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Revitalization of an Urban Riverfront to Revitalize the Socio-Economic Conditions of Springfield, MA

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REVITALIZATION OF AN URBAN RIVERFRONT

TO REVITALIZE THE SOCIO-ECONOMIC CONDITIONS OF SPRINGFIELD, MA

A Project Presented

By

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ABSTRACT

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The City of Springfield, Massachusetts is one of the largest cities in western Massachusetts, and was established on the Connecticut River for trading and as a fur-collecting post. In 18th and early 19th century, it experienced an industrial boom and became a regional financial center. Springfield became a major railroad center and grew to become the regional center for banking, finance, and courts. However, in mid-19th century Springfield suffered due to the flooding of the Connecticut River and the disinvestment in industry. These resulted in an urban sprawl as people started moving away from heart of the city.

Now, once again, the city is trying to revitalize its downtown and neighboring areas to attract people by improving different types of social and cultural amenities. In this thesis, the author studies the relation of the city with its natural asset 'The Connecticut Riverfront' which can be a great place to attract people towards the heart of the city. The author has also researched the various reasons causing this natural asset to be underutilized for several years. In addition, the author also explores the possibilities of connecting the Springfield city and downtown to the riverfront, providing safe and undisturbed access mainly to pedestrians, physically challenged people, and bike riders. Research shows that the existing transportation paths and presence of industrial area are the major barriers discouraging people from reaching the riverfront.

In order to overcome this problem, firstly, the author suggests the rezoning of the riverfront area by changing the existing industrial zone into a business B zone which will allow various types of businesses. Secondly, the author proposes relocation of most of the existing business to open up the land for new development. The proposed development will include dedicated residential areas with semi-private green open spaces, mix-use development with street-front retail area to provide safety on the roads, a dedicated retail complex to serve the new development, demolition and renovation of abandoned buildings, and some activities on the riverfront such as restaurants, bars, cafes, art galleries, exhibition spaces, plazas, and green public open spaces. The connection from city to riverfront will be improved to provide better and safe accessibility. This proposal will increase the residential area in the heart of the city, which will also increase safety in this area.

Residents and visitors can take advantage of this beautiful natural asset thereby bringing Springfield city's waterfront in the limelight. Lastly, this proposal lays the foundation for further development of the riverfront area due to increased accessibility and safety.

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CHAPTER 1

INTRODUCTION

1.1 Summary of Research Focus

In the last century the branding of cities has become very common for urban regeneration. This has attracted more economic investment as a result of the nationwide competitive environment.[1] Major cities like Orlando and Tampa, FL; Providence, RI; and Toronto, ON, Canada are experiencing an increase in the urban redevelopment in terms of downtown revitalization, riverfront development, transit oriented city planning, etc. Any successful regional development needs to balance the relationship between existing and natural resources, open spaces, built forms of architecture and infrastructure. Very few cities in America have managed to revitalize their downtown with creativity, quality and connectivity relative to their natural resources. However, in certain cases, this attempt to create vibrant streets with moving traffic and pedestrian walkways, entryways to downtown, reclaimed waterfronts, safe sites for retail and lodging is a goal for many cities.

Today, cities are also rediscovering the value of their rivers and lakes. Urban waterfronts represent environmental, aesthetic and economic opportunities as well as a record of the industrial and maritime culture and history.[2] Lack of interesting design can make these spaces monotonous; which can make them socially dysfunctional and culturally blank. This may lead to a strained interaction between the people and these valuable areas. Moreover, in many metropolitan areas, inhabitants are isolated from these spaces of the city. This often generates unhealthy and unstable environments within the existing socio-economic systems.[3]

In my research project, my goal is to recommend exciting urban regeneration of a city which is seeking for urban revitalization. By recognizing the importance of the

natural water resource as an attraction; I would like to propose an urban infill on the riverfront, where all groups of people, from workers to shoppers to tourists, students and residents can create a continuous hub of activity. I have chosen a site near the Connecticut River in the city of Springfield, Massachusetts. The motivation for this project is to generate socio-economic development in the form of an urban village which will be designed with mixed use facilities and sustainable urban development. Additionally, the urban village will provide a sense of place and community commitment to achieve a more humane scale with an intimate and a vibrant street life.

An urban village is an urban sector incorporating the principles of environment sustainability, where work, commerce, residence, nature, leisure, culture, community services, education and spiritual nurturance are integrated through mixed land-use zoning of appropriate densities.[4] It has to be linked with accessible public transport services. Urban design, emphasizing multi-functionality of elements, is used to achieve high levels of aesthetic amenity at the street level to create a scene of society and high quality of public realm. Considering the existing land use pattern, zoning and parcel study of the land, this development will have to be integrated in phases. The features of the urban village are: high density, mixed use, mixed tenure, high quality, and based on walking.[5] These types of developments are employed to convert underutilized assets into successful public spaces; a method for achieving community and economic development of a region simultaneously.

Springfield, Massachusetts, located on the Connecticut River, in the Pioneer Valley, is a city in a search of a more prosperous future. It is one of the major and biggest cities in western Massachusetts and in New England. It has a significant riverfront which is an underutilized asset of the city. This project will propose lively activities near the waterfront which will help to bring people from the inner city to the waterfront. It will encourage local economic growth through the establishment of restaurants, movie theaters, shops, plazas etc. and help to promote civic engagement.

Residential development will provide safety to ensure healthy social environment. This in turn will lead to high-quality community development of the entire region of Springfield.

The intent of selecting this project is also to work on the regional and micro level simultaneously. In regional level emphasis has been given to the existing zoning, land use, connections with downtown and other important sites in the city. The main objective is to help in revitalizing downtown area and connect it with the waterfront to help redevelop the socio-economic conditions of the city. However, at the micro level, importance has been given to the programmatic layout which will make the space vibrant and ensure safety at all times. Architecturally, I would like to develop an interesting, physically attractive and user-friendly structure while trying to resolve the physical site constraints. The urban riverfront has a place for both planned and random spontaneous activities like marinas, restaurants, food vendors, sports, shops, an expansion of Basketball Hall of Fame, and active recreation. Finally, the main intention is not only to attract residents of the city but also people from neighboring areas towards the water which will meet the community's long held vision for re-uniting with the river.

1.2 Research Questions

To better understand the scope and limitations of the topic, I intend to examine the following research questions:

1. What kind of an urban village can be suitable in Springfield, especially the waterfront near the downtown?

2. What elements of the mixed use development in this urban village will be most effective for the socio-economic redevelopment of the region?

3. How will the waterfront influence the development?

4.   How to mitigate the barriers created by the existing elements of transportation and infrastructure?

5.   How to make a successful connection of the Downtown with the waterfront?

6.   What type of design forms, spatial and aesthetic parameters will be appropriate?

1.3 Goals and Objectives

My project will provide a vision, a positive urbanity for city and river, which will create a new image for revitalization of the city of Springfield. This vision will engage people with activity, beauty, nature and the scenic views of the Connecticut River and Memorial Bridge. People who live, work and visit Springfield are the subject of the vision.

I would like to design an urban village which will aim to provide more sustainable and attractive forms of development, based around a human scale of building, with a balanced and sustainable mix of uses. The aim of my project is to develop a master plan for an urban village in the city of Springfield, designed as a mixed land use site, equally capable of handling business, commercial, retail and residential applications with public parks as civic spaces. The project will include following core study areas:

1.   Waterfront Redevelopment / Revitalization

2.   Mitigating with highway I-91 and active railroad barriers

3.   Connection of downtown with riverfront

4.   Urban villages and mixed land use development projects

5.   Successful Public and private partnership projects for socio-economic development

The proposed project is an attraction which will connect the citizens to the city and river. It is also a sign of hope for the people in revitalizing the city and creating a

great economic future. This project will help to give rise to more local businesses. Existing business in downtown and new commercial sector will invite more residential settlement in the nearby area; which will increase the real estate prices in the surrounding area.

The idea of urban village development can help to revitalize low-income communities and improve the quality of community life in Springfield. Proposing such a mixed land use development in the city may give rise to employment opportunities in nearby neighborhoods. My project proposal will create amenities which will help to increase real estate prices of the area. The waterfront location of this site also adds more value to the real estate. However, to improve social activity, public open spaces will be designed which will interact with these other applications of mixed use; where people can enjoy with their family and friends.

The design efforts will focus on creating a connecting edge between the central business district and the riverfront development. It will expand the urban grid to the river bank. Pedestrian and bicycle paths along the riverside will help to increase this connectivity. Existing open spaces will be connected to the waterfront, which will emphasize the more importance of the riverside. The gathering places will increase the interaction between the citizens promoting healthy community life.

In terms of public open spaces, attention will be given to developing certain themes for different spaces. This can be achieved by creating direct or indirect interaction of indoor spaces with nature, having different types of activities which will engage people, providing types of sitting elements to improve social interaction among visitors, various attractions which will drive people to the waterfront. This can be achieved by offering local restaurants, stores, recreational facilities, movie theaters, local art and boutiques. Priority will also be given to the design development of, how this urban village can be socially attached to the downtown of Springfield. Finally, it is

the spirit of the people who will use this space that adds the most necessary dynamic, that of the natural enthusiasm of human life and activity.

1.4 Definitions

For the purposes of this research study, it is necessary to define and delimit some of the associated terms, which have been identified here. The terms and definitions listed here are only for the purposes of this research study, so the terms and definitions included here may not necessarily be congruent with other commonly accepted terms.

Urban Village - An urban village is an urban sector incorporating the principles of environment sustainability, where work, commerce, residence, nature, leisure, culture, community services, education and spiritual nurturance are integrated through mixed land use zoning of appropriate densities.[6]

Urban Sustainability – Urban Sustainability may raise support for the quest to design and build more efficient living and working environments. It is basically the interrelationship of human, economic, social, and political activities with natural ecosystem; and the thought should be in mind that small decisions can make a difference in the communities' future.[7]

Mixed land use development - This can be explained as two or more land uses on a single site where the site is able to accommodate different activities which in turn reinforces the culture and benefits the economy of an urban village. It is pedestrian oriented and contains elements of a live-work-play environment.[8]

Urban Waterfront - Urban waterfronts are the edges of seas, lakes or rivers where land meets water. Waterfront planning examines the different ways of experiencing and understanding their qualities for the community.[9] Urban waterfronts

are dynamic places, like the cities they help defining social and economic environment for places.

Public-Private Partnership - It is a contract between a public-sector authority and a private party, in which the private party provides resources to a public service or project and assumes substantial financial, technical and operational risk in the project.[10] It is a best practice and sound advice for developing and maintaining successful partnerships between nonprofit and for-profit organizations.

Gentrification – It is pull and push which denote the socio-cultural changes in an area resulting from wealthier people buying housing property in a less prosperous community. Consequently, the average income increases and average family size decreases in the community, which may result in the informal economic eviction of the lower-income residents because of increased rents, house prices, and property taxes. In addition, businesses catering to a more affluent base of consumers tend to move into formerly blighted areas, further increasing the appeal to more affluent migrants and decreasing the accessibility to less wealthy natives.[11]

Spatial segregation - A dynamic process involving a section of a city occupied by a minority group who live there especially because of social, economic, or legal pressure. It is now described as an overcrowded urban area often associated with a specific ethnic or racial population. It is a concept invented by sociologists, is the extreme concentration of underprivileged groups in the inner cities.[12]

1.5 Limitations and Delimitations

My research and development will focus on making effective connections from the downtown area to the waterfront. In existing scenario, people of the city have not recognized the strength of the city's natural assets. My study and design recommendations will give emphasis on how to attract people towards waterfront, while

making the area safe, sustainable, and enjoyable. It will also include the study of what type of a development will be suitable for existing situations of the city. In addition, my research will recognize the phases of development which will make the design recommendations more practical and viable.

In architectural detail design, I will more emphasis on innovative design of a connecting link through the built structure, which will create an easy and safe access for people to reach till the waterfront. My design explorations will address innovative ideas of mitigating infrastructural barriers present on the site. In addition, it will focus on the study of existing movements, potential access, and point of vistas.

I would like to limit my focus for this project with above explorations and study. My thesis research will not involve the study of financial conditions or funding situations. It will not include the market and real estate conditions or the potential changes expected in the field of marketing due to my design recommendations. My design proposal will require some fundamental infrastructural changes, but it will not address the cost analysis for the same.

My master plan of an urban village will be a mixed land-use development project, which will include public and private spaces. However, I will not focus on what type and how this public – private partnership will work. My findings will be restricted to the design and planning aspect; it will not provide any statistical information about any kind of estimated analysis due to the development.

1.6 Assumptions

My research is based on some basic assumptions. These assumptions will support my study and design development. In the last five to six decades, urban redevelopment project are giving lot of importance to redevelopment of urban waterfronts and opening them as an amenity for a general public use. I am assuming

that waterfronts always attract people for many reasons such as scenic views, greenery, open spaces, and activities like fishing, swimming, boating, jogging, and biking. Hence, I am also assuming that Connecticut River waterfront will attract Springfield residents towards this beautiful natural asset. In addition, waterfront amenities will engage all age groups of people, making the place even more safe and enjoyable. This civic engagement will lead to a social interaction, which will help give people a sense of community. Community gatherings, events and activities will help promote economic development of that region.

I am also predicting that, to provide activities, amenities, safety and healthy socio-economic culture sustainable urban design having mix land use characters will be a positive aspect for my design. Urban sustainability will also provide healthy public-private partnership which will again help for the local economic development.

These all assumptions will only be successful, when there will be easy and safe access, so that people should not consider it to be cumbersome to reach these amenities and development. Hence, I am assuming that, to encourage people to cross all the existing barriers such as highway I-91, roads and railroad, there should be an attractive, engaging and safe connecting link. Connection from inner city and from downtown to the waterfront is desirable to achieve socio-economic development of entire region and not only of a new waterfront development.

1.7 Contribution to the field

In the early 19th century industrial era exploited waterfronts as a source of transport, power, water, and drainage. Waterways were urbanized and engineered to support this industrial settlement. In the 20th century many cities in the world recognized the value of their waterfront for economic and social growth of the city. The City of Springfield has been chosen as one example which has an underutilized

waterfront having a remarkable industrial past. Waterfront amenities and the beauty of nature have the ability to bring people from the inner city towards these abandoned sites. Redevelopment of these residual industrial lands has represented a prime opportunity to reconnect cities with their waterfronts.[13]

In my research and design, I will focus on the problems involved in reconnecting the city with its waterfront, despite its barriers like highways, railroads, service roads, loading docks, infrastructural substations etc. These barriers discourage inhabitants from reaching the waterfront. My study will evaluate potential connections, attractions, vista points which will drive them through, while recognizing the significant obstacles to implement action. However, the physical, geographical, and economic conditions of each site and city will defer according to their explicit past; my recommendation will create one module of resolving these issues.

I will also emphasize on different phases of development for the entire site by keeping in mind the existing conditions. Phase development will address different issues like connectivity, safety, economic stability, and effects on existing settlement in each phase of design. This study will also be helpful in master planning of similar types of situations.

Finally, from my thesis I will contribute to the field of design by showing the relationship between macro and micro scales. Starting from the regional context, master planning the entire riverfront showing different phases of development; and then narrowing down to a structure in the form of a connecting link between the city and its waterfront, will set a design module which will express a relation between different stages of design in urban regeneration.

Notes

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CHAPTER 2

LITERATURE REVIEW

2.1 Urban Village

The urban village is defined by the council of Urban Land Institute in the USA as a development configuration in which work, trade, residence, and recreational opportunities are in balance and which will serve the twin goals of increasing the range of choices available to consumers and of responding to current and impending economic, financial and energy constrains.[1] Leinberger says that urban village is a solution for a multi-core, decentralized model which offers to bring employment and housing closer to reduce traffic congestion and pollution that lies behind most initiatives to stop sprawl.[2] Kenworthy's thinking about urban lifestyle is more innovative and flexible. His examples illustrates that the urban village is "a trend which attempts to respond to emptiness in community life and fulfills deeply felt needs for convenience, efficiency, beauty and connection to a larger section of humanity". Other reasons for the trends towards the urban village include factors such as pollution infrastructure costs, quality of life, etc.[3] According to Brindley, the social patterns of contemporary urbanization in metropolitan regions are increasing segregation, polarization, and ghettoization is widely taken as negative indicators for sustainability".[4] (Brindley 2003) This indicates that the trend of urban village development is healthier for communities.

