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## URBAN BISHTI

An architectural memoir of water systems

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### **Abstract:**

*"If one were to study the water history of a place then each city will have its own story to tell about its engagement with water through its historic revolution." - Charles Moore*

Bangalore was known as a 'land of thousand lakes'. The city's rich water heritage is steadily depleting as it is being engulfed into piping, pricing and storing. This paper presents the design explorations and findings of the architectural design thesis - Urban Bishti which explores the design of architecture for water where creative design strategies significantly supports water conservation, storage, purification and recycling while restoring the splashes, ripples, sprays, trickles of water as manifestations of its presence in the built environment.

Turubunahalli Pump house in Hessarghatta, Bengaluru, a shutdown historical water engineering marvel of 18<sup>th</sup> century that faces the threat of encroachment, is the demonstration site for Urban Bishti. The design proposal presented in the paper attempts to reinstate the relevance and significance of water and architecture through architectural place making of the water heritage site.

### **Key words:**

***Water Architecture, sustainable design practices, adaptive reuse, awareness, water heritage, indigenous water systems***

## **1. Introduction**

Sensitivity to water as a resource presents a profound challenge and opportunity for designers of the built environment. How do we design development that consciously and visibly educates, moderates, anticipates and celebrates hydrological variability and diversity? Can there be Architecture for water that judiciously engages with water as a construct for sustainable practices?

Rethinking of the relationship between architecture, water and man in a contemporary context by weaving memories of the water systems used in the past is presented here through the design explorations and findings of the architectural design thesis - Urban Bishti.

## **2. Water *and* Architecture**

The realms of 'Water' and 'Architecture' have engaged in the passage of history through their distinct yet interrelated role and identity. The establishment of civilizations be it Indus Valley or Egyptian, have been marked by the availability of water. Our ancestors emulated the ethos of living in harmony with water. Water conservation and water management were not only integrated with Architecture but were the driving force behind it. The indigenous water harvesting systems became the nodal point of the community settlements and its architectural dialect. With the advancement in building systems, significance of water vessels heightened. Architecture adopted the role of symbolizing the sacredness and sanctity of water while providing for sustenance. This can be clearly witnessed in the baolis, step wells, kunds and ghats.

## **3. Water *in* Architecture**

The manner in which 'Water' and 'Architecture' engage with each other has changed over the course of time. Water in architecture, from being a social and cultural entity, has transcribed into a politically and economically driven object.

The change in the socio-cultural and behavioral response of people towards water has led to the altered association of water as a mere commodity. This has been the driving factor that has led to the current state of water desolation in an urban scenario.

Water is expended as a product to beautify architecture. Infinity pools, play pools, public fountains, cascading waterfall, water wall and other expressions of water objectifies it as an 'item' that adds value as a mere ornament adorning architecture rather than an aspect of nature that needs to be appreciated and engaged with judiciously and sensitively. Further, the relationship of man with water is on the verge of depreciation from insensitivity to negligence with the architectural trends and practices reflecting the attitude.

#### **4. Water Architecture**

In his book 'Water and Architecture', author and architect Charles Moore wrote that the key to understanding the architecture of water is to understand the water of architecture: the physical laws which govern its behavior, the ways in which it engages our senses, how its presence relates to us as human beings.

Opportunities to observe the qualities of water in their natural forms have diminished in current urban cities as visible water has almost disappeared from everyday life. Much of it is diverted through pipes and culverts for domestic use and agriculture or transformed into virtual water by the food processing and consumer products industries in the form of packaged water.

The absence of water from the public realm has been accompanied by a slowly growing realization that fresh water in itself is a precious commodity, scarce or in limited supply in most parts of the world. Awareness of the importance of water conservation as well as preservation and restoration of water resources in natural ecosystems is gaining importance. As the mediator between natural and constructed form, 'Water Architecture' as a typology can play a significant role in shaping our awareness and experience of water. Water and Architecture could be viewed as entities that compliments 'one another' rather than 'one over the other'.

