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# The Community Cohesion Trail of Brattleboro, Vermont

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**THE COMMUNITY COHESION TRAIL OF  
BRATTLEBORO, VERMONT**

A Thesis Presented

by

PATRICK C. KITZMILLER

Submitted to the Graduate School of the  
University of Massachusetts Amherst in partial fulfillment  
of the requirements for the degree of

**MASTER OF ARCHITECTURE**

May 2014

Department of Art, Architecture and Art History

**THE COMMUNITY COHESION TRAIL OF  
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Department of Art, Architecture and Art History

## DEDICATION

To my beautiful and understanding family. Thank you for all your support these last three years.

## ACKNOWLEDGMENTS

I'd like to thank the faculty and staff of the UMass Architecture department for all their work over the last three years in educating me on what it means to be an architect. They have been forthright with their knowledge, understanding, and dedicated in their endeavor to work with the students in the department and in the pursuit of an architecture with spirit and meaning.

I would also like to thank my fellow students who have continued to impress me with their passion and creativity. They have given me both enthusiasm and hope as we have struggled together through the rigour of the master's program.

I wish all of you a fun and exciting journey.

## ABSTRACT

THE COMMUNITY COHESION TRAIL OF BRATTLEBORO, VERMONT

MAY2014

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Directed by: Professor Kathleen Lugosch

This thesis is an exploration of social connectivity and the ability for architecture to bridge a large distance to connect two community gathering areas in the town of Brattleboro, VT. The focus of this thesis is the creation of a series of architectural installations, bridges and gardens that link together via a pedestrian/bike path to connect the urban center of Main St. with the municipal park on the western end of town known as Memorial Park.

Brattleboro, VT is a town rich in artistic traditions. It is home to the world famous New England Center for Circus Arts, the Brattleboro Music Center, the New England Youth Theater, the Brattleboro School of Dance, and many others. It is a town where people across the socio-economic spectrum practice and appreciate the arts. It is one of the things about Brattleboro that creates a unique environment where community can thrive and earned Brattleboro the designation of "One of America's 20 Best Small Towns" in 2012 by the Smithsonian magazine.

Despite the great number of local arts galleries, institutes and social spaces, this thesis argues that the vast majority of community interactions take place along the sidewalks of the urban downtown, and in certain centers of activity in and around the area, such as Memorial Park. Thus, these two places have been chosen as the focal points of this thesis because of their intrinsic nature to be used by all members of Brattleboro's socio-economic spectrum. Also, the strong presence of artistic enterprises and recreational activity has influenced the determination of architectural installation type.

Through an in-depth study of the town's network of pathways, traffic patterns, and sidewalk conditions, it was discovered that the main areas of community gathering are separated and have no safe method of connection except via automobile.

However, the very nature of the automobile tends to isolate individuals and limit community interaction.

Therefore, by combining the desire to increase a sense of community interaction and the expression and sharing of art, this thesis creates a community pathway that connects Main St and Memorial Park. The route will have a series of small outdoor architectural installations including a sculpture garden, music amphitheater, and open-air movie theater, that will be linked via walkways and bridges along the Whetstone Brook that runs from West to East through the center of Brattleboro.

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## CHAPTER 1

### INTRODUCTION

My family and I first moved to Brattleboro, VT in the summer of 2007. The American economy was booming and construction and architecture jobs were in great supply. I had come to attain a certificate in sustainable building and design from a small non-formal education institute in rural Vermont.

My goal was to learn the basics of "Green" building and return to Virginia to build more environmentally responsible residences. Housing was booming all over the United States with no end in sight. LEED was gaining in popularity and "Green" houses were the wave of the future. However, with war in Iraq and Afghanistan and an artificially inflated real-estate market, the world's economy was about to take nose dive.

In the meantime however, architectural design was riding a great wave of exploration of new materials and manufacturing procedures thanks in no small part to recently expanded computer aided design programs. The Guggenheim Museum in Bilbao, Spain had been completed nearly 20 years previous using the very beginnings of what software could now do effortlessly.

In 2007, China was gearing up for the 2008 summer Olympics and Herzog and de Meuron were wrapping up the latest structural creation, the Beijing National Stadium, affectionately known as "The Bird's Nest."

Very soon after, the world's economy crashed and I, having been in the construction industry for several years, decided to follow my passion into design. An undergraduate

degree led to a Masters of Architecture program at the University of Massachusetts at Amherst and this thesis about community cohesion through the influence of architecture. The small contextual references I have made to the economy and to the way design is now approached for much of the architectural field, make me think about how throughout history, people have shifted back and forth between two extremes of thinking and their approach to artistic expression, community, entrepreneurship, etc.

One extreme period of artistic expression would be the Weimar Republic after World War I. The great loss of life and perhaps identity in Germany led to an explosion of art, dance, intellectual productivity, and literature. The state later fell into great economic hardship, unfortunately, leading to the election of Adolph Hitler in 1933 and the rise of the 3rd Reich. This then eventually led to a crackdown on artistic expression, widespread repression, and World War II, which in turn led to great social states of communism, socialism, and society seeking a sense of community after the war. A cycle of gathering in a movement, then an explosion of creativity to find identity and back again.

In America, the aftermath of World War II brought on the creation of suburbia in Levittown and other similar development projects. This productive state turned the focus of society on the workplace and the creation of "The Company Man," whose job it was to be subservient and productive, but not creative.

War in Vietnam and Korea led to the military draft taking the lives of many of America's youths and society rebelled with an explosion of creativity in the form of art, literature and music. The 1980's saw economic gain and the company became king again, followed closely by a recession in the early 90's and an environmental movement which included

expression and a questioning of how America is both governed and relates to the greater environmental and societal fabric.

Presently, our nation finds itself at the, assumed, tail end of "The Great Recession", and not only has artistic expression been the focal point for much of society these last several years, but also important is the need for a greater sense of belonging to place. Perhaps it is the technological era becoming so common that global communication is creating a backlash that makes people long for times when they hung out on street corners with neighbors and friends. Quite simply, it is the need for community.

With this in mind, I am forced to look around at my own neighborhood and town to better understand some of the strife that exists and why there are separations between socioeconomic groups. My question becomes one of community development and cohesion. Is there an architectural solution that could bring community members together?

## CHAPTER 2

### THESIS PROPOSAL

#### Literature Review

My initial range of literature included books, articles, journal entries and website information. One of the first books I looked through was published by a local author, Fran Lynggaard Hansen who wrote, "*Brattleboro, Historically Speaking*". It is a short book on the town's history and some of the stories passed down about local heroes or landmarks.

I have taken some of the knowledge I gleaned from this book and interwoven it into some of the responses to other readings in an effort to relate my research to the town of Brattleboro, Vermont and the concept of community building. I will go into greater detail about the history of the town in the "Historical Background" section of this paper, in chapter two.

I also looked at "*The Experience of Place*", by Tony Hiss for the great way in which the author relates the built environment to the effect it has on society and inhabitants. Of the books I read that had perhaps the greatest impact on my initial thesis direction is "*Health and Community Design*," by Lawrence D. Frank, Peter O. Engelke, and Thomas L. Schmid, which is also covered later, and deals with the movement of people through a community and the way community interaction hinges on traffic patterns and mode of transport..



## The Experience of Place

Published in 1990, *The Experience of Place* addresses a growing shift away from the corporate mentality and into a more personal expression of life. The cold war was over, there was a large hole in the ozone layer and, people were turning to nature and art to better understand life and express how they felt about the turmoil in the world. They wanted to slow down their lives and examine life and society around them.

This book is broken into two parts. Part one is called Experiencing Cities, and part two is titled Encountering the Countryside. The two parts focus on the daily experience of each geographic area and express the sensations one might feel through either. It is also a brief history lesson that focuses mainly on New York City and the surrounding areas as they have evolved and continue to evolve both socially and economically.

The text begins with the author, Tony Hiss, arriving in Grand Central Terminal in New York city and describing his perception of space and the sensations he feels as he moves through the terminal. He writes, "It alters what I know about my surroundings and about whatever is going on around me, and at the same time modifies my sense of what all these things mean to me."<sup>1</sup> He goes on to write about something he labels "Simultaneous Perception". This is the ability all people have as descendants of animals to move away from a pinpoint perspective and zoom out to the environment at large and experience the surroundings with all the senses at once.

I, like the author, believe that most individuals will experience Simultaneous Perception as a subconscious response to the environment and are affected by it without understanding why they react the way they do. The reason for this is because

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<sup>1</sup> Tony Hiss, *Experience of Place* (New York: First Vintage Books, 1991) , 3

Simultaneous Perception can only happen when there is no perceived environmental threat and the subject is completely at ease. Hiss writes, "When this general kind of awareness occurs, I feel relaxed and alert at the same time. In addition, I notice a sort of unhurried feeling—a feeling that there is time enough to savor all the sights and sounds and other sensations coming in."<sup>2</sup>

I live in a small town of roughly twelve thousand people. My home is seven or eight blocks from main street and the fastest way downtown is to walk along a busy road where there are hills and automobiles, that while laboring up the hills, belch out plumes of exhaust and associated noise. While it is a ten minute walk, I almost never walk along the main roads. The best way to enter town from my home is to go through my back yard and walk up hill through a small patch of forest into a quiet residential neighborhood with small winding roads that lead down into town.

This path can take fifteen to twenty minutes, and while less than a block from the main roads, is quiet and peaceful. While walking this way to town, I feel more aware, alive, and connected to the environment rather than trying to escape from it as I am apt to feel when walking down the main roads. It is also cleaner: whether it is a factor of being less traveled or simply more cared for I'm not sure, but there is less debris on the roadside.

Both ways are residential, but the main road is lined with homes that have peeling paint and are generally less well kept. Perhaps this too is only my perception though and I am reacting less severely to the homes on the quieter path.

The text goes on to discuss Times Square and some of the history of the area, such as how it is laid out geographically, which businesses are located there, the social atmosphere at various times through history, and the related perceptions of the inhabitants. In much the

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<sup>2</sup> Hiss, *Experience of Place*, 3

same way that the main traffic corridors of my home town elicit a strong emotional response, Hiss describes what the environment is like in Times Square. He covers historical anecdotes about how Broadway follows old Indian trails, colonial wagon trails and a fault line. He writes about the light there and how there is more artificial light than natural and how over time, the natural light has been blocked by larger and larger buildings.<sup>3</sup>

What also stands out to me is his description of Cohan statue. Times Square is essentially the intersection of two major roadways that run at angles to each other and when they come together, they form two meeting triangles that are shaped like a giant bowtie that runs north and south. At the southern tip of the north triangle sits the statue, and next to it lies a TKTS booth that sells half price Broadway theater tickets. The booth has set up metal stanchions to cordon off the lines for theater goers who wish to purchase tickets. The "unintended result of this," as Hiss puts it, is the creation of a two to three foot space right around the statue.<sup>4</sup>

Hiss also notes, "You can't sit down-there's no public seating anywhere in Times Square-and you have to scramble around the stanchions in order to get close to the statue. But once you're there you've moved a full two steps away from all the activity swirling through the Square-enough of a distance in this kind of space to confer a feeling of privacy."<sup>5</sup> It is this private place that allows Hiss to observe Times Square as a vibrant, dynamic social environment that reflects the health of the city as a whole.

In many ways, the busy streets of my small town are like what Hiss feels at Cohan statue. Along the roadway there are no stopping off points, no moments of privacy. The noise

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<sup>3</sup> Hiss, *Experience of Place*, 67

<sup>4</sup> *Ibid.*, 73

<sup>5</sup> Hiss, *Experience of Place*, 73

makes conversation nearly impossible, so few people walk together for any reason other than to get somewhere as quickly as possible. The side roads by contrast have the occasional rock wall and I often note residents sitting on their porches reading or conversing with each other.

Part of where I want my career to lead is toward a practice that allows me to confront some of these issues. I feel that if one road can have such a dramatic effect on how a space is used, then what does that mean for the rest of town and the many outdoor spaces in the main business district?

*The Experience of Place* was published in 1990, and while some of the elements, such as technologies mentioned in the text, are presently outdated, there are a great number of relevant observations Hiss makes that still hold true today.

### Health and Community Design

*Health and Community Design* is a book on the impact of the built environment on physical health. Published in 2003, it examines the built environment and how certain patterns correlate with the relative health of a population. The text looks at historical precedents, transportation systems, land use patterns, and types and patterns of physical activity. Chapter nine, Urban Design Characteristics, begins by looking at the "City Beautiful Movement" that was popular in the late 1800s and early 1900s. The movement was largely focused in such cities as Washington DC, Chicago, Detroit and Cleveland, and tended toward monumental grandeur. The authors of this text, however, were not making a point about the movement's aesthetic so much as they were about its

philosophy: they believed that beauty could have an impact on civic virtue and the potential health of a population.<sup>6</sup>

The chapter then moves to its main focus and the evaluation of a later movement, termed "City Efficient." As the chapter states early on, the "City Efficient" movement, "was a shift from urban form, to urban function."<sup>7</sup> This was largely due to the influence of automobiles and the need for increased traffic flow and speed. "The singular focus on the automobile that developed within transportation engineering resulted in a consensus about design that, among other things, downgraded streets from multifaceted instruments of urban design to cogs in a functional machine with a single purpose, to move automobile traffic as efficiently as possible."

Within Brattleboro, the same transition has occurred. The downtown area that has larger buildings, many of which constructed around the turn of the 20th century when the "City Beautiful" movement may have had an impact on their design. Beyond the town center in more recently constructed areas, the aesthetic changes as well as the feel of the streets.

The chapter focuses on streets because they "form the main component of the built environment connecting destinations to one another."<sup>8</sup> It is at this point in the chapter where the authors begin to make the case that streets are essentially the way we measure how space is used. Jane Jacobs makes a similar case, suggesting that, "streets and their sidewalks, the main public places of a city, are its most vital organs."<sup>9</sup>

The book suggests that the majority of traffic engineers and transportation planners believe that a street is, "defined in functional terms having to do with moving the city's

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<sup>6</sup> Lawrence D Frank, Peter O Engelke, and Thomas L Schmid. *Health and Community Design: The Impact of the Built Environment on Physical Activity*, (Washington, DC: Island Press, 2003), loc. 1757, Kindle edition

<sup>7</sup> Ibid., loc. 1759, Kindle edition

<sup>8</sup> Ibid., loc. 1772, Kindle edition

<sup>9</sup> Jane Jacobs. *The Death and Life of Great American Cities*. (New York: Vintage Books, 1961), 29

automobile traffic, measured by the number of vehicles that can be moved along a street over an hour or a day".<sup>10</sup> With names like "arteries" and "feeders", suggests that the main goal of the space is to maximize the efficiency of vehicle traffic.