The concept of an urban village, although to some extent amorphous, is imbued with certain characteristics. It consists of a population which is migrant, ethnic or low income, and it creates a sense of place to which to belong in a potentially alienating city. It also possesses distinct social moral order, represents a cohesive social group. The concept derives from the social life of people and not by qualities of place and space.[5] Each type of urban village core has a different history and development

potential. They can be located in distinct settings such as city center of a metropolitan area, a suburban town or an underdeveloped land. Urban village cores are not created equal; they do not have a particular module.[6] Some modules encompass top quality high rise office buildings, others single story industrial or warehouse space. Many are being built in established upper middle class residential neighborhoods while others are built in developing, entry level residential areas. Each of these types has a different potential which developers must recognize to bring the most appropriate products to the market.[7] Typical features which will best describe the development of an urban village are: permeability, vitality, identity, variety, legibility, safety, robust building type and the enhancement of the environment.[8]

Kaplan commends the urban village's emphasis on a public realm and the effort to organize uses to wean people from their cars and the fulfillment of the public's desire for a sense of community.[9] Principles which can improve the future of the communities are: accelerate the process of the urban infill and redevelopment, establish communities, increase mixed of land uses, create greater transportation choices, and provide adequate supply of housing in variety of price ranges.[10] However, Silverman also indicates that, for success, this concept requires strong commitment from governments, readiness of developers to try a new approach, the willingness of the market to invest into such projects, and regulatory changes and simplifications to allow for the ease of development of urban villages.[11] Additionally, for this concept to work, people will have to accept the idea of living in close proximity to a variety of different people in more heterogeneous neighborhoods; as Urban sustainability is commonly interpreted to mean increased residential densities and a more intense mixing of social groups and functional activities, which reduces spatial mobility. This will mean significant social change.[12]

Key development challenges in planning an urban village can be reductions of energy consumption, facilitate economic development, provide affordable housing, facilitate social and economic mobility, maintain profitability and provide public facilities at least cost.[13] However, Kaplan criticizes the current 'urban village' tag which seems to pop up on every development plan calling for an increase in density. He argues against the use of abstract plans for urban development and the apparent selectiveness of the concept of urban village.[14] Finally, the urban village is an idea, rather than a reality. Its function is expressive and its meaning to a large extent is perceptive.[15]

2.2 Mixed Use Development

Mixed land use development can be explained as two or more land uses on a single site where the buildings are able to accommodate different activities throughout their floor levels which in turn reinforces the culture and benefits the economy of an urban village. It is pedestrian oriented and contains elements of a live-work-play environment. It maximizes space usage, has amenities and architectural expression which tends to mitigate traffic and sprawl.[16] By putting uses in close proximity to one another, alternatives to driving, such as walking or biking, once again can become viable. Mixed land uses also provide a more diverse and sizable population and commercial base for supporting viable public transit. Mixed land uses can convey substantial fiscal and economic benefits.

It is not a standardized product form and it can differ by location and suburban setting. It is generally considered as a real estate project with planned integration of combination of retail, office, residential, recreation, hotel and other applications. Mixed use development can be subcategorized into four groups: Single high rise structure with two or more uses, Two or more high rise structures on a single site holding different uses, A combination of different low rise structures on a single site with retail on

ground level, Single mid rise structure on a single site with retail on ground level and residential or office above.[17] Every component of the mixed use development should drive the development concept and at the same time be suitable and compatible to the other uses in the project. The dominant use takes up the most space in the project and that has to be financially strong.[18]

2.3 Urban Waterfront Redevelopment

Water is a defining force that fundamentally shapes the character of each place it touches. The role of water in transport, industry, sanitation and nourishment made it the reason of human settlement.[19] Waterfronts, the unique places where land and water meet, are a finite resource embodying the special history and character of each community. Urban waterfronts, like the cities they help define, are dynamic places. Urban waterfront planning examines the different ways of experiencing and using the edges of seas, lakes or rivers and understanding their qualities for the community.[20] The competition for waterfront space and the need for public access to the shore and the conservation of waterfront biodiversity as a natural resource have become an increasingly topical issue in urban policy.[21] In many cases it has been seen that urban waterfront regeneration is driven by economic transition, concerns of social community environment, physical obsolescence and new recreational land and property requirements, environmental quality and sustainable development.[22]

There is no comprehensive theory of waterfront development and research on topic mostly over only few large projects in world cities.[23] In journals and trade magazines they do not specifically address the complex set of issues involved in waterfront development; despite the fact that these projects were started almost half a decade ago. The urban land institute (ULI), a non-profit organization dedicated to creating better places, has also focused on the topic of waterfront development by

offering forums, workshops, conferences, panels to educate their members and local leaders.

Much of the existing literature views waterfront revitalization as a means to increase the economic vitality of localities, create new public spaces, and increase access to valued cultural and natural amenities. Waterfront revitalization has been seen by many cities as a mechanism to create and promote a more positive image, thus securing growth and capital investment in a competitive global market.[24]

Waterfronts are often strategic areas, (for example Boston, San Francisco, Chicago etc.) because their usage has direct or indirect impacts on the image of the place (coastal city, city beside the lake, riverside town) and on social equity; many times waterfronts are areas of high-price housing and gentrification.[25] Property values near the water can escalate while benefits may fail to spill over to neighborhoods. This effect would create a gap in real estate prices between an expensive waterfront and more affordable sectors.[26]

While talking more about urban waterfront regeneration, we cannot forget the strategies of urban densification. One of the leading policy strategies of growing cities is to increase the density of the urban structure in order to advance sustainable development by minimizing investments in infrastructure, energy consumption and emissions from private car traffic. These urban densification processes have intensified the planning and building of waterfront areas near the city centers. Thus, the compaction strategies have provided environmental arguments to 'redevelop' these sensitive areas, which were traditionally difficult and contradictory questions for policy makers. [27]

In recent years the focus has shifted to negative aspects of waterfront revitalization, such as: an emphasis on recreation and leisure at the expense of 'real' work; the exclusion of local (often working-class) people; insufficient attention to ecological concerns; and limited public involvement in decision-making.[28] The focus in much waterfront regeneration is on 'prestige projects' and place marketing. These delightful urban scenes created through regeneration are primarily intended for and enjoyed mostly by those who are benefiting from the new economy at the expense of those who are not.[29] Waterfront regeneration projects often serve as a focal point for the creation of public–private, multi-stakeholder partnerships to facilitate particular projects as part of a larger entrepreneurial agenda. These partnerships replace broader public consultation, with community involvement seen as an obstruction to progress.[30]

2.4 Gentrification – Related to waterfronts

Historically, industries such as ports, fishing fleets, shipbuilding, warehouses, mills, factories, grain silos, concrete terminals, coal and salt piles, wastewater treatment plants and tank farms dominated urban waterfronts. [31] These industries are often noisy, noxious and built to be functional, rather than attractive. As some industries abandoned the waterfront, cities saw large parcels of inexpensive waterfront land as an opportunity for mixed-use developments. The proposed offices, museums, shops, galleries, marinas, and especially condominiums and hotels can lead to gentrification and are often viewed as incompatible with the normal functioning of industrial businesses that remain.[32]

While gentrification is related to redevelopment on a broader level, the effects are particularly relevant to the topic of industrial waterfronts. Gentrification affects ongoing waterfront manufacturing and shipping establishments in two major ways. First, complaints from new residents and business owners can lead to operating restrictions

that threaten the viability of waterfront businesses.[33] Gentrification presents a second hurdle in the form of rising property values. Redevelopment projects, like Baltimore's Inner Harbor, can result in a dramatic increase in the value of waterfront land. This can place an economic burden on industrial and marine enterprises that depend on cheap land as part of their business equation.[34]

Yet, reserving waterfronts exclusively for maritime and industrial uses is no longer realistic; most cities lack the volume of enterprises that once lined their waterfronts. The matter of waterfront gentrification is a planning issue. Waterfront ecological restoration, urban livability, and sustainable technologies all appeal to the imagination of urban planners, developers and residents while potentially displacing concerns and questions about how existing waterfront industries fit within these planning schemes. Despite concerns about incompatibility, no studies document industries lost to the forces of gentrification or the effect of mixed-use waterfront redevelopment on adjacent industrial uses.

A mix of productive, cultural, leisure, retail and residential functions often represents the keystone of the success to developing the waterfront. Developments that relied solely on large commercial and entertainment structures or vast residential districts lack complexity and interest, and reveal an embarrassing poverty of intent.[35]

Rinio Bruttomesso asserts that including a variety of activities linked to previous and original uses preserves meaningful traces of the identity of places. He advocates retention of productive activities, compatible with the renewed context, capable of offering visual contrasts and economic diversity.[36]

2.5 Sustainability in Urban Redevelopment

Sustainable Urban development has become a widely recognized and acknowledged goal for human society ever since the deterioration of environmental and

social conditions in many urban areas of the world.[37] This indicates that the sustainability of the city may be at risk. Sustainability is not absolute or independent of human conceptual frameworks. Rather it is always set in the context of decisions about what type of system is to be sustained and over what spatial-temporal scale.[38]

Urban sustainability is a vague concept. It may raise support for the quest to design and build more efficient living and working environments. It is basically the interrelationship of human, economic, social, and political activities with natural ecosystem; and the thought should be in mind that small decisions can make a difference in the communities' future.[39] Its primary focus involves achieving a balance between several objectives like environmental, ecological and social over dynamic temporal and spatial horizons.[40] As this is a very wide concept, confusion always remains about how to translate these broad objectives into national and local strategies or plans of actions for achieving it.

The challenge of the sustainable development is largely an urban challenge. These challenges include increase in social and economic opportunities, reduction in energy content of the urban growth, and minimization of production and recycling of the waste produced.[41]

2.6 The Interstate Legacy

One of the major physical obstacles to connecting rediscovered waterfronts to urban centers are the highways that were built in the mid 20th century as a result of the federal Highway act of 1956. These highways often run parallel to the waterfronts, providing easy access to industrial-era factories, warehouses and ports, forming a barrier between the city center and the waterfront. This common urban topology requires careful attention in many waterfront redevelopment projects.

Within the last decades, many cities have tried to establish the connection to their waterfront. In San Francisco's, damage from the 1989 Loma Prieta earthquake forced the closure and subsequent demolition of San Francisco's incomplete and controversial Embarcadero freeway that ran along the waterfront, which opened up the Embarcadero area to new development.[42] In Boston, on the east coast, Boston initiated the 'Big-Dig' to reroute the three and a half mile section of interstate 93 into the underground tunnel through the heart of the city. It has created acres of street level deck parks over the highway, producing a green belt which helps to connect the historic city with its waterfront.[43]

Providence, Rohde Island has changed a major highway I-195 away from its downtown, day-lighting the river and waterfront area, and opened up approximately 20 acres for development. This newly accessible area is within walking distance of Providence's historic waterfront and commercial downtown.[44] Olympic Sculpture Park in Seattle, designed by a team led by Weiss/Manfredi Architects, takes a different approach to crossing the highway and railway that separate the city center from the waterfront. The park, constructed on a former industrial site and cut from north south by the major arterial of Elliot Avenue and the Burlington Northern Rail Road tracks, weaves a sculptural pathway from the city through highway and railway infrastructure to the waterfront 40 feet below.[45]

2.7 Economic and community development

The idea of shaping economic development and community development to take advantage of each other is neither an ideal solution for social or economic development nor is it simple to implement. However, when these two coincide with each other, they can have a greater impact on the overall development of the community.[46] This indicates that, economic development can contribute to community development in

inner city neighborhoods by expanding employment, improving consumer service, creating business markets, rehabilitating real estate, and promoting role models to community. Conversely, community development can create economic opportunities in those neighborhoods by reducing their operating cost and expanding their markets by providing visitors. This linkage can be exploited creatively and selectively, to create more opportunities and generating greater payoffs than if pursued independently.[47]

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CHAPTER 3

RESEARCH METHODOLOGY

3.1 Data Collection

The data collection for my thesis project is divided into five major parts including: site analysis and assessment, relevant comparative case studies, past recommendations and best practices, discussions with professionals in related fields, and detailed literature review. Gathering data, organizing significant information, analyzing and synthesizing finding and then using them appropriately to develop my design recommendation will be the process of my research. To accomplish this task, I will carry out the following steps:

3.1.1 Site Analysis and Assessment

Site assessment will involve a detailed study of the region and its relation with the study area for the project. Project will require an advanced understanding of historical significance of the city and region, social and economic factors, relation of the Springfield downtown with its waterfront. It will also include the research about the Connecticut River and its history in past few decades. In addition, site assessment will contain existing land use pattern, parcel study, circulation and existing linkages with the study area. It will help to understand need of Springfield, expectations from its natural assets, potential connections and scope for the development. However, this study will also indicate about limitations of short-term and long-term developmental goals.

Site analysis includes, taking an inventory of site elements and analyzing these factors relative to the goal and objectives of the thesis project. It involves gathering relevant information about existing conditions such as vegetation, water table,

topography (slopes, elevations, gradients), and climatic changes (solar intensity and its direction, wind direction, temperature changes). Site analysis will include physical site visits to achieve an actual feel of the site to record perceptual factors about activities on site and nearby areas, circulation of auto, bike and pedestrian traffic. In addition, it will contain special analysis such as views of the site and views from the site, potential for new areas, and its sequential relationship. For physical design, it is necessary to analyze existing or vernacular architectural style, upcoming trends, location of I-91and the skyline of the city.

Next step will carry out collection and organization of available data according to the priority of the focus of the project. To achieve a successful design, site analysis is a must and should be done very carefully.

3.1.2 Case Studies

Case studies are widely used in most professions, including planning and architecture. Case studies can be used to test their theories; and to develop design concept and ideas. It can be utilized to bring out several kinds of information. While some of this information may be unique to the given project and its context. Hence, selection criteria are very important factor in choosing case studies for research.

My first criteria for selecting case studies will be waterfront development which has been settled near to the heart of the city. It will be interesting to study the innovative ways of connecting the cities with their waterfront; and revitalizing city by using the waterfront. Special focus will be given for similar conditions where Highway or railroads are becoming a major barrier in the desirable connection between city and waterfront.

These waterfronts should be safe, attractive, with full of life, and having lots of amenities which will engage all age group of people. To achieve this urban sustainability

in my design it is necessary to study a development of an urban village on a waterfront. This criteria also involves urban design aspects such as infrastructure, waterfront amenities, potential connections from city and its regional connections. While talking about urban village and amenities, maintaining public private relationship is a very important characteristic of urban sustainability. My criteria of selecting case-studies for my project will also involve a successful public-private relationship in an urban settlement. Finally, Climate is also a very basic issue for any kind of case-study selection, as design solution has to respond to New England's climate.

After selection of all the case-studies, next step will include synthesizing and analyzing the data, project goals, key findings and success of the design of those case studies. Comparable analysis and evaluation will include the project significance and impact on my research, background and history, design development, program elements, maintenance and management. In addition, it will also be compared by using reviews and criticism, user analysis, uniqueness of the project, limitations, futures issues and its solutions.

Many past designed projects, research studies, and educational curriculum can influence the new design and recommendations.

3.1.3 Past Design Recommendations and Best Practices

Study of design recommendations in the past few years, for similar sites or projects in comparable urban settlements are very supportive. We can consider them as a different example, which may suggest helpful thoughts for our project. I will incorporate the following past examples in my research evaluation:

- 1995, Pioneer Valley Planning Commission (PVPC) – Springfield Riverfront Revitalization Action Strategy.

- 2010, Urban Land Institute (ULI) – A Technical Assistance Planning Report, The Riverfront, Springfield, Massachusetts.
- 2010, UMass, Department of Landscape and Regional Planning – From Quadrangle To The River, Revitalizing the Heart of Downtown Springfield

3.1.4 Discussion with Professionals in related fields.

I will meet with the officials and staff in Springfield and planners at the Pioneer Valley Planning Commission (PVPC) to conduct discussion to gather information about the city, its waterfront, upcoming projects, and future development recommendations near downtown area, developmental trends. It will help identify about issues faced by city while improving the existing scenario, and can get a further idea of the scope and limitations of my project.

I will try to be in contact with some other professionals; who have worked on similar kinds of project or can give me helpful guidance in design development. After analyzing the data from these conversations, it may guide me towards practical solutions to resolve certain issues.

3.1.5 Literature Review

Conduct a detailed literature review regarding urban development issues, design development of urban village, mix land use development, urban sustainability, waterfront revitalization, and their interaction with inhabitants. It will help to get the detailed knowledge about these terms and their relation with urban design solution. I will integrate all the information and then analyze the methodology applied in it.

3.2 Data organization

Organizing the collected data is one of the most important step in the research methods. For my thesis, I would like to start organizing the data from regional context, then about the city and finally about the site. The first step of organization will be regional information which will help me understand more about the surrounding area of the city of Springfield. Regional context will also contain some data about historical development of that area. The next step will be organizing the data about the city of Springfield, its assets and historical background for few decades.

As my main focus of the thesis is to connect downtown with the waterfront; it is important to document data about detailed existing scenario of the downtown of the city, which will help me to understand the potential of downtown area. In addition, I will have to organize the information about the infrastructural barriers such as highway I-91 and railroad. The information will include about their locations, future developmental plans from the city or state.

Further, I will organize my detailed site analysis for my entire study area. This analysis will contain existing conditions, utilization, parcel study, and potential connection which can be made in the future with the city.

Data collected from comparative case study framework and summary of the discussions with different professionals will be organized according to the priority of its significance related to my focus of the topic.