#### **5. Architecture for Water**

##### **5.1 The theoretical frame work**

The study of water in relationship with people through various aspects has revealed the current attitude of people which tends towards indifference, negligence and lack of ownership. This leads to the question - *Did the advancement of technology that resulted*

*in the ease of availability of water leading to the overpowering of the resource by man, result in a change in attitude towards it?*

In the indigenous times, water was worshipped and respected forming a landmark in a community space. This was clearly reflected in the architecture of the vessel. The water vessels like step wells, baolis, kunds etc were architecturally structured to engage water and people beyond the obvious need. The details and design clearly reflected the sanctity and sacredness of the resource.

In the present generation, the current water management models are mere concrete or PVC vessels like the underground storage sumps or overhead tanks. Intended to just serve the purpose of water storage alone, they have faded the relationship between architecture, water and man that was once established by the indigenous structures.

*What has caused this stark shift in the attitude towards water and how can architectural place making bring about a paradigm shift in this approach?*

The altered perception could be due to the change in the lifestyle of people which resulted in a slow erasure of the importance of the water as a resource in one's memory as opposed to how it was in the past. The lack of tangible contact with water due to the absence of the resource from the surface has also led to this indifference and change in the attitude of people towards it.

In the current systems, technology presides over architecture. The loss of the sense and sensibility and our awareness to our surrounding is a resultant of technology.

## **5.2 Situating the architecture for water**

Bengaluru was known as the 'Land of Thousand Lakes'. The city's rich water heritage is steadily depleting as it is being engulfed into piping, pricing and storing.

A trend that is thriving in every city and every village in India is that when lakes dry up, people source water from wells and then much later they move on to bore wells. The observation and reasoning for the current depletion of water table in Bengaluru is due to silting, mining, deforestation, depletion of granite hills and digging of bore wells.

Hesaraghatta lake is a manmade reservoir located 18 km to the north-west of Bengaluru. The Hesaraghatta reservoir is a fresh water lake created in the year 1894 across the Arkavathy River to meet the drinking water needs of the city.

The Hesarghatta reservoir faces the same plight as many other lakes of Bengaluru - an event highlighted by the urbanization and the rapid growth in population. It is more correct to refer to the Hesarghatta reservoir as a 'once upon a time' water lifeline of Bangalore rather than a current life line. The reservoir is reported to have filled up last in the year 1994 and thereafter the lake's deterioration and drying up started, reducing its reliability as a water supply source. As of July 2009, the lake was completely dry.

The story of Hesarghatta is the story of the current water engineering structures that lies derelict once it outruns its purpose. This story also establishes that the current requirement of man cannot be easily served by only relying on a natural system.

### 5.3 Contextualizing design: Significance and plight of the site

The Turubanahalli pump house is the first and the oldest pump house of Bangalore. It is located in the Hesarghatta reservoir. It is a shut down historical water engineering marvel of 18th century that faces the threat of encroachment. It houses various relics like the brick aqueduct, settling tank aerator, pump house and filtering unit. These are *water heritage structures* which are fit to be preserved and displayed. It reveals the skill of our water engineers in being able to design and build beautiful systems. This site is currently veiled and it may lose its presence in the invading urbanization.



