

1995

# Reconnecting Downtown Springfield to the Connecticut River a Visionary Proposal for an Urban Ecology Park

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**Reconnecting Downtown Springfield To The Connecticut River  
A Visionary Proposal For An Urban Riverfront Ecology Park**

**Joseph S. R. Volpe  
Frank Slegers**

**Center For Economic Development  
Department of Landscape Architecture and Regional Planning  
University of Massachusetts at Amherst**

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**July 1995**

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## Acknowledgments

Professor Joseph Volpe in the Fall of 1994 proposed to graduate student Frank Sleeper a Master project on a visionary design for the riverfront in downtown Springfield. Volpe directed the project and chaired Sleeper's Master Committee. This proposal, *Reconnecting Springfield to the Connecticut River*, is an expanded edition of Sleeper's Master Project, *Back To The River — A Visionary Design To Recapture The Riverfront In Downtown Springfield, MA*. The work is partially supported by Volpe's grant from the Center of Economic Development. Joseph Volpe is the principal, landscape architect, and planner and Frank Sleeper is the researcher and project designer.

Previously Sleeper participated in Professor Volpe's Urban Design Studio in the Spring 1993 exploring the community development of the Mason Square neighborhoods in Springfield. In the Spring of 1991 Volpe, in his Urban Design Studio, engaged another urban design project in Springfield at the Museum Complex including the surrounding residential neighborhood as a vital community edge to the downtown. As supporting research Sleeper examined the

program and design of "Parc de la Villette" in Professor Volpe's seminar "Contemporary Issues in Planning and Design." In the Fall of 1994 Professor Volpe presented his research in the Graduate Faculty Colloquium on the design of 20th Century Urban Parks including Parque Guell in Barcelona, Freeway Park and Gasworks Park in Seattle, and Parc de la Villette in Paris. The highly complex program of the latter new park claims to be a park of the 21st century and raises the question, "What would be a park for the 21st century in Springfield?" Each grew up on rivers, Sleeper on the Lower Rhine area of Germany and Volpe on the Susquehanna in Pennsylvania where processes such as deposition, erosion, growth, and decomposition engaged us. We recall throughout the seasons how we enjoyed tracking the water level of the river with the contour of the Spring flood level defined in the Summertime by the deposition of objects and materials. The rising and falling of the river level is a metaphor for the ebb and flow of life.

Particular background experience included the role of landform in landscape design, notably Mount Cook Village, New Zealand where

Volpe's award winning design created a system of public pathways, housing, and gardens defined by earthforms. On the Farmington River in Windsor, Connecticut, another Volpe award winning design is Northwest Park, a public open space that connects the town of Windsor to its river. The design proposal for Springfield's reunion with the Connecticut River is grounded by the extensive research and practical experience of the planners and designers.

The work of environmental art is an important part of some successful public work and of particular note is the spatial images of Robert Irwin. He explores and celebrates the squares of the urban grid as in the real places like "Nine Spaces-Nine Trees," in Seattle or sometimes only a gesture with wire cables running from building's edge to building's edge. The vocabulary of Irwin's squares and places is adapted to reveal urban processes of Springfield.

Sleeper produced a video in Fall of 1994 on the Connecticut River in the Greenway Studio of Professor Julius Fabos and explored the meaning of ecological processes in the manmade



## Introduction

### A New Riverfront Park for Springfield as a Economic Magnet for the 21st Century

American cities are seeking ways to reconnect urban dwellers with their waterway environments. Hartford, Connecticut, is building a connection between its downtown to the Connecticut River. Interstate 91 and the Amtrak rail line have been lowered into the ground and a great riverfront plaza under construction connects the riverfront with the city center. Manhattan has completed Battery Park on the riverfront of the Hudson; San Francisco has torn down the freeway that blocked its union with the waters of the Bay; and Boston advances the walkway that links the diverse uses of the downtown with the Massachusetts Bay. Acknowledging these physical changes as the base for urban economic improvement we propose that Springfield be next to connect the city to the Connecticut River.

In the center of Massachusetts sitting on the Connecticut River the city of Springfield is in search of a more viable and prosperous future. The riverfront of the Connecticut River, a unique resource to the city is underutilized, disconnected, and wasted. Springfield with

155,000 inhabitants has turned its back on the river as Interstate 91 and railroad corridor cuts off its citizens from their historic waterway (Figure 1). This proposal represents those people in search of a visionary plan that could bring new life to Springfield. To achieve this is to engage the ecological role of the riverfront and the city. To understand ecology is to understand the fullness of the concept — the physical forces, the biotic community of land and water, and the human dynamics of the cultural milieu of Springfield. Why would some new economic entity come to Springfield? Like the demise of Digital, Inc., the trend is for businesses to exit the declining city. There is no economic might in the offing to rescue Springfield. Springfield must do something to attract people — investors — to the city. A superior design of the riverfront would become a national and statewide environmental attraction, a magnet for the city. Only a truly remarkable design can achieve results — a new urban ecology park representing the 21st century would benefit the city's future economy.

### Methodology — Analytic Research and Design Synthesis

The methods employed in the study and design proposal for the riverfront in Springfield include primary research through on-site investigation, interviews, and secondary research methods of library and institutional documents. Site specific research of the river, riverfront, and adjoining streets includes exploring the areas on foot and in automobile, observing, photographing, drawing and painting the site. Interviews with citizens, planners, politicians, and designers reveal problems and opportunities of the site. Searches of planning institutions and engineering offices uncovered reports relating to the project. Many waterfronts including Hartford, New York, Seattle, Pittsburgh, London, Paris, and Boston were visited to study similar urban projects. Library research broadened information, knowledge, and understanding about existing riverfront developments. Human goals were formulated based upon everyday activities of people that would connect urban dwellers from the city to the riverbank. A design proposal was developed beginning with conceptual diagrams, followed by preliminary and final designs with plans, cross sections and elevations. Stages of the design were reviewed and discussed by interested parties at the university and in Springfield.

### **Where Buildings Belong and Where Open Space Is Developed As a Park**

New buildings are not placed in the central area of the proposed Riverfront Park (Figure 10). Structural infill and adaptive reuse of abandoned buildings like Union Station in Springfield are proposed to enhance the heart of the downtown and the urban edges to increase commercial activities. The infill of new buildings in the numerous dead areas (like the Steiger's lot) between existing buildings — not in the park — is a central policy critical to the economic success of Springfield's future. Strength is to be found in developing a policy that clearly defines urban open space along the Connecticut River, and dense, mixed-use urban development in the central business district (CBD). This policy ensures that the open space along the river is distemic public space — open to all citizens and not captured by any single group. This policy discourages the current pattern of undesirable under-world figures taking over the area as is currently the problem with the present Riverfront Park with its poor access and isolated location.

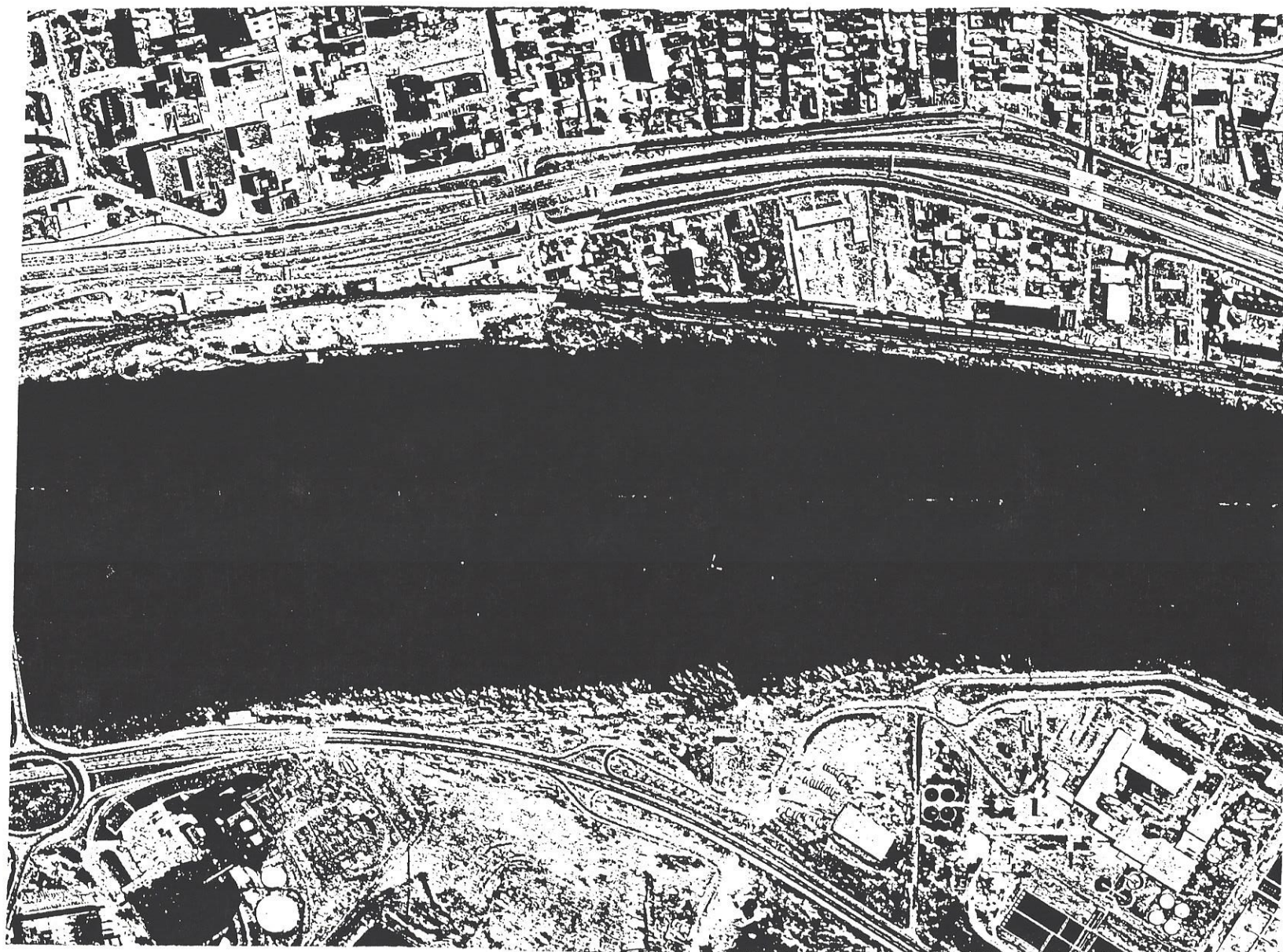
### **Location of Marinas and An Esplanade Corridor South of the Basketball Hall of Fame**

Proposed zoning regulations and park policy would prohibit new buildings on the western side of Columbus Avenue with the exception of a marina and its attending sport shops, restaurant, and small food vendors. Three alternative locations are proposed for the marina or marinas: one, on the northern most edge of the ConRail Bridge, second, due South of the ConRail Bridge, and three, South of the Basketball Hall of Fame. Expansion of the Basketball Hall of Fame is integral with the Riverfront Park proposal and acts as a physical transition between the CBD portion of the park and the mixed land uses South of the Basketball Hall of Fame where a proposed river esplanade connects the handsome existing buildings close to the riverbank. In the rich urban texture of this area zoning policy would ensure the mixed landuse of residential, recreational, retail, and office uses and civilized by the design of an open esplanade corridor between the buildings and the river

bank. North and South of the CBD the Riverfront Park is proposed to be part of the Connecticut River Regional Open Space and Park System.

