

RETHINKING ADAPTIVE REUSE

by

Emma A. Benardete
BA
New York University, 1995
MA
Institute of Fine Arts, 1997

Submitted to the Department of Architecture in partial fulfillment of the requirements for the Degree of Master of Architecture at the Massachusetts Institute of Technology

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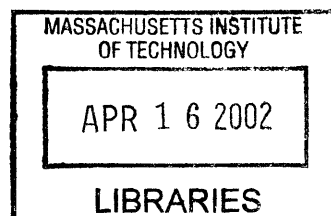
Emma A. Benardete
Department of Architecture
February, 2002

Certified by : _____

Ann Pendleton-Jullian
Associate Professor
Thesis Advisor

Accepted by : _____

Andrew Scott
Chairman
Department Committee on
Graduate Students



ROTCH

READERS:










Leo Marx
Senior Lecturer
Kenan Professor of American Cultural History
Emeritus, (STS)
Massachusetts Institute of Technology

Andrew Scott
Associate Professor
Massachusetts Institute of Technology

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cobblestones

ABSTRACT

Rethinking Adaptive Reuse

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Emma A. Benardete

Submitted to the Department of Architecture on Jan. 18, 2002 in partial fulfillment of the requirements for the Degree of Master of Architecture

ABSTRACT

Adaptive reuse of manufacturing plants in post-industrial countries has become an increasing trend. In the United States, evidence of our industrial past is present in both urban and rural landscapes. The appearance of “brownfields” is due to the change in the U.S. economy from heavy industry and the manufacturing of commodities to the digitized products and supports required of the information age. The need to recycle these lands is part of the realities we face, as we become increasingly aware of the environmental damage caused by the industrial age.

Paterson, NJ is the oldest industrial site in America founded by Alexander Hamilton. He chose it because the seventy-foot Great Falls was a prime source of hydroelectric power. He laid foundations in the city that helped make Paterson a prime textile-manufacturing center throughout the nineteenth and early part of the twentieth centuries. Since the 1960s, Paterson has experienced a decline in its industrial economic base. The city has sought to regenerate interest in the area through historic trails and the attraction of the Great Falls. These efforts have failed. However, through out its history Paterson has been the site of adaptive reuse. The mills and factories constantly had to change in order to keep pace with new technology. Currently, several mills have been renovated to form apartments for artists. While providing picturesque housing, these renovated mills no longer have a place in the piecemeal industries that still exist. This type of renewal has not helped to reunify this community.

To counteract these singular interventions I have proposed reprogramming the central industrial area around the Falls as a center for Ecologists and Environmental Artists. The urban strategy I have adopted is one of creating desire for the current transient population to remain in the area and reinvest in the existing infrastructure. I have used nature to unify the area by artificially reinserting nature where, before Hamilton, nature flourished. A path unifies the area taking the pedestrian through the natural and artificial (man-made) topography of this landscape. The landscape offers sectional characteristics, which I have tried to make the pedestrian aware: aerial, canopic, terrestrial, aquatic, and sub-terrestrial. The path illustrates that we are always moving between sky and water. While the mountain and river offer some geographical orientation, once the pedestrian is embedded in the existing urban fabric, his sense of direction may become obfuscated. The path begins by orientating the pedestrian North and over the course of his walk, if repeated over the course of a year, he would find that the summer and winter solstices help strengthen his sectional placement within this landscape. Along the path I have interjected sustainable infrastructures in order to show how the industrial past can help us revitalize our landscape for a post-industrial future. In my own renovation of certain buildings, I have tried to create a balance between nostalgia for the past and romance for new technology. For nostalgia does not necessitate a recreation of what once was, but can reintroduce us to the past's own love and desire for the future.

Thesis Supervisor: Ann Pendleton-Jullian
Title: Associate Professor



middle raceway

PATERSON'S SUITABILITY AND PROGRAM

In Paterson, the historic Great Falls district has been the site for various industries since the late eighteenth century. It is the oldest industrial experiment in America begun by Alexander Hamilton and his work with the Society for Establishing Useful Manufactures. Hamilton chose Paterson because of its remarkable 70 feet falls. (Fig.1-2) Pierre Charles L'Enfant was hired to plan the raceways, an aqueduct system, and lay out the town. However, his ideas were beyond the means of the city at the time and he was fired. Only the basic idea of the raceways remains from his efforts, which were eventually built by Peter Colt from Hartford, Connecticut. In 1814, his son, Roswell Colt finally benefited from the tax-exempt status of this water-powered industrial suited land by renting it out to early American manufacturers. Thus Paterson began its long history as an industrial power. Paterson was the home to the first Colt Firearm manufacturing plant, and Roger's locomotives, and a major textile provider for both New York and Philadelphia.

Paterson has been a site of adaptive reuse through out its industrial history. Successive water, steam, and electric-powered industries occupied the area surrounding the Great Falls. Each change in manufactured product was accompanied by a boom and bust economic cycle and with each new industry the extant buildings were retrofitted but not rebuilt. Due to this economy of building, parts of the early nineteenth century buildings stand today. Adele Chatfield-Taylor points out that "some of the buildings in operation today [1970] date from the early 1800s, and along with those built throughout the 19th century, provide in Paterson a complete catalog of industrial architecture in this country."¹

By 1950, most of the heavy industry had left the area. Leaving some buildings abandoned, others occupied by a variety of smaller businesses. Since 1971, an effort has been made to preserve the historic district of Paterson. At that time, a group called Urban Deadline focused their efforts to help Paterson rebuild the abandoned historic area and rejuvenate the

¹ Adele Chatfield Taylor, "Proposal for Paterson: Unrecognized Historic Architecture Become the Focus of of a Challenging Plan for Renewal," Architectural Forum, v.132, n.1, 1970, p.73.

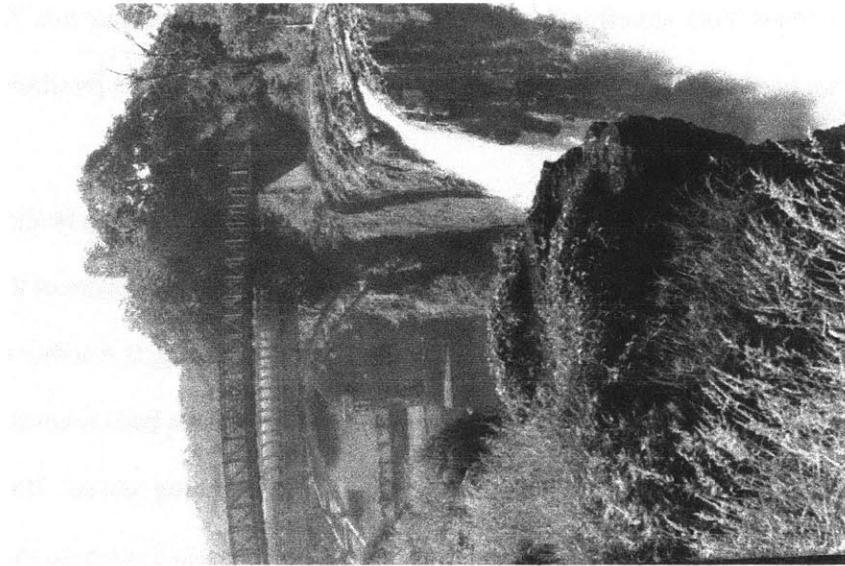


Fig.1 GREAT FALLS

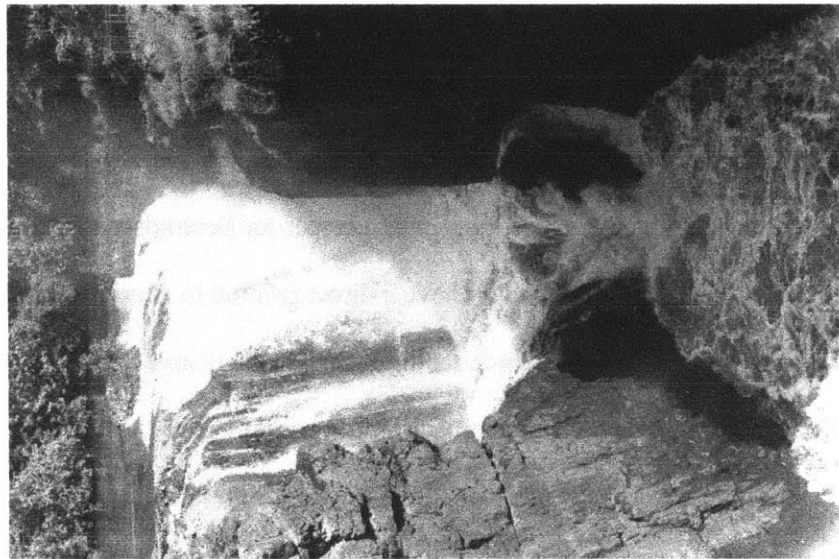


Fig.2 GREAT FALLS

surrounding urban area. Their urban renewal plan focused on Paterson's strong industrial past in order to raise interest in the area. One of the members of Urban Deadline, John Young saw Paterson as a "New York storefront".² However, thirty years later it is clear that Paterson's history has not been sufficient to rejuvenate interest in the area nor has its proximity to New York City helped.

Even though Paterson has lost its industrial base, it has continued to be the site of adaptive reuse. One existing mill building has been converted into a museum of the city on the ground floor, and other multi-use offices occupy the other floors. (Fig.3) Another mill building has been converted into a school (Fig.4) and two other factories have been renovated and divided into artist's housing. It is commendable that these buildings are being reused. However, there is no unifying program to the renovations and thus there is no apparent thought to the programs inserted within the existing community. While the new mill housing is picturesque, they are not connected to the piecemeal industries that still exist. Nor is there already established the appropriate urban infrastructure to support the people who live in the housing.

A central theme might re-stitch the historic district back together, a queue taken from the primary source of income for the area for over-hundred years, textiles. (Fig.5) To counteract these singular interventions of adaptive reuse, I propose a center for Ecologists and Environmental Artists. Environmental science and land art have a direct relation to America's industrial past. This type of center would provide research facilities for scientists involved in the detoxification of industrial sites. This type of holistic approach would re-synthesize the area back together while making the most of the historic site and also moving forward into the future.

I adopted an urban strategy that would create desire for the current population to remain in the area and reinvest in the existing infrastructure of Paterson. I have used the paradigm of the manufacturing past. However, I have changed the product from textiles, a commodity, to trees, a natural amenity. I have artificially reinserted nature where, before Hamilton, nature flourished.

² Taylor, p.74.

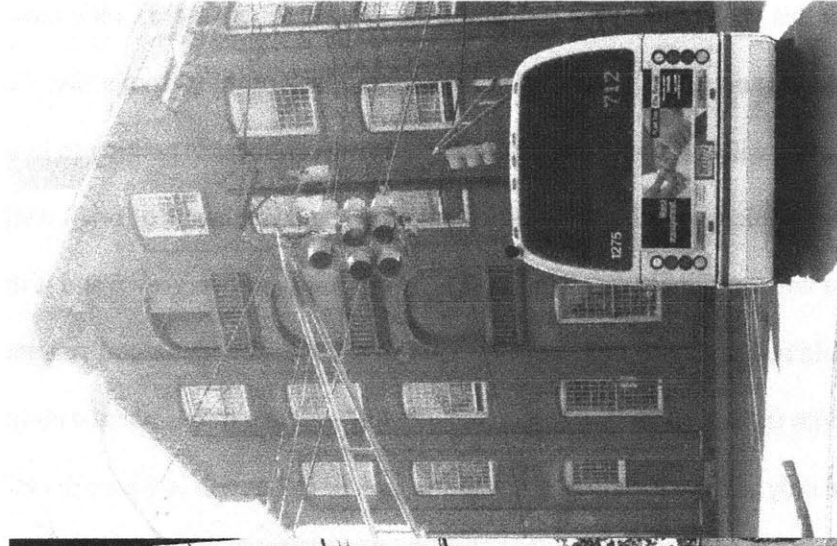


Fig.3
MUSEUM

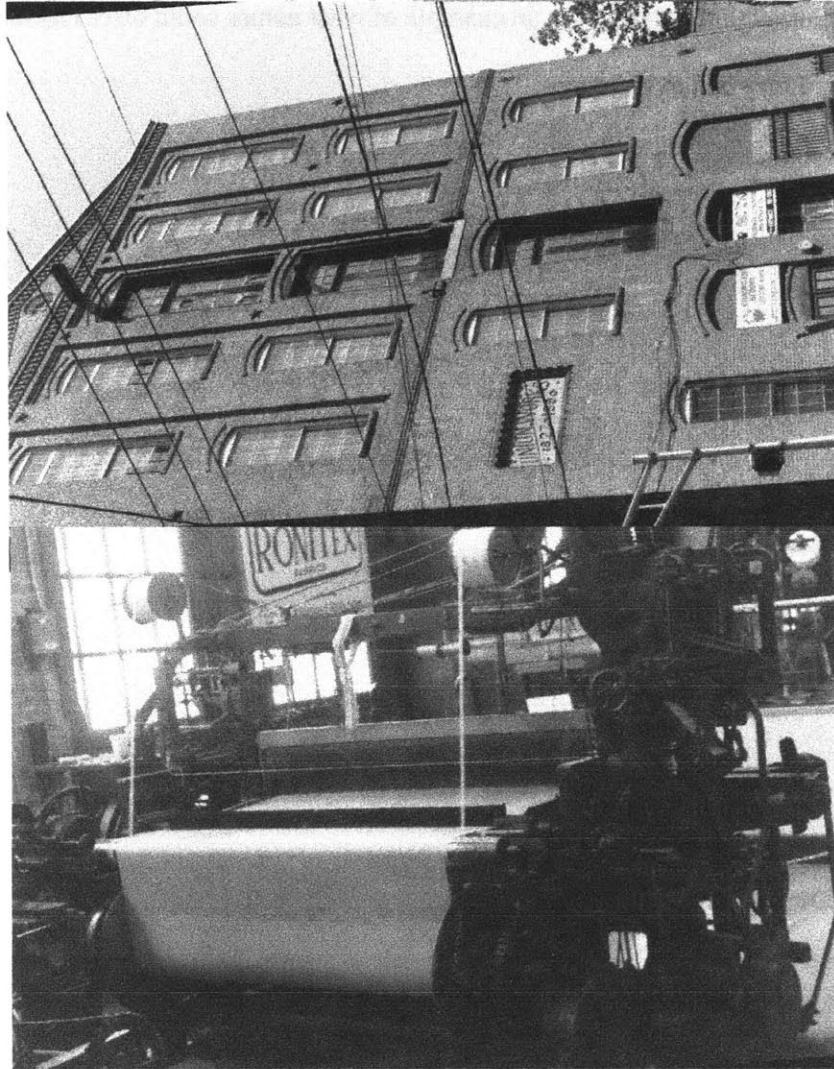


Fig.4
SCHOOL

Fig.5
SILK LOOM

The impetus for this was found in the area along the Passaic River where Colt's factory once stood. It is in an area currently fenced off and it is comprised of ruins from a fire. Currently there is a project to historically renovate these buildings. However, there is nothing to renovate. The buildings have crumbled and what is left is a smokestack and fragments of brick walls with openings where windows once were. (Fig.10-11) These ruins are overgrown and if this were Rome they would be reminiscent of Piranesi. This area, covered with natural vegetation, stood in stark contrast with the rest of the industrial area in which not one tree is planted along the sidewalks. The only place where nature has found a place to flourish is where the industry has left. It was important to see this site as an example of what nature could offer Paterson and not as a place where industry had to be rebuilt.