Figure1: Satellite image of the location of the Turubanahalli Pump House

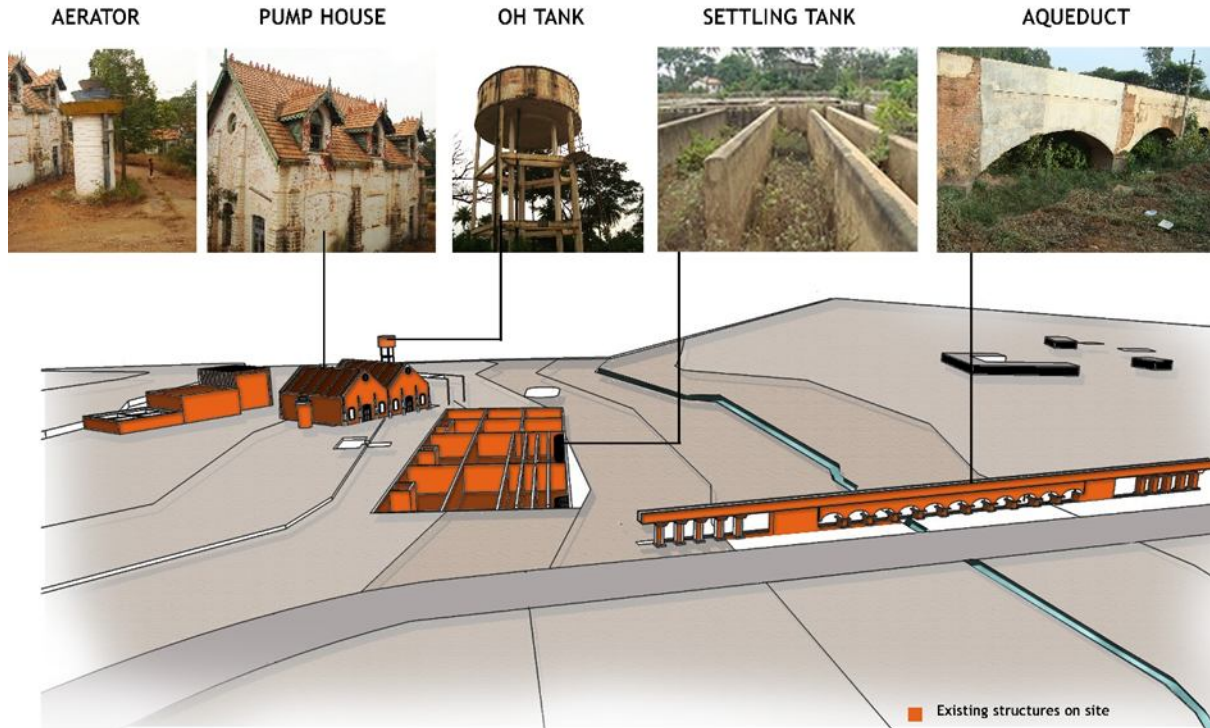


Figure 2 : The existing relics in the Turubanahalli Pump House Site

## 6. Urban Bishti - A Hydrohub : Illustrating, Integrating, Innovating Water systems

*[Bishti : A bishti was formerly an Indian water carrier]*

Urban Bishti is the coming together of old and new systems where the design intent rethinks the relationship between architecture, water and man in a contemporary context by weaving memories of the water systems used in the past.

The architectural design thesis Urban Bishti proposes to juxtapose architectural place making with the current water technology by creating a platform where one is made aware of one's past, realizes the present and is showcased what could be achieved in the future.

Urban Bishti explores the design of architecture for water where creative design strategies significantly support water conservation, storage, purification and recycling while restoring the splashes, ripples, sprays, trickles, floods, waves, streams, and droplets of water as manifestations of its presence in the built environment. The qualities of water like fluidity, dynamism and transparency are integrated into this water sensitive recreation hydrohub involving public participation in its functioning.



The Turubanhalli pump house is the demonstration site for Urban Bishti. The thesis attempts to reuse this site and elevate its significance through architectural place making and weaving through the existing engineering structures on the site. The design proposal attempts to reinstate the relevance and significance of water and architecture through architectural place making of the water heritage site.

The main sequence of design ideation revolved around the creation of socio historic memories of water structures. Deriving and abstracting concepts from the past and metaphorizing the same, into the current day scenario. Abstracting concepts of ghats, check dams, kalyanis, stepwells with the architecture and reframing the interaction between architecture and water, the design enhances the public involvement around the technological water engineering features.

This design proposal demonstrates that a harmonious coexistence is possible between water, technology and architecture where the public is showcased what one can achieve through conservation and water management. Here the architecture allows you to cross the threshold from the tangible to the intangible. Through this design a sense of consciousness is evoked, people are made to question their current practices and rethink their future endeavors.



Figure 3 : Model of the proposed design of Hydrohub : adaptive use of Turubanhalli Pump House in Hesarghatta.



Figure 4 : Site plan shows the overall understanding of the layout and principles of the concept used in creation of the spaces. Most of the public engagement has been designed around the existing relic.



The journey through the site symbolizes the journey in quest of water which ultimately culminates at a modern day "Bishti" (a water carrier) which holds the recycled grey water.

The pivotal programs at Urban Bishti are the public spaces - library, sculpture garden, water memorial, honorarium for Mysore engineers, social gathering space for villagers and restaurant, private spaces - research institute and the grey water bishti. The positioning of these programs in the site is done such that the existing features of the sites i.e. aqueduct, settling tank etc are integrated into the experiential and functional aspect of these activities. By navigating the users of these programs through these restored heritage water management systems, a subtle yet clear recall value of the need for water conservation and management is given.

