

# Public Space in Suburbia: Water Infrastructure as a Community Catalyst

by

Esther J. Chung

Submitted to the Department of Architecture and Planning  
On May 22, 2009 in Partial Fulfillment of the  
Requirements for the Degree of Bachelor of Science in

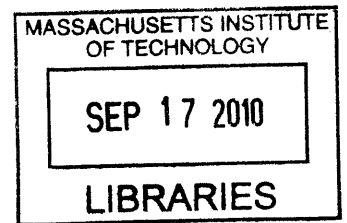
Art and Design

at the

Massachusetts Institute of Technology

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**ABSTRACT**

The phenomenon of Los Angeles, an aggressive thriving metropolis sprawling across the Mojave Desert to the Pacific Coast, is inseparable from its complex history of purchasing, transporting and consuming what is arguably the city's most sensitive need: water. For almost a century, the physical artifacts that were invented as a means to secure, manage and protect this supply have successfully distributed water throughout Los Angeles. However, the increasingly pervasive presence of water infrastructure has also had negative impacts on the quality of public space in LA's suburbs.

In scale, shape and tectonics, water infrastructure alienates the human experience of the public realm. The presence of water infrastructure in Los Angeles suburbs, which already carry the stigma of monotonous architecture and bland public space, only aggravates the problem of a landscape that is hostile to the pedestrian.

Water infrastructure in suburbia must be recognized for what it is—a critical element for the growth and support of human settlements, but also a source of further estrangement of the very people meant to benefit from it. This thesis proposes a solution that mediates the spatial divide, infuses multi-use of the actual artifact and raises awareness of ecological and economic issues in an effort to reinvent water infrastructure as a catalyst for engagement, education and community.

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*“Water throughout history has been perceived as the stuff which radiates purity: H<sub>2</sub>O is the new stuff, on whose purification human survival now depends. H<sub>2</sub>O and water have become opposites: H<sub>2</sub>O is a social creation of modern times, a resource that is scarce and that calls for technical management. It is an observed fluid that has lost the ability to mirror the water of dreams.”*

Ivan Illich, *H<sub>2</sub>O and the Waters of Forgetfulness*



## **BACKGROUND**

### **WATER AND THE HUMAN EXPERIENCE: A TRADITION OF COMMUNITY AND SYMBOLISM**

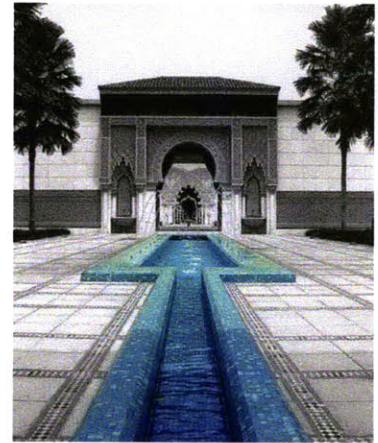
A critical element of human settlement and the inspiration for social and religious customs, water has been an integral part of the human experience. For centuries, water in architecture has embodied symbolic spiritual meaning. Civilizations have mediated the experience of communing with water, be it as a symbol of civic pride through the aqueducts of Rome, a treasured spiritual element in the lush Islamic gardens of Spain or as an intimate environment for relaxation in the bathhouses of Japan.

The rich history of water-related architecture expresses the diversity of roles that water has played within social constructs of various civilizations and eras. The architecture of these times was expressive, emotional and functional. The places that they created often drew people together in community, civic pride or wonder. In addition to serving practical functions, the architecture of water were integrated as places for communal gatherings and interactions between the people that it served.

The Takaragawa onsen  
bath house in Japan  
(Photo credit: Michael S.  
Yamashita/Corbis)



Roman aqueduct in Segovia, Spain



An Islamic garden pavilion



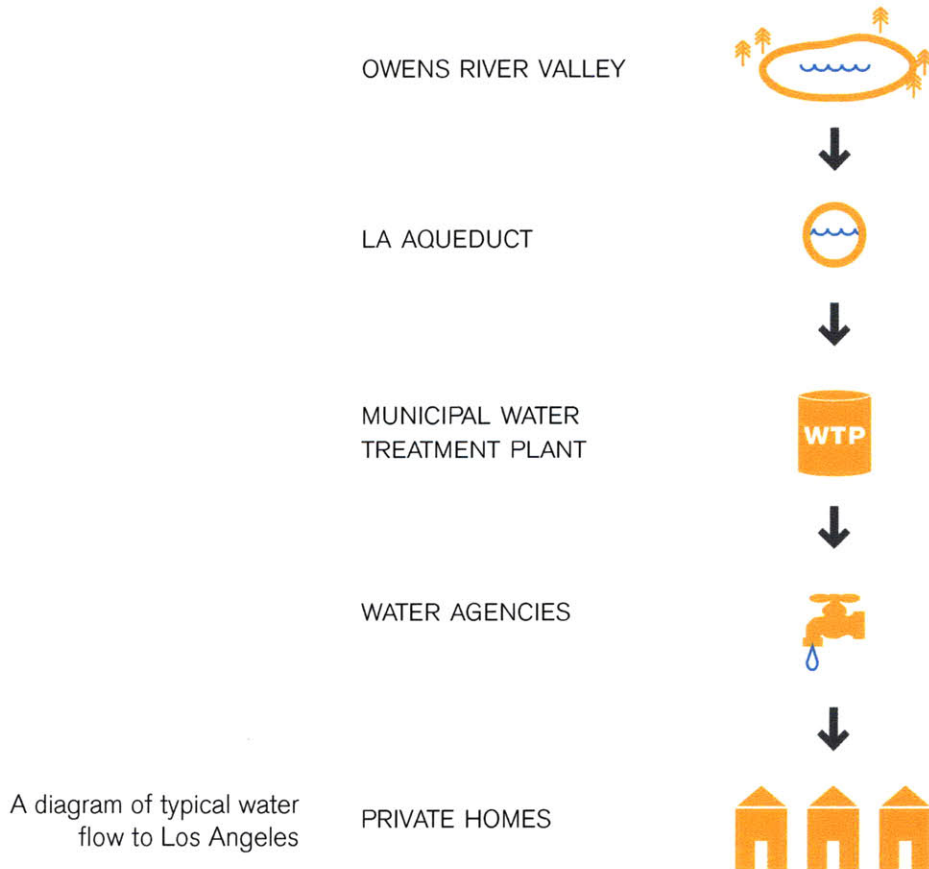
***WATER INFRASTRUCTURE TODAY:  
A SYSTEMATIC APPROACH TO WATER  
MANAGEMENT***

The current attitude towards water and its architecture has changed. With technology and globalization changing the patterns of settlement and a dramatic shock in the sheer volume of water in demand, water is no longer a purifying, cleansing, re-energizing substance, but rather seen as a resource to be manipulated.

Illich proposes that what was once water is now merely H<sub>2</sub>O – a mystical unpredictable element of nature objectified into a commodity to be managed and a hazard to be tamed.