While Riverfront Park addresses the North-South seam of city and river, policy issues need to study and reconsider the City Beautiful design ideas of 1905, 1906, and 1923 which anticipate an open space axis East and West. While efforts have not been successful in making this connection a reality, the redesign of Court Square is a node in that axis and a great public achievement. If the Civic Center is redesigned or expanded it does present an opportunity to make a genuine link with the rich resources of museums and library of Quadrangle Park if it truly considers the urban design potential and not merely the building as an object.







## **Understanding The River, The Region, The City Of Springfield**

### **The Connecticut River And The Riverbank**

The Connecticut River is the largest river system in New England. It extends from near the northern border of New Hampshire and Vermont southward, continues through central Massachusetts and central Connecticut, and finally flows into Long Island Sound at Saybrook, Connecticut. It drains an area of about 11,250 square miles including portions of Quebec, New Hampshire, Vermont, Massachusetts, and Connecticut. At Memorial Bridge in Springfield, the river has drained 9,102 square miles of watershed. The basin is approximately 280 miles long and varies in width to a maximum of 0.6 miles in Massachusetts (United States Department of Agriculture 1970).

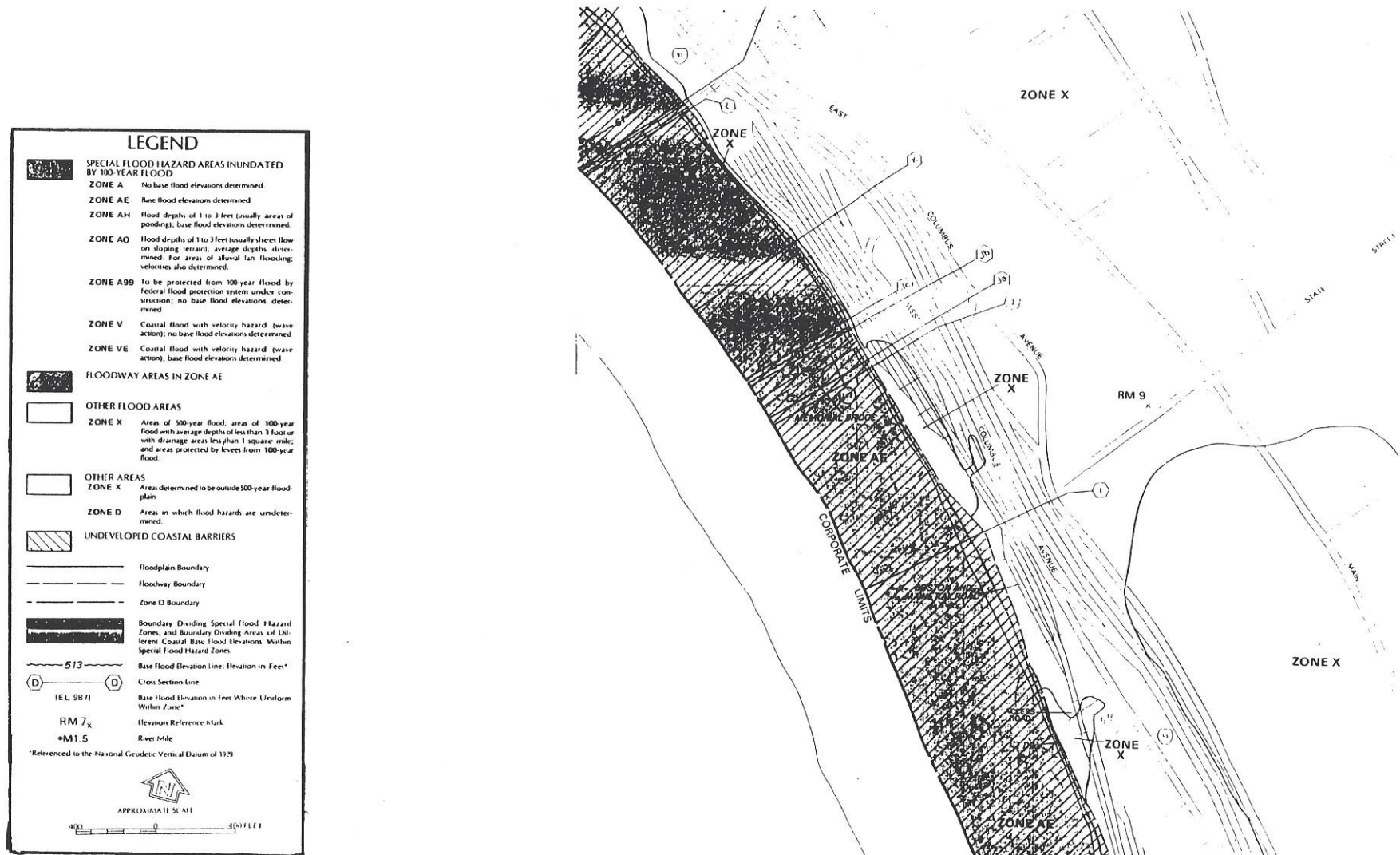
### **Attributes Of The Hydrologic Cycle — A Metaphor For The Design Of Riverfront Park — Water Levels, Erosion And Deposition**

Much of the water which ultimately reaches the streams goes first into the shallow underground reservoir of the water table and is released slowly into the stream flow (Figure 2). There is a smoothing out of variations in flow which is much influenced by vegetative cover. Riparian forests transpire enormous amounts of water and reduce the total volume which finds its way into the rivers and streams. In this climate forest vegetation is the biotic cover of the valley of a permanent stream. The basic lesson that nature provides in the water cycle is one of storage. Natural floodplains, wetlands, and lakes are storage reservoirs for rivers that reduce the magnitude of peak flows downstream by spreading and equalizing flows over a long period of time. Vegetated soils and woodlands provide storage by first trapping and then percolating water through the ground with minimum run-off and maximum benefit to groundwater recharge. Thus, storm drainage is designed to correspond as closely as possible to natural patterns, allowing water to be first retained and then absorbed into the soil at a rate

similar to natural conditions. This attribute of the hydrologic cycle is both a guide and a physical metaphor for the design of the Riverfront Park.

When a river flows round a curve, the channel is deeper where the current hugs the concave bank (Figure 3). The water in contact with the bank is slowed by friction, flowing downwards and inward, carrying eroded materials with it. This material, at least in part, is deposited on the bank further downstream when the main stream once more flows across the channel. When a channel widens, a complex of eddies and bars is formed with debris collecting in the eddies. Such features are unimportant in terms of river morphology, but they are biologically significant. The organic debris which collects in such places offers a special habitat for certain fauna (The Ecology Of Running Water, p. 20-22; Hynes; 1970). At Riverfront Park an artificial eddy is part of the floodbank environmental sculpture. The art work attract people and the eddy attracts fish engaging the dynamics of the Connecticut River.

Figure 4 — Flood Insurance Rate Map Of Downtown Springfield





### **Flood Protection Structures And Fluctuation Of Water Levels Of The Connecticut River In Downtown Springfield**

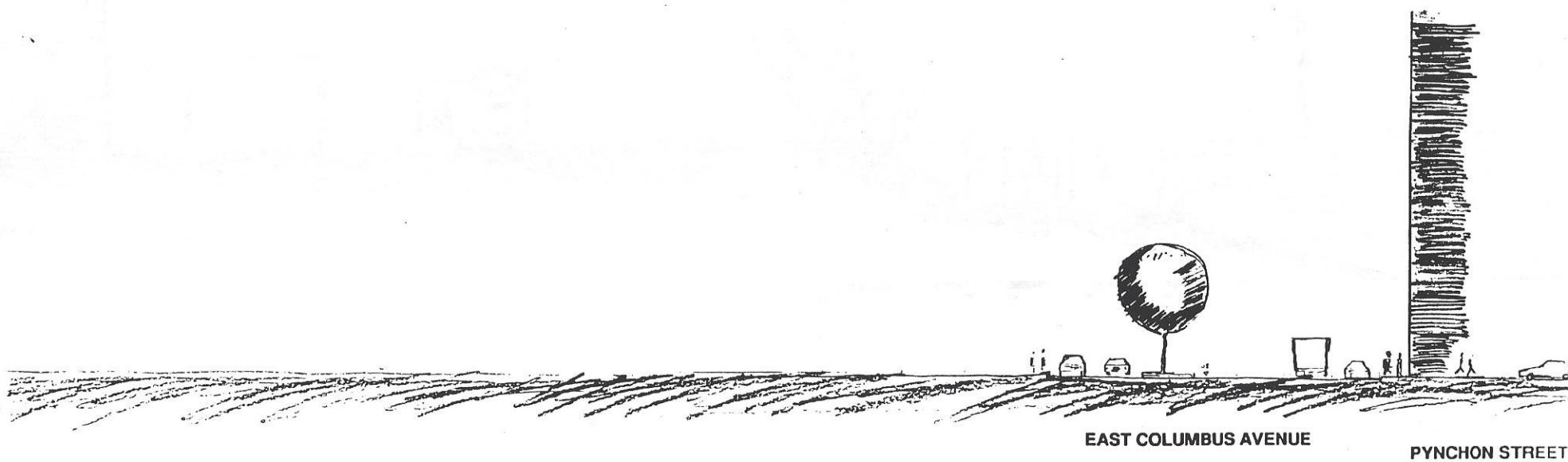
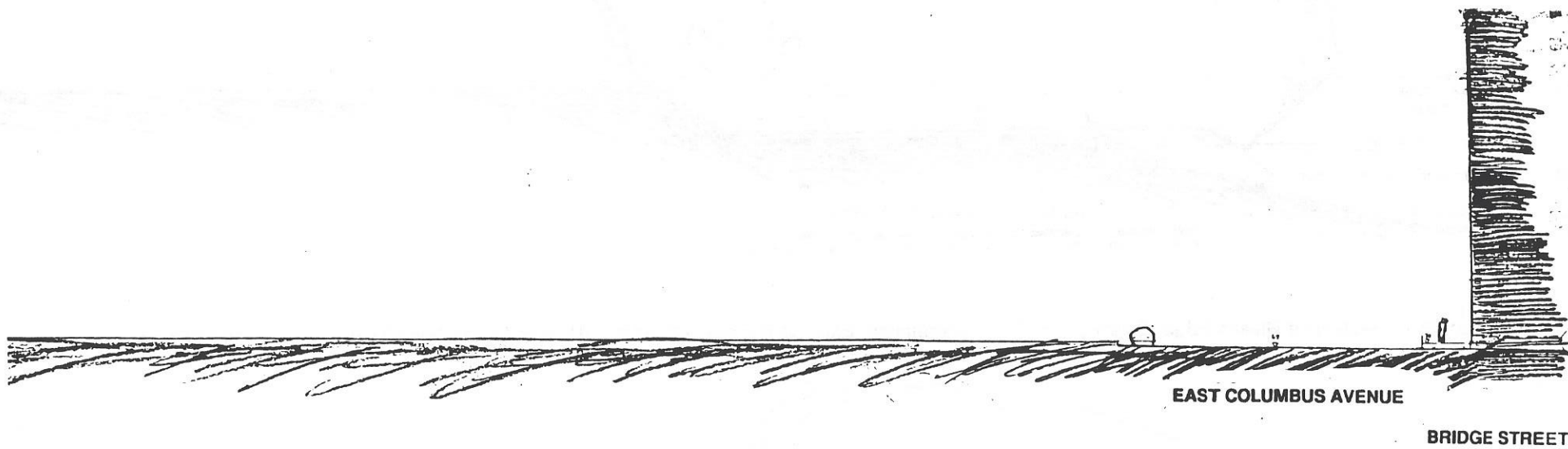
In the past Springfield has dealt with severe floodings. The Spring flood in 1938 reached 60.8 feet above sea level. The ground level of the Connecticut River is about 28 feet above sea level. Many areas were devastated. The U.S. Army Corps of Engineers built a dike as a flood protection structure along the riverfront. The elevation is approximately 66 feet above sea level and represents a continuous ridge line along the riverbank. The Flood Insurance Rate Map (Figure 4) indicates 100-year flood hazard areas and 500-year flood hazard areas. The 100-year flood elevation is indicated as 61 feet above sea level. The 500-year flood area reaches an maximum elevation of approximately 64 feet. The area affected by Spring flooding is reduced by the dike to a narrow strip 40 feet of horizontal distance north of Memorial Bridge and to a wider area of 120 feet at the watersteps in Riverfront Park (Figures 4-8). The dike also creates a steep embankment up to 1:1 gradient. Downtown Springfield's riverfront does not have a natural floodplain but a manmade floodbank.

