



A Framework for Community Design: Worcester's Main South Neighborhood

by
Samuel Joseph DeSollar
Bachelor of Science in Design,
Clemson University
Clemson, South Carolina
June 1992

Submitted to the Department of Architecture in Partial Fulfillment
of the Requirements for the Degree of Master of Architecture at
the Massachusetts Institute of Technology
February 1997

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Signature of Author

Samuel J. DeSollar, Department of Architecture

Certified by

Roy Strickland
Associate Professor of Architecture

Accepted by

Andrew Scott
Associate Professor of Architecture

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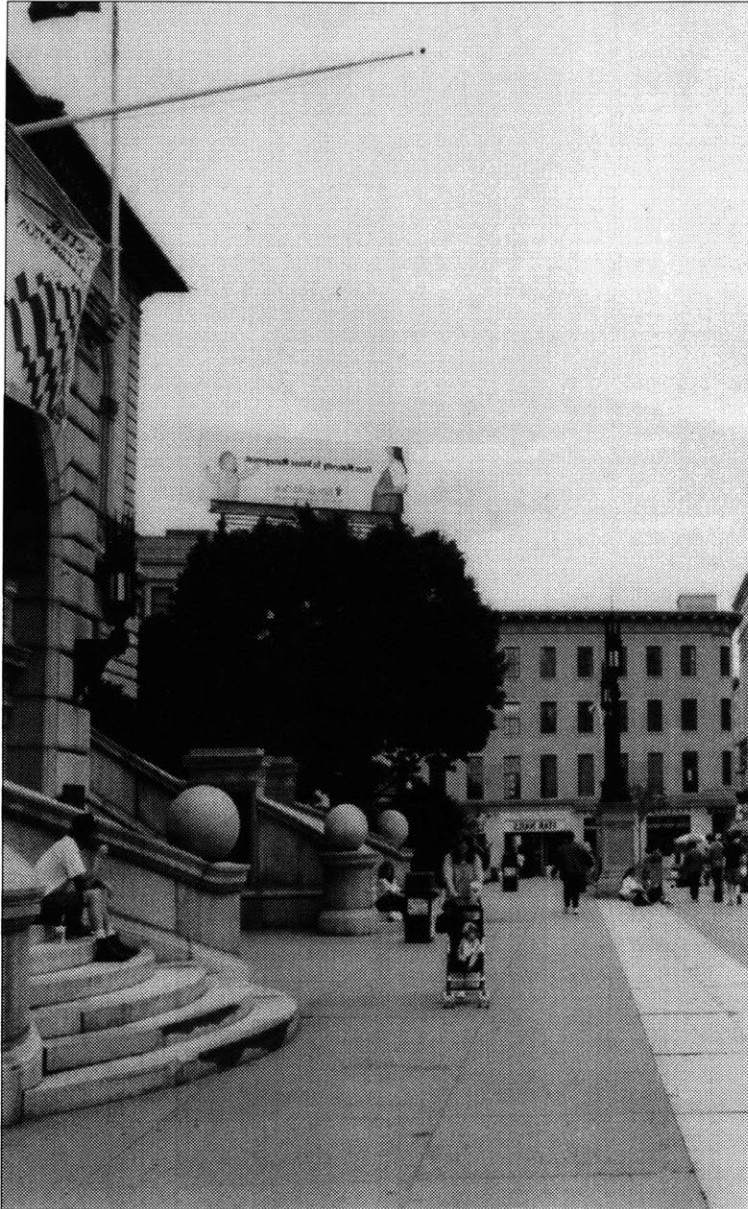
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A Framework for Community Design: Worcester's Main South Neighborhood

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Abstract

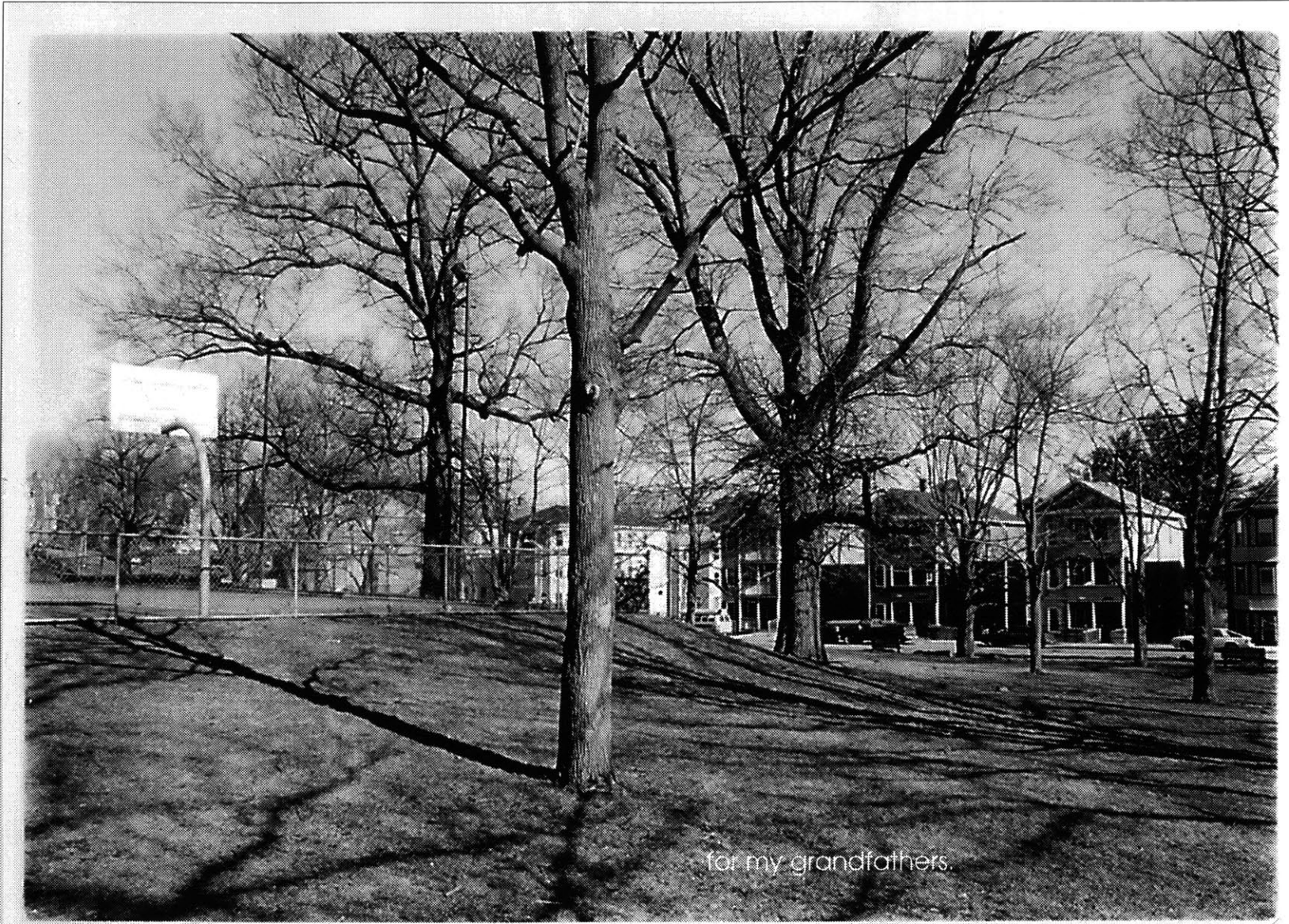
Communities and the connections between them act as the foundation for the fabric of great cities. Suburbs were originally intended as a utopian alternative to crowded urban conditions. However, the current model of residential suburban development in the United States grows less affordable for many Americans, segregates private life to a realm exclusive of community and wastefully consumes material resources. While unchecked development diminishes the rural landscape, urban neighborhoods deteriorate, lacking the resources and amenities of new developments. *The transformation of blighted urban neighborhoods into dense, mixed-use communities is a viable alternative to suburban sprawl.* This thesis proposes to explore methods of configuring a community within an existing urban site: its streets, lots, and buildings; to conserve land and resources, make housing affordable for a wider range of incomes, and perpetuate a sense of individual identity and community vitality. The strategies explored will be developed into a series of guidelines or urban code for the site. Layout of streets, lots, buildings and open spaces will be determined for a small community. Guidelines will be established not only for housing within the project, but those services necessary to support a viable community: commercial centers, open space, and institutional facilities. These guidelines will allow development of the site at an architectural scale.

Roy Strickland
Thesis Supervisor

Associate Professor of Architecture

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for my grandfathers.



figure 6.1 Housing in the Main South Neighborhood in Worcester, Massachusetts.

Introduction

Exploring any large city in the United States, one will find districts or neighborhoods with numerous derelict houses, abandoned shops, vacant lots and condemned buildings. An exodus to the suburban promise of crime free neighborhoods and good schools contributed to the slow deterioration of these areas.

Worcester, Massachusetts, contains several areas of this type. A city whose growth was financed by the manufacturing mills of the 1800's, the area is littered with the old mill buildings and areas of worker's housing that supported the industry there. Several of these areas are crime ridden, the buildings in various states of repair, windows broken and weeds in the yard. The Main South neighborhood in Worcester is one of these areas, and will be used for the exploration of the thesis. (figs. 2.1, 6.1)

This thesis will study methods to reclaim neglected urban areas, producing a vital and diverse community in its place. In so doing, the project may appropriate existing urban infrastructure: physical infrastructure such as utilities, transportation networks, and others. The resulting community will provide an environment with a diversity of incomes, housing types, and residents, both new and existing.

The thesis will explore a process through which a series of guidelines for community development may be defined. By the investigation of a series of existing planned communities, their histories, the composition of their urban fabric, and the behavior of those fabrics within the site, a framework for the comparison of designed communities and guidelines with which to design them will be produced.

The thesis will then implement these guidelines or rules within the existing site of the Main South Neighborhood in Worcester, Massachusetts. Throughout the design process, the rules and guidelines will be referenced and refined as the process and the site inform the rules.

Finally, the thesis will offer a critique of the process, the design, and the dialogue between them.

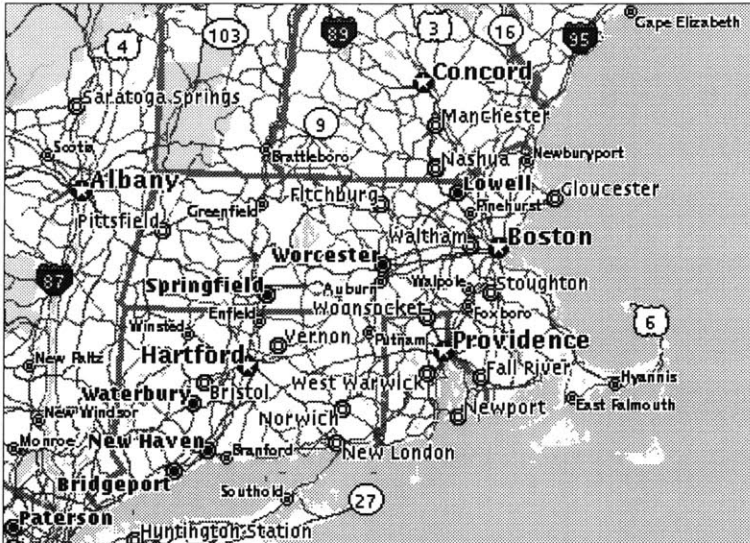


figure 8.1 New England Area Map

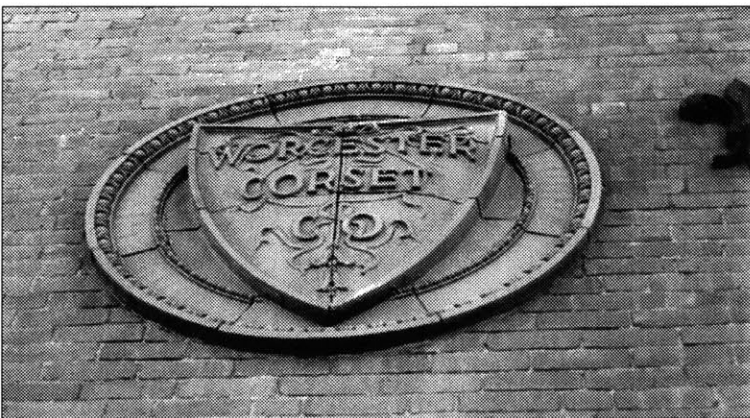


figure 8.2 Building Detail on Main South Site

I. The Site

Worcester, Massachusetts, is located north of the Massachusetts Turnpike approximately forty miles west of Boston. It derives much of its character from periods of economic and cultural growth supported by industrial manufacturing. The city was considered by many to be New England's cultural center during the latter part of the nineteenth century⁷ as well-to-do industrialists donated lands and funds toward civic improvements and institutions after building themselves stately homes. By 1880, Worcester was the United States' twenty-eighth largest city, with 58,291 inhabitants. By 1930, Worcester's population had grown to 195,311.

The fabric of the city reflects many of these the changes. When large numbers of immigrants including Irish, French Canadians, Swedes, Poles, and Lithuanians, came to labor in Worcester's



figure 9.1 Abandoned Industrial Buildings near Railroad Bed.



figure 9.2 Clark University's Clark Hall on Main Street

factories, they associated with particular industries and settled in close proximity to their workplace. This established a pattern of ethnically based neighborhoods in Worcester. Residents still identify with a particular group, and associate themselves with a particular neighborhood. Thus the contemporary city of Worcester acts almost as a cluster of "villages." Evidence of Worcester's industrial heritage abounds.(figs. 1.1, 8.2, 9.1) Adjacent to an active rail line, several turn of the century mill buildings are located within the Main South neighborhood site. Three decker worker housing is also common. Clark University, across Main Street from the site, was funded by one of Worcester's wealthiest residents, and was designed for conversion to a manufacturing facility should the school fail. (fig 9.2)

Though portions of the city declined in the post industrial era, residents largely remained in Worcester. The city supports a large and stable population, with many

families having lived their entire lives in the same neighborhood. Perhaps this has helped to foster the sentiment self confidence and independence prevalent in Worcester.

Political disagreements and Worcester's self-reliant attitude affected the placement of the Massachusetts Turnpike; Turnpike Authorities located their roadway and access to it so as to

effectively place Worcester sufficiently removed from the main traffic artery to Boston. Driving to and through Worcester challenges most outsiders. Though these factors further isolate the city, Worcester maintains a sense of independence, identity, pride, and vitality.

Worcester's Main South area developed as an extension of the downtown area. Main South served housing needs caused by industrial development in the late 1800's. Now the area contains a variety of buildings and institutions. Clark University, numerous churches, a few large older homes, and several mixed use commercial and residential buildings line Main Street. Main South's primary commercial activity is located along Main Street, and decreases in density further from downtown Worcester.

The site, called here the Main South neighborhood, is located across Main Street from

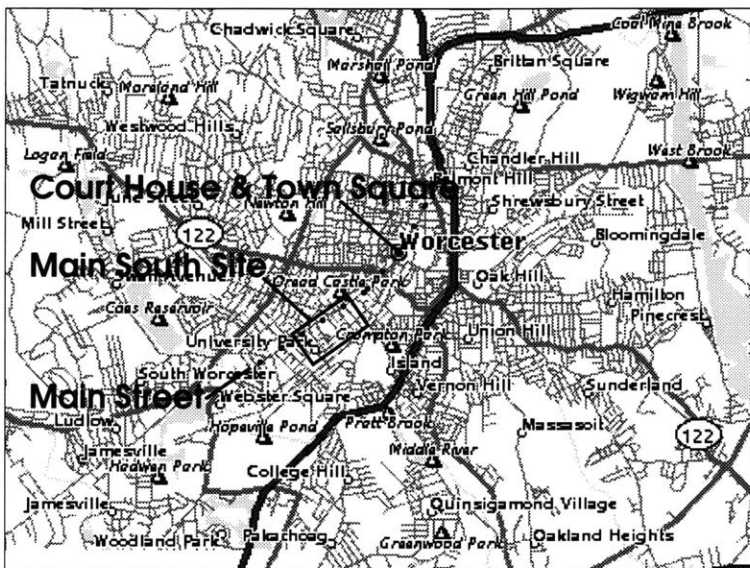
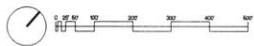
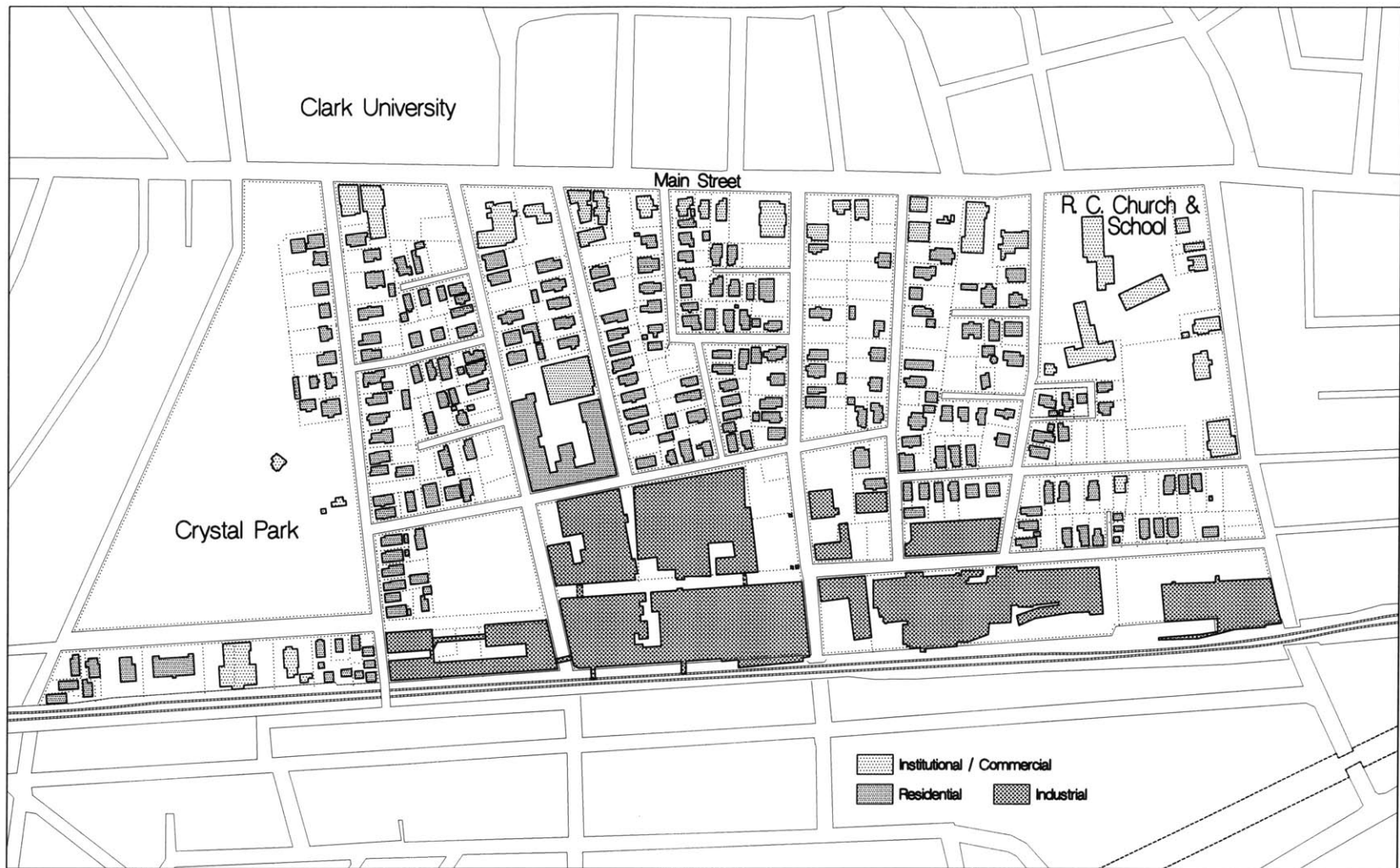


figure 10.1 Downtown Worcester and Site Locator



Worcester Existing Conditions

figure 11.1 Worcester Existing Conditions



figure 12.1 Main Street in Worcester

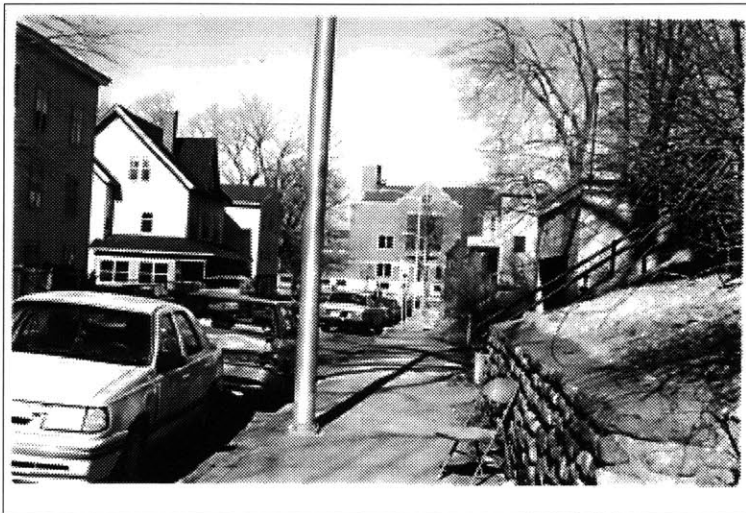


figure 12.2 Housing at the center of the site.

Clark University, approximately three quarters of a mile down Main Street from the town square and courthouse. (fig 10.1) In the center of the Main South area, the site is bounded on the north edge by the traditional downtown Main Street, on the east edge by a large Catholic church and school, on the south edge by a band of industrial buildings facing the railroad, and on the west edge by a large park. (fig. 11.1)

These boundary conditions help to define the site as a discrete entity. The Main Street edge is comprised of several churches, three and four story slot buildings, parking and vacant lots. (fig. 12.1) Clark University is located north of Main Street, above the western portion of the site. The industrial buildings located along the southern edge of the site are in various states of use. Some house small industry, one has been renovated into condominium housing, and others remain vacant.



figure 13.1 Crystal Park at the Eastern edge of the Main South neighborhood

Located within the central portion of the site, housing stock is comprised primarily of detached single and multifamily structures with traditional yards and outbuildings. (fig. 12.2) Condition of the housing also varies. Many houses, especially those immediately adjacent to Crystal Park and in the northeastern portion of the site, are in poor condition. Several are abandoned with broken or boarded up windows. Drug users and dealers have been known to use many of these houses.

Crystal Park (figs. 5.1, 13.1) is reputed not to be a safe place after dark. High police visibility and "active policing"⁸ in the area attempt to counteract these problems.

The neighborhood is located along the slope of a hill, the higher elevation occurring along Main Street. The neighborhood was the planned site of a vocational school with a program of approximately seven acres, but residents objected strongly to any project that would displace a single resident, regardless of benefits to the neighborhood as a whole. Problematic site conditions include several derelict houses, abandoned industrial buildings of varying conditions, a poor street layout, and discord between the community and Clark University north of Main Street. These issues retain their relevancy, and their impact in the design process is reflected in the final proposal.

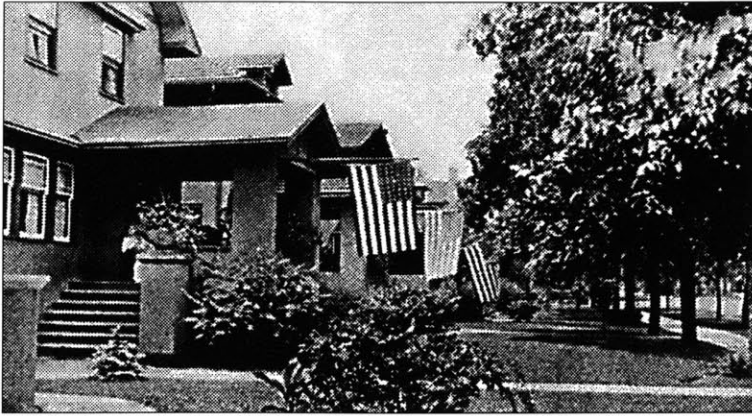


figure 14.1 Suburban Chicago Street, circa 1914.

II. Precedents

Suburbs might be viewed as utopias where ideals manifest themselves as the result of community planning. The examination of these ideals and their manifestations raises questions about the American house and the life which surrounds it. Configurations of the built environment correlate or influence patterns of activity. The examination of existing communities and their patterns may give insight as to the nature of successful

configurations, problematic conditions, and the appropriate use and application of the patterns or elements within them. The reconfiguration and reuse or "recycling" of communities, conserves resources and builds upon existing conditions. Elements of public and private open space, institutions, commercial and retail centers accessible to the community consistently contribute to both the quality of community life and a memorable environment at a neighborhood scale.

