

MEDIATING BETWEEN LAND AND SEA:
PUBLIC SWIMMING POOLS AS A RESERVATION OF THE URBAN
WATERFRONT

by

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ABSTRACT

This thesis primarily explores the materiality of water by focusing on its containment and experiential qualities. By identifying the urban waterfront as a porous medium belonging to both the city and the sea, the design attempts to mediate the built and natural environments and utilize the waterfront for public inhabitation.

The decentralization of heavy industry has created a void in the Halifax waterfront. Now mostly occupied by parking lots, this vacant land has led to a physical distancing of the city from the water. A recent increase in the privatization of the public waterfront through high income condominium development could further exaggerate this disconnection. This thesis aims to reserve public access to the water by reclaiming the shoreline and examine the relationship between the city and its waterfront and to seek ways to redefine the water as an accessible civic amenity.

ACKNOWLEDGEMENTS

This thesis is dedicated to my Mom, for a lifetime of encouragement and support.

Thank you first to Nuala for her continuous patience and encouragement throughout and to Catherine and Diogo who's insightful conversation always left me inspired to rethink, rework, and get back to it.

Thank you to the faculty and staff at the school of architecture, especially to Ken and Dale who's persistent interest and engagement with student projects make it possible for us to present our ideas.

CHAPTER 1: INTRODUCTION

Halifax is not different from many other post-industrial port cities in that it was founded on the basis of its geography and natural harbour to accommodate trade on both land and sea. The city originated with an intimate relationship with the ocean. Depending on it as its primary financial lifeblood. However modern shipping necessities have pushed maritime industry to the fringes of the city where port suitability is determined by berth magnitude and potential for expansion rather than proximity to a central business district. Decentralization of heavy industry has left a void in the city's waterfront.

Tidal cycles and dynamic coastal edge conditions that influence activity on natural coastlines are buried beneath infill and hard built edges, creating a physical distancing from the water.

Interaction with the sea and tidal cycles is a reminder of place, it provides a celebration of Halifax's surroundings. However the city currently lacks ready access to the water, and is facing a growing shift towards a privatization of waterfront property. This furthers the disconnect. This thesis investigates the relationship between land and sea and seeks to redefine the harbour as a public place of leisure and active engagement.

Building by the sea engages themes of temporality. The tidal forces acting on such a building would change it from hour to hour, year to year. Taking cues from the site's existing material palette, the design will assemble basic elements with their basic functions, resting surge, winds and coastal erosion, all part of a cycle that displays a layering

of scars, wear and incremental deterioration. Elements that take on their place and users marks allowing a constant discourse between building, occupant and site.

This project explores inhabiting threshold between land and sea. It investigates the potential of the coastline as a place where the public can have access to the coast within the urban realm. The architecture and program of the design are a response to the built history of the waterfront, the materiality and degradation of coastal architecture and revealing the spirit of place at the waters edge.

Halifax; History as a Port City

Burgeoning in the late 19th century, an era of diverse maritime enterprise, Halifax's densely occupied waterfront pushed the waters edge out from the land to accommodate berths for an ever growing shipping industry. The absence of a central trading company and consolidated transportation network necessitated a vast concentration of individual enterprises and storage warehouses handling a variety of goods en route from or towards western Europe. Halifax enjoyed a privileged geographical setting between Britain and New England and sought to establish itself as the gateway to the North American colonies. The waters edge then directly reflected the society and values of the time, pushing the waterline away from the city allowed for a substantial number of moorings and piers within the central city that directly supported commerce and the city growth.

The establishment of a consolidated rail network linking Halifax via land to eastern city centres and upper Canada together with the necessity for deepwater berths began the shift towards a decentralized maritime industry

in Halifax. Additions to the city's rail access, grain and cold storage facilities, and Ocean terminals began to move activity to the poles of city, to South and Morris streets and Richmond street in the north. This relocation of heavy industry necessitated massive coastal infill to gain space for the new shipping facilities. At the city center, rather than removing the existing underused finger piers, the spaces between them was gradually filled, extending the shoreline away from the city. The transition took a final foothold with the onset of global containerization and the completion of the Halterm container facility at the southern tip near point pleasant park and later the Fairview container facility in 1980 a the northern most point of the peninsula, both solely existing on infill land. (Frost 2008,10).



Infill diagram on the Halifax Peninsula. Original landform in white, 1865 coastal infill in grey, current coastal infill in black.

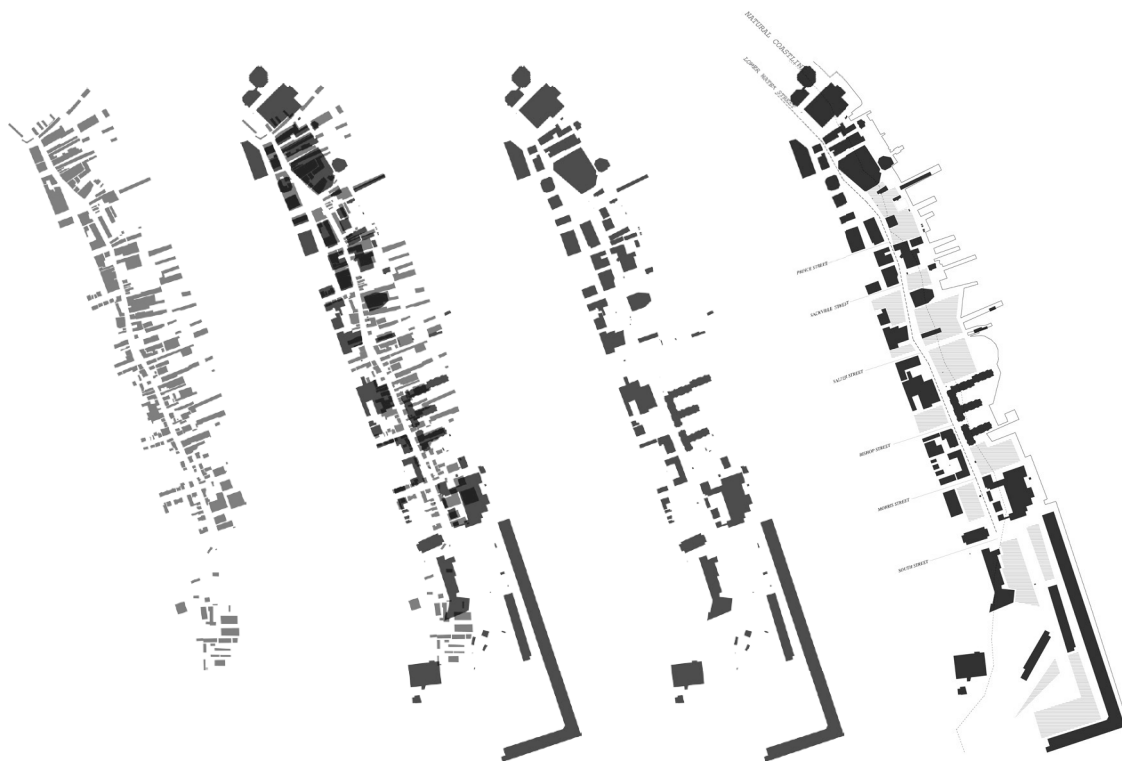
Analysis of the Current Waterfront

Through changes in technology, economics and the shifting of industrial occupancies, the waterfront has become a tremendous opportunity to create environments that reflect contemporary ideas of the city, society and culture. (Marshall 2001, 7)

The coastline of the Halifax peninsula is subdivided between container facilities, deep ocean terminals, military, shipyards, and private residential, leaving only a small portion of portion of land with potential urban access to the waters edge. The existing board walk is heavily oriented towards tourism and offers little in civic engagement, especially with the water.



Land use diagram of the Halifax peninsula coastline (HRM GIS Database)



A comparison of the densely populated 1878 waterfront (left) with the contemporary waterfront (right). Grey hatch on far right plan indicates current parking lots. (HRM GIS Database)

Annual events attract large numbers to the waterfront during the summer months however are isolated festivals and limited to a couple of days.

The Halifax waterfront maintains the primary forms of the industrial past, in particular the artificial waterline. The removal of heavy waterfront industry has created vacant lots. Without the former density of the industrial past on the seaward side of Lower Water street, the waters edge is removed from the built city, no longer engaged in the central waterfront industry warranting the coastal infill. The waterfront is caught between the remnants of heavy industry's decentralization and the built forms they left behind, neither a proper public space or commercial. These temporal and

physical interstitial spaces are reserved mainly for parking.

Recent construction and future proposals on the vacant waterfront lots centre around multi-use developments, comprising condominiums, restaurants, and specialty shops catering to high income consumers. While these developments do include portions of public spaces, they appeal to only a specific demographic. A growing concentration of high income living occupying the limited real-estate of public access to the waters edge has the potential to “privatize” the public waterfront.

The current boardwalk stretches from the Seaport Market in the south to the Casino, scribing the seaward edge of the infill land. The walk is consistently separated from Lower Water street by parking lots. Shops and restaurants are grouped in a couple of centers along the route, predominantly between the Halifax ferry terminal and Museum of the Atlantic.