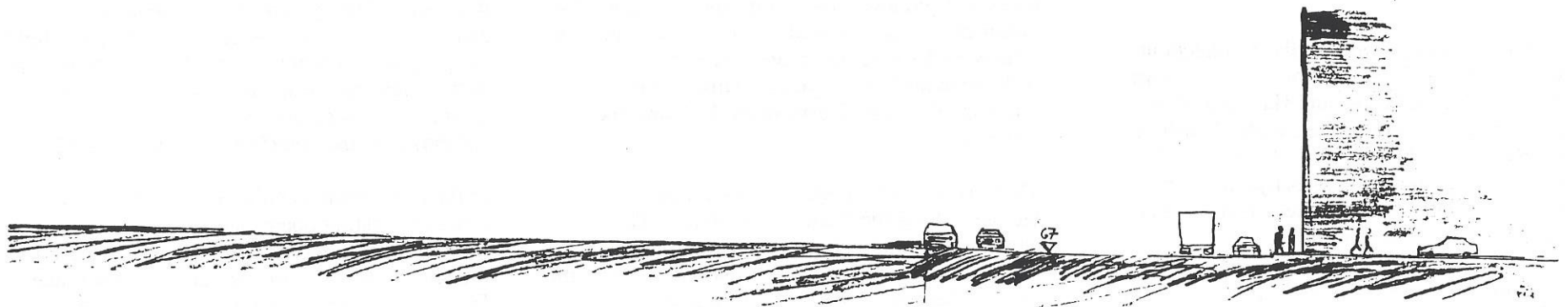
The water levels of the Connecticut River alter throughout the year (Figures 5-8). Generally, there is Spring flooding caused by snow melt, with the lowest water levels in Autumn due to excessive transpiration of plants in the summer heat. The water level change between Spring and Fall is about 16 feet. The mean water level is 46 feet above sea level. In March and April the water level raises up to 54 feet above sea level and in August to October can sink down to 38 feet above sea level.

### **The Riverbank Vegetation And The Soils**

Due to fluctuation of the water table, plants must have the ability to survive flooding, sometimes for several weeks at a time during the Spring. They must also be able to endure relatively dry conditions during Summer and Fall when the water level recedes. On the floodbank, trees of the flood plain community include: Red Maple (*Acer rubrum*), Eastern Cottonwood (*Populus deltoides*), Black Willow (*Salix nigra*), White Ash (*Fraxinus americana*), Silver Maple (*Acer saccharinum*), Slippery Elm (*Ulmus rubra*),

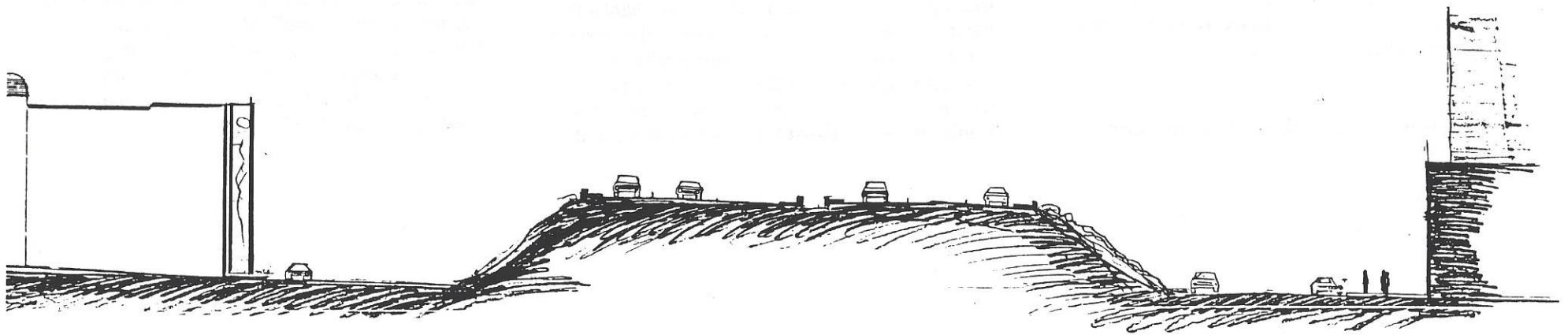
Bitternut Hickory (*Carya cordiformis*), and Butternut (*Juglans cinerea*). Vines commonly found on the river banks and flood plains are: Wild Wine (*Parthenocissus quinquefolia*), Poison Ivy (*Rhus radicans*), Clematis (*Clematis virginiana*), and various species of grape (*Vitis* species), which can be seen growing high into the trees or forming a continuous ground cover. When flood waters leave the deep river channel and spill out across the flat flood plains during flooding, there is a sudden drop in their velocity. The water drops its load of sediment, the largest amount and coarsest particles, like gravel and pebbles, pile up along the stream banks, while smaller particles, like sand and silt, come to rest farther away. In the small portion from the Memorial Bridge to the lower part of Riverfront Park the soils are silty because the area of flooding is reduced. On the upper level of the floodbank, east from the ridge line of the flood-protection structures, soils are modified from their original state. This area is occupied by the Urban Land-Hinckley-Windsor soil association, a rapidly permeable soil.





EAST COLUMBUS AVENUE

COURT STREET



L HALL OF FAME

WEST COLUMBUS AVE

INTERSTATE 91

EAST COLUMBUS AVENUE

UNION STREET



Figure 9 — Existing Street Network And Building Masses In Springfield, Massachusetts