The analysis of a selection of designed communities establishes a benchmark or reference for design decisions at the urban scale. The examples chosen include a distribution of densities from a rural suburb to an urban metropolis. The periods in which the projects were designed range from 1733 in the case of Savannah, Georgia, to Seaside, Florida, designed

within the last decade. All are located within the United States: examples include New York City; Radburn, New Jersey; Riverside, Illinois; Savannah, Georgia; Seaside, Florida; and the South End in Boston, Massachusetts. Each case presents a distinct pattern reflecting a distinct set of ideals. To attempt to compare all cases in an objective manner, a representative section of each design was selected and separated into its constituent elements. (figs. 19.1, 26.1, 32.1, 39.1, 48.1, 53.1) The percentage of building area, private open space, sidewalk area, street area, and area of public open space was recorded for each example. Traditional indexes of length of road per area and number of housing units per area was determined for each case to indicate relative infrastructure costs and density, respectively. Comparison of the results reveals grains of similarities in several cases. Street areas ranged from ten percent to

twenty-nine percent of the total study area, with some cases; New York City, Savannah and the South End, having almost identical street areas. Dimensions for streets, types of buildings, and sidewalks were also similar in the more urban cases. The circulation for each site was also diagrammed, which in some cases included provisions for pedestrian circulation. Each case is presented at the scale of one inch equaling five hundred feet.

After quantification of site elements, the fabrics of each case were inserted into the study area of the Main South neighborhood in Worcester, Massachusetts, to gauge their applicability to the context. (figs. 20.1, 28.1, 34.1, 41.1, 50.1, 56.1) Sizes of blocks, streets, and buildings ranged dramatically, and all cases were altered to fit the site. The insertions ignored existing conditions on the site for clarity. However, the total replacement

of the existing context raised the issue of preservation.

The site at Worcester contains a variety of building types. Several churches front the Main Street edge. Detached houses and outbuildings occupy the central portion of the site, while industrial buildings line the rear edge. Criteria for the buildings to be retained in the following exercises included both their value to the community as institutions and architectural integrity of the structure. Given the existing buildings to be preserved on the site, the same cases were again inserted on the site. The integrity of each example was retained as much as allowed for by the new constraints. (figs. 23.1, 30.1, 36.1, 45.1, 51.1, 57.1)

Each case brought to the site its own set of problems and revelations. Each solution

presented might be implemented as diagrammed with varying degrees of success. To illustrate the issues raised by each case, a short description of the examples and the process of inserting each fabric in the site is included with the corresponding diagram. The case studies are presented in chronological order.



figure 17.1 View From the South of Two Savannah Squares circa 1895.

Savannah, Georgia

The city of Savannah, Georgia, was laid out in 1733 by James Oglethorpe. The original plan was laid out as a series of wards. Each ward consisted of a square surrounded by blocks of private lots to the north and south of the square, and trustee lots for public buildings on the east and west. (figs. 18.1, 19.1) Four original wards

were laid out in two rows at the top of Yamacraw Bluff, a small cliff overlooking the Savannah River. Ten house lots made up a tything, of which there were four in each ward. Original lots granted within the town limits measured sixty by ninety feet. The square at the center of each ward provided a place for villagers to bring their livestock and families in the event of war. The squares were bordered by pairs of tythings on the north and south, while “trustee’s lots,” or lots set aside for public buildings, defined the east and west edges. The town was later expanded by the addition of wards as needed. Defensibility of the town contributed to the compactness of the lots and squares.¹ Buildings in the wards follow a main building / outbuilding pattern for the residential structures. Outbuildings front service alleys, normally about twenty-four feet wide.

Residential buildings are multiples of a twenty foot wide increment. Reflecting the subdivision of the original lots, buildings occupy one or more of the twenty foot wide parcels. Sidewalks and landscaping, most of which are publicly accessible, occur in front of buildings in a band approximately sixteen feet wide. Streets normally measure thirty-six feet or forty-four feet curb to curb.

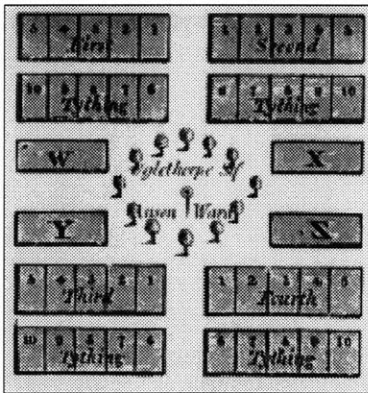
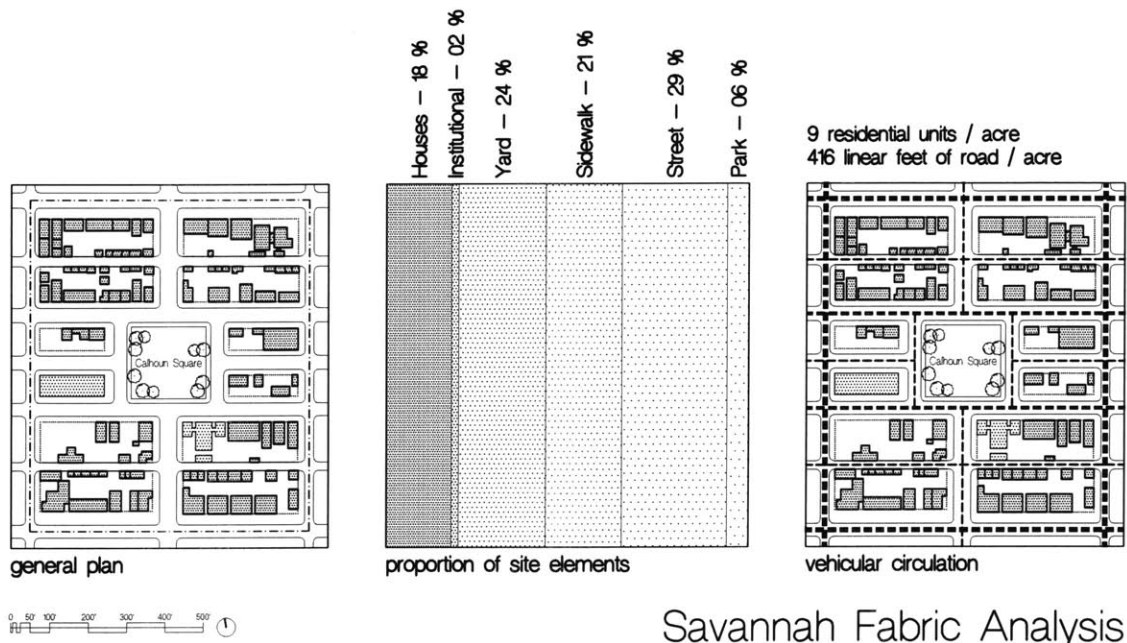


figure 18.1 Detail of a Savannah Ward from an 1820's map. W, X, Y, and Z denote trustee lots.

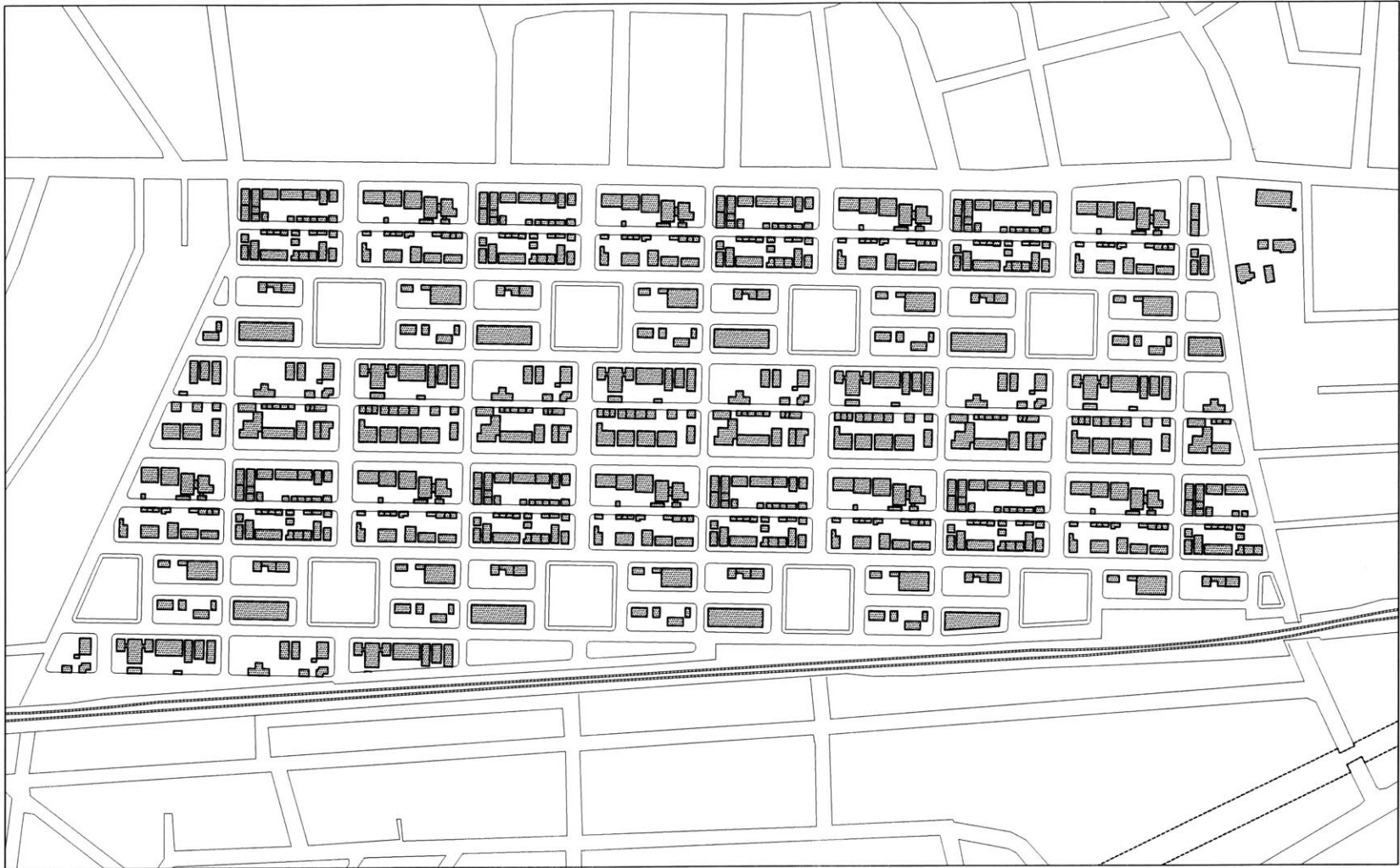
Savannah Fabric Intervention

The insertion of the Savannah fabric into the Main South neighborhood uses Main Street at the northern edge of the site as its primary reference. (fig. 20.1) Given the consistent dimensions of Savannah's blocks and squares, wards are repeated across the site and left incomplete at the edges of the neighborhood. Comparing the fabric of the Savannah insertion to its new surroundings shows the discrepancy between the grain of the block and ward pattern to the large blocks and dead end streets of Worcester. The Savannah fabric contains an excessive number of streets at its original scale.



Savannah Fabric Analysis

figure 19.1 Savannah Fabric Analysis



Main South with Savannah Fabric

figure 20.1 Main South with Savannah Fabric

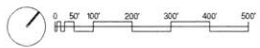
The organization of trustee lots in the new context could divide institutions into finite elements which would occupy bands of territory corresponding to the trustee lots. In this way, institutions would meld with the residential fabric to become an integral part of the fabric rather than a set piece. The hierarchy of streets and the introduction of several new through streets is a welcome change from the old fabric. Alleys within the Savannah fabric allow servicing of the site, and encourage the pattern of main front buildings and outbuildings. Where the original strength of the Savannah fabric might be said to derive its reference of orientation from the nearby Savannah River, the edges of the Main South neighborhood do not offer a grounding element of the same strength. With the exception of Main Street, edge conditions of the site are not

satisfactorily resolved by the Savannah fabric. Wards are terminated to form odd shaped blocks which fail to contribute to the fabric of the site. Some anomaly or set piece placed within the fabric or at the edges of the site is required to avoid monotony and help ground the Savannah fabric.

Allowing certain existing buildings to remain interrupts the pattern of wards. (fig 23.1) Buildings along Main Street whose footprints extend over street lines force the elimination of alleys in some wards. This has also occurred over time in some wards in Savannah. The Main Street edge consisting of a mixture of existing institutional buildings and new party wall commercial buildings complements the existing fabric. The building and street pattern of the new fabric on Main Street is attuned to the opposite side of the street. The frequency of cross streets is consistent with the context, and several new streets align with existing streets or allow for termination on public buildings. The Catholic church and school at the eastern edge of the site act as an anchor tying the adjacent neighborhoods together and resolving that edge of the fabric.

Along the southern edge of the site, the row of existing industrial buildings acts as a buffer between the residential core of the neighborhood and the railroad bed. Most of the buildings are in reasonably good condition, though all would require substantial renovations and landscaping. Toward the eastern edge of the site, additional buildings are needed to provide a continuous edge. Breaks between both new and old buildings should allow for either view corridors or passage to the areas below by means of existing and new pedestrian and vehicular bridges or underpasses. This connection should be strengthened in all cases where the industrial buildings remain.

A triangular park, much smaller than the existing park on the site, completes the eastern edge.



Main South with Modified Savannah Fabric

figure 23.1 Main South with Modified Savannah Fabric

Open space is distributed throughout the site in the form of squares and the areas around the industrial buildings. The squares are formal, and informal open spaces and a large central open space is not present in the intervention. If set within a large open space, the parking garage and mill at the center of the plan might serve to structure distinct types of public open space. (fig. 24.1)



figure 24.1 Renovated Industrial Mill at Center of Site

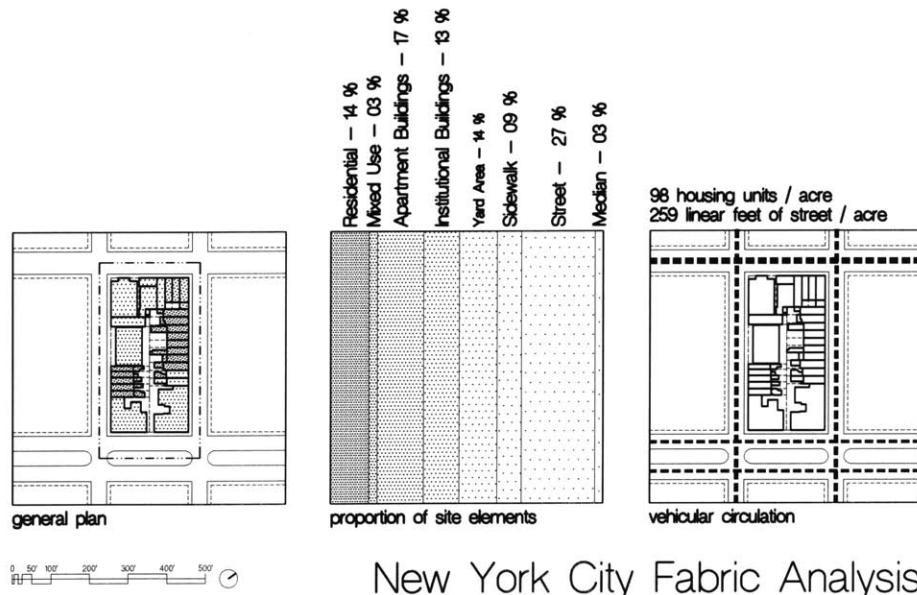


figure 25.1 View down Park Avenue toward the New York Central office building. This view is now blocked by the Pan Am building.

New York City

The development of New York City's familiar street grid dates from 1806. The southern end of the

island of Manhattan had already been settled, including the present day financial district and Greenwich Village. The majority of New York City was surveyed and plotted in 1806, by order of the Common Council of the City. The grid pattern began north of 14th street, where only a few scattered settlements and estates existed in primarily open country at that time. The city was unable to complete the survey on its own and was forced to enlist the aid of the state legislature. Governor George Clinton appointed three commissioners to complete the survey, and the resulting map of 1811 is aptly called "The Commissioners Map." It depicts the now familiar street grid of New York. Blocks are two hundred feet deep with fifty to sixty foot wide roadways to prevent the spread of fire. (fig. 26.1) Blocks vary in width. The grid ignores topographical changes in favor of a repetitive block pattern and includes little land for new parks. The plan efficiently



New York City Fabric Analysis

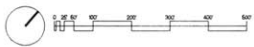
figure 26.1 New York City Fabric Analysis

divides the island of Manhattan into lots which encouraged the systematic development of the city. Lack of open space was rationalized by the proximity of the ocean combined with wide streets allowing for fresh air, and the expense of the land.² The population of Manhattan Island in 1810, according to the federal census, was 96,373.

Building types on the sample block include a church building sixty-five feet in height, tenement buildings of forty-five to fifty-five feet in height, to larger apartment and office buildings of one hundred and two hundred twenty five feet in height. The variety of building types reflects the building code at the time of construction. The hotel with large setbacks located below the church dates from 1975; the hotel is one-hundred-six feet in height. The taller buildings fronting Park Avenue date from the 1920's. They are two-hundred-twelve and two-hundred-and-twenty-five feet in height.

New York City Fabric Intervention

The New York City grid aligns with the Main Street edge of the site. (fig. 28.1) The density of cross streets is slightly higher than that of Worcester, and street alignments occur at critical junctures. Every street is a through street, and the repeated block size gives the neighborhood a distinct identity. Institutional, public and apartment buildings occur on the short side of each block; this edge is aligned with Main Street. The longer sides of the blocks with slightly narrower streets support a primarily residential fabric, with tenement buildings and a hotel. At all edges of the site except Main Street, the fabric ends raggedly, creating smaller triangular blocks. This pattern contains little open space, though portions of blocks, entire blocks or joined blocks could remain unbuilt. Central Park and several pocket parks in New York City



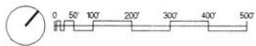
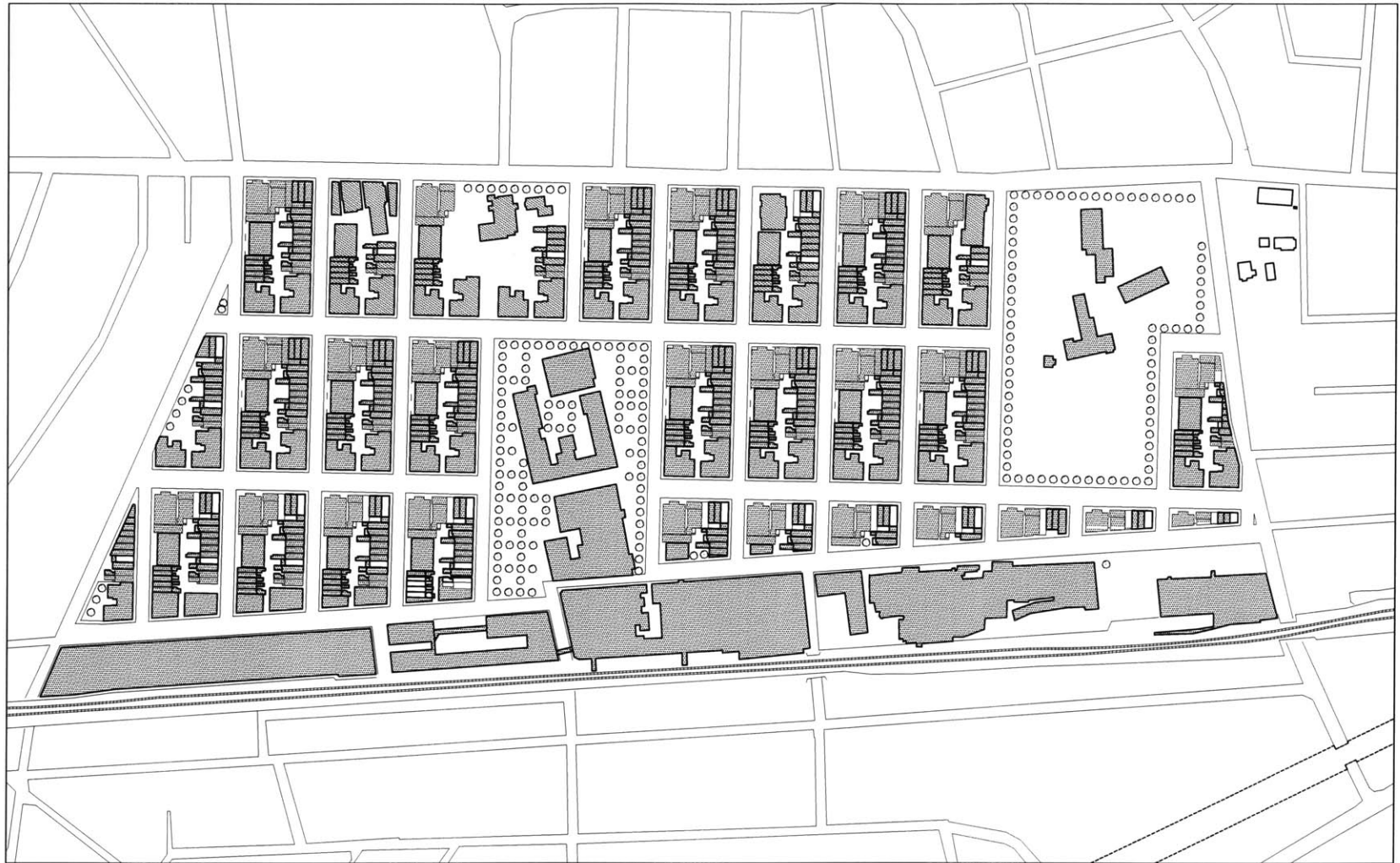
Main South with New York City Fabric

figure 28.1 Main South with New York City Fabric

follow this pattern. New parks could include midblock pedestrian accessways connecting a series of small and large parks. The largest amount of habitable open space currently occurs in the streets. Landscaping, service access, building height, building use, and traffic flow have significant impact on the life of the street. Buildings in this pattern are serviced from the street, and interior block space being too small for yard area acts primarily to admit light.

When existing buildings are taken into consideration, the pattern is significantly altered. (fig. 30.1) The industrial buildings along the southern edge of the site create a buffer between the neighborhood and the railroad. The mill buildings at the center of the site sit amid a large wooded lawn, where they might act as a community center or some other neighborhood institution. The Catholic

church and school at the eastern edge of the site expands to cover the area of approximately four New York blocks. The additional open space adjacent to the school might act as a park for the entire neighborhood. Several through streets still occur in the scheme, and visual continuity and pedestrian access through the community green at the center of the site is preserved. The existing buildings cause a welcome variety in block length while maintaining the integrity of the fabric.



Main South with Modified New York City Fabric

figure 30.1 Main South with Modified New York City Fabric



figure 31.1 Riverside under construction in 1870. A hotel, designed by Jennings, and the water tower, designed by Olmsted, Vaux & Company, surround a block intended for stores.

Riverside, Illinois

Designed by the office of Olmsted, Vaux, and company in 1869, Riverside, Illinois occupied a 1600-acre site straddling the Des Plaines river, nine miles west of Chicago's central business district. The site held two features uncommon to the Chicago area: it was both elevated and

contained a full-grown forest. A railroad made its first stop outside Chicago at what would be Riverside's town center. (fig. 31.1) Suburban migration from the cities was already beginning, and Riverside was of the first developments to address this need. The developer E. E. Childs hired Frederick Law Olmsted and his partner Calvert Vaux, publicizing that the planned "suburban village" would have the same grace and charm as the architect's earlier Central Park project. Unfortunately, Riverside was financially troubled from its inception, and the developer was deceptive in his dealings with the architects and others. Riverside was not completed in its entirety as planned by the architects, though enough was completed to present to the visitor the image of "an elegant drive, a handsome park, and a delightful suburban city."³ (fig. 32.1)

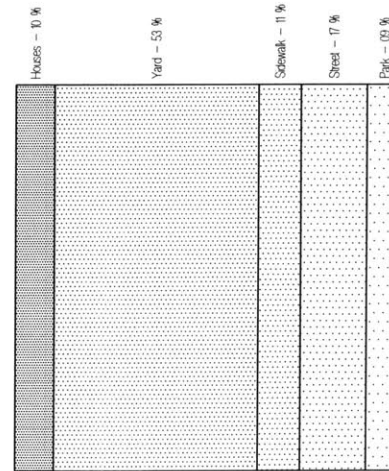


general plan

1.3 residential units / acre
155 linear feet of road / acre



vehicular circulation



proportion of site elements

figure 32.1 Riverside Fabric Analysis



Riverside Fabric Analysis

A network of heavily planted and organically curving streets was used to distinguish Riverside from the prairie which surrounded it. Community parks, greens, and ball courts were intended to foster social interaction. There is little documentation of the types and sizes of houses built at Riverside, though the development was initially marketed towards “the more intelligent and more fortunate classes.”⁴ The sizes of the lots and houses are considerable. Houses were required to be set back at least thirty feet from the lot lines, with no walls or fences along the road or between lots. Thus houses stood as pavilions in a continuous expanse of lush greenery. (fig. 33.1) The scale of Riverside as compared to the other cases is overwhelmingly large. Houses in Riverside have footprints two or three times as large as most structures in the other examples.