The major strategies for water management today reflect this attitude of objectification. Water is brought into communities through highly engineered systems of aqueducts, channels, reservoirs and dams. Water is not an experience with nature or with other people; it is merely an “urban cleaning fluid” that

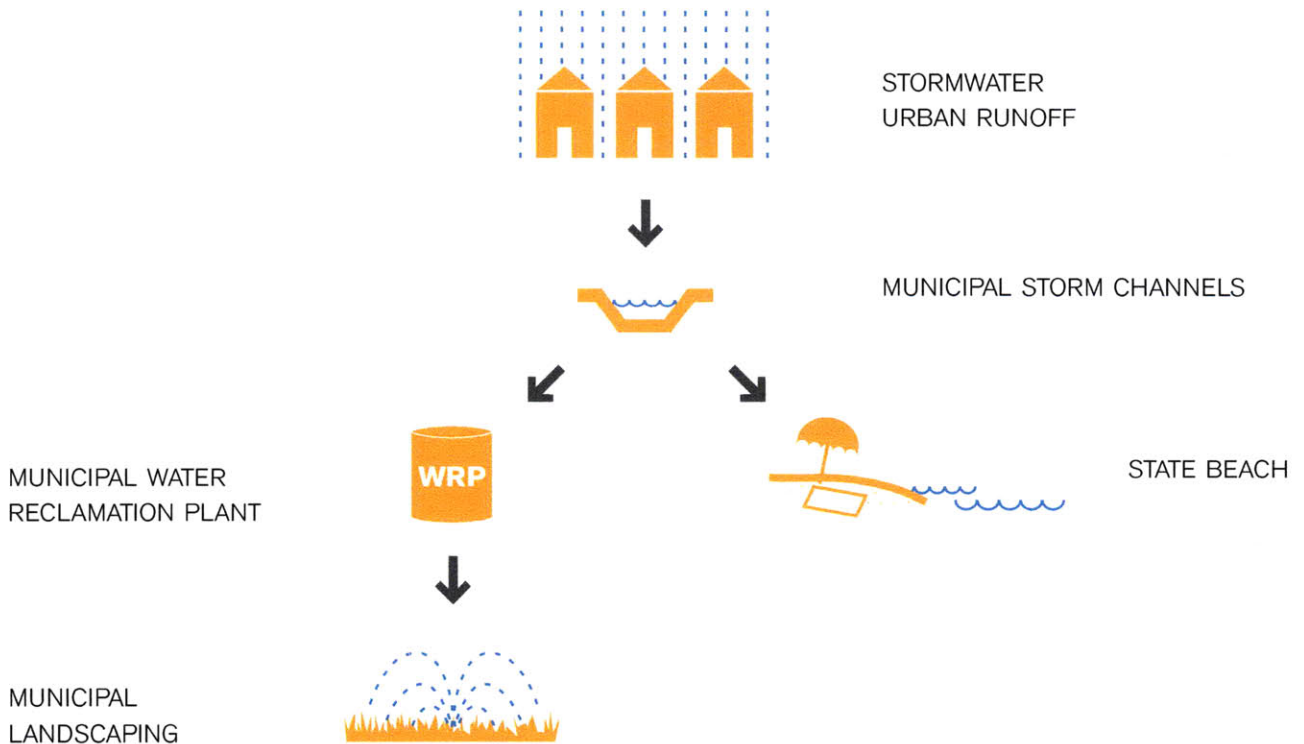
### **HOW WATER GETS HERE**



appears upon demand . Likewise, management practices of water as a hazard reflect a mindset of control. Storm drain channels are the perfect rational response to the threat of floods – remove the problem, the water itself, as quickly as possible. Again, water is seen here as an outside hazard that must be dealt with rationally and efficiently. The objectification of water in minds of people is the result of architecture that regards it as an object.

A diagram of typical water flow out of Los Angeles

### HOW WATER GETS OUT





Mapping of aqueduct system in state, region and city context

## ***SUBURBIA: AN OPPORTUNITY FOR INFRASTRUCTURE AND PUBLIC SPACE***

The prospect of bringing emotional and cultural meaning back to the artifact of infrastructure is an appropriate vision for an environment that has the physical landscape but lacks meaningful public spaces. Los Angeles' suburbs, with a reputation for monotonous architecture and bland public space, serve as an ideal site for reinventing infrastructure as a catalyst for community.

## ***LOS ANGELES' WATER INFRASTRUCTURE: OBJECTIFICATION AND ALIENATION***

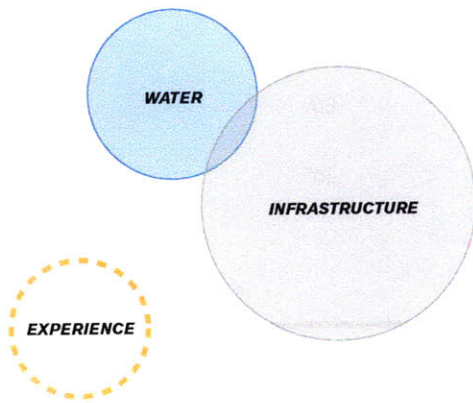
The phenomenon of Los Angeles, an aggressive thriving metropolis sprawling across the Mojave Desert to the Pacific Coast, is inseparable from its complex history of purchasing, transporting and consuming what is arguably the city's most sensitive need: water. The California Water Wars in the early 1900's set the tone for Los Angeles' approach to water and water rights: get it at any cost. William Mulholland's work in constructing the Los Angeles Aqueduct left a legacy of building infrastructure to accomplish economic pragmatic goals of development for the city as a whole. With its semi-arid climate on the western edge of the Mojave Desert, Los Angeles and its suburbs had very limited natural sources of water available to them. The growth of LA literally depended on the supply of water that could be brought in through infrastructure. At the same time, water management strategies for flooding were focused on how to remove storm water from the city in a quick and effective manner.

The consequences of an objectifying systematic approach is the rejection of human interaction. The infrastructure that results offers no acknowledgment of human scale, human uses and human needs. Furthermore, the artifact is divisive and alienating; it is actually detrimental to the human experience. It creates more forbidden space in a landscape that is already hostile to the pedestrian. Once a focal point of civic community, modern-day water infrastructure instead alienates the human experience with water and with others.

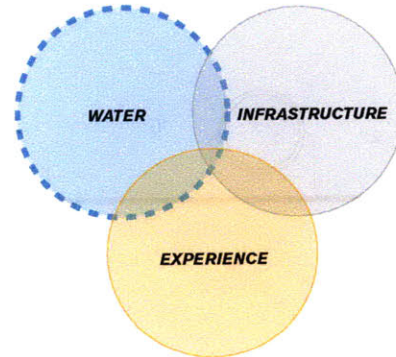
## **STATEMENT**

### **WATER INFRASTRUCTURE AS A COMMUNITY CATALYST**

Water once had a symbolic, cultural meaning that its architecture reflected. Both the water and water infrastructure had social roles that contributed to the social and cultural fabric of their times. The current system infrastructure in Los Angeles suburbs is an overbuilt, purely engineered reaction to water management that does not address the potential for human experience. Water infrastructure needs to be reinvented to give human experience a place in the design and reuse of an underutilized artifact.

