-go program.

If this project is to be self-sustaining, it must stimulate assessment growth which would not otherwise have occurred. If the average tax rate over the twenty-year period is estimated at \$50/\$1000 assessed valuation, by the middle year of the twenty-year period assessments would have to have grown \$300,000 above what they would otherwise have been for increased tax income to equal municipal costs (before that year added income would be less than costs, after that year more than costs). On an annual basis, this is a growth of \$30,000 in assessments above what would otherwise obtain (assessments increased \$4,400,000 townwide during 1964).

For the entire growth to be based on commercial property, this would mean adding about \$150,000 per year to the sales level of the Center because of the beautification. This is just over 1/3 the projected potential rate of growth for the Center. Given the judgement that the beautification program will materially boost the Center, it is not unreasonable to attribute 1/3 of its growth to this program. An example of the commercial impact of beautification is analysed in a current planning publication¹. Atchison, Kansas, a city of 15,000 population, invested \$300,000 in a landscaped mall. Within a year of opening in late 1963, retail sales had increased 20 percent, ten new firms had located there, and tax returns already exceeded costs. Numerous other cases could be cited, though few so dramatically sharp in returns.

On the other hand, the impact of Center beautification will be town-wide, enhancing property values throughout the community. In part because Lexington spends generously on quality schools, home builders in Lexington can and do successfully aim for a quality home market. Similarly, a beautiful Center should help them sell better quality homes than would otherwise be possible. Conversely, depressed conditions in the Center would make it harder to sell to a high-price market, causing the average value of new homes to drop.

If beautification in Lexington Center influences home-builders to the extent that the average assessed value of the homes they build is increased \$150 above what it would otherwise have been, the difference in taxes on those homes alone (ignoring the subtler tax impact on existing structures) would cover the cost of this program.

¹Housing and Home Finance Agency, "Profile of a City - Atchison, Kansas" Urban Renewal Notes, Sept.-Oct. 1965.

No one can prove whether either or both of these impacts will be felt. Probably the greater impact will be on values outside of the Center, since much of the growth of the Center is largely assured in any event (and the tax benefit of the growth has already largely been "claimed" to offset widening costs). Our professional judgement, based on improvement programs in other communities as well as the spending and assessment growth history of Lexington itself, is that tax returns attributable to this beautification will easily exceed costs even within the first decade.

IS THIS WHAT THE TOWN MEETING ASKED FOR?

When the March, 1965 town meeting appropriated \$250,000 to widen the Massachusetts Avenue right-of-way, and \$13,000 for planning studies, did it intend results such as are now recommended? Perusal of the materials used to influence that meeting suggests that this was exactly the intent, and that anything less would not be carrying out their directions.

7
There were two basic intentions in the widening: one to improve circulation, the other to improve esthetics. The latter may well have been the dominant motive. In a statement advocating the widening, the Board of Selectmen were quoted, "The condition of the structures occupied by the retail trade, the circulation pattern around Lexington Center, the inadequate parking facilities and -- above all -- the undistinguished appearance of the shopping center do not appropriately reflect the needs, the taste and the general affluence of the town's population... Not only is the widening of Mass. ave. essential to the improvement of the circulation pattern in the Center, but it provides the long-awaited occasion for redeveloping the commercial core with the guidance of an overall design concept lending unity and distinction to the business district."¹

The lead editorial in the Minute-Man stated "This project would mean to the town a Massachusetts ave. of equal width throughout the Center and the removal of a bottle neck which now snarls traffic and which if allowed to continue in the years to come would probably mean almost paralysis during peak hours of traffic. More important than this is that it would mean the tearing down of the two oldest and most unattractive business structures in the Center and their replacement by larger, much more attractive and considerably more valuable modern business structures.

¹Lexington Minute-Man, March 4, 1965, pg 1 et seq.