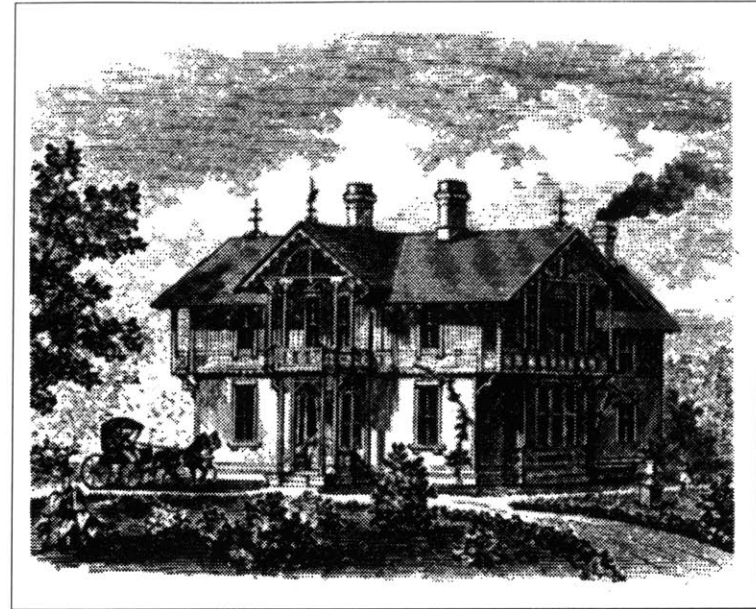
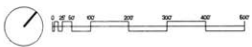


figure 33.1 Illustration of Dore Residence on Fair Bank Road in Riverside c. 1871. The house, designed by Olmsted, Vaux, & Company, still stands.

Riverside Fabric Intervention

When inserted into the context of Worcester, this difference in scale is made more painfully apparent. (fig. 34.1) The organic nature of the streets as well as the dispersed structures also contrast sharply with the existing context. Open space in the



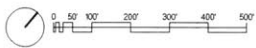
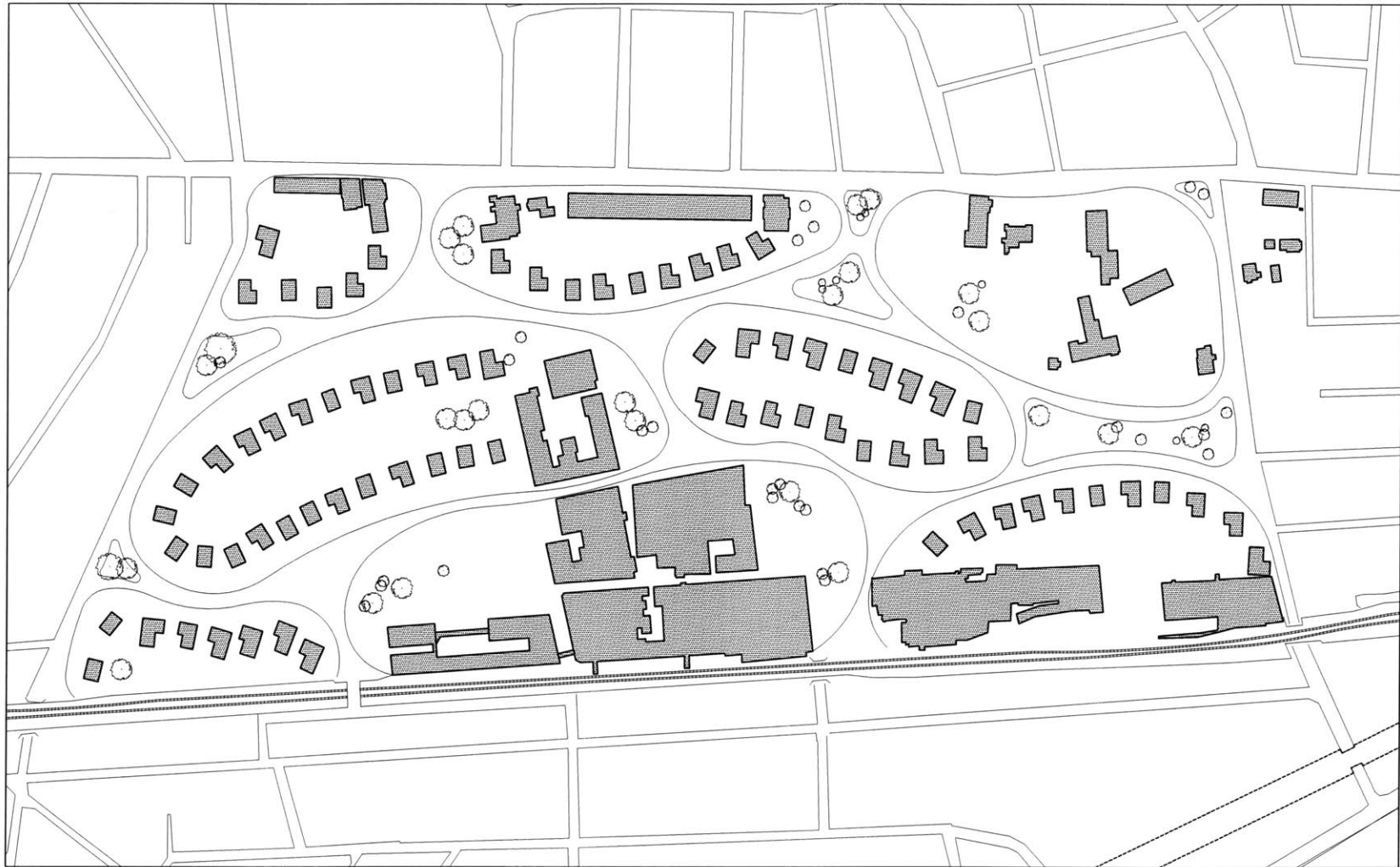
Main South with Riverside Fabric

figure 34.1 Main South with Riverside Fabric

Riverside fabric sample is occupied mainly by privately owned yards surrounding the houses. Originally, the curvature of the roads was intended to follow the topography of the land. In this case, it is applied to fit the boundaries of the site. Several large medians scattered over the site serve as public open space. The density of structures of the Riverside scheme is lowest of all the case studies, with a total of one hundred sixteen houses. Building footprints based on the original Riverside maps are from twenty-five-hundred to thirty-five-hundred square feet. The original site at Worcester contains three hundred fifteen structures, including large industrial buildings and residential outbuildings. The Main Street edge of the Riverside intervention creates a large void in the continuity of the urban wall of the street. The spacing of the buildings is so great

that they have little presence on the street. Much of the street and site boundary is fronted by landscaped median. Interaction on the street, between and within the community is not encouraged by the Riverside layout. Houses are self-contained and self-referential. Streets within the site meander through the neighborhood in a disorienting fashion. Places within the neighborhood are indistinct and undefined.

Retaining existing buildings gives the neighborhood definition by the placement of landmarks. (fig. 36.1) The industrial buildings provide closure for the southern edge, while institutional buildings, churches, and new rows of party wall buildings help to define the Main Street edge. The form of the streets appears forced in the proximity of buildings with an orthogonal



Main South with Modified Riverside Fabric

figure 36.1 Main South with Modified Riverside Fabric

reference, and dead end streets hamper traffic flow through and between neighborhoods. The blocks mimic islands on which specific building types or public functions might occur. The Riverside fabric, with or without existing structures, seems ill-suited for the Worcester context.

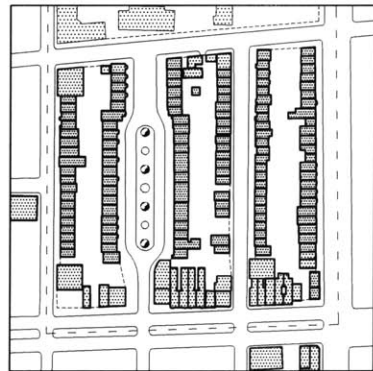


figure 38.1 The South End's Union Park, laid out in 1851.

South End, Boston, Massachusetts

The development of the distinctive pattern of Boston's South End neighborhood began when expansion pressure from Boston made the filling in of marshes financially viable. By 1850, most of the marshland and tidal pools which made up

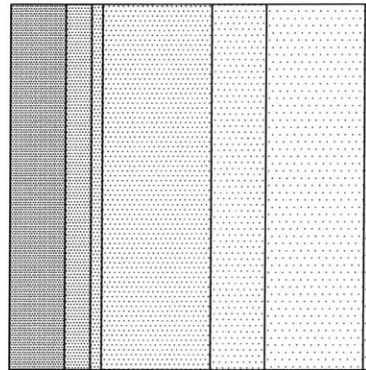
the South End had been reclaimed. By 1880, the newly made land was almost entirely filled with housing stock. The original occupants of the South End came from the rich and prosperous section of the middle class. The typical dwelling was a narrow row house, three-and-one-half to four stories high. Housing in this area was developed by large syndicates. The moneyed middle class wished to make a statement against what they viewed as Boston's "country town" image, and a more cosmopolitan urban type for dwellings became fashionable. The row houses of the South End were modeled after Georgian London; the street grid was carefully integrated with the houses. (fig. 39.1) Uniform building heights and continuous cornice lines were not uncommon, and such devices gave a uniformity and continuity to the street. More



general plan

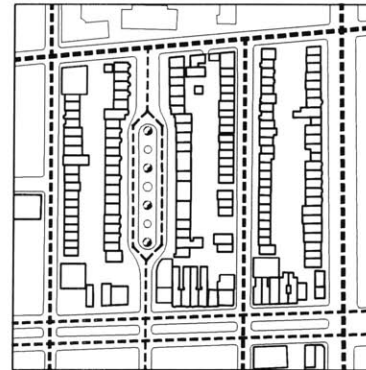


House — 15 %
 Mixed Use — 07 %
 Institutional — 03 %
 Yard / Alley — 30 %
 Sidewalk — 15 %
 Street — 27 %
 Park — 03 %



proportion of site elements

20 residential units / acre
 264 linear feet of road / acre



vehicular circulation

South End Fabric Analysis

figure 39.1 South End Fabric Analysis

affluent developments included lozenge shaped parks in the middle of the street to break up the monotony of repeated blocks. (fig. 38.1) Most buildings were of brick or stone to protect against fire. In 1870, the South End was the only strip of land connecting Boston to Roxbury, and all Boston transportation lines in that direction were routed through the neighborhood. With the encroachment of industry and an increasing immigrant population, Boston's Back Bay area superseded the South End as the fashionable area in which to live by 1885. The middle class moved out, and the South End became a neighborhood of lower class residents and lodging houses. The row house came to be known as a symbol of bad neighborhoods and financial failure. This stigma remained until part of the neighborhood had been destroyed by urban renewal earlier in this

century. Presently, many of the South End row houses that had fallen into disrepair have been renovated, and some sites left vacant from the razing of buildings are now occupied by cooperative community gardens.

South End Fabric Intervention

The South End fabric uses the Main Street edge of the Worcester site as its primary reference, as do many of the other precedent studies. (fig. 41.1) The long blocks are inserted parallel the Main Street edge, utilizing the wider streets with shorter block edges as access streets. Larger buildings occur primarily at the shorter end of the block, indicating more public or institutional uses along those streets. These large buildings act as a screen, helping to shield the inner block from



Main South with South End Fabric

figure 41.1 Main South with South End Fabric

traffic. Longer, narrower streets branch from these streets to more private, residential streets consisting of continuous rows of three story brick dwellings. The differentiation of the two street fabrics: private row houses and larger, more institutional structures, emphasized the hierarchy of the public short, wide streets and more private long, narrow streets with formal, ornamental gardens.

The nature of the long blocks allows them to deviate from the strictly orthogonal, unlike more formal cases like Savannah. The short ends of the blocks were aligned with the transverse edges of the site. Alignments with the existing street patterns along the perimeter were also afforded by slightly adjusting the angle of the short ends of the blocks. The lengths of the blocks were also varied to

accommodate these conditions. Block widths as well as lot dimensions within the blocks remained consistent with the original South End pattern.

The blocks and elements of the South End create three different types of street. Wider continuous streets act as major arteries, carrying traffic from different parts of the city through the neighborhood. Only one or two such streets occur in the South End, and they measure approximately ninety feet curb to curb. Neighborhood versions of these arteries run parallel to the long dimension of the block and measure approximately thirty-eight feet curb to curb. Commercial and retail enterprises occupy the lower floor of the standard row houses with offices or residences above; buildings have been enlarged with additions encroaching upon the street in places. On street parking and a corresponding street width is likely to occur here.

Transverse streets run parallel to the short ends of the blocks and measure approximately thirty-eight feet curb to curb. Larger lots and buildings occupy the sites along the edges of these streets. Apartment buildings, churches, schools, governmental buildings or other types of institutional buildings are likely to be located here. The character of these streets will draw upon the institutions located there. The locations of such functions allow them to be used by residences within both sets of adjacent blocks, helping to connect the blocks while defining their edges and unifying the neighborhood.

Private residential sections of the neighborhood occur on longitudinal streets with ornamental parks around which traffic must flow. On street parking occupies a small portion of the twenty eight feet wide one way lanes on either side of

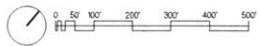
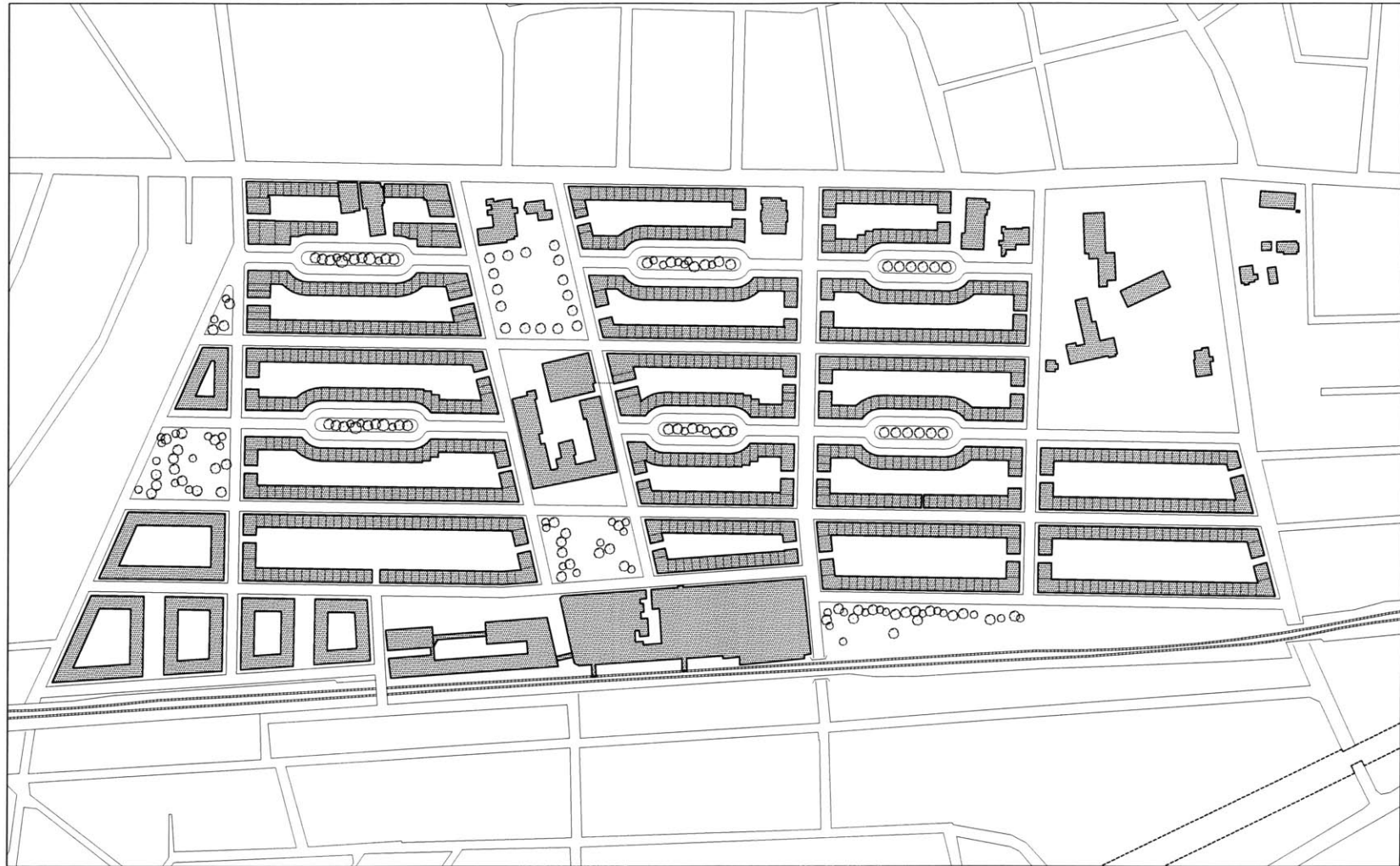
the park. These parks not only impede traffic but act together with the residential row houses to form a coherent outdoor urban room. The setback line of the structures usually mimics the outline of the park. The character of these outdoor spaces will vary with both the types of landscaping and entrances of the buildings on either side of the street and the configuration of the park itself. South End residential parks tend to be highly formal and ornamental, and are often fenced with locked gates. In both their size and arrangement, the parks are more objects to be viewed than landscapes to inhabit.

Entrances to the center of the residential blocks usually occur in the middle of the short ends of the blocks. While on street parking fulfills some of the need for parking, many of the residents must park within the block. Most block interiors are

unstructured and unkempt, with cars parked haphazardly on dirt or gravel alongside dumpsters and scrubby trees. The undulating back edges of the buildings contrast sharply with the uniform facades of the front, and many row houses have tiers of wooden balconies. These are used for laundry, storage, or other functions. Where block sizes have not allowed for service entrances, some block interiors have been converted into lush garden spaces. This would suggest vehicular access needs to be structured, especially in common spaces, to allow for alternate uses to coexist.

With the flexibility of block lengths in the South End fabric, the addition of existing context to the scheme does not create obstacles, rather providing provides welcome interruptions that

ground and center the scheme. (fig. 45.1) Institutional buildings along Main Street occupy the entire depth of the block, and the Catholic church and school resolves and anchors the eastern end of the site. The angled strip of land and buildings in the center of the site indicates the possibility of community uses in that location. At the southern edge of the site, the industrial buildings augmented with courtyard office or institutional buildings provide protection and closure at the railway.



Main South with Modified South End Fabric

figure 45.1 Main South with Modified South End Fabric

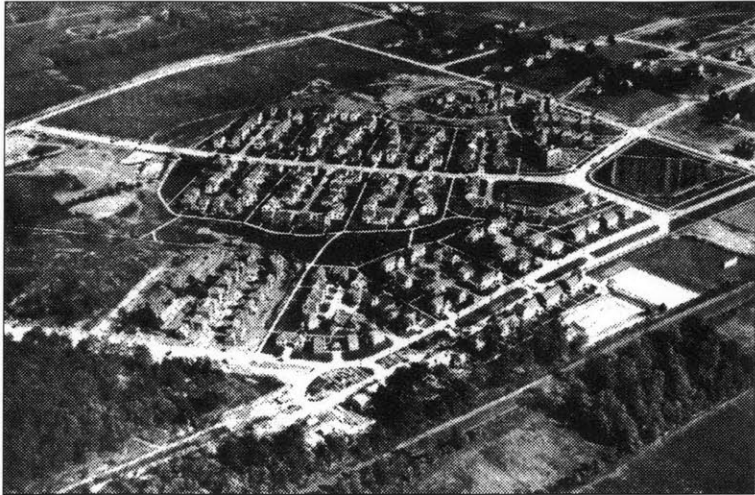


figure 46.1 Aerial view of Radburn c. 1929.

Radburn, New Jersey

Designed in 1928 by Clarence Stein and Henry Wright and developed by the City Housing Corporation in Fairlawn, New Jersey, Radburn was conceived by Stein as a "town for the motor age."⁵ Radburn was originally intended to be an American Garden City.⁶ However, site restrictions

minimized the greenbelt surrounding the town and an extended period of economic decline caused the areas intended for industry to remain vacant. Instead of the intended Garden city, Radburn developed as a suburb. (fig. 46.1) The layout of Radburn set out to neutralize the negative impact of the automobile on social interaction and neighborhood continuity, especially when considered in the context of the traditional gridiron pattern of development in the United States. Radburn was designed to foster a rich family and community life, with safety for children in the community a primary concern.

Radburn is comprised of superblocks as opposed to the characteristic narrow rectangular block. (fig. 48.1) Specialized roads are built for one use: service lanes for building access, collector roads around superblocks, main through roads, and

expressways. Roads accommodate differentiation of movement, collection, service, parking, and visiting. Cul-de-sacs organize the suburb into dwelling groups. Pedestrian and vehicular traffic is separated. Where pedestrian and vehicular paths cross, they occur at different grades. Houses have a reverse orientation, acknowledging the separation of path function. Living and bedrooms primarily face the greensward. (fig 47.1) Service rooms face the access road. (fig. 47.2) The park runs continuously through the neighborhood, tying it together. Recreational facilities include playgrounds, tot-lots, swimming pools, tennis courts, athletic fields, and a community gymnasium. A community center is located above Radburn's collection of shops.

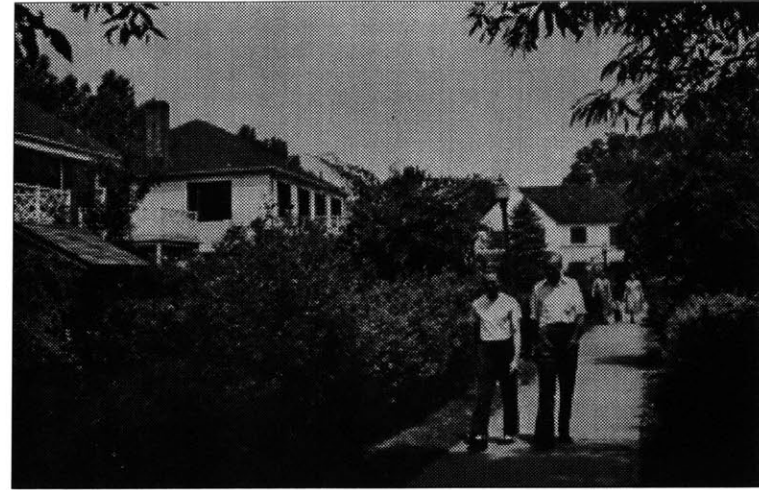
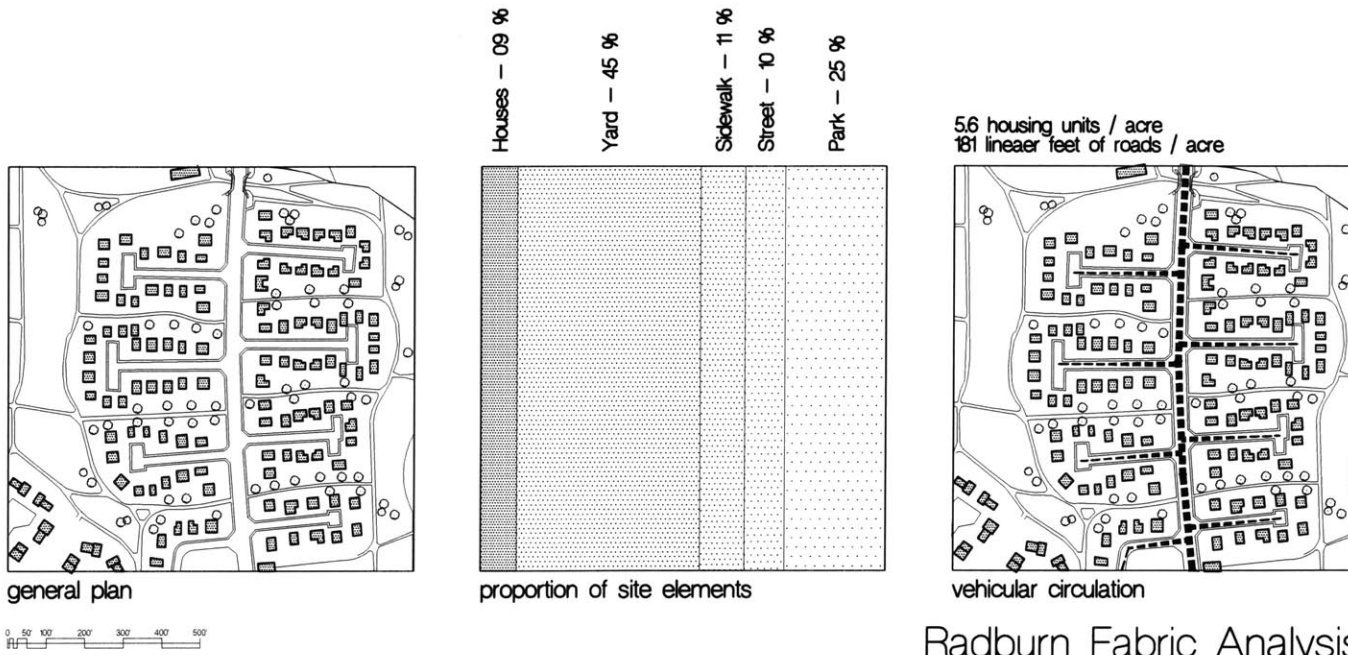


figure 47.1 Pedestrian path between houses leading to greensward.



figure 47.2 Service road side of house cluster.