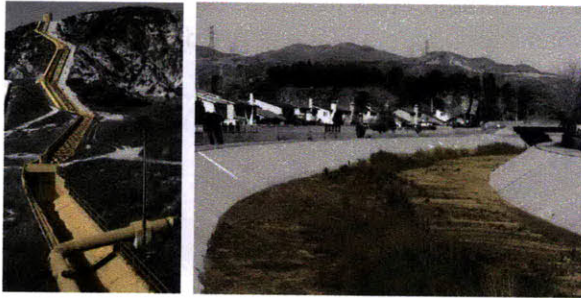


The current system of water infrastructure ignores the human experience.



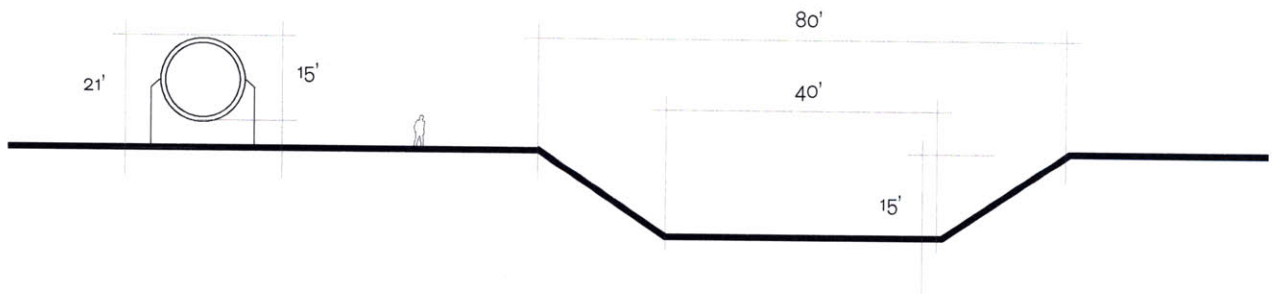
Water infrastructure should be redesigned to include experience that connects people to water and to each other.

## APPROACH

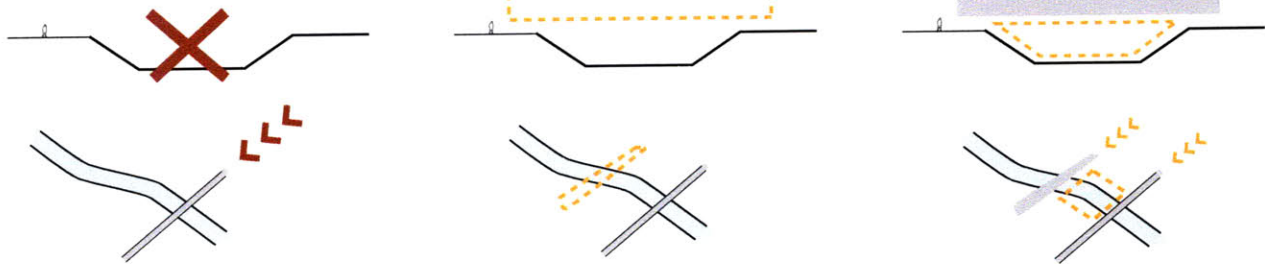


(L) Cascades at the terminus of the Los Angeles Aqueduct  
(R) Bouquet Canyon Channel

The product of a rational engineered approach to water management is a robust, efficient system, but one creates opaque, inaccessible and dangerous spaces in the city.



The Aqueduct acts as more of a symbol. It is a complete, separate entity. On the other hand, the inherent dimensions of the storm water channel lends itself to potential occupation and reuse. The storm water channel becomes a scene for interactions.



The storm water channel is a literal chasm that prevents human access on the landscape. A strategy to infuse a multiplicity of uses and encourage occupation of the channel begins with a literal bridge across the divide. The bridge can provide relevant programmatic elements as well as serve as a practical connector between the two banks of the channel. The resulting space that is created beneath the bridge makes an opportunity to occupy the channel itself.

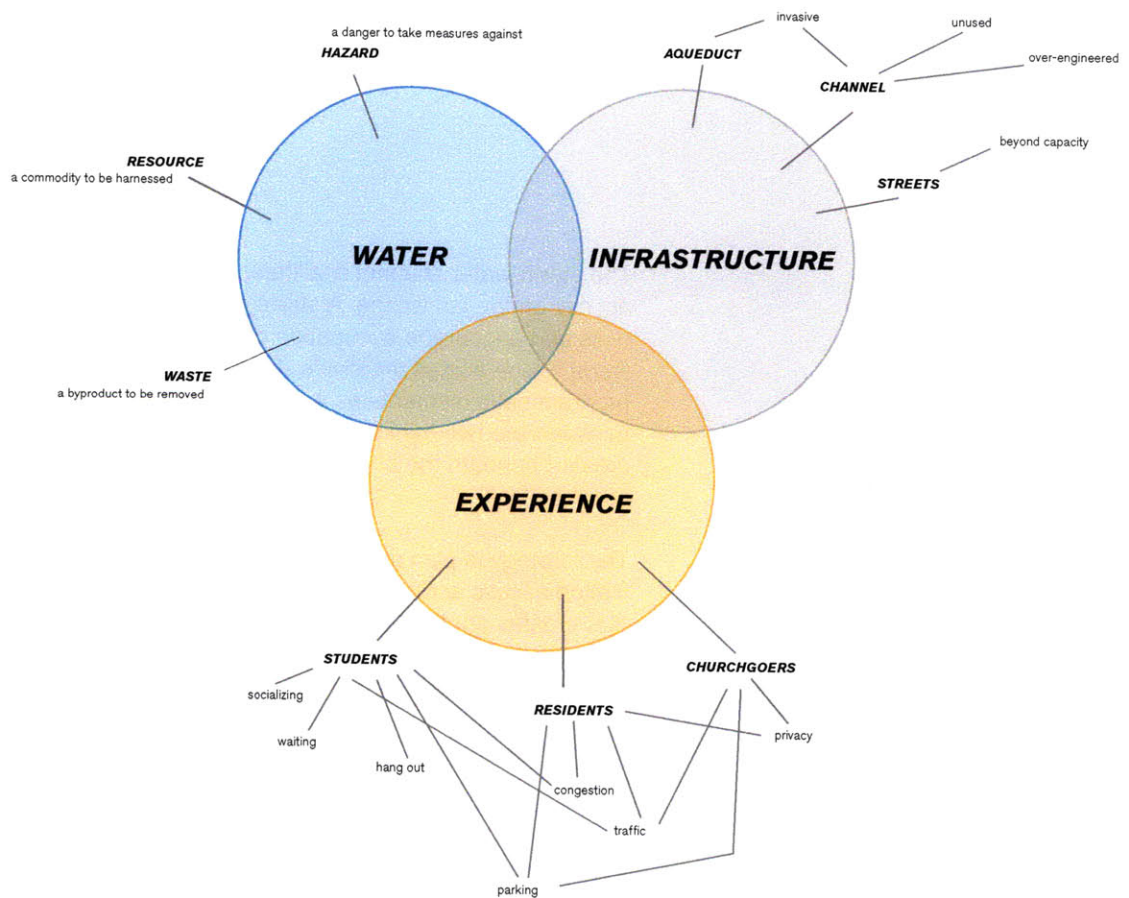
The strategy in plan also addresses the issue of congestion and limited access across the existing storm water channel. A bridge that creates another connection point along the channel will increase pedestrian access to the other bank and provide boundaries of the zone to be occupied within the channel below.