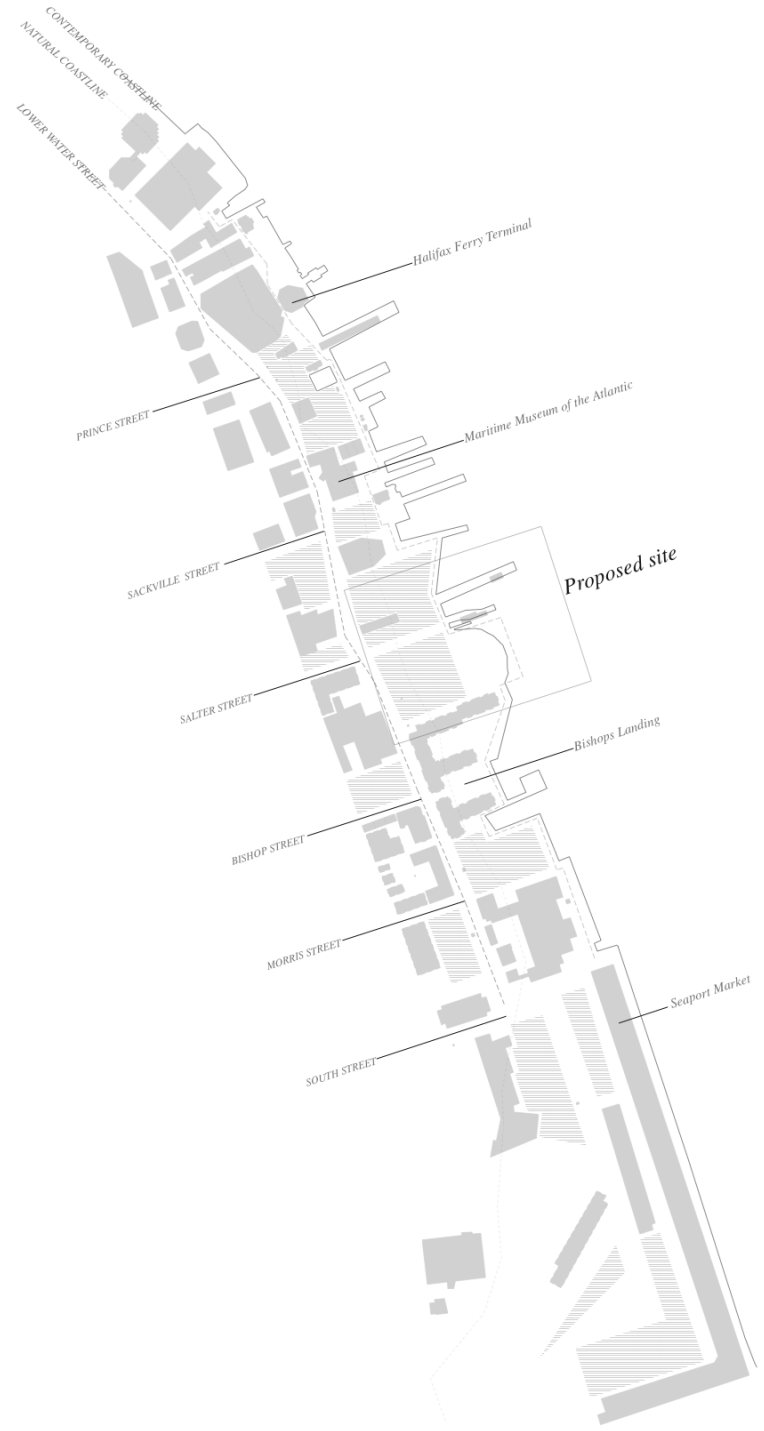


Diagram of the current public waterfront surrounding Lower Water Street. Grey hatch indicate parking lots.

Analysis of the Site

The siting of the project is two fold, reserving public access to the water and reintroducing the water's edge to the city grid. Both are achieved by the removal of the existing infill parking lot. A preemptive move to avoid the development of another mixed use high income development in between the city and the water.

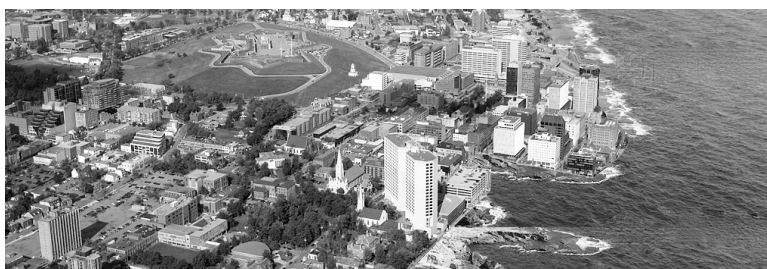
The parking lots at the terminus of Salter Street between the Bishops Landing development and a financial tower is one of the largest voids on the water front, occupying over 20000 square meters or 5 acres of horizontal parking at the waters edge. Regular observation at a variety of times of the day show a consistent underutilization of these lots, even at peak work week hours. The site is adjacent to the brewery market at the south west corner.



Photograph of the existing site on a Wednesday at 10:30 am, what I believed to be a peak parking hour.

The removal of the parking lots and a dredging of the infill would reveal the natural waterline at Lower water street, primed for an intervention that seeks to amend the rift between the urban edge and the harbour. Resetting the shoreline to a preindustrial state reestablishes Lower Water Street once again as a water street, where the public can gather at the threshold of city and sea.

The site and intervention would be a unique place in the city where basic human activities meet basic elements. Earth, water, and air meet and can be freely occupied and engaged by swimming or wading, a reminder of place. I believe this would reestablish the waterfront as a civic amenity, accessible to all demographics.



A series of photo-collages showing hypothetical reclamations of the natural edge on the Halifax waterfront. The collages explore ready public access to the water's edge.

Analysis of the Swimming Pool as a Type

For the material element to engage the whole soul, there must be a dual participation desire and fear, a participation of good and evil, a peaceful participation of black and white. (Bachelard, 12)

Water takes on many forms and brings with it many emotions, immensity of the open ocean, limitless depth of the murky lake. Water can bring about apprehensions, fears, and dangers. Water can be out of human scale. The swimming pool however is the basic human response to our will to fully embrace water. We arrange sizes and temperatures that suit us in an environment within our control. In the pool we can freely enjoy cool refreshment in the summer months, sensations of weightlessness and water's basic restorative qualities. What the primitive hut is to dwelling the tidal pool is to swimming. Basic suggestions inviting people to water can be conveyed with simple details, a floating dock placed at a reasonable swim from shore, a diving board suggesting depth, a ladder for safe entry and exit. These details can turn any body of water into a completely different thing, suddenly you can imagine the experience and sensations of swimming there.

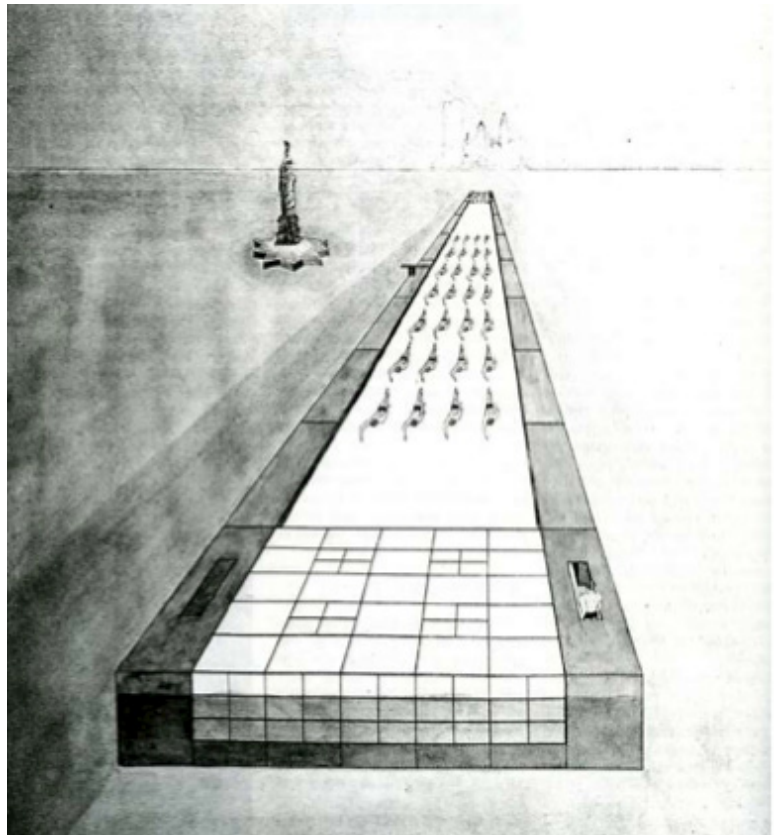


The Irving Dry dock, seemingly awaiting a diving platform. Dry-dock looking south, Halifax Harbour, Halifax, Nova Scotia (Nova Scotia Archives Website)

A pond, a lake, a river may be changed into a swimming hole by the simple introduction of a springboard, a ladder, a dock..Transforming any kind of water, natural, sacred, ceremonial, into athletic water. (Leeuwen, 2)

The swimming pool as a type is unique. Given a deep enough breath nearly everything is accessible in the pool or at least there is the sense that there is that possibility. Rather than just passing through a space, as a swimmer you are part of the medium that unites the entire volume. All senses are fully engaged underwater, we are for a short time removed from a two-dimensional world.

As an architectural object the pool can be as discrete as is possible, existing almost completely out of sight. Consumed by high tides or heavy rains, the entire complex can disappear below the surface of the rising water.