Radburn Fabric Analysis

figure 48.1 Radburn Fabric Analysis

Ironically, the architecture of Radburn is designed in a traditional style in contrast to its innovative plan. Neo-Georgian colonial adornment is used in an attempt to make the houses more marketable. Designed by Andrew J. Thomas, apartments at the edge of commercial area are executed in the collegiate Gothic style. Apartment houses are grouped around broad landscaped courts opening to the street. A block of shops is located in the commercial area with offices above. The shops were also designed in a collegiate Gothic style.

Radburn Fabric Intervention

When placed in the Worcester site, the Radburn fabric works well. The greensward is of variable width, and provides the mechanism for a comfortable fit within the site. (fig. 50.1) Strips of greensward at the edges of the site provide a buffer between neighborhoods, and

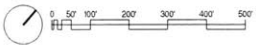
when placed within the site, allow for views down the hill to the city beyond. Through streets are scarce in the initial Radburn intervention, and only one building type is present in the scheme. The pedestrian network of paths and parks remains intact from its transition to the new site, and the clusters of residences perform in the same way as in their original context. However, the edge conditions at Main Street and the railway are awkward.

When existing buildings are considered, the Radburn scheme is improved. (fig. 51.1) Churches along Main Street in conjunction with new rows of retail and office buildings form a continuous edge. At the southern portion of the site, industrial buildings and long, narrow blocks of offices or workshops screen off the railway. The buildings at the center of the site act as a spine, tying the railway and Main Street together. However, through streets still occur only at the edges of the site.



Main South with Radburn Fabric

figure 50.1 Main South with Radburn Fabric



Main South with Modified Radburn Fabric

figure 51.1 Main South with Modified Radburn Fabric

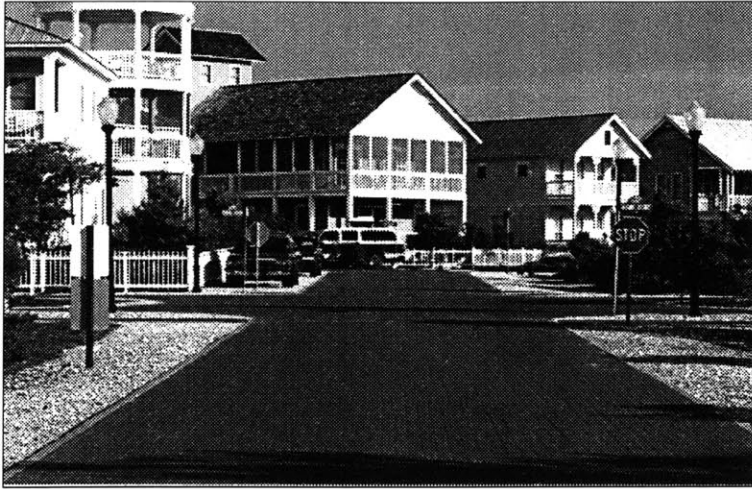
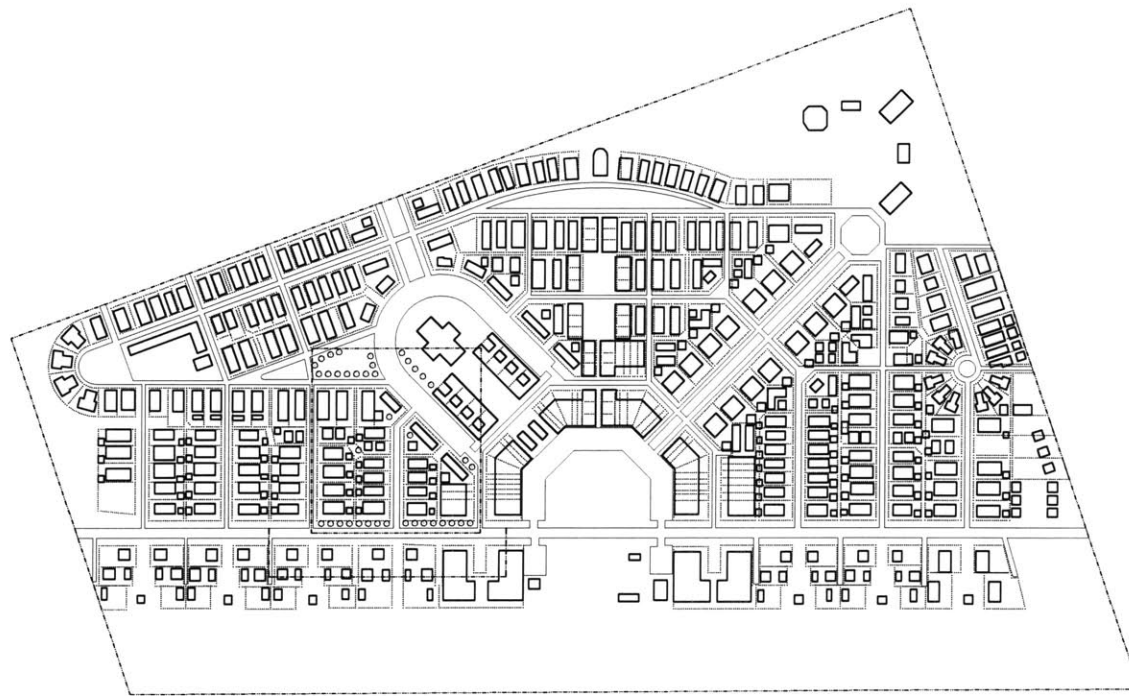


figure 52.1 Typical Seaside Street.

Seaside, Florida

The master plan and urban code for the town of Seaside, Florida was created by Andres Duany and Elizabeth Plater-Zyberk in 1983. The town is organized according to its urban code, which uses building type, lot size, setback, building height, material type, and material placement guidelines in lieu of traditional zoning regulations. The

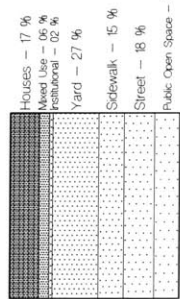
Traditional Neighborhood Development ordinance, or TND as these guidelines are called, regulates new construction in the town. The TND defines eight different building types, placed according to their location in the town and their relation to the street. (fig. 52.1) These types define the yard area, types and sizes of porches and balconies required, allowances for outbuildings, parking requirements, and building height restrictions. Certain public buildings are not restricted by type, and must pass a design review board on which the developer and a local architect sit. Building types are arranged to define specific street types and consequently districts within the town. Lots are proportioned and sized to fit their intended building type, with lots becoming smaller toward the center of town to increase density. (fig. 53.1) Street and sidewalk



Seaside, Florida



general plan



proportion of site elements



vehicular circulation

6 residential units / acre
326 linear feet of road / acre

Seaside Fabric Analysis

figure 53.1 Seaside Fabric Analysis

occur at the same grade, with sidewalks usually measuring eight to ten feet wide and paved areas from twelve to twenty feet wide. Buildings on these streets are from twenty-two to forty-five feet maximum height. Public space within Seaside includes both squares and small plazas near the town center as well as a network of pedestrian paths located at the interiors of residential blocks. The Seaside code strictly regulates both the type and placement of fencing at the street. Seaside is structured to grow incrementally. This is economical for the developer and allows the town to attain a character not possible in developments built all at one time. Public amenities and improvements to the town are added as income from lot sales allow.

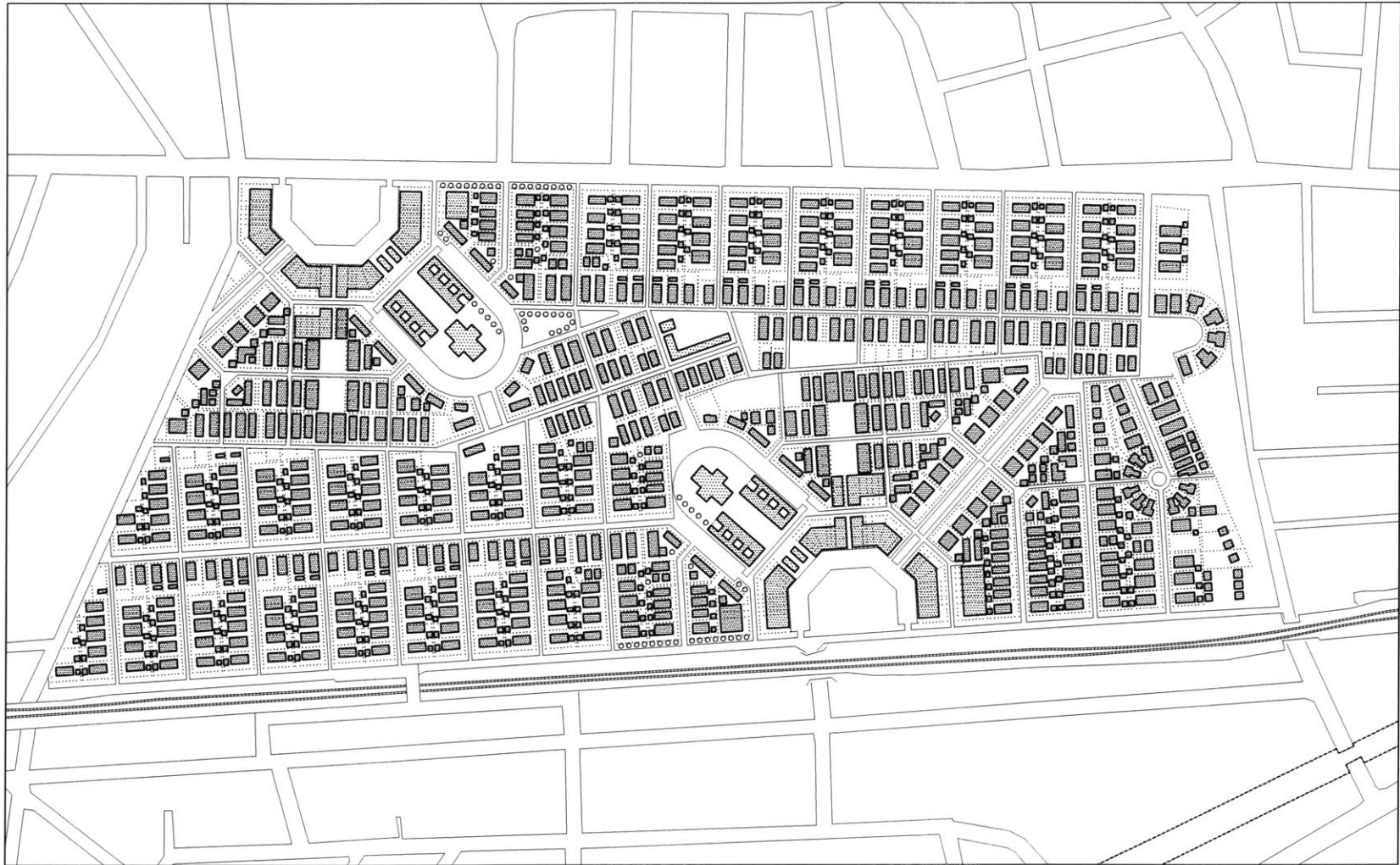
Seaside has developed into a critical and commercial success. Several of Seaside's buildings have been designed by prominent architects, of whom many own houses there. Due to its commercial success, Seaside has become an expensive and exclusive community. The size of the development and the limited palette of building types has excluded residents of lower income.

Seaside Fabric Intervention

Placing the fabric within the site constraints shows that the site is almost twice as large as the entire town of Seaside. (fig. 56.1) The blocks are small, the streets are small, and the open spaces are small as well. The public squares placed across from Clark University on Main Street and at the railroad act as community hubs. These hubs would house a small retail center near the university, and a rail transportation link at the rail bed. The connection between these two centers might be strengthened to form a spine which would help to unify the community. The suburban freestanding house and outbuilding lot structure is used along Main Street, the analogous street to the highway at Seaside. However, the nature of the rest of Main Street suggests a denser

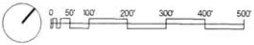
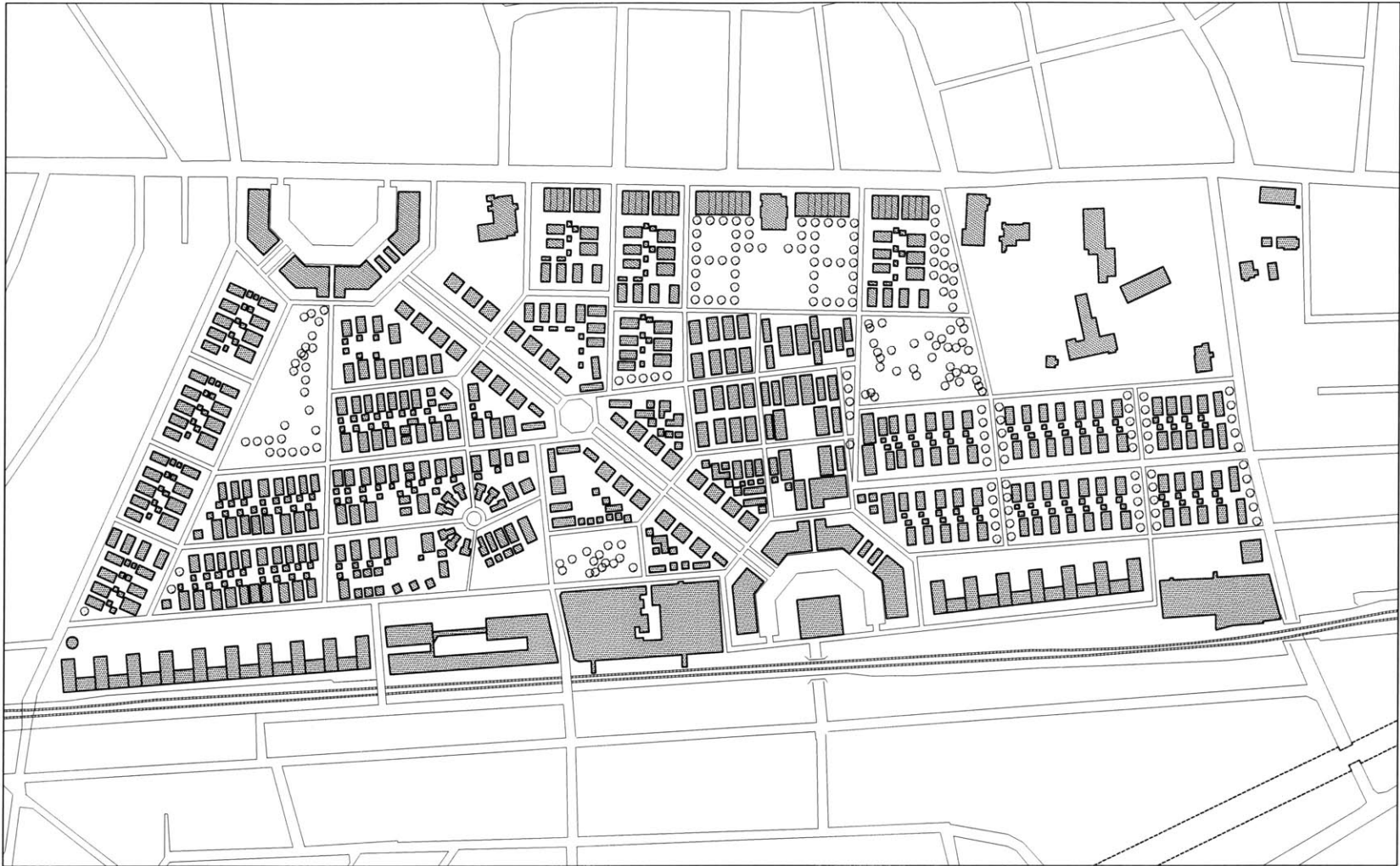
type of building might be appropriate. This is also true at the railroad edge of the site. The pedestrian network within the block works in the Worcester context, and public spaces adjacent to institutions or frameworks for public activities are successful as well. The density of housing in the Seaside fabric would allow for the construction of a more elaborate public infrastructure.

The addition of existing buildings to the fabric refines the scheme, placing rows of commercial buildings which act as a buffer along Main Street. (fig 57.1) Workshop buildings complement the screen of industrial buildings along the railroad tracks. Streets and districts are clarified, and the link between the retail complex across from Clark University on Main Street and the transportation node near the railroad tracks is further defined and strengthened.



Main South with Seaside Fabric

figure 56.1 Main South with Seaside Fabric



Main South with Modified Seaside Fabric

figure 57.1 Main South with Modified Seaside Fabric

III. Site Rules

The imposition of a foreign site into a new context allows for discoveries, the revelation of possibilities through otherwise unlikely juxtapositions. Using the Main South Neighborhood as the new context for the disparate urban patterns, a new appreciation of both the scale of the site and the scale of the case studies is gained. The elements of the examples, their street layouts, building types and arrangements, all reveal aspects of themselves and the site when placed within the confines of the Main South Neighborhood.

The applicability of each case can be almost inherently felt in the initial ease of fit within the bounds of the site. Several similar characteristics when using park elements and certain block configurations allowed a mutability in dimension which accommodated

existing conditions. New cases might be added to explore their applicability to the Worcester site and other sites in the future. The study implies a consistency of dimension, type of street, and type of building within a specific context toward a specific result.

Categorizing the patterns of behavior of the case studies in the new site allows the composition of a series of rules or guidelines for each category.

These rules may then be tested on site in the Main South neighborhood. Examination of the behavior of the rules in context will help refine them and create new rules not made apparent by the interventions. Each rule can then be incorporated into or used to inform a series of guidelines for site design for the Main South site and future sites. Following is a list of guidelines or "site rules" generated from the case study interventions.

1. *Open Space.*

Public open space will be configured in two ways at the Worcester site. Local parks scattered throughout the site address needs of individual block groupings. These spaces will be distinct from one another in their configuration to be identifiable, and they will be comparably sized. Open spaces similar in size to those in the South End are too small to be useful for any sort of group activity. Open spaces targeted for use by small sections of the neighborhood will be roughly the same area as the squares in Savannah or Radburn's greenswards. Open space configurations may include landscaping, equipment, or hard surfaces: areas for informal congregation. Attaching an open space to a residential block must allow for buffers between adjacent residents so as not to become a

nuisance. The site will also have one large park with structured activities such as a pool and athletic fields. The association of the large park or its facilities with an institution such as the school to be located on the site is optional, but should not exclude residents from the use of the park or its facilities.

2. *Range of Building Types.*

The myriad of conditions across the site as well as the range of existing buildings of good quality on the site calls for a number of responses in building types and configuration. Buildings across the site should be from one to four stories in height, corresponding with the surrounding context. Buildings at the edges of the site should generally be long buildings with small gaps between them or party wall buildings to serve as buffers between

both the railroad and Main Street edges and the center of the site. Buildings at the center of the site are to be primarily residential structures of two to three stories.

3. Edge Condition at Railroad Bed

The railroad poses both problems of noise and danger to children, acts as a barrier dividing the city of Worcester, yet provides opportunities for containment and transportation. The industrial buildings near the railroad tracks on the site will be preserved as possible, and additional buildings of a larger scale will be built to finish out the southern edge of the site. Schools, offices, workshops and a rail station may occupy these buildings. The extension of the commuter rail from Boston suggests that a small rail station is

appropriate for a site adjacent to the tracks. There are currently two vehicular bridges that span the railroad. Additional pedestrian or pedestrian friendly automotive bridges may be located to connect the fabric of the neighborhood to the south.

4. Locations of Institutions

The location and configuration of institutions should allow for the community to share in the use and administration of facilities where practical, allowing the institution to develop an identity integral with the community in which it resides rather than isolated from it.

5. Street as Organizational Device.

The placement of streets and their relationship to the existing street pattern and each other serves as the basis to organize the community. Street to street dimensions determine building type, yard size, and sidewalk size, while curb to curb dimensions and street connections determine whether there will be one way or two way traffic, street parking, which streets are more public and which are only for residents.

6. Through Streets / Hierarchy of Streets.

The Main South neighborhood currently suffers from a lack of through streets and poor street organization. Streets that allow passage through the site will occur at the perimeter and center of the site. Such streets will be of a larger dimension than private residential streets, and should have

larger and more public buildings. The private residential streets should not be through streets. Interruptions such as street offsets or parks as in the South End are to be placed so as to discourage through traffic and enhance the site layout.

7. Service

Service: delivery, trash collection, and back door placement is inherent in the configuration of the lots and buildings within the block. Service within the block will be as structured as the public front of the block. Alleys and rear service entries are warranted only in larger buildings, but should be avoided if possible. The railroad edge buildings and Main Street buildings are to be serviced from the sides or the street. Residential structures should not require service alleys.

8. *Parking.*

Three types of parking is permissible: on the street, in the interior of the block, or in a garage. Parking lots are not permitted. On street parking at a center or institution might be head in parking, while parking elsewhere should be parallel. Interior block parking must be structured and landscaped. The total amount of site parking must be reasonable with at least one space per unit. Garage parking refers to both private and commercial garages. Commercial garages must not exceed four stories, and must be finished in a material and landscaped in a manner that harmonizes with its surroundings. Private garages must house some function above, such as a garage apartment or an extension of the dwelling; one story garages are not permitted unless the roof is habitable. Garages need not be enclosed. Parking

rules are intended to contribute to the dispersion of cars and the continuity of streets.

9. *Pedestrian and Bicycle Circulation Network.*

Paths exclusively for pedestrian and bicycle traffic occur along major streets and will be designated as public thoroughfares. Pathways will be coordinated with any park network.

10. *Focal Points / Center Points.*

Buildings marking the entrance points or gates to the neighborhood should be distinctive in both placement and configuration. These buildings terminate vistas, create thresholds, or act as landmarks in the neighborhood. In one portion of the site, a neighborhood center which includes commercial and retail buildings will be located.

11. *Preservation of Buildings.*

Several types of buildings on the site are of good condition and architectural quality. Some of these buildings are included in the exercises with modified context. Institutions such as the churches along Main Street and other buildings in good condition housing organizations that contribute to community stability will be preserved whenever possible. Several industrial buildings are also of good quality and should be considered as places for both housing and institutional uses. Retaining older buildings allows the site to maintain a more diverse character, and avoids the look of being built all at once.

12. *Lot Size and Building Setback*

Lot size and building setback can determine whether a building has a front yard, side yards, or

no yard. In most cases, a zero lot line setback will be permitted on one or more sides. This will be required on the Main Street edge and in certain cases in the neighborhood center. Lots for detached residential construction will be sized to allow multiple dwellings and / or support buildings to be constructed on the site. Though this will drive up costs per lot, it allows several households to live on one lot. Other types of housing with appropriate lot sizes will address additional housing needs. A variety of lot sizes will be established for both residential and other construction, where the size and configuration of the lot responds to topography, street, and building type.

Additional Rules will be established as necessary, and existing Rules are subject to further modification.