CHAPTER 4

BACKGROUND CONTEXT AND EXISTING CONDTIONS

4.1 History

4.1.1 History of American Waterfront

> "Today, cities are rediscovering the value of their rivers and lakes. In the mid 19th century, when railroads rendered water transportation less dominant, cities made the big mistake of literally turning their backs on the water that spawned them. Waterfront streets were abandoned. Buildings that once faced the river were converted to face away. Urban waterways were forgotten. Many became little more than sewers, serving as dumping grounds for human and industrial waste."[1]

In the last 50 years cities around the world have invested in development opportunities along waterfronts, empty dock yards, abandoned industrial sites, and fallow railroads. These sites have been replaced by mix land-use development with uses like housing, shops, parks, aquarium and esplanades. Port cities drew much of their early power and wealth from their waterfront settings as hospitality, financial and support services grew to facilitate maritime commerce, travelers and trade. The harbor was central to the city until the time of the civil wars, when land-bound transportation came in the picture. The waterfront started to disappear from the daily life of the citizens.[2] In addition, land-bound transportation such as railroads and highways have been constructed along the waterfronts to avoid major gradients minimizing the cost of the construction.

With the growing industrial era, waterways were urbanized, engineered, and exploited as a source of power, drainage, and transport.[3] Factories and shipping companies lining the water's edge limited public waterfront access. Container shipping required larger ships, deeper channels and larger sites for container storage. This often caused further separation of the port from the city. In the early 20th century, economy

redefined the relationship between cities and waterfronts. As technological, economic and transformational developments took place, many former industrial sites on the waterfront were abandoned. Manufacturing and warehousing activities migrated to cheap land at the perimeter of the urban area.[4] Many middle class people started buying homes at the outskirts of the urban areas often following industrial employment opportunities. Federal mortgage programs and construction of highways further encouraged the population shift. As a result, inner cities were faced with aging infrastructure, a declining tax base, and disproportionate distribution of low income residents. This led to various economic, social and cultural problems.

After years of losing population, many downtown areas began attracting new residents in the late 20th century through a combination of change tax base, gentrification and environmental awareness.[5] As residents are getting attracted towards new job opportunities and amenities, interesting architectural and physical features are moving back to the city. These new residents now demand for the recreational access to waterfront and this drives the development of the underutilized waterfront land near the urban core. Yet, many of these urban waterfronts are separated from the city core by the active rail lines built to serve industrial sites and the interstate highways constructed along the edge of many industrial districts. Now there are no opportunities or activities along the waterfronts, which reduces the interest of the public to visit these beautiful natural attractions.

In the last few decades, many of the empty dockyards, abandoned factories, and fallow rail yards have been replaced by esplanades, parks, shops, aquariums, and housing. These new development projects can serve to capture the imagination of today's creative and service economies, encourage real estate development, give opportunities to local businesses and recreate the image of the city. In addition, waterfront development also offers the opportunity to remediate brownfield, restore natural shorelines, and enhance transit, pedestrian and bike connectivity to the

waterfront. With an increasing number of reinvented waterfronts, it becomes clear that history, water, and nature can attract people.

4.2 The City

4.2.1 History of the City of Springfield (focus on the riverfront)

Springfield sits on the bank of the Connecticut River, just a few miles north of the border between Massachusetts and Connecticut. The city is most commonly known as the birthplace of basketball. It also used to known by its nickname 'The City of Homes' in the 18th and early 19th centuries. The purpose of establishing the city of Springfield was for trading and as a fur-collecting post. Springfield's location at the crossroads of New England is the most significant reason for its progress and continuing economic success in the 18th century.[6] The Connecticut River served as an easy and economical means of transportation north and south for early settlers. Midway between New York and Boston and on the road between New York and Canada, Springfield is ideally located for travel in all directions. The United States Armory was located here in 1794 due to location and technological advancements, particularly in metal crafts. The city first grew into a thriving industrial community through the establishment of mills of all varieties. It gradually became a center of invention and development. To support this industrial revolution, a rail road was a necessity for transporting massive amounts of raw products like cotton, wool, and coal to produce steam power. In 1849, the Springfield rail road project was started to connect Springfield to the Connecticut state rail line.[7] In the nineteenth century, Springfield became a major railroad center and experienced another industrial boom. The city grew, and such industries as printing, machine manufacture, insurance, and finance took hold and prospered. It was a multicultural community, and the regional center for

banking, finance, and courts.[8] In 1926, Amtrak build a passenger station in the city for the better public transport from the other parts of the country.

In 1936, at the height of the great depression; Springfield suffered its most devastating natural disaster as the Connecticut River flooded, reaching record heights. Large riverfront portions of the North and South ends were destroyed. Two years later, water hit Springfield again. The New England Hurricane of 1938 came up the east coast of the United States which flooded the Connecticut River Valley once again. After these natural disasters, the city experienced disinvestment in business and industry resulting in a great depression for decades and high a crime rate.

After World War II, the US war department proposed a network of inter-regional high speed highway system. In 1958, interstate I-91 was developed in the region of Springfield city. In 1969, the Peter pan Bus Company established its branch in the city to operate from Springfield to Boston.[9] In 1957, when the state opened the Massachusetts turnpike; public transport between Boston and Springfield was greatly improved. From this period, the city has been trying to achieve revitalization to improve its economic and social conditions which was badly affected due to natural disasters.

Springfield has a remarkable history not only in industrial development but also in the fields of education, old New England culture and architecture, sport and athletics. The city has a great location and a potential to grow, flourish and become a new 'City of Homes' once again in its future.

4.2.2 Economic and social status of the city in the past few decades

The total population of the city by 2009 was around 153,170; the racial composition of the City is 52% white and 21.5% Black or African American whereas nationwide it is 74.5% and 12.5% respectively. There are total of 26.5% other races

(Asian/Pacific Islander, Native American, etc.). Ethnically, the population of the City is 35% Hispanic. [10] The demographics data for Springfield is shown in Table 1.

4.2.2.1 Demographics

Table 1: Demographic data of Springfield[11]

	2000	2009	2012
Population			
Population	152,082	153,076	153,608
Labor Market Population	1,522,021	2,370,565	2,845,962
Households			
Total number of households	57,178	57,581	57,881
Average household size	2.57	2.61	2.56
Median household income	$30,417.00	$36,289.00	$39,951.00
Housing			
Total number of housing	61,172	62,946	
Occupied housing units	57,130	56,055	
Owner occupied	22,978	28,903	
Educational Attainment: Age 25+			
High school graduate or over	73.40%	75.50%	
Bachelor's degree or higher	15.40%	17.10%	

4.2.2.2 Local Government

Type of Government:	Mayor
Comprehensive city plan:	Yes
Year plan completed:	1970
Strategic city plan:	No
City zoning ordinance in effect:	Yes

4.2.2.3 Leading employers

Figure 1: City of Springfield: 2009 jobs vs. resident employment by sector[12]

Baystate Health system	Ambulatory health care facilities
Baystate medical center	Ambulatory health care facilities
Big Y foods	Food and beverage stores
Massachusetts mutual financial group	Securities, community contracts and other financial investment
Mercy medical center	Hospital
Springfield college	Educational services
Union news / Springfield publications	Publishing industries
Weldone rehabilitation hospital	Ambulatory health care facilities
Western New England college	Educational services

4.2.3 Regional Site Analysis and Assessment

Springfield is the largest city on the Connecticut River in western Massachusetts and in the Pioneer valley. The city is in Hampden County. Springfield sits on the bank of the Connecticut River, just a few miles north of the border between Massachusetts and Connecticut as shown in

Figure **1**. The City of Springfield is an urban industrial center of metropolitan status at the junction of regional routes between Boston and New York City. The city is easily connected to them by means of transportation by interstate I-91 North-South and I-90 East-West. It is located approximately 89 miles in the southwest direction of Boston in the Pioneer Valley region of western Massachusetts, 25 miles from Hartford, and 140-150 miles from New York City.

Figure 2: Regional map of the city of Springfield, Ma[13]

The Figure 3 shows that the city is surrounded by small cities such as Chicopee and Holyoke on its North, and is connected with them by Highway I-391. West Springfield and Agawam on its West are connected to Springfield downtown mainly by three bridges: Northend Bridge, the historical Memorial Bridge, and Southend Bridge.

The city of Longmeadow is on Springfield's south end and connected to the city by Interstate I-91.

Figure 3: Regional map showing neighboring towns of The City

4.2.4 Assets and cultural attractions of the City

Springfield has many cultural attractions in the center of the city and the downtown area has some historic architectural structures which will be explored in the following subsections.

4.2.4.1 Quadrangle museum, Library & Dr. Seuss Sculptural garden

Figure 4: Quad. Museum and Dr. Seuss Sculpture

The Figure 4 shows The national Dr. Seuss Memorial and sculptural garden at the center of the city, which is surrounded by the city's central library, and five museums: the George W. V. Smith art museum, the museum of Fine arts, the Connecticut valley Historical museum, and the Springfield science museum (planetarium at Quad.)[14]

4.2.4.2 Symphony Hall

Figure 5: Symphony Hall

The Figure 5 is a picture of Symphony Hall, which a part of Springfield's Municipal Group, is an example of triumphant architecture in the heart of the city. Originally called Municipal Auditorium, it was extensively refurbished and reopened in 1980 as Symphony Hall.[15]

4.2.4.3 Basket Ball Hall of Fame

In 1891, James Naismith, physical education student at Springfield College invented the game of basketball. In 1985, the Naismith Memorial Basketball Hall of Fame was reconstructed and relocated to its current location near Southend Bridge. The new Hall of Fame building has been portrayed in Figure 6.[16] As the city's planners

began in the late '90s to dream of an expanded and revitalized urban environment along the Connecticut River, it was only natural that the Hall of Fame would serve as the centerpiece of the Springfield Riverfront Redevelopment Project. Now, the Naismith Memorial Basketball hall of fame is a great destination and an iconic landmark of the city.[17]

Figure 6: Basketball Hall of Fame

4.2.4.4 Mattoon Street Art Festival

The Mattoon historic district on Mattoon and Elliot Street was developed between 1870 and 1890 with a few remaining Victorian row houses. This is the longest running arts and crafts fair in Western Massachusetts, and one of the best in New England.[18] This art festival held every year early in September features the art and craft of dozens of artists, food venders, exhibitors, and street musicians.

Figure 7: Mattoon Street at the time of Art Festival

4.2.4.5 Mass Mutual Entertainment Center

The Mass Mutual Center is a multi-purpose arena and convention center in downtown Springfield that serves as a venue for various shows, major sports events, concerts and performances.[19] The facility opened in 1972 as the Springfield Civic Center and was at the time considered to be the largest arena in the region.

4.2.4.6 Forest Park

It is one of the largest municipal parks in the United States having 735 acres of land.[20] It sits on the banks of the Connecticut River in the southern part of the city. Among the park's notable attractions is a locally renowned zoo, a hockey and ice-skating rink, a baseball grandstand and diamond, a rose garden, a bocce court and many miles of walking trails. Other attractions include basketball courts, tennis courts, a beach-sand volleyball court, playgrounds, picnic areas, a swimming pool, ponds with a wide variety of waterfowl, and a small exhibit of dinosaur tracks.[21]

4.2.4.7 Pynchon Plaza & Court Square Park

Pynchon Plaza is a park that has been derelict for 20 years but it is an important keystone for the open space axis which could connect the Connecticut River with the Quad in a direct way. Court Square Park is surrounded by extraordinary historical buildings like Old first church, Courthouse designed by H.H. Richardson, City hall and Symphony hall. These historic buildings around court square are the major landmarks that create a strong identity and sense of place for the city.

4.3 Downtown Area Analysis and Assessment

Downtown of Springfield is compact, has a pedestrian scale, and contains diversity of retail, commercial, cultural, civic and business uses. The heart of the downtown is Court Square, which is framed by City Hall, Symphony Hall, while the Civic center and the Quadrangle museum are in the northern part of downtown. More northward from Court Square is the business core along the Main Street; however currently 40% of this block has vacant buildings and vacant shop fronts.

Main Street forms an eastern boundary, and Mass Mutual Civic and Convention center is just across the street. The corridor running eastward from Court Square forms the city's cultural heart. South of Court Square, the environment becomes neighborhood oriented. Concentration of commercial land uses like shops, restaurants; small offices and banks are located along the street corridors in the western central downtown area. In order to activate the economy of Springfield, the proposal calls for the infill of new buildings in the numerous dead empty areas and on the riverfront.

4.3.1 Existing Land-use pattern

The map displayed in Figure 8[22] shows existing land-use pattern on the riverfront and in the surrounding area. Land uses in downtown Springfield do not follow a clear pattern. The exception is the Quadrangle Museums (institutional/open space) and Main Street where commercial uses such as offices, small retail, restaurants, and some institutional uses are present along the street corridor. Dwight Street is dominated by big and small size parking lots and some commercial activities; Chestnut Street has a mix of institutional uses, residential uses and small commercial area. Mattoon Street is the only street in the central downtown area with residential uses on either side. Otherwise residential uses are scattered, are all low income and with a high proportion (around 80 %) subsidized housing. Many of the structures are dilapidated

and in a rundown condition. On the north side most of the land is zoned industrial and owned by the private owners. Along the river is a park and recreational zone. There is very little residential along the riverside.

Figure 8: Existing Land Use and Zoning near downtown[23]

There are two entertainment areas in downtown and the location can refer in Figure 8[23]: The first one is restricted to the Mass Mutual Center for concerts/sports events and Symphony Hall at Court Square. The second one is between Dwight Street and East Columbus Avenue, with bars, clubs, restaurants and the City stage. There is no development that goes beyond the I-91 corridor. There is also no big supermarket or grocery store in the downtown area and no public schools. The various surface parking lots are ideal locations for urban infill to concentrate activities in downtown. The riverfront is another area that has a high potential for mixed use including recreation, entertainment, housing and offices. More visual and physical permeability underneath I-91 is an important goal that is achievable without major alterations. A redesign of East Columbus will encourage some development beyond the I-91.

4.3.2 Street Network

The highway interstate I-91 boarders downtown Springfield on the southwestern perimeter and runs parallel to the Connecticut River, while I-291 intersects and provides a northwest to northeast boundary. Within the city limits I-91 is enclosed by the multilane one-way collector streets: East and West Columbus Avenues. In addition, Main, Dwight, and Chestnut streets function as primary arteries that connect the downtown area with surrounding neighborhood. State Street is a primary artery that runs north-south, connecting seven different neighborhoods. Figure 9[24] speaks clearly about the street network in the downtown of Springfield city.

Figure 9: Street Network Study[24]

Furthermore, the CSX railroad and Amtrak creates a railway network which also continues along the Connecticut River between the riverfront and the downtown Springfield, similar to I-91. Currently, Riverfront Park and the Connecticut River walk and bikeway are accessible by way of an underpass located on State Street and West Columbus Avenue. A bridge entrance located behind the LA fitness (not mentioned before) provides an additional access point. The current street network does not facilitate usage of bikes through bike lanes or areas to park the bikes, encouraging people to use alternative modes of transport. One way arteries and streets encourage traffic speeds which affect walkability and also do not support small retail activities which are highly dependent on low traffic speed and accessibility.

In general, the highway and railroad contribute to the separation of the riverfront from the downtown area. This results in difficult access, which is one of the major problems which have to be overcome to activate the riverfront as a recreational amenity and a desirable destination to visit.

4.3.3 Public Transportation

Figure 10: Public Transportation Routes[25]

The Pioneer Valley Transit Authority (PVTA) provides bus transportation locally within Downtown Springfield and to and from communities in the Pioneer Valley (refer Figure 10[25]). Bus lines run every 20-40 minutes with several bus stops along the primary arteries. All PVTA buses are wheelchair accessible, however, bus racks are not provided to encourage the use bicycles as an alternative mode of transportation. The existing transportation infrastructure should be viewed as an asset to the City of Springfield and be leveraged to encourage increased activity within the downtown area. It can be used as a means of alternative travel for residents, workers and visitors.

4.3.4 Open Spaces and Parks

Figure 11: Open Spaces, Plaza and Riverfront Park[26]

Parks and open spaces in downtown are successful individual entities but are poorly connected. As shown in the Figure 11[26] others are visually attractive like Court Square, Riverfront Park, and Steiger's Park but are underutilized. Court Square does not have benches. Connections underneath I-91 to Riverfront Park and the Connecticut River Walk are weak. More programmed activities in underutilized parks could help to improve perception and quality of open space. The goal is to bring citizens towards the waterfront and to build a strong relation with the downtown and the other open spaces till the Quadrangle.

4.3.5 Parking and Impervious Surfaces

Within the 250-acres of the Downtown Springfield site boundary, approximately 40 acres is comprised of parking garages and parking lots, while on-street parking amounts to only 19,000 linear feet, as you can clearly see in the Figure 12[27]. Most, if not all, of this parking consists of hard paved impervious surfaces and contributes to pollutants entering the combined sewer overflow system, where it is discharged directly into the river and impacts river water quality. Abundant downtown surface parking increases the perception of urban sprawl and does not generate profitable tax income for the city.

Figure 12: Parking Lots[27]

4.4 Connecticut Riverfront and the City

The riverfront, as a unique resource to the city, is underutilized, wasted and disconnected from downtown and the entire city. In 1995 Springfield Mayor Markel stated that, "the city must invest in its riverfront; in an effort to promote an increase in public usage, appreciation of the region's most important and natural recreational resource." Over the past fifty years, Springfield has been gradually cut off from its riverfront by the construction of railroad tracks and interstate I-91 along the riverfront as shown in Figure 13[28]. Flood control walls, dikes and Columbus Avenue create further barriers to reaching the riverfront. Northend, Southend, and Memorial Bridges connect the city with West Springfield.