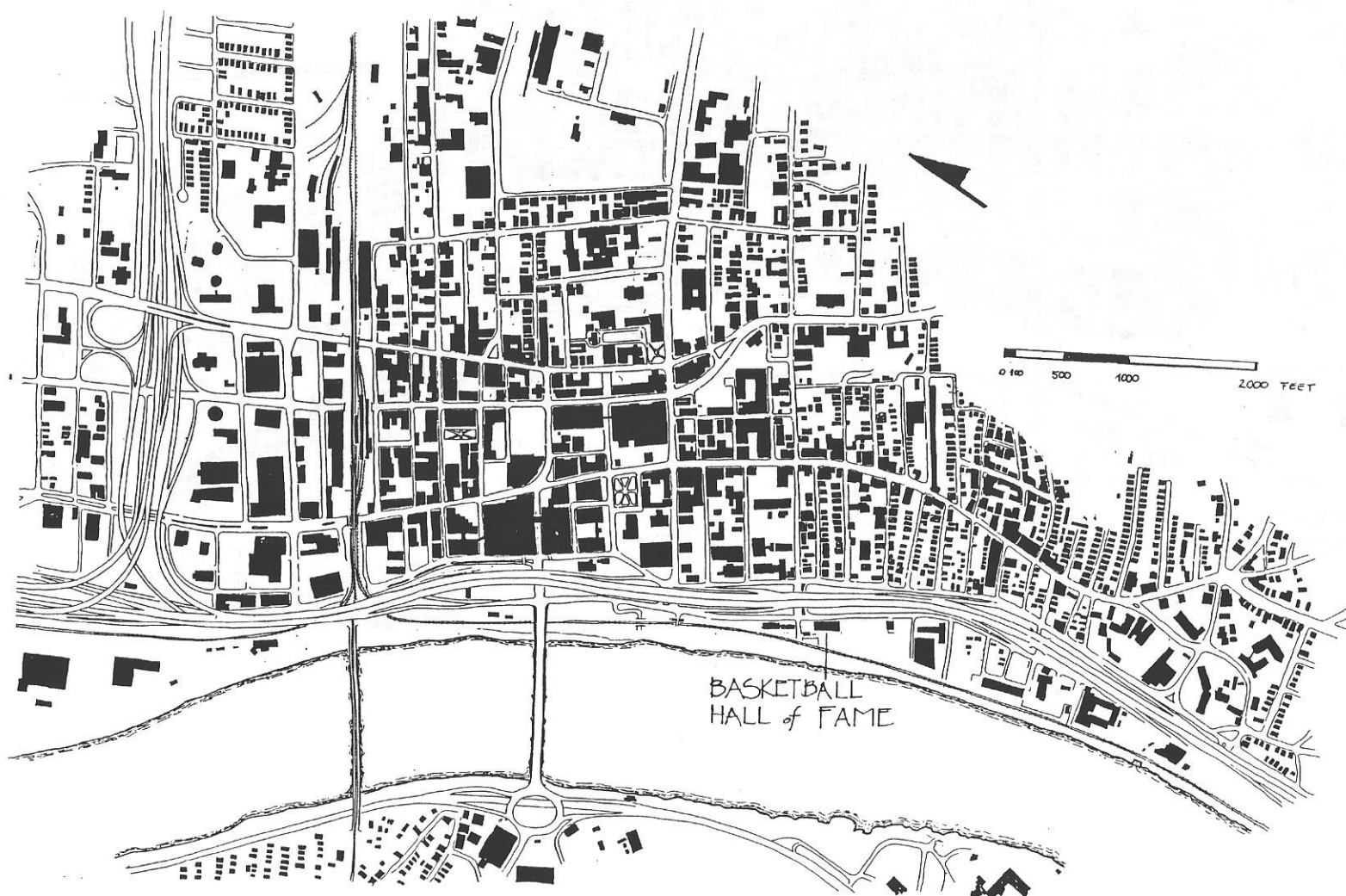
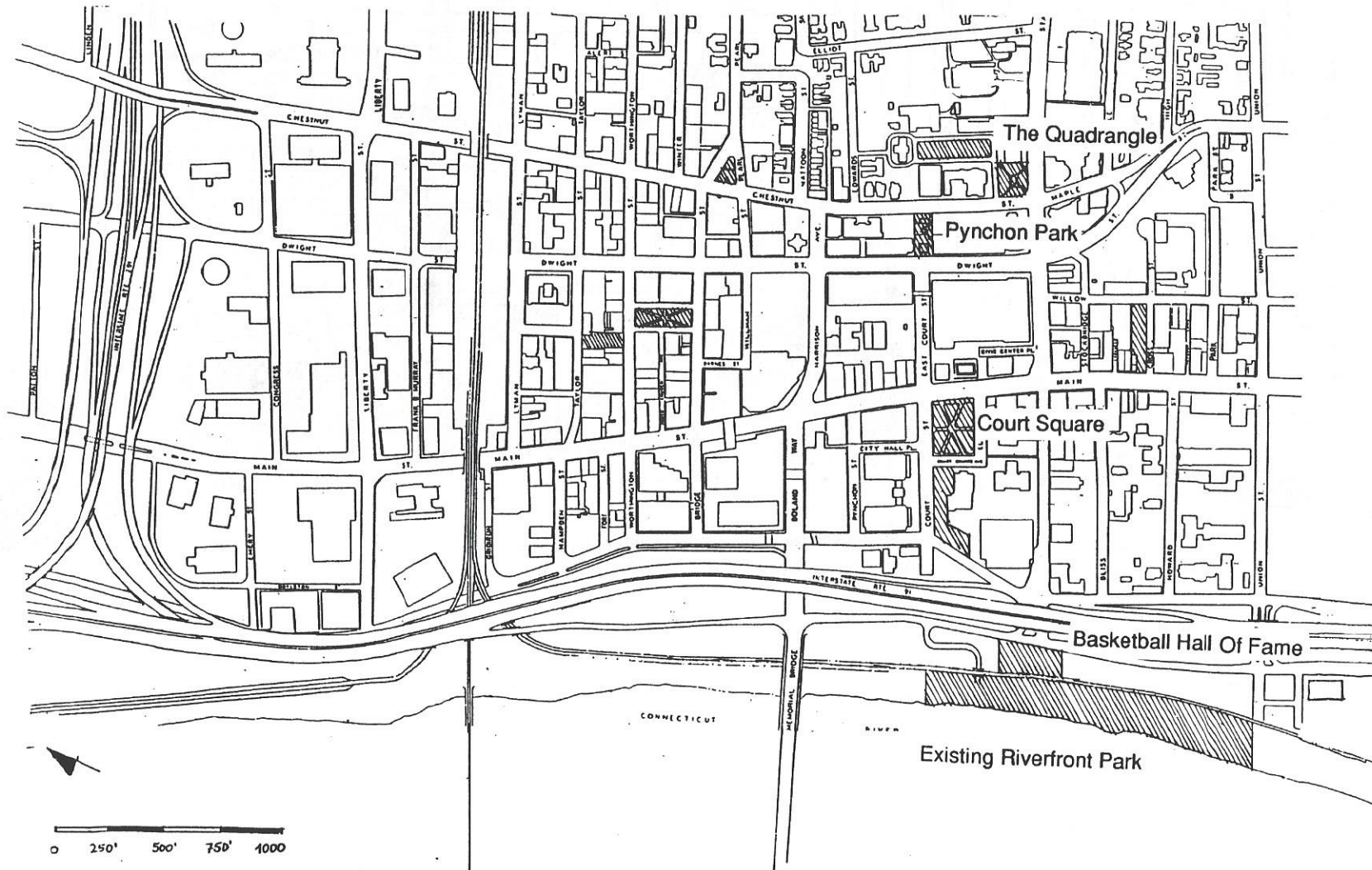


Figure 11 — Existing Open Space System In Downtown Springfield





## Case Studies Of Urban Riverfronts

**Riverfront Park, Hartford, Connecticut**  
Like Springfield, Hartford is cut off from the Connecticut River. Unlike Springfield however, Hartford has a plan that is being implemented to reconnect the downtown to the river. A section of I-91 and the railroad has been depressed into the ground and a terrace that spans the railroad, highway, and the flood walls is under construction. This terrace is a part of the urban design effort that expands the existing elevated Hartford Constitution Plaza, which connects various office buildings in Downtown Hartford (Figure 13). One foreseeable limitation, like Constitution Plaza itself, is the weak connection to the downtown streets due to the elevated walkways. Upon completion in 1996 it deserves careful study of its use and impact on the city. This project is part of a larger, regional concept intended to engage the whole riverfront for recreational use in the greater Hartford area. The Riverwalk along the West and East side of the Connecticut River becomes a unifying link to the downtown and the neighborhoods. Hartford's effort to regain the riverfront is linked to attracting more people to the city center bringing increased economic investment and development.

Another lesson learned from Hartford concerns the power of the Connecticut River during Spring floods. Hartford underestimated the force of the seasonal surge of the river. Constructed elements like paving, fences, and light structures were destroyed because they were built within the existing floodbanks. Manipulation of existing flood protection structures and floodbank is generally undesirable in the Springfield design proposal unless one undertakes the Herculean effort, employed in Cincinnati.

### **Cincinnati Riverfront, Cincinnati, Ohio**

In Cincinnati, a bold serpentine concrete stair is both a flood embankment structure to protect the city from severe floodings of the Ohio River, and a great public gathering place to engage the river (Figures 14-15). This powerful structural solution is an imaginative metaphor for the flowing Ohio River. Although rejecting the massive concrete solution of the floodbank, the proposal for the Connecticut Riverwalk and Bikepath in Riverfront Park recalls the curving image in Cincinnati.

### **Mill Race Park, Columbus, Indiana**

The Mill Race Park in Columbus, Indiana represents a "soft" approach to deal with the design of a riverfront. Most impressive is the simplicity of the design media. Landform and the existing

plants of the floodplain (Figures 16-17) determine the character of the park. Structures are restricted to areas with active recreation like basketball fields or major gathering spaces. The power of earthforms as a design media is revealed during the inundation of the floodplain. The amphitheater, the centerpiece of Mill Race Park, is an impressive earthform sculpture surrounded by water during Spring flooding. In the proposal for Springfield's Riverfront Park the seasonal water levels are engaged in an environmental sculpture sited on the floodbank of the Connecticut.

### **Battery Park City, Manhattan, New York**

Battery Park City is a major new open space on the Hudson River in lower Manhattan. Next to the magnificent esplanade overlooking the tidal river high rise residential community defines the urban edge with commercial activities limited to very few restaurants and shops. The waterfront design softens the urban grid of downtown Manhattan to the edge of the Hudson River. The 1.2 mile long North-South esplanade celebrates the interaction of city grid and water edge (Figures 18-19). The great riverwalk is defined by gateways, corridors, gathering plazas. It is enriched by the contribution of many environmental artists whose works enliven the urban culture of the city and the expanse of the river landscape.



Figure 16 - 17 — Mill Race Park, Ohio

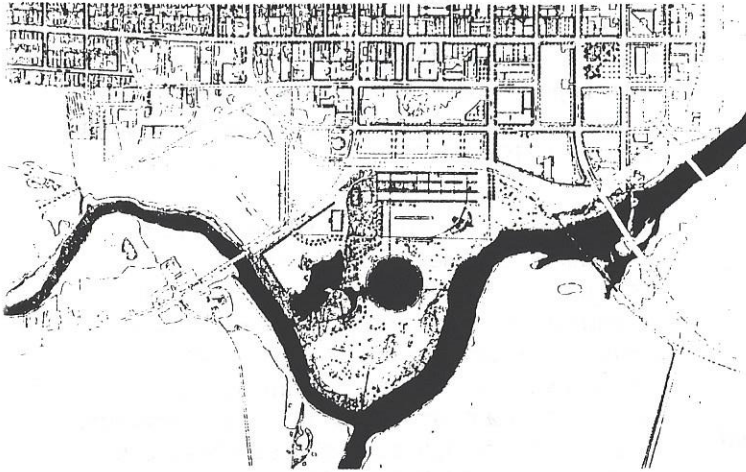


Figure 18 — Battery Park City Master Plan, Manhattan, N.Y., N.Y.

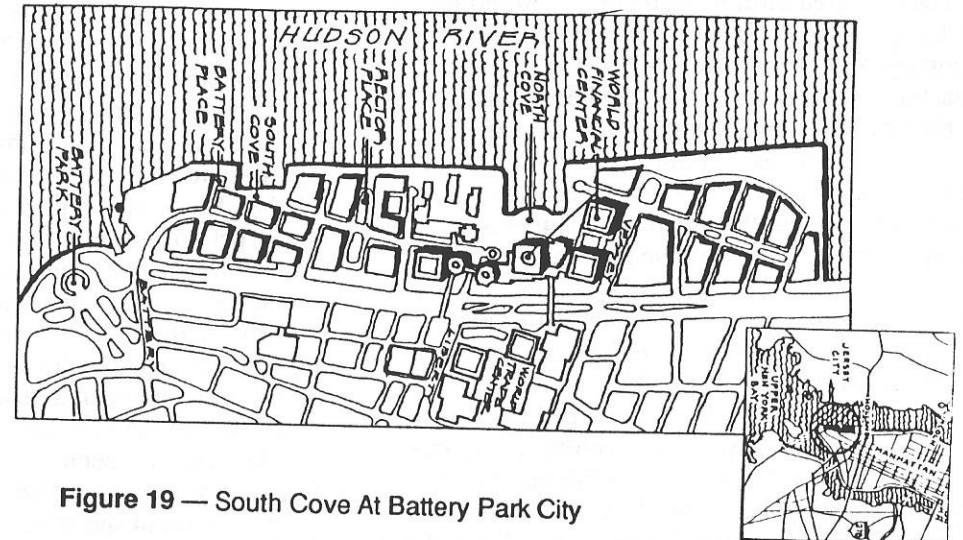
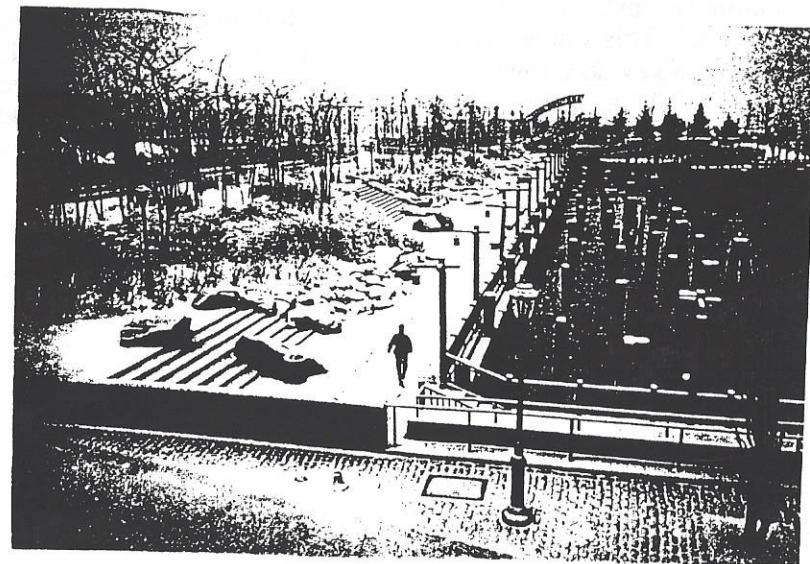
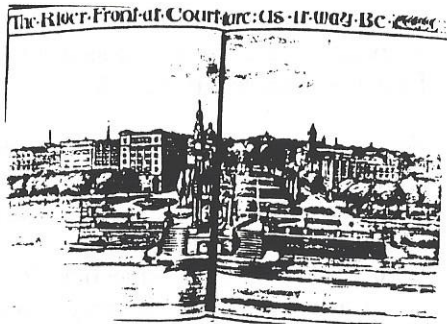