IV. Design Proposal

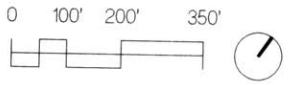
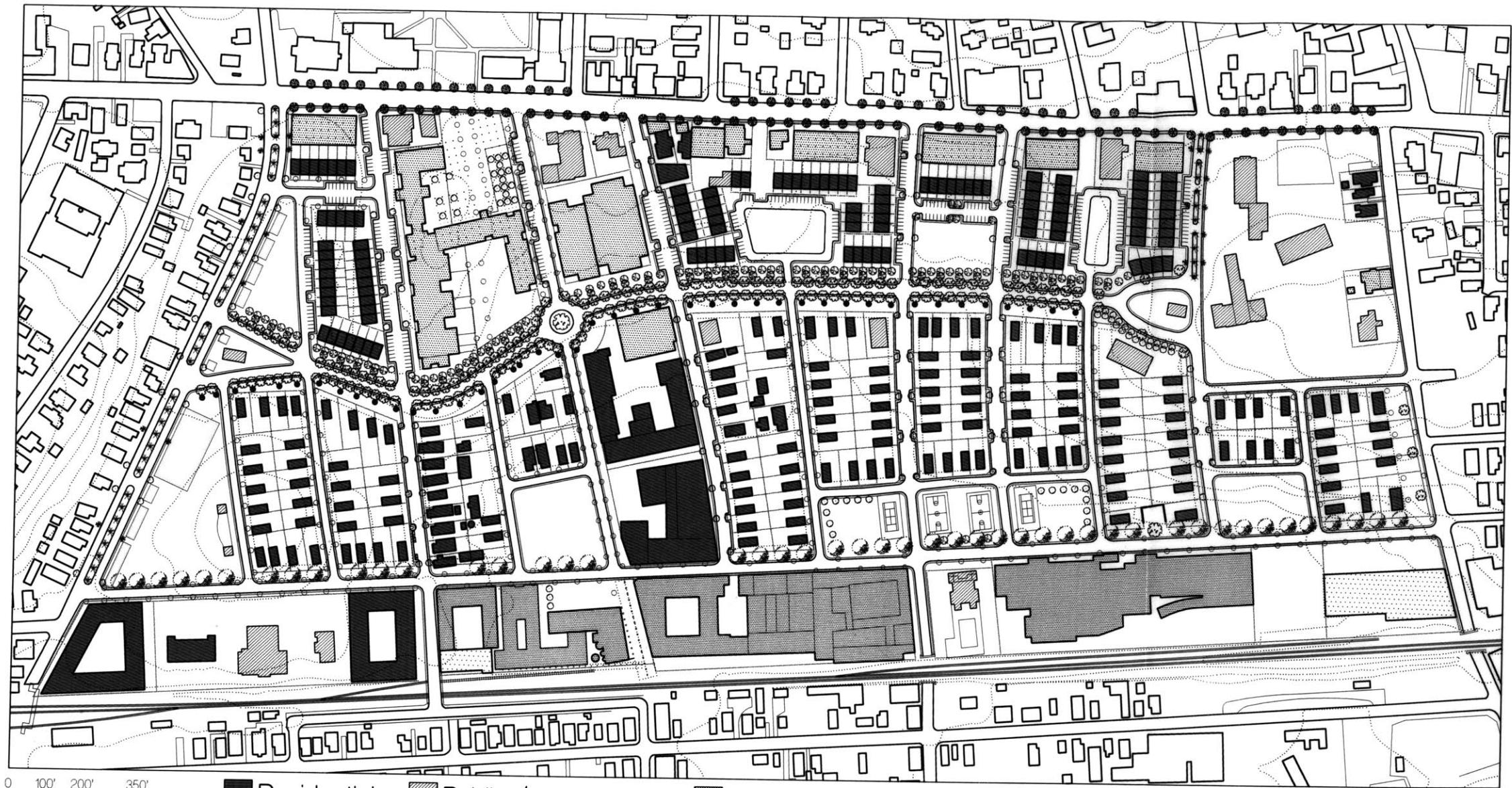
Analysis of the site revealed several issues which guided design decisions throughout the project. These included context related issues, preservation, site circulation, types of buildings including housing, types and layouts of streets, and types and uses of open space. As the project progressed, landscaping of the site grew in importance as an element shaping outdoor space, defining and delineating territory. While no single issue predominated, all exerted an influence on the design and consequently upon the interdependent issues.

Site security, neighborhood identity, diversity, and relationships to neighboring sites are handled both programmatically and architecturally in several portions of the design. Each is referenced in applicable sections of the proposal. The proposal uses street layouts, building types and building heights and

densities consistent with the area.

The proposal is organized by section. The section on preservation deals with issues of existing buildings and institutions on the site. Types of streets, their dimensions, locations, elements defining the streetscape, and their importance to the identity of the project are discussed in the Street Types section. The Building Types portion of the proposal reviews the types, placements, and rationale for general buildings on the site. Public Buildings addresses this specific building type, and proposals for individual public structures. Types, sizes and programs for the parks and plazas within the site are related in the Open Space portion of the proposal. Finally, the Landscaping section defines planting types, placements, and characteristics.

All sections of the design aspire to maintain a sensitivity to the site and context resulting in a diverse and vital community that is both a good neighbor and a good place to live. (fig 65.1)



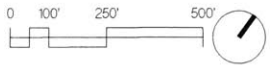
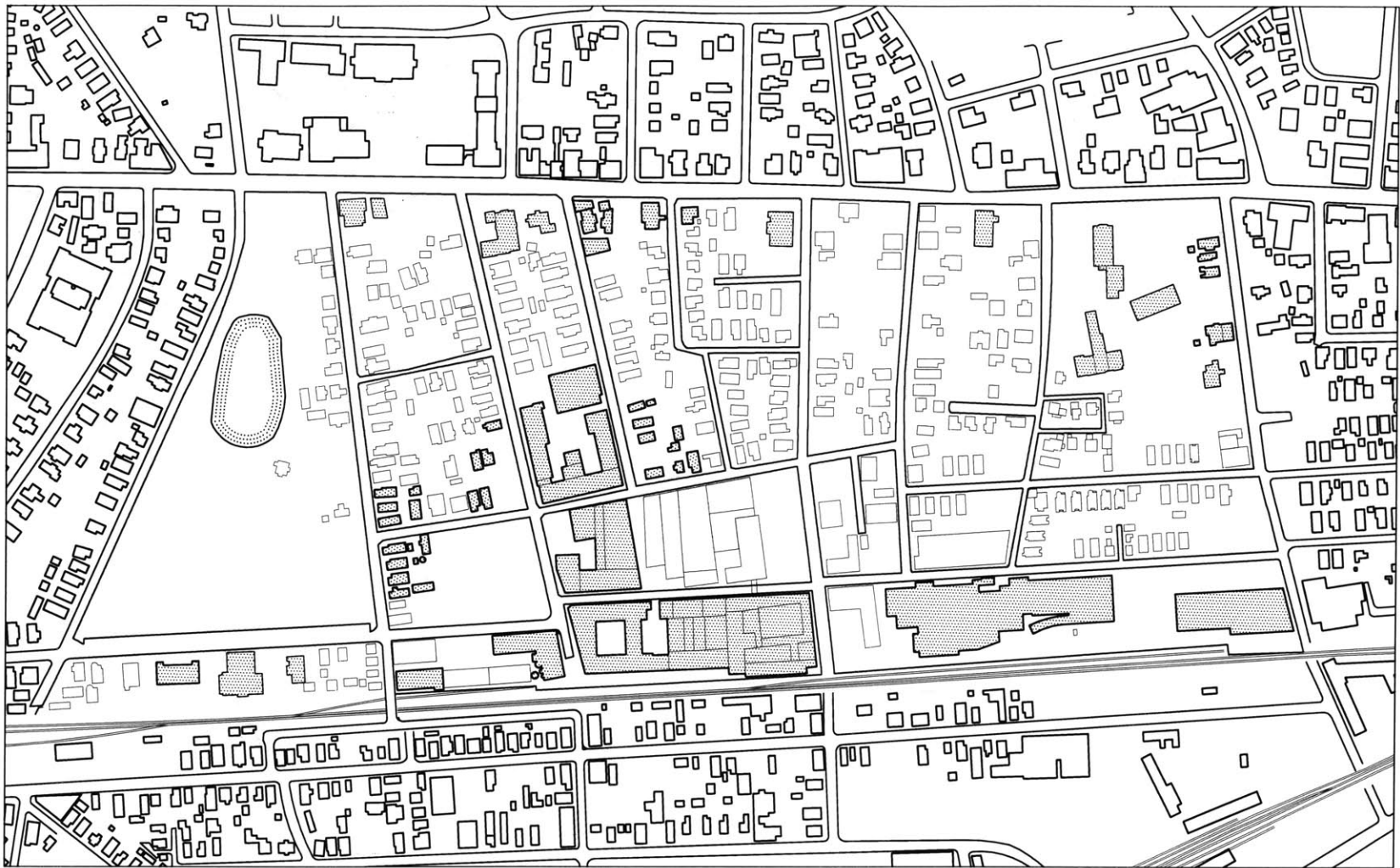
- Residential
- Public / Institutional
- Commercial
- Mixed Use
- Industrial

Worcester Main South Proposal

Preservation

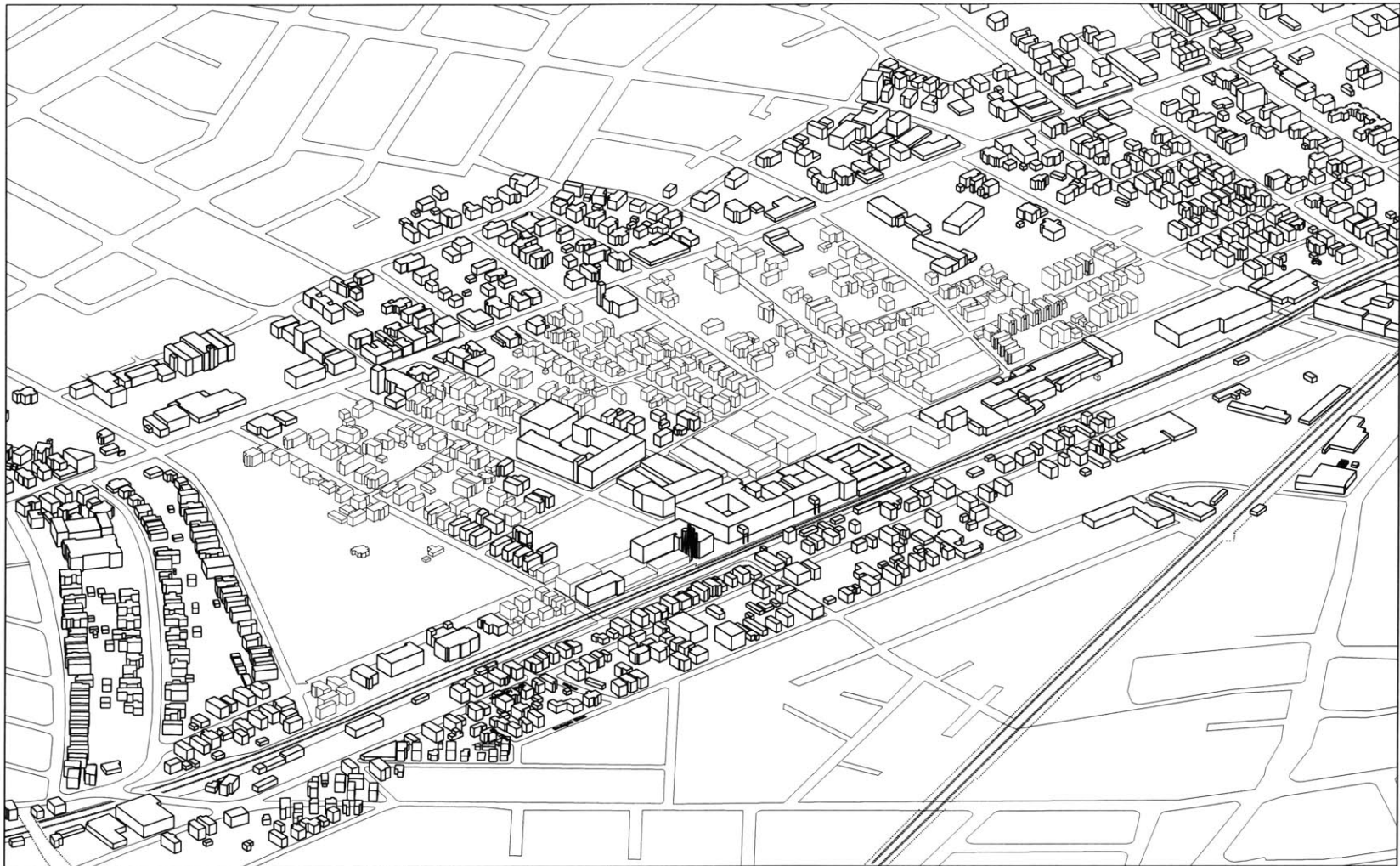
The site contains several types of buildings including churches, mixed use buildings of three to four stories, one story retail structures, one to four story single and multiple family houses, small apartment buildings, large industrial buildings, school buildings, and park buildings. Retaining these buildings where possible allows the site to retain a more diverse architectural character and reduces the cost of new construction and use of materials. Criteria for preserving any building depended upon two factors: architectural or structural condition and contribution to the social or physical fabric of the neighborhood. Churches in all cases were preserved, acting as both physical and social landmarks. Industrial buildings in good condition were retained wherever possible, especially those recently converted to



housing. Housing stock in good condition remained where not in conflict with new streets. Retail and commercial buildings were similarly treated. The result of this process is shown on the Preservation Plan. (figs. 67.1) A comparison of the site before and after the proposal is made in figures 68.1 and 69.1.



Preservation Plan

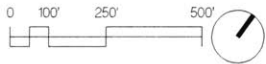
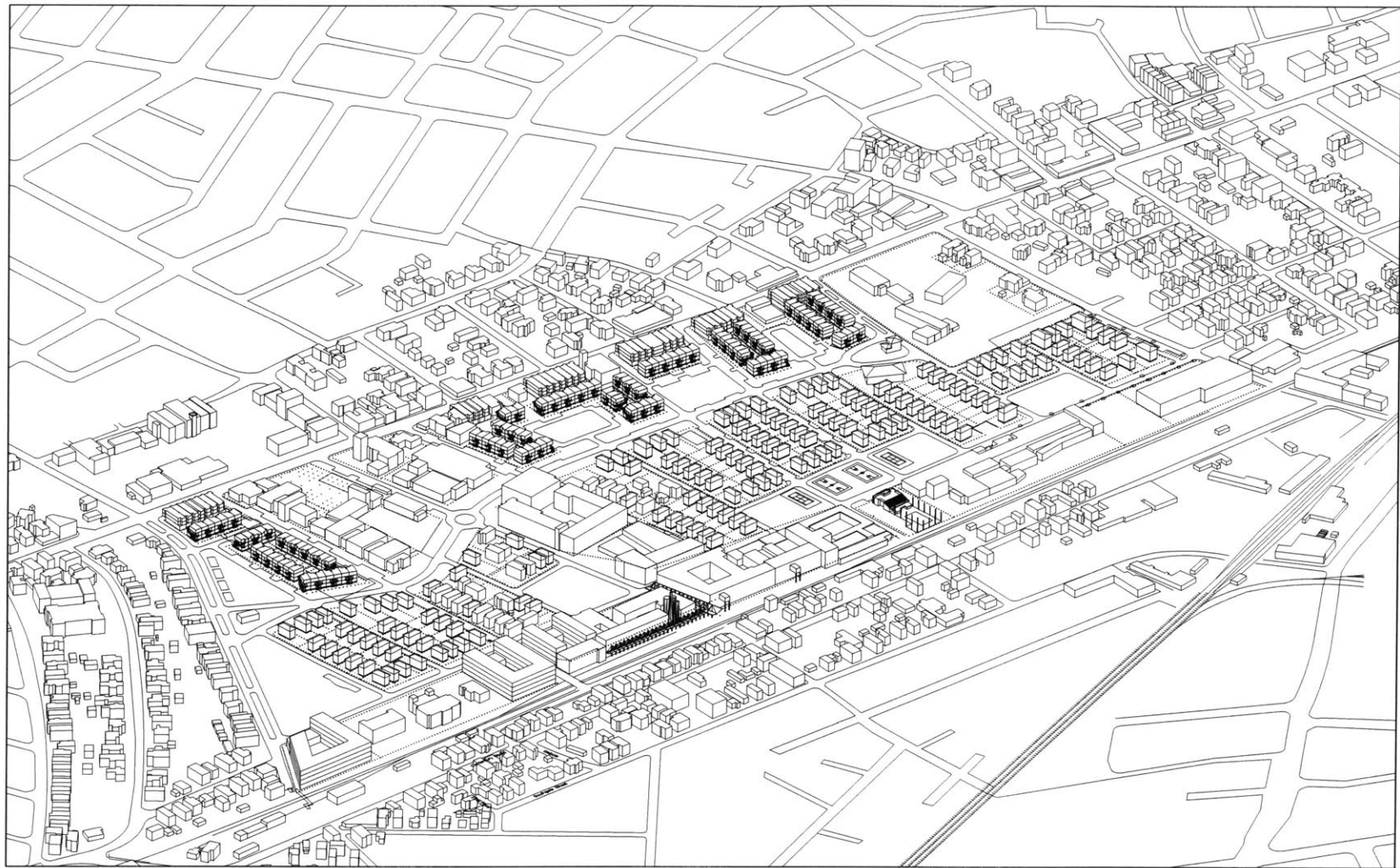
figure 67.1 Preservation Plan



-  existing building to be retained
-  existing building to be removed

Existing Conditions Axonometric

figure 68.1 Existing Conditions Axonometric



Main South Proposal View

figure 69.1 Main South Proposal View

Street Types

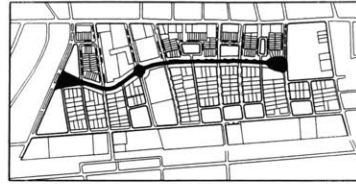
The existing street network on the site was confusing and encouraged a sense of insecurity and disorientation when on the site. Few through streets existed on the site, a jumble of cul-de-sacs and oddly shaped blocks littered the site. Using all or portions of existing streets whenever possible, a new network of streets was laid out. The new network contained several new through streets, a consistent block pattern, and distinct street types for specific site conditions. Separate networks for pedestrian and cyclists (paths at midblock *et. al*) were not included, as paths and sidewalks along the street network seemed sufficient. (figs. 71.1, 74.1, 76.1)

Main Street

Since only one side of Main Street falls within the site boundaries, all interventions with the exception trees for street landscaping occur on the southeastern side of the street. Street trees are London Planetrees, chosen for their canopy shape and distinctive bark. Most buildings fronting Main Street are commercial structures. New structures are required to be at least two stories, with entrances and service off of Main Street. A generous front setback is indicated, to be used for sidewalk area, planting, outdoor seating for restaurants and cafes, and display of wares. Property owners are free to configure this area as they wish, provided access to the storefront and through sidewalk access are maintained. (fig. 71.1)



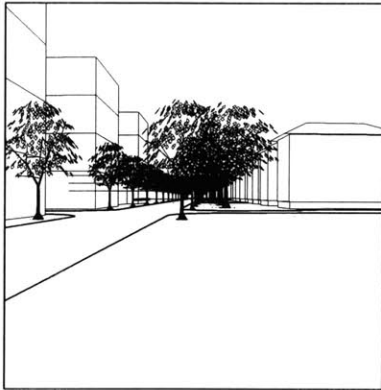
Trade Street



Central Boulevard



Main Street



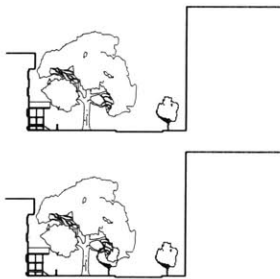
street perspective



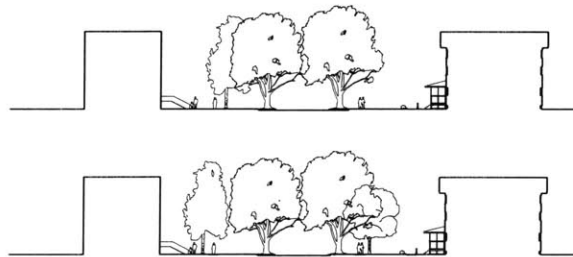
street perspective



street perspective



street section



street section



street section

figure 71.1 Street Types Diagram - Main / Central / Trade Streets

Central Boulevard

The central boulevard is a specialty street, acting as the central spine of the neighborhood. (fig. 71.1) It serves as both a link and a boundary between the upper portion of the site with its dense housing and commercial facilities and the lower portion of the site with its detached housing and industrial buildings. Heavy planting defines the boulevard. An arcade of red maples frames the center of the boulevard, creating a canopy of leaves for vehicular traffic. The boulevard undulates with the topography, encouraging a slow and safe passage. Central medians at the center and each end of the boulevard further slow traffic and contain institutional buildings and park space. Paper birches on the upper side of the street frame pathways for cyclists and pedestrians, while London planetrees enclose small lawns on the lower side. The boulevard does not connect to busy streets outside the site,

maintaining a low traffic volume and ensuring its ownership by the neighborhood. It is seen as a place for relaxation and recreation.

Trade Street

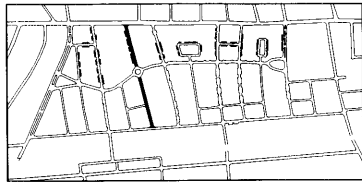
Currently in Worcester, there exists no art district. While industrial loft space is still affordable to rent in Worcester, the street along the industrial edge of the site is designated as the center of a proposed artist's community. (fig. 71.1) Recyclable industrial space in existing buildings as well as new loft apartments in new structures with gallery spaces on the ground floors line the street. Outdoor gallery spaces occur at one end of the street, while a large park with a stage for outdoor performances occupies the other end. Meeting rooms, studios, and a supply store will be located in existing industrial buildings near the middle of the street. The street is lined with Chinese stewartia and red oak trees.

Entry Avenue

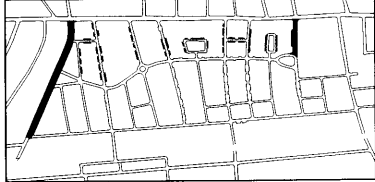
Divided streets with central planted medians, the entry avenues demarcate points of access to the neighborhood. Trees along these streets are tall and thin in profile, with thin foliage and visible tree structure to encourage a sense of space and openness. The only coniferous trees on the site occur here, so that they remain green all year round. These Japanese falsecypress trees are augmented in the other seasons by brilliant ginkgo trees in the center median and American sweetgums along each side of the street. (fig. 74.1)

Commercial Street

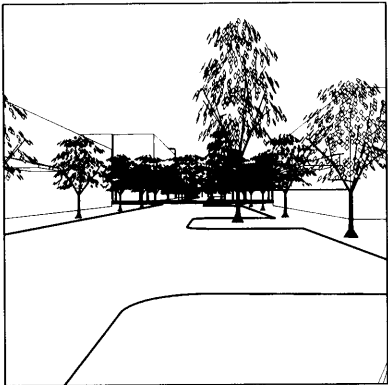
Located in the center of the site, the commercial street is lined with retail stores near Main Street and terminates at the commuter rail station near the railroad tracks. This street's commercial structures must be between two and four stories in height, and are serviced by head in parking. The retail plaza, movie theater, and parking garage entrance all occur along this street. Galleries for consigned art works are located near the lower portion of the street. This street is lined with American sweetgum, with ornamental ginkgo trees. (fig. 74.1)



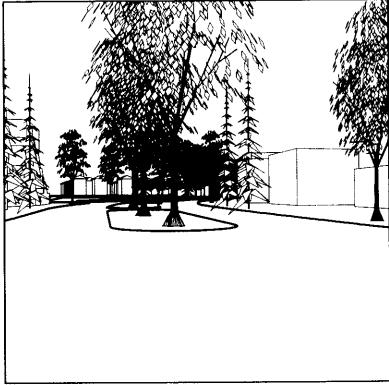
commercial street



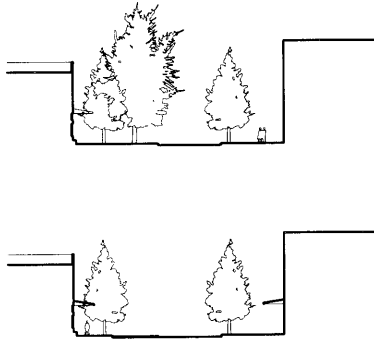
entry avenue



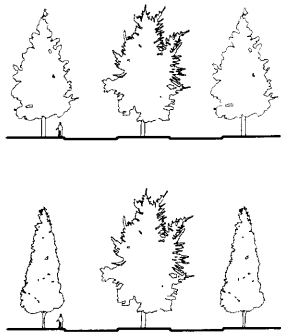
street perspective



street perspective



street section



street section

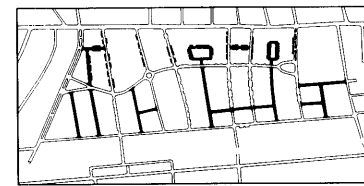
figure 74.1 Street Types Diagram - Entry / Commercial Streets

Through Residential Street

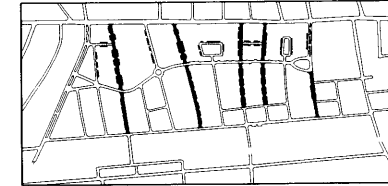
The most public of the residential streets, the through residential street provides structured on street parking on both sides of the street. These streets exit directly from the site in at least one direction. A sense of enclosure is provided by an arcade of American sweetgum trees within the parking median, and a shallow street section. (fig. 76.1)

Private Residential Street

Smallest of the site streets and with more restricted access than the through residential streets, the private residential streets cater primarily to use only by the residents. The streets have an intimate section, with room for on street parking only on one side of the street if the street is one way. Houses on residential streets are from 1-1/2 to four stories, and vary by type. These streets are lined with the small Chinese stewartia. (fig. 76.1)



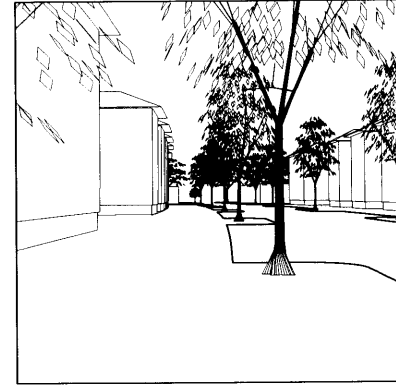
private residential street



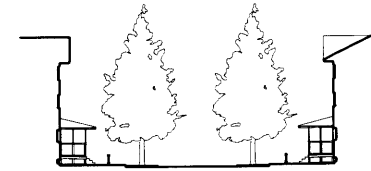
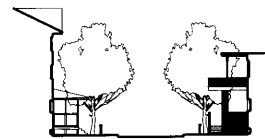
through residential street