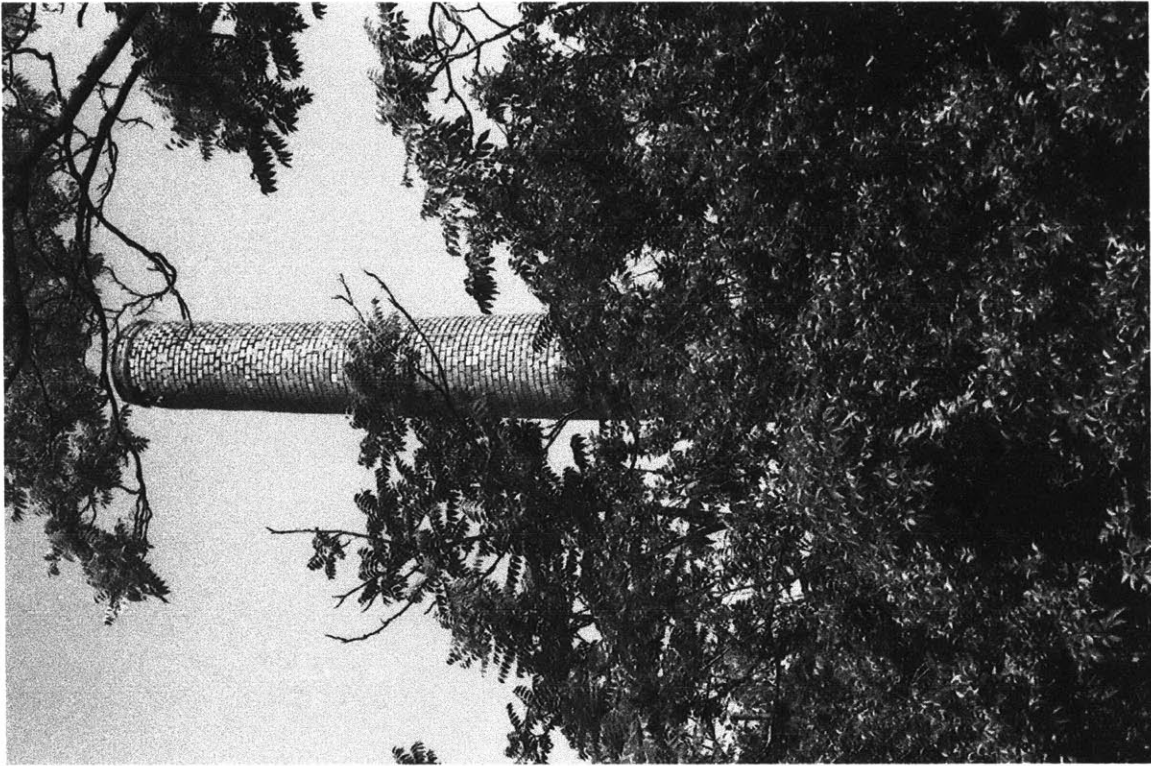


FIG. 6 SMOKESTACK RUIN



FACTORY RUIN

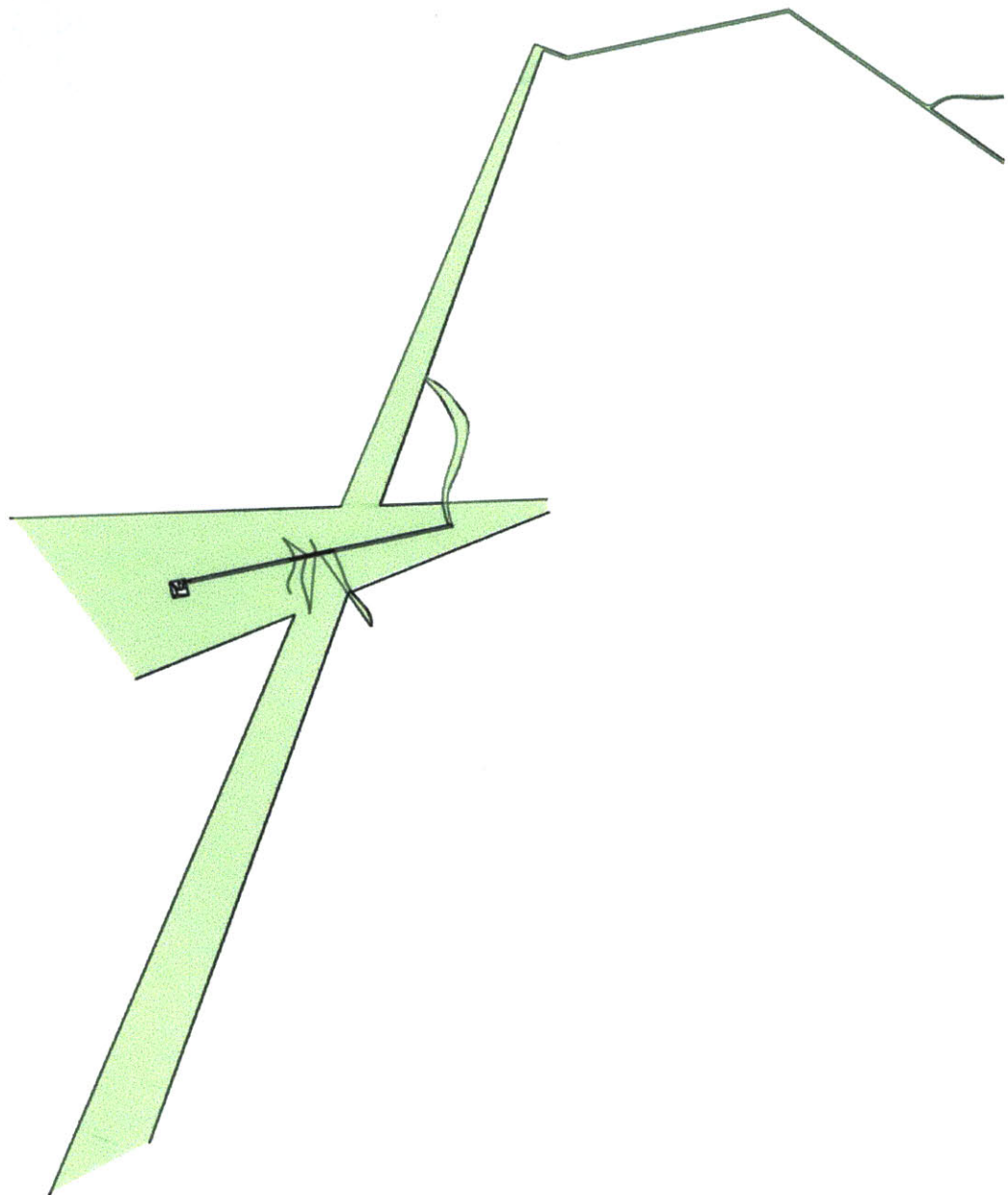
URBAN STRATEGY AND PATH

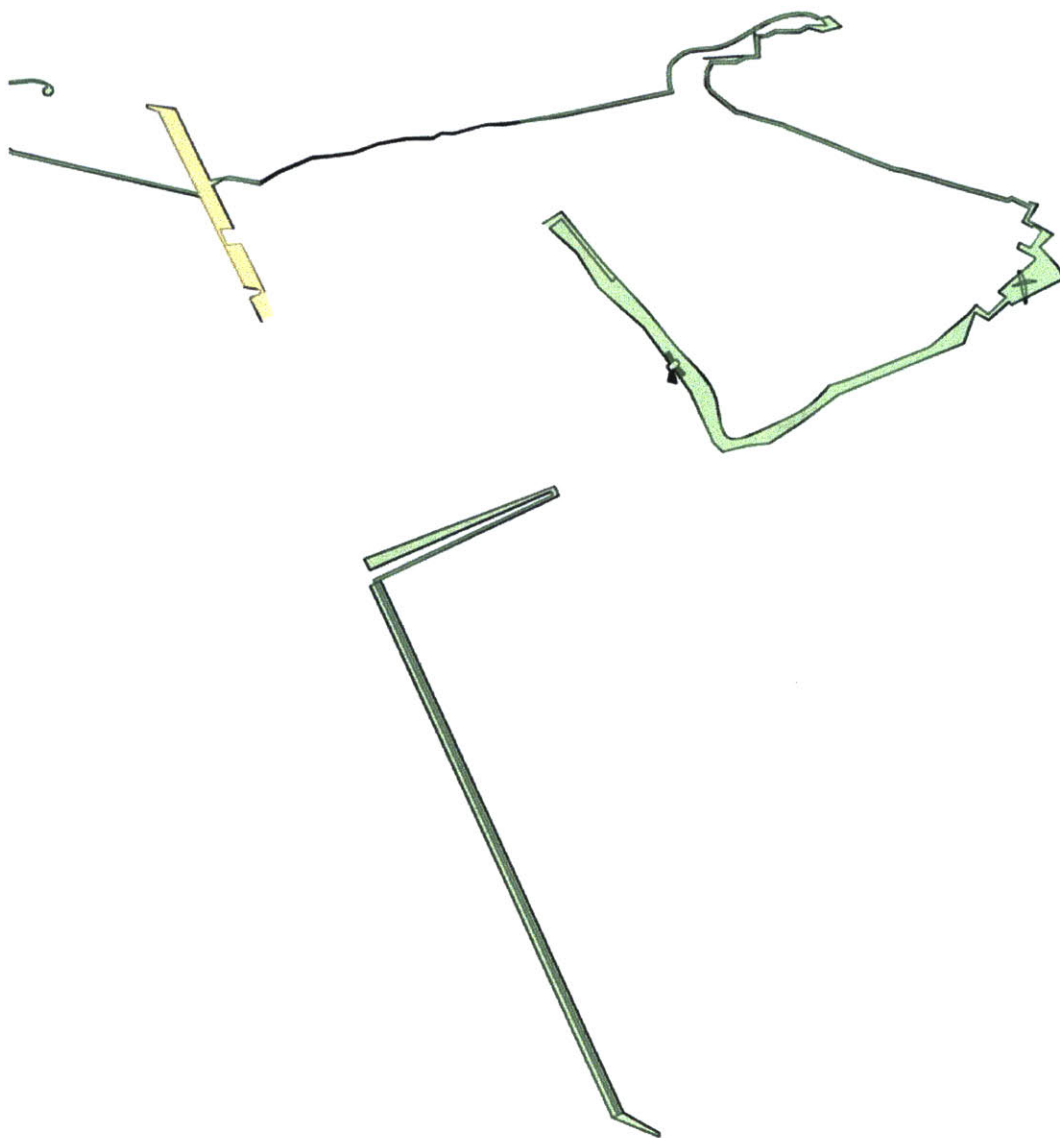


site model

The urban strategy is comprised of a path to be used by pedestrians. The path is two and half miles long and its purpose is to acquaint the pedestrian with various characteristics of Paterson's landscape. It is a path to be used throughout the year offering different aspects of the city than are offered by the now-present urban infrastructure. The path does not have to be experienced as a whole but may be experienced in individual parts that can be linked by the pedestrian to other parts of the urban fabric.

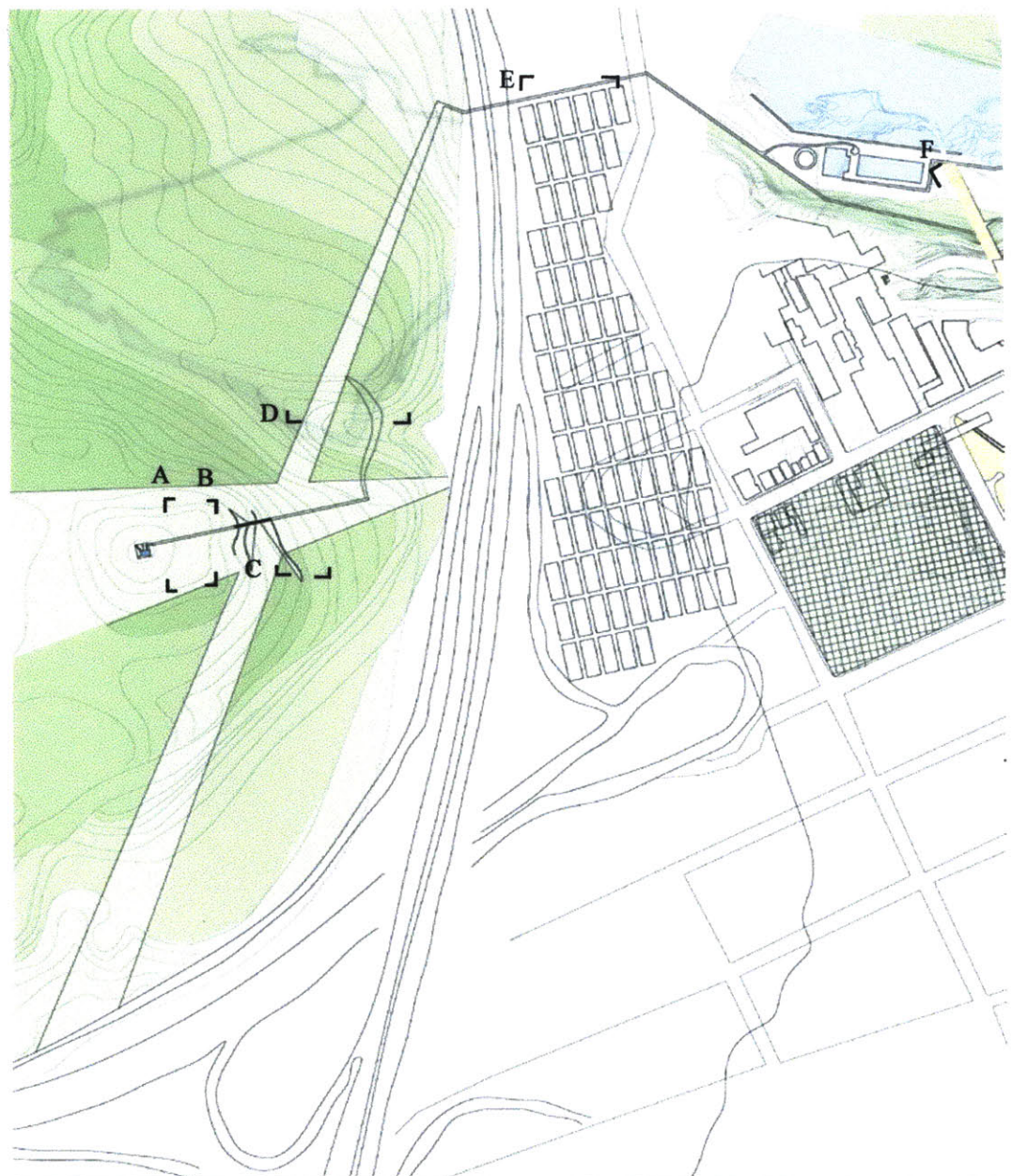
PATH





The path unifies the area I have focused on in Paterson. The Wachtung Mountain bounds the area to the South, the reservoir and public pool to the West, the Passaic River to the North, and Paterson's City Hall to the East. This plan also shows where lateral sections are taken across the path's course in order to provide a fuller description of the events along the path. The path addresses certain characteristics of Paterson: natural versus artificial topography, orientation, and environmental responses to the existing site. These elements are the tools used to create desire by me.

PLAN

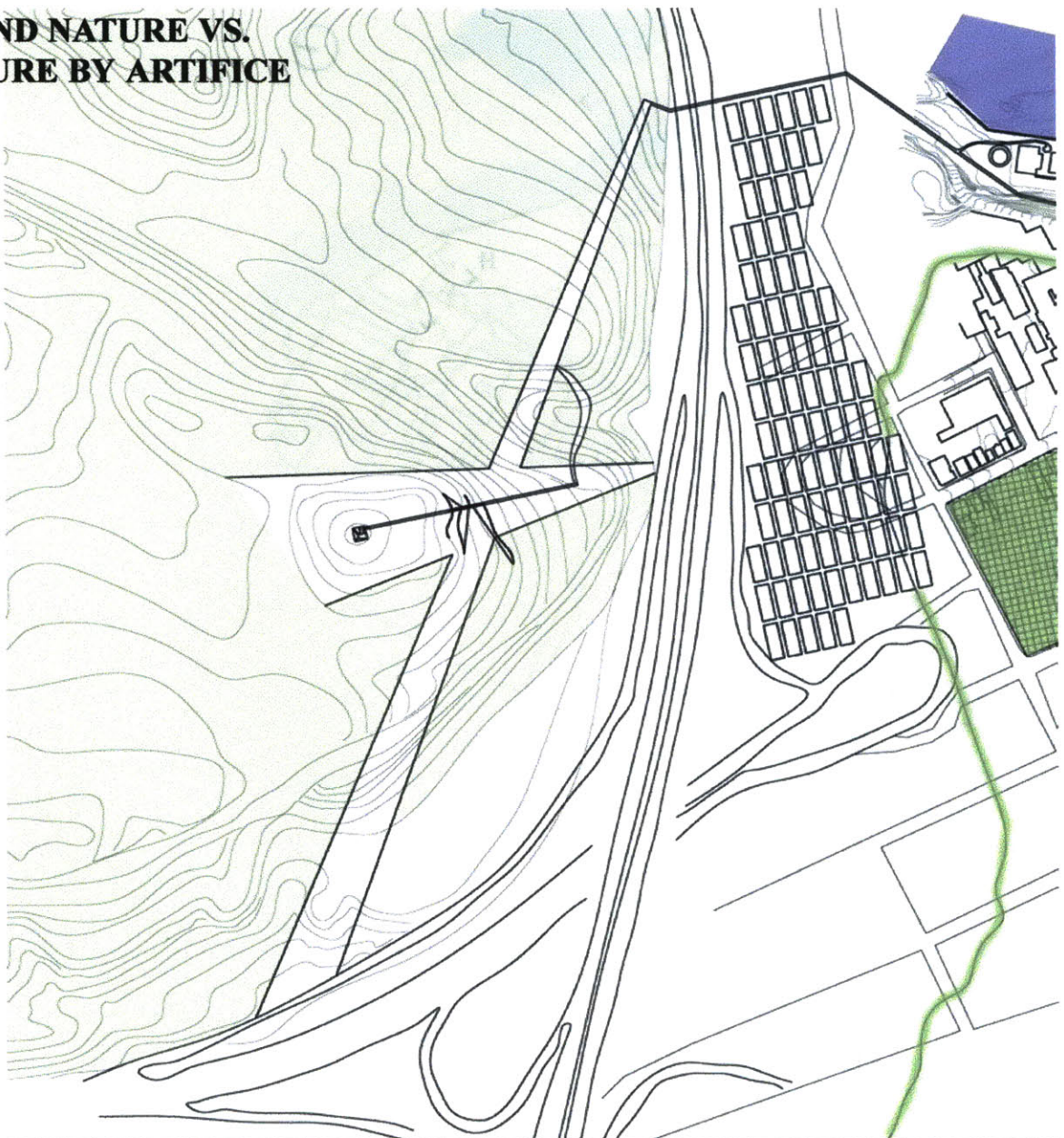


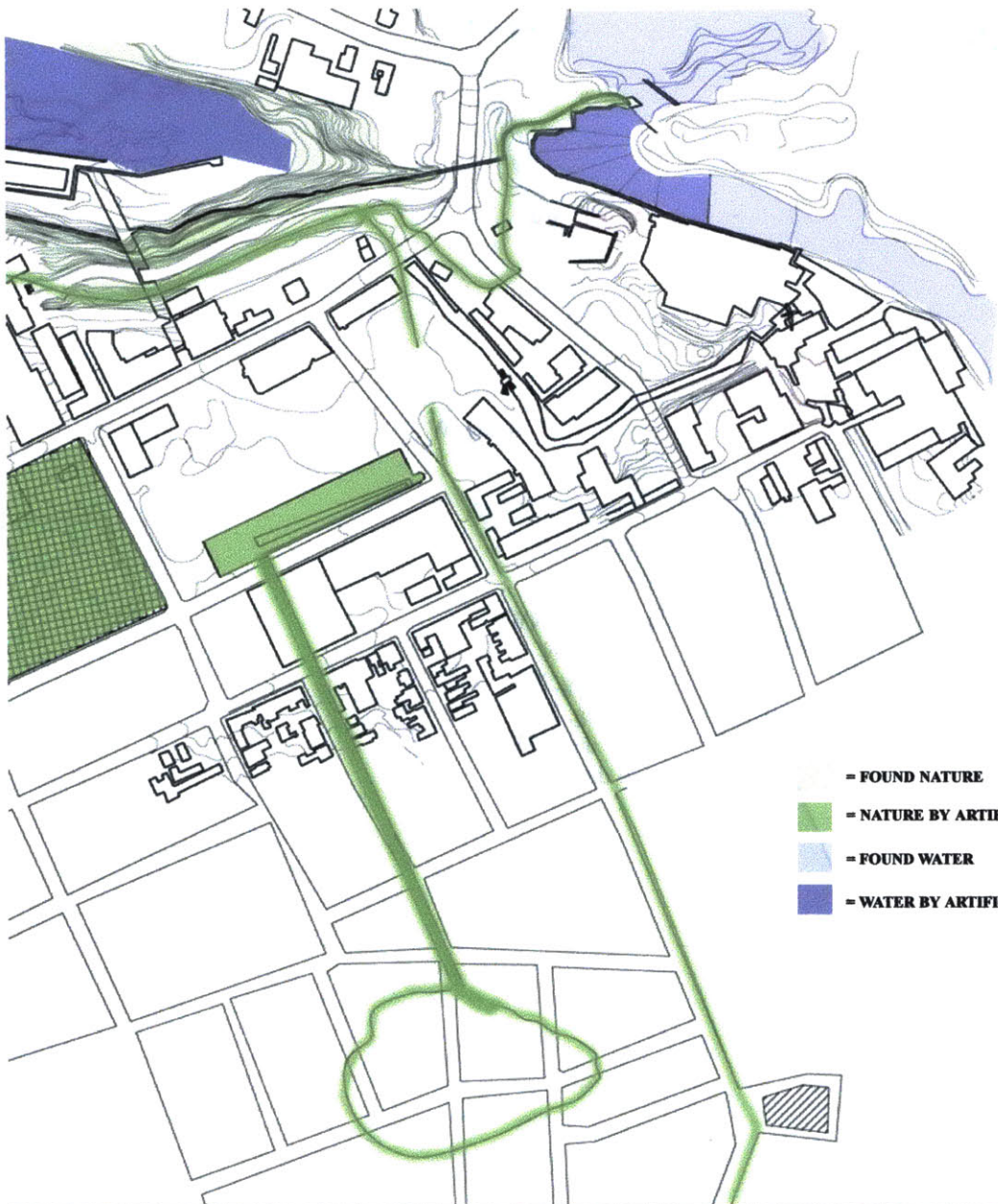


PLAN OF THE DEVELOPMENT
AS APPROVED BY THE
LOCAL AUTHORITY

The path leads the pedestrian over and through natural and artificial (man-made) topography of this landscape. In this diagram, the lighter tones indicate what is natural and the darker tones indicate what is artificial. The mountain and the river are natural elements in this landscape. The reservoir and the flora inserted into the landscape are the artificial elements.