Koolhaas, 1994 (Delirious New York)

The floating pool- an enclave of purity in contaminated surroundings- seemed a first step, modest yet radical, in a gradual program of improving the world through architecture. (Koolhaas 1994, 35)

In Koolhaas's *Story of the Pool*, the hypothetical floating pool is described as a slice of heaven on earth, containing clear reflections of the clouds and the stars on its surface, amid the murky banality of its host water body. As the pool ages over years of continual use, the water within remains pristine throughout time. The modesty of its function and construction is a perfect fit for the democratic program. The pool is used as a vehicle of optimism for its constructivist creators, carrying them away from soviet Russia to America, their image of the land of opportunity.

Analysis of Built Precedents

The built precedents to follow are focussed on the design of outdoor pools and public access to the waters edge. Each example deals with the shoreline in a different way, in how they are accessed, how they engage with the surrounding urban condition, and how each frame the experience of swimming. The list is not exhaustive however tailored to the scope of the thesis. Arranged from informal access, to controlled access, each precedent has in some way influenced the final design.



The Malecon seawall. Havana, Cuba. (National Geographic website)

Built as an 8 mile sea wall by the American army corps of engineers, the Malecon seawall protects coastal construction from breaking waves, while incorporating walkways, beaches, rock outcrops and informal tidal pools. The Malecon exists as combination of a built and natural edge condition.

Allowing the beach break and tides to interact with the city, the Malecon becomes a medium for public access to the water. Swimmers, fisherman and sunbathers inhabit the found spaces together. Usage changes with the tides. The short seawall provides necessary hydraulic protection and doubles as a flexible piece of urban furniture, accommodating a variety of activities. The wall is scaled as a means of access to the water acting a threshold from the natural edge to the urban. Swimmers are at the mercy of the sea and must be conscious of the underwater terrain.



Leca de Palmeira swimming pool. Porto, Portugal. (Siza 2004)

Alvaro Siza's pool complex built at Leca de Palmeira emerge from an existing seawall between an active road and the sea. The intervention can be seen as an elaborate seawall, enclosed space acting as the medium of access to the recreational area and ocean below. Blending the built environment with the natural, concrete seawalls and retaining walls bridge and damn by scribing to existing rock

formations to create inhabitable space from necessary seawall infrastructure. The project is fundamentally linked to the seawall which contains the architecture of the change rooms and cafe and which must be passed through to reach the pools. (Ganshirt, 43)

The pools are created by linking existing rock formations, imposing a geometry on to the landscape. Rather than creating a feeling of safety and enclosure, the pools are meant to embrace the exposure and power of the ocean. The seawall then is a lense to pass through leaving the protected city behind and entering into a more natural environment.



Copenhagen Harbour Baths. Copenhagen, Denmark. (JDS Website)

The recent Copenhagen Harbour Baths are physically unified with the shoreline, where the structure can be seen as a punctured extension of the land in the water. The Baths are a collection of individual pools serving children, adults and the elderly. Paired with basic street level entry, the pools are accessible to a wide demographic. Perforated underwater enclosures line some pools while others are open to the harbour floor. As part of a hard edge harbour boardwalk no natural shoreline is present, however the design mimics a sloped entry into the water as would be found on a

beach. Sunbathing extends in towards the surrounding park.

The Harbour baths are the first installment of a series of baths in and around the Copenhagen harbour. Part of a city wide celebration of the surrounding condition and the city's commitment to a multifaceted water treatment plan. A recent addition of a winter sauna extend public attendance throughout the year.



Katsrup Sea Bath. Copenhagen, Denmark. (White Architektur Website)

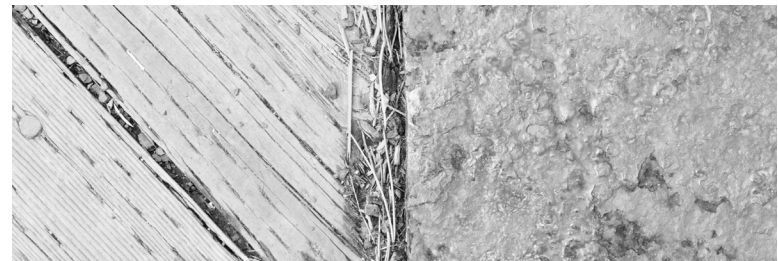
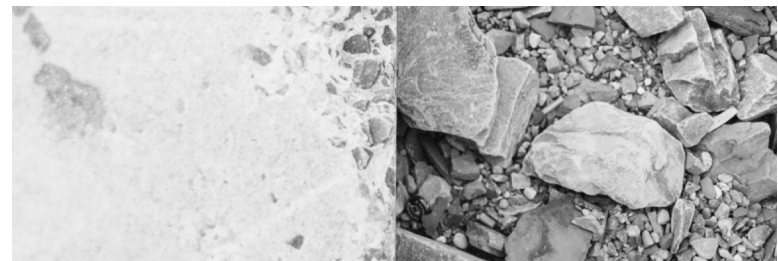
Although not an urban project, the Katsrup Sea Bath's form and construction is a basic alternative to the traditional pool and replicable in an urban context. The main structure forms a satellite extending away from the beach, designed specifically around swimming. The structure is a platform over in the open water, without any pool linings or basins it acts as an enclosure and medium for access to the water. Within the structure are changing rooms, multiple levels of seating and a diving platform. A semi enclosed plan, open to the beach, offers a sense of security in the open waters. Built on timber piles, the footing is porous and allows the sea to pass through. As sited, the swimming structure leaves the natural shoreline behind.

Analysis of Material Palette

Beginning with a survey of the existing materials at the waterfront, the variety material junctures at hand became an area of focus. Many of these materials signalled their place on either solid land, transitioning from land to sea, or as water born surfaces. The employment of specific materials is legible, concrete for retain land and water, wooden planks for boardwalks, timber piles to allow the free flow of water beneath the finger piers, steel and aluminum connections. The functional characteristics of the materials are generally tailored to their place in the sequence of leaving the land and the weathering they can withstand.

Cataloging the existing palette, the focus of the study was on single material junctions. Initially limited to construction materials, the scope was then extended to include natural materials such as rock and water.

A series of photo-collages was then assembled from the textures and shapes of the material photographs. Assembling combinations of colour materials and function with intention of blending of constructed shoreline structures with the natural coastline. The major design themes that emerged were the differences of water transparency based on either containment or free flowing water bodies, transparency of boardwalk materials revealing the natural shoreline below, and the ruins of primary structures gradually becoming part of the encroaching natural edge over time.



Photographs of the material junctions found at the Halifax Waterfront.

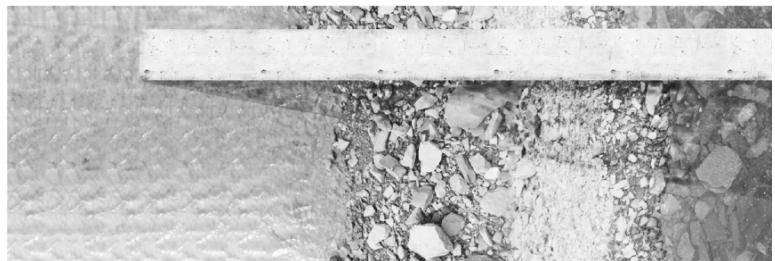
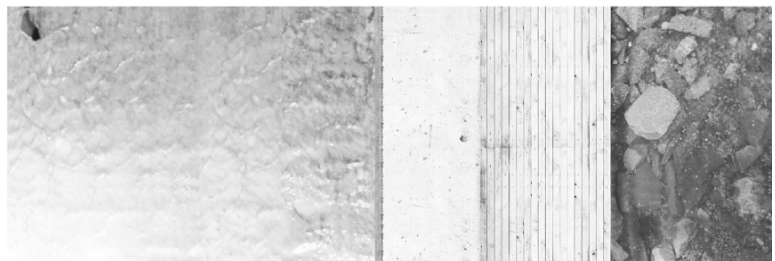
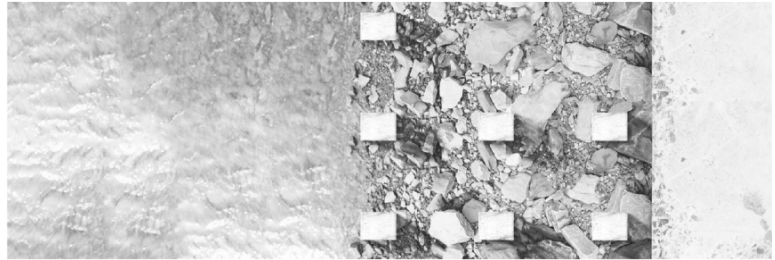
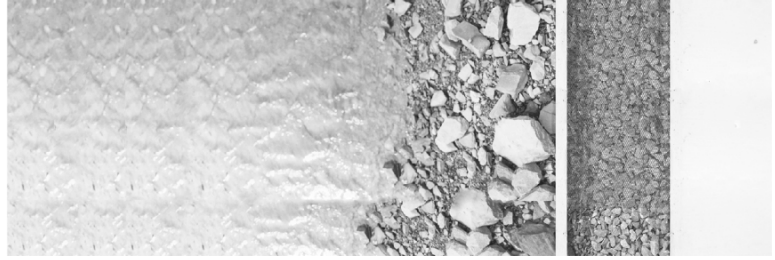


Photo Collages made with junction material photos of hypothetical shoreline structures designed as ruins.