If streets are limited to simply moving automobiles, and streets are the main connectors of spaces in the built environment, then the logical conclusion is that people will only drive from place to place. However, *Health and Community Design* states that, "Streets can be said to have at least two core purposes: first, to move people and goods between destinations, second to serve as a stage for social interactions in the public setting."<sup>11</sup>

The change that happened in history between the "City Beautiful" movement and the "City Efficient" movement was essentially the rise of the automobile. In Brattleboro, this can be seen in the narrow downtown roadways, where the buildings are older and the streets were designed for carriages, horses and pedestrians. It is a downtown that had a streetcar in operation between the years of 1895 and 1923.<sup>12</sup>

By the 1930's, the depression had affected agriculture and the local industries, and the automobile was introduced. Little by little, the town expanded and the outlying areas and commercial zones were being designed using the "City Efficient" method. The roadways broadened, the stores were separated from the street by large parking lots and pedestrian traffic diminished in these places.

The same thing happened across America, and the main stage for social interactions was being designed by engineers who cared only for increased vehicular flow.

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<sup>10</sup> Frank et al., *Health and Community Design*, loc. 1787, Kindle edition

<sup>11</sup> *Ibid.*, loc. 1795, Kindle edition

<sup>12</sup> A Brief History of Brattleboro. Town of Brattleboro. <http://www.brattleboro.org/vertical/Sites/%7BF60A5D5E-AC5C-4F97-891A-615C172A5783%7D/uploads/%7BBBA7CD345-4131-4620-AE9B-D9DC1CC8A2ED%7D.PDF>, 3

Las Vegas, Nevada is an interesting example of some of the historical shifts that have happened between design methods and the transitions created by the influence of the automobile.

In the early 1940s, a building boom was in full swing in Las Vegas. A two-lane highway connecting with Los Angeles was flanked by hotels, casinos, restaurants and clubs and became what is known today as "The Strip." It was a rocky evolution based on the "City Efficient" method and optimized for automobile traffic. The buildings were set back from the roadway and fronted by monstrous parking lots just waiting to capture the maximum amount of travelers.

As automobile traffic increased with the popularity of Las Vegas, the roadways began to swell and traffic soon overwhelmed the city. One of the reasons for this was that travelers would not walk anywhere: they drove from casino to casino, thus increasing the traffic problem. It was at this time that the town issued an order to place parking lots at the rear of buildings and bring the buildings right up to the roadway. Anyone familiar with Las Vegas today will know that the roadways are still imposing expanses of asphalt. However, the shift in design method altered the way visitors move from club to club and automobile traffic decreased while pedestrian flow increased.

One of the tenets of the City Efficient method is the "eighty-fifth percentile" rule.<sup>13</sup> It is the idea that streets are designed for the safety of the fifteen fastest drivers out of one hundred. Engineers want everyone to be able to drive with safety, so they design roadways to be driven on at high speeds. This increases the size of the carriage way, the

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<sup>13</sup> Frank et al., *Health and Community Design*, loc. 1809, Kindle edition

traffic lane, and decreases the number of distractions along the road edge, as well as setbacks.

Part of the reason for the widening of the road and the setbacks are to allow motorists to focus on driving. Frank writes, "The rate of speed at which one is traveling will greatly determine the ability to process detail in the environment. In evolutionary terms, human senses are adapted to the speed at which humans move through space through their own power while walking."<sup>14</sup> Thus, when planners eliminate the distractions along roadways and people can travel at greater speeds.

This argument is addressed in the text with the following, "Conversely, pedestrian travel, being much slower, allows for the appreciation of the environmental detail."<sup>15</sup> They make the argument that joggers and bicyclists fall somewhere between the spectrum, but tend to be more akin to pedestrian movement.

In Brattleboro, the results of altering setbacks and street front detail can be easily seen. As a resident, I have noted that Brattleboro is a community of people who tend to enjoy being outside, especially in the warmer months. In downtown, the space along the roadways on sidewalks becomes a veritable hot-spot for social interaction. It is one of the places where Brattleboro really crosses the socioeconomic barrier, because it is a meeting space for all.

Once a month on the first Friday of the month, a multitude of stores and galleries stay open late for an event called "Gallery Walk." Started in 1995, it is a social atmosphere that especially comes into full swing in the warmer summer months when at 6:00pm Main St. is closed and people from town and surrounding areas fill the downtown. Live

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<sup>14</sup> Ibid., loc. 1843 Kindle edition

<sup>15</sup> Ibid., loc. 1843 Kindle edition



music is played on street corners, people perform dance, school groups sell deserts to raise money, and townies meander through the multitude of cafes, shops, and galleries in search of interesting local art and to socialize.

Gallery Walk is just one example of how the downtown area brings the residents together. Parades, music festivals, and protests also call people to the area, and all this interaction happens mostly in the eight feet or so of concrete that lives between the roadway and the buildings pressed up against it.

In November of 2000, the Neighborhood Streets Project produced guidelines for smart street design. The document states the following, "Streets are key determinants of neighborhood livability...They provide a place for human interaction: a place where children play, neighbors meet, and residents go for walks and bicycle rides. the design of residential streets, together with the amount and speed of traffic they carry, contributes significantly to a sense of community, neighborhood feeling, and perceptions of safety and comfort."<sup>16</sup>

This was not the first challenge to the auto-centric design method of "City Efficient," but it stated clearly that streets had more than one purpose, and that they should be thought of as an intricate part of community design. Other challenges include traffic calming devices which were first used in Europe, such as modified road textures or raised crosswalks that slow automobiles as they pass over them.

In the late 1960s the Dutch began to experiment with the "woonerf," which is the idea of a living yard where the Dutch altered neighborhood streets through design interventions. It was an ambitious plan where obstacles such as large planters, park benches and play

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<sup>16</sup> *Neighborhood Street Design Guidelines*. (November 2000). 1

structures were placed in the roadway, thus forcing the motorists to slow as they passed them.<sup>17</sup>

In a similar move, I was involved in project in 2012 called "Paint the Pavement." It was a community driven project where twenty or so of the members of the community gathered to address the concern of dangerous traffic going through our neighborhood. The "Paint the Pavement" movement began in Portland, Oregon and involves the painting of large murals on roadways and in intersections in an effort to bring awareness to drivers and to slow them down. Essentially it is adding detail to the environment that forces them to modify their speed.

The conversation became a design charrette, and a design was presented to the traffic safety committee of Brattleboro. As something like this had never been done locally, we worked with them to create a town ordinance and permitting process based on one created in Portland. Although Brattleboro may not be legally equipped for a "woonerf," it is a community in transition to take back its streets from automobiles.

The most recent Master Plan for Brattleboro, which was approved in mid February of 2013, includes some modification to zoning codes on the outskirts of town in some of the commercial districts. It is a move to urbanize these corridors and bring the built environment closer to the roadway in an effort to slow traffic and create mixed use spaces which are more pedestrian friendly.

This is an example of how human design response moves in cycles and always fluctuates between the extremes of being productive and lucrative as a group or being centered on the sensual human experience as an individual.

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<sup>17</sup> *Traffic Calming: State of Practice*. Institute of Transportation Engineers. (2014), 10

Local culture has shifted to thinking that the experience of place is more valuable than the efficiency of moving from one place to the other. In this thesis, I want to better understand the point in history that Brattleboro is at now within the national context. These disparate parts of the built environment, that were created at different times, can be joined, and this thesis acknowledges how the process and interventions can better the society and community that lives and works here.

Interview by Tom Finkelppearl: Linnea Glatt and Michael Singer on Designing the Phoenix Solid Waste Management Facility

Earlier I discussed the City Beautiful movement as compared to the City Efficient movement in the early 1900s. The City Efficient movement was led by engineers designing urban space in an effort to maximize the flow of automobile traffic. As far as the average engineer is concerned, the design of an environment is dictated by how to best design efficiency for a certain task or the efficiency of a material.

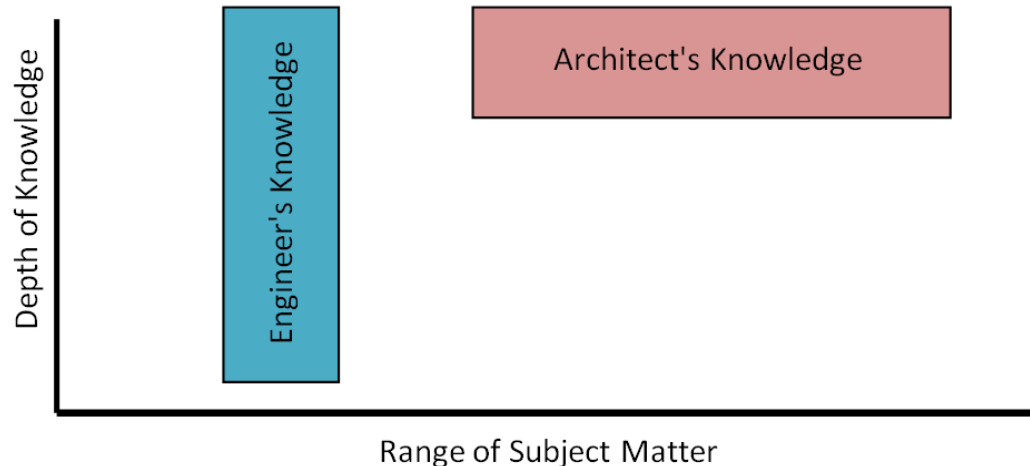


Figure 1: Professional Knowledge

Bart Sapeta, a professor from Keene State College, used to describe the differences between architects and engineers by drawing two bar graphs. If the vertical axis was depth of knowledge and the horizontal axis was the range of subject matter, then the engineer's bar would show as a bar that stood vertical and the architect's bar laid horizontal.

The design of the Phoenix solid waste management facility began in much the same way. It was originally designed by engineers who's main goal was the efficient transfer of waste. The artists Michael Singer and Linnea Glatt were called in to propose some portion of the design that would be additive in an effort to beautify the design. It was in no way intended for them to have a hand in the overall scheme of the facility.

However, upon seeing the engineer's design, they felt it was so lacking that they decided to create a design of their own. Against all odds, the city council and director of public works, Ron Johnson, chose the pair of artists to lead the design team and create the final design for the \$18 million facility.



Figure 2: Solid Waste Facility Exterior

Constructed in 1993, it was one of, if not the, first major infrastructure facility in America designed by artists. It was a huge leap of faith for the city of Phoenix, and an extraordinary, interactive project. The interview took place in New York City in 1996 and was conducted by Tom Finkelpearl.

The interview describes in detail some of the finer points of the facility design and many of the decisions that were made about some of its features. What is most interesting to me is not so much the facility, which is very well thought out, but rather, the thought process the two artists went through and how they think about design.

They begin by describing some of the problems they saw in the original engineer's designs. The first thing they talk about is "the out of sight, out of mind" mentality the engineers had. It was because the engineers designed the building to hide its function. Singer and Glatt speak about the attitude the engineers had about their design, "attitude that says you do not put garbage in the view of the visitor." Glatt states, "They came in, did what they were doing, and then left. They didn't have any connection with the site or interconnection with the functions of the facility."<sup>18</sup>

This realization of the motivation and goals of these two artists made me question what I design for.

However, this reevaluation has made me wonder if the "Greenway" that Brattleboro is lacking is really what the small town needs to create community. I have to admit that the path offers a great deal of appeal: it is functional, works to bring people together, and keeps pedestrians and bicyclists safe from automobile traffic. The problem is not with the path as a corridor, a method of bypassing the streets. It is all that, but the details of how it meshes with the surrounding landscape, architecture, and infrastructure is what will make it a success.

The interview proceeded to discuss the prevailing winds. Still speaking about some of the problems with the initial design, Michael Singer says, "The other thing that jumped right

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<sup>18</sup> Finkelpearl, Tom. *Interview: Linnea Glatt and Michael Singer on Designing the Phoenix Solid Waste Management Facility, Dialogues in Public Art*. (Cambridge: MIT Press, 2000), 201

out was that the visitors center and the administration were placed on the east side of the facility. The prevailing winds are from west to east. So basically they had visitors and administrators downwind from a 2-acre enclosed space filled with garbage."<sup>19</sup>

It is common to think about wind direction in architectural analysis. It makes all the difference in cold environments when winter storms can be really difficult for entrances or create cold icy patches that people will avoid in the winter. Also, the cooling summer breezes



Figure 3: SWF Courtyard

make a great excuse to locate a small resting place along a path in a certain location. Later in the interview, they talk about why they positioned the building so that it did not respond to the city grid of Phoenix. It was one of the contentious points of the new scheme brought up by the engineers. To the question, Singer responded, "Yes. This building is going away from the grid. To us, that deals with movement and transformation. Every element of our design contributes to the idea of transformation, reclamation, educating the public towards issues of waste, the need to recycle, the relationship of the building to the landscape around it."<sup>20</sup>

It is a design that the two artists really delved deep to create. It shows a great bit of forethought and research into the needs of the people, the facility, and the best way to intertwine them. They later describe how the public entrance to the facility winds its way into the site and up on to the former landfill that is now a towering, grass covered mound

<sup>19</sup> Finkelppearl, *Dialogues in Public Art*, 201

<sup>20</sup> Finkelppearl, *Dialogues in Public Art*, 204

that stretches out for miles and offers views to both the city and the mountains in the distance. For Singer and Glatt, it was an opportunity to show visitors where the trash came from and the environment they were protecting by recycling and being responsible. The transfer/recycling facility stands in the nexus and that is what they wanted people to know. It is another example of the details they added to the project that makes an impact on the community.

This sort of movement is just one of the many examples that ties the facility to the site and uses the landscape to further the purpose of the facility, which is not only to deal with garbage, but to be educational for the public in a transformative way. There are multiple paths in the facility and they have been separated by function.



Figure 4: SWF Interior

The self haul area is separated from the dump truck area, which is separated from the large rig area that hauls garbage to a distant landfill. The interesting thing is the way the paths overlap. Visitors cross over a bridge that spans the municipal garbage traffic and the intersection is an important tool that allows for another opportunity to learn and really visualize the amount of effluent that passes through this system.

The two artists also wanted to celebrate the importance of landscape rather than use it as a way to decorate the building, so it was an integral part of the design from the very

beginning. According to Glatt, "Over time, you won't be able to tell if the building is emerging from the landscape or is submerged into it."<sup>21</sup>

The artists created a sunken employee courtyard so that, not only would it be cooler than the hot surrounding Arizona landscape, but that it was a safe outdoor space for employees, many of whom are prisoners on work release. They say that it is one of the nicest areas in the entire facility.