**FOUND NATURE VS.
NATURE BY ARTIFICE**

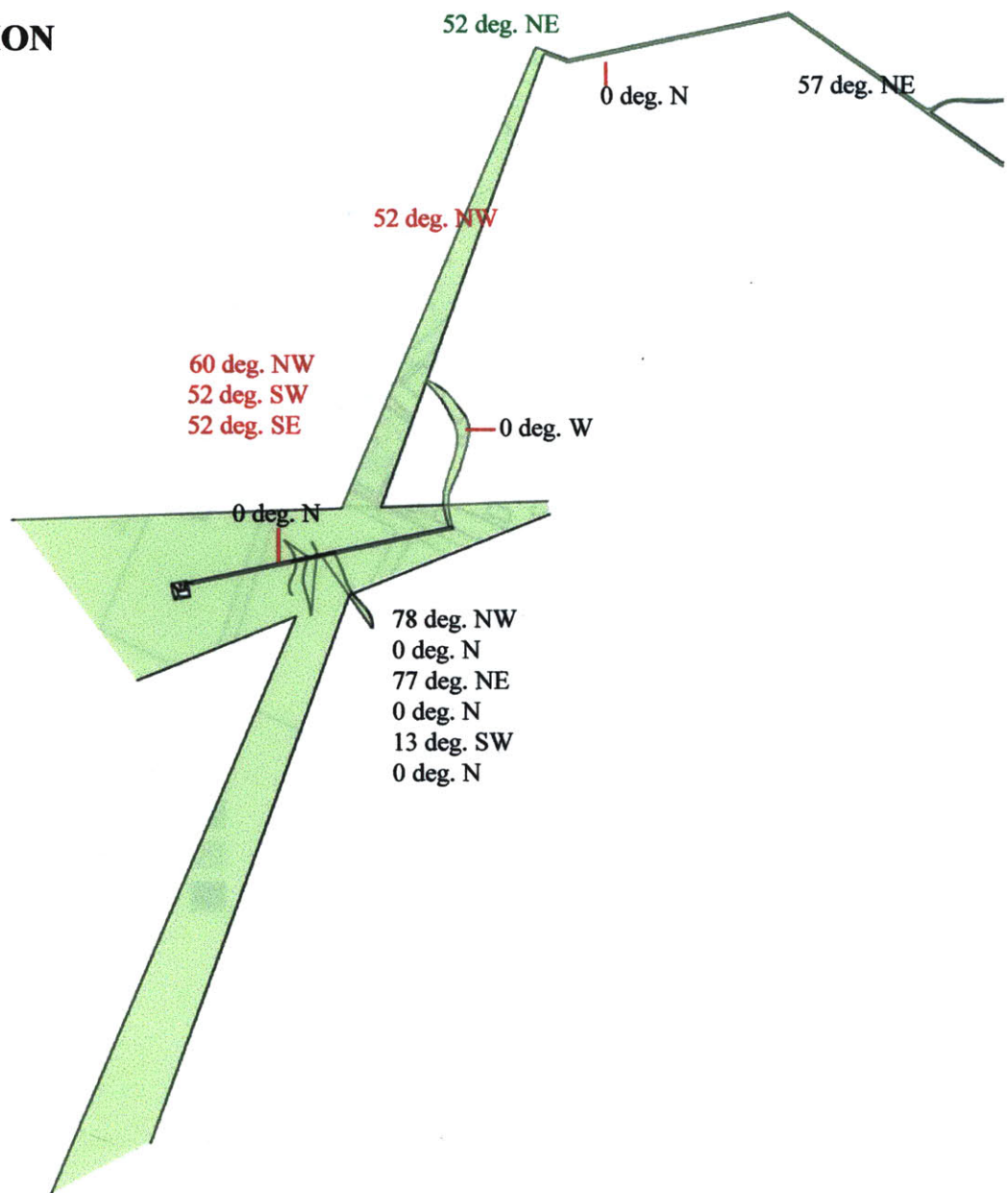


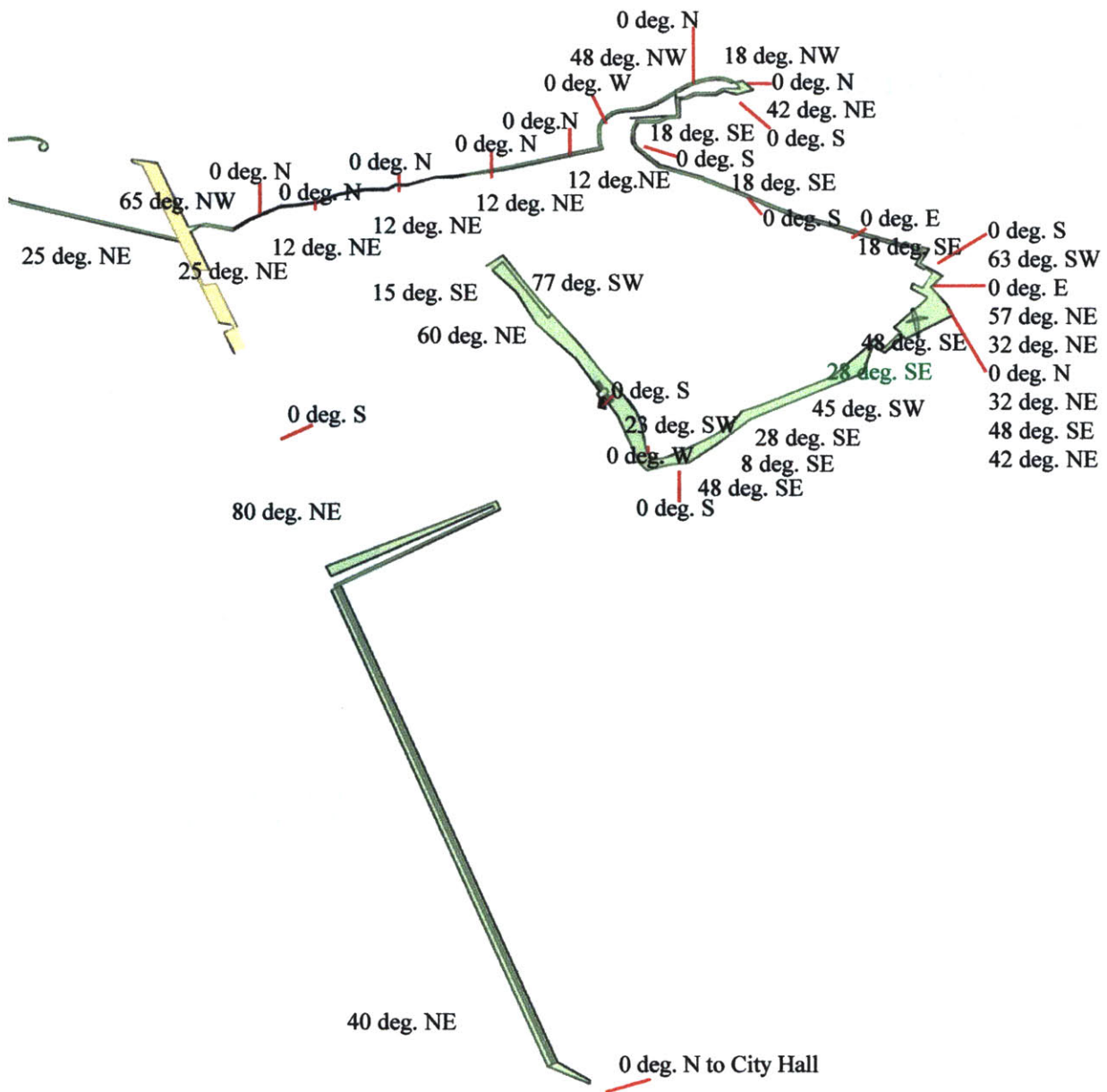


- FOUND NATURE
- NATURE BY ARTIFICE
- FOUND WATER
- WATER BY ARTIFICE

While the mountain and river offer some geographical orientation, once the pedestrian is embedded in the existing urban fabric, his sense of direction may become obfuscated. The path begins by orienting the pedestrian North and over the course of his walk, if repeated over the course of the year he would find that the summer and winter solstices help strengthen his sectional placement within this landscape. This diagram shows the pedestrian's orientation all along the path. Where the orientation to the cardinal points is shown in red, the pedestrian is moving parallel to a solstice azimuth angle. Where the orientation is shown in green, the pedestrian is moving perpendicular to a solstice azimuth angle.

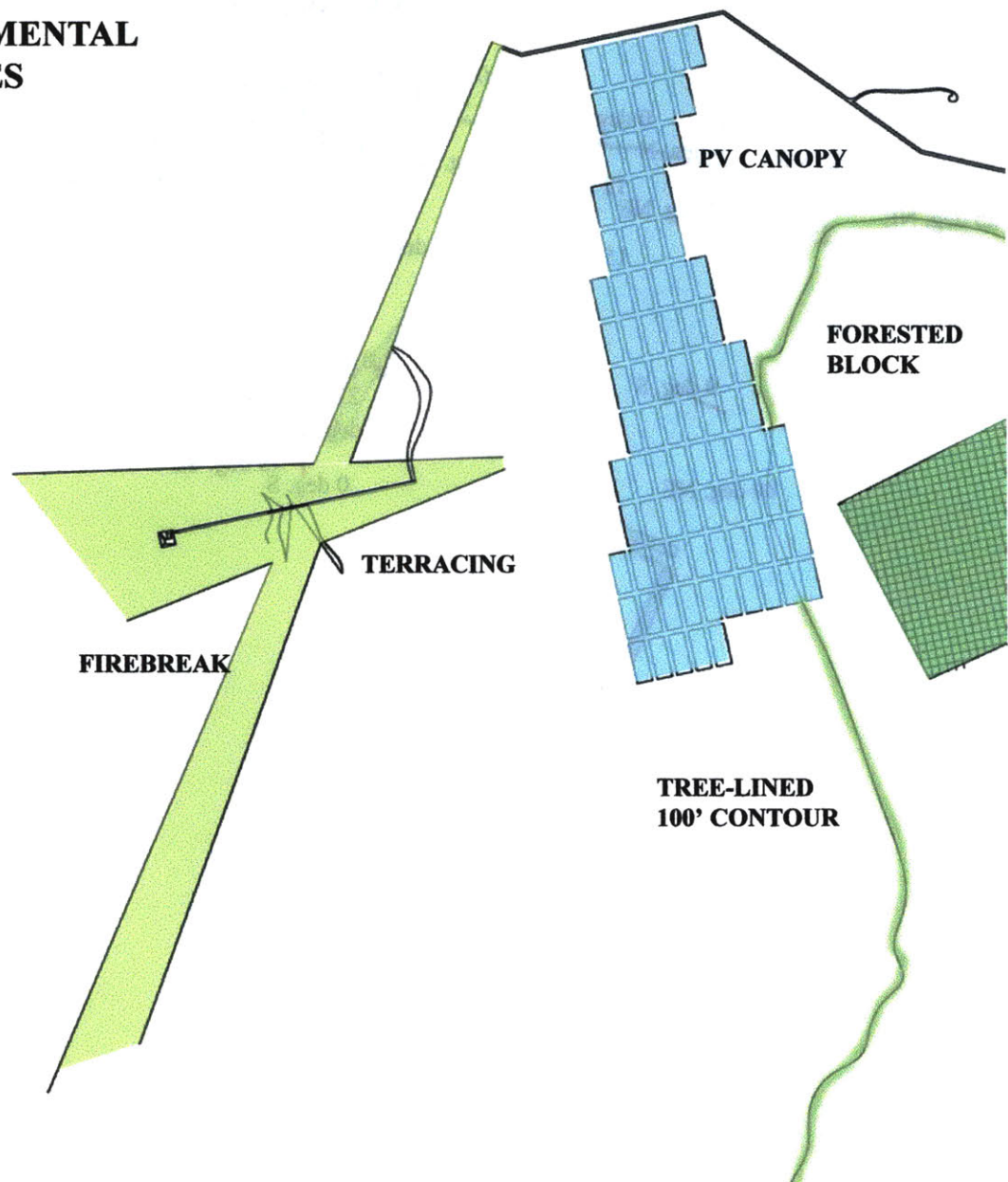
ORIENTATION



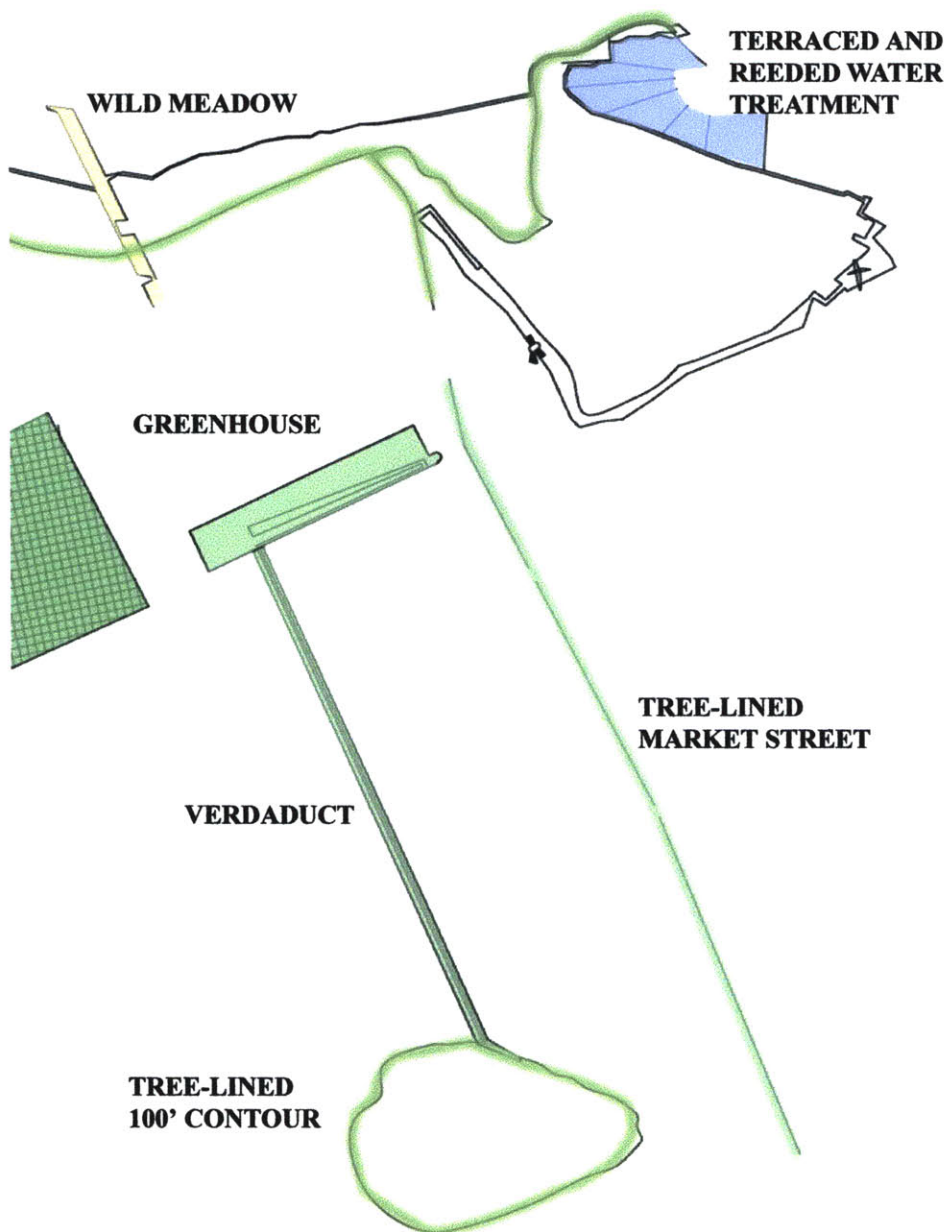


Along the path I have interjected sustainable infrastructures in order to show how the industrial past can help us revitalize our landscape for a post-industrial future. This diagram shows where these elements occur along the path. Although shown in the diagram as a whole, the implementation of certain elements would require time to have presence in the landscape. While the path crosses or passes parallel to several of these elements, their relationship to each other is not emphasized. The elements function both as parts of the path as well as autonomous pieces of new infrastructure.

ENVIRONMENTAL RESPONSES



The landscape offers sectional characteristics, which I have tried to make the pedestrian aware: aerial, canopic, terrestrial, aquatic, and sub-terrestrial. The path illustrates that we are always moving between sky and water. The following pages of illustrations show the path unfurled. The pedestrian's sectional relationship to the topography is shown as well as at what points in the landscape the pedestrian shifts from one level to another. Orientation is indicated above the sectional lines. In correspondence with the plan (p.20), labeled lateral section cuts are shown. The lateral sections will follow with a full description of the events in the landscape.



PATH UNFURLED



plan

WE ARE ALWAYS MOVING **BETWEEN SKY AND WATER**

52 deg. SE
52 deg. SW

60 deg. NW 0 deg. N 75 deg. NW 0 deg. N 77 deg. NE 0 deg. NE

13 deg. SW

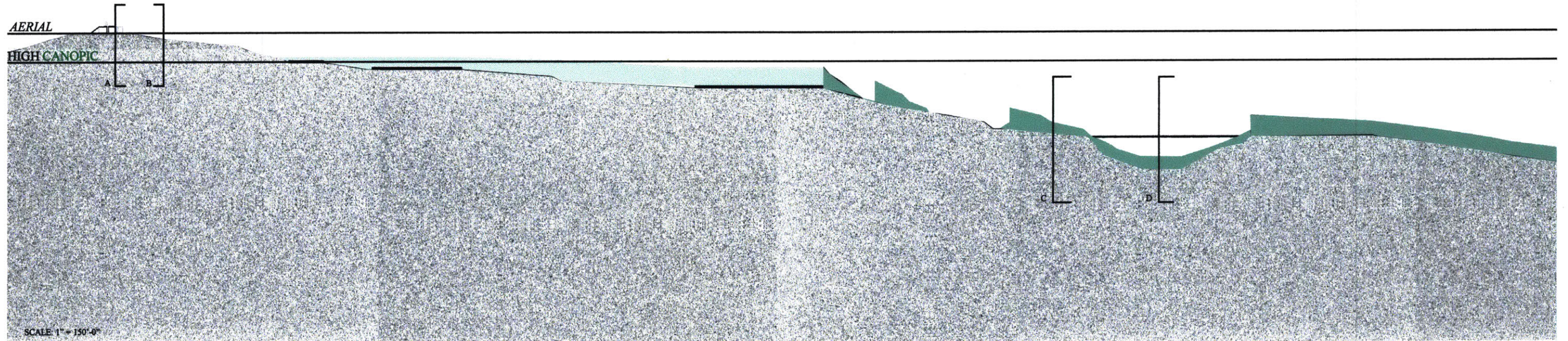
0 deg. N 0 deg. W 0 deg. N

52 deg. NW



AERIAL

HIGH CANOPIC



SCALE: 1" = 150'-0"