The site is in Santa Clarita, a suburb of Los Angeles located about 40 miles northwest of the heart of the city. The site is along the municipal storm water system and meets the Los Angeles Aqueduct at its south-western point. Existing conditions on the site include a high school to the north of the site, a church to the south and typical suburban residential development surrounding the entire area.

## SITE ANALYSIS

The diagram below maps out the issues that surrounded each stakeholder and their viewpoint for a project to create community.

(Opposite page) A montage of photos from the site, showing the aqueduct on the southern boundadry, the channel, tycpical residences, the church and finally the school.





**HIGH SCHOOL**

athlete  
teacher  
latch-key kid  
drama member  
social butterfly

rehearsal  
hanging out  
studying  
waiting  
learning

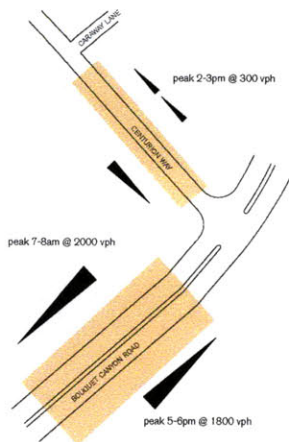
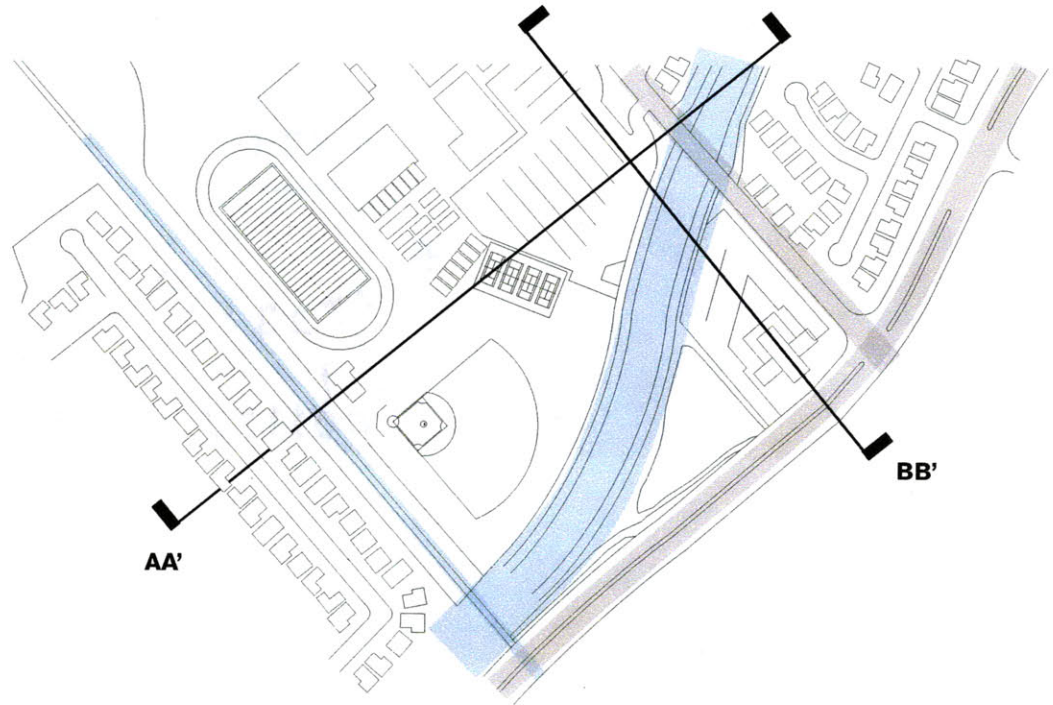
**CHURCH**

singles  
youth  
congregation  
family  
administration

prayer  
worship  
gathering  
celebrating  
singing  
listening

**HOMES**

family  
neighbor  
babysitter  
cleaning lady  
dinner  
sleeping  
relaxing  
homework



An exercise in mapping activities around the site provided insight into relevant program. The sectional time maps on the opposite page demonstrate varied uses of the site depending on the time of year, the time of week or time of day. There are predictable rhythms and patterns to use which could reflect in the purposes of the program.

The diagram to the left represents typical traffic flows along the main access road, Bouquet Canyon. With the better traffic flows along Bouquet Canyon, redirecting pedestrian and school traffic to this street became a priority.

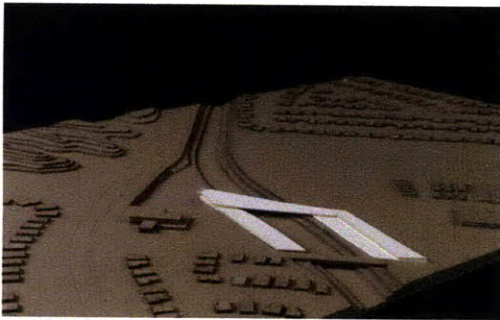


## DESIGN PROPOSAL

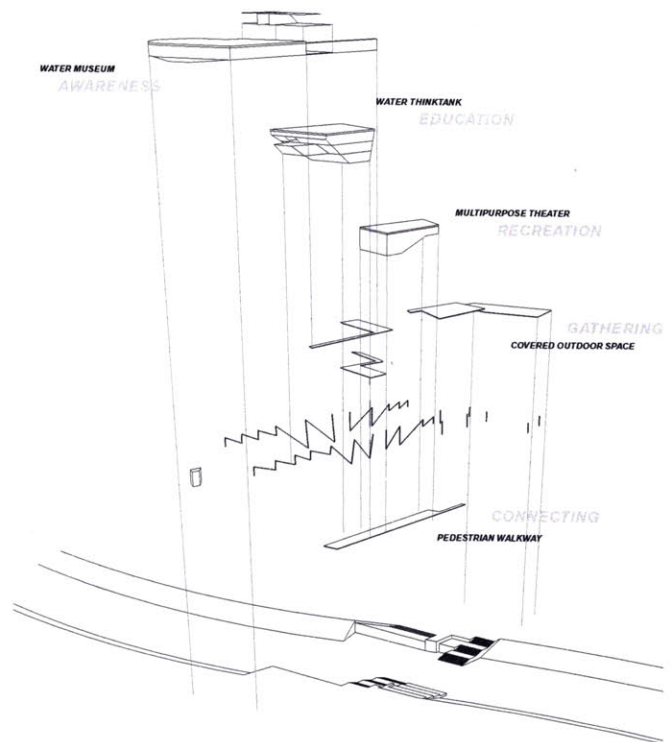
Breakdown of program:

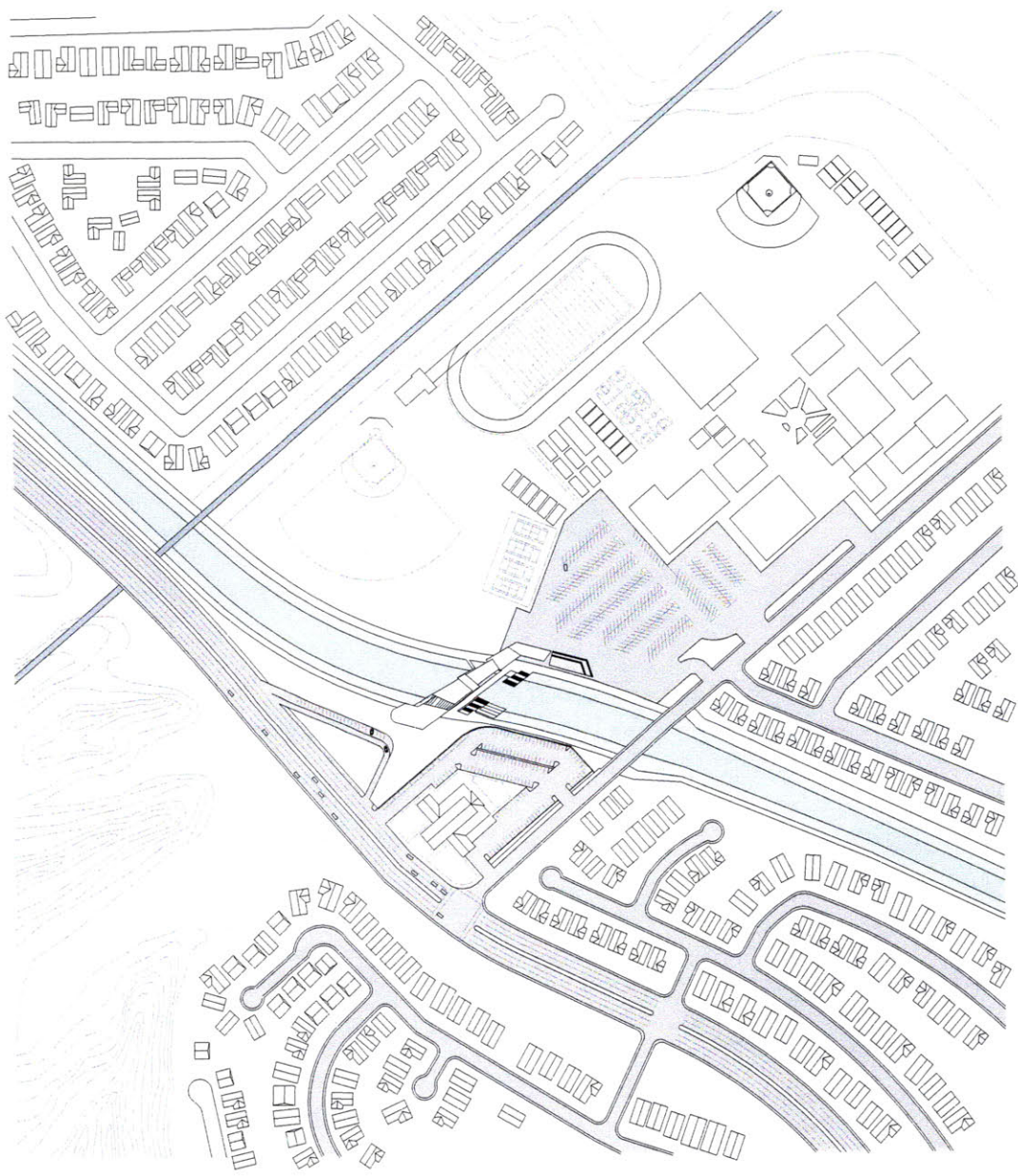
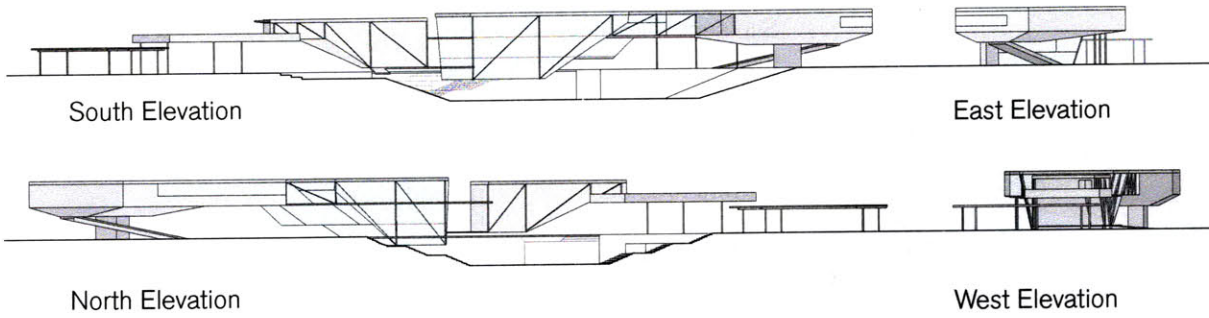
- Connecting through a pedestrian walkway
- Gathering through a covered outdoor space,
- Recreation through community theater
- Education through offices and workings spaces for ecological activist groups
- Awareness of water issues through a regional water museum

The site plan to the left shows the connection between the school and a new pick up turnaround that alleviates traffic and congestion on the only other street that provides access to the school.



Model photo showing an early scheme with bridge and programmed banks.