They also to talk about how they revealed the facility and its operations to the public. They even describe a public meeting they went to with community

members and how heated it was, with people being

upset about always being the ones who, much like the landfill, were dumped on. But it was not the intention to follow the same path as previous facilities and create a great monstrosity that reeked of garbage, both in how it smelled as well as how it portrayed itself to the onlooker.

Glatt phrases the issue like this, "I think the most obvious is that it just turns around the whole notion of what these places have always been in a community. Usually they are just tucked away in the most undesirable area, and this indeed has been a very undesirable area for Phoenix. For many years, that area adjacent to the landfill was used as sludge ponds for water treatment, and borrow pits for the landfill. We felt it was important to take a stand at that site where these past abuses had occurred, because this is the only way



Figure 5: SWF Lecture Space

<sup>21</sup> Finkelppearl, *Dialogues in Public Art*, 205



that you are going to turn things around- to be aware of the abuses and try to point the way in a new and responsible direction."<sup>22</sup>

The interview goes on to talk about the success of the project in a way that makes it sound as though the facility is a reception hall, and perhaps that was the point. The goal was not to follow the mold of what a waste management facility should be, but to create what it could be. They say that the facility has rooms and outdoor areas that are rented out for community meetings, gatherings, and even weddings.

The facility itself also has many interesting interior features that allow the public to interact with the waste stream and see what happens to their garbage. Speaking about the success of the facility, Singer states, "The city has recognized that the place has been a huge success. They have groups coming every day. They're getting calls from all over the country about replicating this project, so they are setting up a consulting service for other cities."<sup>23</sup>

I look at my own goals for thesis and I hope to be as thorough as Glatt and Singer were on this project. I think most of it though must come from embracing the problems rather than confronting them, and then redefine the way we look at solutions.

Within the town of Brattleboro, there is a great multitude of talent and creativity that can be the catalyst for change, but it is almost as if the town is always simmering, but never boils. Maybe the places of gathering don't need to be along a great corridor that connects the local gathering spaces, but rather the creation of smaller, more focused gathering spaces throughout the community.

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<sup>22</sup> Finkelpearl, *Dialogues in Public Art*, 206

<sup>23</sup> *Ibid.*, 216

In the end it will most likely be a combination of many things that define what this thesis is and how it looks. With the design of the Phoenix Waste Management Facility by Michael Singer and Linnea Glatt, I have seen what a taste of that looks like. In the next phase, I tried to define it for myself, in an effort to understand how such a space might benefit Brattleboro's community.

## INTERVIEWS

### Interview #1

Adam Hubbard, RLA

I met with Adam Hubbard the morning of Thursday, March 14th, 2013 to discuss the question of socioeconomic divisions within the community of Brattleboro, Vermont.

Adam is a Registered Landscape Architect and local resident with a good deal of experience working in community development. For the last eight years or so, he has been working with Stevens and Associates, an engineering firm in Brattleboro that focuses on community development projects such as affordable housing and outdoor green spaces.

The interview began with the subject of divisions within the community. We looked over maps and spoke about affordable and subsidized housing. He agreed that there are great divides in the community and that many of the divides are geographical.

There are several main arteries in town that funnel automobile traffic to and from the downtown area, as well as across the Connecticut river to the New Hampshire commercial corridor on the other side. Many of these arteries create physical barriers between areas of different economic levels. Some of the neighborhoods formed by these small chunks of land are where local and federal housing authorities have bought up cheap houses and created subsidized homes for families of lower economic means.

There are two entities in town that Adam mentioned that work to create affordable, subsidized housing. One is the Windham & Windsor Housing Trust, whose website welcome screen states the following:

"Through its community development work, WWHT has eliminated blight, revitalized neighborhoods, and preserved historic properties. Most importantly, WWHT's work restores human dignity as well as neighborhood pride, stability, and a sense of community."<sup>24</sup>

This is an organization that is county-based and collects funding from federal and state grants as well as private donations. Their office is actually a building they renovated from an old shoe factory, houses multiple units of affordable housing.

A similar organization is the Brattleboro Housing Authority, which receives federal money to administer federal subsidized housing programs. They run a number of housing developments in the area, including a high-rise in downtown Brattleboro for older occupants, and several town-house developments both inside and immediately outside of town.

As we continued our conversation we moved to looking at maps and online resources. Hubbard showed me some of the areas where the housing authorities have projects. Two things became clear. The first, is that the vast majority of the projects seem to be isolated, either by large roadways or by a river, which limit the pedestrian traffic. The second, is that many of them line up along the same river, the Whetstone Brook, which runs

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<sup>24</sup> Eliminating Blight, Revitalizing Neighborhoods & Preserving Historic Properties. Windham & Windsor Housing Trust. last modified 2014. <http://www.w-wht.org/about/eliminating-blight-revitalizing-neighborhoods-preserving-historic-properties/>

through town and just so happens to pass by some of the town's main public and social spaces such as Memorial Park (the main municipal park), two schools, the Farmer's Market, and the local Co-op.

During 2011 Hurricane Irene flooded the Whetstone Brook and damaged some of these very attractions and affordable housing units. There are new plans under way to rebuild some of the units and move others, as well as modify the bank along some portions of the river.

This design thesis is a walking/biking path along the Whetstone Brook. It acknowledges the risk of future flooding, assuming climate conditions will become more unstable as the climate continues to change. However, private property is assumed to lose value along the river, as insurance and incidental costs rise, and be moved higher in elevation, out of the flood zone, thus opening up opportunities for alternative project development.

Much of the property is currently owned by the town and rapidly becoming uninhabitable. This then presents a number of questions, such as: "Can we link these parcels with a bike/pedestrian path?" "What if the new path could be designed to be flooded?" "Could some of the pedestrian bridges either be disconnected during a flood event or allowed to be fractured in a flood that allowed for cheap and easy reassembly?"

To answer these questions, this thesis focuses on community linkages and the intertwining of socio-economic groups across physical barriers such as streets and rivers. I am hoping that eventually it will lead to me being more involved in some of the local planning decisions at the town level or at least with some of the local organizations working towards similar goals as myself.

## Background



Figure 6: Brooks House

The town of Brattleboro, VT is a town that is steeped in history. Originally, it was an area long used by the Abenaki Indian tribes as a hunting ground and part of their territory as they moved north and south during the changing of the seasons along the Connecticut river. European history in this region began at Fort Dummer, established in 1724, and located just south of the town, roughly five miles north of the Massachusetts state line and two miles west of the New Hampshire state border along the Connecticut river.

The town of Brattleboro was later chartered in 1753 and named for one of the land owners, a man from Boston named William Brattle Jr., who was granted shares of land by King George II.<sup>25</sup>

From the beginning, Brattleboro was a place of industry and commerce. Located at the confluence of the West river and the Connecticut, it has long been used as a stopping

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<sup>25</sup> A Brief History of Brattleboro, Town of Brattleboro, 1

point for transporting goods, such as lumber, wool, grain and more to lower New England.<sup>26</sup>

One of the first buildings in present day Brattleboro was a grist mill along the Whetstone Brook where the falls near main street powered the water wheel that milled the grain.

The first national census in 1790 states that the population of Brattleboro was 1589.<sup>27</sup> The town grew quickly and survived off its trade with the states to the south and the resources in the region. The smaller township of West Brattleboro also established itself at this time as a route along present day Route 9 to Bennington, VT and Albany, NY.

Trade along the Connecticut river continued to be the main route of transporting goods through the early parts of the 1800s. By 1824 Brattleboro was believed to be the richest village of its size in all of New England.<sup>28</sup> Much of this wealth was due to the many mills along the Whetstone Brook.

The mills included papermaking, wood products, grist, printing house, and furniture shops. Brattleboro produced axes, rifles, flour, knitting machines, lumber, cider and more. By the time the town was 100 years old, it supported a population of nearly 5000 people, thanks largely to the industry along the Whetstone Brook.

The Whetstone Brook and the town's relationship with it shift greatly between the mid 1800s and the Great Depression in the 1930s. Electricity made the Whetstone Brook unnecessary as a power source which moved most of the industry away from downtown. The Great Depression also forced many of the factories to close or be repurposed. The town's relationship with the brook, however, remained the same in some ways. People still thought of the Whetstone Brook as a power source or a tool for industry and less as a

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<sup>26</sup> A Brief History of Brattleboro, Town of Brattleboro, 1

<sup>27</sup> Ibid., 1

<sup>28</sup> Ibid., 2

source of recreation. Thus, large sections of the brook remained virtually abandoned or used as a dumping ground in some places for many years. Even today, it is a place that is seen, but seldom touched or accessed.

This is one of the reasons the Whetstone Brook makes a perfect location for a community design project. It is an integral piece of the history of the town and links the town to its historical roots. The Whetstone Brook also runs along the East-West axis of town and connects the urban center to the municipal park on the western end of town, two of the town's main communal gathering sites, which will be discussed in greater detail later.



## CULTURAL DATA

Through an in depth study of the culture of Brattleboro, it was determined that three major factors were central to the development of the design and program of the thesis. These factors revolved around the importance of art, outdoor recreation, and socioeconomic equality in the town.

The most obvious of the influencing factors is art. The town plan, released in February 2013, states that, "Brattleboro values the arts and our cultural resources, and recognizes the need to sustain and build on our environment of social vitality and artistic endeavors, both for its intrinsic benefits and as an important economic driver."<sup>29</sup>

A partial inventory of arts in the town of Brattleboro was conducted by the Town of Brattleboro for the Town Plan and the Arts Council of Windham County which produced the Atlas of Cultural Assets in conjunction with a group of students from the Conway School of Landscape Design.

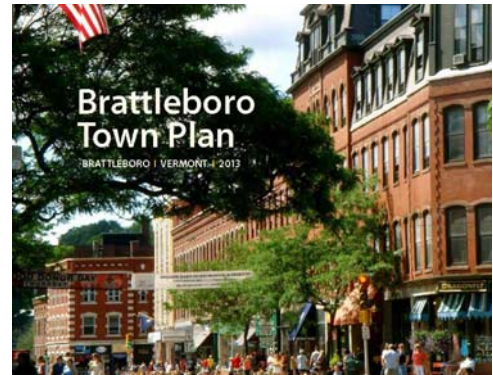


Figure 7: 2013 Town Plan

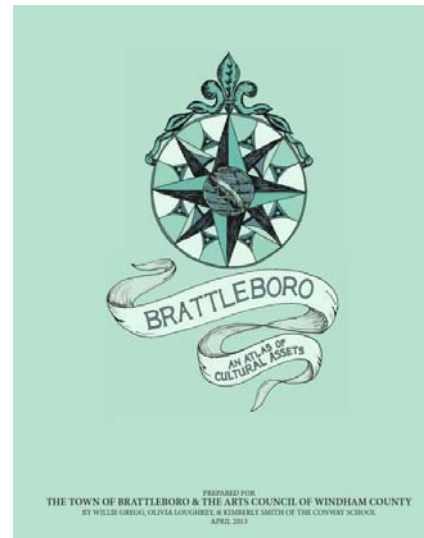


Figure 8: Cultural Atlas

<sup>29</sup> Town of Brattleboro, Town Plan 2013 (Brattleboro, VT: Town of Brattleboro, 2013), 95

The town plan and the cultural atlas list the following organizations, among others, located in town and the surrounding area:

The Brattleboro Music Center	The Vermont theater Company
The Vermont Jazz Center	The Brattleboro School of Dance
The Marlboro Music Festival	The Vermont Performance Lab
The New England Youth Theater	Friends of Music at Guilford
Nimble Arts	The New England Center for Circus Arts
The Marlboro Morris Dance Troupe	Shakespeare in the Park
The Blanche Moyse Chorale	The Hooker Dunham Theater and Gallery
The Brattleboro Museum and arts Center	The Windham Orchestra
The Yellow Barn	The Sandglass Theater of Putney
The International Puppetry Festival	The Chamber Music Series

Figure 9: Table of Arts Organizations

This table is only a small sample of the many organizations that operate in and around Brattleboro. It does not include any for profit organizations, nor does it include the many individual artists who live and work in the area. It would be an understatement to say that art is important to the identity of the town of Brattleboro.

For this reason, the thesis design focused greatly on art, both performing and visual, as a major influencing factor for both the location of the installation sites and the creation of the program.

The second influencing factor of the thesis design is outdoor recreation. Brattleboro and the surrounding area is home to a number of outing clubs, wilderness camps, horse stables

hiking trails, recreational parks, swimming holes, and more. As a small town in rural New England, the surrounding landscape has long been a source of recreation and diversion.

It is a testament to the people who live in this region, that even in the heart of winter, when there is two feet of snow on the ground and temperatures are below freezing, the residents of Brattleboro can be seen playing in the snow, snow shoeing, cross country skiing, and sledding on any given day. The rest of the year, people are in the woods and on the streets taking advantage of the sun and warmth. Recreation has long been important to the town.

During World War II, the sale of war bonds through the local Kiwanis Club established a fund and raised nearly \$34,000 which was later used to buy the land for Living Memorial Park, which was dedicated to the memory of the veterans who fought in the wars. It is a public recreation area that is 53 acres in size and has a small ski hill, ice rink, outdoor theater, the only public swimming pool, playground and softball field.

It is an important hub of affordable recreation programs for lower income families through its subsidized summer sports activities and free lunch program. Every year it is where the town gathers to see Shakespeare in the park, the Fourth of July fireworks, the Easter egg hunt, and more. Memorial Park is one of the key places that supports local recreational opportunities. For this reason, it is one of the two locations this thesis focuses on it, as it is also one of the main gathering locations for community relationships. The third and less obvious influencing factor for the thesis design and program, is the socio-economic structure of the town. Brattleboro has a history of wealth and wealthy

individuals, but it is also a place where the development of industry gave rise to a population of working class families.

As previously discussed, during the interview section of this thesis, there are a number of organizations in Brattleboro that specialize in affordable housing for low income families. Many of these families have limited access to transport such as automobiles and tend to rely on public transportation and walking.

Many of the low income areas in town are situated a block or two from an access point to the trail and as such, their proximity has influenced the location of some of those access points and the type and size of the installations along the trail. These locations will be shown in greater detail in chapter four, the environment.

## CHAPTER 3

### PRECEDENTS

The following list of precedents are only a fraction of the projects analyzed or researched for this thesis. They include the most notable and relevant projects that were examined. Some of the projects were chosen for their form, their materiality, their architectural language or a combination of all three. The list includes large projects and examples of smaller architectural installations that influenced the design process of some of the installations and bridges in the thesis proposal.