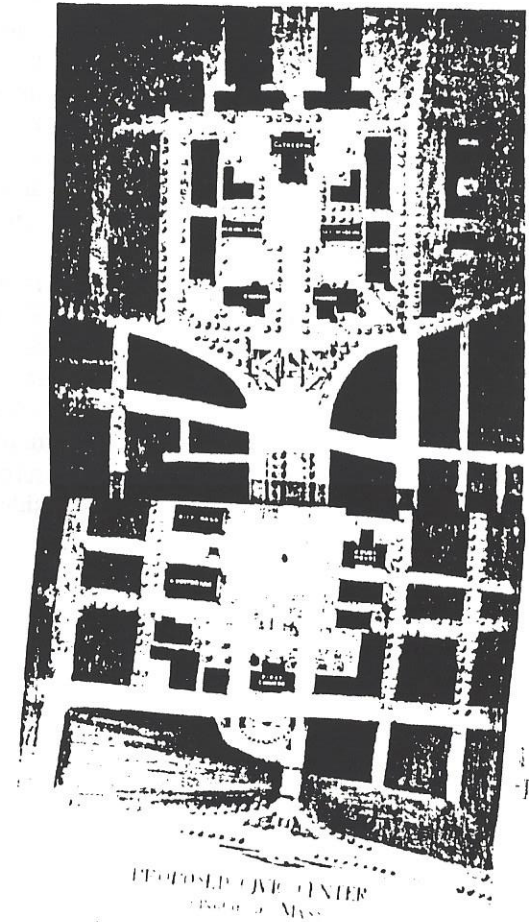
Figure 19 — South Cove At Battery Park City



**Figure 20** — Gardner And Gardner Proposal For Riverfront Park And Court Square 1905



**Figure 22** — Olmsted Jr. Plan For Linking Quadrangle, Court Square And Riverfront 1923



**Figure 21** — Peabody And Stearns Proposal For Expanded Court Square And New City Hall 1906

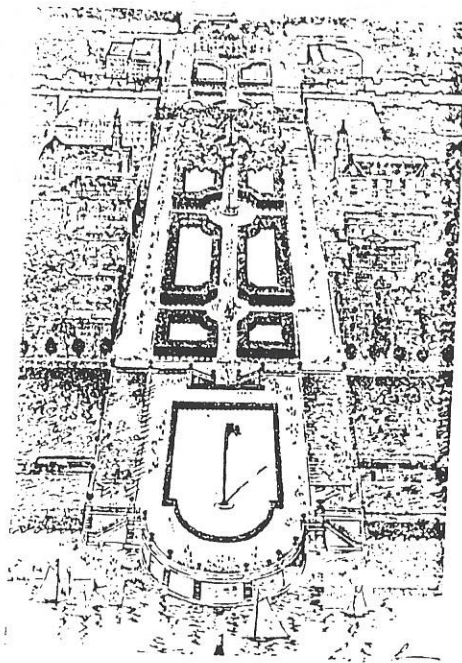
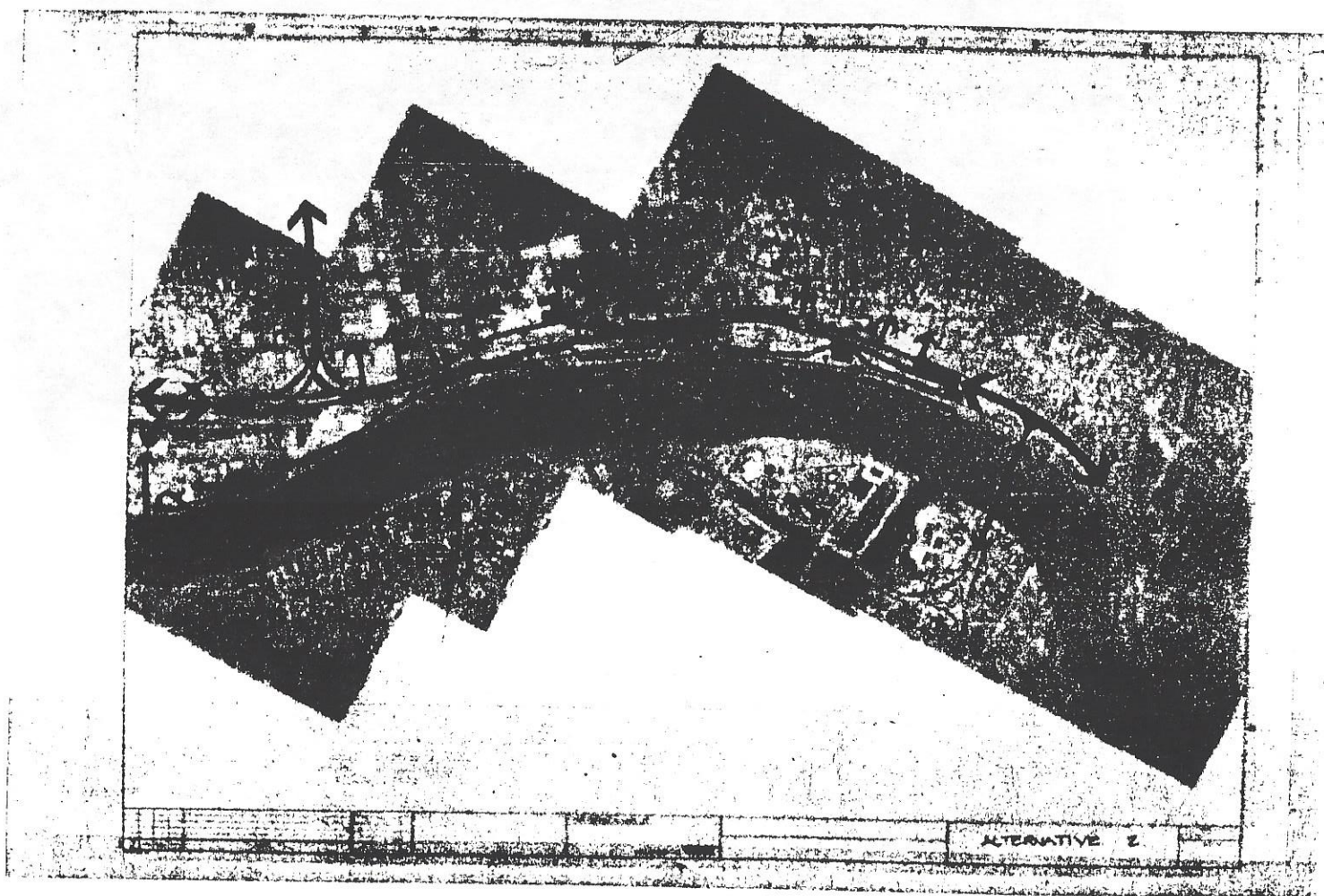




Figure 23 — Alternative 2 Of The Camp Dresser & Mc Kee Proposal Tunnels I-91 Between The North End Bridge And The "Longmeadow Curve"