CHAPTER 2: DESIGN

Beginning at the junction of land and sea, viewing the land from the water and water from the land, each evenly matched in concealing and revealing, locked in a ceaseless tug of war for a reclamation of the coastline

So what belongs to the city and what belongs to the sea, where do we find ourselves on this shifting threshold?

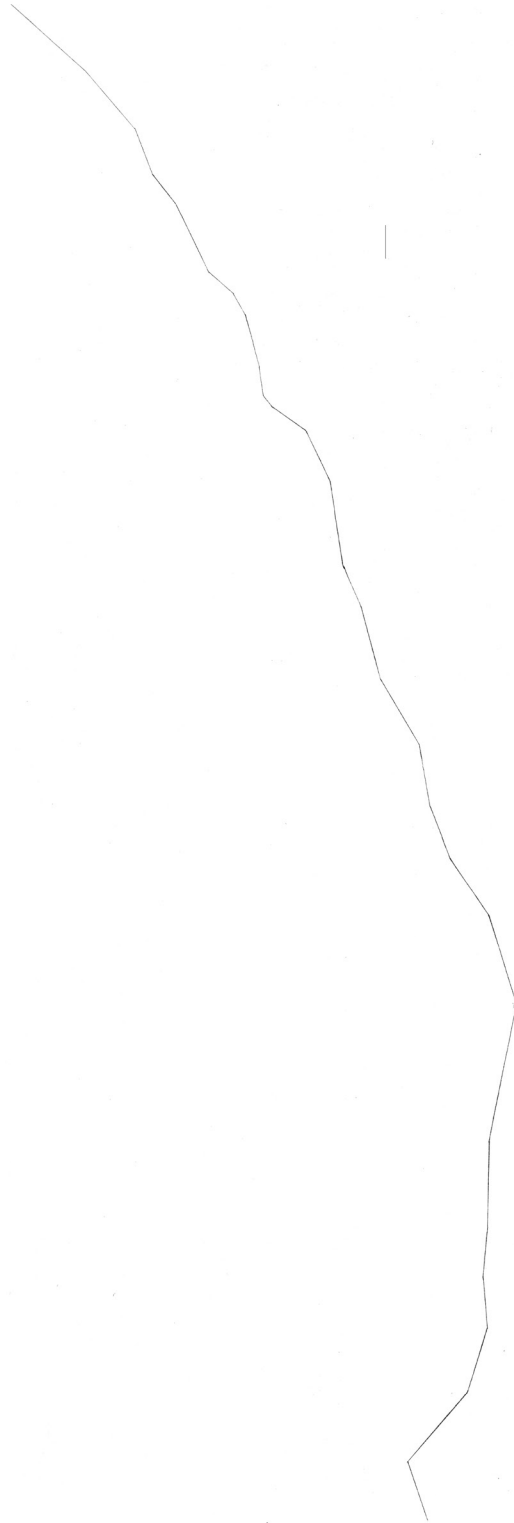
The design consists of several major elements. At the reclaimed shoreline a new semi-permeable boardwalk stretching the length of the site, in the harbour a network of tidal pools, and in between the two a change room building. The representation is focussed on creating a whole out of fragments, providing glimpses rather than one complete image to encourage an individual assembly of the parts.



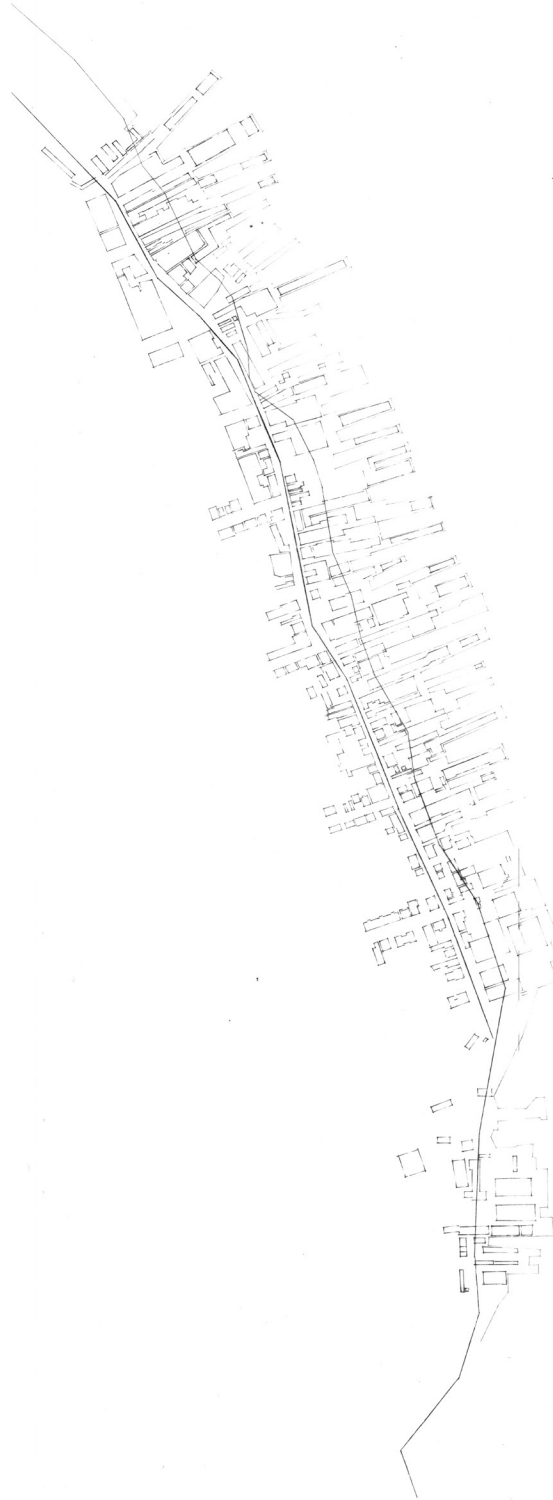
Site photographs comparing points of view from land and sea.

Explorations in the Urban Timeline

The design is imaged as a new trajectory for the city's waterfront, gaining traction from the pre-industrial shoreline and imagining a new way for the city to meet the water in the future. With the natural coastline as a starting point, where the earliest inhabitants of the city would have freely engaged with the sea, the design peels back the pavement to reconnect the sea with lower water street. Beginning with the test site at salter street, the project is situated at the beginning of a timeline of continuous reclamation of infill land. As the parking lots become obsolete the land is dredged rather than developed by private enterprise, until the entire public waterfront is reset to lower water street.



Pre settlement coastline of the Halifax waterfront



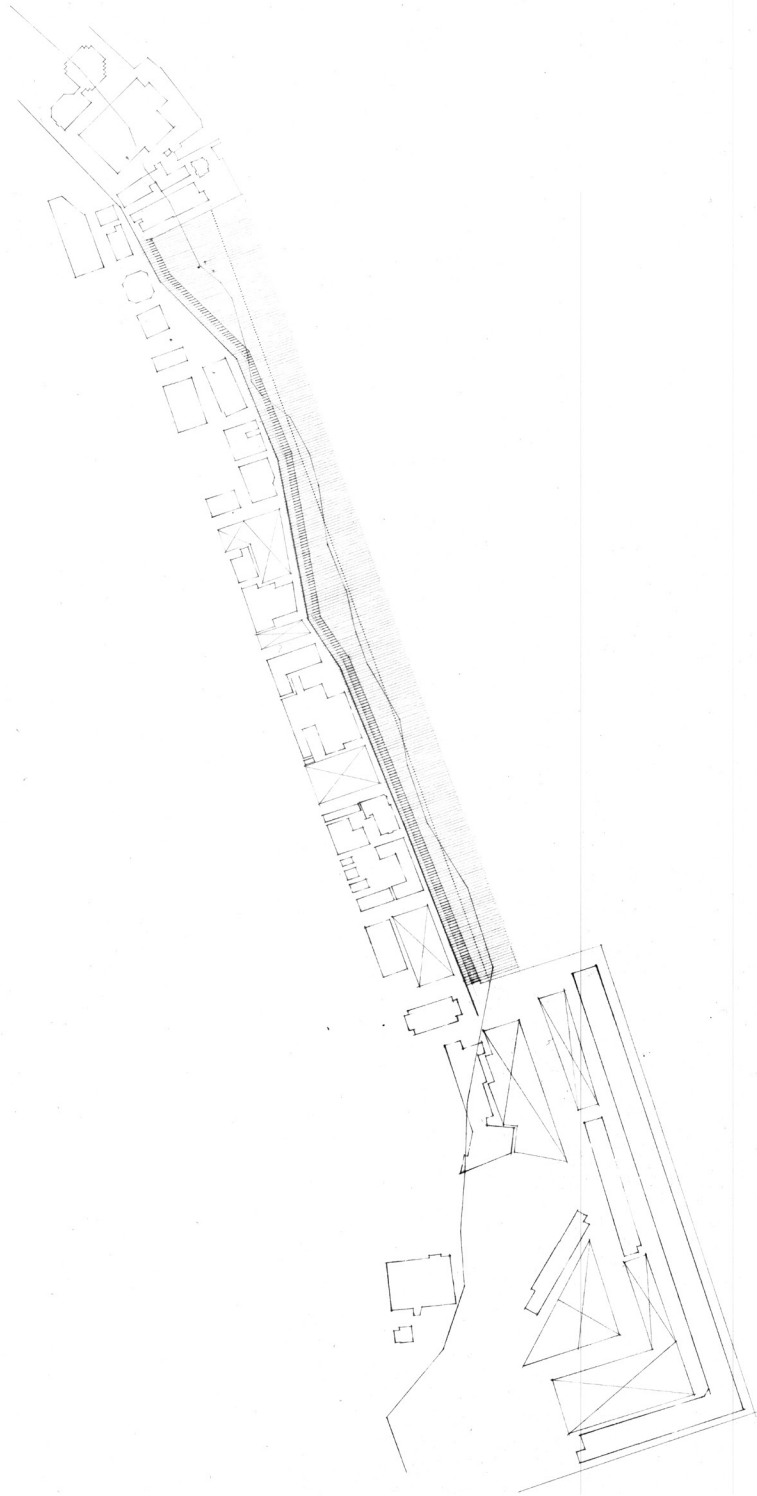
Peak industrial shoreline. Lower water street is established at the shoreline, however blurred by the density of maritime architecture.