Currently any awareness drive about water as an issue is either through the format of information on panels that is put up in public spaces or galleries or it is through miniature working models of water systems that are put up in museums. Neither of the two engages and interests public in a way that it leaves a long lasting impression about the importance of the cause. The design in Urban Bishti creates awareness about water management spatially which is wholistic without sermonizing it.

These existing relics on site form space markers guiding movement or engaging people in activities. For example, the public entrance is through the settling tanks which house the gallery and the library. The aqueducts form the marker for the research institute while the pump house accommodates the café.

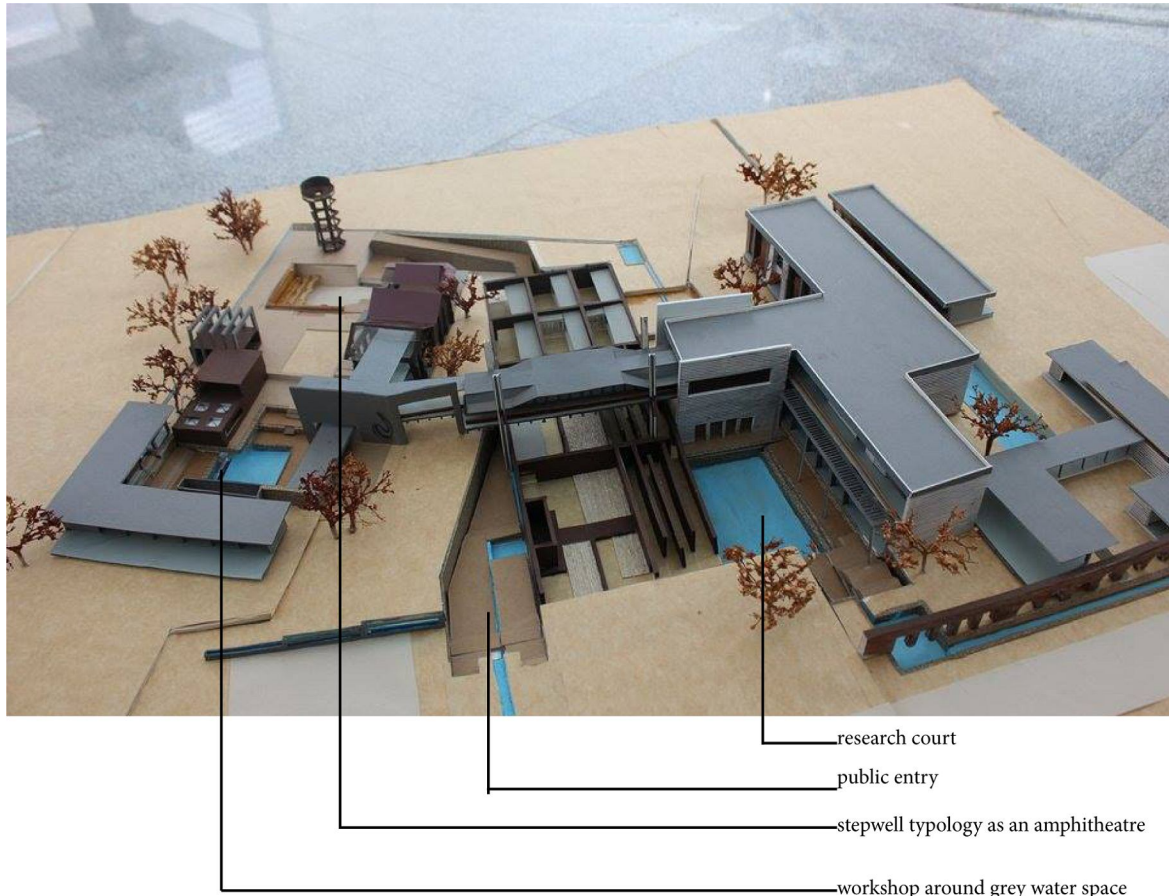


Figure 5 : The structures indicated in brown are the existing features of the site; the structures indicated in grey are the inserted new elements which ties the water, existing features and program