They include:

The High Line New York, New York

The Platte River Greenway Denver, Colorado

Ring Around a Tree Tokyo, Japan

The Whetstone Brook Pathway Brattleboro, Vermont

Rio de Moinhos Open Air Theater Rio de Moinhos, Portugal

Guardian Style Steel Bridge Fort Payne, Alabama

## The High Line, New York, New York



Figure 10: High Line Southern Terminus

The High Line Park in New York City runs from the Chelsea meat packing district up to the rail yard at W 34th Street. It was originally an elevated rail line to transport freight in and out of the city. The raised line was originally constructed in 1929 and functioned in some capacity until 1981. The line then sat abandoned for years and became a blight to the city. By the early 1990s, the town and property owners along and below the High Line were petitioning to have the line demolished. Then, in 1999 Joshua David and Robert Hammond create the "Friends of the High Line", a group that advocates for the preservation of the rail line and recreating the line into an elevated public park.<sup>30</sup>

The idea gained traction and by 2003, a competition was held for the design of the new park. By 2006, construction began on the creation of the winning design from the landscape architecture firm of James Corner Field Operations, and the architecture firm of Diller, Scofidio and Renfro.

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<sup>30</sup> High Line History. High Line. <http://www.thehighline.org/about/high-line-history>

The basic design is a linear park that is a system of layers. The landscaping layers over the architecture which layers over the city grid as the entire system winds itself over and among the cityscape of buildings.

Unlike a traditional park, it is elevated which gives the visitor an entirely new vantage point of the city. It also moves through the city, which makes it a means of transportation that is safe for pedestrians and separate from a traditional sidewalk experience.

For these reasons, the High line make a good precedent to study for this thesis. The design of the High Line incorporates an existing structure and modifies its relationship with the surrounding environment. No longer are there trains that are entering warehouses or loading platforms for freight. Nor is there the traditional utilitarian aesthetic of a purely functional rail line and its structural elements.

Instead, the underlying structure has been woven into a place of refuge for life. Where it now meets existing buildings, may be a cluster of shrubs and flowers that no longer allow access. The pedestrian walkway is a series of keyed platforms, reminiscent of concrete



Figure 11: Map of High Line

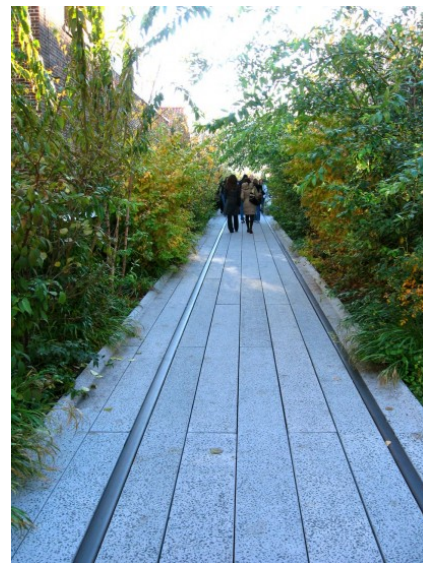


Figure 12: High Line Section

railroad ties, that lie side by side forming the walking surface, and seem to dissolve into the landscape like the aging rail lines that still linger beneath the surface.

This language and material palette continue the entire length of the park forming the visual continuity.

### The Platte River Greenway Denver, Colorado



Figure 13: SPG Pathway

For decades, the South Platte river that runs through Denver was used by industry to dump waste and the surrounding environment was inhospitable and inaccessible to pedestrian traffic. It was calculated that 240 locations along the river were dumping toxins or industrial bi-products into the waterway.<sup>31</sup> Beginning in 1974, the Platte River Development Committee was formed to initiate a massive environmental cleanup. With outside funding and a massive effort of volunteers, a group called the Greenway Foundation worked to develop and clean the waterway for recreational use.

By the late 1970s, the foundation saw a lull of activity due to redevelopment of the downtown area and lack of interest. Then, in the mid 1990s, in collaboration with the

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<sup>31</sup> South Platte River Greenway. Project or Public Spaces. accessed February 2014. [http://www.pps.org/great\\_public\\_spaces/one?public\\_place\\_id=57](http://www.pps.org/great_public_spaces/one?public_place_id=57)



mayor's office and a series of youth initiatives, the foundation was joined by over 17,000 youth volunteers to replant, and clean the riparian area along the river.<sup>32</sup>

This investment created a 30 mile long trail that winds its way through the Denver metropolitan area and sparked the creation of more than 100 miles of adjoining trails that link the downtown



Figure 14: Denver Bike Path Map

to the surrounding suburbs. What was perhaps most striking, was the shift in thinking and use of the local waterways, rivers and canals that this seemed to trigger.

This transformation of uses is the representative quality of this project that most links it to the thesis. It is the idea that a society's interaction with a resource can change over time.

Similar to Brattleboro and the Whetstone Brook (WB), the South Platte shifted from a resource for industry and became a place where recreation was the main use.

The Whetstone Brook has a history of providing power, whether it was to create electricity, turn a mill wheel for grain, or process lumber. The WB has historically been hands-off by the population at large for the last 70 years or so, and access has been limited to a few select areas.

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<sup>32</sup> South Platte River Greenway. Project or Public Spaces. accessed February 2014.

## Ring Around A Tree, Tokyo, Japan



Figure 15: Ring Around a Tree

This installation was created by Tezuka Architects in 2007. It is essentially an annex to an existing kindergarten. The Ring creates a play space for the children while offering the school a small enclosed classroom, and protected bus stop for transportation.<sup>33</sup>

It is worth analyzing to understand some of the strategies employed in making this open-air structure functional. How is the structure protected from the elements? Is the interior space insulated and conditioned? What are the levels of accessibility? These are but a few of the questions explored with this precedent.

With the thesis and the installations along the WB, the installations will encounter extreme variations in the environment including rain, extended

freezing temperatures, and possible flooding. By understanding some of the solutions of existing structures, it is possible to glean information about how to counter these issues.



Figure 16: RAAT Interior

<sup>33</sup> Ring Around a Tree by Tezuka Architects. Design Rulz. last modified April 2013.  
<http://www.designrulz.com/design/2013/04/ring-around-a-tree-bytezuka-architects/>

Ultimately, the Whetstone Brook community pathway will have to exhibit a continuity through architectural language and a resilience through materiality and structural connections.

### The Whetstone Brook Pathway Brattleboro, Vermont

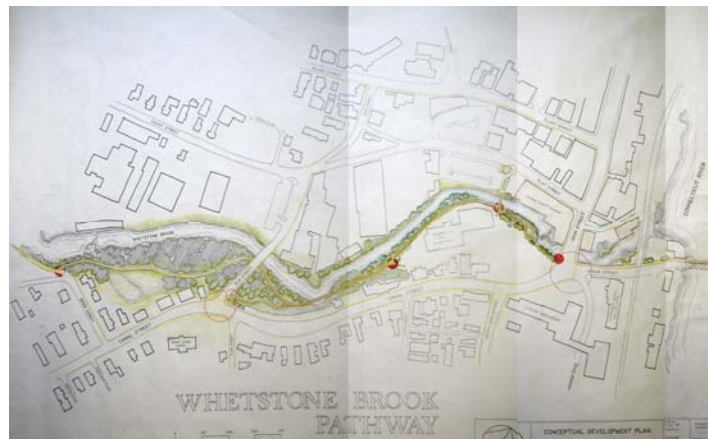


Figure 17: Whetstone Pathway Map

In 1993, a design was created by a group of activists in Brattleboro to build a path along the Whetstone Brook in downtown Brattleboro, VT. This idea met with a great deal of confrontation from some of the inhabitants of the town and had issues with getting past regulations that existed at the time.

The end result of the initiative was that the path was never created in its entirety.

However, the lower portion, closest to the downtown area, was built, and a pedestrian bridge over the Whetstone Brook was constructed.

It was this map, that initiated the idea that a path along the Whetstone Brook would be possible, and an ideal starting point for the thesis project.

## Rio de Moinhos Open Air Theatre Rio de Moinhos, Portugal



Figure 18: Open Air Theater

This is an open air amphitheater that sits along the river Tagus in Portugal. It is the site of an old river dock that, due to major flooding in 1979, was abandoned and left to fall into disrepair. The site is also a point along a river path that locals use for recreation and sightseeing.

Designed by the architecture firm Ateliermob, it is a simple concrete stair/seating unit that overlooks the river and an adjoining performance platform.

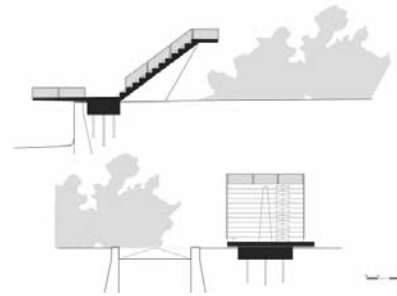


Figure 19: Open Air Theater Drawings

This is a prime example of one of the installations proposed for the thesis project. The characteristics that make it so appropriate are its simplicity, its exposure to the elements, and its low maintenance needs. The architecture team took an existing stone dock and restored it to make it safe. They then integrated the cleaner concrete-form installations into the existing dock by crossing the dock's main axis which runs parallel to the river.

## Guardian Style Steel Bridge Fort Payne, Alabama



Figure 20: Box Truss Bridge

In researching this project, a multitude of bridge types were examined. Ultimately, the style that best fit with the thesis proposal was a clean Box Truss that could span great distances but also was resilient enough to withstand forces from a variety of directions, such as possible flooding.

The box truss bridge shown above is an example produced by the Pioneer Bridge company out of Fort Payne, Alabama. The box frame allows for a multitude of façade systems and can also be easily roofed to enclose it for protection from snow and rain as is common with regional covered bridges.

## CHAPTER 4

### SITE AND PROGRAM



Figure 21: Community Gathering Locations

The concept of the thesis is to link the two main community gathering spaces within the town of Brattleboro, VT, in an effort to increase the sense of community and socio-economic mixing. The two spaces chosen have been the urban sidewalks of downtown, and the main municipal park, Living Memorial Park on the western end of town. The straight-line distance between them is approximately 7500ft or 1.44 miles.

Essentially, the distance between gathering spaces becomes the project site, as the thesis is to better understand how to connect distant locations through architectural intervention.

Therefore, the Whetstone Brook and select adjoining roadways have been chosen for the site, a pathway distance of 2.4 miles.

## City and Region

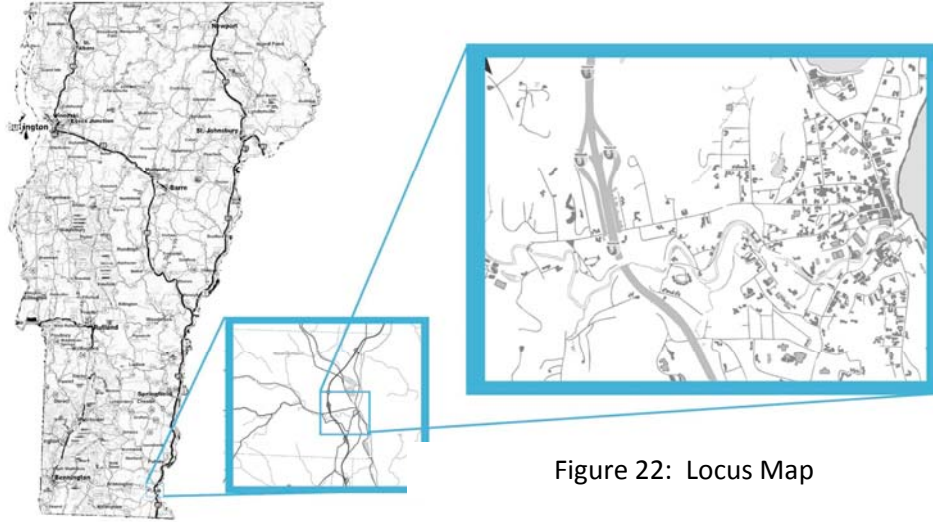


Figure 22: Locus Map

The following information about Brattleboro is according to the 2010 census and data collected in 2009 by state and local agencies:

Population		12,046
Median Household Income		\$37,728
Household Income	< \$10k	8.7%
Household Income	\$10-20k	17.5%
Household Income	\$20-30k	14.6%
Household Income	\$30-40k	14.1%
Household Income	\$40-50k	13.0%
Household Income	\$50-60k	7.4%
Household Income	\$60-75k	8.3%
Household Income	\$75-100k	6.2%
Household Income	\$100-125k	4.2%
Household Income	\$125-150k	3.2%
Household Income	> \$150k	2.9%
Population below Poverty line		24.4%
Median Gross Rent		\$755 / month
Population that is White or non Hispanic		89.2%
High school graduate persons age 25+		90.6%
Bachelor's Degree or Higher persons age 25+		33.3%
Housing Units in Multi-unit structures		23.2%
Homeownership rate		71.4%
Persons/household		2.34

Figure 23: Table of Local Census Data

**2014 POVERTY GUIDELINES FOR THE 48 CONTIGUOUS STATES AND THE DISTRICT OF COLUMBIA**

Persons in family/household	Poverty guideline
1	\$11,670
2	15,730
3	19,790
4	23,850
5	27,910
6	31,970
7	36,030
8	40,090
For families/households with more than 8 persons, add \$4,060 for each additional person.	

Figure 24: Table of 2014 Poverty Guidelines



## Environment

The study of the site environment includes, not only the natural elements but societal elements as well. This analysis will incorporate a study of terrain, hydrology, infrastructure such as sidewalks, bus routes and more, as well as zoning, and low income housing. The goal of the environmental study is to better understand the surrounding features of the site that will affect the choice, size, and location of architectural installations.

The following is a series of maps created to better visualize the environmental factors involved in the thesis research:

### Zoning Map

The main factors to consider are the areas through which the path will pass. It is evident that the thesis site includes a wide range of zoned locations including industrial, residential, historic downtown, and more. For the purpose of this thesis it is assumed that the installations will not be limited by the individual zones, but will rather be influenced by them in reference to direction of site lines, noise, and pathway access.