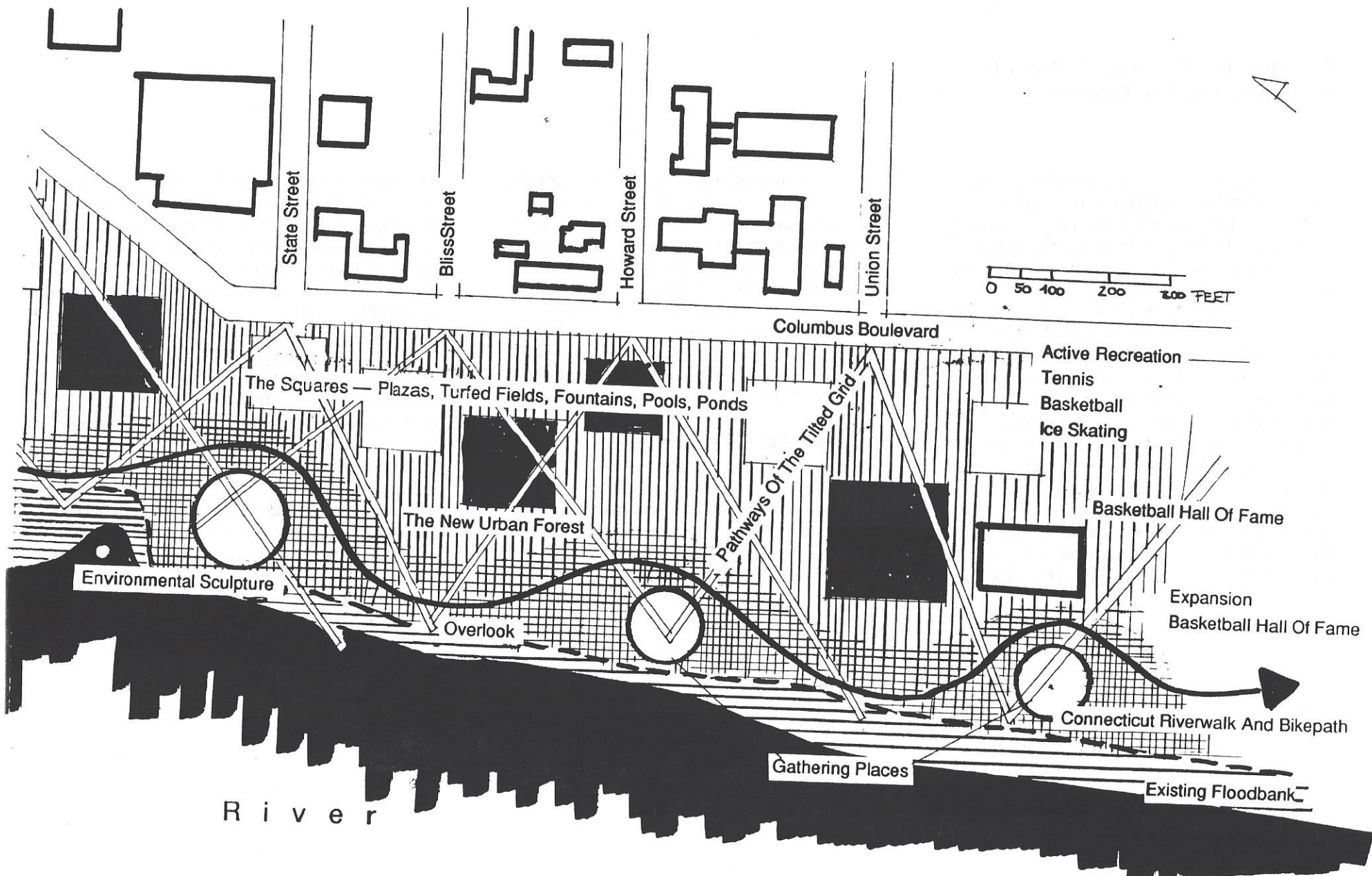
## Design Concept For Riverfront Park —

### Connect The Grid System Of The City With The Linear System Of The Connecticut River

The Camp Dresser & McKee Proposal provides a framework for the creation of the urban park on the riverfront in Springfield by diverting I-91 and the railroad, thus eliminating those impediments that cut Springfield off from its river. The urban Riverfront Park would extend from North End Bridge to South End Bridge. The design of the Riverfront Park in this study focuses on the CBD area between the ConRail bridge to the North and the Basketball Hall of Fame to the South (Figure 25). These two landmarks define a 4000 feet long site and are gateways to the larger Riverfront Park. To the East, the site is defined by the western edge of the CBD at East Columbus Avenue. To the West, the site is defined by the Connecticut River and the ridge line of the flood protection structures and its existing cover of mature trees as floodbank vegetation. Within this limited area of study, the widest width of the site is 750 feet at Memorial Bridge, and narrowest at State Street with 550 feet. The challenge of the design concept is to connect the grid system of

the city streets with the linear system of the river. The human scale of the city grid is maintained, but is also transformed and extended to the riverfront. The grid is turned 45 degrees, "tilted" so that people from different points of the street network can lead to and encounter common destination points along the Connecticut River. These points are gathering places and overlooks at the river's edge. This network of paths crosses a variety of squares which are rhythmically aligned along the urban edge and are activity areas for the urban dwellers which animate the vibrant city. The major north-south corridor is the Connecticut Riverwalk and Bikepath represented by the linear path system along the river, flowing like a stream, connecting with the pathways of the "tilted grid," and coming to rest at the major gathering places and overlooks along the Connecticut. This is the major regional connection for pedestrians and bicyclists along the Connecticut River, linking Springfield's neighborhoods with regions north and south.





## **Design Proposal Back To The River — A Visionary Design To Recapture The Riverfront In Downtown Springfield, MA**

### **Columbus Boulevard — The Connecting Edge Between The Central Business District And The Riverfront Park**

The Boulevard of four rows of parallel Ash trees defines a permeable edge between Downtown and river that directs the pedestrian movement along the redesigned Columbus Avenue. The rows of trees give way to The Squares which mark broad gateways, invite people to gather, and direct visitors to the river. Pedestrian peninsulas facilitate pedestrian crossing over Columbus Avenue, which is designed as four lanes of traffic with parking strips on both sides (Figures 26, 27, 29).

### **Making An Event Out Of Urban Run-Off — The Squares**

In The Squares water is physically and biologically cleansed by sedimentation and mineralization before it flows to the river.

Their edges and floors are defined by wetland plants or structures of benches, low walks, curbs, and trellises. Pools, fountains, and waterfalls contribute to the biotic cleansing of water. Furthermore they become spectacular events where people witness a garden and park experience of biotic events that reveal the water purification process. The Squares become plazas for meeting, sitting, gathering near the downtown area and for playing tennis, basketball, and other recreational activities near the residential areas (Figures 26, 27, 29).

### **Extending The Urban Grid To The Riverbank — The Tilted Grid**

The Tilted Grid is a path system in the park that connects the urban grid of the downtown with the river's edge. The path system turns an angle of 45 degrees at Columbus Avenue to define a direct straight path that moves people to a gathering node or overlook on the riverbank. These 15 feet wide masonry pathways are edged with shallow runnels on both sides to reveal the flow of surface runoff from the city to the river.

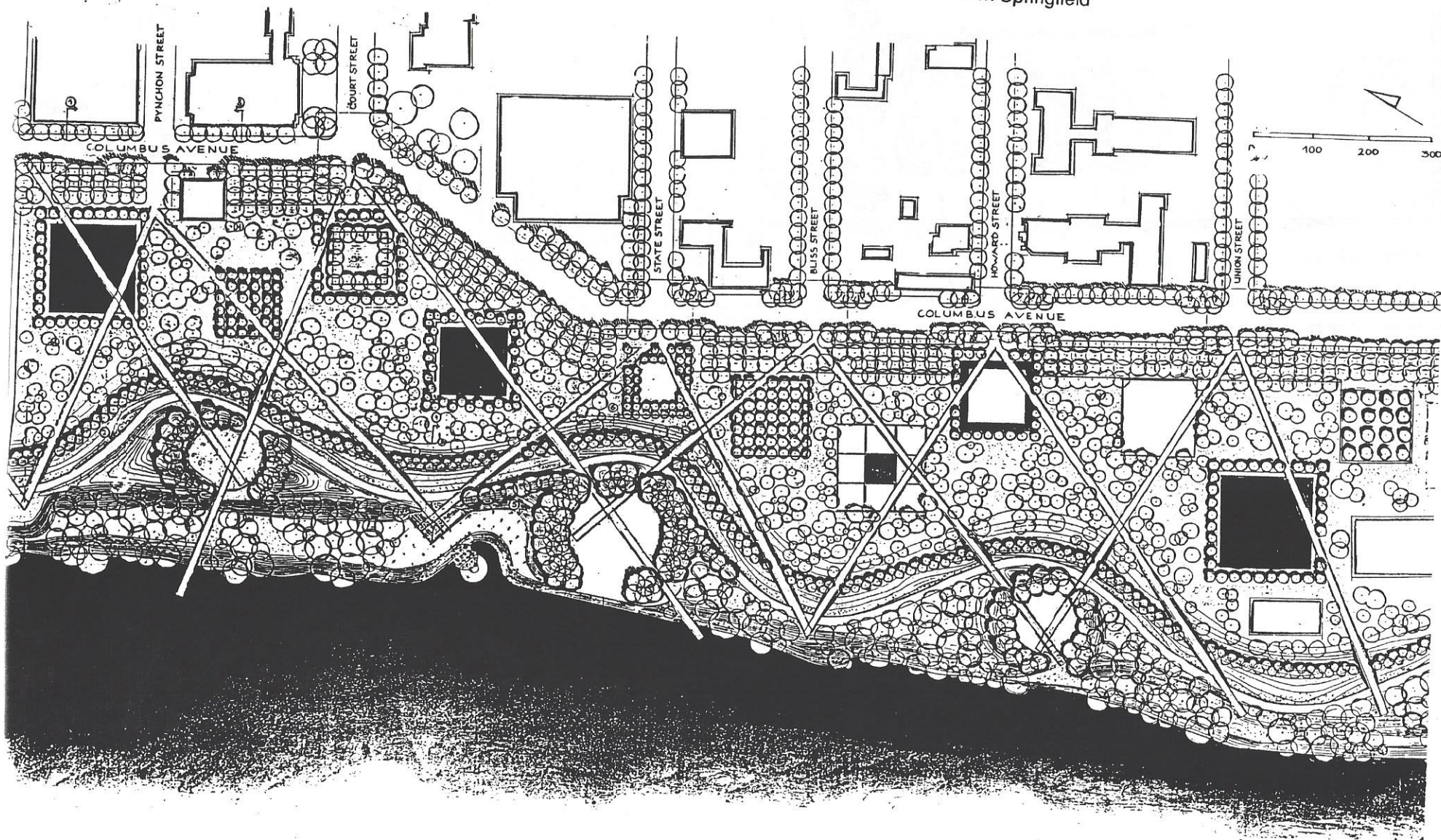
Coming from the city, the pathways cut through the flat Squares, the New Urban Forest and the undulating landform. At this point, an inclined rip-rap wall retains the landform and directs movement to the river. The Columnar Red Maples and the suspension structures become lenses which focus on the sky and on the water (Figures 26-31).

### **The New Urban Forest — The Matrix For The Riverfront Park**

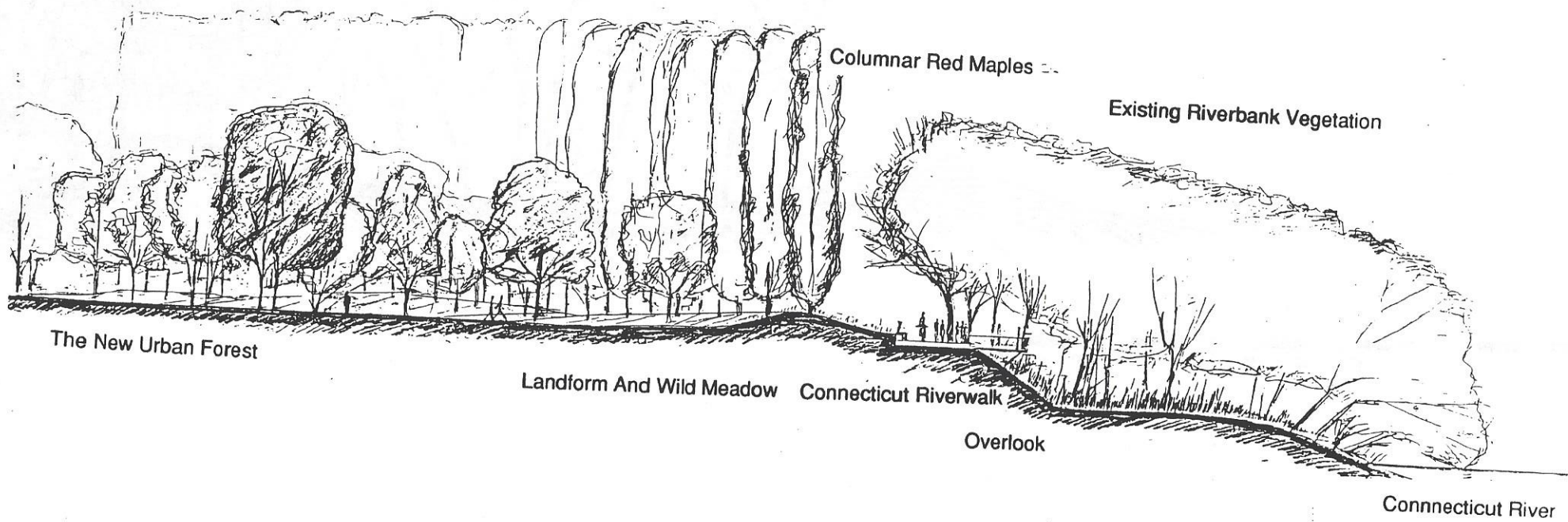
The New Urban Forest is planted with a full range of indigenous hardwood trees including Shad, Birch, Alder, Poplar, Willow, Hickory, Linden, Maple, Oak, and Beech. As a living matrix for the Riverfront Park people engage the canopy of trees each seasons with the transience of Spring flowering, the cool comfort of shade in the Summer, the color spectacle of foliage in the Fall, and the sculptural beauty of the tracery structure of trees in Winter. This is a place where spontaneous activities like seeing, smelling, strolling, reclining, playing, and resting are promoted (Figures 26, 27, 29).