Figure 13: Springfield Riverfront – A Typical example of American Waterfronts

Springfield riverfront shows all the characteristics of a typical American waterfront. Highway I-91 and railroad (Amtrak line) runs parallel to the riverfront creating significant pedestrian barrier. East Columbus Avenue and West Columbus Avenue runs parallel along the highway, creating further high speed traffic corridors.

4.4.1 Connecticut Riverfront Attractions

The city has developed a riverfront park near the old Basketball Hall of Fame which can be seen in Figure 15. They have recently completed the Connecticut River walk (bikeway) which connects the park to the Chicopee city border in the North and dead ends at the Basketball Hall of Fame to the south. The plan is to connect this bikeway till Agawam through the Memorial Bridge to its west side (see Figure 14[29]).

Figure 14: Riverfront Attractions – Bikeway and Boat House[29]

Figure 15: Riverfront Attractions – Memorial Bridge and Riverfront Park

The Memorial Bridge is important due to its historical significance and its attractive design (see Figure 15), and can be considered as an asset in developing this region. It also provides beautiful scenic views of the waterfront. The city of Springfield owns an active boat house located near to the Northend Bridge. It has a lot of opportunity of development and of attracting local people.

4.4.2 Environmental concerns - Water quality of the River near the City

Springfield's riverfront holds enormous potential to become a central focus of the region's urban life through the development of river oriented attractions like boating, kayaking, fishing, river beach for swimming and recreation. But to develop these amenities, the water quality of the Connecticut River near the city is not very suitable due to Combined Sewer Overflow (CSO) system.

Figure 16: CSO system in Springfield City

CSO is an old sewer collection system that was designed to carry both sewage and storm water in the same pipe. When there is not a lot of storm water, this mix is

transported to a wastewater treatment plant where it is processed. However, after heavy rainfall or snowmelt, storm water and sewage overload the system. In certain situations, this mix without any treatment goes directly into the river or could back up into homes, businesses, and public streets. To improve the quality of the water city has to overcome with the problem of CSO. Figure 16 gives the idea of the remaining area having CSO system against the area where the sewage system has been already separated.

In the present condition, the water quality has been considered as class-B. This class does not allow swimming and fishing activities due to the high bacterial percentage, which can cause diseases. Sometimes it also generates a bad odor as human waste get mix into the water during heavy rainfall. However, in the dry and sunny weather water is good for activities like boating and kayaking.

4.5 The riverfront site, detailed site analysis of study area

The Springfield city has 4.5 miles stretch of the Connecticut River bay.[30] Historical Memorial Bridge, Northend and Southend Bridge connect the city with West Springfield area on the other side of the river. The total study area is around 96 acres which is located on the riverfront stretch between Northend Bridge and the Memorial Bridge; and on the south side until the riverfront park near the Basketball Hall of Fame. Out of 96 acres of land, 30 acres is completely underutilized.

Along the river, the city is fairly low and flat. Moving outward from the river, the terrain becomes hilly, most prominently along State Street and Belmont Avenue. The Peter Pan bus station and Amtrak Union station is within a walkable distance from the central north side of the study area. Interstate I-91 and then Amtrak rail line runs parallel to the riverfront. As shown in Figure 17 these transportation corridors cut off the citizens from their historic waterway. Riverfront Park near Basketball Hall of Fame is blocked by the I-91 with only one on-grade access on State Street.

Figure 17: Map showing study area and Downtown of the city

Providing on-grade connections to the riverfront from the city, mainly from the downtown, is a very important aspect to increasing the popularity of this asset of the city. The existing on-grade pedestrian connections can be found on state Street, Liberty Street, and from West Columbus Avenue; however Figure 18 shows that they are unwelcoming, and weak in safety issues, as people have to cross Amtrak rail line on foot. These connections can be improved to increase accessibility to the riverfront.

Figure 18: Unwelcoming and weak connections

4.5.1 Unmaintained vegetation on the riverfront and near Bike Path

A bike path also runs parallel to the riverfront, the purpose is to get stunning views of waterfront, but unfortunately due to all these barriers and having very less access to the riverfront amenities, it is completely underutilized, creating further unsafe pockets. Due to the existing terrain, the bike path is very low and at most of the places is covered by unmaintained vegetation which can be noticed in Figure 19. This vegetation blocks the view of the riverfront as well as downtown creating a lonely bikeway.

Figure 19: Unmaintained vegetation around the bikeway

4.6 SWOT Analysis – Related to study area

Figure 20 represents the SWOT analysis (strengths, weaknesses, opportunities and threats) related to existing conditions of the study area. It provides detail idea of strengths and weaknesses of the site, and opportunities and threats in developing that site.

Figure 20: Diagram showing SWOT Analysis

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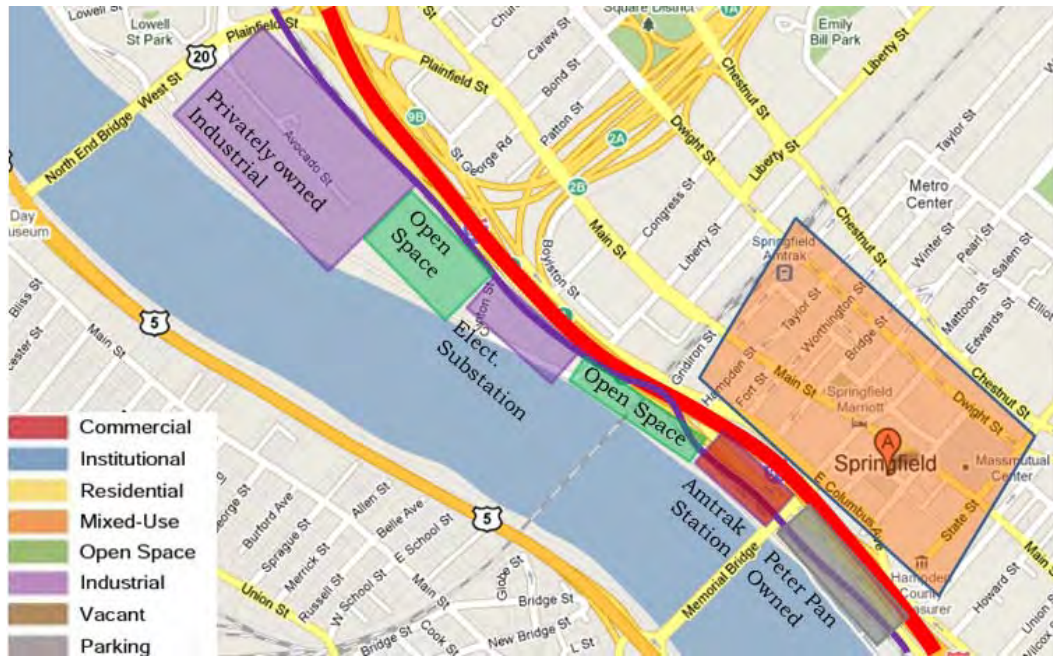
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CHAPTER 5

ANALYASIS THROUGH ANALYATICAL MAPS

5.1 Parcel study

Figure 21: Map showing study area and Downtown of the city

The above Figure 21 indicates all the existing uses present on the riverfront area. Springfield riverfront between Northend Bridge and Memorial Bridge is mainly zoned industrial and is owned mostly by private food wholesale supplier companies which can also be seen in the topmost photo in Figure 22. There is a paper company at the end of the existing Avocado road (refer second photo in Figure 22). Apart from the industrial area, most of the land is open space having unmaintained vegetation which makes the place unsafe. This can be seen in third and fourth photos in Figure 22.

The remaining part has electrical and sewage substations, the location shown in Figure 21. Beside the substation there is a building owned by the Peter pan Bus

Company. This structure looks like an abandoned building sitting on the riverfront and can be seen in third photo in Figure 22. On the north side of the Memorial Bridge there is a freight station owned by Amtrak, which is one of the obstacles in developing the riverfront site at the prime location opposite the Springfield downtown.

On the south side of the Memorial Bridge, there is a vacant parking lot owned by Peter Pan Bus Company rendered in gray color in Figure 21 and can be seen in fifth photo in Figure 22. It is the most suitable site in the entire study area which can be developed without any demolition or relocation of the existing users. This can be a good location for proposing a new connection to the riverfront from the heart of the Springfield downtown. Hence, this particular site has been selected for the architectural study to build a connecting link from downtown to riverfront, while accepting the challenge of mitigating all the transportation corridors and providing safe pedestrian and bike friendly access.

In Figure 22, the red color line represents location of highway; violet color represents location of railway line and green color indicates bike path location. All the dark brown color buildings beyond the highway are the landmark buildings including City Hall and the MassMutual Center in the South, the Peter Pan bus station and Union Station building in the center; and the Greek cultural center and a church in the north. These will remain constant in all analytical maps in order to provide a sense of proportion and location in each map.

Figure 22: Existing photos of the study area

5.2 Existing population density map

Figure 23: Existing population Density Map

The map in the Figure 23 shows the population density division in nearby area. It can be seen that there is no presence of resident population on the study area. The maximum population exists in the downtown area, and falls in the low income category.

5.3 Existing occupied housing

Figure 24: Existing occupied Housing

The map in the Figure 24 shows the occupied housing density division in nearby area. As there is no population, there is not a single housing present on the study area.
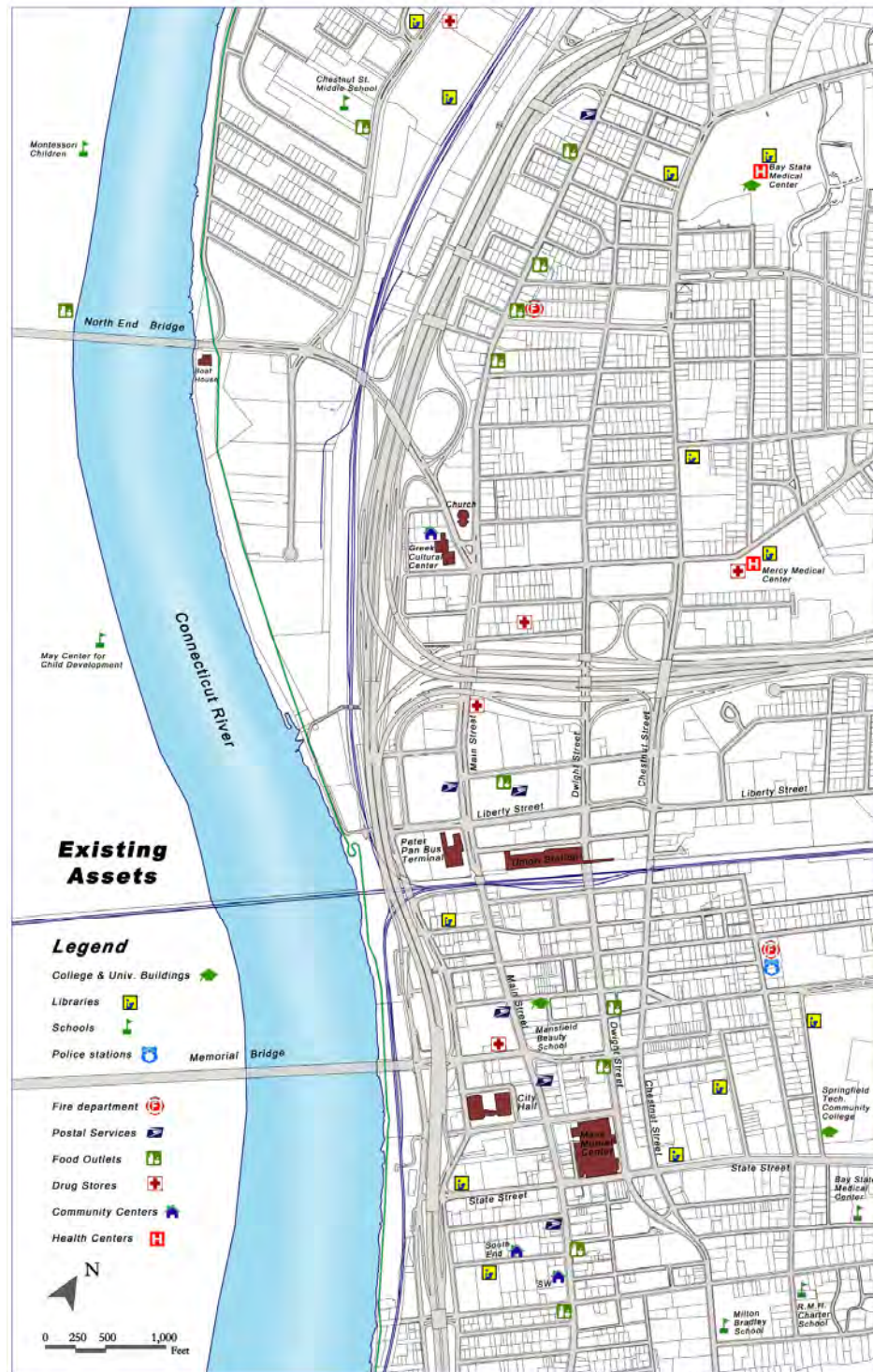
5.4 Existing assets

Figure 25: Existing assets in nearby area

The map in the Figure 25 includes various symbols denoting the different types of assets present in the nearby area of the riverfront. There are lots of amenities available in the downtown area, however very few are available in the other parts of the city. There is not a single asset available on the riverfront area due to lack of development, and there is very poor access from the riverfront to basic amenities such as drug store, grocery store, health centers, laundry services, barber shops, post office, daycare facilities, etc.

In addition, a very small number of the activities existing on the entire waterfront take advantage of this natural scenic asset of the city. There are lots of opportunities to provide amenities such as water viewing restaurants, bars, fitness center, library and other entertainment facilities which will attract people towards waterfront.

5.5 Existing urban grain study

Urban grain study focuses more on the existing settlement, showing type of development in the entire area. The map in the Figure 26 is divided into five different parts by hypothetical lines denoted in red color. The upper right side is all residential development having mostly single family houses. The bottom right side is the downtown area mainly having commercial and retail areas, and comparatively less housing. The upper left side is again housing area and below that, in the middle, there is an industrial area. Finally, the bottom left part does not have much space for development. Thus, it clearly shows that transportation corridors (highway and railroad) divide the area in completely distinct zones causing separation of uses and not leaving any opportunity for mix-use development. In addition, there is no development happening on the riverfront which can connect the riverfront with the downtown area.
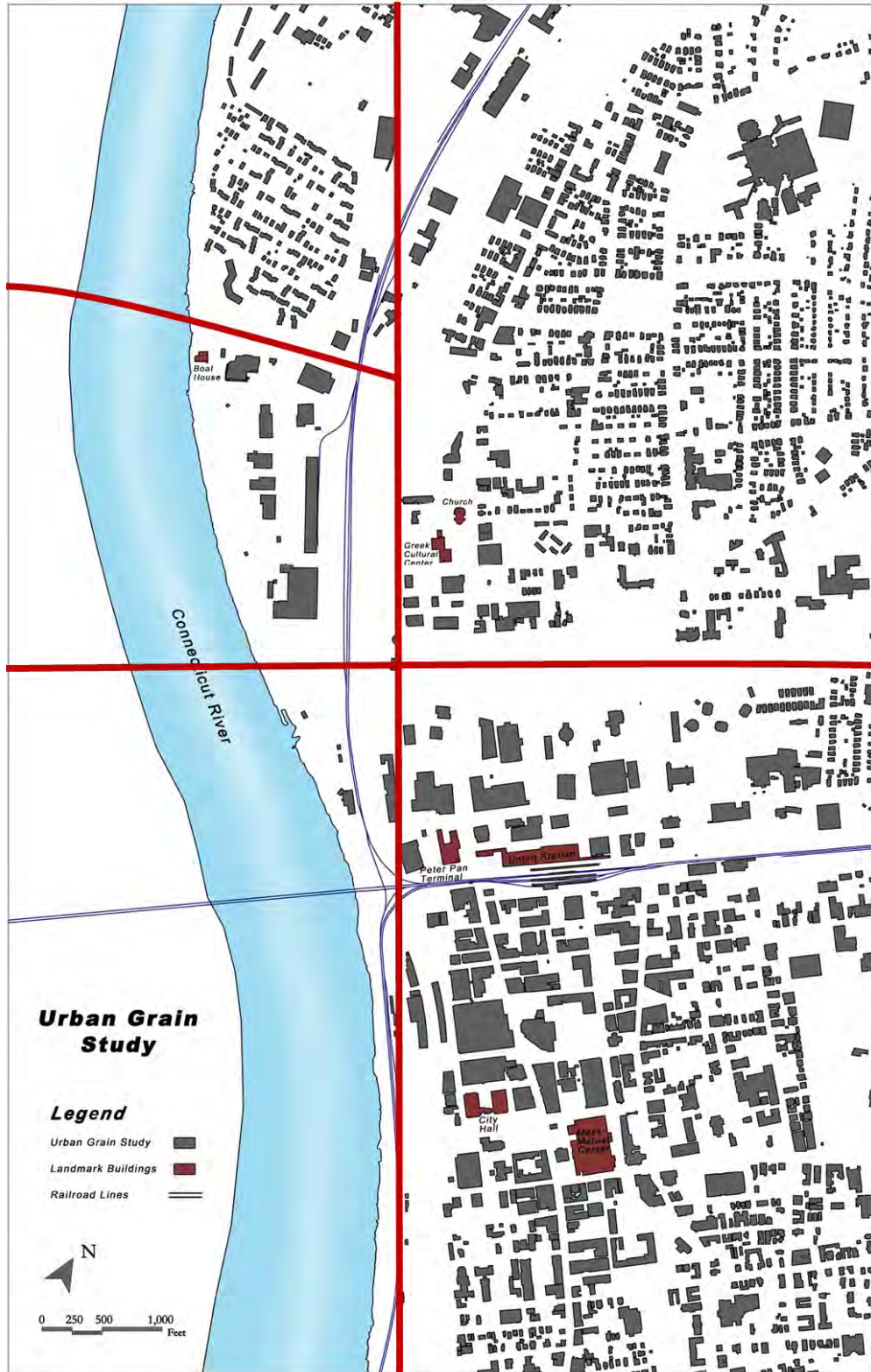
Figure 26: Existing urban grain study

5.6 Existing nodes and corridors study

Figure 27: Existing nodes and corridors

In the above map in Figure 27, highway I-91 and its exits has been represented in red color. All the primary roads are represented in orange color (refer left hand side photo in Figure 28) and secondary roads are in yellow color (refer right hand side photo in Figure 28). All the remaining roads are the tertiary roads. The map and color coding indicates that many major routes run from North-South direction, and very few routes run East-West direction. Thus, it clearly indicates that there are very weak connections from city to the riverfront area.