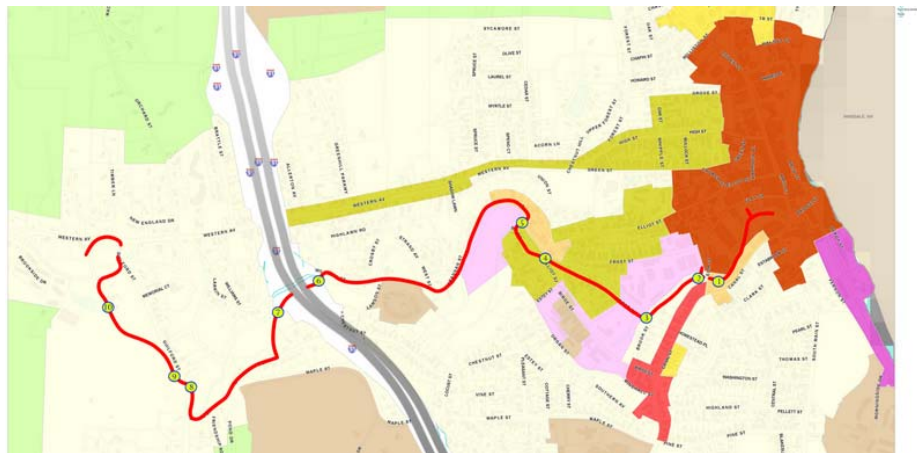


Figure 25: Zoning

## Public Land

The project installations have been located primarily on town owned land to make property issues more manageable and because the project is meant to be publicly owned and operated or possibly managed by a non-profit organization dedicated to its maintenance, in an effort to increase the sentiment of community connection and ownership.

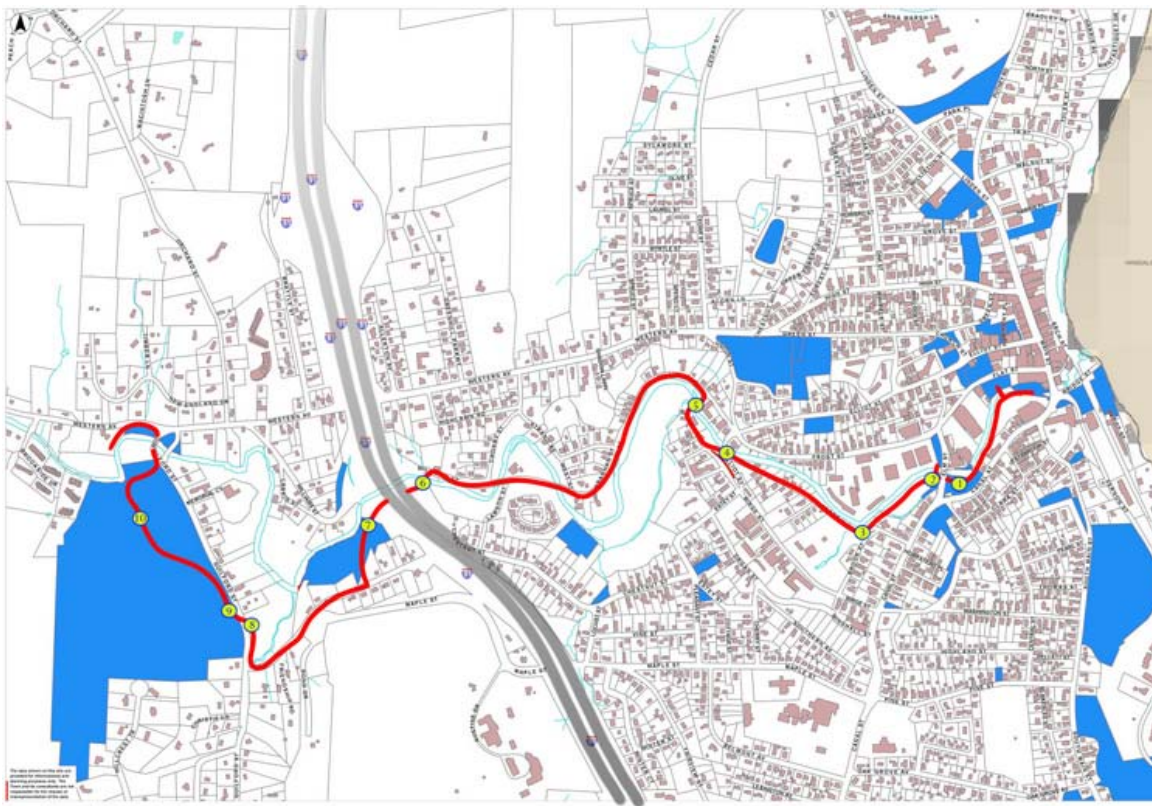


Figure 26: Public Land

## Low Income Housing

Locations shown fall under property either owned or managed in some capacity by the Brattleboro Housing Authority or the Windham and Windsor Housing Trust. When not publicly owned, these are locations that are rated as low income housing or section eight housing under the guidelines of federal and/or local authorities.

These properties influenced the program choices for the thesis project and the location of the path in terms of access, due to the desire to create safe pathways for this population to travel and commute.

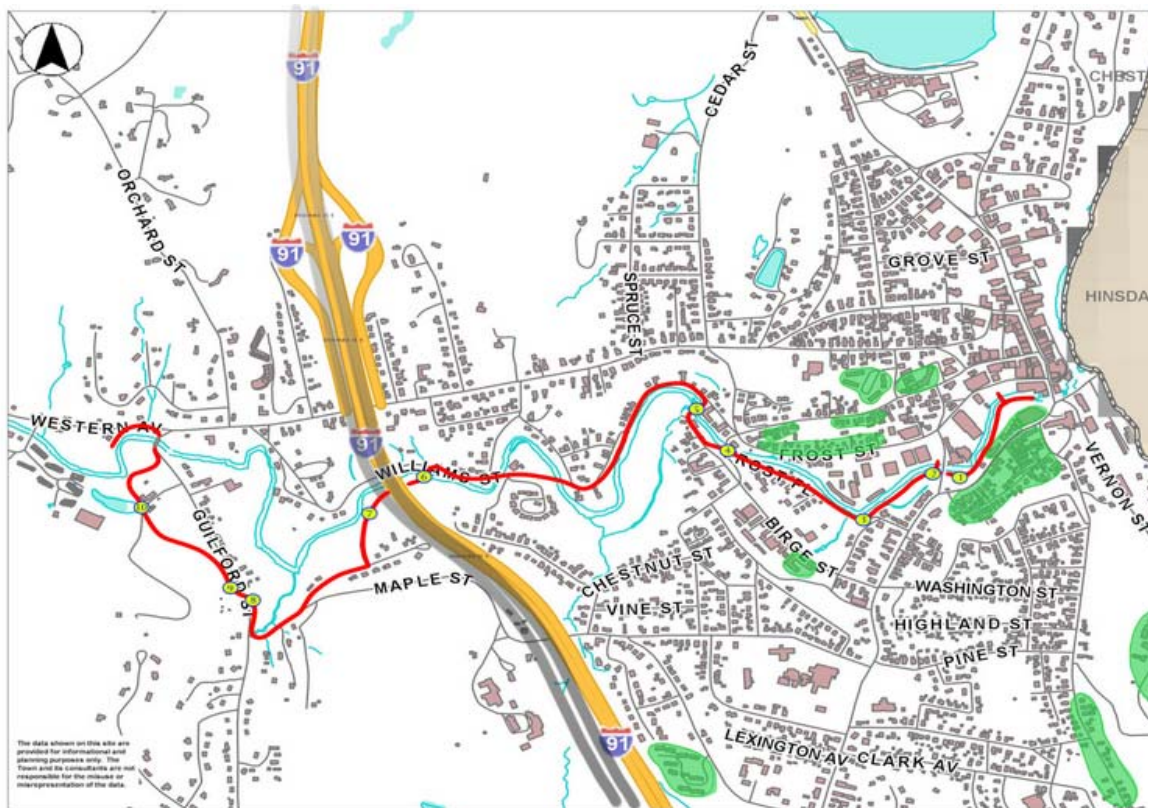


Figure 27: Low Income Housing

## Public Parking

These locations are situated mainly in the interior of the town near the urban center and thus did not factor greatly in relation to the majority of the sites. However, one of the sites on the trail, closer to downtown, has been tied to an existing parking lot to increase access for visitors and handicap individuals. The location of this parking lot affected the creation of one of the four main bridges in the design and site layout for the movie theater installation.

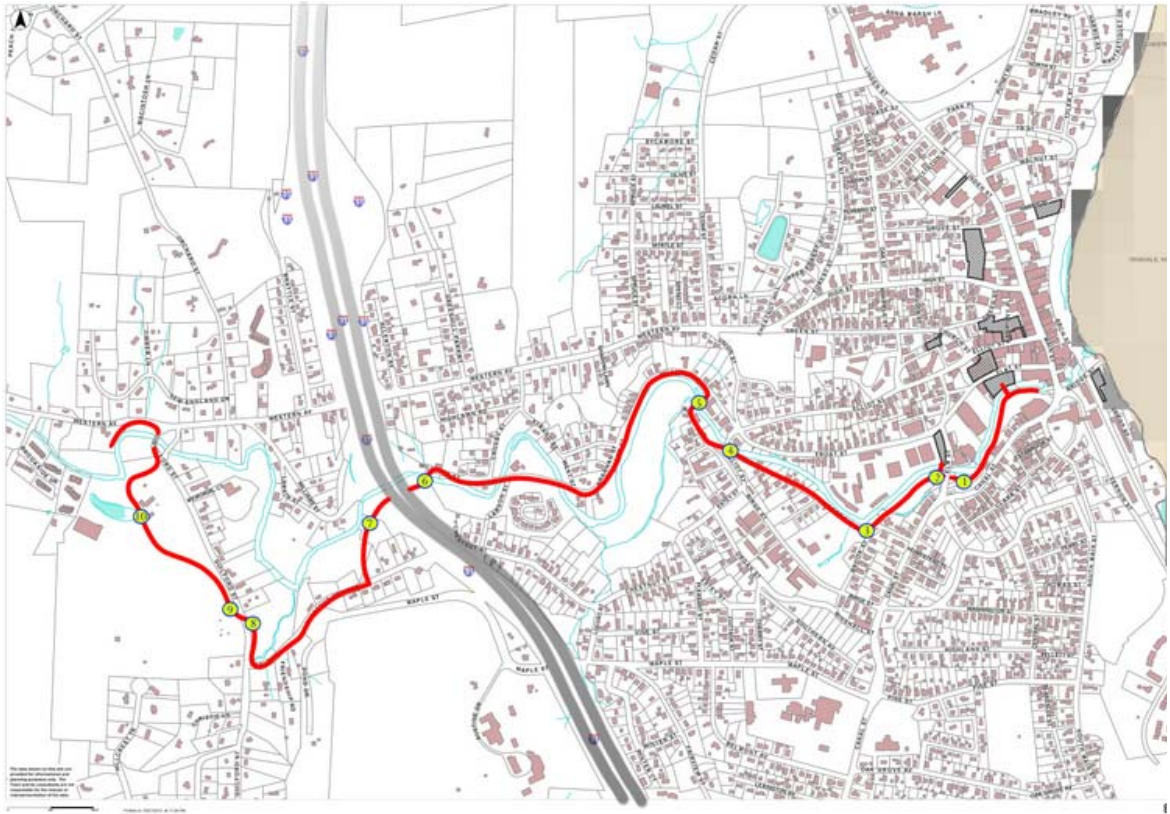


Figure 28: Public Parking

## Bus Routes

The local bus line is called the Bee Line and it runs throughout the local area, mainly along the major arteries of the town. It is a widely used transportation system and of major interest to lower income individuals. It was important to include and understand the location and access points of the public transit system in town primarily to increase access to the project pathway and to create a greater promotion of public transit for environmental reasons.

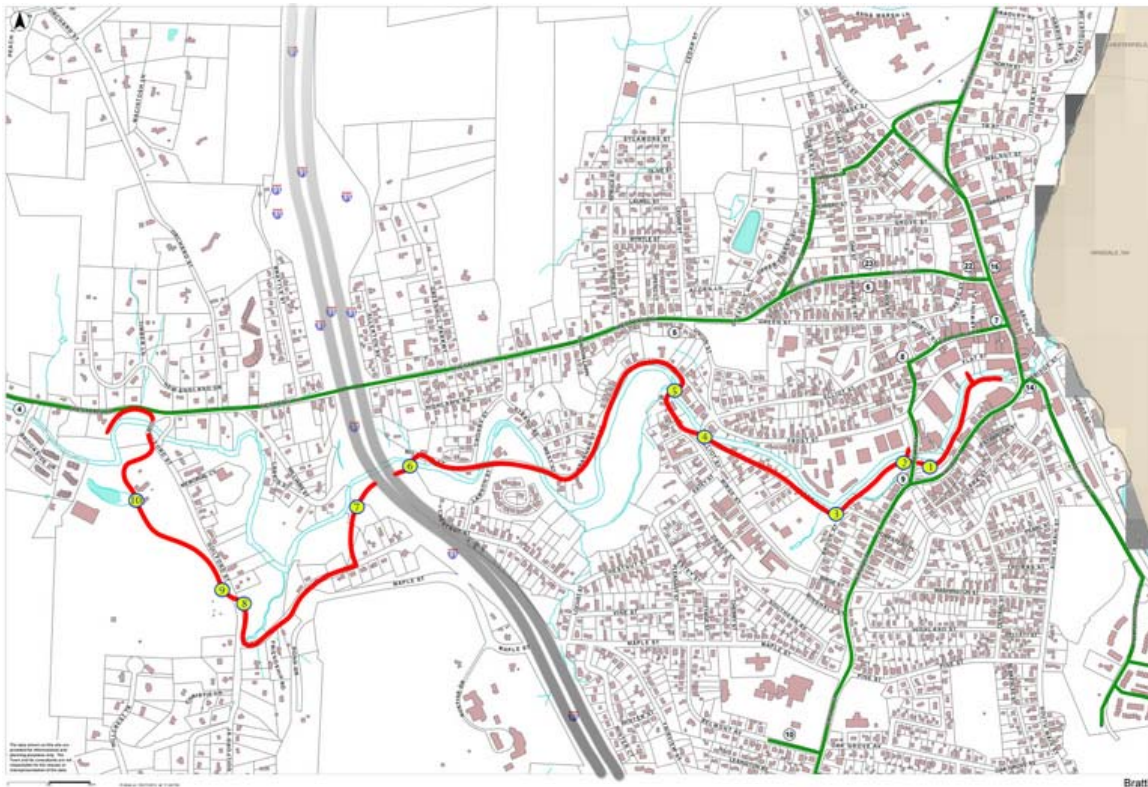


Figure 29: Bee Line Bus Routes

## Sidewalks

The location of the sidewalks is important because it shows a continuity or, in some cases, a lack of continuity of pedestrian passageways within the town. The availability of sidewalks is greatly increased the nearer the urban center, but does not begin to describe the walking conditions upon many of those sidewalks, which can be unsafe due to proximity of high volume automobile traffic, narrowness of sidewalk, and maintenance issues such as debris or damaged concrete.

The location and continuity of pathways was one of the major factors in the creation of the thesis project. It became apparent that limited safe passages existed between community gathering locations other than by automobile, which may be limited for much of population and tends to negate community interaction rather than promote it.