Figure 26 — Design Proposal, Back To The River — A Visionary Design To Recapture The Riverfront In Downtown Springfield







Columnar Red Maples

Existing Riverbank Vegetation

The New Urban Forest

Landform And Wild Meadow Connecticut Riverwalk

Overlook

Connecticut River

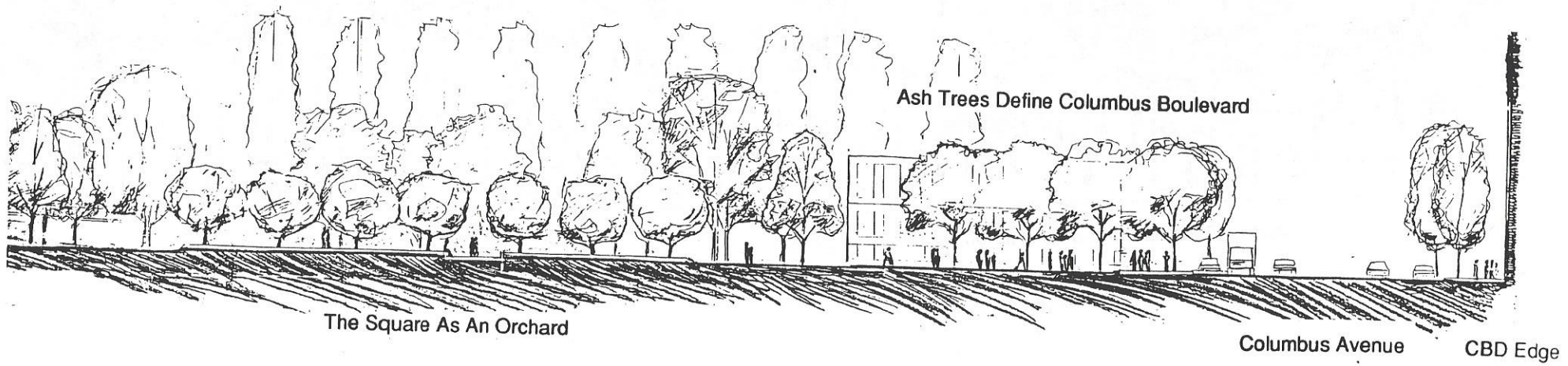
Suspension Structure For Overlook



Landform, Trees And Glacial Boulders Define The Gathering Space

Connecticut Riverwalk Defined By Basalt Curb



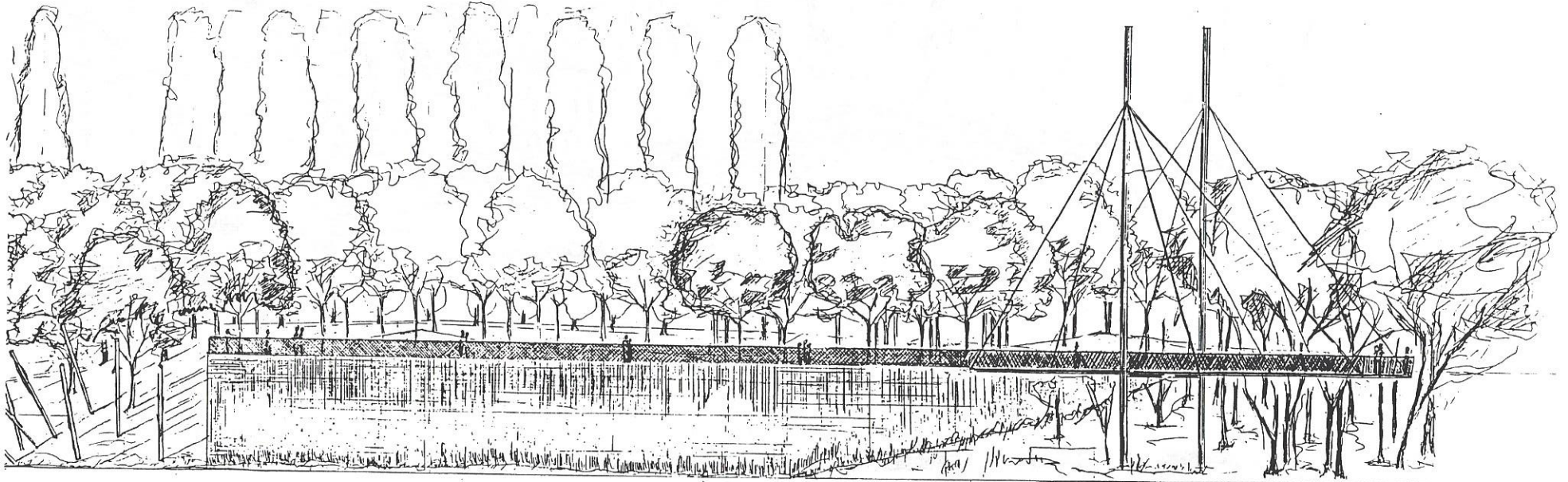


The Square As An Orchard

Ash Trees Define Columbus Boulevard

Columbus Avenue

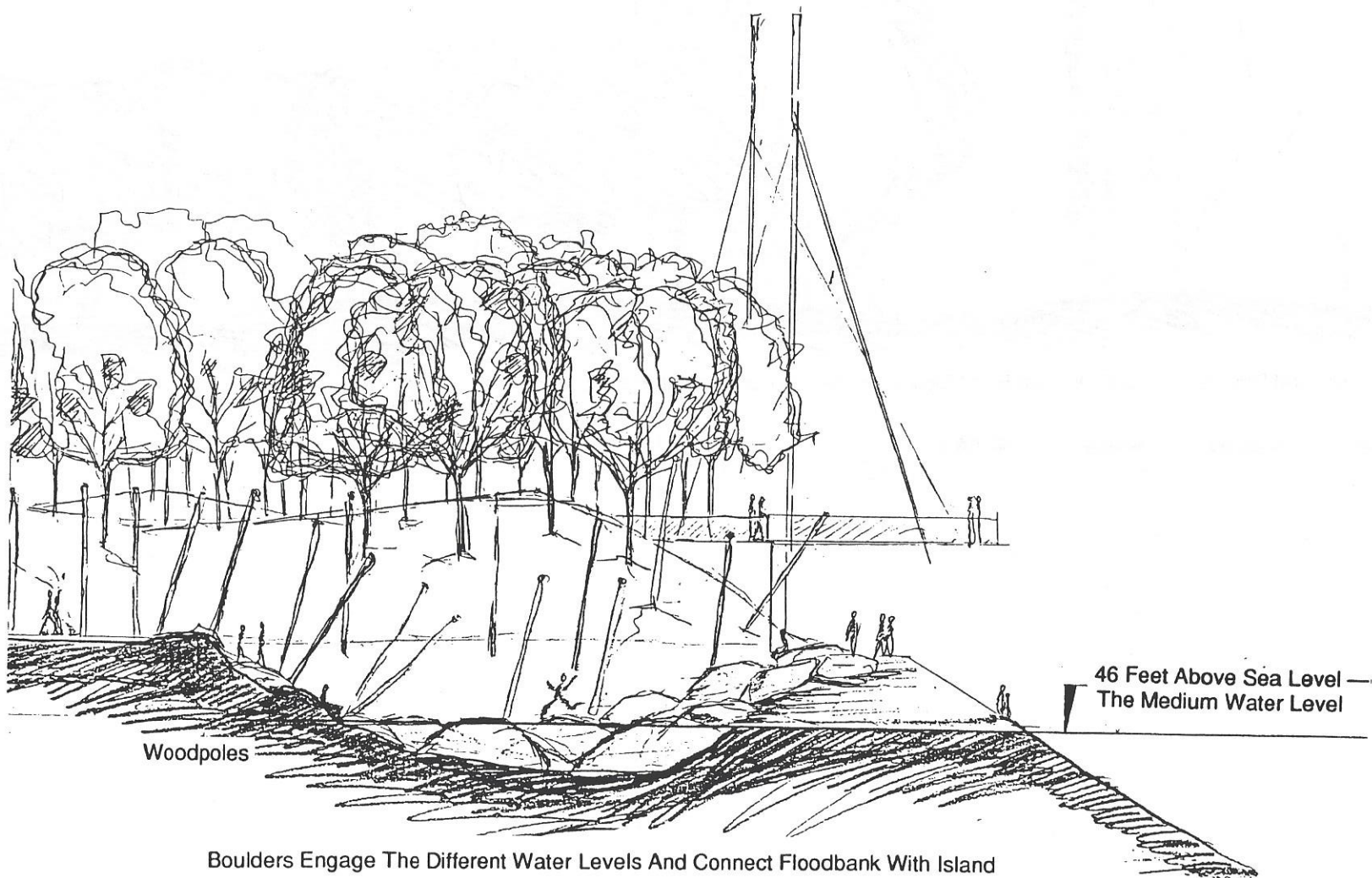
CBD Edge

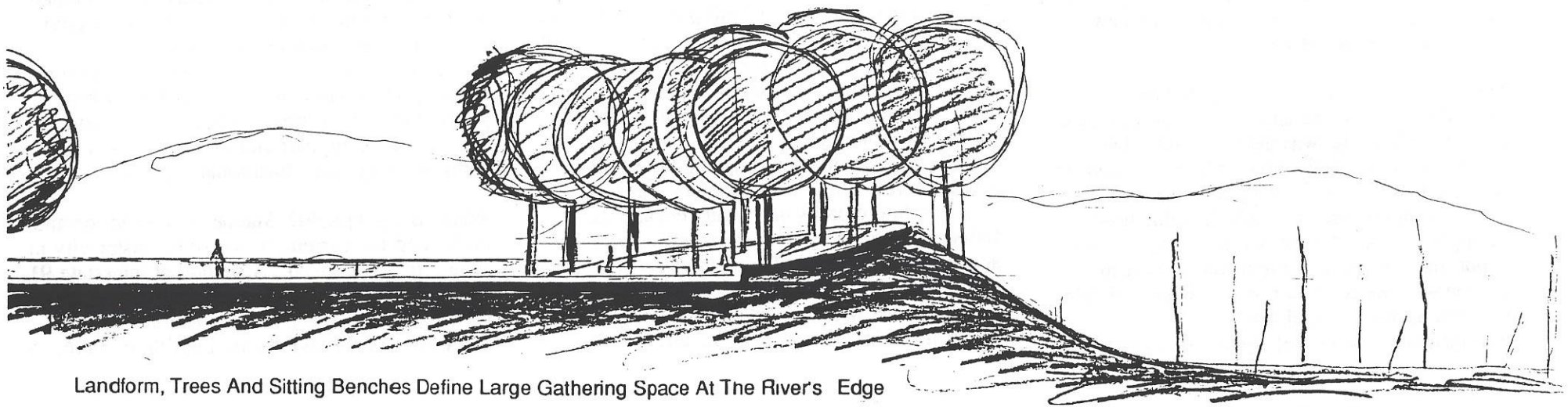


Existing Concrete Wall At Riverfront Park

Suspension Structure For Overlook







Landform, Trees And Sitting Benches Define Large Gathering Space At The River's Edge

Woodpoles



will connect the downtown of Constitution Plaza to the Connecticut River.