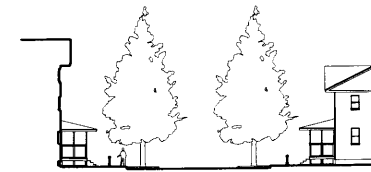
street perspective



street perspective



street section



street section

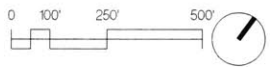
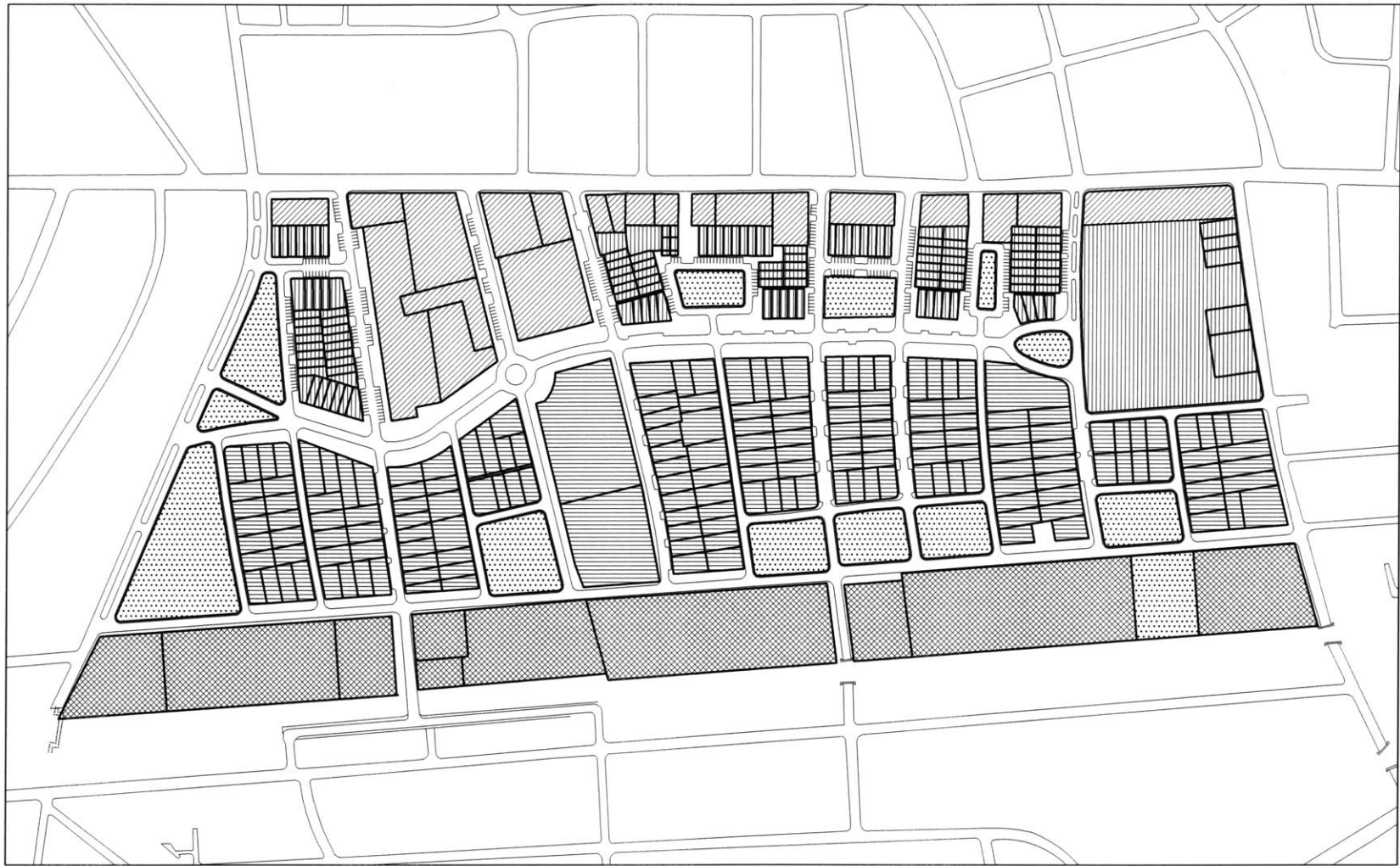
figure 76.1 Street Types Diagram - Residential Streets






Building Types

Existing currently on the site were several types of buildings, each serving specific purposes. All building types were retained and new types were added to respond to programmatic needs and encourage physical and economic diversity within the site. Buildings are grouped on the site by type in order to place them nearest to their appropriate location. (fig. 78.1) Dense commercial and residential uses are grouped nearest to Main Street where property will be most expensive and activity will be highest. Detached housing occurs in the central portion of the site, buffered from the railroad by existing industrial buildings and new residential loft apartments. Grouping the site by type of building is both economically grounded and helps with orientation when on the site. Institutional and public buildings may occur anywhere within the site.

Commercial Buildings

Commercial buildings occur primarily along Main Street and the commercial street. They are intended to house retail on the ground floor, and have an open plan and a fifteen foot front setback to accommodate service, delivery, and outdoor seating. Buildings are from two to four stories with the upper stories to be occupied by office, commercial, or residential uses. All entrances to commercial buildings are accessed from the street. Upper stories include accommodations for balconies at the rear of the building. Specific commercial buildings include a three level parking garage servicing the retail plaza and adjacent housing, a three screen movie theater, a cafe, a convenience store, and a small inn and conference center catering to Clark University students, parents, and faculty. (fig. 79.1)



- | | |
|--|--|
|  Attached Residential |  Mixed Use Commercial |
|  Detached Residential |  Industrial / Residential Lofts |
| |  Public Open Space |

Land Use and Distribution of Buildings

figure 78.1 Land Use and Distribution of Buildings

Building Legend

- A parking garage. 3 levels.
- B movie theater. 3 screens.
- C open plan mixed use commercial
- D cafe

E outdoor seating area

F public plaza

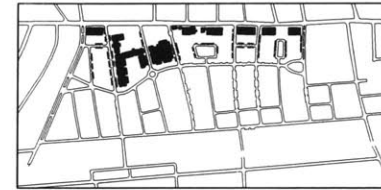
G inn

H conference center

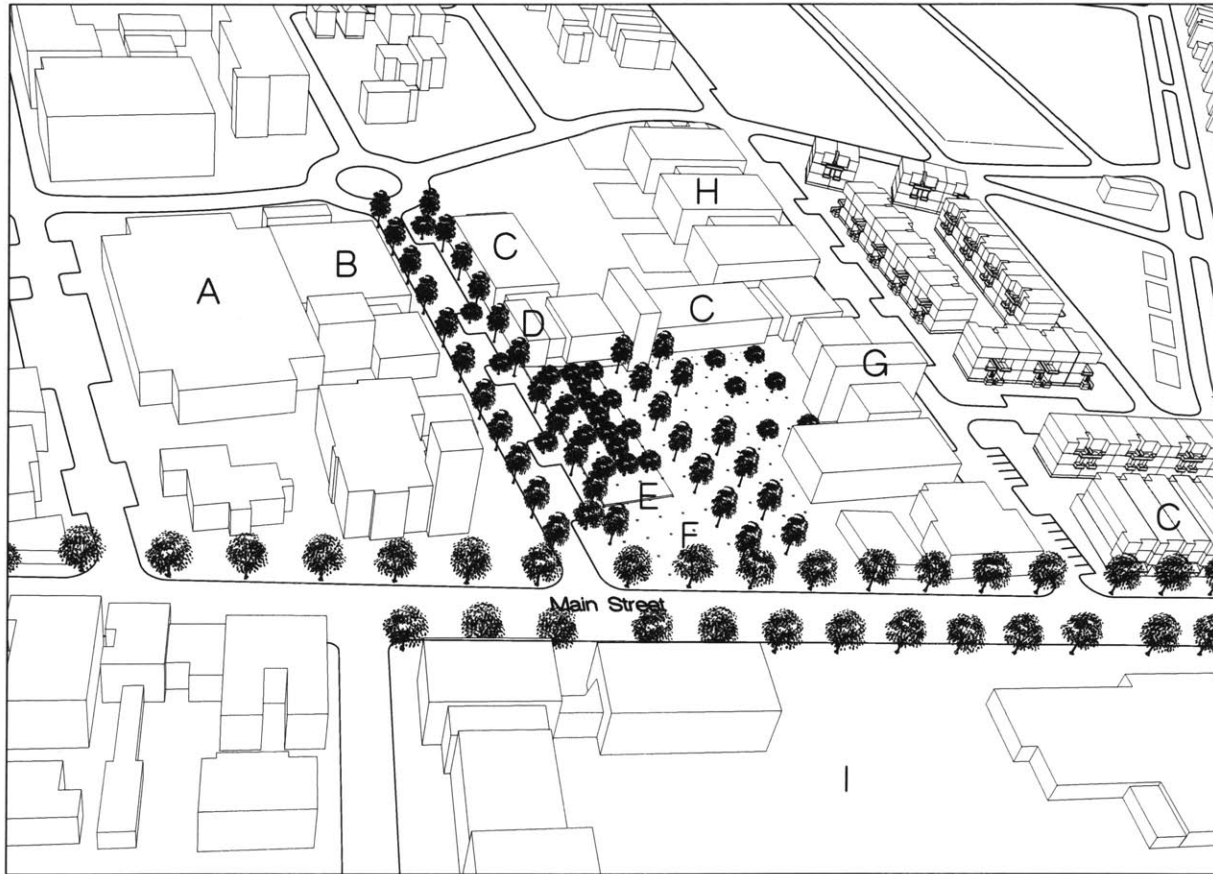
I Clark University quadrangle

Commercial

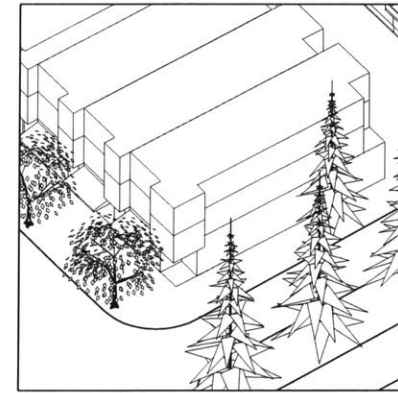
15'-0" front setback for outdoor seating / delivery area. open plan with 20'-0" +/- bays and entrances at alternate bays minimum. Two story minimum with four story maximum. Office, commercial or residential may occupy the upper floors.



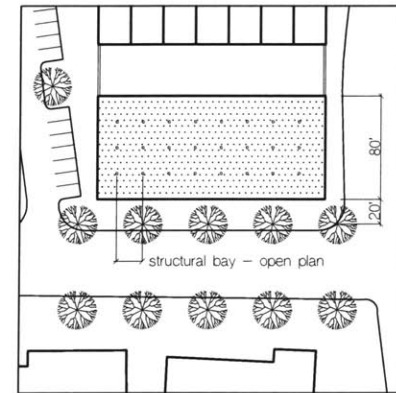
commercial



retail center axon



building axon



typical plan

figure 79.1 Building Types Diagram - Commercial Buildings

Attached Housing

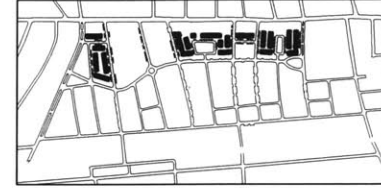
Attached or row housing is located near Main Street behind the commercial buildings on the site. Attached housing is placed on a twenty-five by seventy-five foot lot, with a buildable footprint of twenty-five by forty feet. A fifteen foot front setback may contain an unenclosed porch or stoop and landscaping. The rear of the lot is used as a small yard. Access to the rear of the lot is fenced and gated. Porches and patios may occur on the upper levels. Attached housing must be between two and four stories high. The prototypical rowhouse unit contains a two bedroom apartment on the ground floor, two studio apartments on the second floor, and a three bedroom apartment on the third floor. Attached housing is grouped around small parks or open space, giving the units an identifiable center. Head in parking occurs at ground level, with one space per unit. (fig. 81.1)

Detached Housing

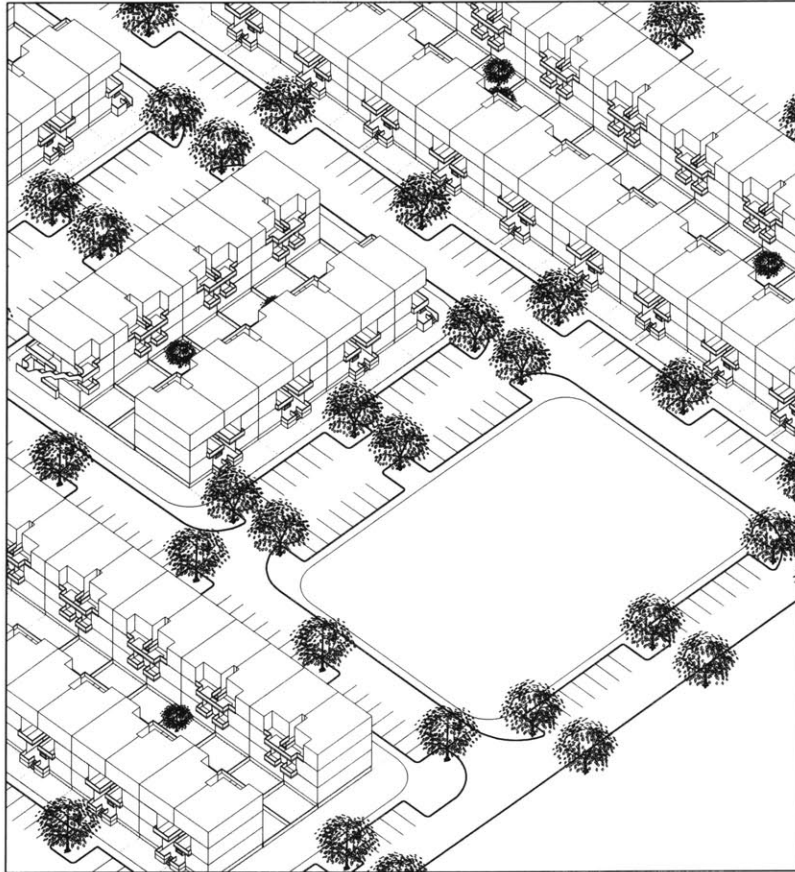
Larger lots provide the opportunity for multiple dwellings on a single site. Larger lots drive up initial costs but allow more than one household to live on a lot. Detached housing lots measure forty-eight feet wide and are 100 feet deep. A fifteen foot front setback may contain an unenclosed porch or stoop. Buildings on the site may be between one and a half and three and a half stories. Garages on the site must have living space above. Several lot configurations are possible: a moderate house with a sizable yard, a house and garage with apartment above, a series of connected buildings and outbuildings. Corner lots allow larger houses to help ground the corners of the block and compensate for multiple setbacks. All fencing is to be located at the property line, and no party walls are allowed. (fig. 82.1)

Attached Housing

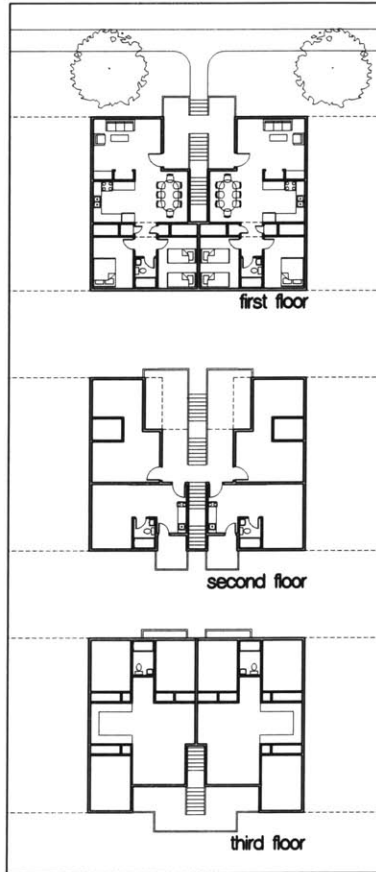
Setback area may have up to 50% unenclosed porch or stoop. Rear yards to be fenced and gated. Two story minimum, four story maximum. Unit lots may be combined provided entry and unit frequencies are maintained.



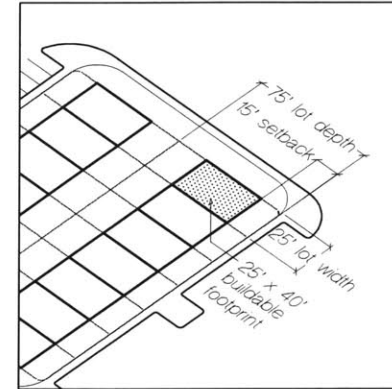
attached housing



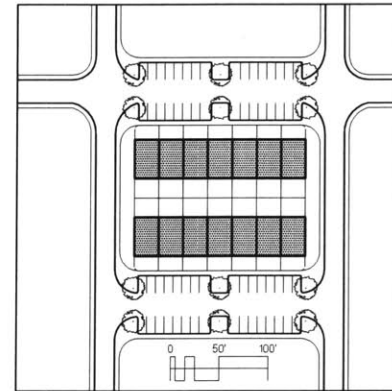
block axonometric



unit plans



lot configuration



typical block plan

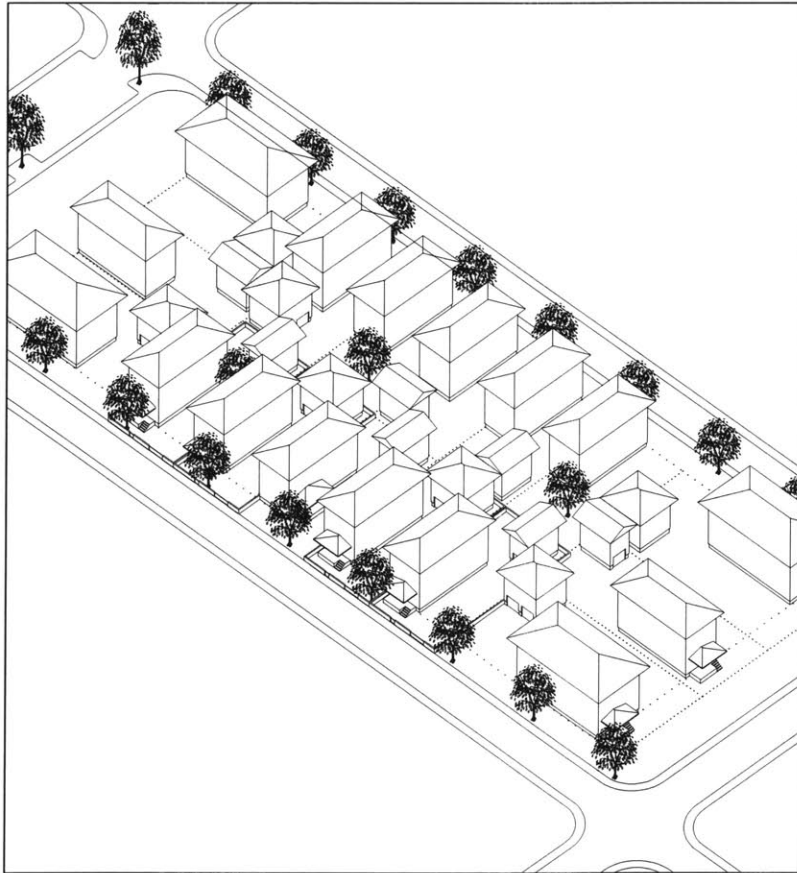
figure 81.1 Building Types Diagram - Attached Housing

Detached Housing

fencing located at property line
 setback area may have up to 50%
 unenclosed porch or stoop area.
 front facade of house located
 on setback line. NO party walls.
 Multiple dwellings allowed per lot.
 1-1/2 story minimum, 3-1/2 story
 maximum. Up to 60% lot coverage.



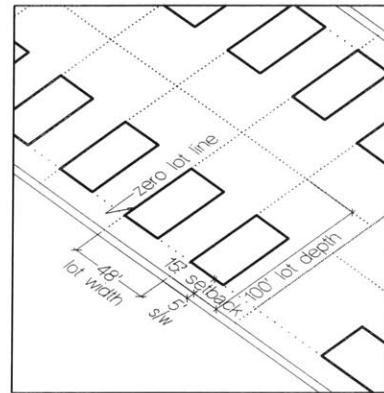
detached housing



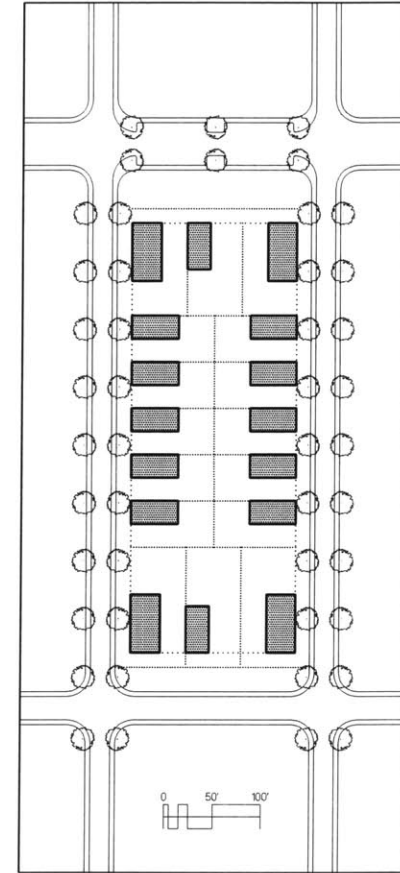
block axonometric



lot building layouts



lot configuration



typical block plan

figure 82.1 Building Types Diagram - Detached Housing

Residential Lofts

Continuing the line of industrial buildings, the residential lofts in the artist district of the site have a minimum sixteen foot floor to floor height, and a compulsory gallery space on the ground floor. Parking is also allowed on the ground floor and below. Preference for residents of the loft buildings is given to artists, who must submit a portfolio for occupancy. Lofts are oriented north, and act as a buffer for the neighborhood from the railroad behind. (fig 84.1)

Industrial Buildings

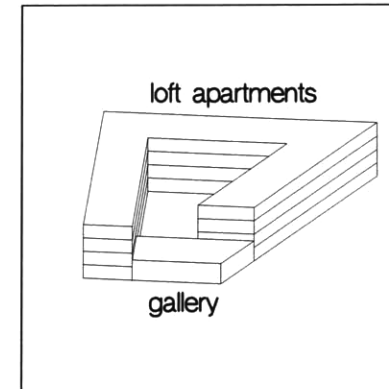
Several industrial buildings are located on the site, some still active. Multiple new uses are to be located within vacant buildings, including housing, community space, studios, workshops, and new light industry and office space.

Residential Lofts

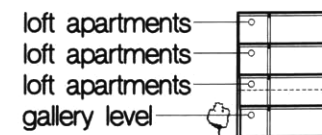
Ground floors at street contain gallery space. Parking and courtyard areas may occur to the rear of the gallery. Smaller galleries and communal studios may be incorporated on the upper floors.



residential lofts



typical loft building



residential loft section

figure 84.1 Building Types Diagram - Residential Lofts / Industrial Buildings

Public Buildings

Several specific new public buildings are proposed. Each is placed adjacent to appropriate uses, and all are located for greatest accessibility. (fig. 86.1)

Greenhouse

Located at one terminus of the central boulevard, the greenhouse serves the community gardens adjacent. The greenhouse will serve as headquarters for plantings and maintenance on the central boulevard, and house winter community garden space.

Day Care Center

Two day care centers are located on the site. Both have outdoor playgrounds and are located immediately adjacent to dense housing areas.