Current shoreline. Lower water street remains between infilled land to the east and the city grid to the west, completely removed from the waters edge. Parking lots along the street are marked



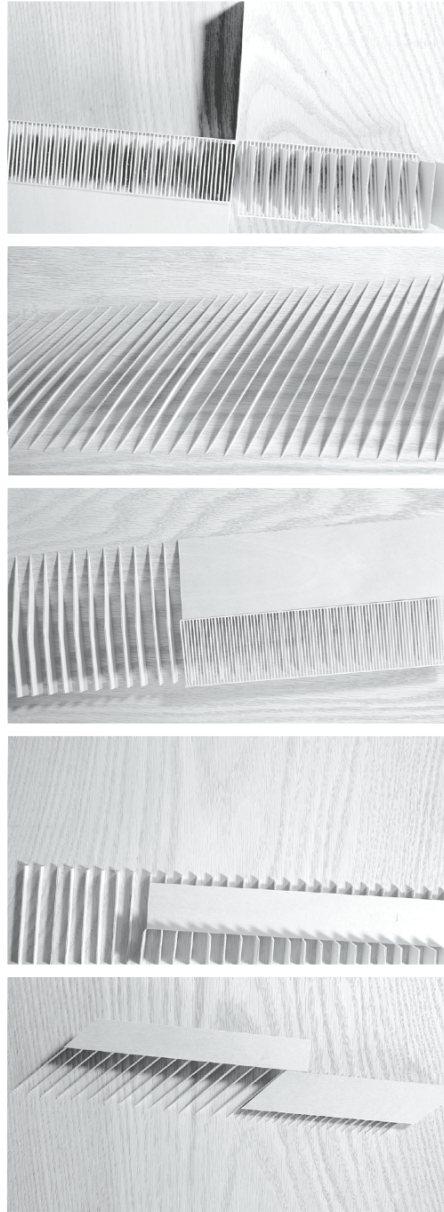
Current shoreline with removed parking lot at Salter Street intersection. The design is established with an initial seawall structure at the reclaimed natural shoreline.



Future shoreline with a total removal of coastal infill. The initial seawall structure has expanded along the entire length of the pub-

Explorations in Coastline Structures

The seawall is conceived as a continuous series of concrete fins spanning the space between street level and the waterline. Conceptually, the fins act as a medium for public access to the water, allowing the flow of both the tides and the public to pass through.



Conceptual models of the fin structures. Exploring ways to direct the flow of water, spanning, or ramping into the water. The models became integral in the design of the shoreline seawall and board-



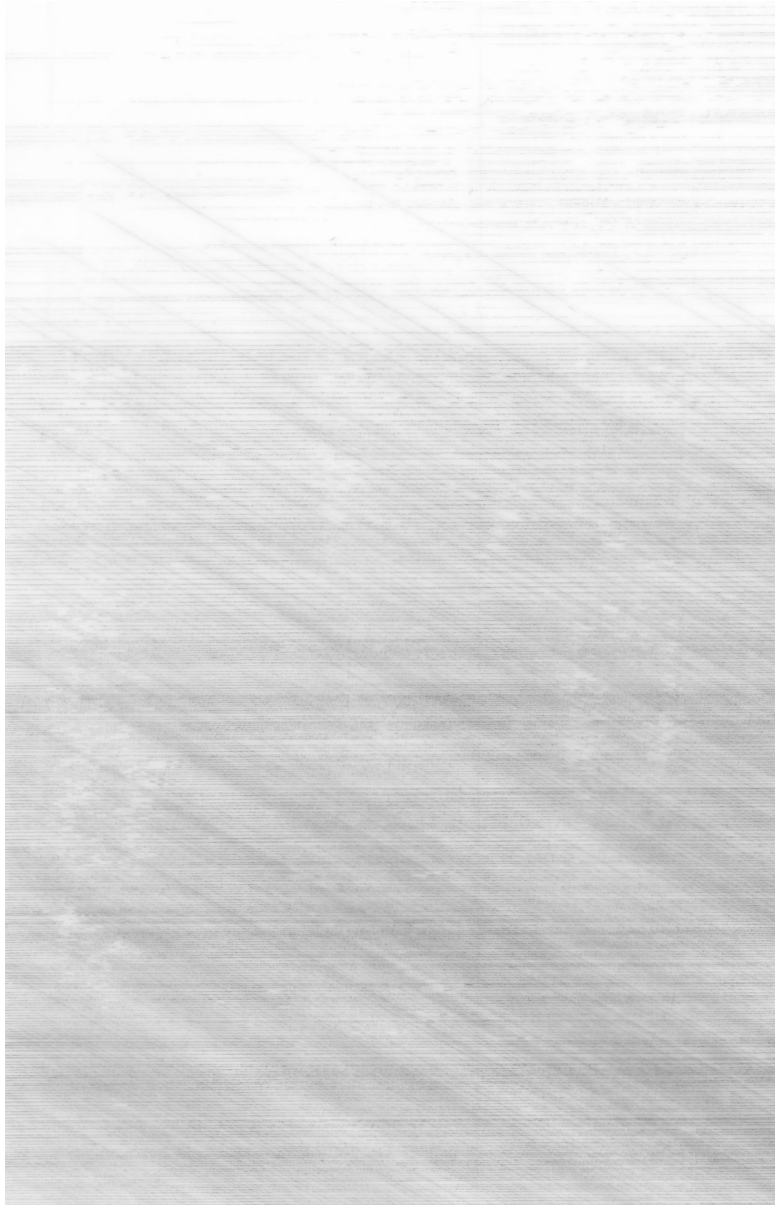
Model of the primary structure of concrete fins at the Lower water street boardwalk. Generated from study models.

Explorations in Section

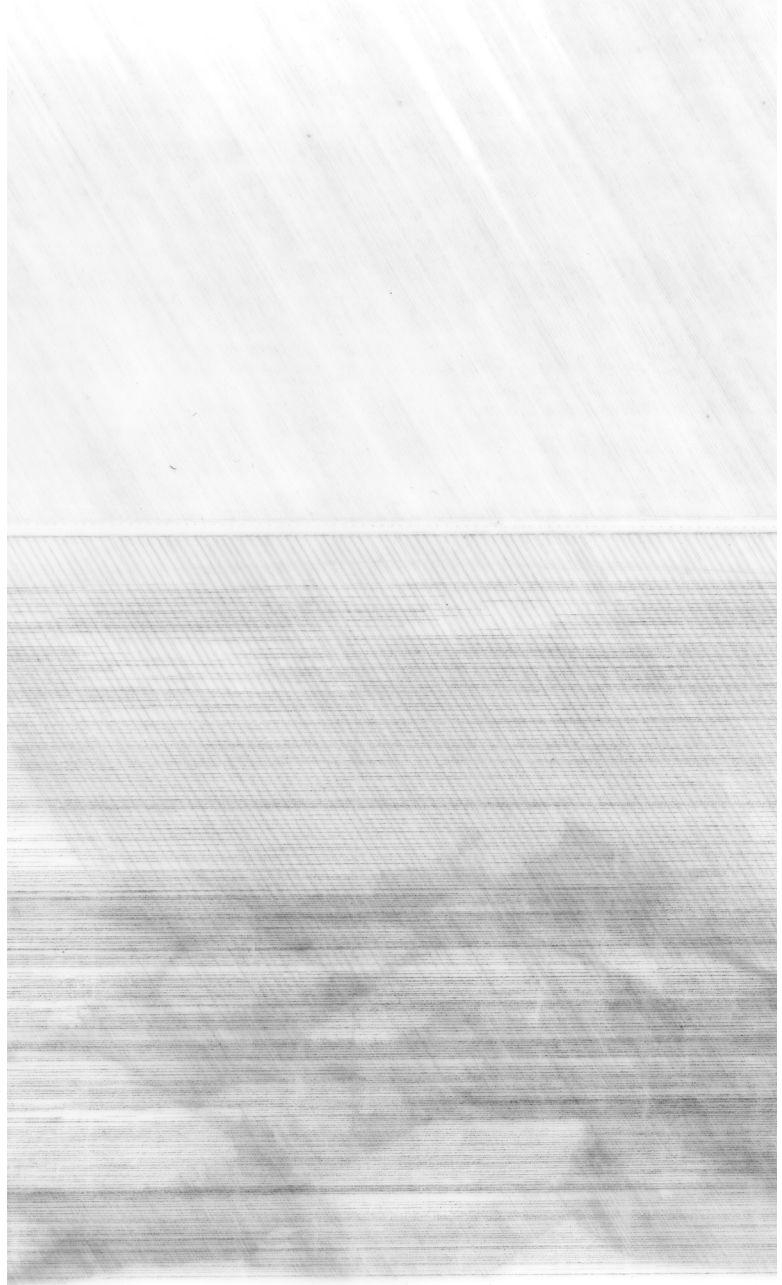
The design of the swimming pools at Lower Water Street began with trials in designing basic retaining structures and shoreline enclosures. Free of any constraints, these drawings would serve as reference points for the final design work. The series of 10 drawings is arranged moving from open water to the shoreline, from basic retaining walls and pools to empty spaces filled with light and reflections off the water below. These ideas would reemerge as precedents in the final design of pools and change room building.