Springfield cannot afford to be timid. Despite the obstacles the pursuit of two major public ventures are required: one, a rapid transit connection to Boston with the accompanying restoration of the old train depot and, two, find new links for I-91 and the Amtrak line in the downtown to clear the way for the implementation of a new urban ecological park, Springfield's Riverfront Park.

The anatomy of Riverfront Park connects the city with the river in ways that reveal urban life processes integral with the water system of drainage, wetlands, floodplain, and river. Exploring the physical, biological, and cultural patterns of city and river, Riverfront Park creates a new concept for a park, a rich system of gateways, corridor paths, gathering nodes,

meeting places, and lookouts defined by elements of the city and elements of the river. On the downtown edge are the existing structures with new buildings infilling the dead vacant areas as a revitalized economy would demand. On the river side people can touch the river, explore the revealed attributes of the hydrologic cycle and go boating at the marina. Although Riverfront Park would extend North and South as part of the Pioneer Valley Regional Open Space and Park System, the downtown section (covered in detail in this report) would have **no** buildings except a marina and its attending structures. The human activities of the CBD section of the Riverfront Park cater to everyday activities of the more contemplative nature: gathering in the urban Squares, walking under the tree shaded paths of the New Urban Forest, viewing the water garden environments of sedimentation and filtration ponds, roller-skating and biking along the Riverway Path, sitting on

the overlook of the Connecticut River, engaging the wetland plants and consequence of the seasonal water levels revealed in the environmental sculpture of riverbank.

Riverfront Park takes people back to the river and provides a vision, a positive urbanity for city and river, a new image for the revitalization of Springfield. The riverfront in Springfield is recognized as one place connected to city and region. A vision engages action, engages people, and engages the beauty and the power of the Connecticut River. People who live, work and visit Springfield are the subject of this vision. The proposed Riverfront Park is an attraction which reconciles the citizens with city and river. A visionary plan is a sign of hope — hope for the people in a revitalized city connected to its water source. We have hope in Springfield's economic future — A Park for the 21st Century.

### B. Potential Alternatives

The CDM Team has identified three potential alternatives to improve access to downtown and the riverfront and improve highway capacity, and traffic flow. These alternatives were developed during a brainstorming session. They represent a sampling of alternatives which exist. The following lists each alternative, the major factors associated with its construction, a brief narrative describing the alternative, and a figure depicting the proposed alignment.

#### Alternative I—Depress I-91 Between York St. and I-291 Interchange

- Depression along the existing I-91 alignment.
- Cut and cover construction.
- Requires tunnel vent buildings.
- Minimizes land takings.
- Eliminates existing parking facilities (including parking under I-91).
- Minimizes impact to other abutters.
- Minimizes permitting.
- Provides opportunity to address utility upgrade.
- May require alternate routes for hazardous cargo.
- Requires north/south bound surface links.
- Does not allow for complete access and development of riverfront.
- Retaining wall/fill areas of depression are difficult construction areas.
- Difficult to maintain existing traffic during construction.
- Does not address area traffic problems.

*Depression of I-91 is the least disruptive of the three alternatives, but will limit the development potential of the project.*

Depression of I-91 along its existing alignment through the downtown area of Springfield between York Street and a point beyond the interchange of I-291 is the least disruptive of the three alternatives to be presented. While it removes the interstate as an obstruction to riverfront development, it does not address the access problem created by the railroad bed running adjacent to the river. This will limit the development potential of the project.

Depression of the interstate will require maintenance of existing traffic flow during the cut and cover operation. This will reduce the volume capacity of the interstate as portions of the highway will be taken out of service as the depression takes place. Alternative traffic routes would be required to alleviate continuous traffic congestion. While this solution maximizes traffic maintenance problems, it minimizes the impact to abutters and the amount of land taking required to implement the depression.

This alternative will require a local surface roadway system to be constructed or existing roadway expansion to adequately serve the downtown Springfield area.

#### Alternative II—Depress I-91 between the North End Bridge and the "Longmeadow curve"

- Depression along the existing I-91 alignment.
- Cut and cover construction.
- Increases number of tunnel sections to allow access at interchanges.
- Eliminates "Longmeadow Curve" lane reduction problem on I-91.
- Eliminates elevated I-291 interchange.
- Requires construction of downtown local surface road.
- Requires tunnel vent buildings.
- May require hazardous cargo route to bypass tunnel sections.
- Difficult to maintain existing traffic during construction.
- Opens up riverfront property for complete development.
- Additional impact to surrounding neighborhoods and abutters.
- Increase number of utilities requiring relocation.
- Eliminates existing parking facility (including parking under I-91).
- Increases volume of demolition debris.
- Addresses existing high congestion traffic areas.
- Requires processing and/or removal of contaminated soils.

*Alternative II provides a comprehensive solution to both riverfront access/development and solutions to local traffic problems.*

This alternative encompasses a much larger portion of the existing highway system in order to solve several local traffic congestion problems. The northern portion of the tunnel alignment will be between the North End Bridge and I-291 cloverleaf. This alternative is a much more comprehensive solution to both riverfront access/development and solutions to local traffic problems. The "Longmeadow Curve" is that portion of I-91 in the vicinity of the Springfield/Longmeadow corporate boundaries that funnels down from six lanes of traffic to four lanes and then a return to six lanes. This lane reduction historically creates traffic backups and is a factor in causing tractor trailers to overtake.

#### Alternative III—Redirect I-91 to the west side of the river, construct new river bridges, and expand capacity of Route 5

- Eliminates need for tunnel sections.
- Relocate railway cargo and through-passenger service and provide local rail service.
- Significantly reduces impact on neighborhoods and abutters.
- Significantly reduces quantity of anticipated contaminated soils.
- Eliminates several local traffic problem areas.
- Requires new Connecticut River bridge crossings and a bridge crossing of the Westfield River.



The AMTRAK Hartford line is a double track mainline that follows the east side of the Connecticut River, starting at Union Station in downtown Springfield and terminating in New Haven, Connecticut. AMTRAK is presently in the process of "single tracking" this line, which involves eliminating one of the main tracks and establishing controlled sidings for trains to pass. It is expected that both main tracks will remain in the Springfield area. Currently, AMTRAK has traffic utilizing this track approximately once per hour. The majority of traffic is passenger service; however Conrail has trackage rights and runs one cargo train daily, averaging 30 to 100 cars, from Springfield to Hartford. When traffic is heavy, Conrail will run an additional local train to Hartford. The existing double-track rail bridge crossing the Connecticut River is operated by Conrail for its trains from Albany, New York. AMTRAK passenger service also utilizes this system.

#### Potential Alternatives

##### Alternative I—No Railway Modifications

This alternative is the arrangement stated in Bid No. 313 hypothetical project. No railway modifications are proposed. I-91 would be depressed within its current alignment. Not relocating the rail system will severely restrict the development and accessibility of the riverfront area. In addition to the location of the railroad, the use of the tracks to transport hazardous cargo is a deterrent to development and pedestrian traffic.

##### Alternative II—Relocate adjacent to depression of I-91 Longmeadow Curve

This scenario will include the relocation of the north/south rails from their current location along the river bank to a point adjacent to the new interstate tunnel sections. Preference would be to depress the rail system along with I-91. This would likely require that the rail system be electrified, as diesel powered passenger service is prohibited in tunnel sections. AMTRAK/Conrail are currently electrifying many areas of the northeast corridor. Inclusion of Springfield into that electrification program could be negotiated as it is a less expensive method of power and would help AMTRAK meet EPA pollution standards.

A second option would be to depress the two-track system allowing for at-grade crossings between the new local ground surface roadway and the downtown area; however, railway channel sections have had problems with vandalism and trash accumulation in other parts of the northeast.

Critical to relocation of any rail system is the maximum grade at which any proposed track could be laid. This will govern the final decision as to whether the track must be located at-grade or can be depressed along with the highway. All proposed railway relocations would require extensive studies to determine feasibility, costs, alternatives, and the requirements of the rail users prior to recommending a solution.

*Highlighting Alternative III will be the construction of a new downtown/riverfront railroad station that will serve the newly developed area and be a focal point for riverfront development.*

##### Alternative III—Relocate Service to West Springfield side of the Connecticut River

This solution requires that cargo and through-passenger train service be relocated to the West Springfield side of the Connecticut River. This new alignment could be constructed as part of the new highway/bridge system or located along the western bank of the river. This will eliminate all cargo from passing through the newly developed riverfront on the Springfield side of the river. Highlighting this alternative will be the

construction of a new downtown/riverfront railroad station that will serve the newly developed area and be a focal point for riverfront development. This new local passenger rail system will be located close to the current I-91 alignment. Accommodations for transporting passengers downtown could be by people movers. It will be necessary to study all railway routes in the region to properly evaluate every option.

##### Alternative IV—Use Abandoned B&M "East Longmeadow Branch" Track

This solution would explore the possibility of having AMTRAK utilize an abandoned B&M track from Control Point #98 (Conrail) east of Union Station referred to as the "East Longmeadow Branch." This would allow for the abandoning of all tracks in the riverfront development.

This approach is enhanced by the possibility that this abandoned rail runs through several communities such as Stafford Springs and Windsor Locks, and connects to Conrail East Windsor Branch which terminates in Hartford, Connecticut. This alternative has the added benefit of increasing ridership.

The feasibility effort will focus on a consolidation of facilities to free up land area and to develop new connection and sidings which can service revitalized industrial areas, a key to their economic viability. The design approach will examine track and cross-track rights and services, and look to work with the rail carriers focused on ultimately developing a modern rail network which can be a basis for increased revenue and usage on their part. It should be noted that the railroads are extremely sensitive about maintaining the integrity of their existing rights-of-way. Negotiations for rights-of-way purchases can be extremely protracted which is why this effort must be approached in terms of what this can do for the future of their facilities not in terms of the impacts.

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