Figure 28: Primary (left) and Secondary (right) roads

Most of the primary streets have double lane roads on each direction, and some of the primary roads have single directional traffic. Thus, these wide roads and one-way traffic increases speed limits. This scenario reduces the pedestrian activity on the street, making some of the pockets in the area lonely and scary.

In addition, important nodes have also been marked on the map in the Figure 27 according to the activities and the popularity of the locations. There are more important nodes on the intersections of the primary and secondary nodes, as well as in downtown area. Existing nodes help in deciding potential connection from the city to downtown and riverfront.

5.7 Existing zoning

Figure 29: Existing zoning map

The map in the Figure 29 indicates that industrial area dominates the riverfront area in the study area for this project. It restricts any other type of development in that area. Also, the downtown area is dominated by business C which allows higher density, high-rise commercial buildings without any parking requirements. But this commercial area creates lonely and unsafe places after business hours due to lack of residential and other uses of development.

Another zone that dominates the riverfront area is the riverfront zone indicated in green color in the map shown in Figure 29. This riverfront zone includes pre-existing non-conforming uses which existed there before setting the proper zoning for Springfield city. The Amtrak station, electrical and plumbing substations fall under this zoning category and are very difficult to change or relocate.

5.8 Existing land-use

The land use map in Figure 30 shows that there is very limited residential area in the heart of the city. Also, there are lots of vacant sites in the form of parking lots creating unsafe places for people. The map also indicates that the highway is the biggest barrier in the overall development of the area since it does not allow the development to expand from the downtown to the riverfront. Due to separation of uses, the Springfield city downtown area is missing the opportunity of the mixed land use development.

Figure 30: Existing land-use map

5.9 Existing green spaces and parking lots

Figure 31: Existing green space vs. parking lots

The map in Figure 31 indicates all the green spaces and all the impervious surfaces in the form of parking lots present in the study area and in the nearby areas. In the map there are two types of green spaces, dark green color represents accessible green spaces, and light green color indicates inaccessible green spaces that can also be defined as unmaintained vegetation.

The map shows that there are very less green spaces available in the downtown area which can be utilized as public gathering spaces, and can also help in improving social activities. The map also indicates that there is an abundance of vacant lots and parking spaces, which create a lot of impervious surface in the city. These parking lots and unmaintained vegetation create unsafe areas and also disturb pedestrian activities.

CHAPTER 6

PROCESS

6.1 Past proposals

Past proposals have been studied as types of case studies, to know what has been already suggested for the same site, what has been successfully built, and which recommendations are still in the form of proposal. This will help in getting different ideas for developing the site.

6.1.1 PVPC proposal for riverfront development in 1995

Figure 32: PVPC proposal for riverfront development in 1995[1]

In 1995 PVPC (Pioneer Valley Planning commission) proposed a riverfront development plan for the site located on the south side of the memorial bridge. They

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first introduced the idea to build a bike path on the riverfront which would connect all the neighboring areas with each other. They suggested many other activities such as festival field, riverfront plaza, gazebo, sports outlet center, miniature golf, amphitheater, boat house, and water viewing restaurant. The proposed locations can be seen in the Figure 32. Out of all these things, by 2011, only riverfront plaza and bike path have been successfully built, and the other things remain in the form of a proposal.

6.1.2 ULI proposal in 2010

Figure 33: ULI - TAP report in 2010[2]

Under the direction of the Urban Land Institute in Boston, the Riverfront Technical Assistance Panel (TAP) convened in Springfield, MA in May 2010, bringing

together stakeholders, city and community leaders, and a panel of land use and development professionals for a day-long session focused on the city's most underutilized natural asset: The Connecticut River riverfront. They focused mainly on the stretch of riverfront that extends from Springfield's Memorial Bridge in the north to the South End Bridge in the south.

The downtown side of the riverfront is good for market rate housing having views of riverfront. So they suggested medium density residential building connecting with each other with a viewing gallery above the railway lines. Mostly all the first floor will be utilized for parking spaces to bring pedestrian activity up to the level of Memorial Bridge and providing undisturbed view to residents staying above. In the report they have also suggested an active plaza at the entrance from the state street towards the riverfront. This smaller intimate park will serve as a gateway to the riverfront, a gathering place and a focal point for the area. This plaza and the proposed boat house will help in increasing activities on the riverfront. These activities will be connected to a bike path, which will increase the popularity of the area while providing safety due to the residential area.

6.2 Case-studies

The case studies have been chosen on the basis of waterfront development, public and private partnership; and underpass connection to reach towards the waterfront. These case-studies are on a bigger scale as compared to the study area, but will be helpful in the specific criteria for which they have been chosen.

6.2.1 Toronto, Canada – Waterfront development

Toronto is Canada's largest and most rapidly growing metropolitan region. Toronto makes claims to being a model for re-use and waterfront revitalization as

shown in Figure 34. They have used the waterfront as a way of revitalizing the city. The mission was to transform the Toronto waterfront into a series of sustainable, mix-used urban sector, integrated with parks and open spaces which will greatly expand the city's capacity for urban living, employment and recreation[3]. The overall aim was to provide a unique identity to the lake's edge which claims to redefine the public landscape of the 3.5 kilometer waterfront as a cohesive system.

Figure 34: Arial Overall development plan for Toronto

For this project, the East Bayfront area, which is a small part of total development, has been taken into consideration for detailed study. The East Bayfront district is the most central waterfront revitalization area to the downtown core. The goal was to create highly local environment, good neighborhood within the city which will be a desirable place to live and work; and at the same time, the 1.5 kilometers of water's edge should become a vibrant public destination with a variety of experiences and amenities[4].

6.2.1.1 Scenario before development

The 55 acres of land adjacent to waterfront was completely underutilized. There was public access to water's edge. The raised highway divides the city and the

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downtown area from this piece of land as shown in the Figure 35. The dock wall was used for cargo, cruises and pleasure boat mooring. There were many buildings and

Figure 35: Predevelopment conditions of East Bayfront

structures which used to reflect the port related industrial heritage of the site[5].

6.2.1.2 Principals of new development

Some of the few principles listed below explain the entire development strategy for East Bayfront area[6].

- Create publicly accessible, vibrant water's edge promenade.

- Strengthen visual connection to the water from the city.

- Terminate major north-south streets at a series of special public spaces.

- Streets and public spaces should be designed to encourage pedestrian, cyclist activities.

- Establish the existing Queens Quay Boulevard as an active, beautiful, east-west urban boulevard that provides pedestrian amenity, commuter bike lanes, and mass transit to create a main street for East Bayfront.

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- Support variety of uses and allow for flexibility of uses for future development.

- Create gateways to provide major corridors as entries to East Bayfront.

Figure 36: East Bayfront New Master Plan

6.2.1.3 Master plan

The above master plan in the Figure 36 clearly expresses most the features rendered in the strategic principles. Queens Quay Boulevard is the central main street having all types of transportation access including private transportation such as, vehicles and bike; and public transportation such as tram and buses[7]. As shown in Figure 37, this main street also encourages pedestrian activities by providing sidewalks and street front retail store to provide safety. As this street is a main transportation

corridor, it reduces the vehicular transportation reaching the waterfront and encourages more public activities near waterfront area.

Figure 37: Schematic section and view of Queen

Master plan in Figure 36 also shows the dedicated green spaces created to increase social environment near waterfront area. These have been designed in three different types: public open spaces, semi-public open spaces, and private open spaces providing various types of activities such as markets, arcades, winter garden, children play area, water garden, open and shaded lawns, sitting area near water features, community center with outdoor spaces, and multipurpose courts with sculptures to display art and enhance the beauty of the open area[8].

6.2.1.4 Water's edge promenade

The water's edge promenade has been designed in three distinct zones as shown in Figure 38. The upper level is a broad terrace for outdoor dining, strolling, festivals, and special events[9]. The lower level serves as the main public walkway bringing pedestrians close to the water. After that, they have design a dense planting zone and built-in sitting under the continuous canopy of trees as shown in Figure 38. The lowermost level close to water is designed for strollers, runners, and bike riders. The middle level will be calm compared to the other two levels. The water's edge is an active pedestrian, year round, multi-use water related public passage[10].

Figure 38: Water's edge promenade, a schematic view

They have created a nice bike and pedestrian-friendly boulevard which connects to downtown of Toronto. Landscape features like wave decks and footbridges use playful variations on the themes of waves. This new dynamic aspect to the streetscape and elements encourages variety of activities like walking, running, skating and biking in a small area. This has now become a vibrant urban community place which is very popular destination for visitors and residents on warm days.

6.2.2 Waterfront Development Chattanooga, Tennessee

The 21st century waterfront development plan for Chattanooga transforms the downtown riverfront with a combination of development, preservation, and enhancement. The overall plan comprises 129 acres on both sides of the river as shown in the Figure 39. They have connected the important public spaces such as markets, aquarium, art district, museum with a green pedestrian access. The goal was to reunite the river with the city and the downtown.

Figure 39: Chattanooga waterfront development plan

The new development transforms some of the neighborhoods into mixed use development by creating residences, shops, cafes, and galleries with a funicular to ease the trip up and down the hill[11]. They changed their streetscape by adding traffic signals; redeveloping prime intersections and made them more pedestrian friendly. They encouraged these changes through zoning, site regulations, urban design solutions, public-private partnerships, and adding mixed-use buildings on the corners[12].

6.2.2.1 Riverfront parkway and Ross's Landing Park

The revitalization of the Ross's Landing Park is a cornerstone of the plan. The vision involves an enlarged and enhanced Riverside Park which can also provide fabulous settings for local festivals. The Figure 40 shows the expanded marina, water taxies, and green landscape public gathering place using existing terrain. This new development also involves riverfront cafes, viewing galleries, and river terraces to increase activities.

Figure 40: Green area at Ross's landing

Figure 41: Underpass connection and pedestrian area at Ross's Landing

The Figure 41 shows the underpass pedestrian connection avoiding the highway traffic and providing safe environment for bike and pedestrian friendly people. These things attract residents towards the waterfront.

6.2.3 Riverfront Development at Hartford, Connecticut

Hartford is the capital of the U.S. state of Connecticut. Figure 42 reflects that the Hartford city and East Hartford has been divided by the Connecticut River. Highway I-91 and Amtrak railway tracks act as barriers dividing the city from its riverfront.

Figure 42: Regional map of Hartford, CT showing riverfront area

The reunion of the city of Hartford with the Connecticut River was the key strategy for the revitalization of Hartford downtown area[13]. A section of I-91 and the railroad has been depressed into the ground and a terrace has been built which spans the railroad, highway and the flood walls. This terrace is a part of an urban design effort that expands the existing elevated Hartford constitution plaza, which connects various

office buildings in downtown Hartford. This project is part of a larger, regional concept intended to engage the whole riverfront for recreational use in the greater Hartford area.

The organization 'Riverfront Recapture' created a river-walk in between Bulkeley and Founders Bridges, and river plaza on the river bay. They have also developed pedestrian links directly connecting to this valuable natural resource. The Figure 43 shows the riverfront connections marked in red, and the destinations in the downtown in orange circles. The most important and the first destination is the Adriaen's landing (the Connecticut Center for science and exploration), which was built to generate activity near the river. This pedestrian walkway further connects to the Connecticut Convention Center, State House Square and Constitution Plaza; the construction of a pedestrian walkway also connects Constitution plaza and Phoenix Plaza to Riverfront Plaza. All these connections offer stunning views and pedestrian passage to, along and across the river.

Figure 43: Map of the downtown area of the city of Hartford

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Revitalization also supports the connection of south Riverfront Plaza to Charter Oak Landing shown in Figure 42, and the Colt Neighborhood Gateway project, providing access to the river from Van Dyke Avenue which is on the south side of Charter Oak Landing; as well as north to Riverside Park. These projects have been extremely beneficial in providing additional access points to the riverfront and in complementing the revitalization efforts relative to Colt property and Sheldon/Charter Oak neighborhood.

6.2.4 Battery Park City, Manhattan, New York

Battery Park is a 25-acre (10 hectare) public park located at the 'Battery', the southern tip of Manhattan Island in New York City, facing New York Harbor as shown in Figure 44. This city is a planned community built on landfill in the 1970s and 80s with a high-rise residential community on the Hudson River in lower Manhattan with open spaces and commercial activities limited to shops and restaurants. The waterfront design expands the urban grid of the downtown Manhattan to the edge of the Hudson River. The 1.2 miles long north-south esplanade celebrates the interaction of the city grid and water's edge. The great river walk is defined by greenways, corridors, and gathering plazas.

Figure 44: Battery Park City master layout

Battery Park city has achieved worldwide acclaim as a successful exercise in community renewal. Through public and private partnership between Battery Park city Authority and the private developers, this planned community has become a great example of an urban development. Today, it contains 9.3 million square foot of commercial space, 7.2 million square foot of housing, 52 shops and services, 35 acres of parks, 22 restaurants, 20 works of public art, 3 schools and 2 hotels, a multi-screen movie theater and a nice marina[14]. However, officials mention that there are many vacant retail spaces in the area, because the residential area is not enough to support the designed retail and store front. Despite these conditions, the overall area is always active which can be seen in Figure 45, full of people who take the advantage of the waterfront park, bike path, water front restaurants and cafes, green public open spaces and winter garden. It increases the social gatherings and provides a feeling of safety.

Even though it is on a larger scale it is the great example for the current project as it contains all aspects of this project like green architecture, urban infill, mixed use development with commercial, residential and parks on the waterfront site with the partnership of public and private authorities.

Figure 45: Waterfront at Battery Park City

6.3 Expert opinions

As a part of the process and research, the opinion of experts about the entire development is very important to proceed further towards any conclusions.

6.3.1 Nancy Denig (Denig design Associates), Landscape Architect

Ms. Nancy pointed out that connections from the city to the riverfront should be strong enough to attract pedestrians towards the riverfront. Access points and gateways to riverfront should be one of the focuses of the design development. There should be strong connections of all the existing attractions such as Quadrangle, MassMutual center, Forest Park, zoo and museums with the riverfront. She also mentioned that, to get undisturbed views of waterfront and to increase safety on the bike path; cleaning and organizing the existing vegetation is very important aspect of a new development.

6.3.2 Steven Heikin (ICON Architecture), Architect and Planner

Architect Steven Heikin provided an idea about increasing public attractions which will also support local business, local artist, local entrepreneurs, and local residents of Springfield. He suggested developing an amphitheater, art galleries, museums, restaurants, bars, cafes, street front shops, boat house, plazas, public open spaces, ice skating in winter season and sporting outlets. These activities can bring people from neighboring areas towards the Springfield downtown area. He also suggested making good use of all the existing gradients which will provide maximum views waterfront to all the activities.

6.3.3 Lynn Carlton (SASAKI Architects), Planner

As a planner by profession, Ms. Lynn expressed her worry about the success of the new development of the riverfront area. The new development and entertainment attractions on the waterfront, is a good solution to develop waterfront area and attract people, but there is not enough population to support those activities in that area. Lack of residential area is providing unsafe places in the downtown and riverfront area, mainly after office hours. She strongly suggested developing medium density residential area with the mixture of rental and ownership apartments on the riverfront as a part of the new development to provide safety 24/7. In addition, development should also provide amenities for the residential area such as viewing terraces, boat lounges, restaurants and some commercial uses. The electrical and plumbing substation can be screened with a suitable material which will merge into the nature and will not disturb the beauty of the area.