Figure 30: Sidewalks

## Safe Biking Routes

The Windham Regional Commission created a map of the Brattleboro area and surrounding areas that highlighted the safe biking routes that took into account road traffic, shoulder width and steep grades and cycle hazards. The map rates the roadways by coloring them green, yellow and red depending on suitability.<sup>34</sup>

Similarly to the information found in the sidewalk map, the information provided in this map provided the influence for the location of that path. While some of the path moves along the river along previously un-built land, the majority of the path is on existing roadways, thus, it was important to understand which routes were safe for bicycle travel.

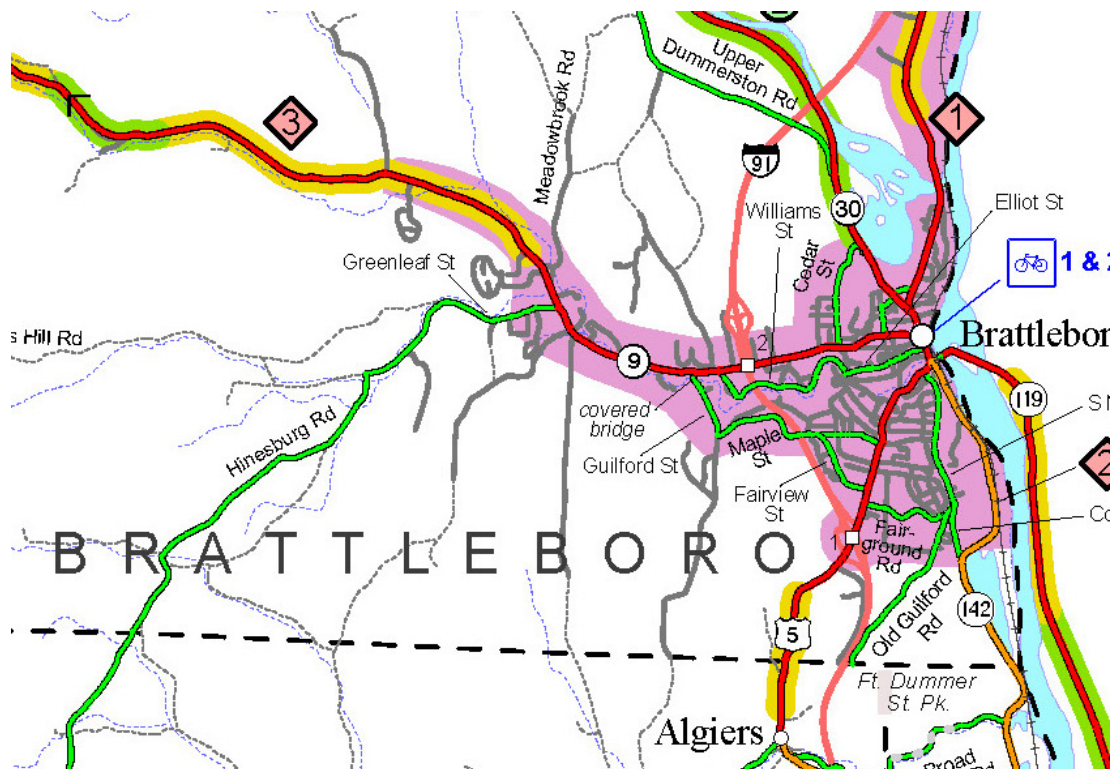


Figure 31: Safe Bike routes

<sup>34</sup> Southeastern Vermont Bicycle Suitability Map. Windham Regional Commission. last modified June 2012. <http://windhamregional.org/bikemap>

## Flood Plain and Surface Water

Since the project pathway follows the course of the Whetstone Brook, one of the most important factors in design choices and installation locations was flooding. Not only did the analysis reveal where the safe zones were and were not along the water way, it informed how durable the designs would need to be to survive flood events.

Using the data from flood mapping, it was determined that heavier, more permanent materials such as concrete and rock should be used below seasonal flood levels, while above those levels, the installations should be designed in such a way as to be easy to maintain and assemble in sections if need be. Ultimately, the installations should be able to be flooded and sustain minimal damage and be able to drain and/or redirect water in a flood event.

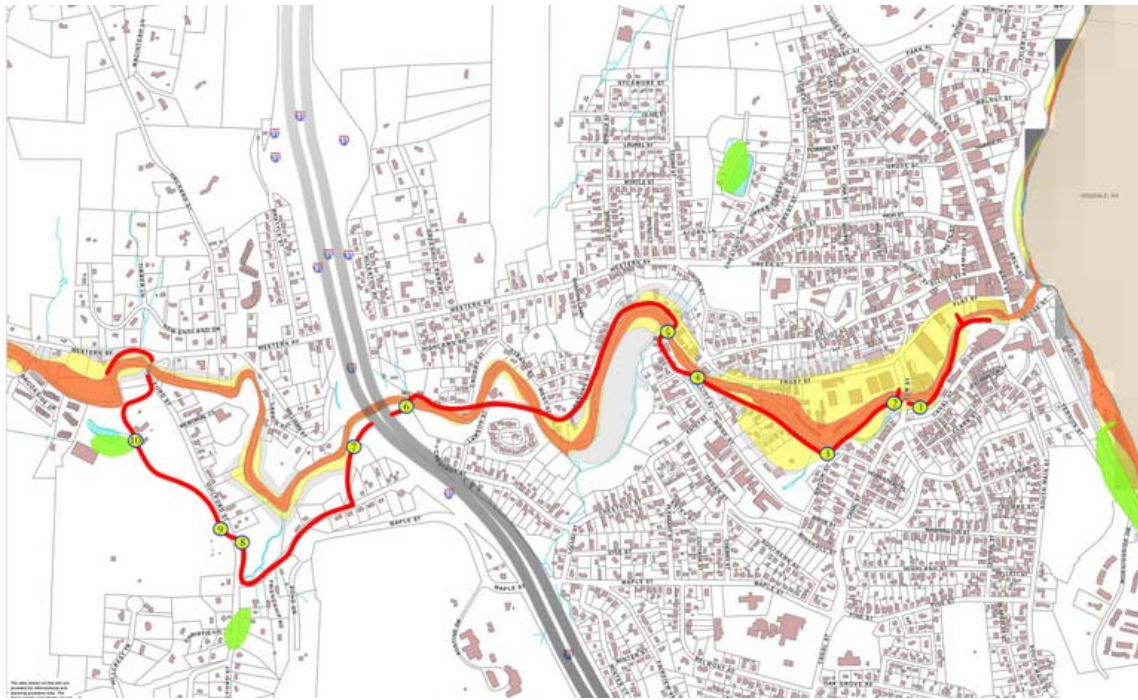


Figure 32: Flood Zones



## Sites

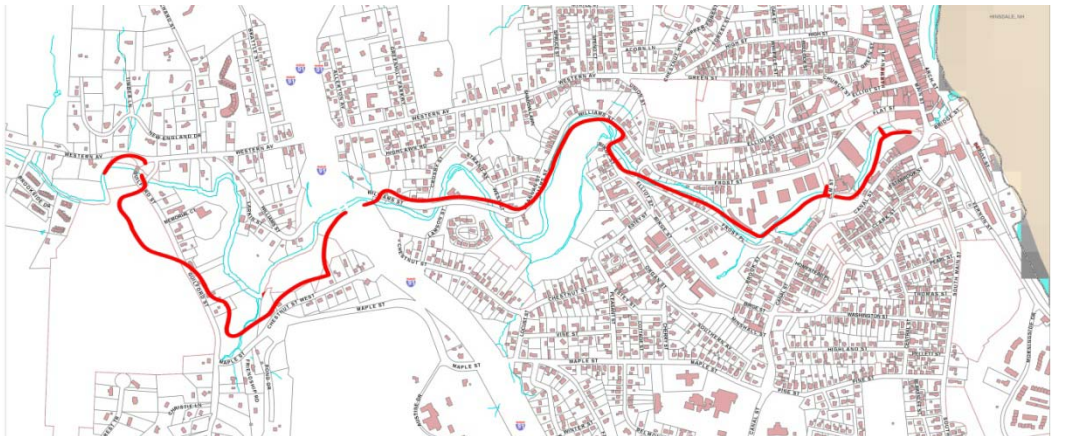


Figure 33: Map of Path

The pathway follows the Whetstone Brook, crossing it at four points along the course. At times the path runs along roadways that have been rated to be safe for bicyclists and at other times it cuts through underdeveloped land on the river bank.

For the sake of this thesis, the project site has been defined as the pathway in its entirety from Memorial Park to the urban downtown. The installation sites are the various points along the pathway that have been designed to have some sort of structure, either a bridge, gathering location, or informational signpost. This section of the thesis focuses mainly on the individual installation sites as the project site has been described in relation to the town and its geographical and cultural qualities.

The main attributes of each of the installation sites that contributed most to the design decisions were the topography, access, safety, maintenance, and programmatic scheme.

For this section, we will focus mainly on those attributes that are provided by nature such as topography and access.

The project site is made up of approximately twelve nodes or installations. The number may fluctuate depending on need or season as some of the nodes may be transitory artistic installations or sign posts that are seasonal.

This thesis focused on the design of three of the largest installation sites because it is believed that an understanding of the largest installation designs will inform the smaller ones making them less problematic.

Site of the installation of the amphitheater, ticket booth, and event space



Figure 34: The Glade Map

Of main importance to this image are the elevation contours. They show a change of 100 ft from the lowest part of the site along the river to the highest part along Chestnut St. to the South. This affects the way traffic moves through the site and access points.

The town owns this property as it was once a public park many decades ago. There is an unmaintained access road that connects to Chestnut St. which has been determined to be

the best access point for the path at point "B" labeled on the map. Access point "A" on the North side has been determined to be the best location for the pedestrian bridge that will link the site to Williams St, and the lower portions of the pathway.

From this information, it has been determined that the movement across the site must be such that the changes in elevation do not inhibit access and meet ADA guidelines.

Therefore, the installations on this property must be arranged in such a way as to allow the greatest amount of mobility, while still allowing a measure of physical communication between the installations so that it is understood by the users of this site, that the installations are linked and related. This will allow the site to function as a whole unit rather than a series of separate activity spaces.

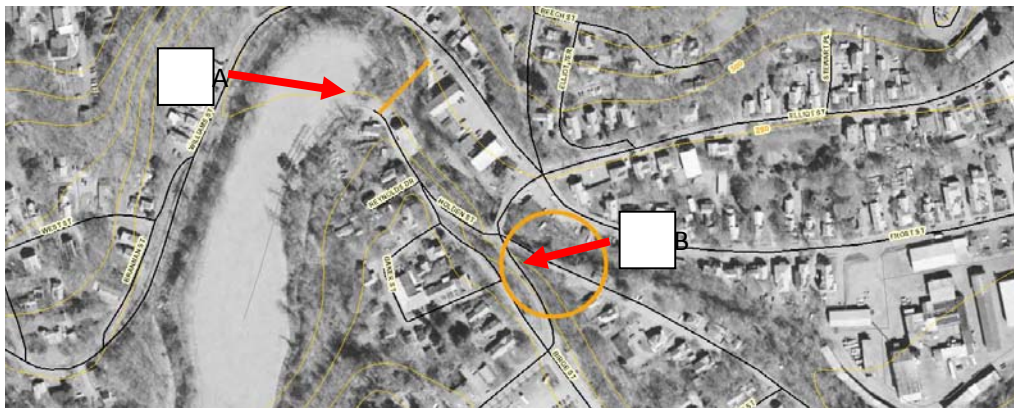


Figure 35: Swimming Hole Map

The Path continues along Williams St. until it crosses the Whetstone Brook at an existing bridge abutment the town owns. From there, it moves south along Holden St. and crosses Elliot St. at the vehicular bridge and runs along Frost Terrace. The thesis proposes a separate pedestrian bridge apart from the Elliot St. vehicular bridge due to safety concerns

on the existing bridge. The sidewalks are narrow, in disrepair and do not meet the Americans with Disabilities Act (ADA) guidelines for accessibility. Also, since Elliot St. has not been rated a safe street for bicyclists, it is best to cross it rather than incorporate it into the pathway, to limit time spent on this road by pathway users.

The map shows the location of the proposed pedestrian bridge at point "A" and the location of the swimming hole installation at point "B." While the installation is much smaller than that of the amphitheater, previously mentioned, it remains greatly affected by the level of elevation change.

Elevation, in combination with an installation site that is long and narrow, created the main influencing factors for the design of the installation.

The last of the three sample installation sites analyzed is the theater.

Programmatically, it includes a pedestrian bridge, an outdoor movie theater, services and a maintenance office. This installation site is close to downtown

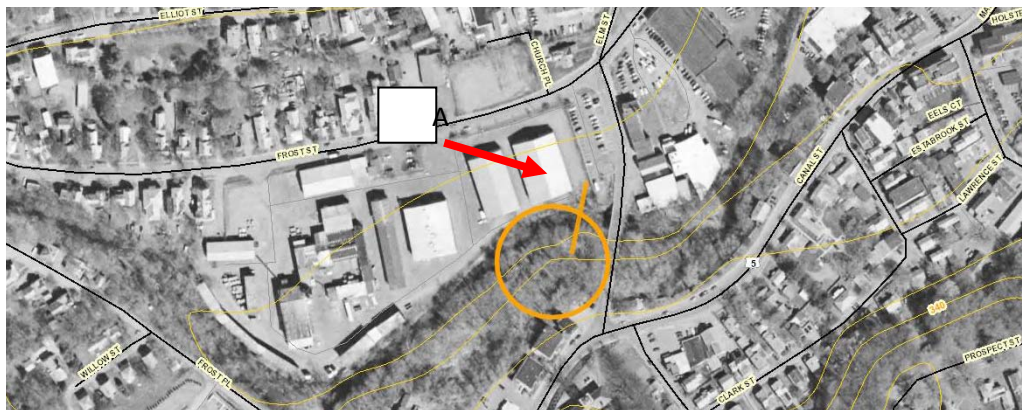


Figure 36: Theater Map

and very accessible to people who work and live in the immediate urban center.

Important attributes about this site were the town-owned parking lot situated just north of

the site, the low elevation of the site which leaves it exposed to seasonal flooding, and its proximity to an existing vehicular bridge.

The vehicular bridge, Elm St, crosses the river at a relatively steep slope making it unsuitable for ADA access. Traveling south, it rises in elevation approximately forty feet. Also, the single sidewalk is narrow, with no safe shoulder for bicycle traffic.

Thus, the creation of a separate pedestrian bridge was proposed in the thesis to facilitate ease of access and safety. The proposed bridge would be accessed via the parking lot at point "A."