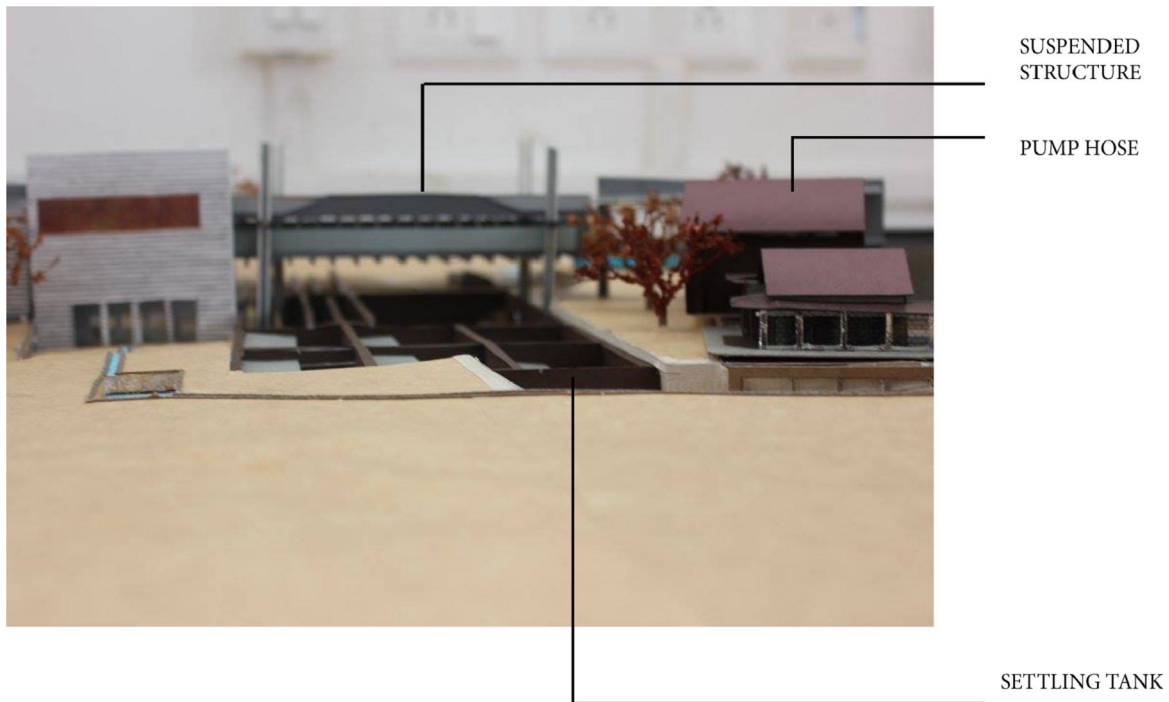
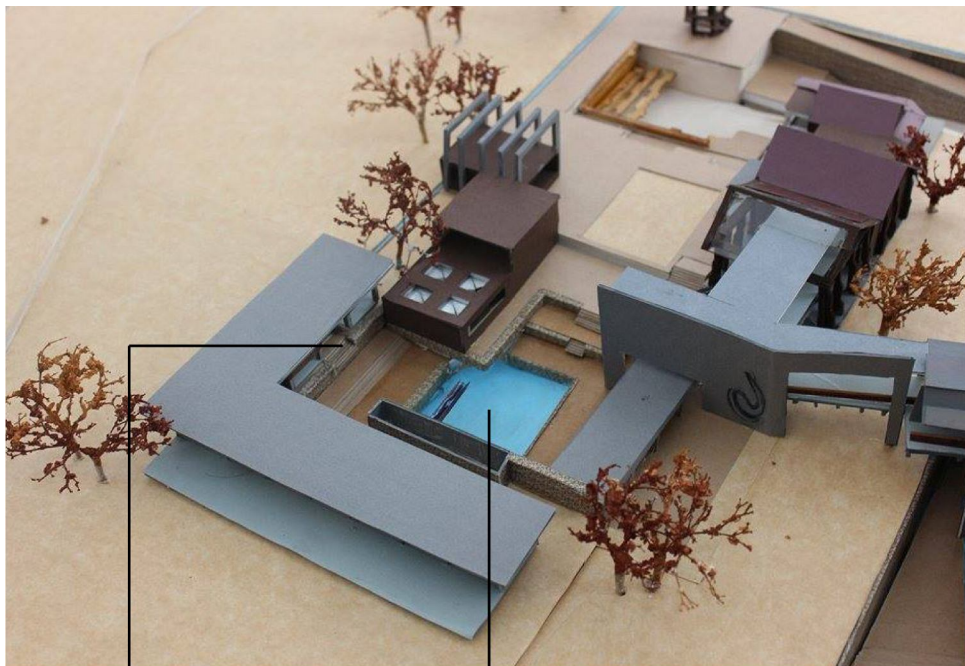