6.3.4 Tim Brennan (PVPC), Executive director - Transportation

Mr. Tim Brennan provided more detailed information about the increased Amtrak service from Springfield to Vermont and further to Canada. Government has already approved the funding for the high speed trains passing through Springfield and passed the proposal to renew the old tracks. Thus he suggested any changes in the existing railway track location would not be a practical solution, as it will not be applicable in the future.

In the design and development, he suggested that the first step is to: understand the ownership of each parcel of land; identify the land area available for development; analyze which part of the land area is good for residential and mixed-use development. In addition, he suggested studying the existing local transport system to connect this new development with the downtown area. Eventually, this new waterfront revitalization

should support the downtown revitalization, which will help in overall economic development of the city.

6.3.5 Chris Curtis (PVPC)

Mr. Chris was involved in the bike path development project from 1995. He mentioned his thoughts that this new development should also provide success to existing bike path which can become a good regional connector. He expresses his worry about the water quality of the Connecticut River near Springfield city which is contaminated due to the CSO (Combined Sewer Overflow) system. (Refer section environmental concerns 4.4.2 for more information). Prior to improving the waterfront area and developing housing on the waterfront, it is necessary to clean the water and separate the sewage system completely. This water will not be safe for fishing and swimming for a couple of decades and in addition the water level becomes very shallow in dry seasons, which is not suitable for mid-size boat.

He also strongly suggested that the existing industrial area should be shifted into the industrial zone of the city. Without the change in the existing zoning pattern the new development is impossible to achieve. Moving the existing businesses to north-east part of the city will provide sufficient amount of land on the waterfront for the development.

Notes

[1] PVPC (Pioneer Valley Planning Commission). "Springfield Riverfront Revitalization Action Strategy." In *Action Strategy For Riverfront Revitalization,* 39-49. Springfield, MA, 1995.

[2] Urban Land Institute (ULI). "The Riverfront, Springfield Mass." A Technical Assistance Panel Report, Boston, 2010.

[3] Toronto Waterfront Revitalization Corporation. "The Vision For East Bayfront." East Bayfront Precinct Plan, Toronto, 2005, pp. 6.

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[6] Toronto Waterfront Revitalization Corporation. "The Vision For East Bayfront." East Bayfront Precinct Plan, Toronto, 2005, pp.18.

[7] Toronto Waterfront Revitalization Corporation. "The Vision For East Bayfront." East Bayfront Precinct Plan, Toronto, 2005, pp.19.

[8] Toronto Waterfront Revitalization Corporation. "The Vision For East Bayfront."

East Bayfront Precinct Plan, Toronto, 2005, pp.28-33.

[9] Toronto Waterfront Revitalization Corporation. "The Vision For East Bayfront." East Bayfront Precinct Plan, Toronto, 2005, pp.24.

[10] Toronto Waterfront Revitalization Corporation. "The Vision For East Bayfront." East Bayfront Precinct Plan, Toronto, 2005, pp.24.

[11] Hargreaves associates. "The 21st Century Waterfront." Executive Summary, Chattanooga, Tennessee, 2002.

[12] Hargreaves associates. "The 21st Century Waterfront." Executive Summary, Chattanooga, Tennessee, 2002, pp.4

[13] "Riverfront Recapture." *Capital city economic development Authority.* http://www.cceda.net/projects/riverfront_recapture.html (accessed January 25, 2012).

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CHAPTER 7

RECOMMENDATIONS

7.1 Proposed relocation for the existing businesses

The diagram shown in the Figure 46 shows the changes suggested in the relocation of the existing business. Some of the businesses are suggested to move in the north-east area of the Springfield city, which is an industrial zone.

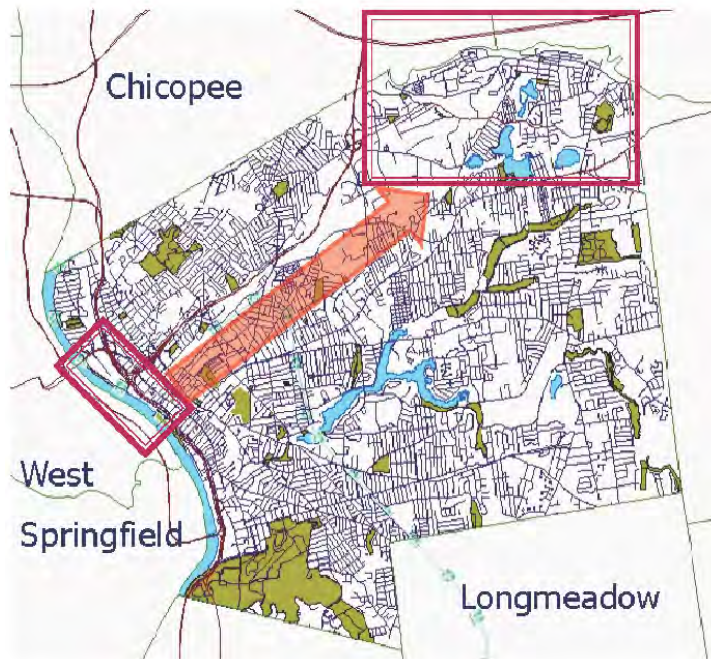**Figure 46: Relocation suggestions for the existing businesses**

7.1.1 Transferable Developmental Rights (TDR)

All the relocation will take place by using transferable developmental rights (TDR). This is a type of zoning ordinance that allows owners of property zoned for low-density development or conservation use to sell development rights to other property

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owners. This is a way of controlling land use to complement zoning and strategic planning for more effective urban growth management and land conservation. TDR is a creative, innovative, and experimental form of development control[1]. It offers landowners financial incentives or bonuses for the conservation and maintenance of the environmental, heritage or agricultural values of their land[2]. These land-based development rights can, in some jurisdictions, be used, unused, transferred or sold by the owner of the parcel.

7.1.2 New locations for the existing business

The new location has been selected by consulting with the principal planner of the city Mr. Scott Hanson. The following Figure 47 shows the area in the north-east of the city where new sites have been chosen for the relocation.

Figure 47: Industrial area at North-east of the city

The following pictures in the Figure 48 show the perfect locations for selected sites for the relocation. Two of them are city owned sites and others are privately owned but vacant sites which are suitable for relocation.
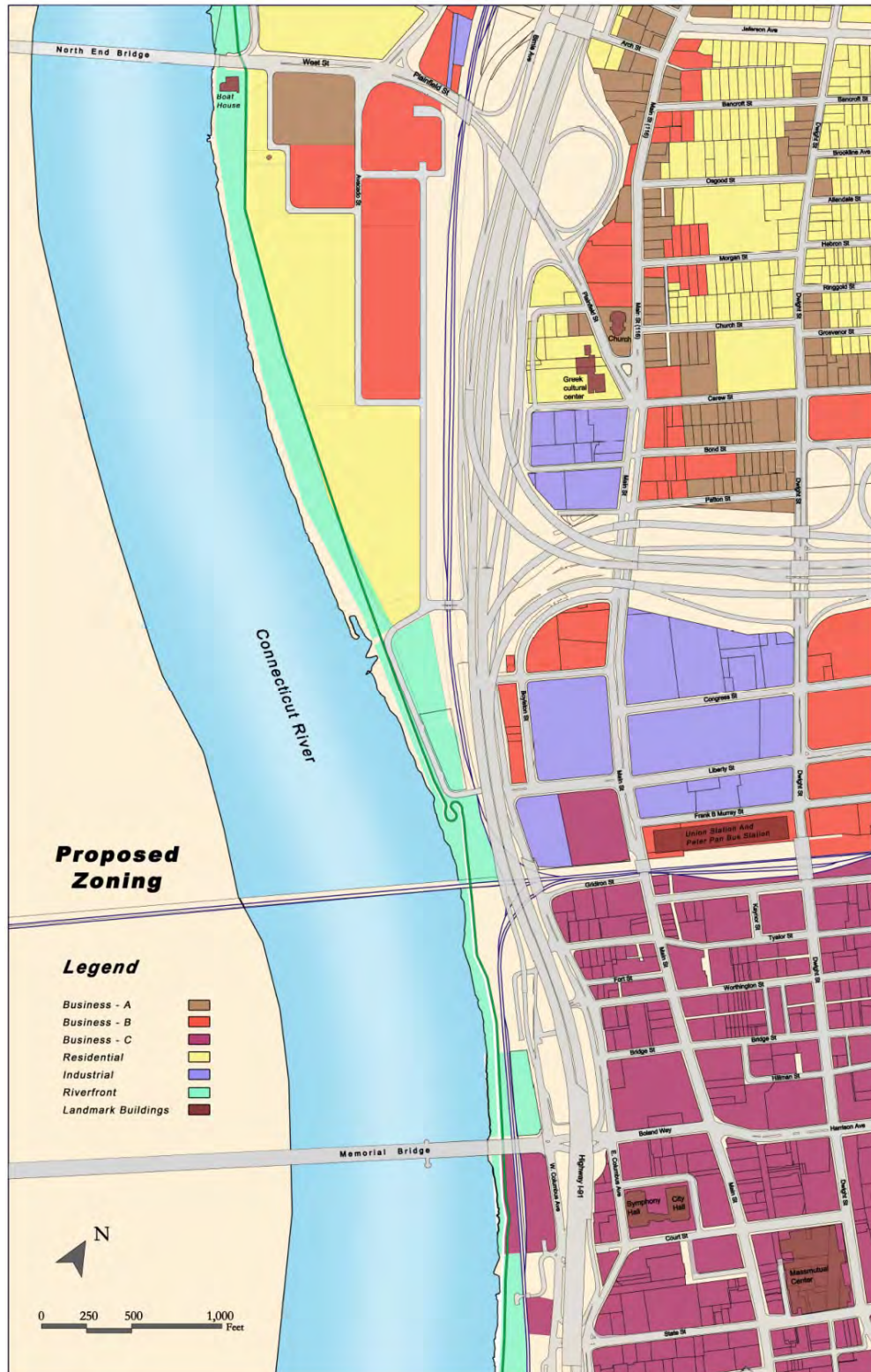

Figure 48: Specific sites selected for relocation
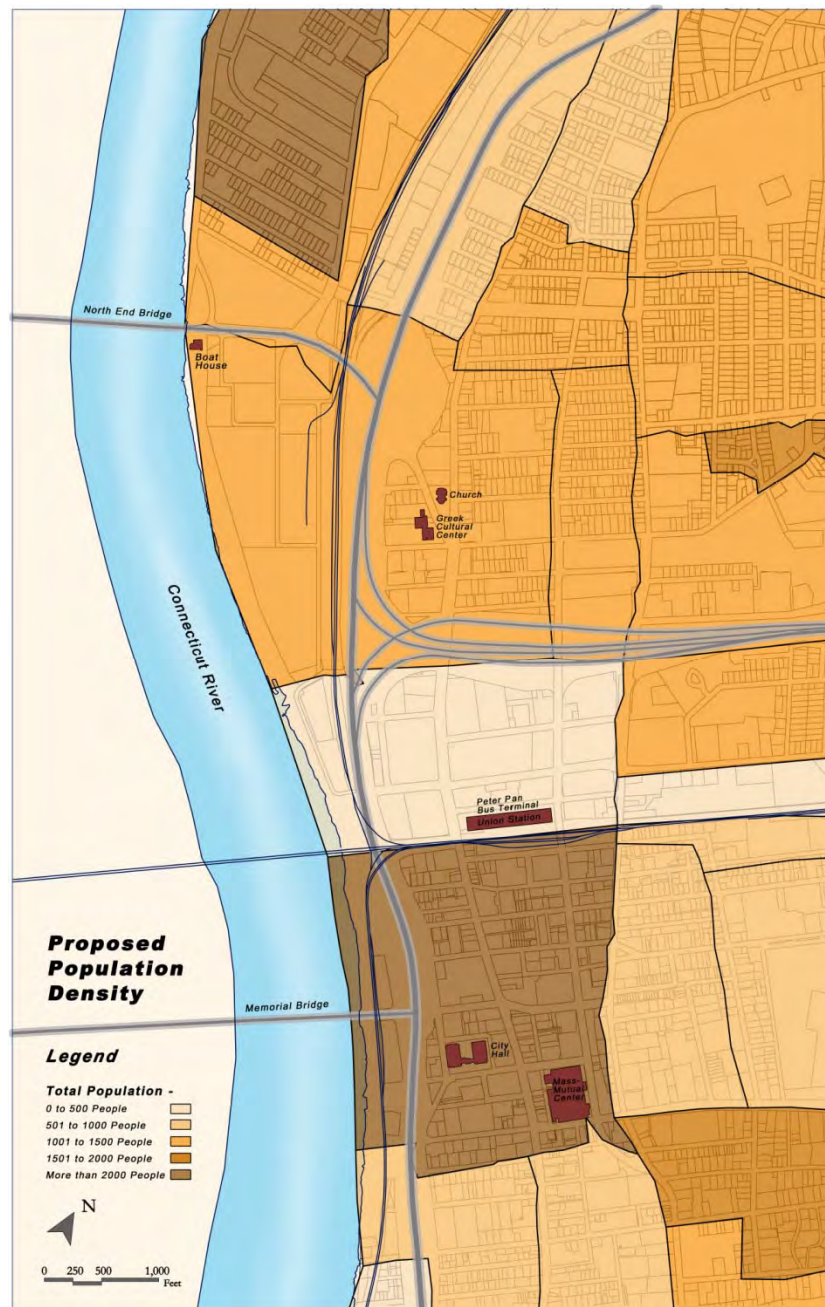
7.2 Proposed zoning changes

The following zoning map in Figure 49 indicates the zoning changes suggested for the new development on the riverfront area of the city. The first step will be to change the existing industrial area into Business-B zone which allows more variety of businesses. Then, some of this Business–B zone should be changed into Residential-C zone, which will allow higher density multi-unit development. The pre-existing non confirming Riverfront zone will not be changed as most of it contains vegetation or the uses such as substation and Amtrak station which are not moving from their original locations.

These changes in the zoning pattern will provide more land and flexibility for the new developments.

Figure 49: Proposed zoning map
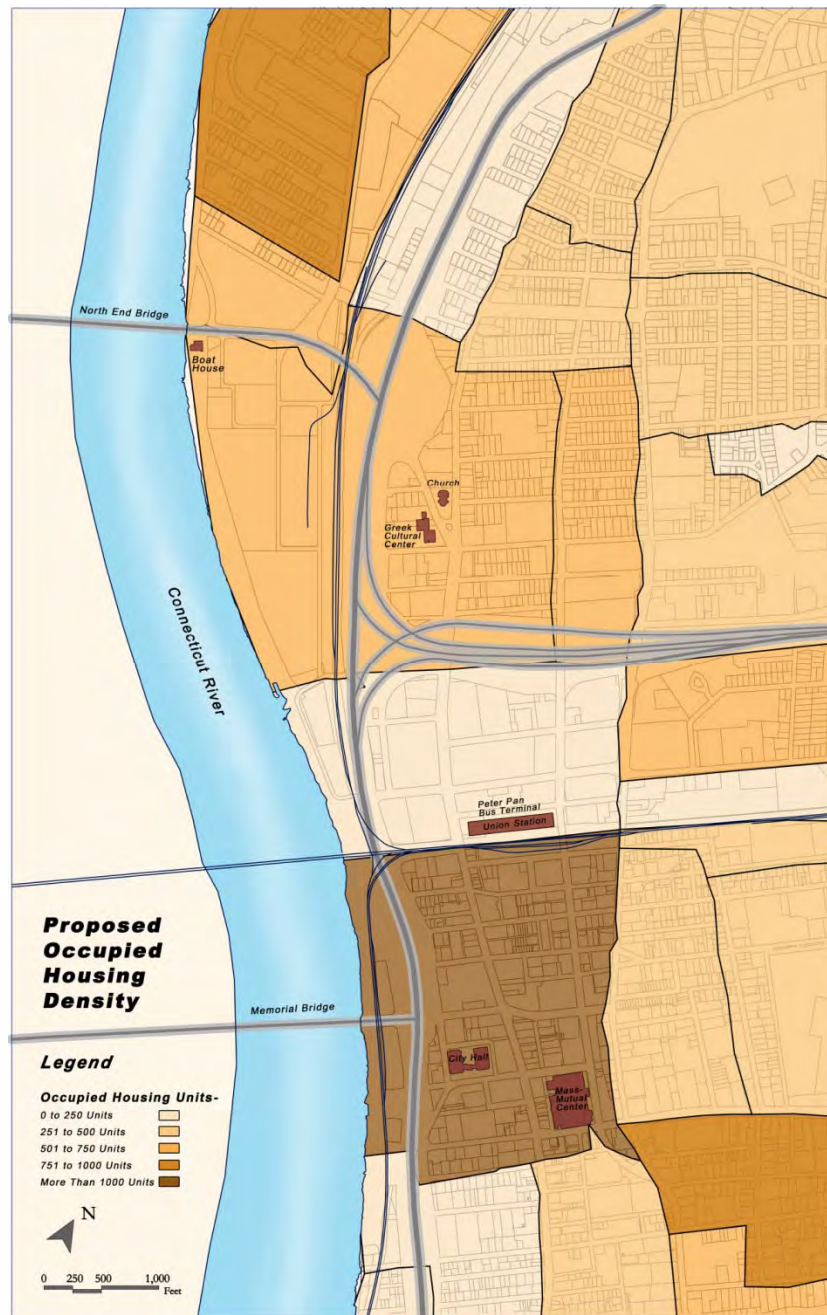
7.3 Estimated population rise

Figure 50: Estimated Population rise

The population rise has been estimated by considering average of 3 people per dwelling unit. This will not make any difference in the southern part, but will increase population in the new residential zone on the northern part of the study area.