Approaching the shore line from the open harbour. Moving from free flowing, to shoreline structures to containers for water and

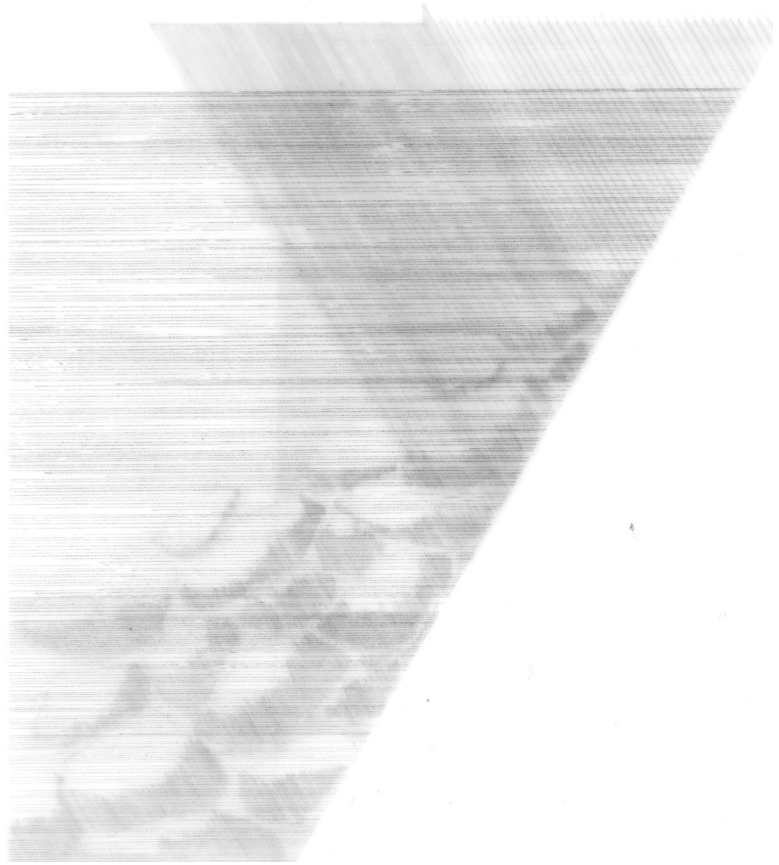


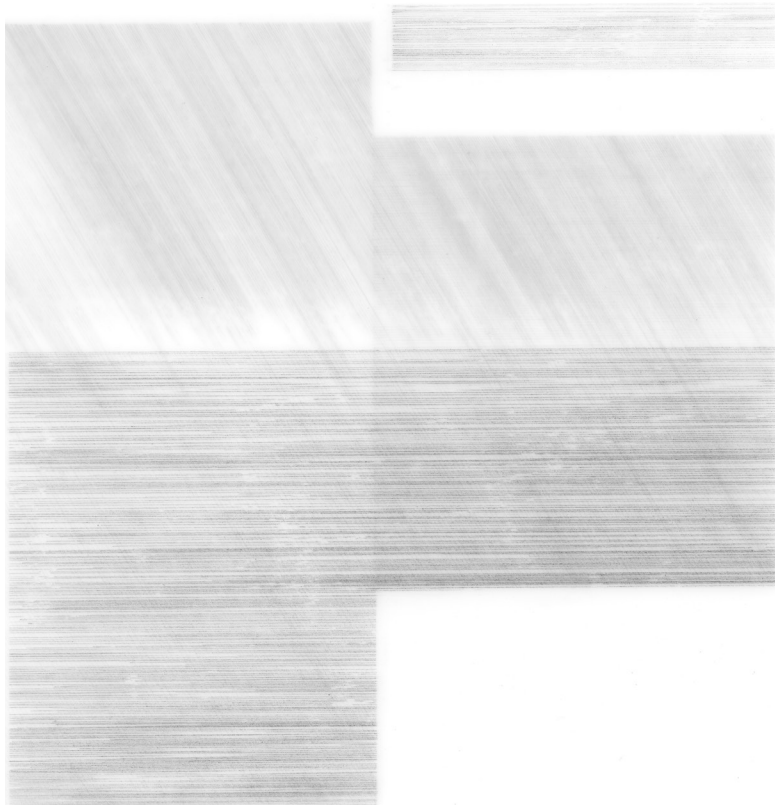
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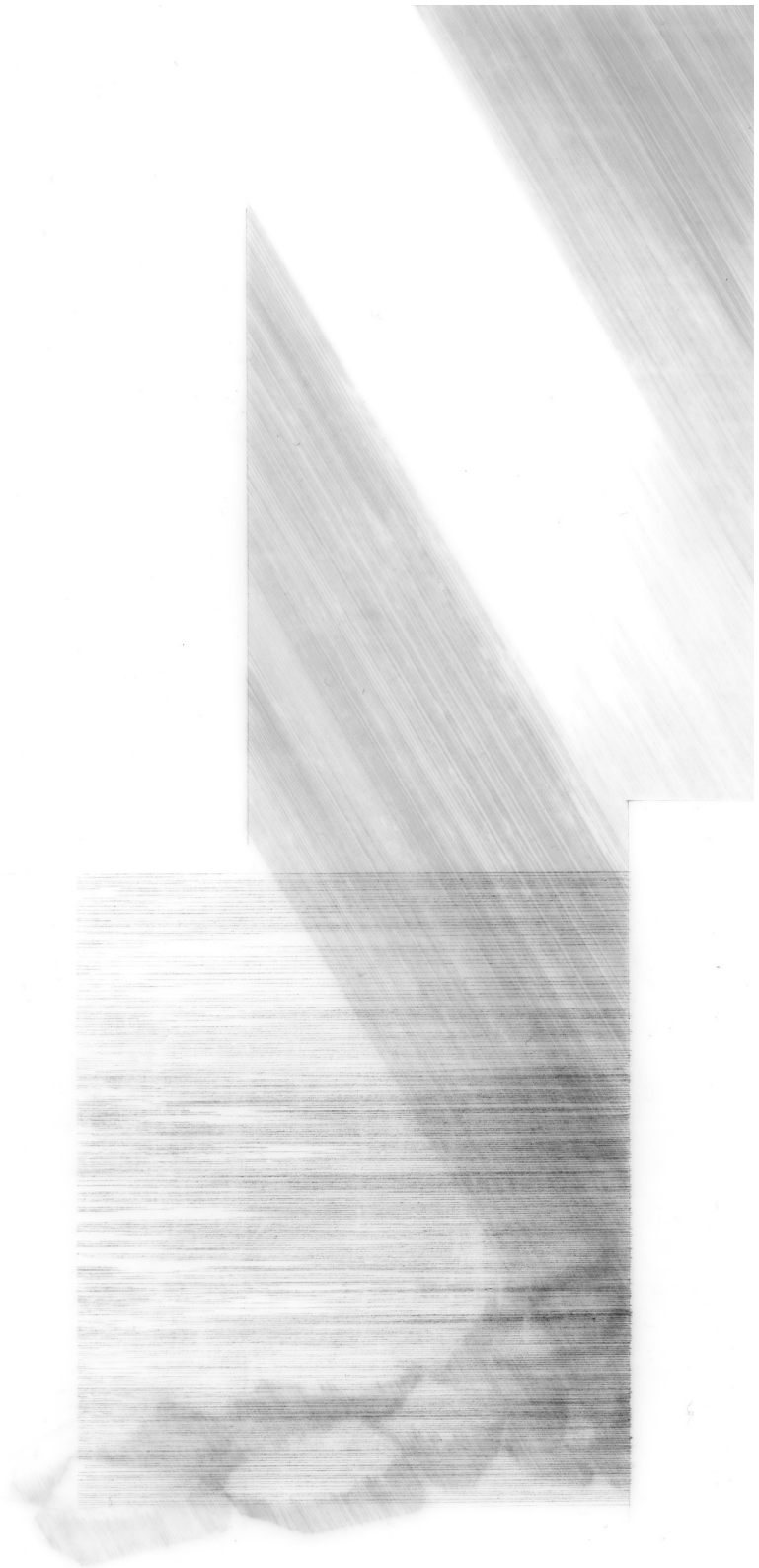
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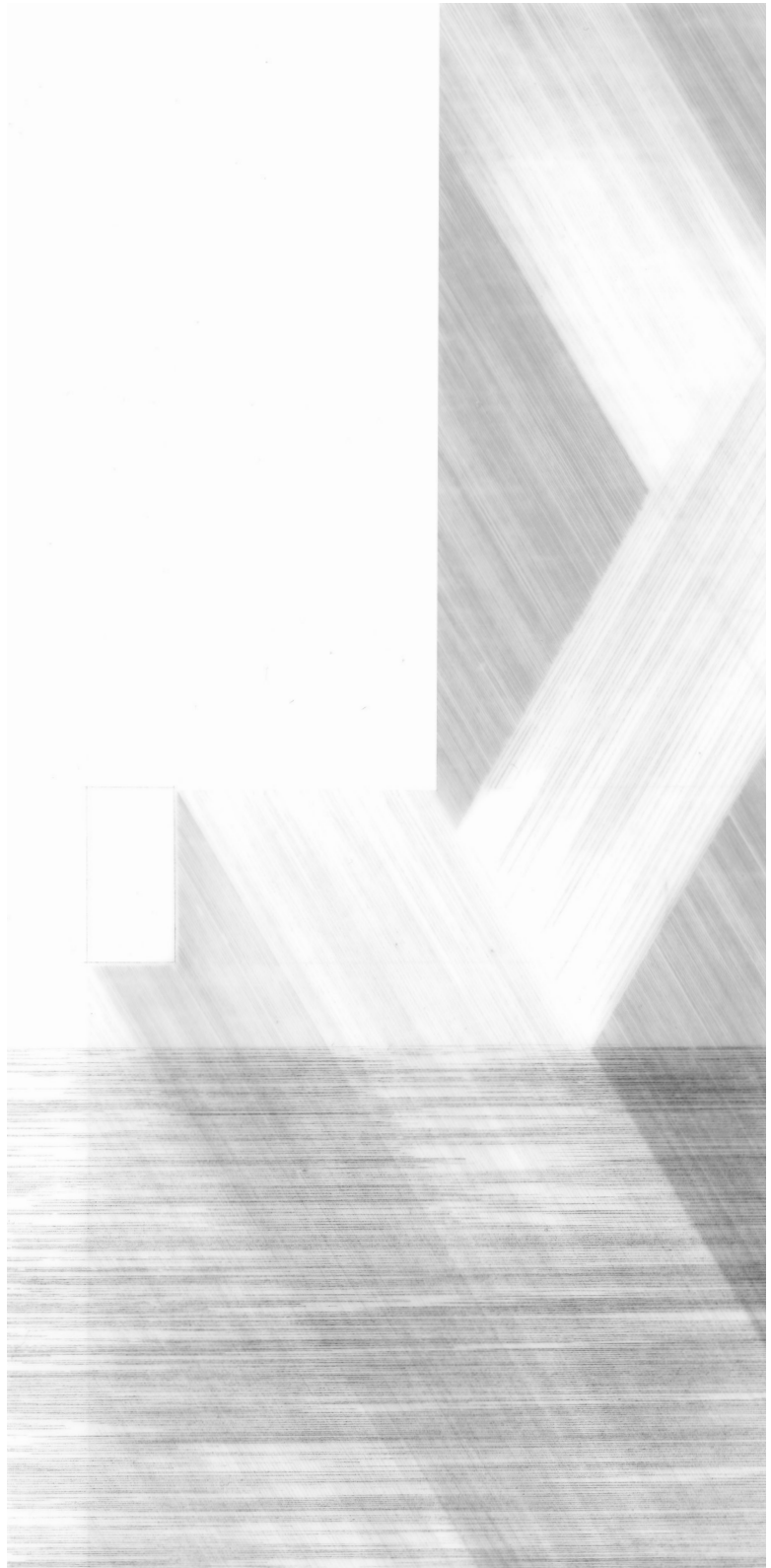