38 deg. NE



0 deg. N



0 deg. N



57 deg. NE

25 deg. NE

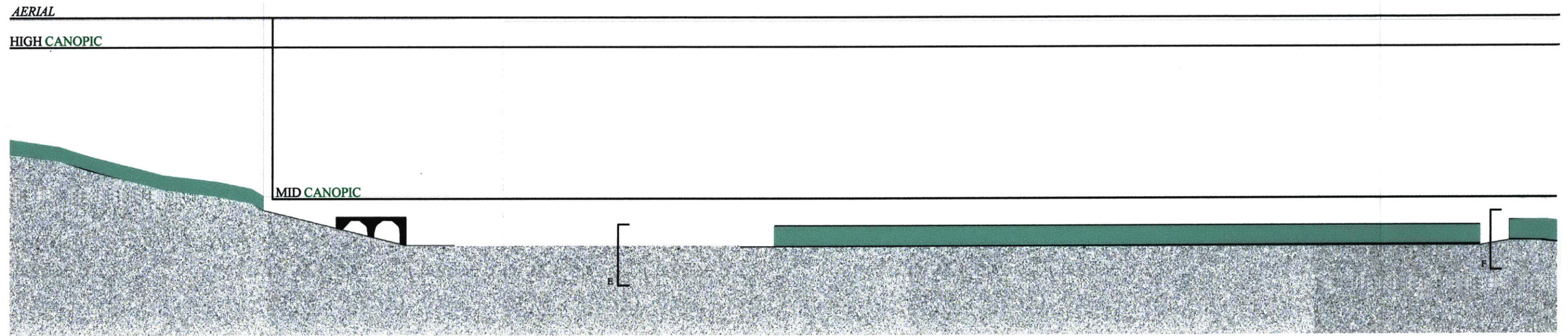
65 deg. NW

25 deg. N

AERIAL

HIGH CANOPIC

MID CANOPIC





0 deg. N

0 deg. N

12 deg. NE

0 deg. N

12 deg. NE

0 deg. N

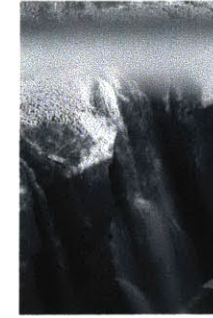
12 deg. NE

0 deg. W

0 deg. N

18 deg. NW

0 deg. N



0 deg. S 18 deg. SE

0 deg. S



0 deg. S

0 deg. E

0 deg. S

18 deg. SE

0 deg. S

63 deg. SE

0 deg. E

AERIAL

HIGH CANOPIC

MID CANOPIC

LOW CANOPIC

AQUATIC

G



57 deg. NE 32 deg. NE 0 deg. N 32 deg. NE



28 deg. SE 45 deg. SW 28 deg. SE 18 deg. SE

0 deg. S

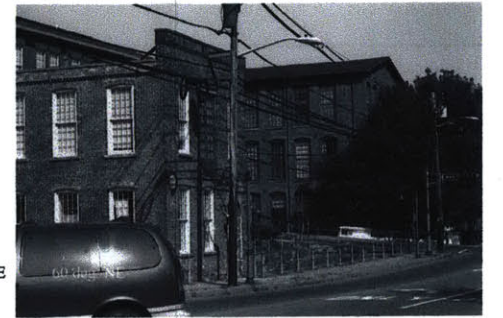
0 deg. W

77 deg. SW

0 deg. N

77 deg. SW

15 deg. SE



AERIAL

HIGH CANOPIC

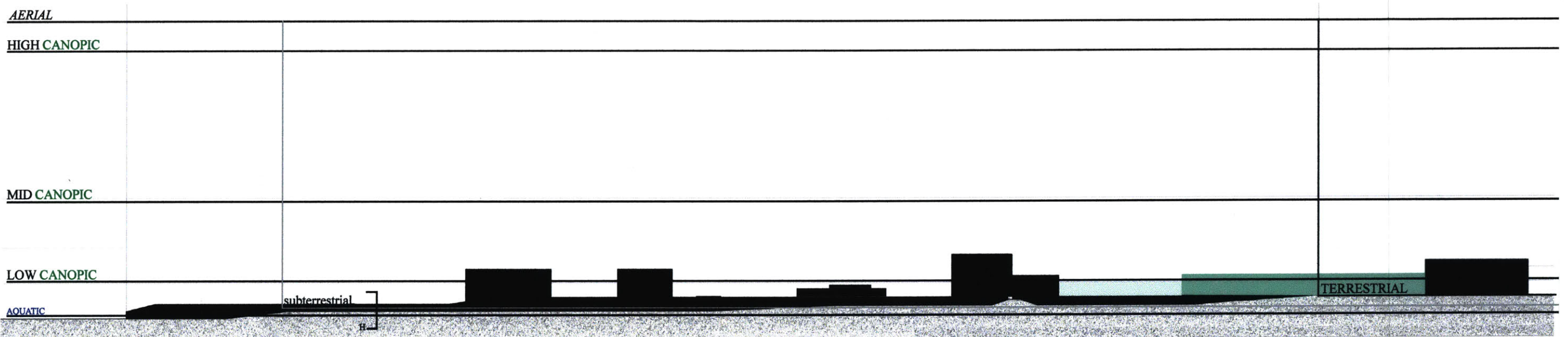
MID CANOPIC

LOW CANOPIC

AQUATIC

subterrestrial

TERRESTRIAL



0deg S



40 deg. NE

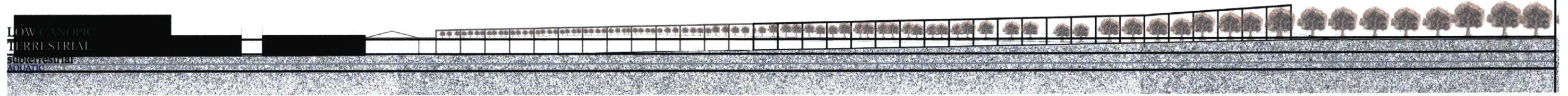
0 deg. N to City Hall

AERIAL

HIGH CANOPIC

MID CANOPIC

LOW CANOPIC
TERRISTRIAL
Subterrestrial
AQUATIC



EVENTS IN THE LANDSCAPE

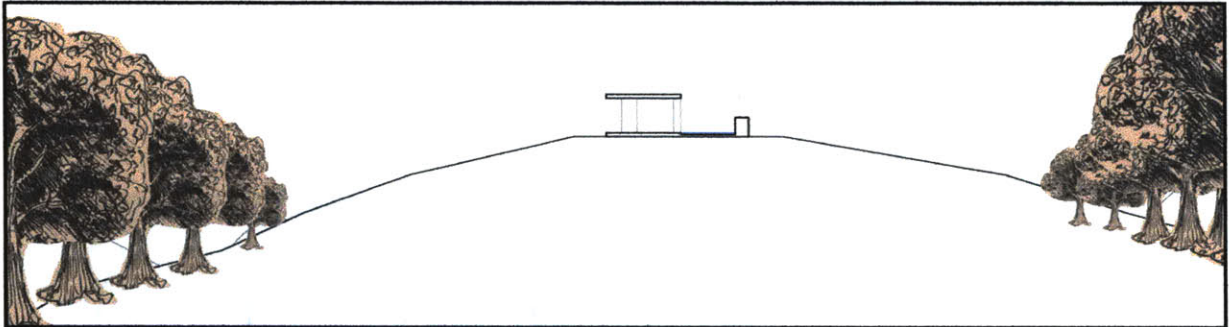


firebreak

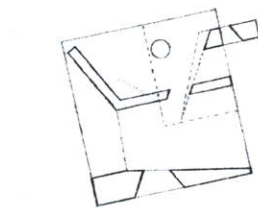
Temple to Sky and Water:

This new structure is constructed to counterpoise the ruins along the river's edge. This new ruin sits on the highest point in the industrial center of Paterson, a reservation. (See Section A) I have conceived it as a starting point. As a starting point, it orients one towards North. In its construction, the three vertical planes are shifted and cut through in order to receive light and direct it toward a collecting pool for rainwater. (See plan below.) On both the winter and summer solstice sunsets, light is caught over the water. The light creates shafts that can be penetrated as people move around the temple. The cylinder that penetrates the roof plane is meant to act as a sundial. Once oriented, one can begin to move along the Paterson and one can always look back and see where one started from and become reoriented. (All sections are 1/50" = 1'-0" unless otherwise noted.)

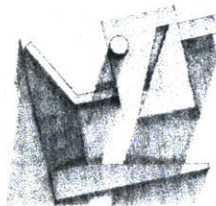
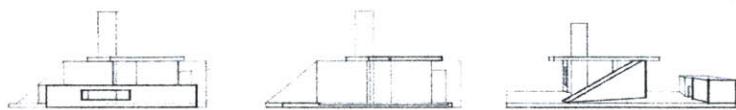
SECTION A



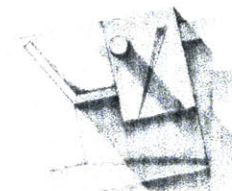
TEMPLE TO SKY AND WATER



PLAN



SUMMER SOLSTICE SUNSET



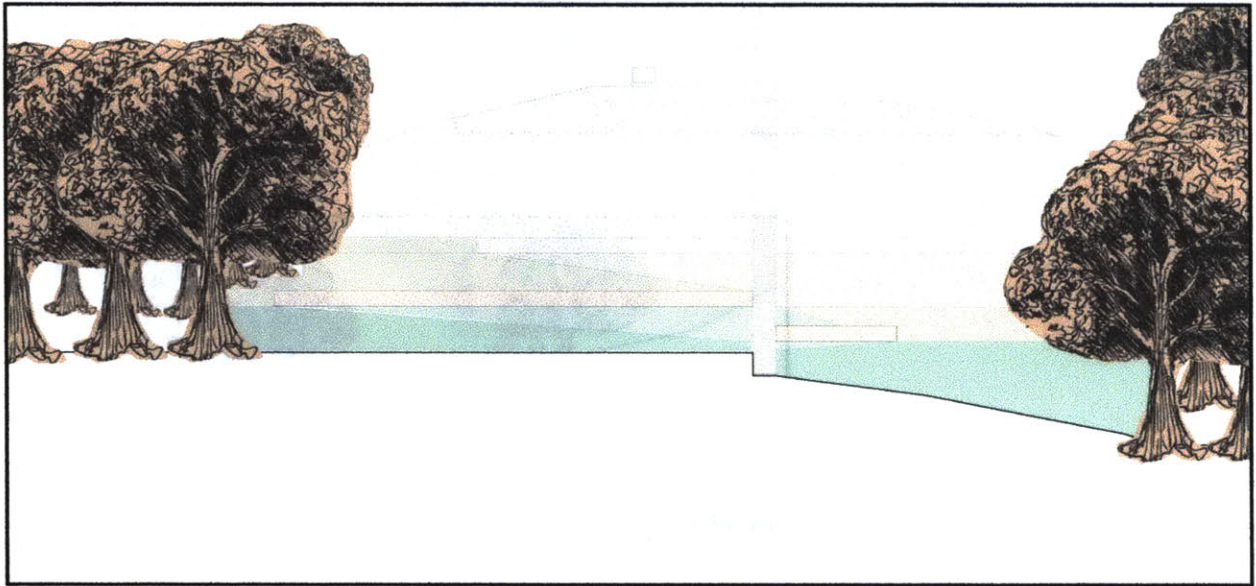
WINTER SOLSTICE SUNSET



Terracing:

The next interventions the pedestrian approaches are the terrace walls along the path. While the path turns into stairs to navigate the steep slope of the mountain at a constant rate, the terrace walls invite the pedestrian to peel off the path and navigate the landscape in order to find an appropriate slope. The walls mark out lengths of ground so that a 1:10 slope is possible. In order to follow the switchback procession it is necessary to cross the stairs so the pedestrian may chose to short circuit the route at anytime.

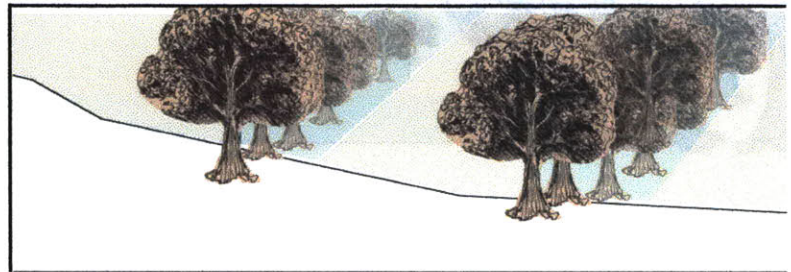
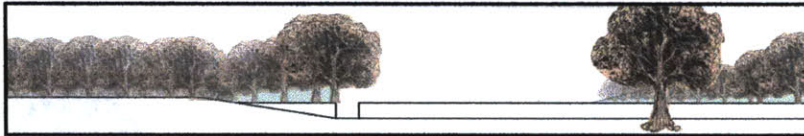
SECTION B



Firebreak:

Once the pedestrian moves down the terrace walls, he passes on either side of him a break in the forestation as shown in Section C. (See also plan, p.20) This break cuts across the mountain from East to West at an angle such that on December 21st at 8am the winter solstice sunrise can light a swatch across the forest floor. Illustration 1 is an image of how the light across the firebreak path might appear. The pedestrian has the choice at this point to peel off the terrace path and move directly on to the firebreak or to continue moving North. This firebreak also helps prevent fire from quickly spreading across the mountain as well as providing a service access.

SECTION C



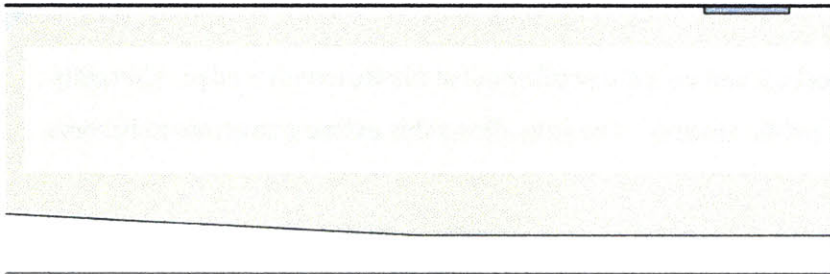
SECTION D

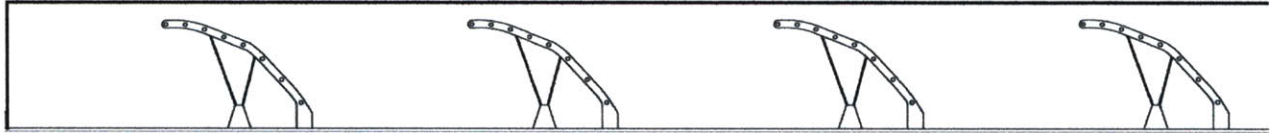
Illus. 1: FIREBREAK



Bridge:

The bridge was conceived as a way to navigate a 50' declivity or ravine that occurs in the mountain's topography. The firebreak cuts across the declivity but the clearing is too steep for general pedestrian movement. Thus after the terracing, the path swings the pedestrian from due North to due West and the bridge gently curves away from the other side of the ravine. From the bridge, the pedestrian can see the canopy of the trees dip down and rise back up accentuating the movement of the land. (See section D) The pedestrian can remain sectionally at the High **Canopic** level. The design of the bridge's form is inspired by Maillard, a Swiss engineer of the 1930s. The bridge could redefine Maillard's triumphs in thin plate concrete forms by being made of high density concrete, the latest in concrete technology.





SECTION E

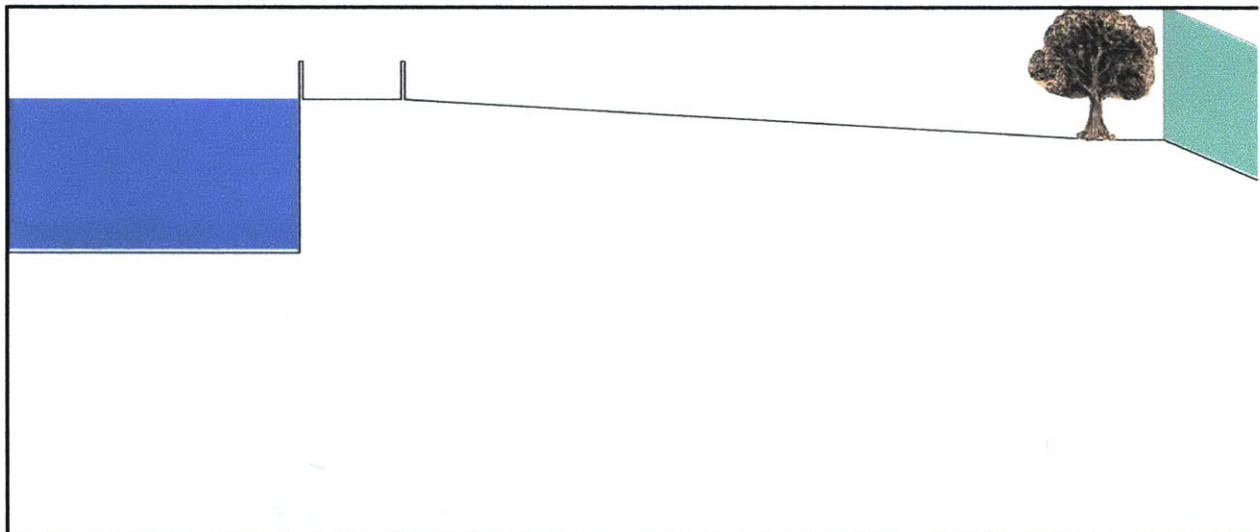
Energy Field:

At the bottom of the mountain, one crosses under the highway and arrives along a stretch of unused land due to its proximity to the highway. My strategy for Paterson includes limited car access within the epicenter. In order to do this, car parks had to be provided outside the epicenter. This unused area is suitable. The canopies built to cover the cars are themselves covered with photovoltaics. They are arrayed on a north-south axis. They are spaced such that even at the lowest altitude of noon sun on December 21st will not cause one canopy to cast a shadow on its northern neighbor. This field can generate energy to be supplied to the industrial center as well as outlying areas.