Due to the low elevation of the site, in relation to the water level of the Whetstone Brook, the proposed design includes material, and connection choices that encourage stability during a flood event and ease of maintenance.

The analysis of these three locations each suggest design solutions that are unique to each site, such as placement of installations and site traffic patterns, as well as material choices that allow for longevity and ease of maintenance. It is clear that of great importance is the limitation that elevation change along the river valley brings to the design process, influencing both the construction methods employed and location of access points for the installation sites.

## CHAPTER 5

### THESIS PROJECT

The project began by searching for a way to create a greater sense of community in the town of Brattleboro, Vermont, and as a method to increase community mixing across the socio-economic spectrum. As previously mentioned, the study began by understanding the dynamics of the inhabitants of Brattleboro and locating the places where community demonstrates its greatest level of presence and mixing.

The result was the selection of two locations that exemplified these qualities, the urban sidewalks of downtown and the publicly owned park on the west end of town, Memorial Park. However, due to the distance between them, the question to be answered by the thesis became the following: Can architecture, which is traditionally represented by a single structure or a grouping of structures, be used to bridge a great distance?

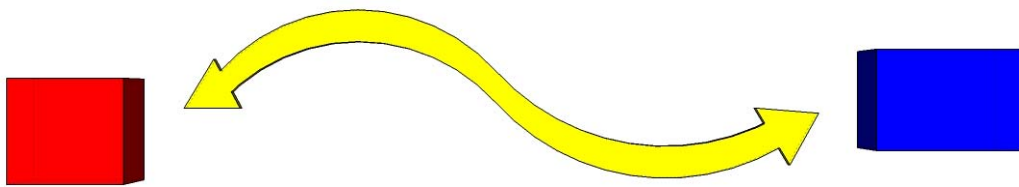


Figure 37: Bridging Distance Diagram

## Overview

The goal of this thesis is to explore methods and design solutions for joining two public locations of social gathering that are separated by a distance of nearly 1.44 miles, using architecture as the bridge between them. Through the analysis and design process, it has been determined that the problems facing such a task reside not only in the distances between spaces, but the method of travel and path chosen to move from one to the other. Automobiles were immediately withdrawn as a possible transportation method as they tend to inhibit community mixing and encourage isolation.

Therefore walking and bicycling became the obvious choices as they have similar space and structural requirements, as well as encourage a greater level of community interaction.

The first objective of the thesis was to plot a path from one location to the other through the town. The Whetstone Brook, by coincidence, moves through town in such a way as to be adjacent to a host of favorable assets such as town-owned land, safe cycling streets, and public parking lots. It also passes along one property edge of Memorial Park and empties into the Connecticut River in the downtown area.

Thus, by linking town-owned land along the Whetstone Brook with a series of safe streets, one could travel safely from one community gathering location to the other. These linked properties and streets create the route and establish a location for a pedestrian and bicycle path.

## Program

At first it was thought that by analyzing the community's needs, based on cultural assets, and the popularity of artistic expression, that the thesis should be a path and a building. The obvious choice was to design a community center with an emphasis on the arts and spaces for performance. After a brief exploration of this option, it only succeeded in producing a building, and the bridge between the two gathering locations, and the greater connection of community, remained nonexistent. However, the exploration did reveal an initial program for the project.

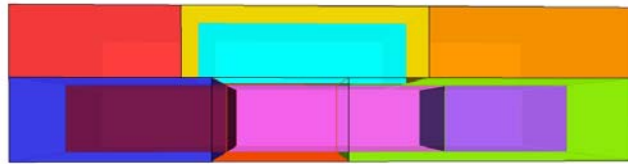


Figure 38: Conventional Program Diagram

The program was to include the following:

Event space

Services

Small open air Theater

Amphitheater

Maintenance offices

Swimming pool

Bicycle Repair Station



## Path

The pathway necessitated a series of signposts for directions and a number of bridges to cross the brook. It was also decided that areas where the path moved from undeveloped land to existing street would be labeled as zones of transition and receive some sort of transitional structure such as a bench or deck to offer a moment of pause and safety from possible vehicular traffic should it be present at the time of transition.

These zones of transition would also act as sign posts so that a traveler can move along the path and understand its location and shifts in direction by these visible installations. However, in order to be recognizable, the installations had to be constructed in similar ways and with similar materials so that it was understood that they were related. From this idea came the development of a common architectural language and the concept that the program could be broken down into pieces and stretched along the path to become the transitional spaces and signposts.

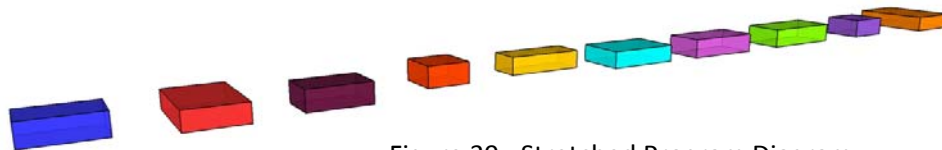


Figure 39: Stretched Program Diagram



Figure 40: Program Along Path

## Installations

The thesis focuses on three installation sites which will be named the theater, the Swimming hole, and the glade. The theater site is closest, of the three, to the downtown area and has been designed to be accessible to people who live and work in the urban area. The swimming hole is farther out from the urban area in the midst of a residential zone that it would best serve. The glade site is comprised of an amphitheater, ticket booth and an event center. It is the largest of the installation sites, and while being in a residential area, it is relatively unpopulated and has a site that feels secluded and distant from the urban center.



Figure 41: Theater Bridge Entrance

### The Theater

The concept of the theater site began with the idea that community members could benefit from an informal gathering place in the urban center. With the closing of one of the only two movie theaters in town, an open-air theater became the program choice for this location, along with services and a maintenance office for the path.

Though the site may be accessed via the path as it winds its way along the south edge of the brook, it made sense to place a bridge at this point also to link the installation site with

the adjacent public parking lot on the north side of the brook. This increases access to visitors from out of town and residents to the north. The pedestrian bridge, originally designed to be separate from the rest of the installation structures, was eventually integrated into the program to form the framework of how the site spaces were arranged. The end result was a long box beam truss that spans the river and widens to the south and becomes the seating for the theater, the screen, the services and the maintenance office.

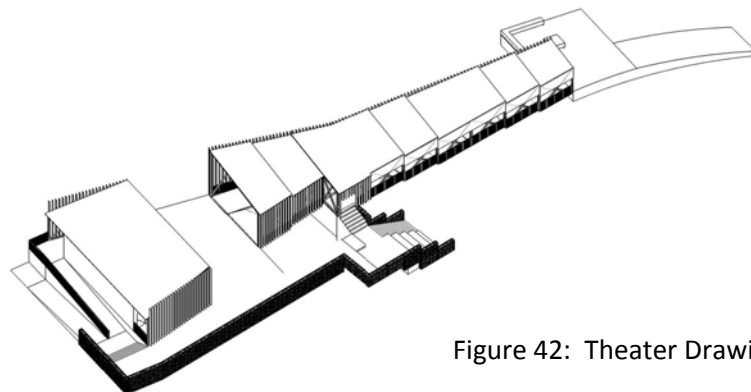
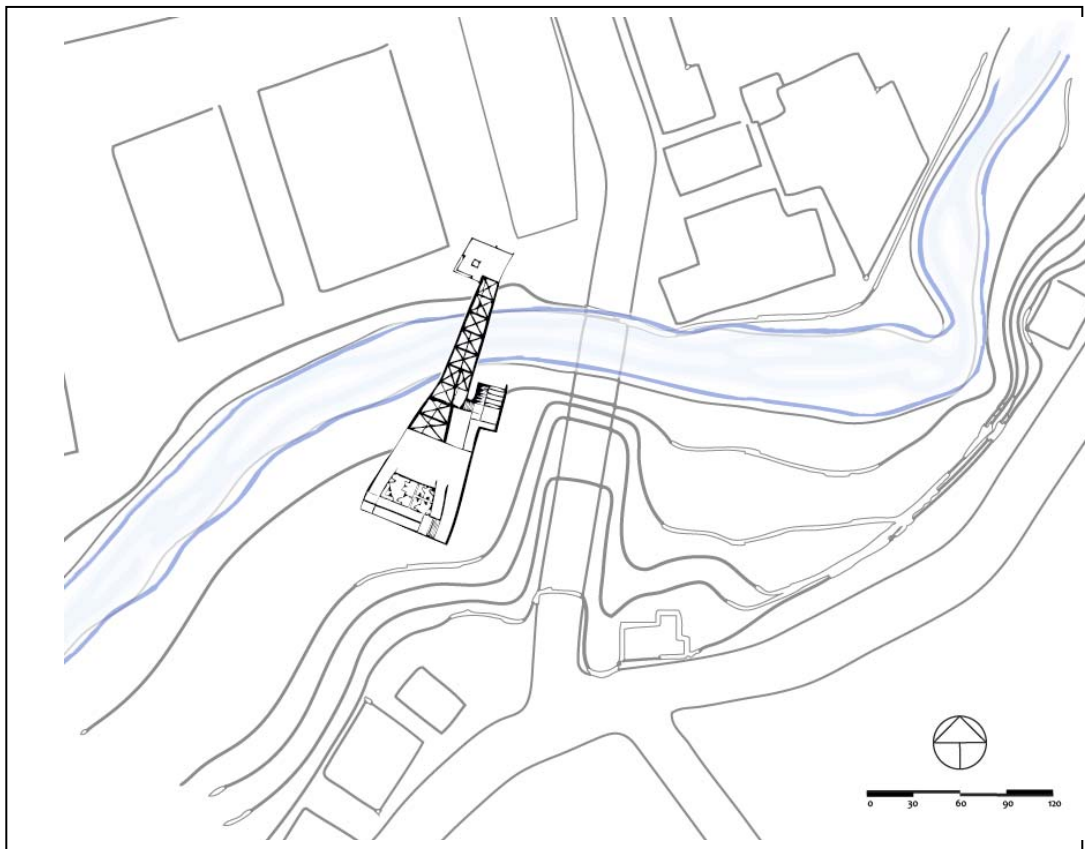


Figure 42: Theater Drawings



Figure 43: Swimming Hole

### The Swimming Hole

The swimming hole developed out of the original program idea that a community center should have a swimming pool. This spot is presently the only well used swimming hole within the town. Other more popular spots are located a considerable distance outside of town and are relatively inaccessible via bicycle or walking.

Based on the existing use, it was appropriate to develop the site to allow for greater access, and to provide a larger space for community gathering. Originally the site was comprised of a steep embankment next to a twenty three foot rock retaining wall on the south side of a vehicular bridge. Along the bank is series of large granite boulders that extend from the ground and provide places to sunbathe and jump into the river.

The design process accentuated these natural features and added stairs and seating. The result was a series of concrete platforms and connecting stairs that extend down into the water. The concrete platforms are detailed to withstand flooding and they allow greater access to the water for children and elderly who may have limited mobility.

ADA access was not designed into the installation due to the steepness of the site and limited space. It is believed that an alternate, adjoining installation could be placed

opposite the brook on the other bank which could offer greater access as the slope is less with a greater available space.

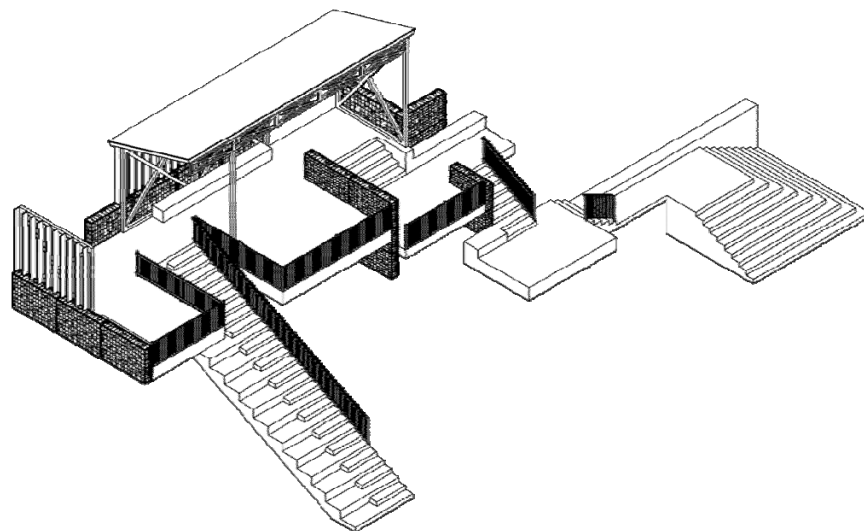
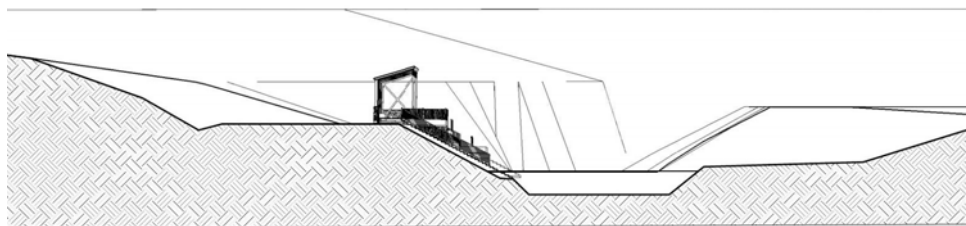
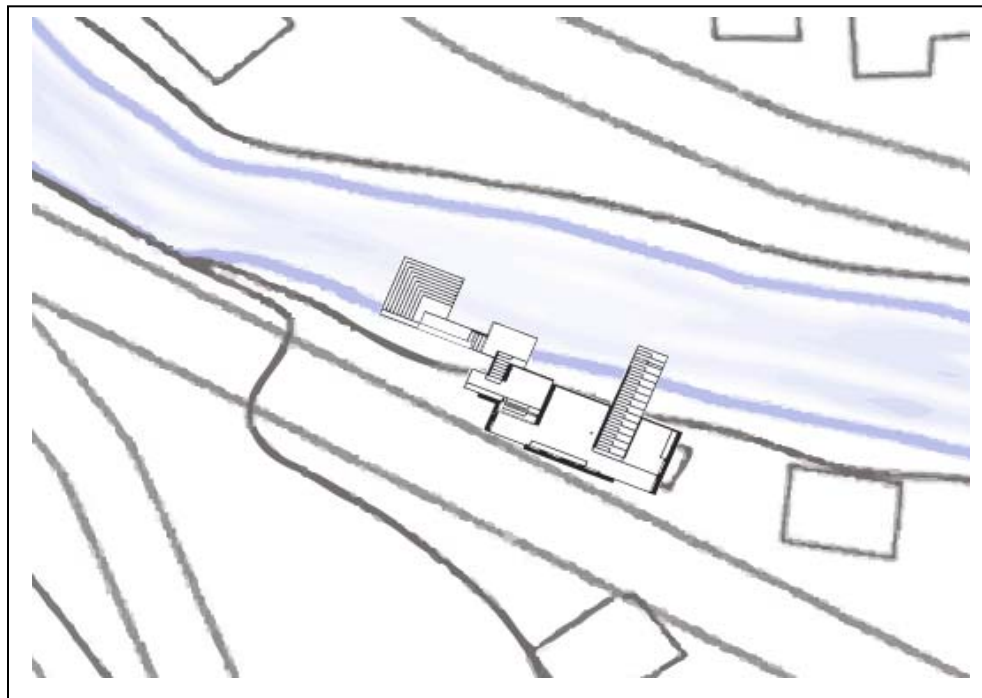


Figure 44: Swimming Hole Drawings



Figure 45: The Glade

### The Glade

As previously mentioned, the glade is comprised of three main installations: an amphitheater, a ticket booth, which includes services and a maintenance office, and an event space, which includes services and a small catering kitchen.