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7.4 Estimated rise in housing density

Figure 51: Estimated rise in housing units

This Residential-C zone will allow approximately 150 dwelling units in the northern part, 100 units in the central and more than 50 in the southern part of the study area.

7.5 Proposed Phase Development

7.5.1 Conceptual diagram for available and unavailable parcels

Figure 52: Available and Unavailable parcels

The above diagram in the Figure 52 indicates all the available and unavailable parcels for the new development.

7.5.2 Development Phase - I

Figure 53: Development Phase - I

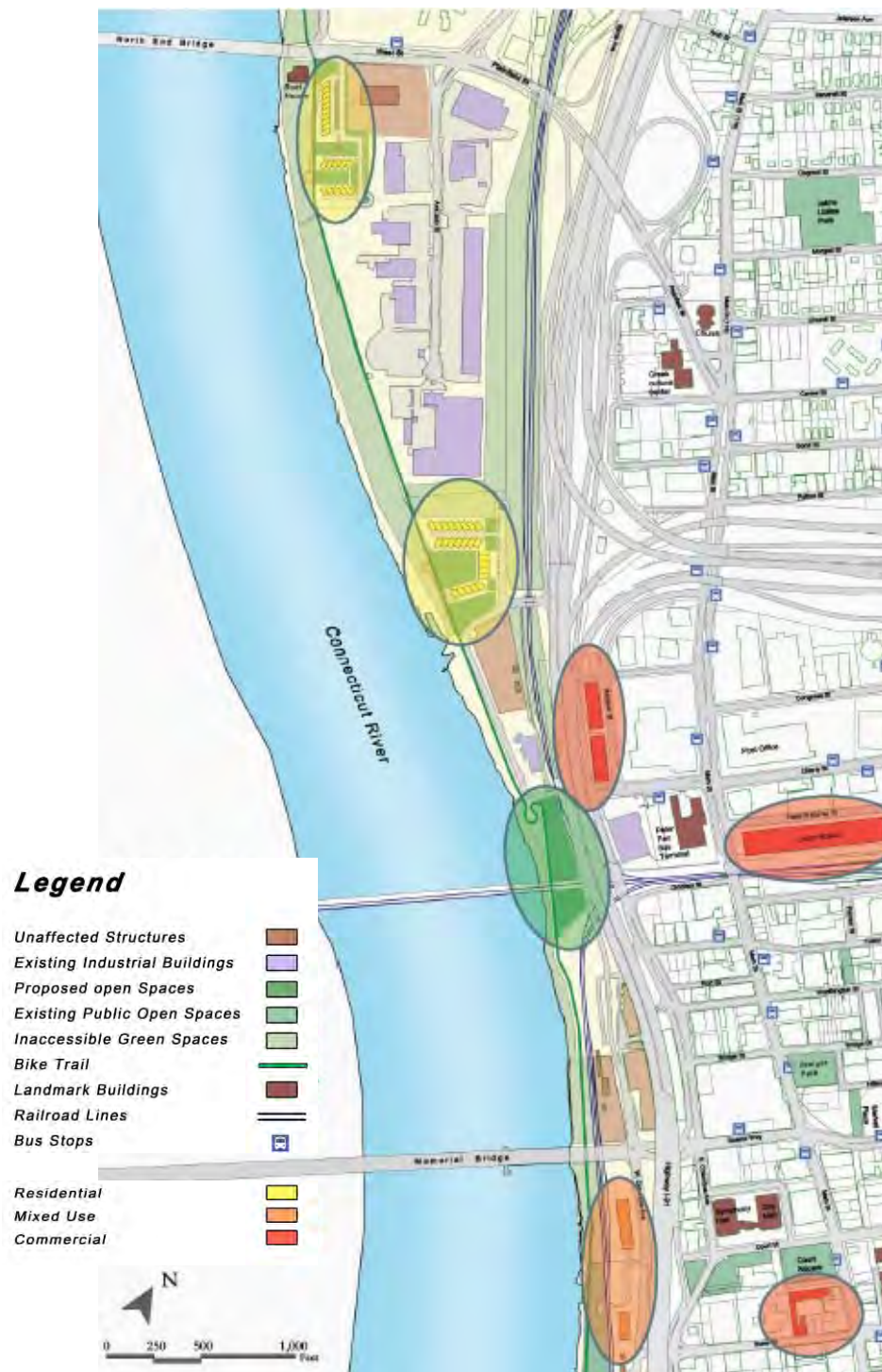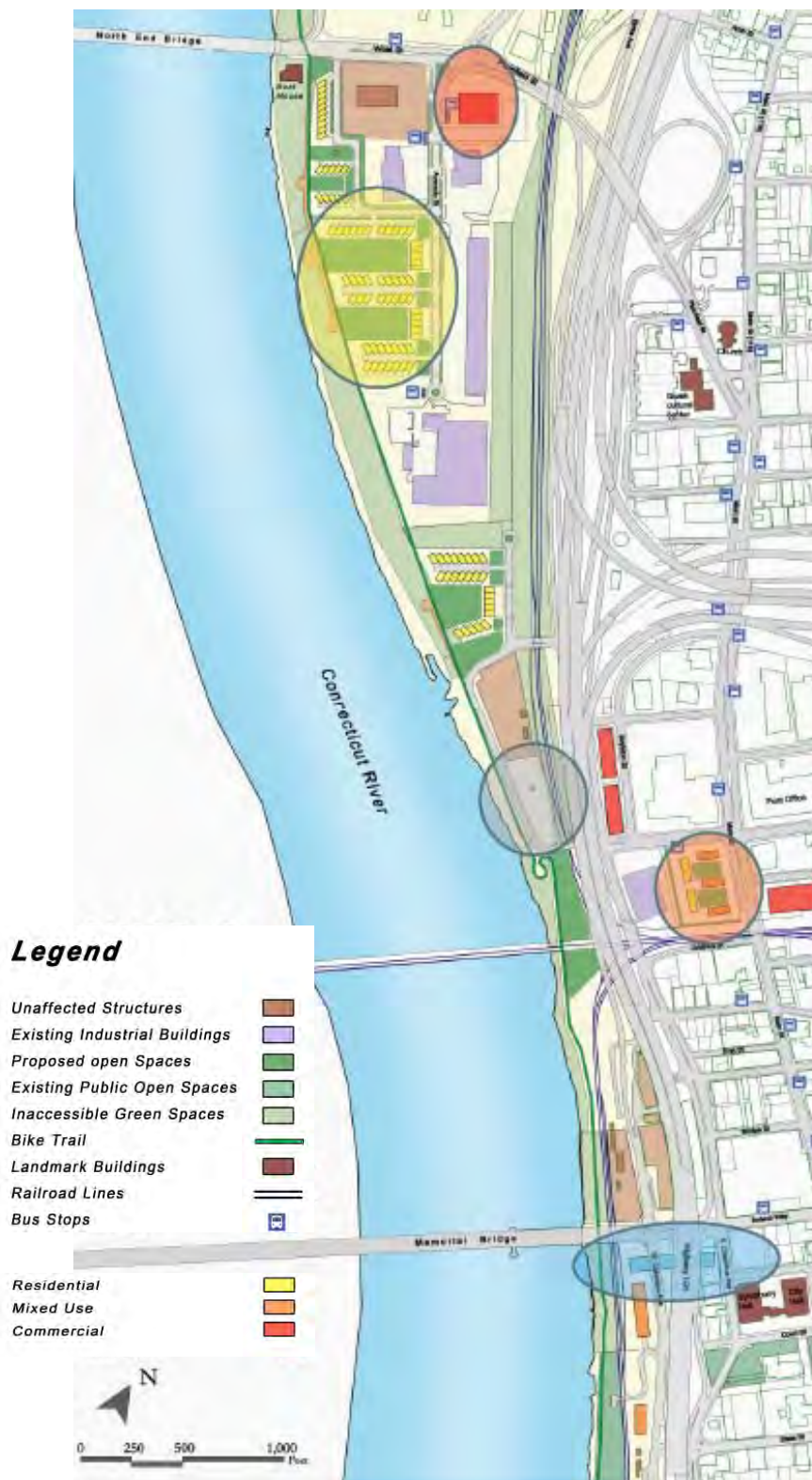All the development taking place in the first phase is shown in the above map in Figure 53. Starting from the north side, residential units are planned on the parcels of unmaintained vegetation. Thus, immediately in the first phase, the relocation of business will not take place. Moving a little to the south, in the central part, Amtrak Union station will get developed, becoming a new transportation hub for the city having the Peter Pan bus service within the complex. This plan is already approved by the city. In the central part, the parcel with unmaintained vegetation will be cleaned and converted into a garden area. On the southern part, the abandoned hotel building will get renovated as a new hotel building, which also got an approval from the city. On the riverfront area, there will be a mixed-use development with medium density residential and commercial area which will support future riverfront activities.

7.5.3 Development Phase - II

In the second phase of development as shown in the map in Figure 54 (from north side), the tire shop will move in the city area, and a retail complex including a grocery store will take its place to support the new residential development. Three wholesale food retailers will move to the location of the truck company which will move to its new designated place in the north-east side of the city. A new residential area will be developed at this site. In the central area, the storage building owned by Peter Pan will be demolished, and the area will be converted into a riverfront parking lot. The old site of the Peter Pan bus terminal site will be converted into a new mix-use development having new storefronts at the first level and residential units on the above levels. In the south side, a new connecting link, falling under the institutional category, will act as a pedestrian connection from downtown to riverfront. It will include a museum, art galleries, an exhibition area, a public library, an auditorium, a theater, a children's art gallery, a food court, and a water viewing restaurant.

Legend

Unaffected Structures	▨
Existing Industrial Buildings	▨
Proposed open Spaces	▨
Existing Public Open Spaces	▨
Inaccessible Green Spaces	▨
Bike Trail	▬
Landmark Buildings	▨
Railroad Lines	══
Bus Stops	▣
Residential	▨
Mixed Use	▨
Commercial	▨

N

0   250   500   1,000
Feet

Figure 54: Development Phase - II

7.5.4 Development Phase - III

Legend

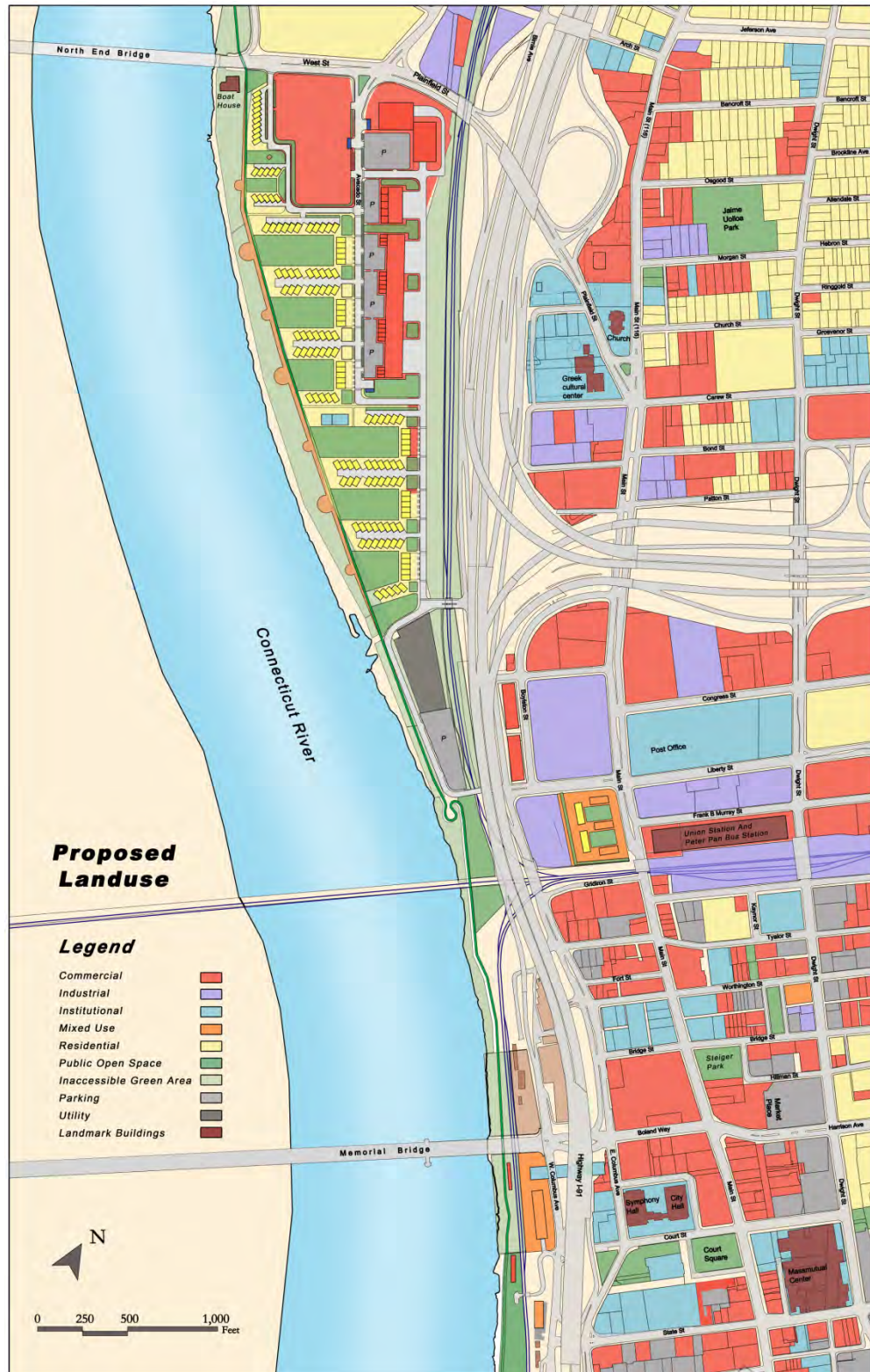|	
Unaffected Structures	▨
Existing Industrial Buildings	▨
Proposed open Spaces	▨
Existing Public Open Spaces	▨
Inaccessible Green Spaces	▨
Bike Trail	—
Landmark Buildings	▨
Railroad Lines	═
Bus Stops	▣
Residential	▨
Mixed Use	▨
Commercial	▨

Figure 55: Development Phase - III

In the third phase of development, as shown in the map in Figure 55 (from the north side), the retail development will be completed with the addition of other retail stores such as drug store, small shopping complex etc. The paper company will move to its new location in the north-east side of the city (refer to Figure 48) and all the residential areas will be connected to each other. The new retail area will be developed on Avocado Street, on the front side of the old truck company. This new residential and retail area will change the industrial look of Avocado Street, and will also provide safety in this new development. The new retail area will include cafes, a barber shop, a book store, laundry service, fast food chains, post office service, a convenience store, etc. Additionally, there will be a small institutional development in the form of a community center and a day care center to support this new development.
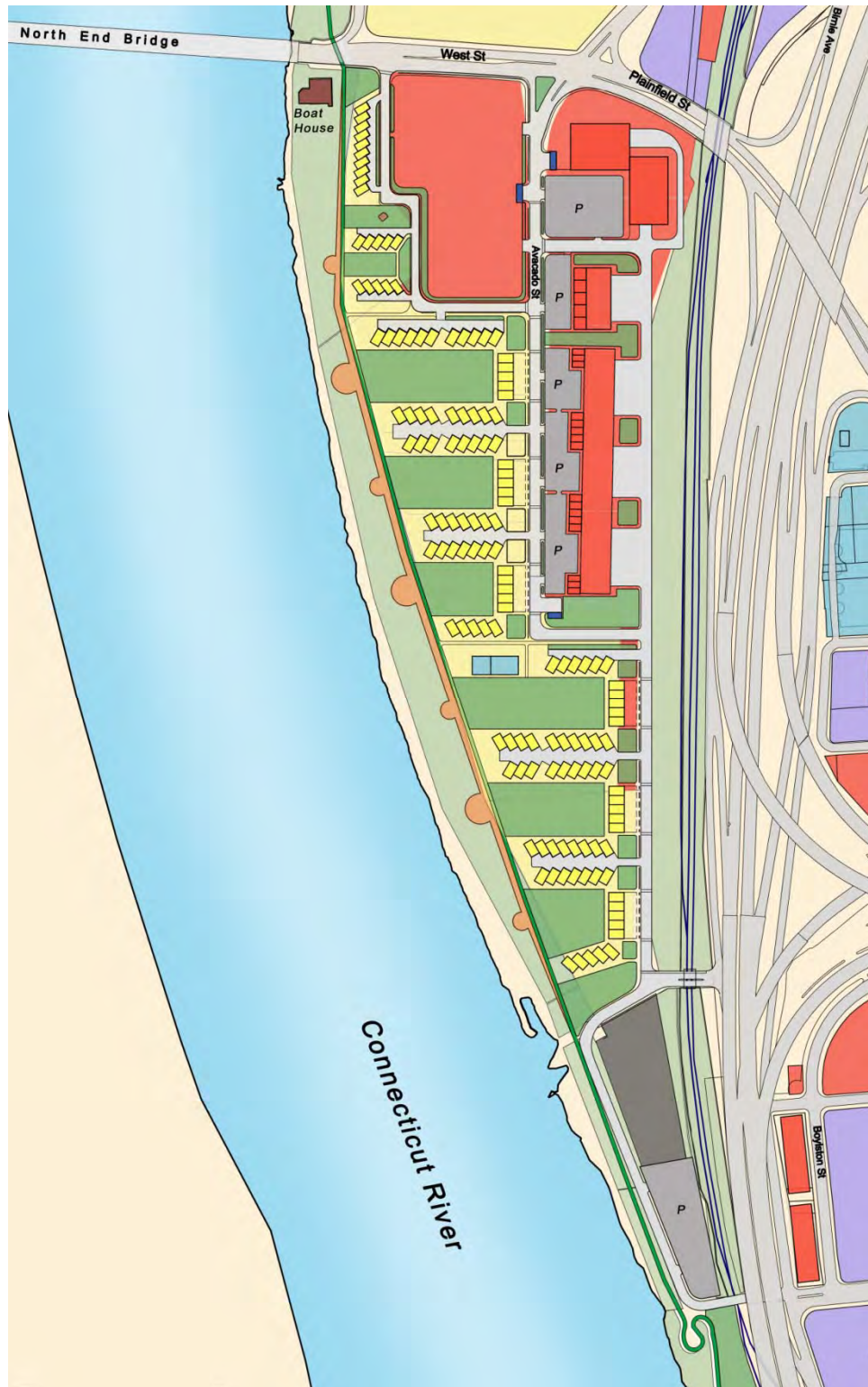
In the south side, some small retail areas will be developed on the riverfront, such as coffee shops, juice centers, fast food chains, bike shops, book centers etc. These activities will provide safety to the bike path, and allow people to enjoy these activities while sitting on the riverfront.