Pool/Reservoir:

The pedestrian's path allows one to peel off and visit the public pool at the Reservoir's edge. Currently there is no true pedestrian path to this public amenity. The path allows this existing structure to become rediscovered. (See plan, p.20)

SECTION F



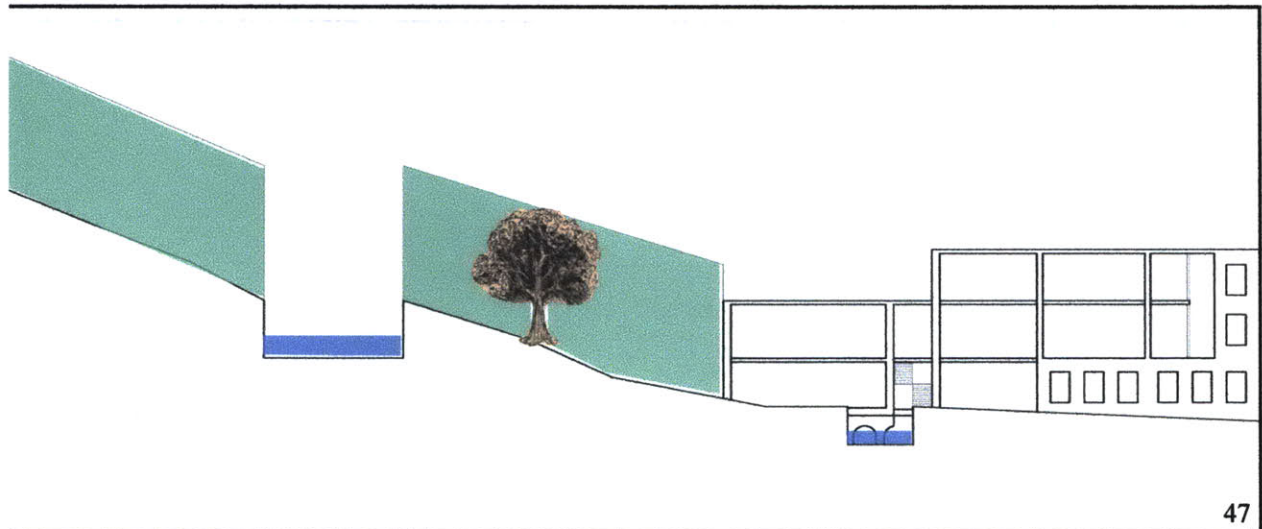


Wild Meadow:

The wild meadow is a break in the dense vegetation that currently exists on the raceway topography. This cut in dense but unkempt vegetation allows a view from the altitude to the reservoir on the 150' contour back into the epicenter. Conversely the wild meadow provides another pedestrian route directly from the city to the public pool. The meadow would be covered with indigenous low-lying vegetation. As it approaches the sidewalk, it turns and enters the visitors center. (See Section F)

100' Contour:

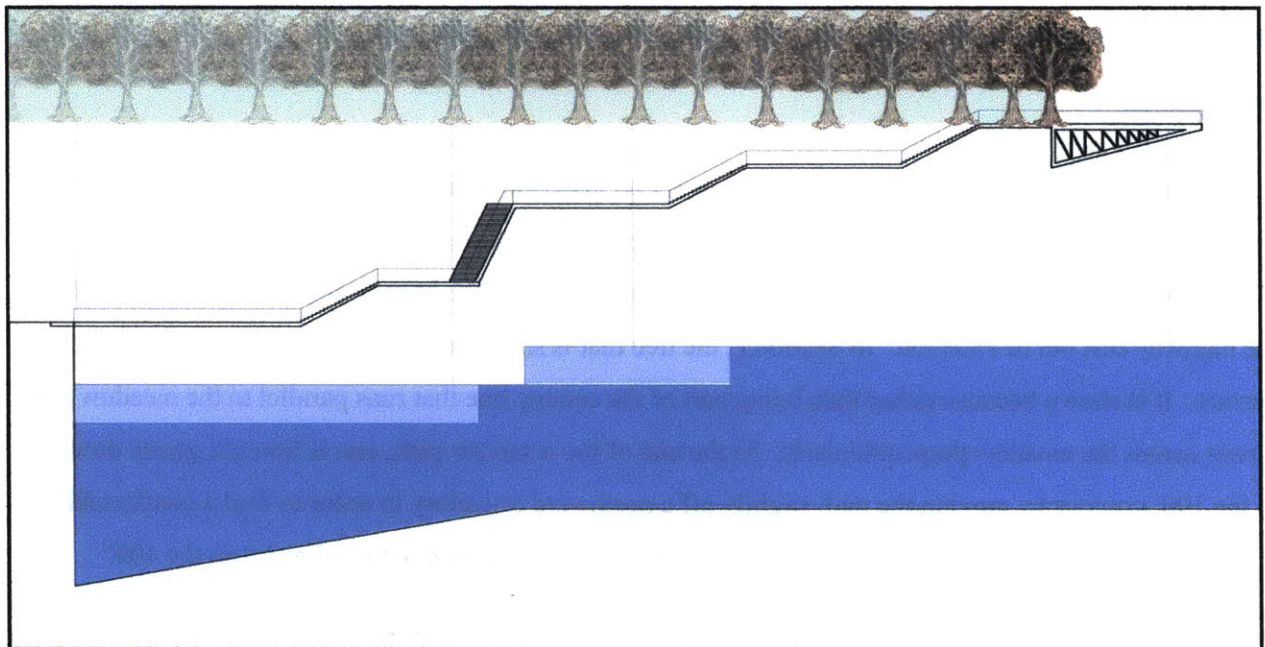
I have planted the 100' contour with trees as an artificial insertion of nature whose purpose it is to highlight the topography, a product both of nature and the man-made environment. I chose the 100' contour because it circumscribes the western and southern edges of the industrial center before following the highway east out of Paterson. In Section F, the tree that is shown after the middle raceway marks this gesture. It is shown because rather than being part of the canopy line that runs parallel to the meadow cut, it runs across the meadow perpendicularly. At the end of the reservoir path, one is brought gently down to the 100' contour by moving the path slightly off a northward trajectory in order to find a comfortable 1:8 slope naturally in the landscape. Once at 100', one crosses a service road and picks up the 100' contour again, moving towards the Great Falls.



Look out:

The 100' contour brings the pedestrian to the edge of the palisade, the site of the 70' Great Falls. It was this site that inspired Alexander Hamilton to chose Paterson as the first industrial city of America. My look out is meant to push you toward the gorge of the falls. Then a bridge-like structure brings one down the edge of the cliff, pushing one away from the edge, out over the water, and then bringing one back towards land. (See plan, p.20) A series of stairs interspersed negotiates the fifty foot drop in elevation needed in order to bring the pedestrian back to terra firma. (See section G) The pedestrian is brought to the Passaic River's edge, which he walks along until he moves back towards the epicenter.

SECTION G



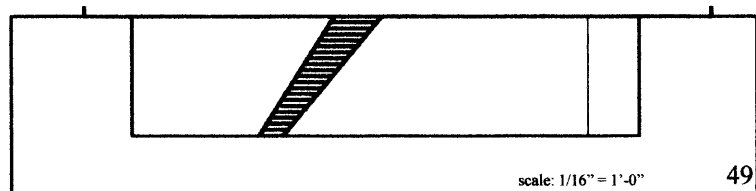
Water Treatment:

Due to continuing industrial use of the Passaic River upstream from the Falls, the hydroelectric plant at this site is now abandoned. The water that flows over the falls is often the wastewater from these industrial plants. The natural topography of the river below the Falls could be terraced in order to create reeded terraces that could cleanse the water as it proceeded downstream. The intention would be to clean the water to the extent the non-polluting water recreation could occur and reactivate the river's edge around Paterson.

Subterrestrial:

Once the pedestrian has been lowered from the 100' contour down to the fifty-foot contour of the river's edge, he can then enter into the subterrestrial level. This is an extension of the path of the middle raceway, which use to serve the various factories along the river. These factories have burned down and have left ruins. Their footings and property lines are still visible through the indigenous growth that has claimed the site. The extension of the middle raceway becomes this meandering path created by walls that were the foundations of the old industries. There is a stair that presents itself in a subterranean room. This stair allows one to emerge onto ground or terrestrial level if one does not want to continue subterraneanly. (See Section H) Serendipitously, the western wall in this room is oriented perpendicular to the Summer solstice sunrise at 4:45am. On June 21st, at sunrise this wall would be aglow with light and reflect the light all around this subterranean world.

SECTION H



Peep Out:

If one has chosen to continue on the path, one finds towards the end another staircase. This staircase does not promise to permit exit. Rather at the top of the stair the pedestrian can begin to reorient himself with the old industrial buildings that survived on the power of the water provided by the raceway. The pedestrian can also look toward the epicenter. If he wants to emerge, a secret stair is provided to the right to allow exit. (See Illus. 2, and plan, p.20)

Epicenter:

If one follows the subterrestrial path to its conclusion, one walks up a ramp and is caught by the procession of the 100' contour toward the epicenter. (See epicenter plan, p.53) The center provides the trees for the 100' contour's forestation. This canopy breaks so that the pedestrian can emerge into the epicenter. (See Illus. 3) He is oriented south and can look up to the mountain from whence he came. Straight ahead he sees a grid of trees another type of canopy to balance that of the energy field. A collecting pond marks the epicenter. The path cuts through the pond and directs the visitor toward the greenhouse. The pond irrigates the terraces of flora that step down from it.

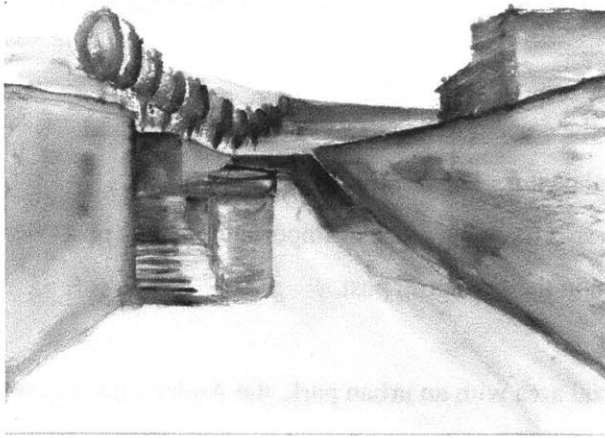
Greenhouse:

The greenhouse is a converted industrial shed. The existing structure has been kept intact. The roof has been changed to translucent and transparent glass allowing the pure volume to read and the plants within to survive. The greenhouse also houses labs for the ecologists on the eastern side. The brick wall with its multiple windows was maintained because the shallowness of that part of shed allows daylight to penetrate its full depth. Illustration 4 shows an early sketch of the joint between the greenhouse and the verdaduct.

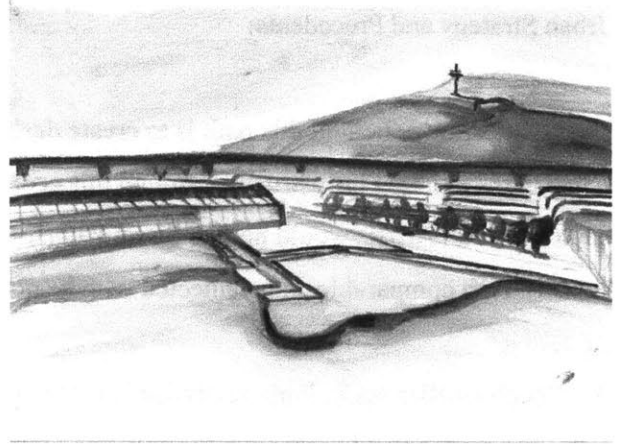
Verdaduct:

The verdaduct, a green path, is a new piece of infrastructure. Essentially it is an extruded greenhouse that connects this new center to the old center of City Hall. It is a production line of plants with the seedlings starting out at the greenhouse end and as they grow they get moved further east. So that at the point of a local 100' contour line and City Hall the seedlings are now trees that can be moved away from the epicenter and distributed to the greater area of Paterson. (See plan, p.20) Illustration 5 shows a section through the verdaduct at the beginning where it connects to the greenhouse.

Urban Strategy and Precedents:



Illus. 2: PEEP OUT

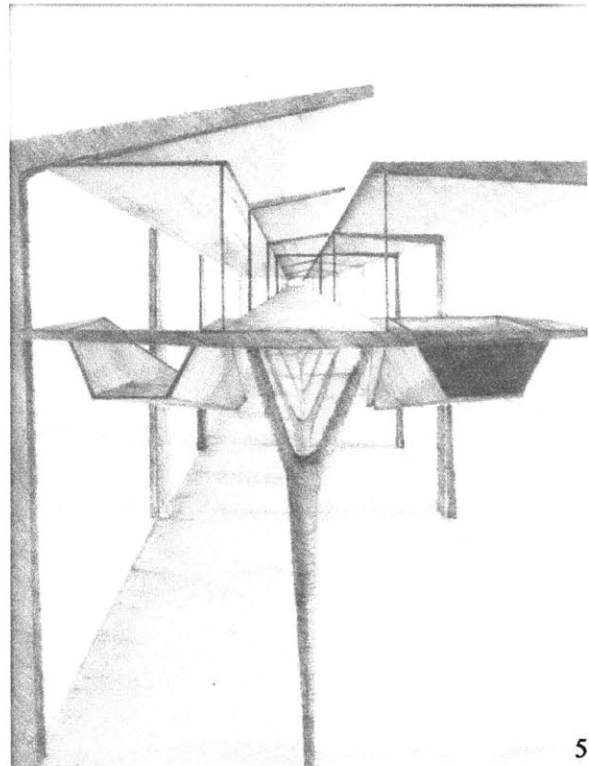


Illus. 3: EPICENTER

Illus. 4: GREENHOUSE



Illus. 5: VERDADUCT

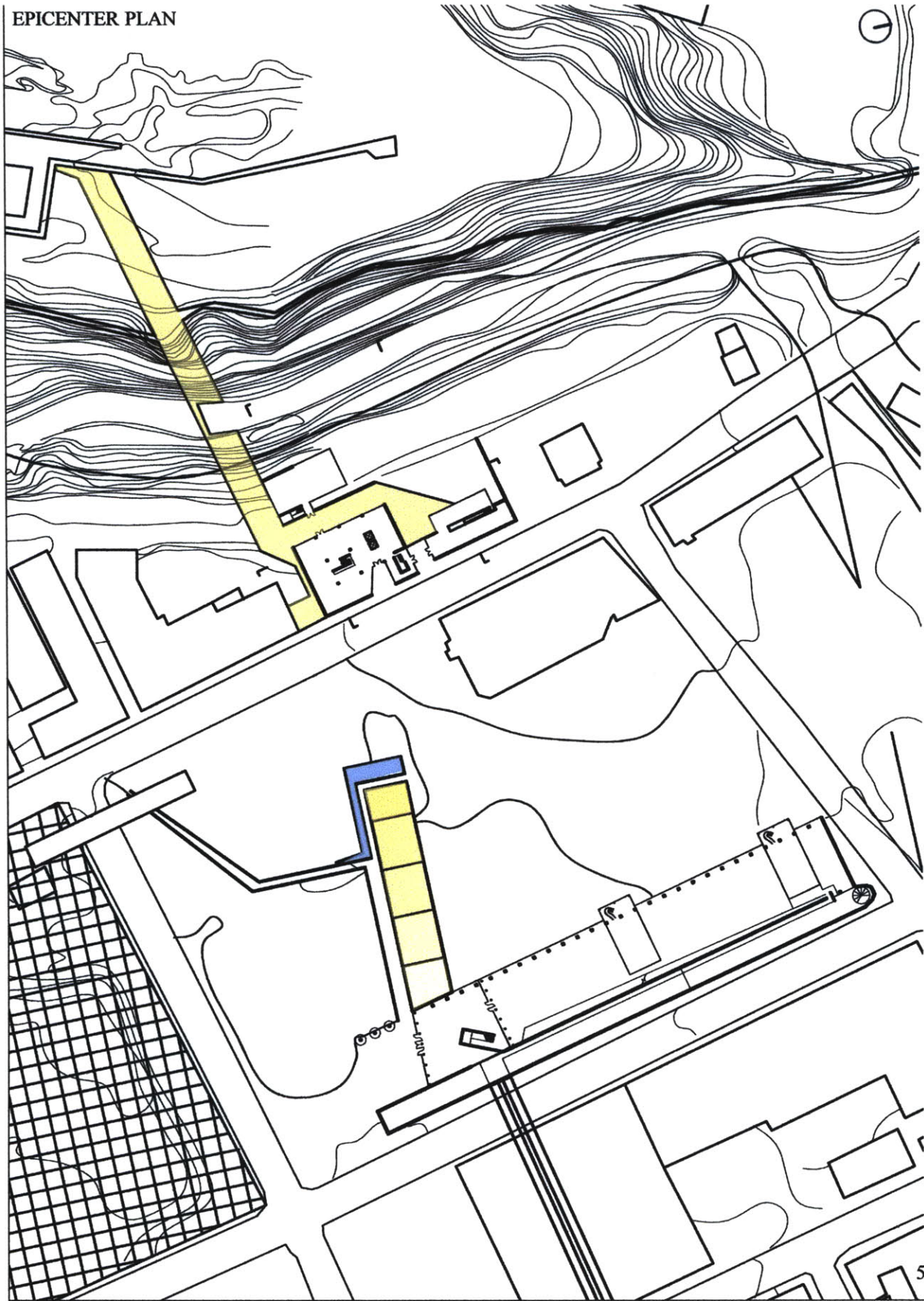


Urban Strategy and Precedents:

The urban strategy behind this path is to create desire in the current residents of Paterson to stay and invest in the existing infrastructure around this ecological center. The Center for Ecologists and Environmental Artists would help to direct Paterson towards having a place of importance in this post-Industrial era comparable and connected with its position in the Industrial past.

On a much smaller scale, Paris revitalized an old industrial area with an urban park, the Andre Citroen Park. The park helped reprogram the area once inhabited by Citroen's manufacturing plant. The park has helped with a larger urban renewal plan and has become a tourist attraction. Also in Paris, an abandoned railway line in Paris was reused as an elevated urban park. It is a three-kilometer urban park and the space between the supporting arches has been programmed with shops. Its program and length is a precedent for the verdaduct.

EPICENTER PLAN



VISITORS' CENTER, GREENHOUSE AND VERDADUCT

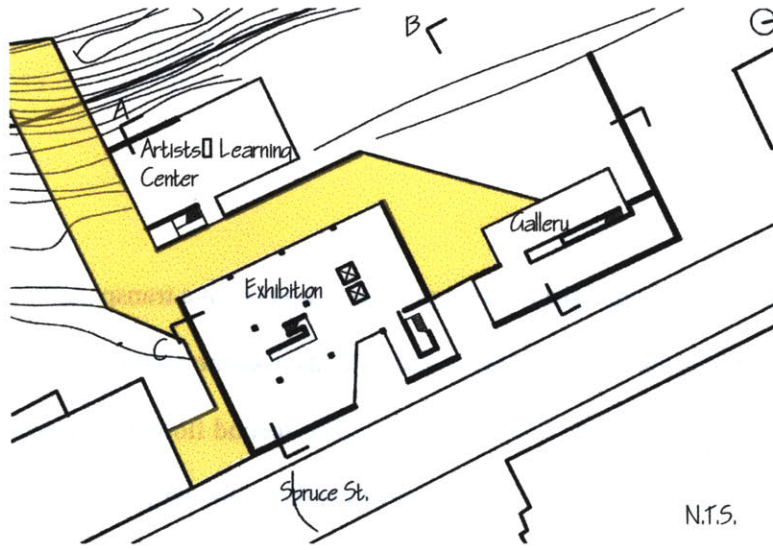
VERDADUCT



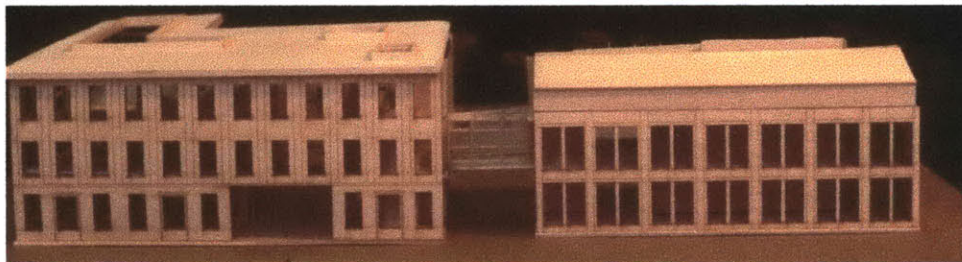
verdaduct

Visitors' Center:

The visitors' center is housed in an old textile manufacturing mill located on Spruce St. These mill buildings along the upper/middle raceways were converted to manufacture locomotives around 1840. "From 1836-1890 Paterson paced the world in railroad engines."¹ These buildings are situated in a unique and historic site. They look out on L'Enfant's raceways, which today, are overgrown and abandoned. In my design, these buildings are part of the epicenter. (See epicenter plan, p.53) The visitors' center is comprised of three buildings, two face Spruce St. while the third straddles the middle raceway behind the other two. (See first floor plan, next page) The larger of the two acts as the main building around which the other two act as satellites in both program and accessibility. The program of this complex is a permanent exhibition space, a gallery, artists' learning center, scientists' learning center, administrative office, and café. The first floor of the main building houses the permanent exhibition. I have shortened the volume of this building by a bay, allowing the meadow to enter into it with no roof above it. The meadow then continues across to form a garden for the smaller building that faces Spruce St. One can exit the permanent exhibition space and enter into the building that straddles the raceway. It houses the artists' learning center in a double height space with views up and down the middle raceway. Across the way parallel to Spruce St., the gallery space is housed. The narrowness of this building makes it a perfect receptacle of natural light. I have added a glass volume onto the back of it to provide more floor area for the program contained in it.