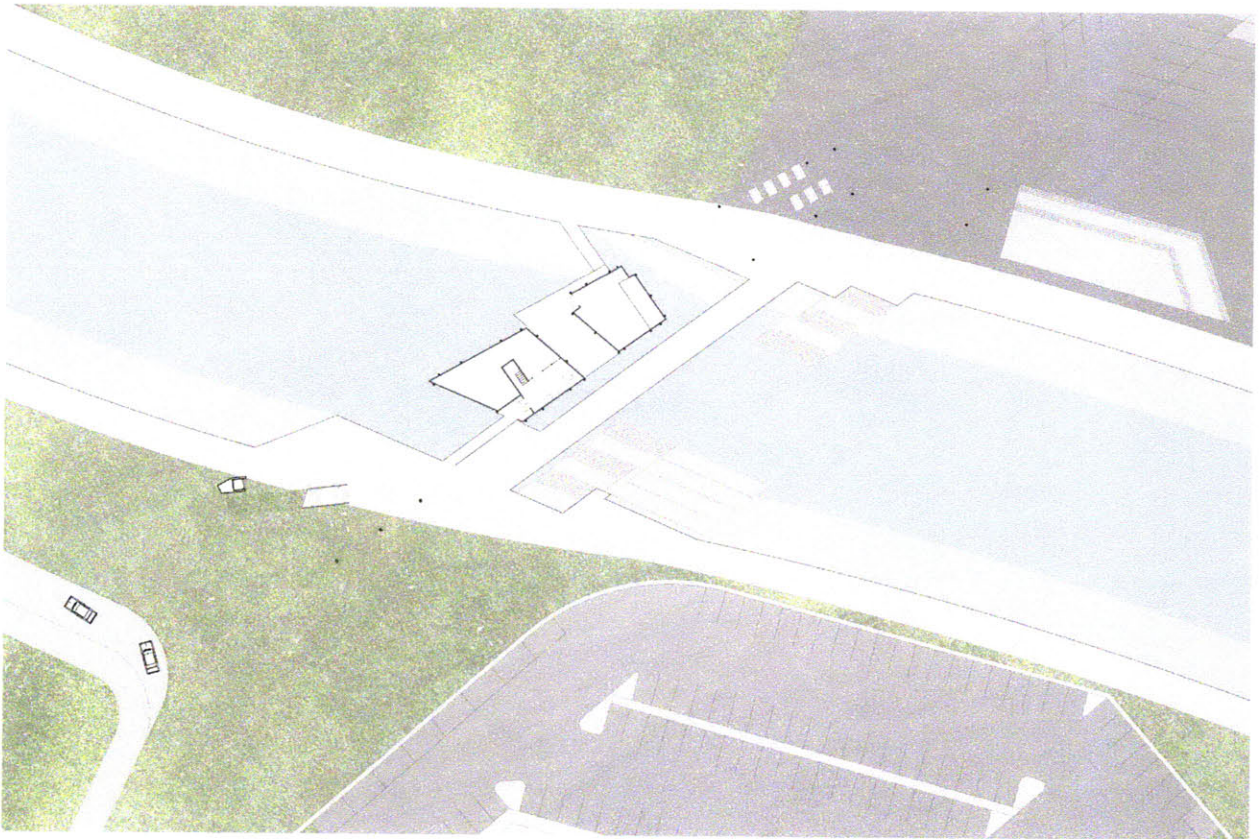
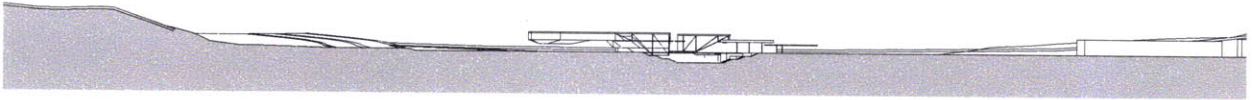


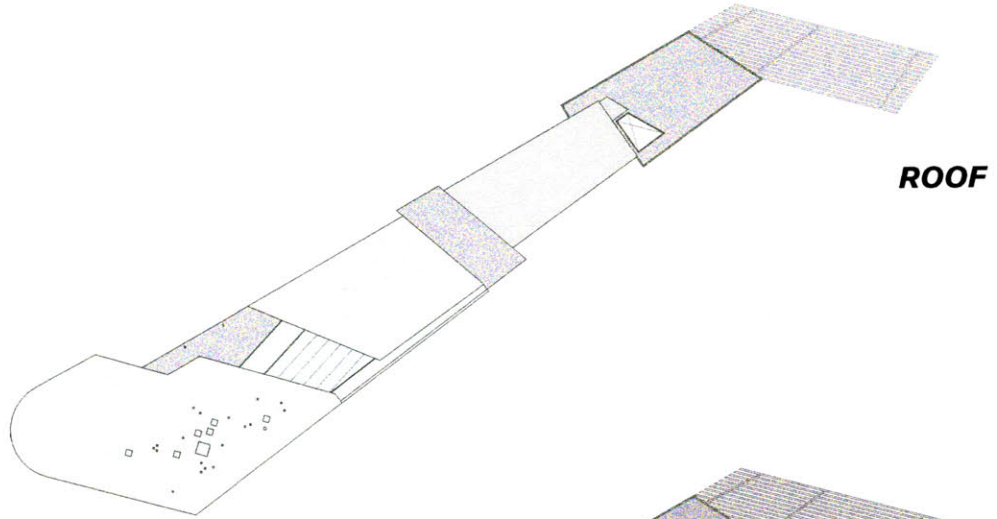
Site section (middle) shows the connection between the school and the street enabled by the bridge.



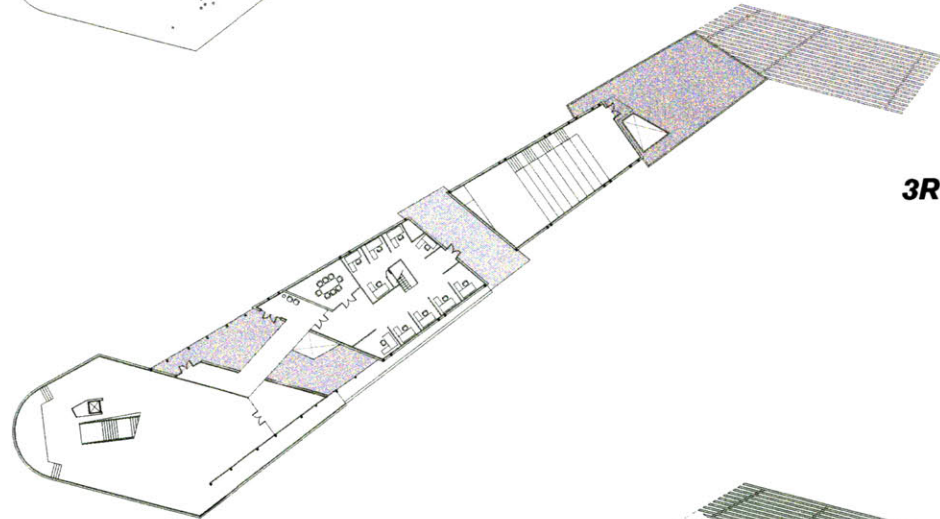
Ground floor plan (bottom) accentuates the floating program elements in the cavity of the channel with circulation and occupation allowed to occur on the ground plane.

Second, third and roof plans are pictured on the right. Program elements on the northern end of the site relate to the school. Elements in the center are oriented towards preservation and activism surrounding the channel. Finally program elements on the southern edge of the site relate to a symbol that can be understood by at the city scale.