7.6 Proposed land use map

The completion of all three phases of the new development can be seen in the proposed land use map shown in Figure 56. This development shows the new division of land on the riverfront which includes different categories such as residential, mix-use, commercial, retail, utility etc. However, it also provides sufficient privacy to the residential area as it is separated by Avocado Street from other uses. The existing access towards the riverfront on State Street and Liberty Street not only will get improved, but in addition, there will be new car access near the electrical substation and pedestrian access in the form of a connecting link. This proposal will also help in developing abandoned and rundown buildings near the riverfront area.

Figure 56: Proposed land use map

Figure 57: Enlarged plan for north side development

7.6.1 Road network in new development (North side study area)

In the new development, Avocado Street will be a single lane tertiary road, designed mainly for the residential area. As shown in Figure 57, it will avoid car traffic along the riverfront and will also avoid the traffic travelling from North End Bridge to downtown. It will be a two lane road until the commercial area which will allow all the truck traffic required for the businesses. After the parking lot of the new commercial area, the truck traffic required for the wholesale food retailers will turn and serve them from the rear of the structure as shown in Figure 58.

Figure 58: Section of a service area at the back side of wholesale food retailers

Once the truck traffic moves to the service road, single lane Avocado Street will become a small-scale retail-oriented pedestrian friendly street as shown in Figure 59. The street will have pedestrian walkways and a special bike lane on the street.

Figure 59: Typical proposed section of Avocado Street

Bus transit will serve this new development with its first-stop being near the retail complex and the last-stop near the community activity center. This new development will also increase activities on the bike path by providing viewing decks on the riverfront. The existing bike path is very small in this area, so the new development proposes addition of a new river-walk near the deck area as seen in the Figure 60.
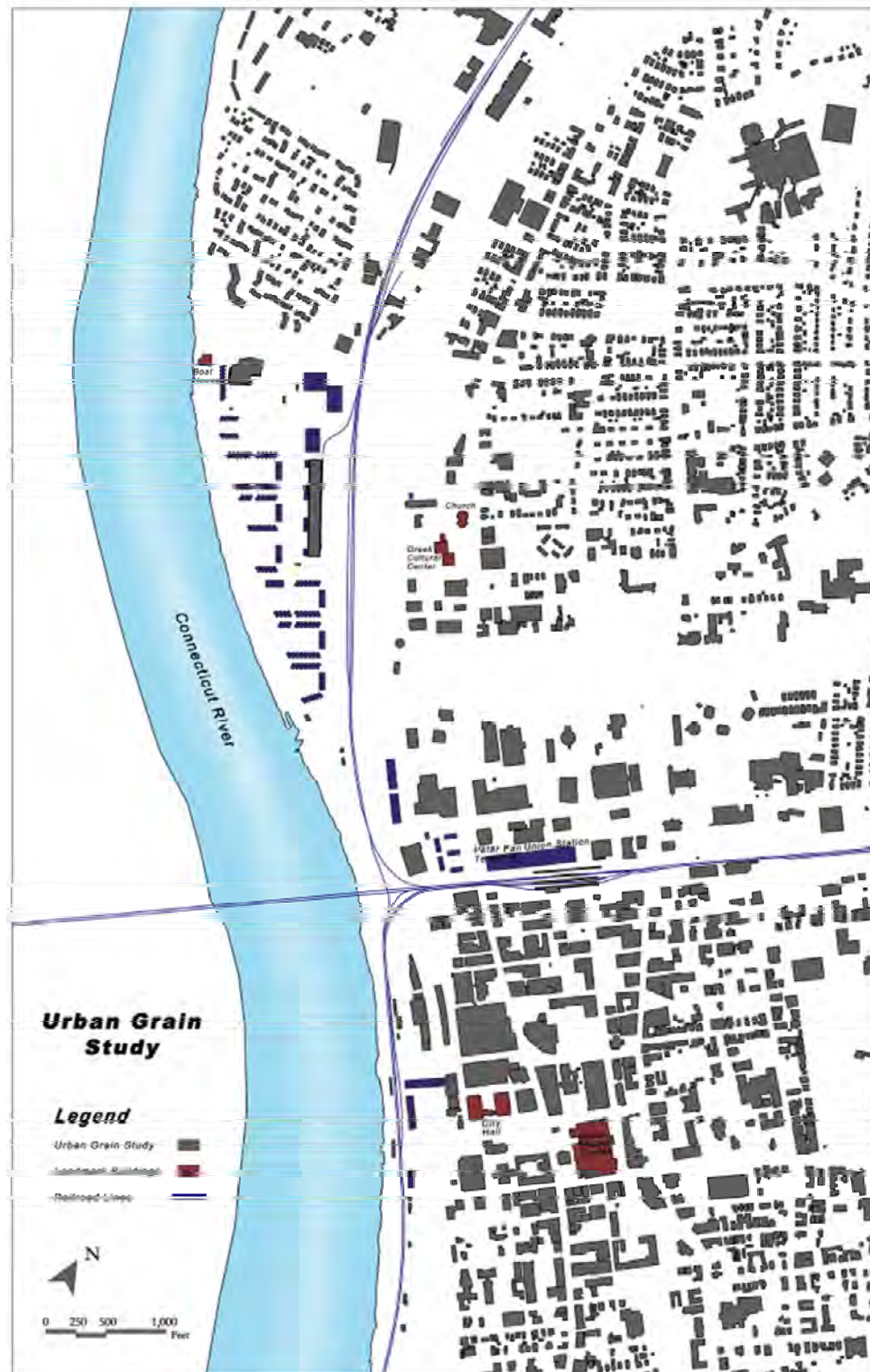

Figure 60: Typical section at Riverfront and Bike path

Just above the electrical substation (shown as a part of the utility category with dark gray color in Figure 57), there is an existing, underutilized connection shown on the right hand side in Figure 18. This connection will be improved and will be reactivated for the private vehicles. It will allow one-way traffic coming inside from West Columbus Avenue and leaving from the connection at Liberty Street which is shown in the left hand side photo in Figure 18. One-way traffic will cut down the car traffic coming inside towards the riverfront, and at the same time will help in reducing cut-through traffic to and from the downtown.
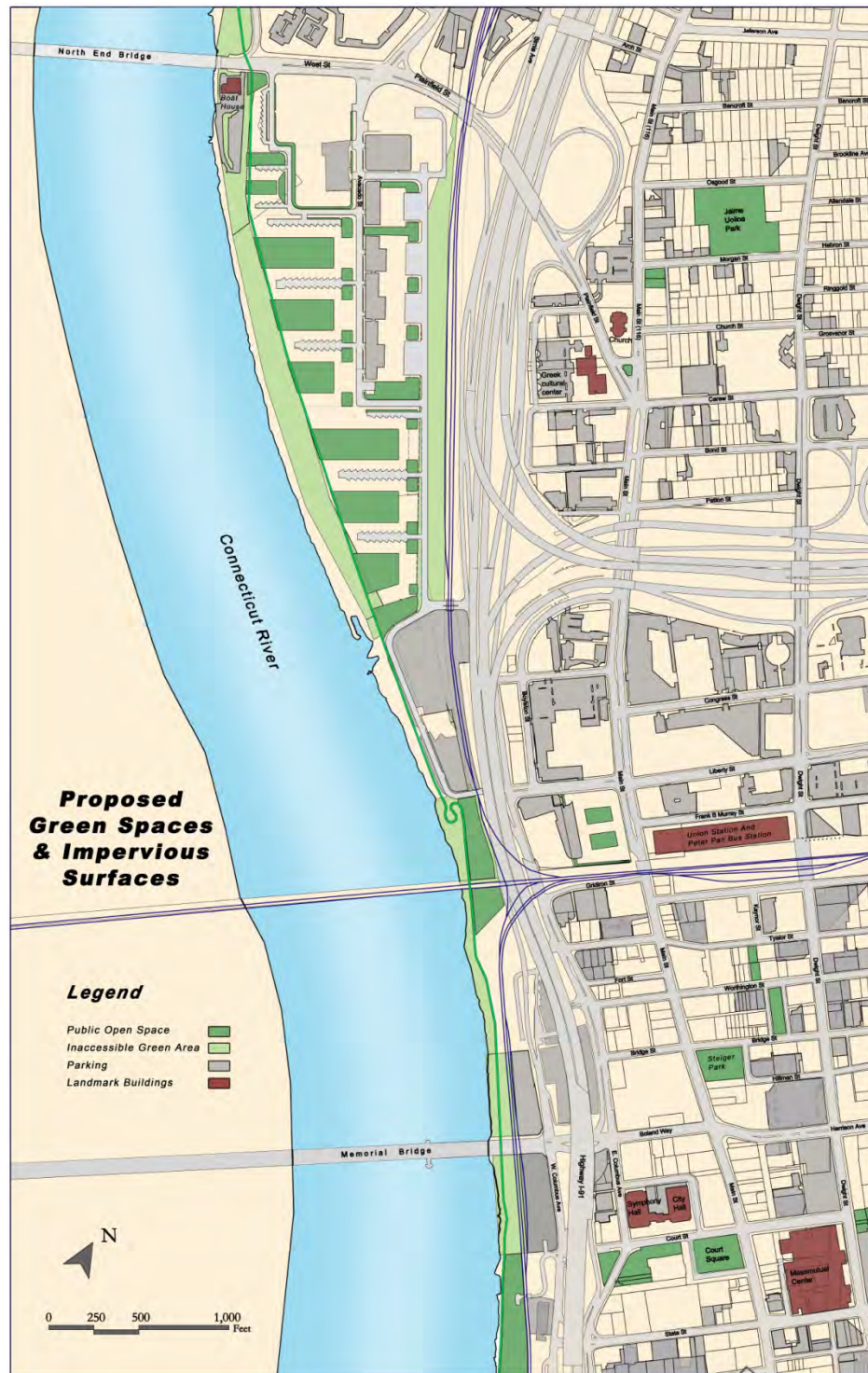
7.7 Urban grain study after proposed development

The map in Figure 61 showcases the proposed urban grain on the riverfront of the Springfield city. Grey color shows all old buildings and dark blue color represents the new development. This map can be compared with the old urban grain study showcased in the Figure 26.

Figure 61: Urban grain map with proposed development
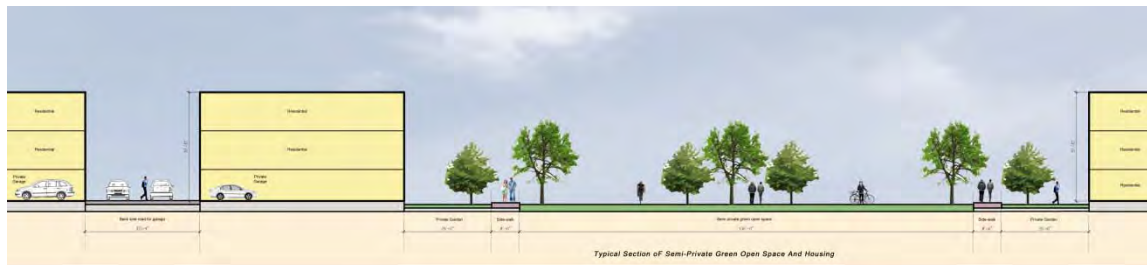
7.8 Proposed increase in green spaces

Figure 62: Proposed green spaces

The above map in Figure 62 showcases the increase in accessible green spaces on the riverfront. This map can be compared with the old green spaces shown in Figure 31. The proposed development will increase the accessible green spaces by 60 to 70%, and will also restrict car traffic from reaching the edge of the waterfront. The remaining inaccessible green spaces need to be cleaned to get better views and additional safety in each pocket of the riverfront.
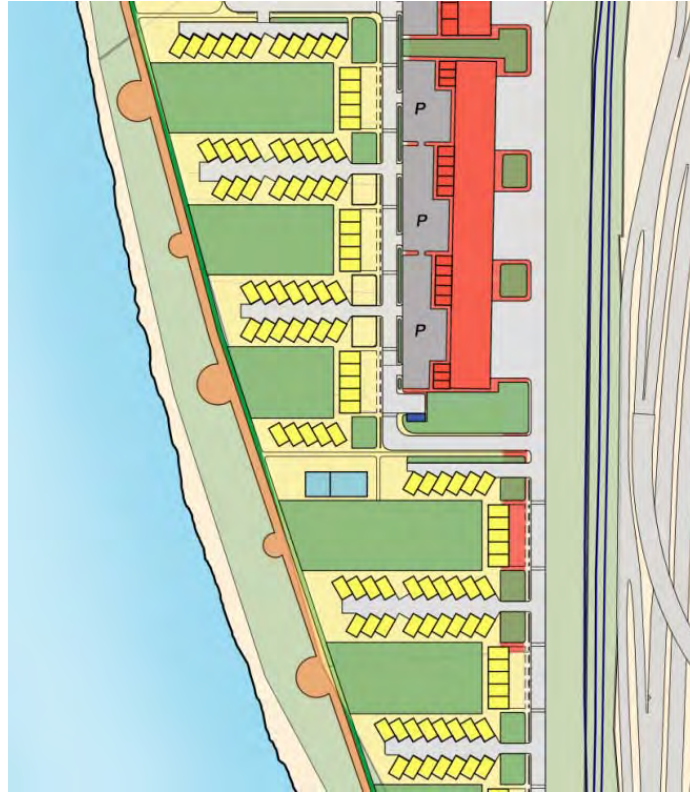
These accessible and maintained green spaces will not only increase the beauty of the area but will also help in providing complete safety on the riverfront. Most of the proposed green space is semi-private public open spaces designed in between residential area. The detailed section of this semi-private green open space has been showcased in Figure 63. All the cars will have access to the garages from the rear of the houses, keeping the front-side a vehicle-free, green open space.

Figure 63: Typical section through proposed semi-private public open spaces

7.9 Proposed residential area (North side)

The proposed residential area in the north side of the study area will be in the form of multiunit town houses having garages at the rear and little private areas which open into a semi-private central open space. The orientation of all units have been designed such that, each unit will get undisturbed views of the water, and will have green open space in their front yard as shown in Figure 64.

Figure 64: Part enlarged plan of residential area

These units are approximately 20'/25' x 45'/50' in dimension, and can be envisioned as sustainable green residential developments as showcased in the pictures in Figure 65.

Figure 65: Future residential area

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7.10 Agencies having interest in new development

Some of the local agencies that might be interested in the proposed development would include governmental bodies, transportation agencies, stakeholders, school district, real estate agents, developers, construction companies, community organizations, non-profit organizations, etc.

Notes

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[2] Wikipedia The free encyclopedia. *Transferable developmental rights (TDR).* January 2012. http://en.wikipedia.org/wiki/Air_rights#Transfer_of_development_rights (accessed March 2012).

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