FIRST FLOOR PLAN

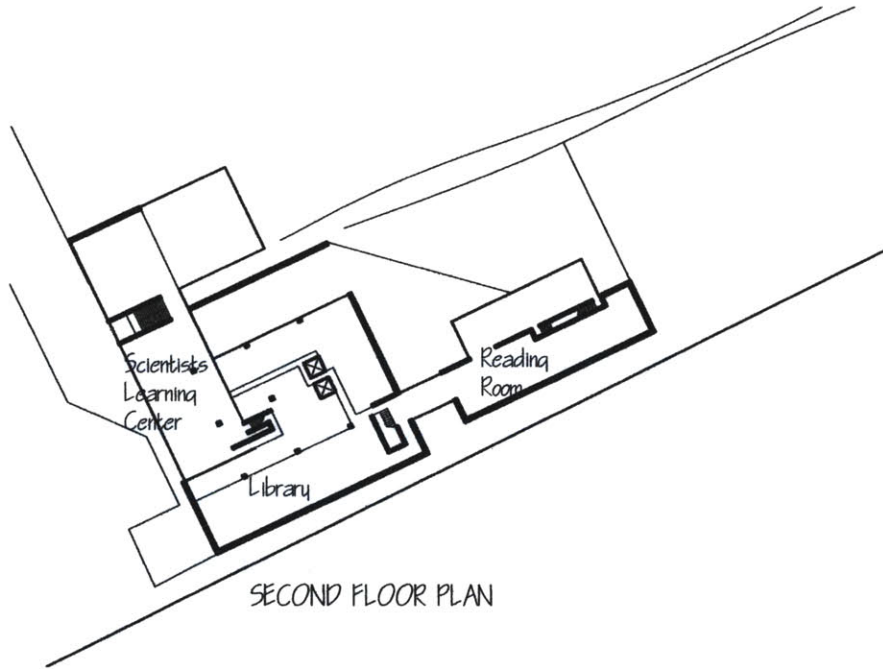


VIEW OF EAST FACADE

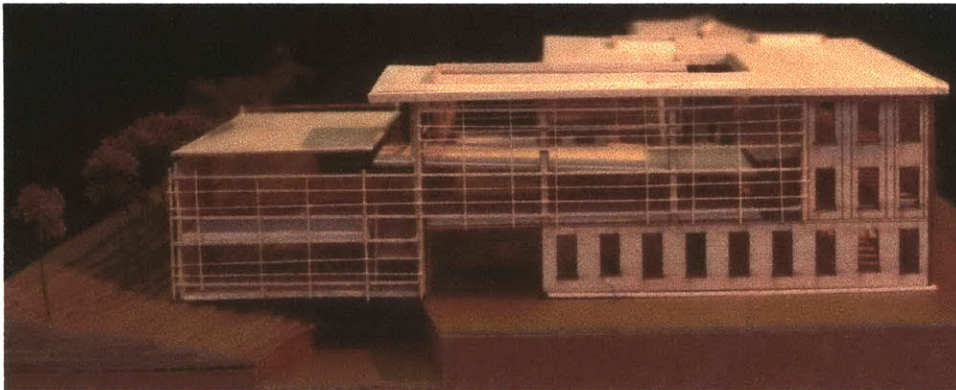
On the second floor, the scientists learning center is housed in a transparent volume that breaks the monotony of the brick southern façade and extends over the raceway in order to rest over and sit perpendicular to the artists' learning center. (See second floor plan, next page.) It can be reached via a stair inside the first mill building or via the stairs which are in the artists' learning center bridging between the two extant buildings. The width of this glass volume is determined by the necessity for natural light, which can penetrate at most forty feet. (See Illus.6)

The eastern floor plate on the second floor houses the library stacks. It is accessible by a stair that resides in the northeast corner of the building. While these two floor plates do not connect, access can be reached via bridges that connect each floor plate to the elevator cores in the northwest corner. The bridges connect in between the two elevators. From the stacks, one can walk over an enclosed bridge to reach the second floor above the gallery where a reading room is housed. The reading room can also be reached by a stair enclosed in an opaque volume lit from above by a skylight, which penetrates the roofline like an elongated chimneystack. The reading room continues on the third floor of this building and is only accessible by this stair.

¹ Cunningham, p.130.



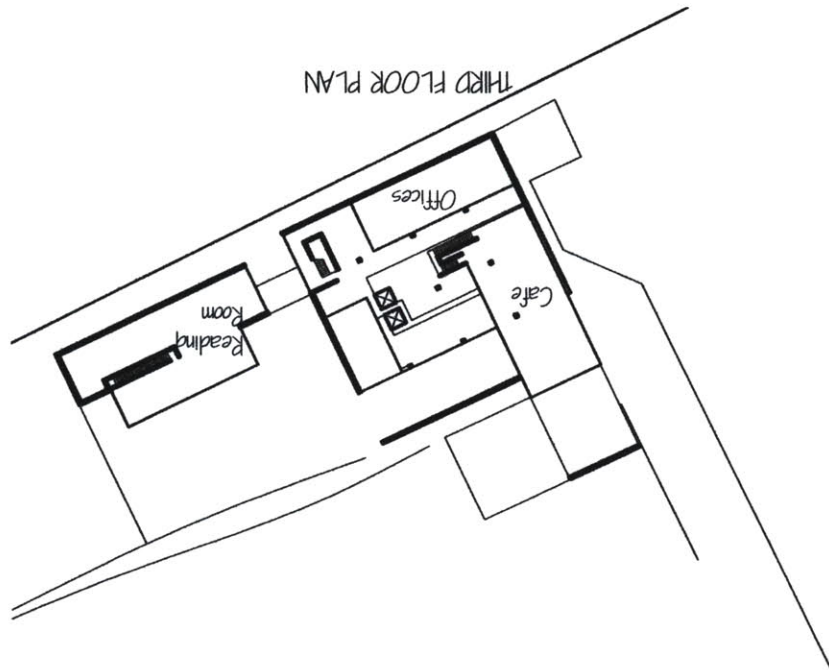
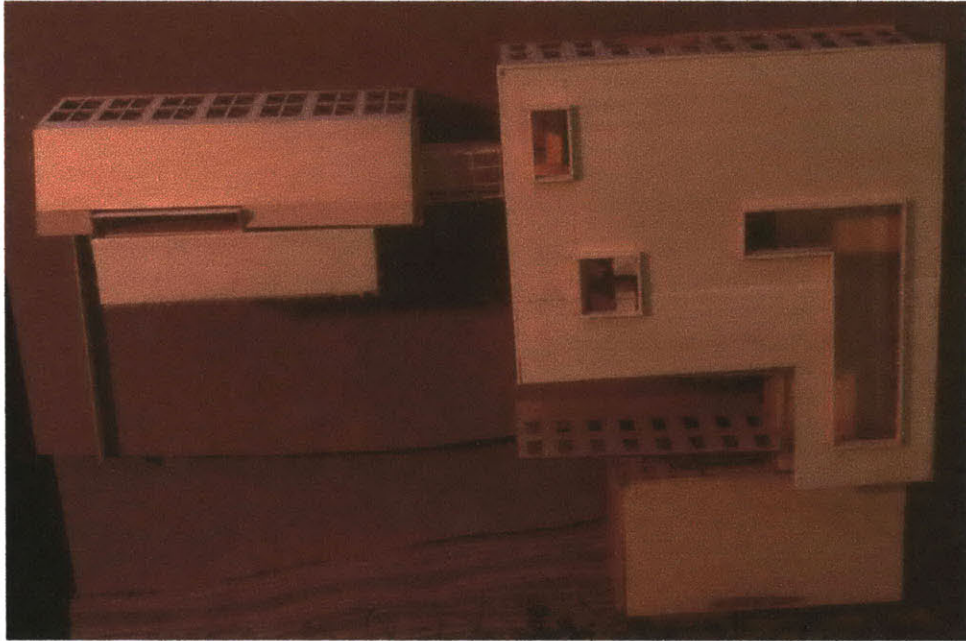
Illus. 6: view down wild meadow

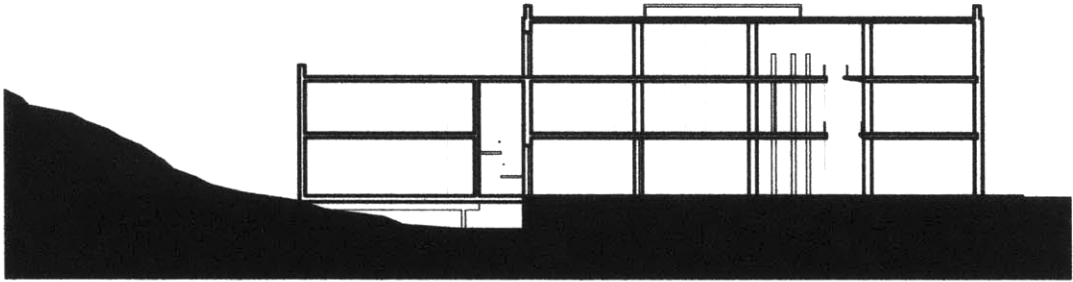


VIEW OF SOUTH FACADE

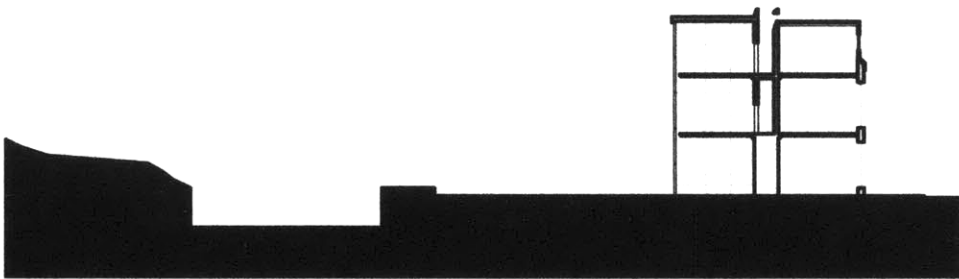
On the third floor of the main building, the administrative offices and café are housed. (See third floor plan, next page.) The stair attached to the scientists' learning center continues up to the café. The café's volume is the length of the original main building, and it uses the roof of the scientists' learning center as a fair weather garden/café. The northeast corner stair accesses the administrative offices. The main building's roof has three skylights. A long rectangular one sits atop the café and allows light to penetrate down the stairs. The second sits above the elevator cores. The third sits above the northeast corner stair. (See aerial, next page.)

AERIAL VIEW

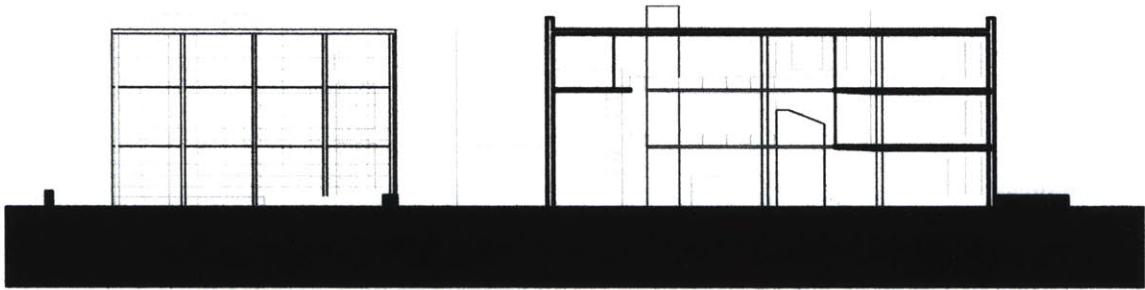




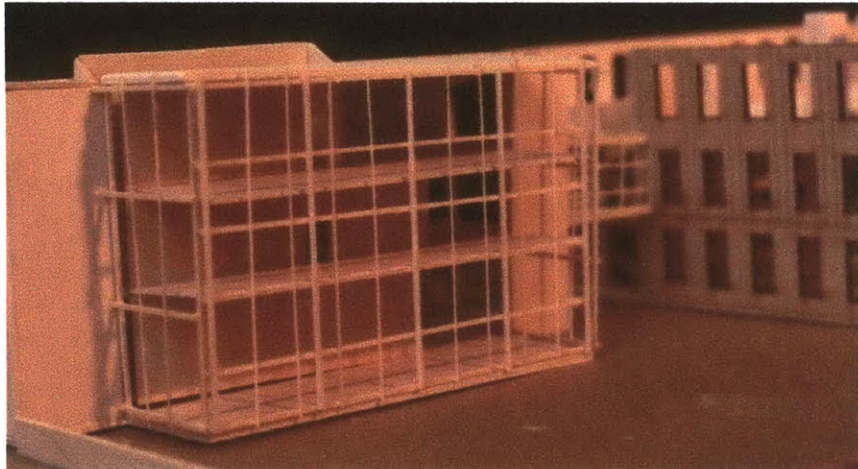
SECTION A



SECTION B



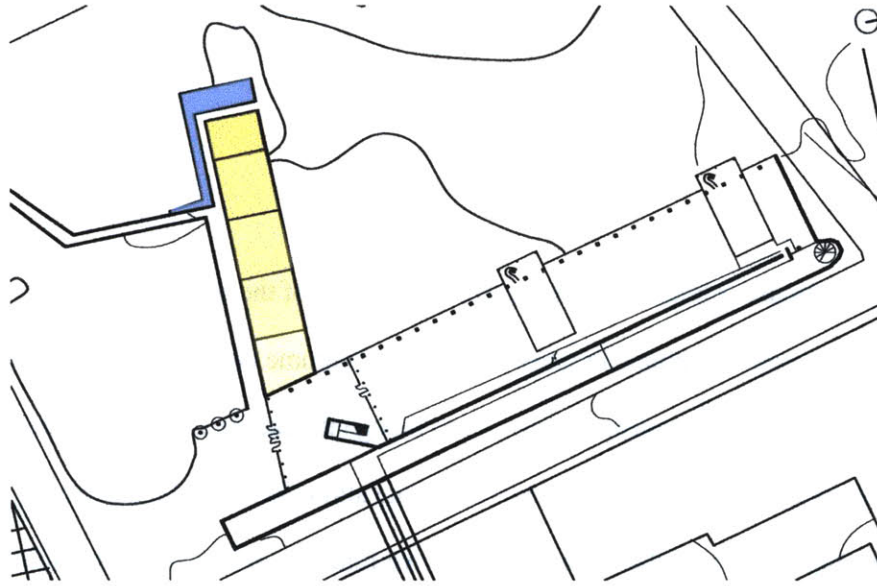
SECTION C



VIEW OF WESTERN FACADE OF READING ROOM

Greenhouse:

The greenhouse sits in the epicenter. (See epicenter plan, p.53) The greenhouse is the reuse of what is now an industrial shed (ca. 1930-40s) that houses a NJ Transit Bus depot. It is approximately six hundred feet long. (It currently sits opposite the museum divided by a strip of parking. This is an example of a type of disconnected urban fabric that thwarts efforts to rejuvenate the area.) However, in this proposal, the museum remains and is integrated into the epicenter. As seen in the section of the path, the pedestrian is brought from the subterrestrial level on to the terrestrial level and reoriented southward looking back towards the Wachtung Mountain, where the path begins at the Temple to Sky and Water. At the epicenter, the pedestrian's path cuts through a collecting pond for rainwater. (See greenhouse plan, next page.) The water is used to irrigate successive terraces of flora that land at the side of the greenhouse. The path follows the terraces to the southern entrance of the greenhouse.



GREENHOUSE PLAN



VIEW OF SOUTHERN FACADE

The greenhouse is housed under the western volume of the bus depot, reusing the extant trusses while enclosing the volume in glass. The eastern volume houses labs for the ecologists. The depth of this volume is twenty-six feet. Even though the façade is brick, the multitude of punched windows and the narrowness of the floor plate allow for natural light. Small punched windows at the top of the wall that separates these two functions allow afternoon light to penetrate into the lab space.



AERIAL VIEW OF ROOF

The path continues through the greenhouse with two options. The first presents itself where the dividing wall is peeled away so that one may pass directly through to the labs or outside under the veraduct.



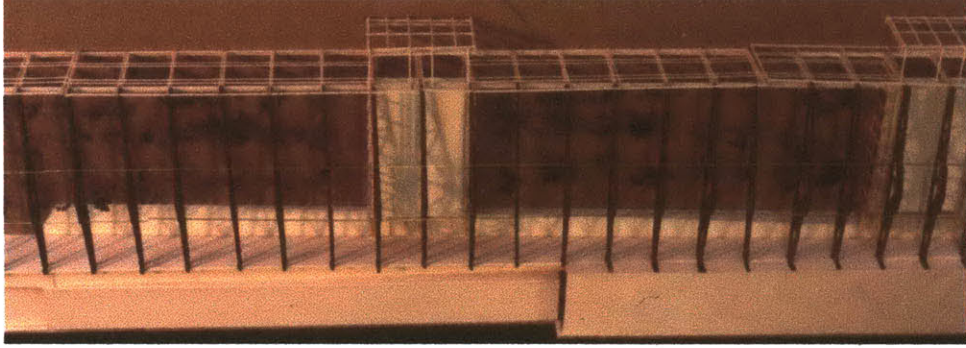
VIEW OF EAST FACADE AT CONNECTION POINT TO VERDADUCT



VIEW OF ROOF, STAIR AND RAMP

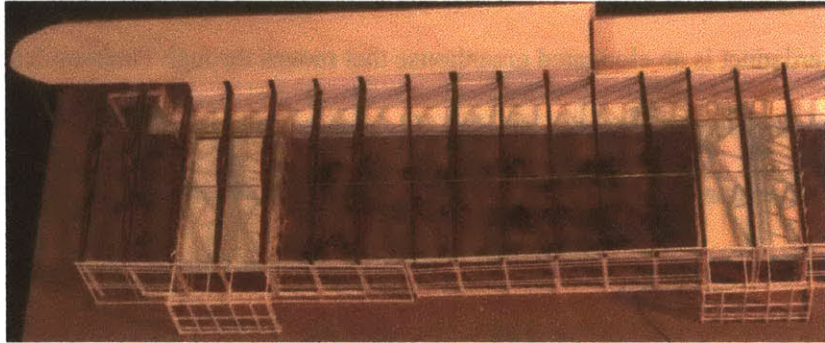
The second option occurs after one has passed through the vestibule or, acclimatization zone of the greenhouse. The path continues up a ramp that runs alongside the dividing wall rising slowly over the 600' length of the greenhouse. (Also in the vestibule, a stair occurs that allows the knowledgeable visitor, or ecologist, to circumvent the ramp and proceed directly up to the veraduct.) The visitor can move from ground level to the second floor looking at what is growing and observing small labs contained within the western volume. The path turns and wraps around the wall, continuing upwards. The visitor can now observe the ecologists in their labs. Then the path exits out on to the roof plane. Here, the veraduct begins.