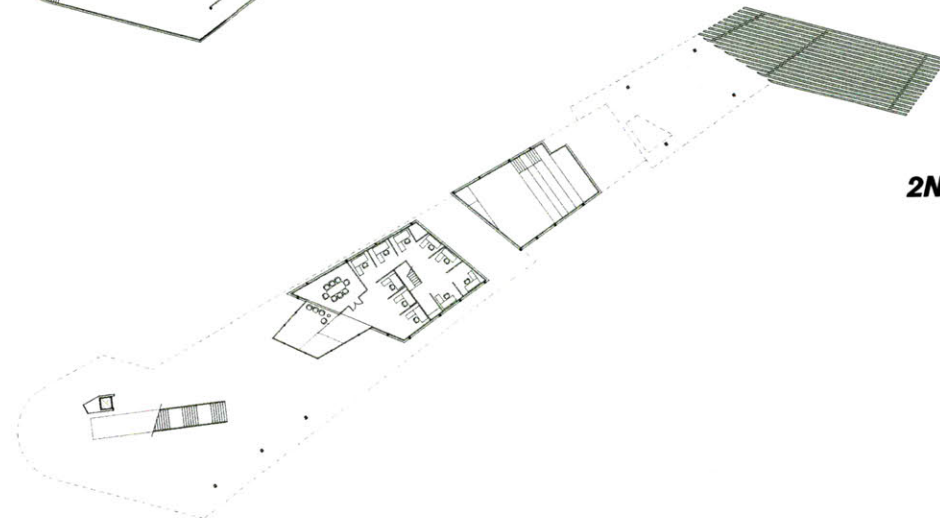




**ROOF**



**3RD FLOOR**



**2ND FLOOR**



The relationship of the occupants of the bridge in relation to the groundplane changes depending on the purpose of the program. The north side of the bridge which faces the school begins with a large covered open space which invites many users.

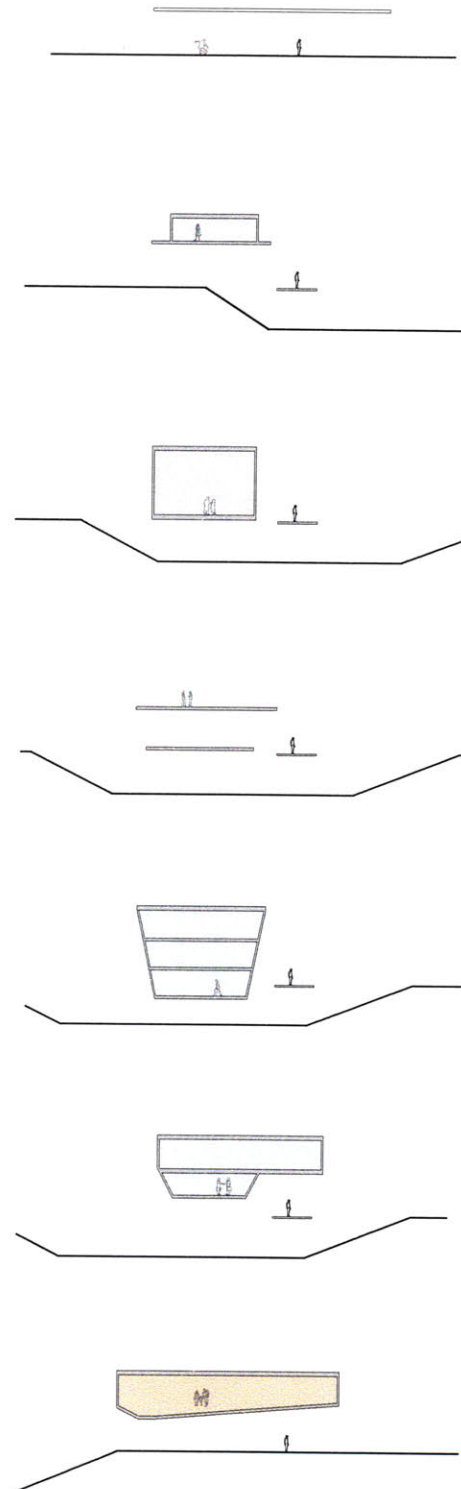
The program begins to be lifted off the ground plane and float in the cavity of the channel. The theater makes use of the slope of the changing landscape for its seating and as a projection screen with relevant information displaying for students.

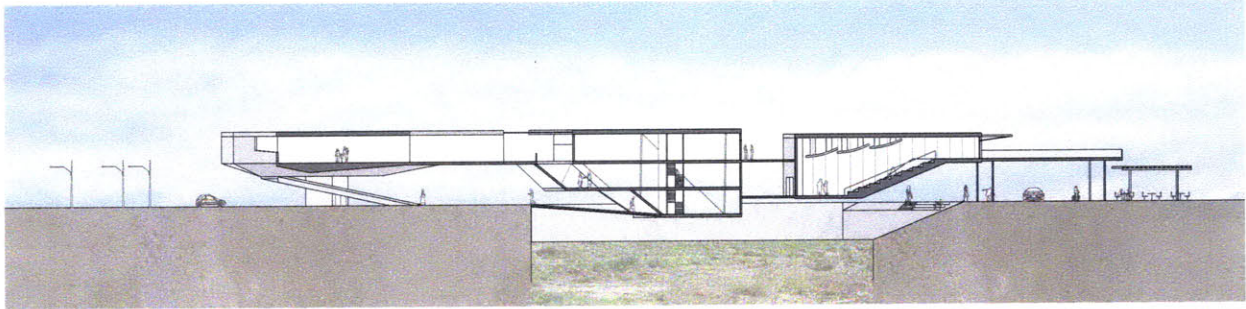
The center of the bridge remains open and uncovered for users to have clear views around. The experience of being at the exact center of a once forbidden space is the highlight of this space.

Next is the working space for ecological activism groups related to the water and river conservation issues. This element is the lowest occupiable zone of the bridge, bringing researchers and students closest to the physical manifestation of their work.

The transition space between the offices and the museum elevates the occupants one last time as the bridge crosses to the other bank.

The museum is floats above ground and projects its image to the city as a symbol of committment to water-related issues.