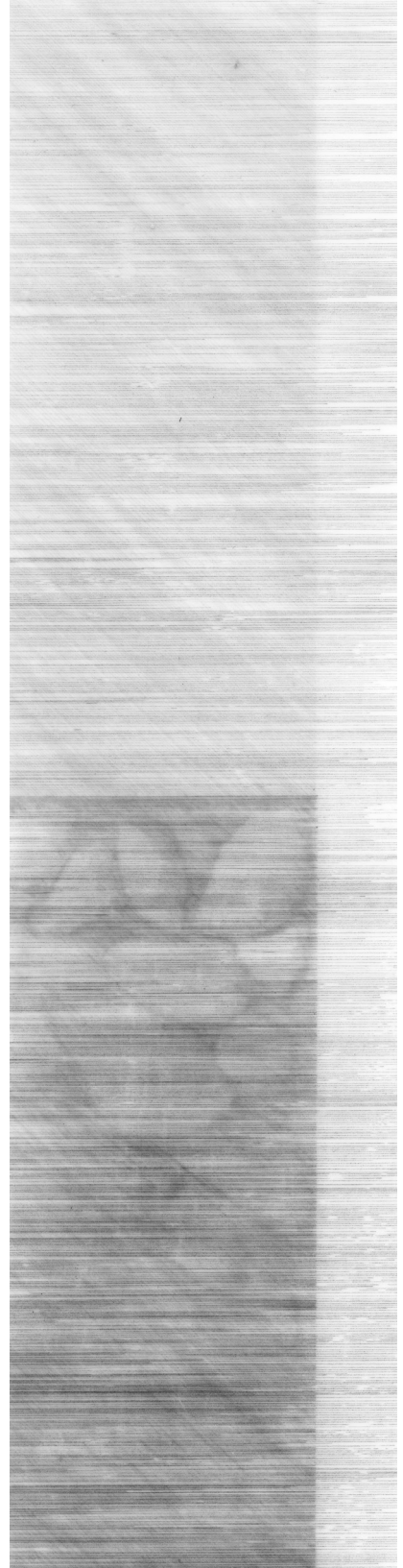
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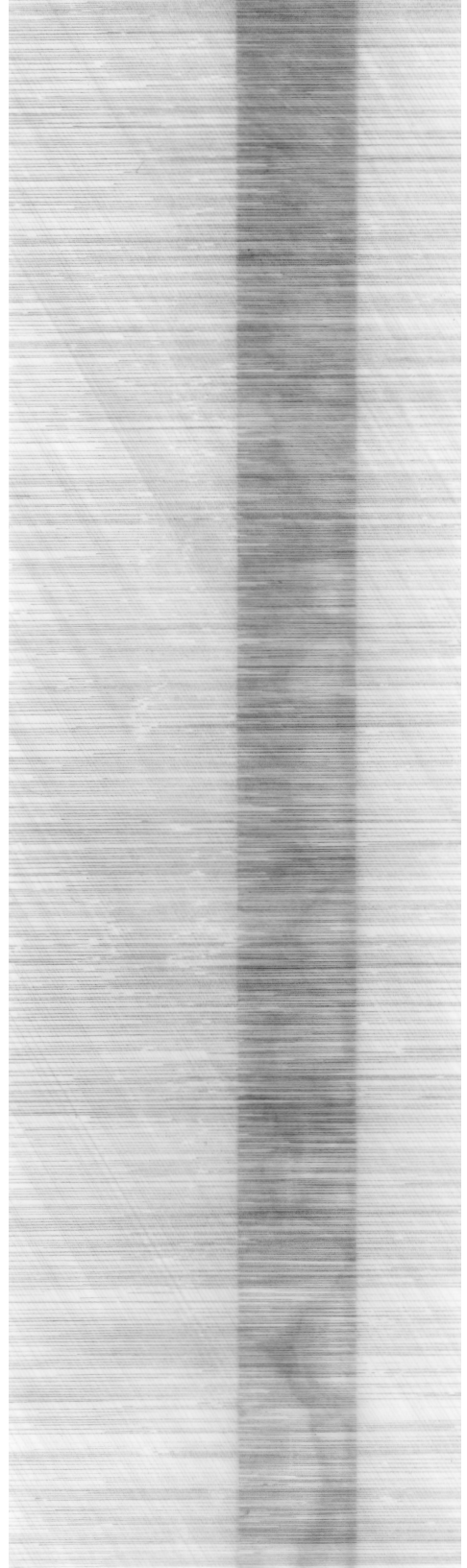