Police Sub-Station

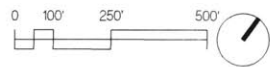
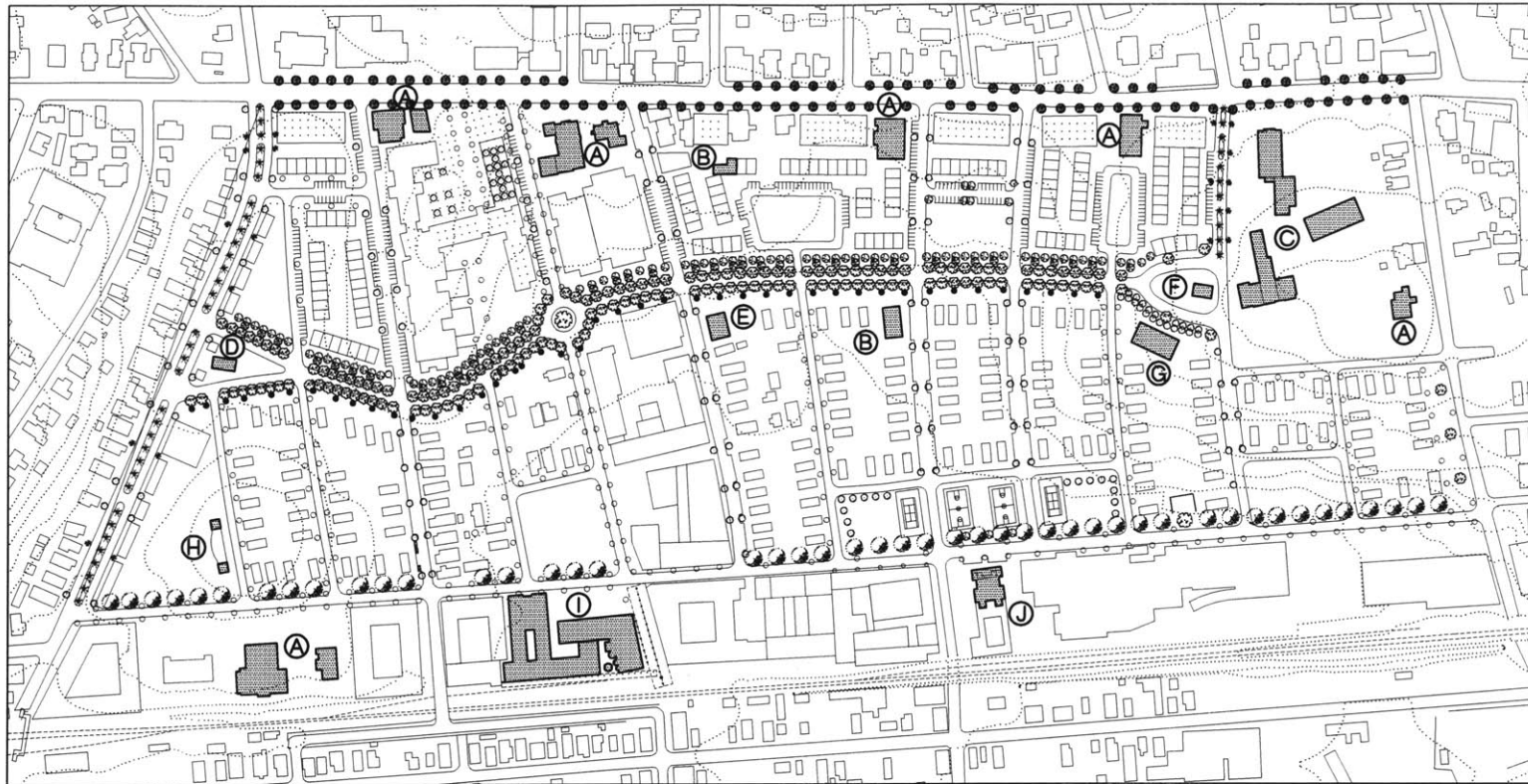
To discourage illicit behavior and criminal activity, a small police facility will be located along the central avenue. The station will help to facilitate “active policing” of the neighborhood, and instill a sense of security in the residents.

Meeting Pavilion

Located at the terminus of the central boulevard near the existing Catholic church and school, the meeting pavilion serves small organizations and informal gatherings.

Athletic Facility

Intended as an outreach facility for the Catholic church and school, the facility will be available for use by both residents and church affiliated persons. The facility will be jointly administered.



Building Legend

- | | |
|---------------------------------------|-------------------------------|
| A - Existing Church Building | F - Meeting Pavilion |
| B - Day Care Center | G - Athletic Facility |
| C - Existing Catholic Church & School | H - Outdoor Performance Stage |
| D - Greenhouse | I - Commuter Rail Station |
| E - Police Sub-Station | J - Pool Facility |

Public Buildings Plan

figure 86.1 Public Buildings Plan

Outdoor Performance Stage

Located in the large park at the corner of the site, the stage is a simple structure affording structured and unstructured performances of drama, music, and performance art.

Commuter Rail Station

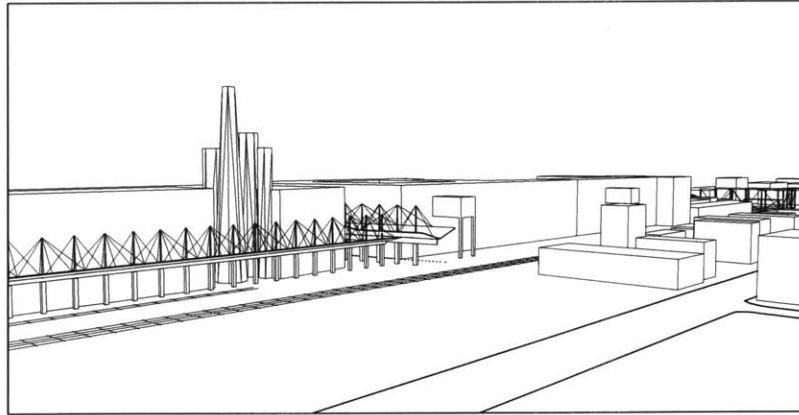
Taking advantage of the recent extension of Boston's commuter rail to Worcester, the station anticipates an intercity commuter line continuing to destinations east. It is located adjacent to the existing rail line, in an existing industrial mill and a new facility. (fig. 88.1)

Pool Facility

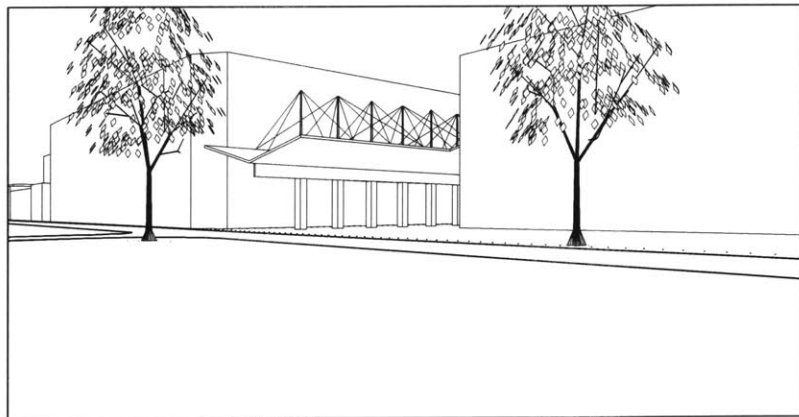
Replacing the existing pool in Crystal Park, the new facility will be for year round use by residents and students in the area. The facility includes offices, locker rooms, an olympic size pool, a viewing gallery, and a sunbathing platform. (fig. 88.1)

Railway Station

Platforms are partially enclosed. Facilities are located in adjacent existing and new buildings.



railway station platform

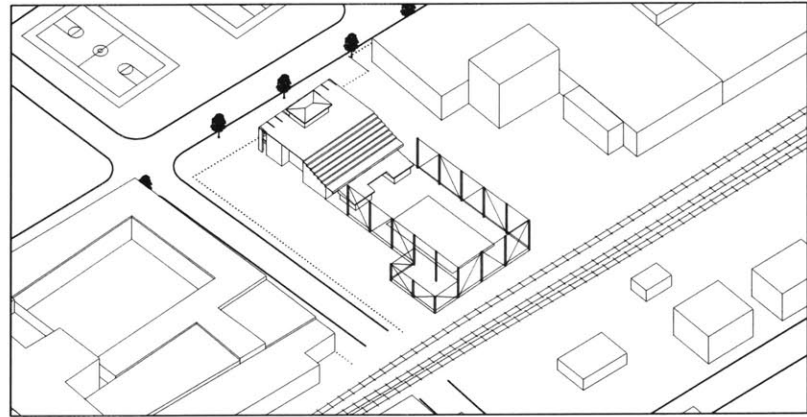


railway station entry

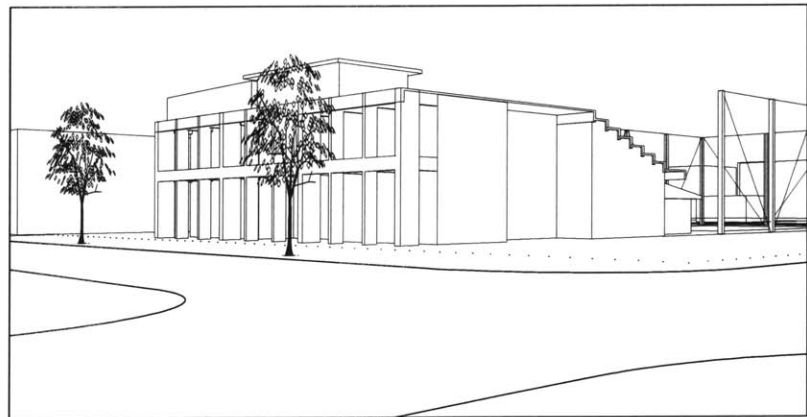
figure 88.1 Public Buildings - Pool Facility and Railway Station

Pool Facility

The roof of the facility serves as a grandstand. A removable enclosure may be placed around the pool for year round use. The building houses offices, locker rooms, restrooms, a snack bar and lounge.



pool facility rear view



pool facility entry

Public Open Space

Crystal Park, a large open field with a lake and derelict swimming pool, occupies the eastern portion of the existing site. The park has been the site of several muggings and is not reputed to be safe. A lack of structure and the sheer size of the park may contribute to these events. In an effort to give parks a new reputation on the site, the area of Crystal Park is to be redistributed throughout the site, with each park having a programmed function. (fig. 90.1)

Ball Courts and Playgrounds

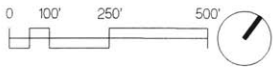
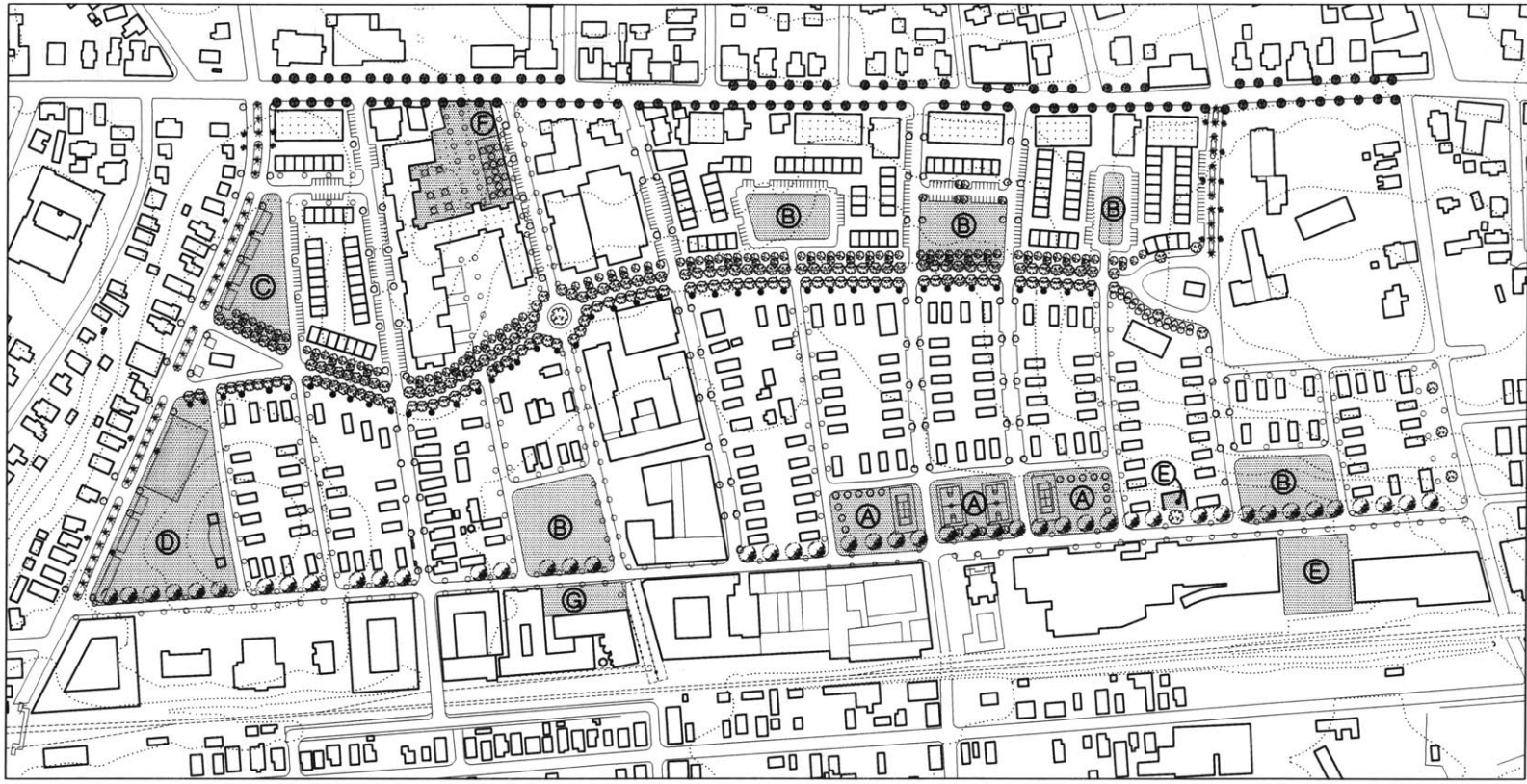
The existing basketball courts will be relocated to a central location on the site, and will be augmented with tennis courts and new playground equipment. These parks are “watched over” by the surrounding residential blocks.

Pocket Parks

These parks are enclosed by residential blocks. They are intentionally left temporarily unprogrammed, so that the surrounding residents may claim the shared space and decide what type of equipment, facility, monument, or landscape best serves their needs.

Community Garden

The remaining upper portion of Crystal Park, this site will be used for community garden plots. Small pools along the entry avenue act as a memory of the lake once located here, and serve to water the gardens. The gardens are adjacent to attached housing, whose residents receive preference for plots. The greenhouse at the end of the central boulevard also augments the garden facilities.



Open Space Key

- | | |
|-------------------------------|--------------------------|
| A – Ball Courts & Playgrounds | F – Public Plaza |
| B – Pocket Park | G – Transportation Plaza |
| C – Community Garden | |
| D – Performance Park | |
| E – Outdoor Gallery | |

Public Open Space Plan

figure 90.1 Public Open Space Plan

Performance Park

The performance park occupies the lower half of the former Crystal Park site. The reflecting pools continue the line of water features from the community gardens, and the large pool serves as a skating rink in the winter. The open stage on the hill is served by casual outdoor seating for performances.

Outdoor Gallery

These spaces allow artists living along the avenue a venue to display environmental pieces, sculpture, and other art works. A small space is enclosed by walls at the end of a residential block, and a larger space above a parking lot provides an open framework for pieces of other scales.

Public Plaza

The retail complex's open space provides for outdoor seating for the cafe and a focal point to the retail center. The plaza is furnished with landscaping, structured seating, green areas and hard surfaced areas.

Transportation plaza

In the forecourt of the train station, the plaza serves as a place to wait for the train, to be dropped off or picked up, or to pass the day.

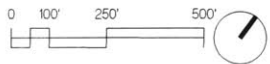
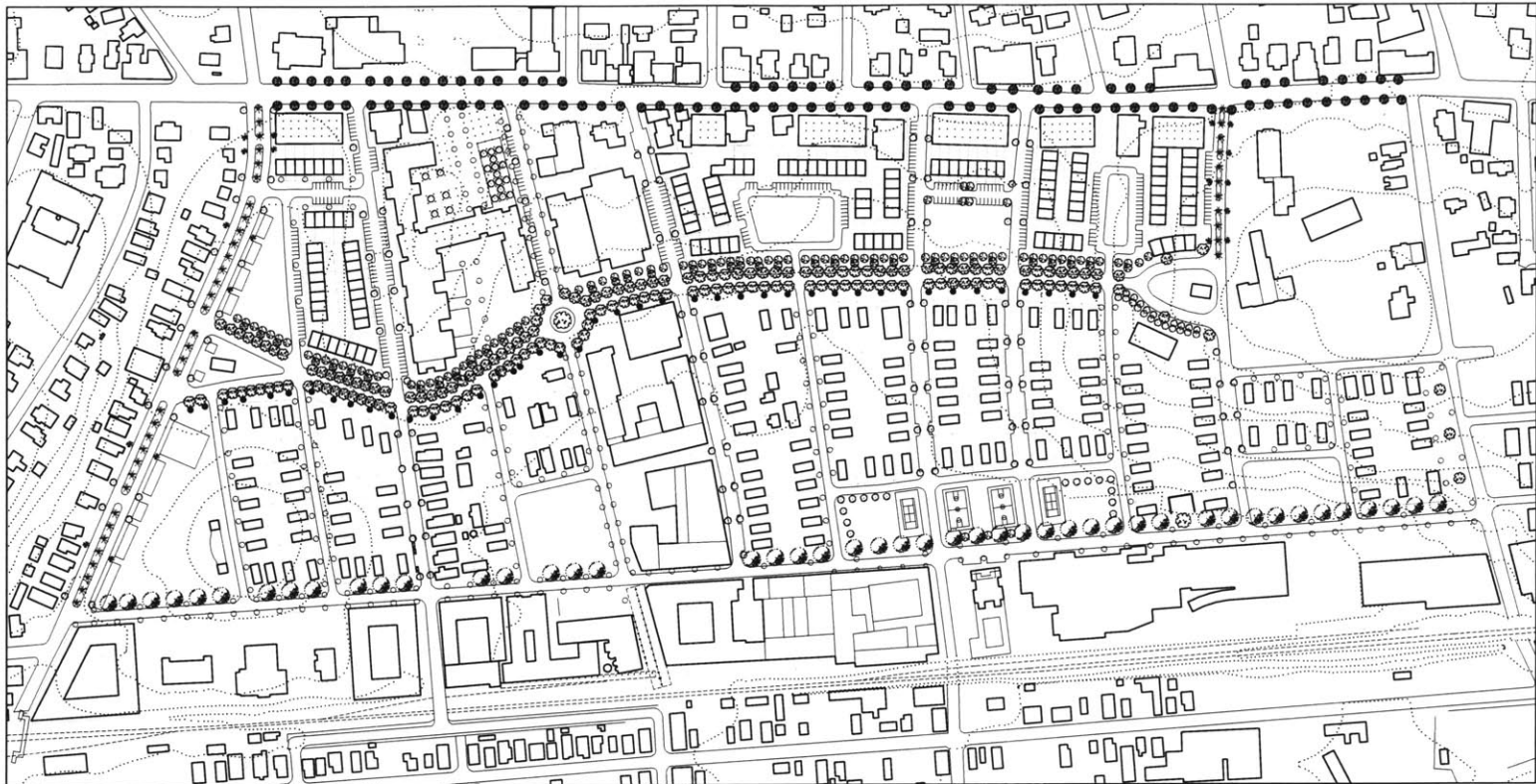
Landscaping

Specific planting types and spacings are used to differentiate between types of streets, parks, and plazas. (fig. 93.1) Landscaping is chosen for its size, spread, urban tolerance, seasonal foliage coloration, and structure. Two temporally related planting strategies are used. Some types of trees, the Chinese stewartia for example, mature quickly, reaping an early benefit for initial landscaping efforts. These trees are also short lived. Other types of trees such as oaks are long-lived but slow to mature. Both types of tree species with differing maturity rates are included in special areas, such as the landscaped central avenue. A variety of tree species is also protection against the neighborhood's entire tree population being wiped out by one disease.

Tree types are distributed on the site in part due to their size and spread. Oaks and maples line

the landscaped boulevards, creating canopies which will mature over long periods of time. (figs. 94.1, 95.3) Thin trees with a limited spread and opacity are located at the entry avenues. Smaller trees like the stewartia (fig. 95.4) are located on the residential streets. Trees add scale and enclosure to streetscapes and open spaces.

Several factors make certain trees more likely to survive and thrive in urban situations. Air pollution given off by both street vehicles and manufacturing facilities affects the growth of the tree. Toxins in the soil and changes in the compaction rate of the soil may harm urban trees. Trees must also be provided with proper drainage so that the tree does not "drown." The "concrete bathtubs" with no outlets for drainage in which many street trees are planted retain water and drown intolerant tree types. Certain species of trees require more sunlight, and do not survive in



Landscaping Plan

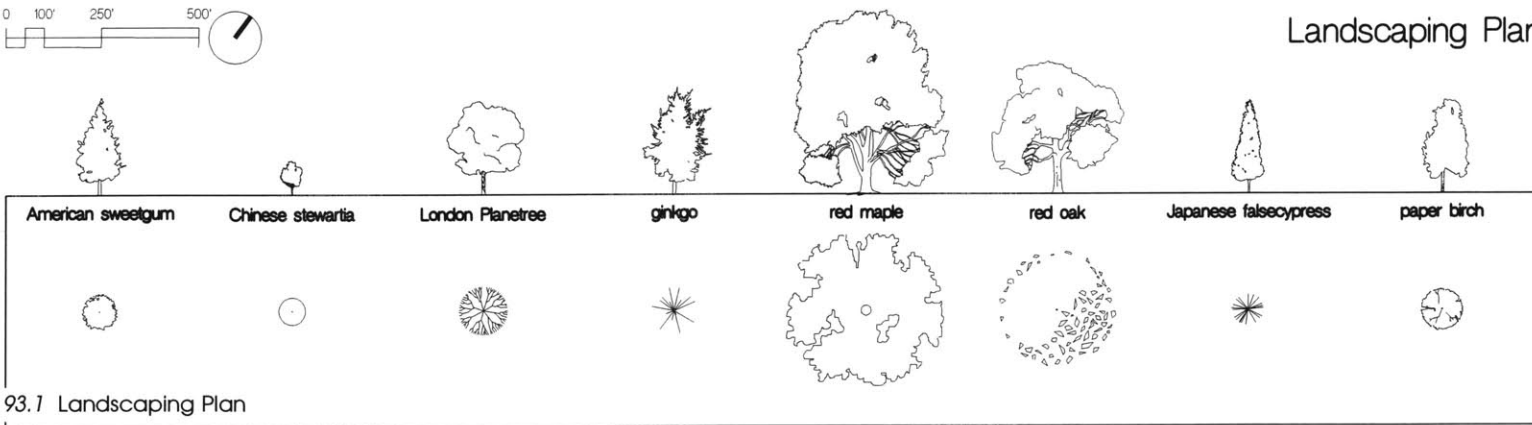


figure 93.1 Landscaping Plan

Red Maple
Acer rubrum

40' - 60' height
spread <= height

Foliage Colors
(SP,S,F,W)

medium green
dark green
gn-yellow/yellow/brt red
x

inconsistent coloration
from tree to tree. brilliant
colors.

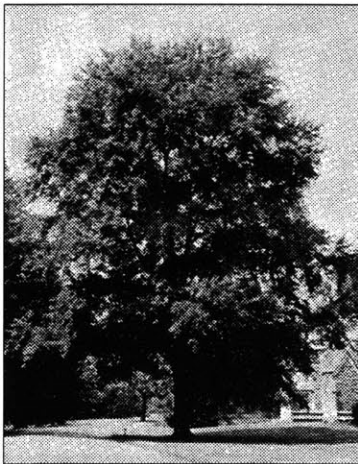


figure 94.1 Red Maple

Paper Birch
Betula papyrifera

50' - 70' height
spread = 1/3-2/3 height

Foliage Colors
(SP,S,F,W)

green
dull dark green
yellow
x

creamy white, peeling
bark.



figure 94.2 Paper Birch

Japanese Falsecypress
Chamaecyparis pisifera

50' - 70' height
10' - 20' spread

Foliage Colors
(SP,S,F,W)

dark green
dark green
dark green
dark green

tall, narrow coniferous
tree.

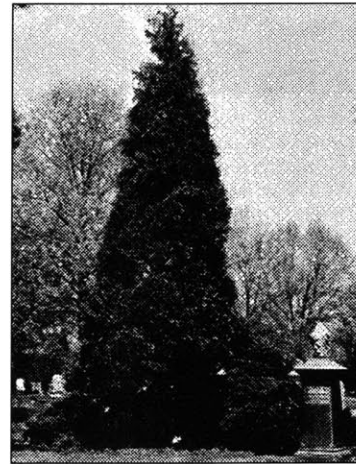


figure 94.3 Japanese Falsecypress

Ginkgo
Ginkgo biloba

50' - 80' height
30' - 40' spread

Foliage Colors
(SP,S,F,W)

light green
bright green
brilliant yellow
x

excellent street tree. takes
time to mature. interesting
branch and leaf structure.
narrow profile.

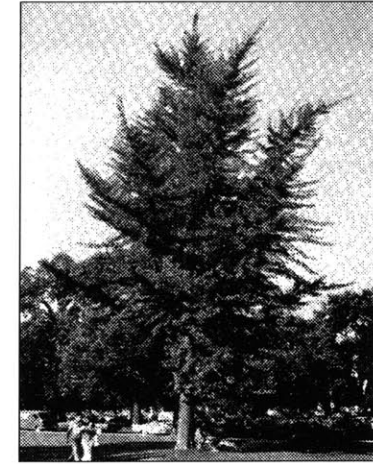


figure 94.4 Ginkgo

American Sweetgum
Liquidambar styraciflua

60' - 75' height
spread = 2/3 height

Foliage Colors
(SP,S,F,W)

green
deep glossy green
yellow-purple-red
X

holds leaves late in fall.
excellent lawn, park or
street tree.