Figure 6 : The existing and the new structure in a single frame



Figure 7 : Rainwater catchment space which enhances the circulation space for researches and public movement



Urban bishti a new stepwell typology which holds Recycled water and workshops are held around it.

Social gathering space for villagers and farmers

Figure 8 : Grey water Bishti which articulates technology with a Public space.



Water is typically expended as a product to beautify architecture. Infinity pools, play pools, public fountains, cascading waterfall, water wall and other expressions of water objectifies it as *items* that are mere ornaments adorning architecture rather than an aspect of nature that needs to be appreciated and engaged with judiciously and sensitively. In this design a conscious effort has been made to reverse the current trend of 'water for Architecture' to 'Architecture for water'.

This has been achieved and emphasized by designing details that highlight the path of water through the architecture and the landscape - a concept that has been derived or adopted from the indigenous structures.

The qualities of water like fluidity, dynamism and transparency are integrated into this water sensitive recreation hydrohub involving public participation in its functioning. Urban Bishti rethinks the relationship between architecture, water and man in a contemporary context by weaving memories of the water systems used in the past.

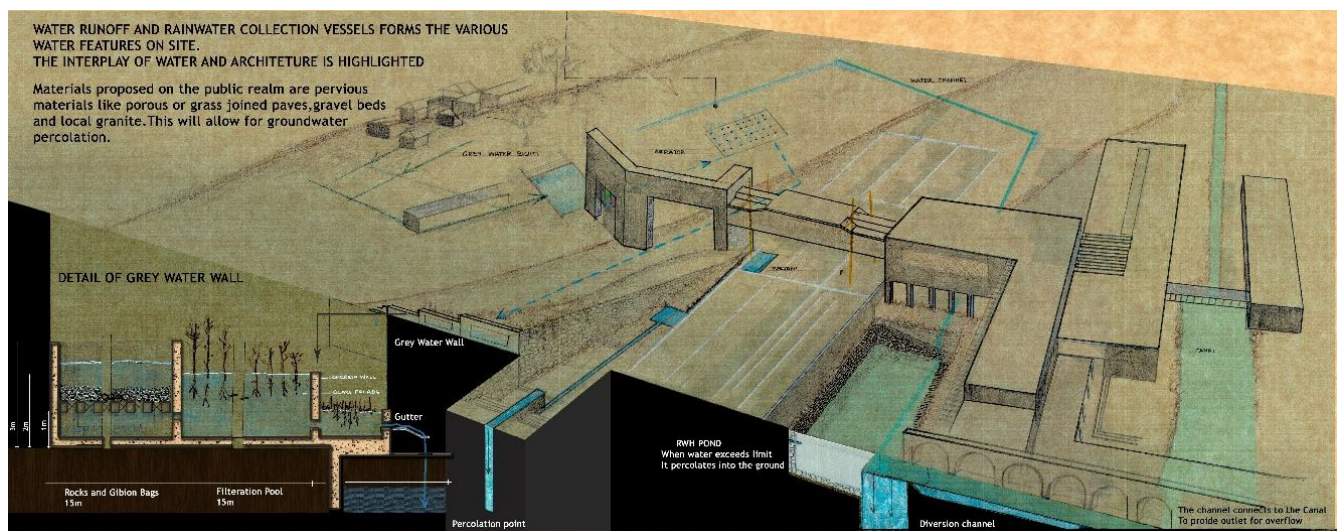


Figure 9 : The path of water through the site has been highlighted through water channels which connect various percolation pits, recharge wells and rainwater catchment areas.