AERIAL VIEW OF LABS AND RAMP

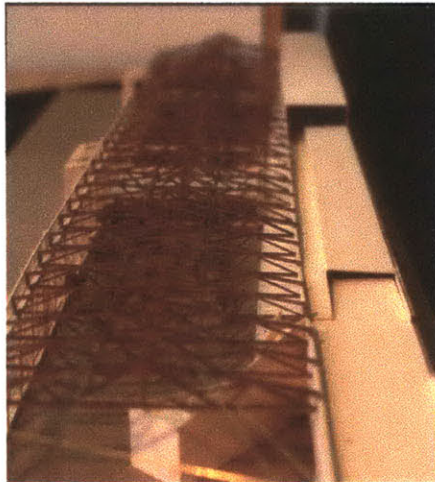


AERIAL VIEW OF SOUTH END: STAIR AND RAMP





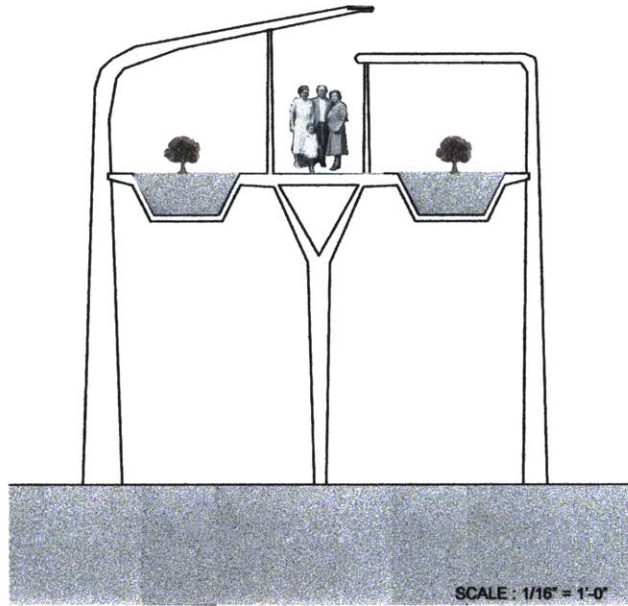
AERIAL VIEW OF NORTH END



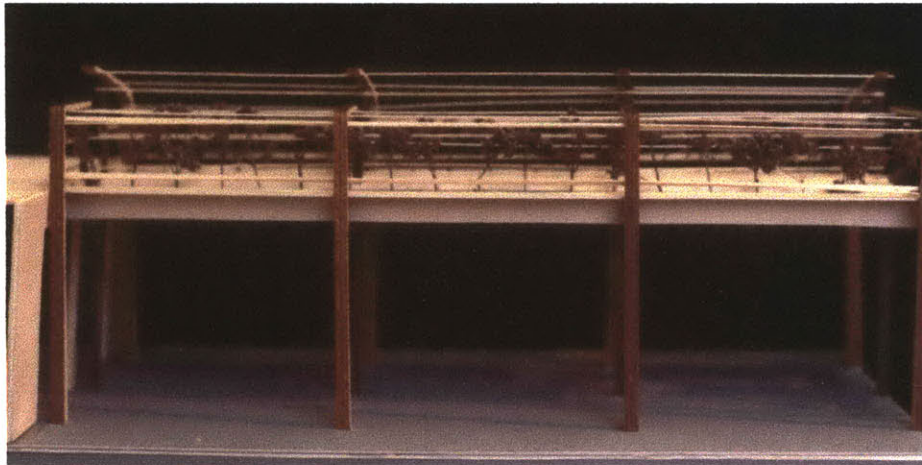
AERIAL VIEW OF ROOF, STAIR, AND RAMP

Verdaduct:

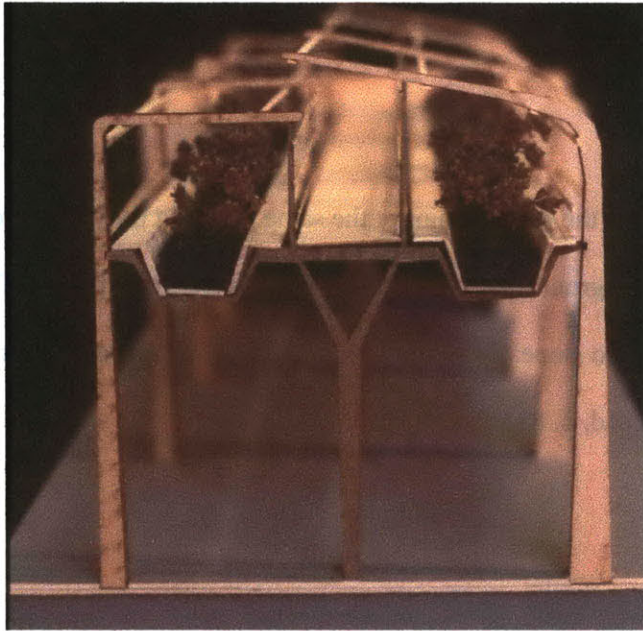
The verdaduct is an elongated greenhouse that moves through Paterson from the eastern edge of the greenhouse east towards City Hall. It changes sectionally as the trees within grow from seedlings to mature trees. The changes occur over four sections. In the first section, the verdaduct is a bridge that allows pedestrian foot traffic to occur underneath it. (See section one, next page.) The path from the greenhouse's roof on to the verdaduct remains external. However, the roof from the northern half of the verdaduct extends over the path to provide both shade and protection from inclement weather. The seedlings are housed on either side protected from the exterior elements by glass. The small volume allows heat to build up quickly and for the interior temperatures to be adjusted rapidly.



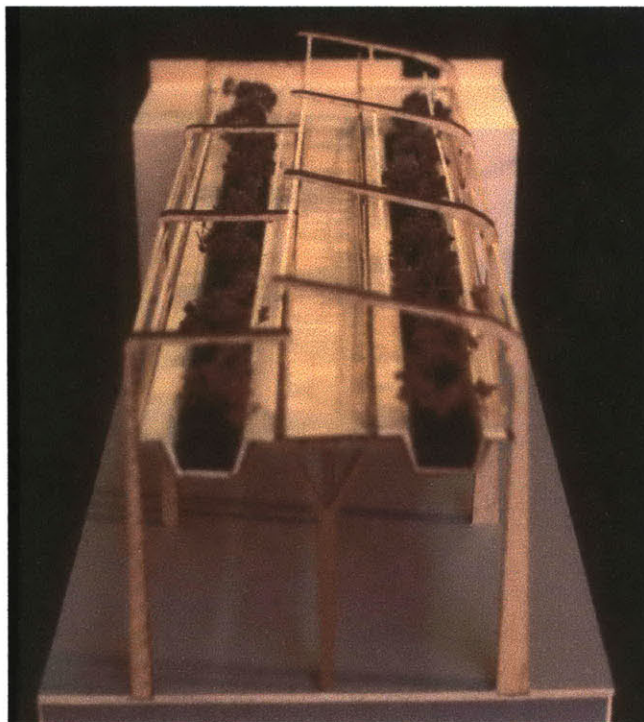
SECTION ONE



SECTION ONE: VIEW OF SOUTH FACADE

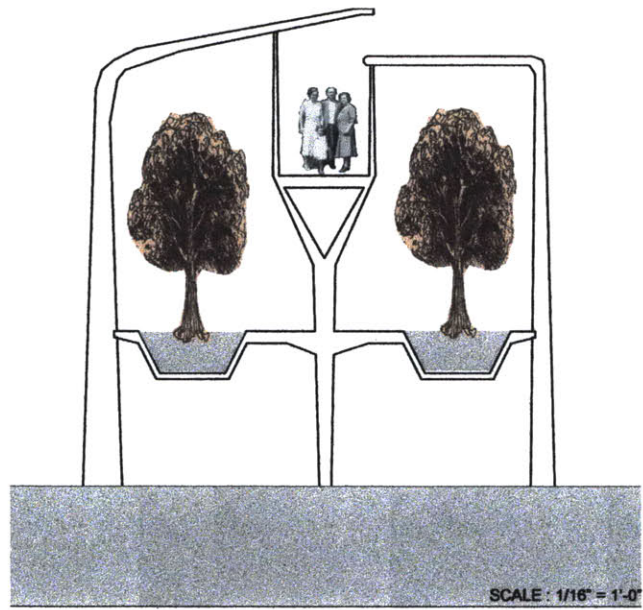


VIEW OF EAST END



AERIAL VIEW

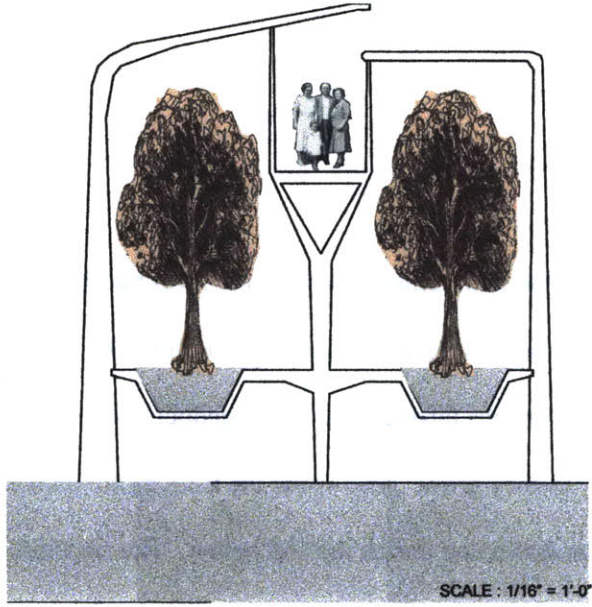
In the second section, the path remains at the same level but the enclosure of the verduct now extends to the ground. (See section two: beginning, next page.) The troughs that contain the trees have begun to slope towards the ground to accommodate the increasing height of the trees. (See section two: end, p. 83)



SECTION TWO: BEGINNING

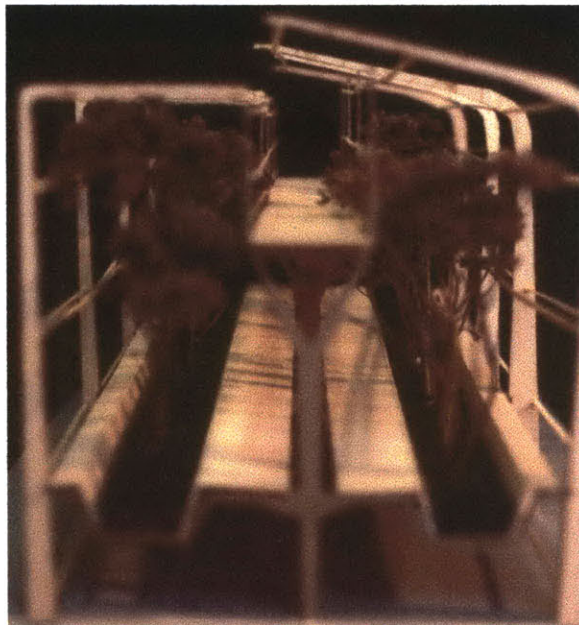


SECTION TWO: VIEW OF SOUTH FACADE



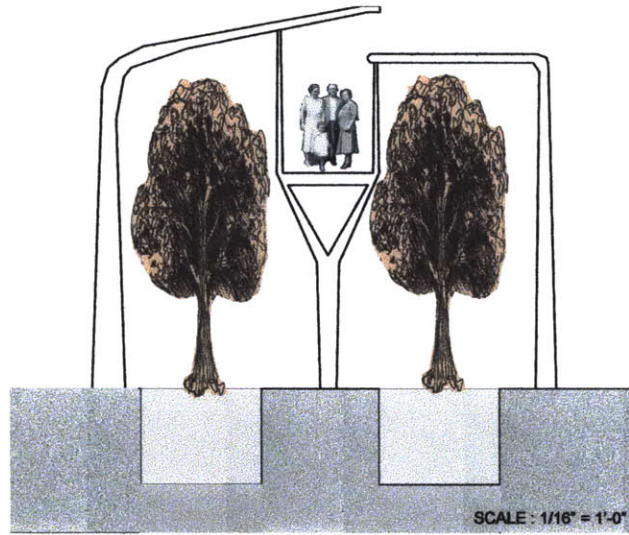
SCALE : 1/16" = 1'-0"

SECTION TWO: END



VIEW OF EAST END

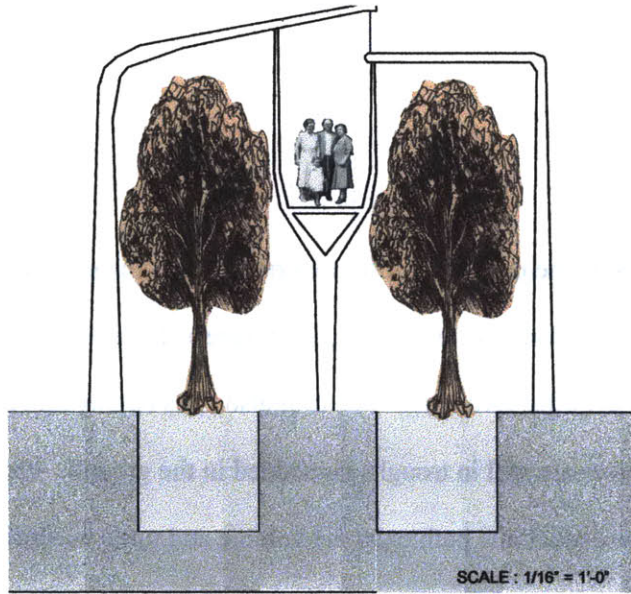
In the third section, the path remains at the same level but the ground has begun to slope upwards. (See section three: beginning, next page.) In addition, the troughs have gone into the ground. Having the trees in troughs through out the veraduct allows the trees to be moved down this production line easily as they grow. Also while the troughs are above ground and sloping excess water can easily run down and enrich the soil below. The structure remains the same height as from the beginning but since the ground has risen, what part of the structure exposed above ground is shorter. The path also becomes enclosed at this point and the roof begins to rise to allow for the taller trees. (See section three: end, p.87)



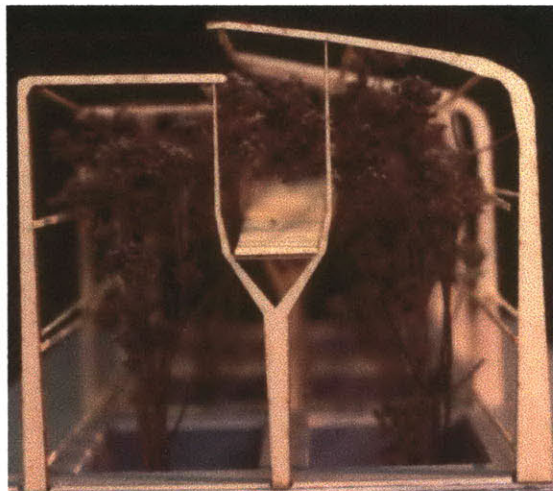
SECTION THREE: BEGINNING



SECTION THREE: VIEW OF SOUTH FACADE

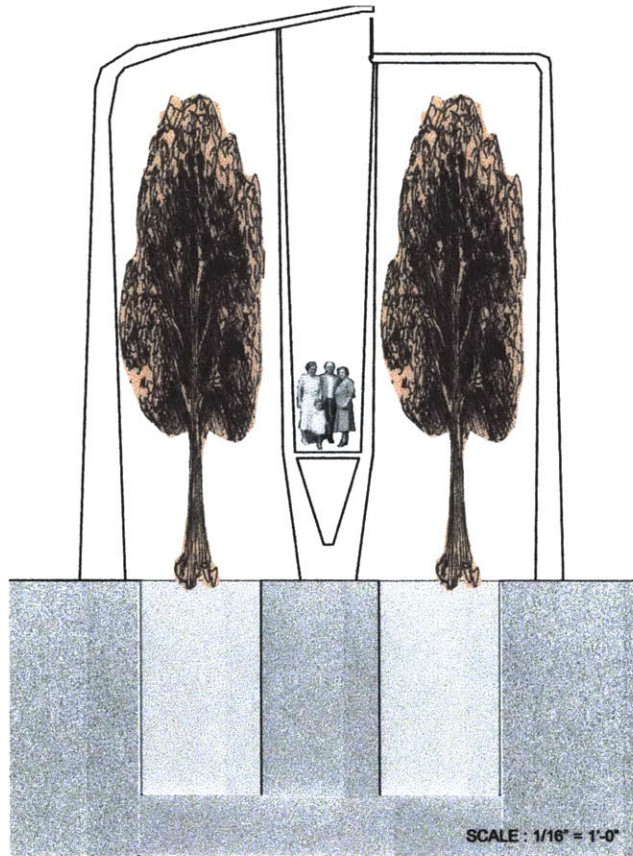


SECTION THREE: END



SECTION THREE: VIEW OF EAST END

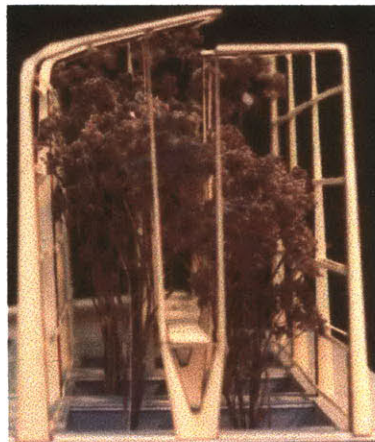
In the fourth section, the path gets closer to terra firma as the ground continues upwards with its steady slope. (See section four: beginning, next page.) The ground rises approximately twenty feet over the course of the verdaduct. The roof also rises twenty feet to accommodate the tallest of the trees. The trees are still in troughs embedded in the ground. The verdaduct has one roof. At the end of the verdaduct, the path exits the volume and turns northward depositing the visitor off a ramp in the direction of City Hall. (See section four: end, p.93) The prospect that greets one as one emerges from the verdaduct is the tree-lined 100' contour ring. The trees are the mature trees from the verdaduct. Thus the visitor has experienced the full production line from seedling to maturity. The verdaduct provides all the trees needed for the artificial insertions of nature I have discussed.