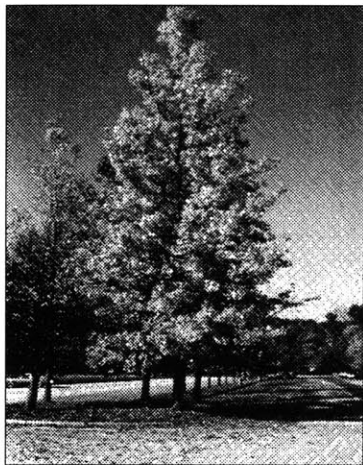


figure 95.1 American Sweetgum

London Planetree
Platanus x acerifolia

70' - 100' height
65' - 80' spread

Foliage Colors
(SP,S,F,W)

green
medium-dark green
yellow brown
X

distinctive bark and
structure

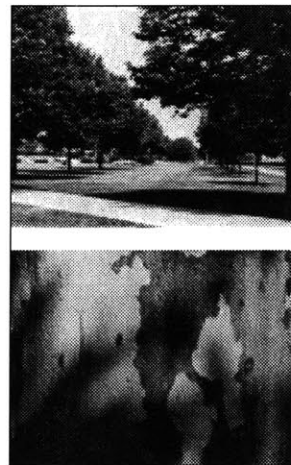


figure 95.2 London Planetree

Red Oak
Quercus rubra

60' - 75' height
60' - 75' spread

Foliage Colors
(SP,S,F,W)

light green
dark green
bright red
X

large acorns, attracts
birds, small mammals,
very pollution tolerant.



figure 95.3 Red Oak

Chinese Stewartia
Stewartia sinensis

15' - 25' height
spread = 2/3 height

Foliage Colors
(SP,S,F,W)

green / white flowers
medium green
dull red
X

excellent small residential
street tree.

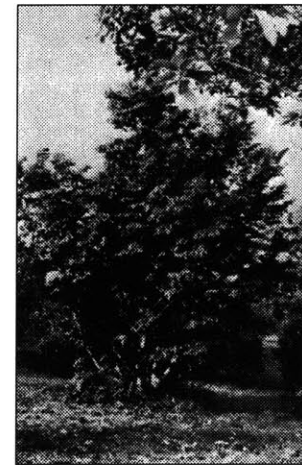


figure 95.4 Chinese Stewartia

the shade of buildings or other trees. Trees requiring time to mature must be protected until they are strong enough to withstand abuse. Tree species on the site are chosen considering these factors.

All deciduous trees have brilliant foliage coloration. Yellows and reds of various shades and hues give the project a distinctive aura in autumn. Some leaf shapes, such as the ginkgo's, have distinctive profiles and distribution patterns on the trees.

Since deciduous trees are bare for many months of the year in Worcester's cold climate, trees of this type are selected in part for visual interest in the branching structure and the color and texture of the bark. The ginkgo and London planetree (figs. 94.4, 95.2) have remarkable tree structure, while the paper birch and London planetree (figs.

94.2, 95.2) have very distinctive, pale bark. A few coniferous specimens are placed along the entry streets for green all year round. Since they produce a sap harmful to the finish of a vehicle, the number of coniferous trees is kept to a minimum.

V. Conclusion

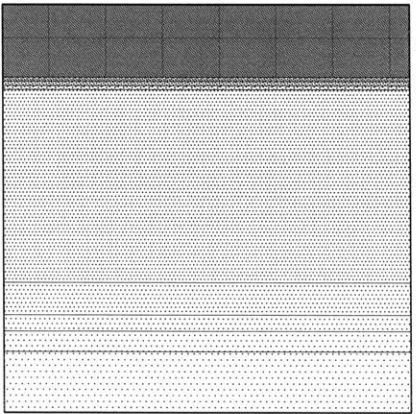
The proposal contains multiple building types, street types and streetscapes, several public facilities and parks. These are all a response to specific contextual conditions, and reflect a desire to produce an environment of diversity within an existing site. The site has several amenities, several identifiable nodes or centers: places with which to identify. Multiple and distinct housing types are distributed across the site. The distribution of site elements is recorded in figure 100.1. Approximately one quarter of the total site area is covered by six general types of buildings. Reflecting the private yards of the residential buildings and the enclosed outdoor areas of the institutions, the largest single element in the scheme is private open space. This covers thirty-two percent of the site. All site factors reflect a range of functions, a heterogeneous environment.

Reminders of many of the precedents are apparent in the proposal: the long blocks of the South End, parks mimicking the squares of Savannah, an undulating boulevard reminiscent of Riverside. How does this development compare to its sources? (fig. 101.1) It has almost as much parkland as Radburn, slightly more yard than Seaside. Its road lengths and unit densities are similar to many of the precedents. The information in these indexes; road per linear feet, units per acre, distribution of elements; relates directly to cost issues, physical space ramifications, the way in which residents will live and interact in an environment.

Two questions must be asked when using data of this kind: what questions are the data addressing and subsequently what values are acceptable as standards? Initially, the indexes were created to



general plan



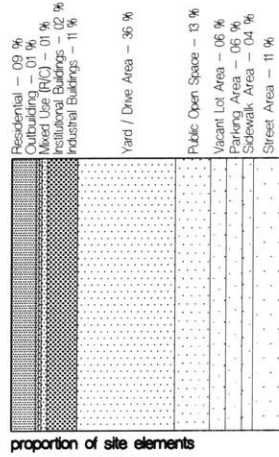
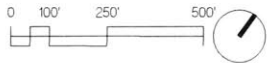
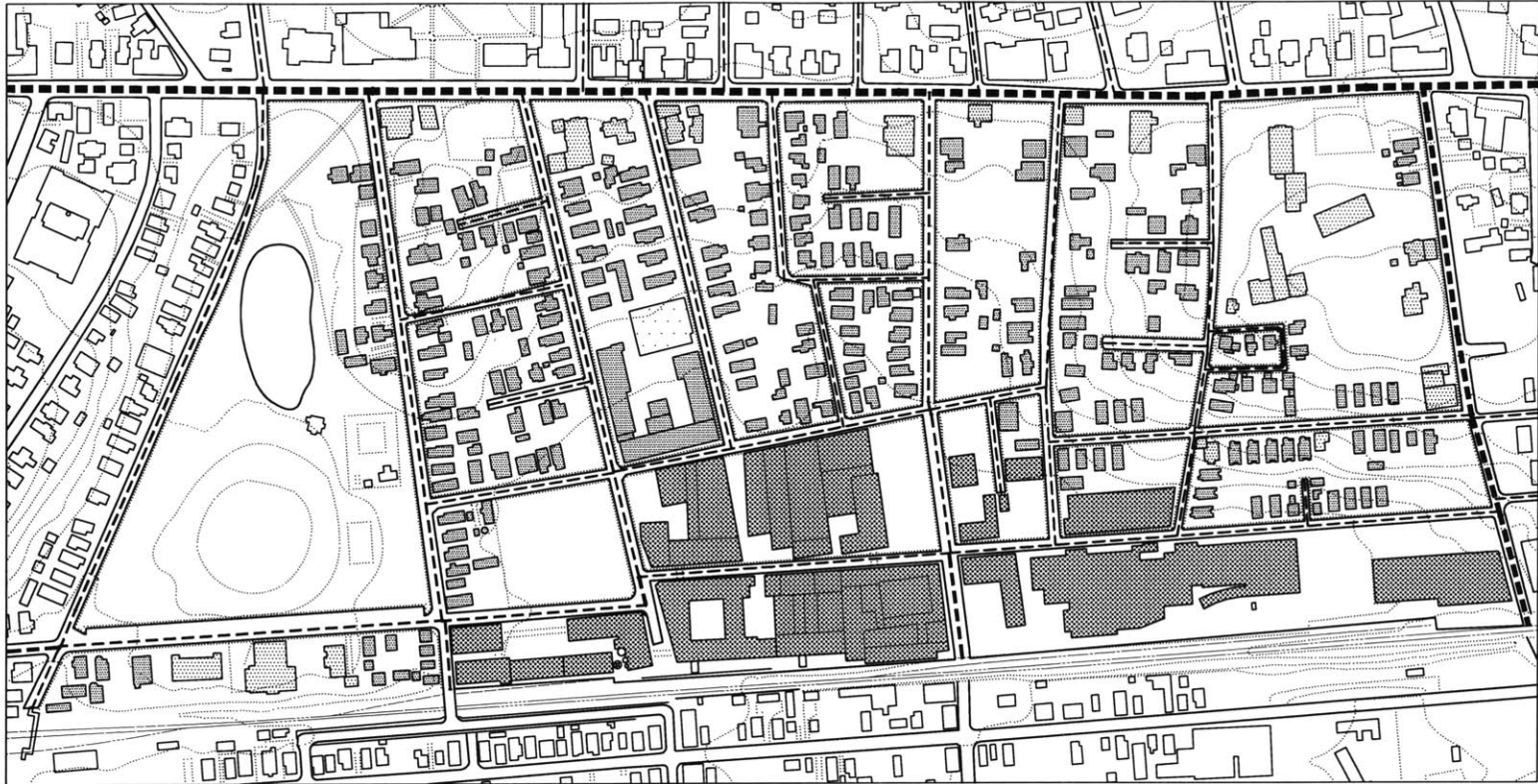
proportion of site elements



vehicular circulation

115 housing units / acre
253 linear feet of street / acre

Worcester Fabric Analysis

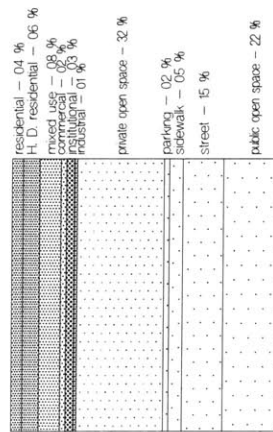
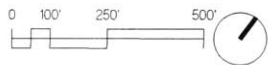
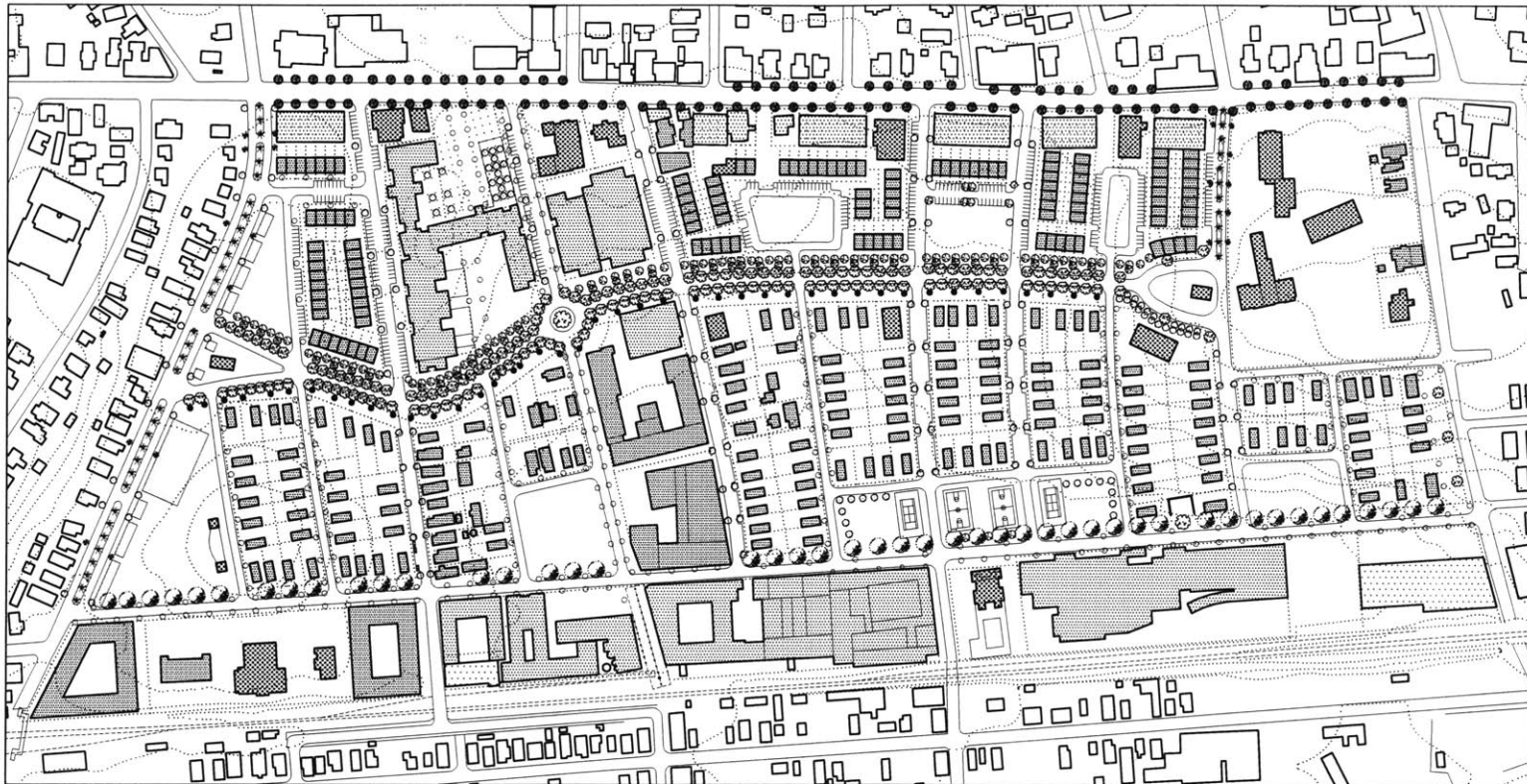


proportion of site elements

Worcester Site Analysis

6 housing units / acre
181 linear feet of street / acre

figure 99.1 Worcester Site Analysis

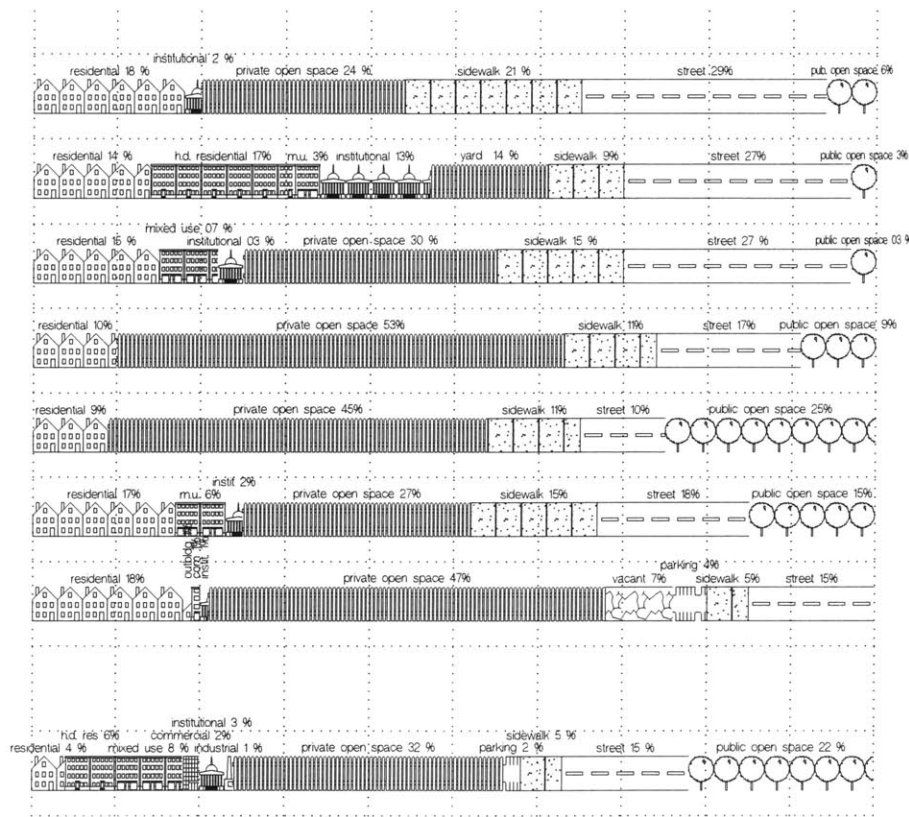


Main South Proposal Analysis

13 housing units / acre
218 linear feet of street / acre

figure 100.1 Main South Proposal Analysis

100 %
 90 %
 80 %
 70 %
 60 %
 50 %
 40 %
 30 %
 20 %
 10 %
 0 %



Savannah, Georgia

New York City

South End, Boston, Massachusetts

Riverside, Illinois

Radburn, New Jersey

Seaside, Florida

Main South, Worcester, Massachusetts

Main South Proposal

figure 101.1 Fabric Analysis - Composite Graph

Fabric Analysis — Composite Graph

give a consistent standard to compare diverse types of community designs. Once several designs were indexed, the correlations and tradeoffs between physical form, open space, types and densities of buildings began to establish themselves. Additional patterns with an awareness of their attributes when indexed would further an understanding of the makeup of communities. This thesis initiates the process in establishing criteria for evaluating a design, referencing existing patterns with known characteristics.

The urban fabric examples were originally chosen for clarity. But this eventually limits the type of pattern that may be selected. In the existing Worcester context, an obscure fabric did exist, and data for a representative portion of the site rather than the entire site differed dramatically. Data for the Worcester fabric is reflected in figure 98.1; the entire site is analyzed in

figure 99.1. A comparison of the Worcester "fabric" and the entire site was needed to reveal the nature of the site. The Worcester fabric contains primarily detached single and multifamily dwellings on open lots. A small number of commercial and institutional buildings front Main Street. It is a typical fabric for the area. But the major discrepancy between the two figures is the amount and type of open space. The Worcester fabric is comprised of almost half private open space. This amount rises to fifty-six percent if vacant land is included. However, the Worcester fabric contains no public open space.

Crystal Park, occupying a substantial portion of the site, makes the figures for the entire site appear almost respectable. But there exists half as much vacant and derelict land as park space. (fig. 99.1) This is indicative of a problem. The image of the open space on the site needed to be changed. A strategy of redistributing

the open space contained in Crystal Park across the site into smaller parks was executed. The results of the distribution can be seen when comparing figures 99.1 and 100.1. Though there is no one park as large as Crystal Park in the proposal, the locations, scale, and diversity of functions more than compensate for the loss of the open field.

Site rules, or the behaviors of the site patterns in the real world, constitute the other tool produced by pattern analysis. Site rules, like the site composition charts, are also a breaking down of site characteristics into understandable elements. The derivation of site rules from patterns combines the behaviors of patterns in their original form and how they react to a new context. Not all patterns or site rules may be applicable to a particular site. Knowing when to apply a particular rule must reference the intentions of the designer. Neither site rules nor pattern analysis is a substitute for

attention to the site and its context. Both are intended as tools or references to guide the design. Each site contains specific social, cultural, economic, and physical conditions which will help the designer to determine design decisions.

The pair of tools, fabric analysis and site rules, combines to create a way of evaluating design proposals and seeing new possibilities in design. Though the analysis can be tedious and time consuming, once established it allows a variety of approaches and solutions to any problem. These fabrics are the beginnings of a reference tool which may be infinitely expanded. It is hoped that these tools might inspire new fabrics, and help to create memorable environments appropriate for their context.

Acknowledgments

Roy Strickland for his dedication to the project, insightful criticism, and guidance over the past year.

Shrimp for his interest in the details, keeping me in touch with how things are done out there.

Kristina Hill for her insights as a Worcester native, her landscape and design expertise.

Alan Gordon and The Worcester City Planning Office for their time and effort in helping me come to understand the site.

Preservation Worcester for their friendly support and interest.

Kathleen for the thesis training, cookies, and help in figuring out what it was going to be about.

Alberto for his unflagging support, humor, cooking, and dance lessons.

CM@Klein for helping me through Taipei, IBS, Bruder, shop therapy, and finally the T word, with a warm spirit and bottles of cool ones.

Rebecca for her understanding and support for the duration.

My Parents for their love and support.

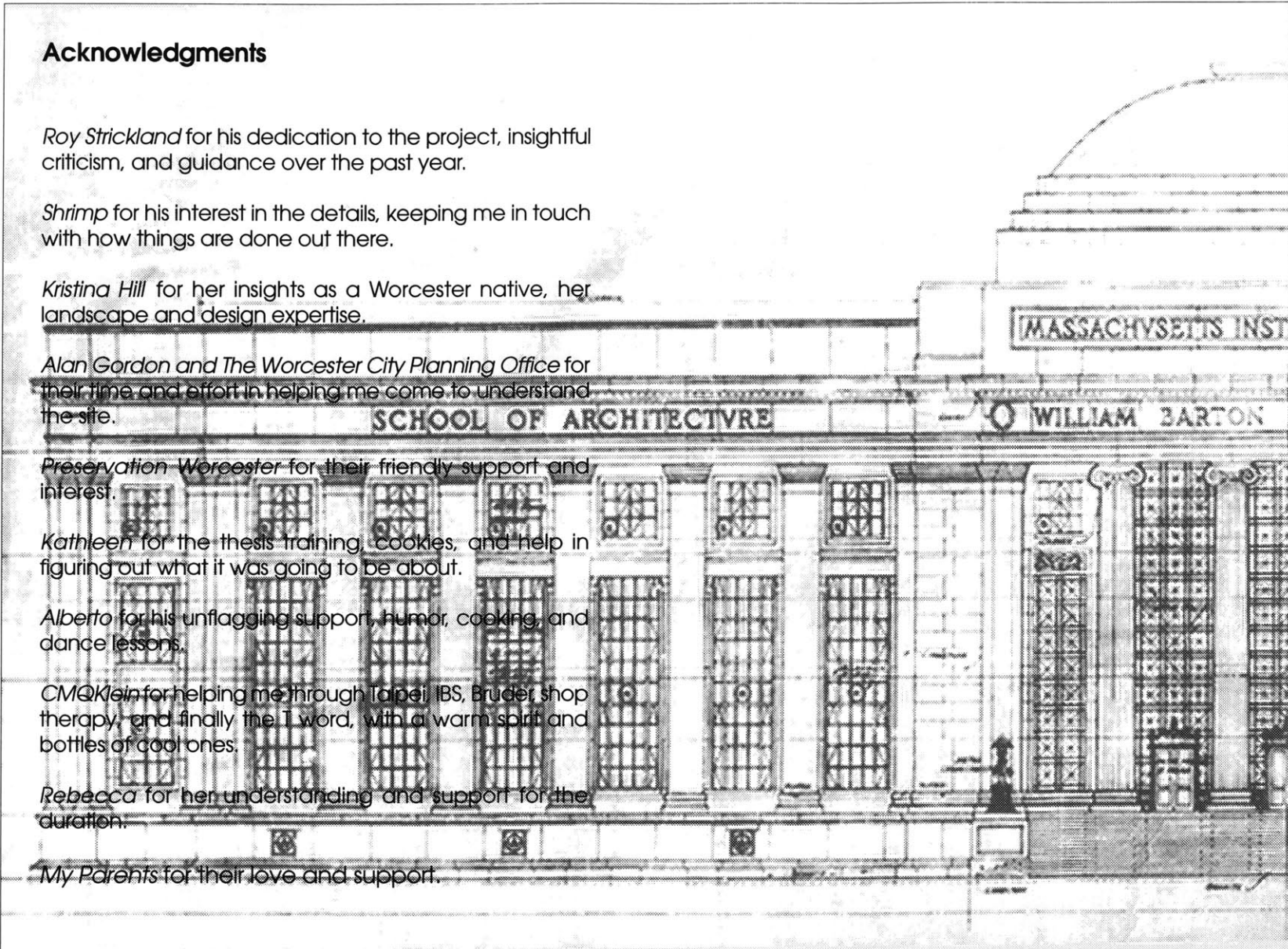


Illustration Credits

All illustrations and photographs are by the author unless otherwise noted.

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End Notes

1. Mary L. Morrison, ed. *Historic Savannah*. (Savannah: Historic Savannah Foundation, 1979.) p. viiii.
2. I. N. Phelps Stokes, *New York Past and Present*. (New York: Plantin Press, 1939.) p. 26.
3. Robert A. M. Stern, ed. *The Anglo-American Suburb*. (New York: St. Martin's Press, 1981.) p. 24.
4. Victoria Post Ranney, *Olmsted in Chicago*. (Chicago: R. R. Donnely & Sons, 1972.) p. 11.
5. Robert A. M. Stern, ed. *The Anglo-American Suburb*. (New York: St. Martin's Press, 1981.) p. 84.
6. Clarence S. Stein, *Toward New Towns for America*. (Cambridge, Massachusetts: The M.I.T. Press, 1957.)

Sunnyside Gardens, a garden suburb adapted to the city grid of Queens, New York, was designed by Stein and Wright four years before Radburn and was developed by the same company. Sunnyside Gardens employs principles of the Garden City in an urban site, where in Radburn the same ideals are explored in a suburban context.

7. According to several natives of Worcester, Clark University was the only place Sigmund Freud lectured in the United States when Worcester was the cultural capital of New England.

8. Active policing is currently in effect on the site. When visiting the site for the second time, I encountered police officers who, upon seeing a different car driving slowly, decided it was appropriate to momentarily detain and question the author as to his business on the site. They were quite friendly.

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