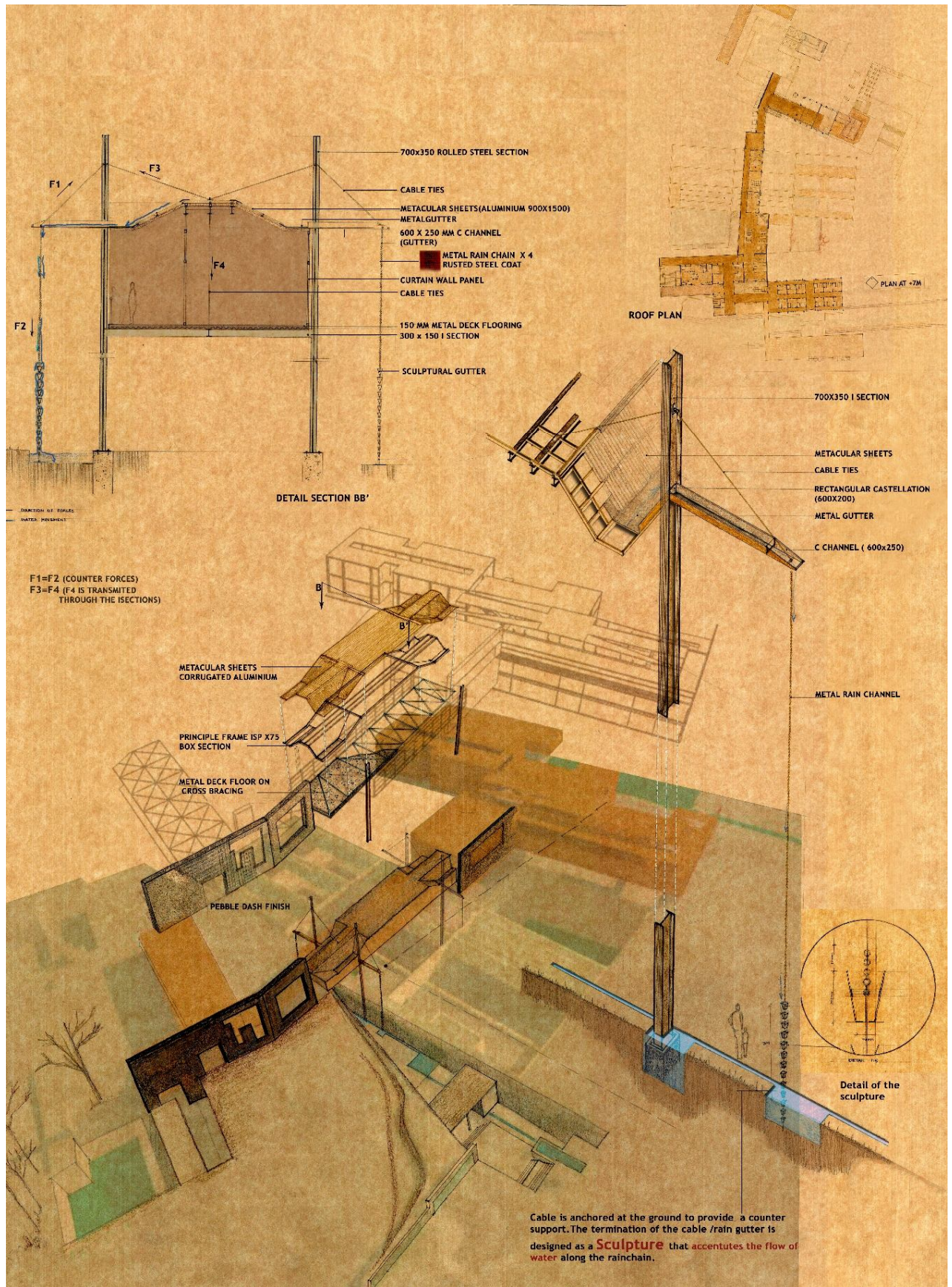


Figure 10 : The sculptural gutter accentuates the path of water from the roof to the earth.