This is the site of a previous public park known as the Whetstone Park which has been closed for decades and the land, while owned by the town, has been left to return to its natural state. It includes an unmaintained access road that links it to an adjacent residential neighborhood to the south.

Opportunities for this site are a natural terracing effect of the land that allows the installations to sit at varying elevations while remaining accessible by ADA standards and in close proximity. The bowl nature of the hill to the south also creates a natural amphitheater which could be easily developed to be more accessible and hold a higher capacity crowd for performances.

Space on the site is limited so it is proposed that the parking lot be minimal, allowing only for service vehicles and several handicap spaces. This will also have the added benefit of

maintaining a minimal flow of vehicular traffic and creating a safer environment for pedestrians.

River access is also encouraged at this site as a natural beach presently exists and would be an optimal setting for family as it has the characteristics of a child friendly beach with sand and a gentle slope into the brook. This particular attribute of the site would have to be explored further for greater potential.

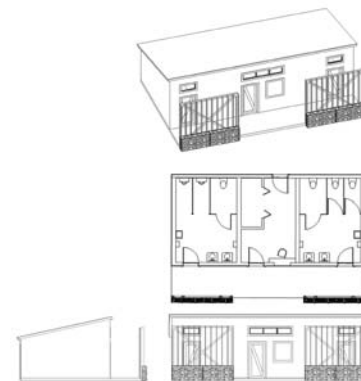
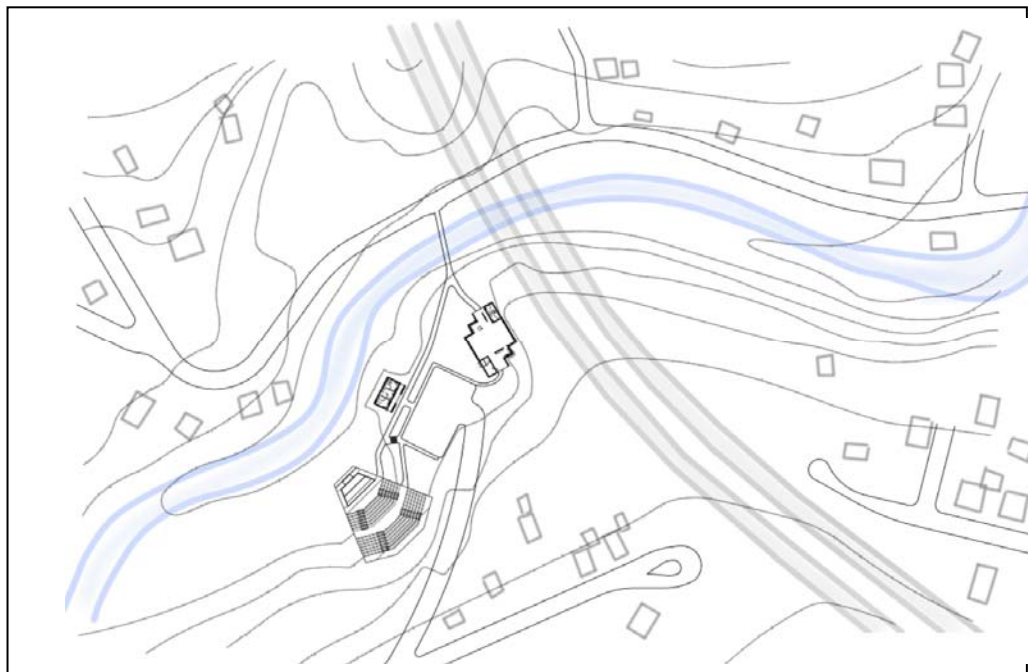


Figure 46: Ticket Booth

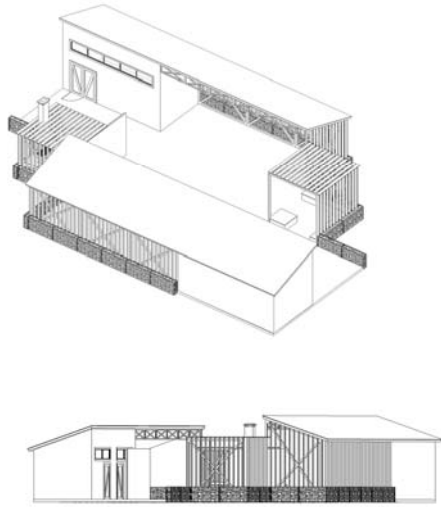


Figure 47: Event Center

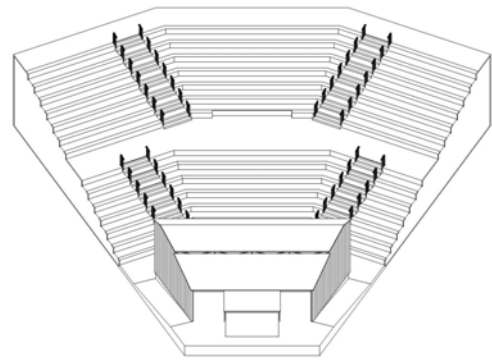


Figure 48: Amphitheater



## Details



Figure 49: Detail Image

This thesis includes a study beyond the conceptual design of the spaces and installations along the path. Due to the volatile nature of the river and seasonal fluctuations of flood waters, a more in depth study was done regarding the nature of the structural connections of the installations themselves.

This study is in response to the dynamic nature of the water course and an attempt to circumvent the possible issues with structural failure and the issue of maintenance. Three techniques were applied to respond to the issues. The first technique is to simply elevate the structures above the assumed flood levels per FEMA maps. The second is to buffer the structure against the force of water. The third technique applied is to accept that a certain amount of damage will be sustained during a flood event and that the amount of damage can be mitigated along with the cost of repairing the damage.

## Elevation

Elevation is the oldest technique used against the threat of flood waters. It is the most obvious and the most inexpensive to use. This is also the most commonly employed

technique for the installations along the path. Many of the installation are removed from the river so that elevation is automatic. For those installations along the river bank, such as the theater site, elevation is employed by simply adjusting the footing height supporting the bridge. Footing height is determined by analyzing the history of the seasonal and extreme flood levels and balancing the height with the need to limit height for ease of access.

Inclusive access can be achieved with the inclusion of a ramp in the design, but a ramp can use a great amount of space. Therefore, the height must be balanced with the space limitations available. In the case of the theater, this compromise in height, raises the structure above normal seasonal flood levels, but leaves portions exposed to 100-year flood event levels.



Figure 50: Flood Level Diagram

### Buffering

Buffering has long been used against the force of water. It is in the form of sandbags and dykes in any area where flooding occurs regularly without the ability to elevate a structure above the water. Next to elevation it is the simplest and most effective. The basic premise is to create structure that can withstand the forces of water and buffer the structure against collapse.

For the installations, two materials and techniques were employed. First, concrete was used for the footings and slabs to form the base of the structures. The other technique was to employ river stone in a series of steel cages to protect walkways and seating areas from direct force but allow controlled flooding and draining.

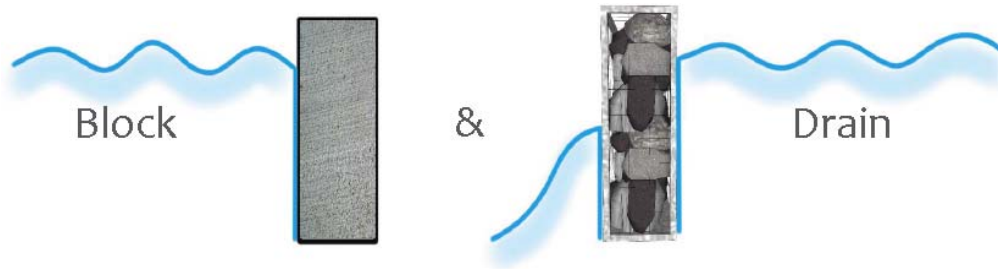


Figure 51: Concrete and Rock Wall Diagram

These two techniques are an effort to protect the super structure in two different ways.

The concrete footings and slabs are designed to withstand the force of water and floating debris while being submerged during a flood event.

The caged river rock acts as a loose barrier that breaks the force of water while allowing the flooding to occur and then offering an outlet for draining after the event.

The rock cages are typically employed in higher elevations where they are likely to receive flooding less



Figure 52: Rock Cage Example Image

often, and also used along the river's edge where protection may be wanted but assumed flooding will occur. This is in an effort to protect the path from increased levels of erosion, while still allowing for drainage after an event.

## Mitigation

The third technique employed for the installation designs is to mitigate damage and maintenance. This technique relies on a series of layers to make up the envelope of the structure. There are two types of structures designed for the pathway.

The first is a traditional enclosed structure that relies on traditional envelope systems.

These structures have little resistance to flooding and will tend to react in a similar manner as traditional construction. However, these structures were limited to the few installations that required an enclosed space that could be locked and conditioned such as restrooms and maintenance office. They were also situated at higher elevations than the majority of the structures in an effort to minimize damage from flood events.

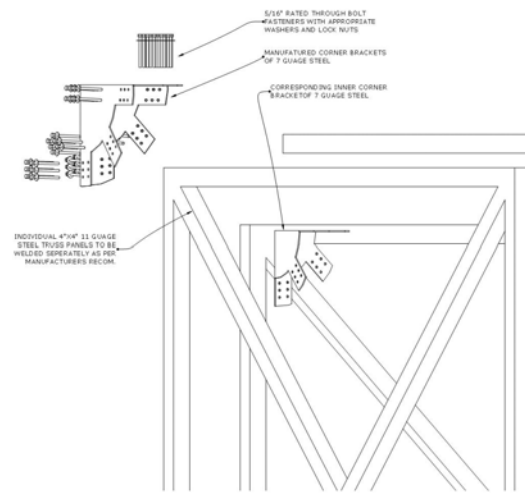


Figure 53: Box Truss Connection Detail

The other, and most commonly employed envelope system used for the installations and bridges was a break-away system of layers. This system is made up of an inner steel box truss that forms the main structural element. Inside of this structure is a flooring system, hand rails, and lighting. Outer layers include a railing system and an integrated screen system of vertical rough-cut lumber that sits perpendicular to the direction of the truss and forms a visual block when viewed from an angle.

The truss is also roofed with a traditional standing seam roofing system that protects the bridge from the majority of rain and snow much like a traditional covered bridge. The traditional roofing system was employed because it is assumed that the added height elevates the roof above flood levels, offering greater protection.

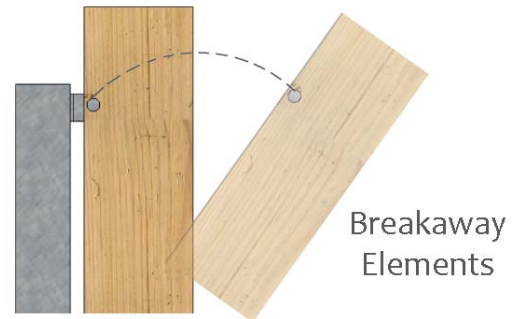


Figure 54: Break Away Elements

The screening system with integrated railing, best exemplifies the break-away system. This allows members of the screen system to be destroyed in individual pieces during a flood event so that damage is minimized. An example of this might be an impact during a flood of floating debris, that cracks and breaks a wood member, then pulls away from the bolting assembly. This piece could later be replaced by removing the bolt and attaching a new wood member. This same process allows for greater maintenance as the individual pieces can be replaced as needed during the life span of the installations.

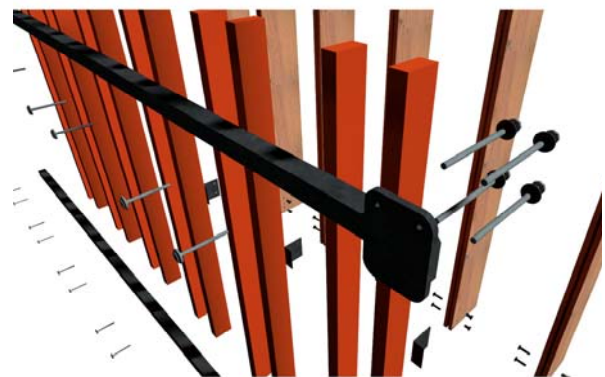


Figure 55: Railing Assembly

The end result is a system that can easily be maintained or altered as new materials or color schemes are employed. The entire installation could be maintained by a small one or two person crew without the use of heavy equipment or technical skills.

## CHAPTER 6

### CONCLUSION

My understanding of Brattleboro and the social dynamics are now much different than they were before this research began. Initially, my journey began with observations of the community around me and the interactions of the people who live here. As I read and reviewed literature about community building and place making, my understanding shifted from a context of member interactions to the larger influence of the built environment on social interactions through history. The idea that space can encourage or limit community by its very nature, scale, and accessibility became apparent.

The literature review made me question the validity of development philosophies implemented in the town. The preference of the automobile as a metric for designing space and linkages. This way of thinking has left the town in a fractured state that has perhaps created a resilience in the people, but also a system that isolates and divides members of the community. The breakdown is not universal, though, and unity survives and thrives in small pockets around the town such as the urban sidewalks and public spaces.

The idea that Brattleboro needed a community center and a pathway was only the beginning of what the project became. The architecture became the link and the language of the unifying force that joined two distant community gathering spaces together in a recognizable way. The language then led to the development of the details best suited to the environment the installations were situated in.

It is my hope that the understanding of this smaller scale response triumphs over time, creating deeper ties to the landscape and fostering the natural creation of community interaction. Also, by applying this method to larger projects and greater distances, a more cohesive community may be created in a multitude of locations, while evolving the technique to better suit each individual site, culture, and socio-economic group.

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