SECTION FOUR: BEGINNING

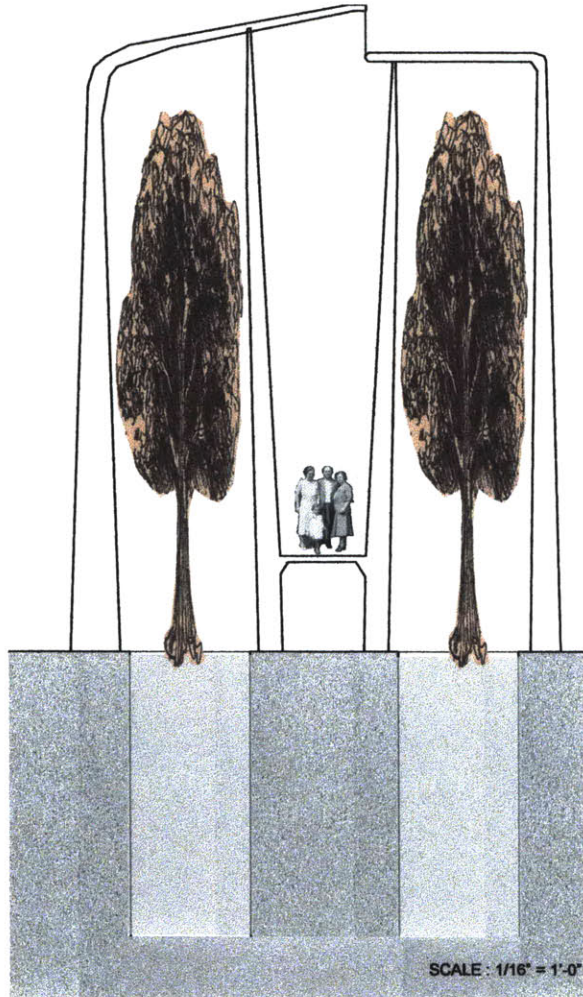


SECTION FOUR: SOUTH ELEVATION

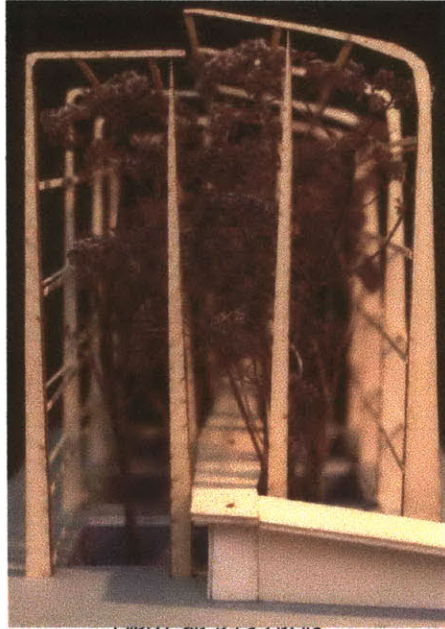


VIEW OF WEST END

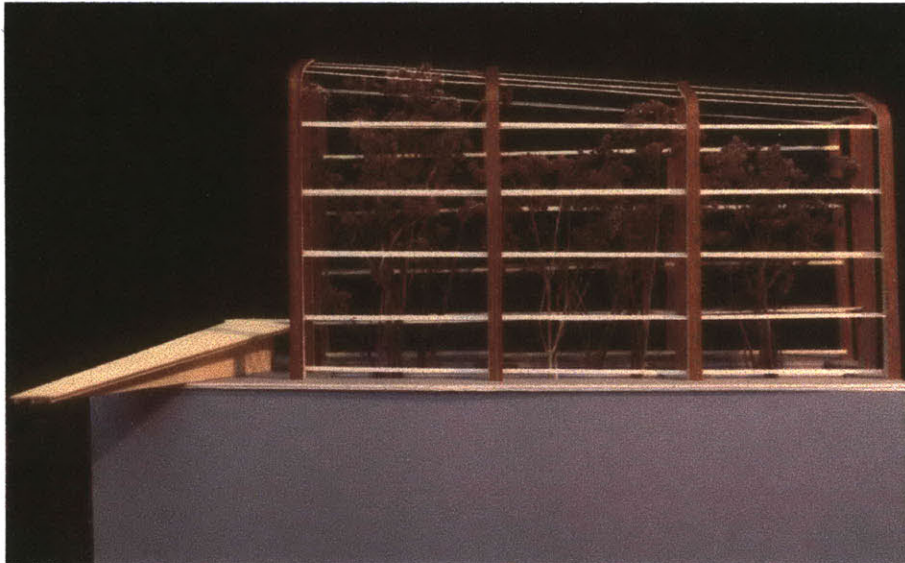
Thus the verdaduct becomes a marker of time for Paterson's community. A child could claim a seedling in the first section of the verdaduct. Then as the child grows, the tree moves along the verdaduct marking the passage of time. When the child has become an adult, the tree has left the verdaduct and has been planted somewhere in Paterson with the name of the child. The life of the community weaves itself through Paterson, as trees, products of nature.



SECTION FOUR: END



VIEW OF EAST END



VIEW OF WEST ELEVATION



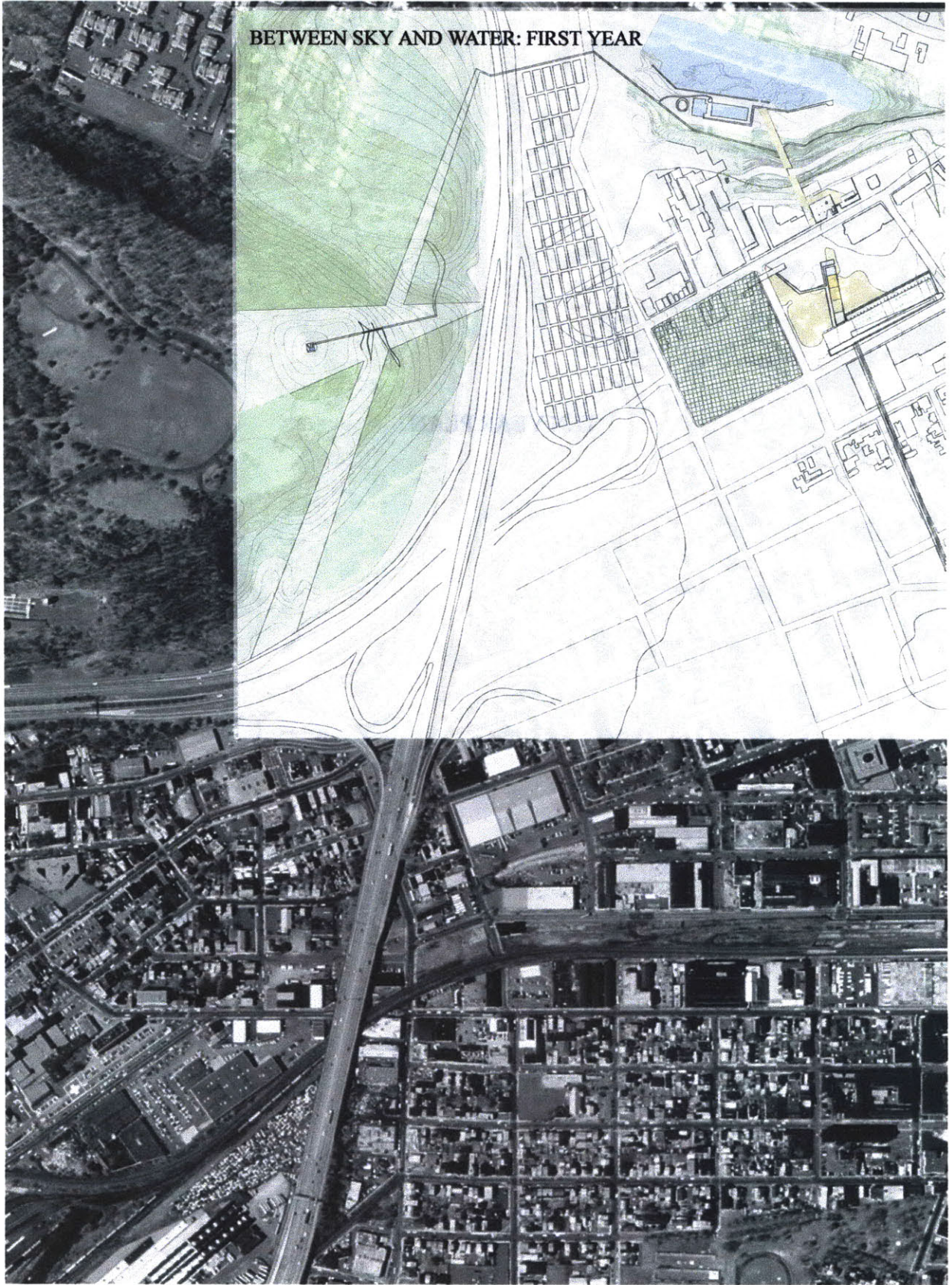
AERIAL VIEW

TEN YEAR PLAN



tenth year plan

BETWEEN SKY AND WATER: FIRST YEAR

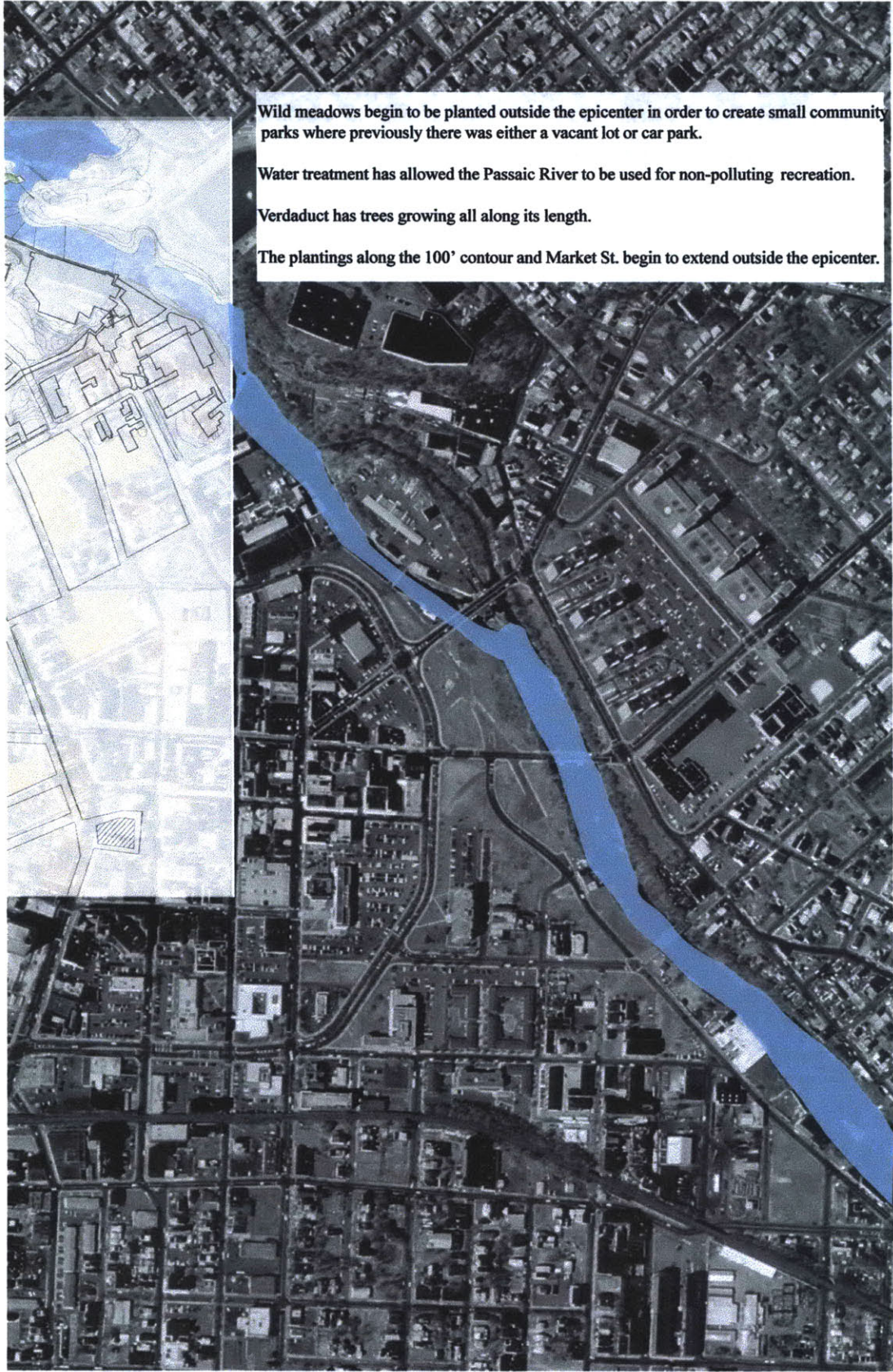




The design has been mapped on to the existing site. The infrastructural changes have begun and vegetation has been cleared as planned. However, the insertions of nature have not yet grown. The seedlings are growing in the first section of the verdaduct and greenhouse.

BETWEEN SKY AND WATER : FIFTH YEAR





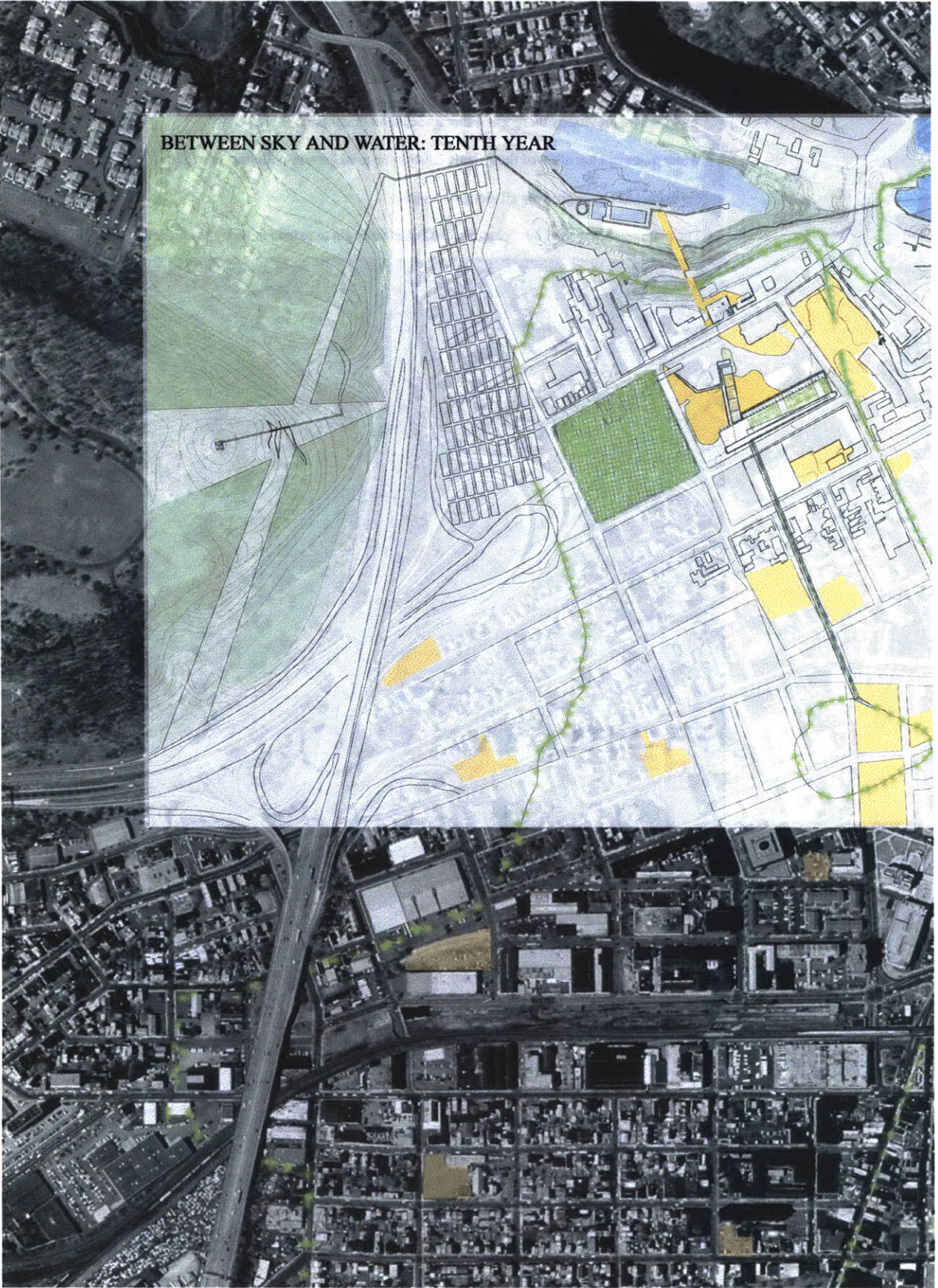
Wild meadows begin to be planted outside the epicenter in order to create small community parks where previously there was either a vacant lot or car park.

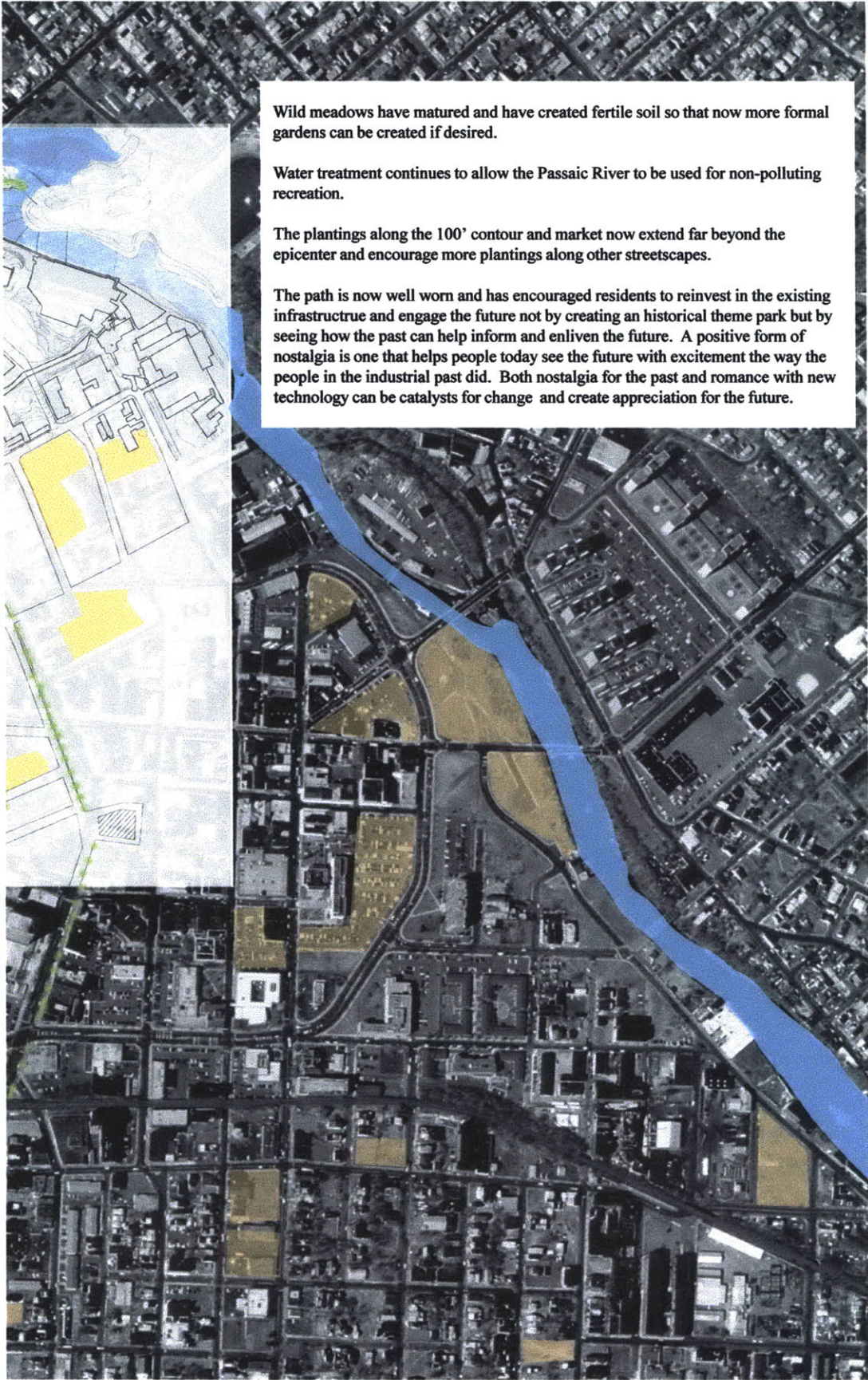
Water treatment has allowed the Passaic River to be used for non-polluting recreation.

Verdaduct has trees growing all along its length.

The plantings along the 100' contour and Market St. begin to extend outside the epicenter.

BETWEEN SKY AND WATER: TENTH YEAR





Wild meadows have matured and have created fertile soil so that now more formal gardens can be created if desired.

Water treatment continues to allow the Passaic River to be used for non-polluting recreation.

The plantings along the 100' contour and market now extend far beyond the epicenter and encourage more plantings along other streetscapes.

The path is now well worn and has encouraged residents to reinvest in the existing infrastructure and engage the future not by creating an historical theme park but by seeing how the past can help inform and enliven the future. A positive form of nostalgia is one that helps people today see the future with excitement the way the people in the industrial past did. Both nostalgia for the past and romance with new technology can be catalysts for change and create appreciation for the future.

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rosette

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ILLUSTRATION CREDITS

bus depot



ILLUSTRATION CREDITS

Between Sky and Water: First Year - Tenth year (pp.100-105) based upon aerial photograph of Paterson, New Jersey from Intrasearch, [www. interasearch.com](http://www.interasearch.com).

All other images by the author.