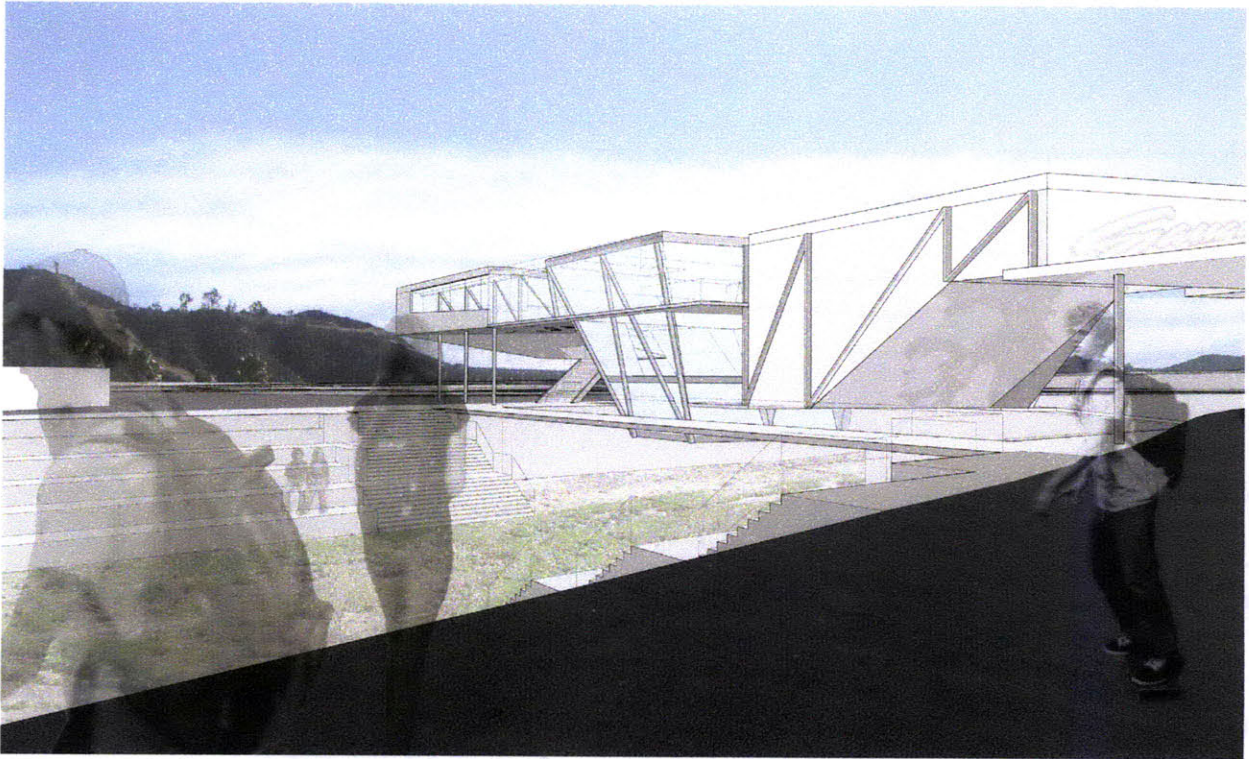




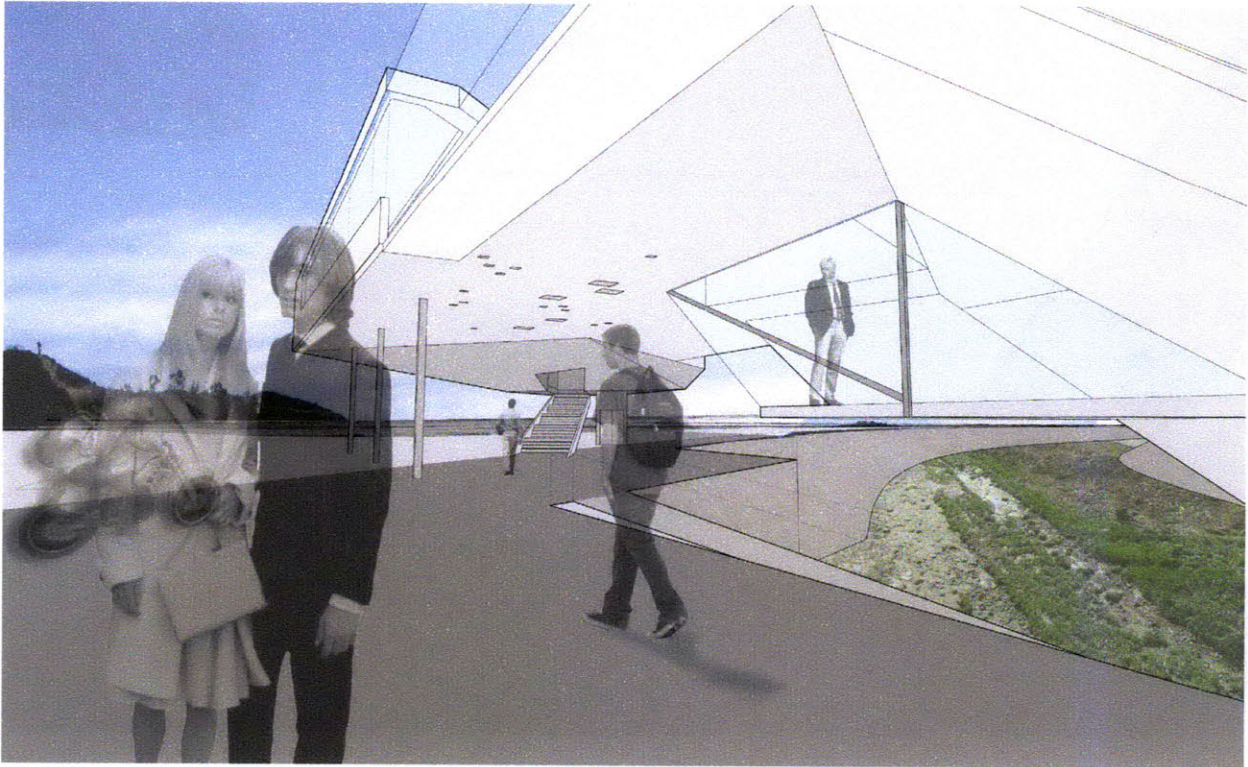
Section illustrating theater, outdoor balconies, working spaces, museum and public space on ground floor.



Looking north from vehicular approach on Bouquet Canyon Road



Looking south from campus at ampitheatre below and walkway on grade

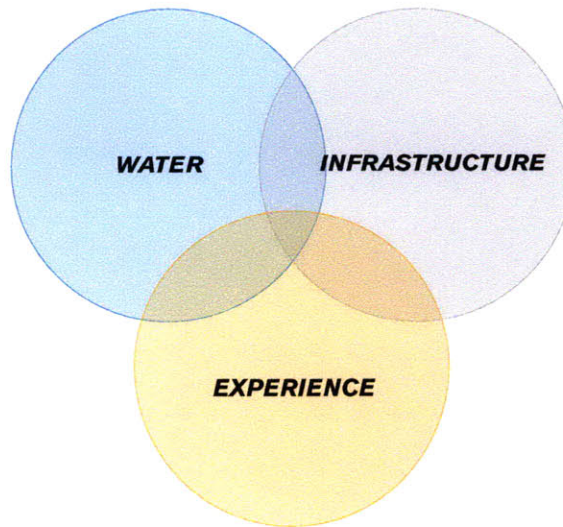


Looking south beyond offices and museum entrance from pedestrian walkway

## **CONCLUSION**

Modern-day water infrastructure excels in the utilitarian, efficient distribution of water, but has failed to reflect the historic, symbolic connection to social and cultural values in its form. As a result, human connection to the built form of infrastructure has disintegrated.

The endeavor to mediate this disconnect is one of physically bridging gaps to create new spaces that can serve a stage for human interaction with other people and with the environment. A programmed bridge offers one practical reuse of infrastructure that is underutilized and brings a negative connotation to open space in suburbs. Regardless of what the specific strategy may be, the goals of building community, infusing multiuse into underused infrastructure and creating quality public space should be maintained as the objectives of future design proposals to improve the human experience with water infrastructure.





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