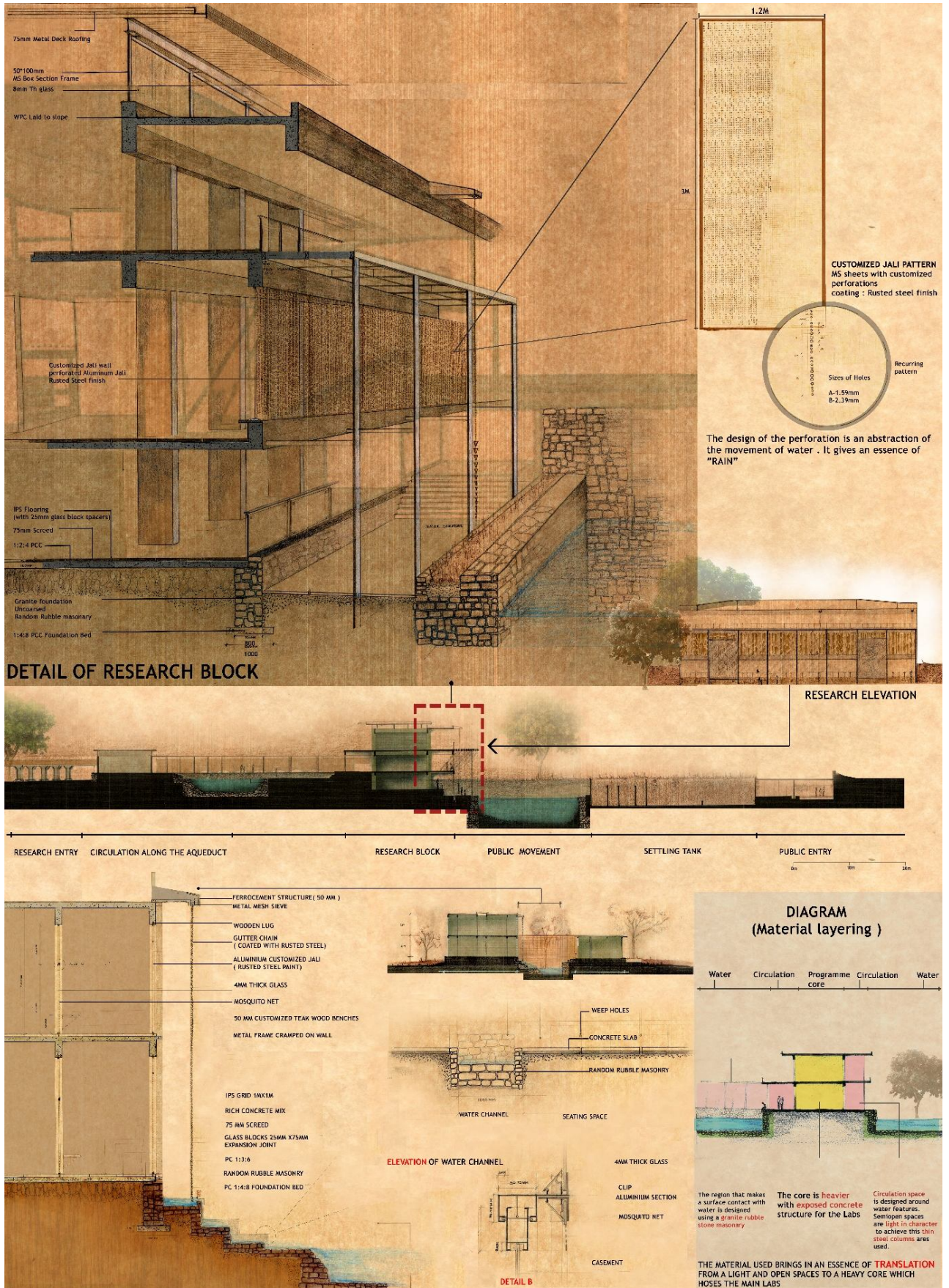


Figure 11: The design demonstrates highlights and rethinks the journey of water through a built structure as opposed to the popular PVC pipes.





Can there be 'Architecture for Water' that judiciously engages with water as a construct for sustainable practices?

We are living in an age where human presence is the strongest force of change in our geography. Life has always evolved by adapting to its surrounding. But the evolution of man and technology has equipped him to adapt the surroundings to himself.

With great power comes great responsibility but the current human attitude has led to the misuse of this power. Urban Bishti through its reformative program aims to change this attitude of man and question - ***Is Water for Architecture or Architecture for water?***

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