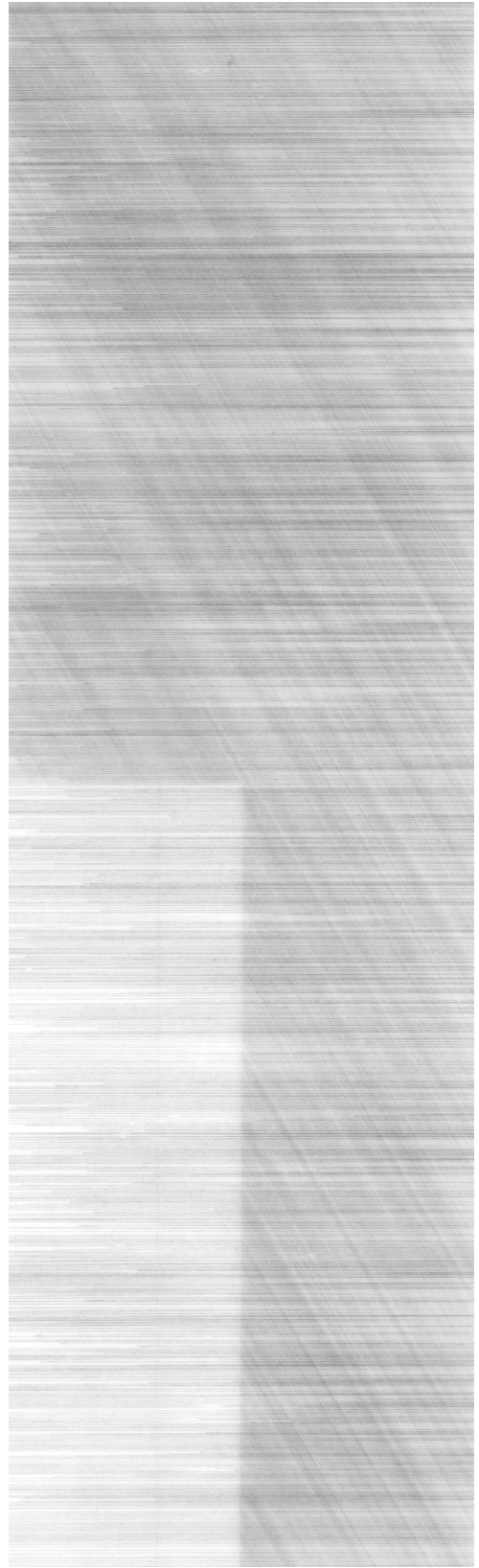


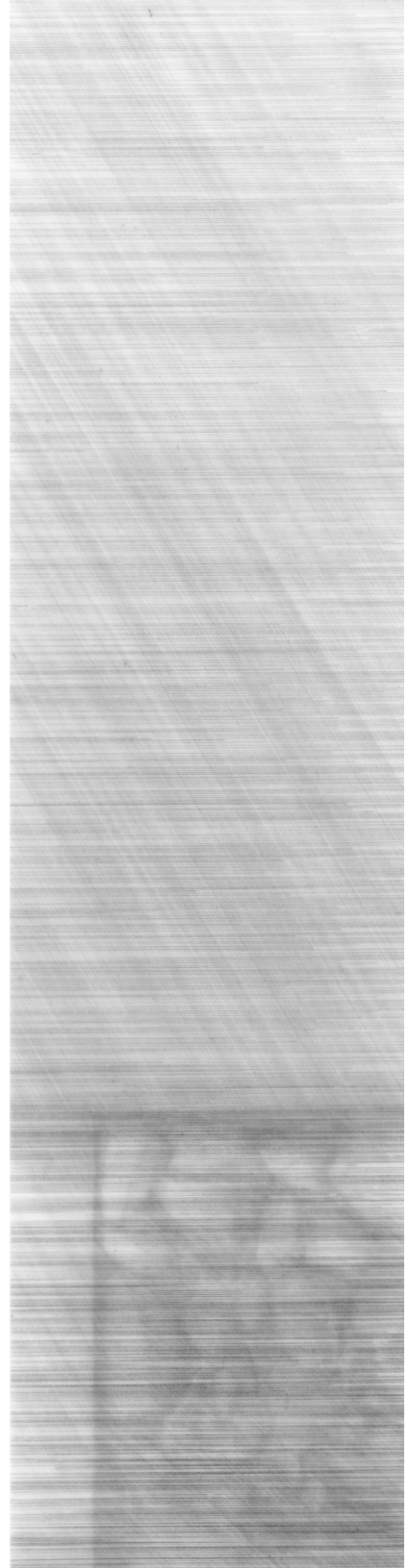
Explorations in Plan

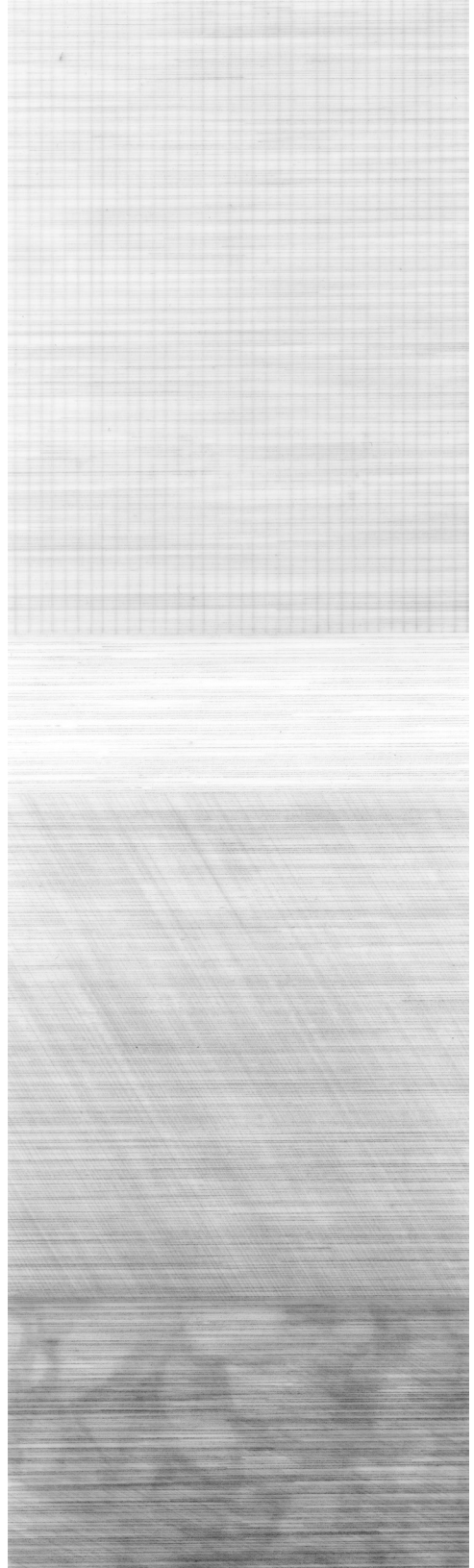
Clefts and slots in the lining of the pools could reveal the raw sea floor between the masses of the shoreline construction. Leaving the known for the unknown at the junction of natural and built forms below the surface, the design reinforces the swimmers place at the junction of the city and the sea.









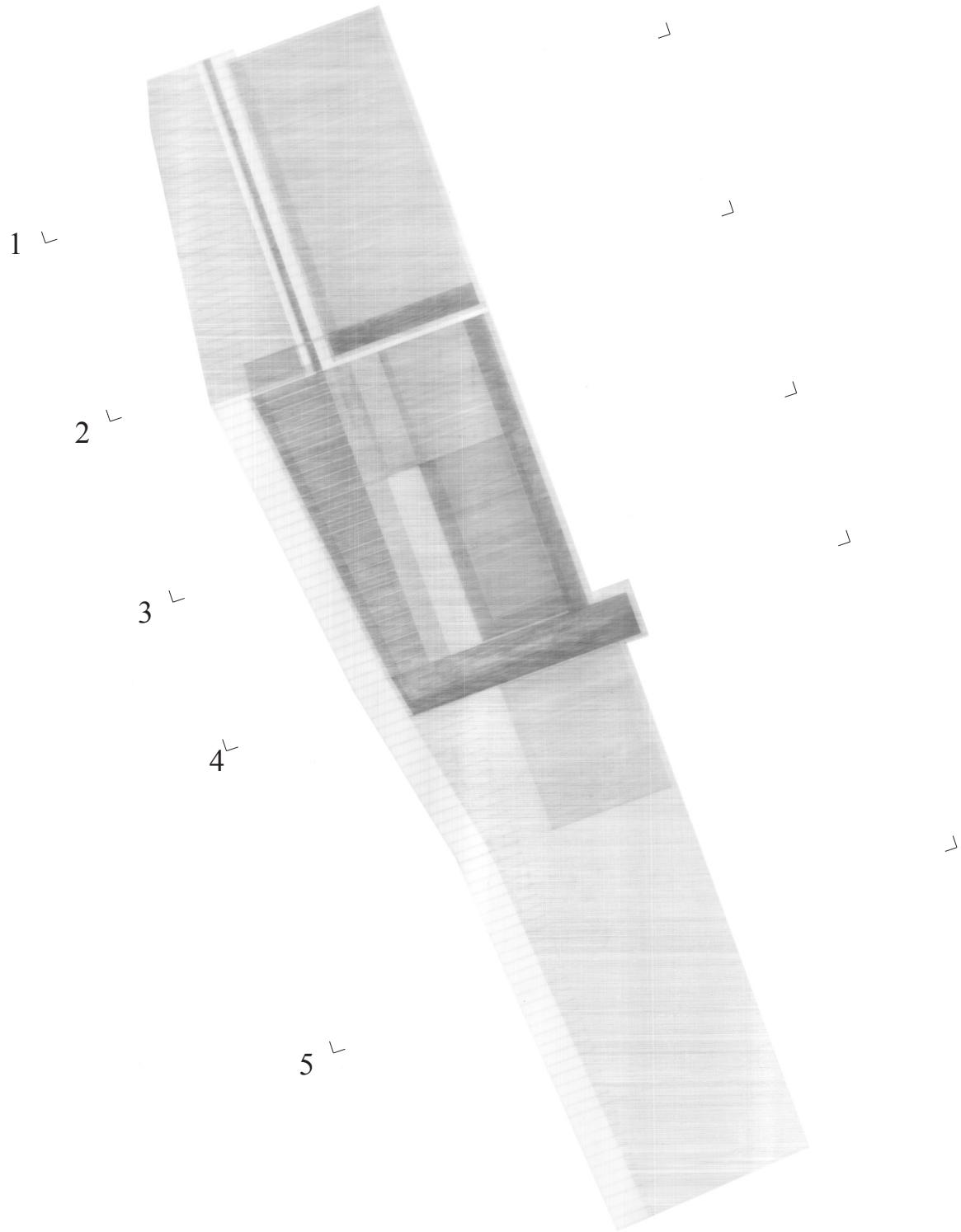


Volumetric Containment

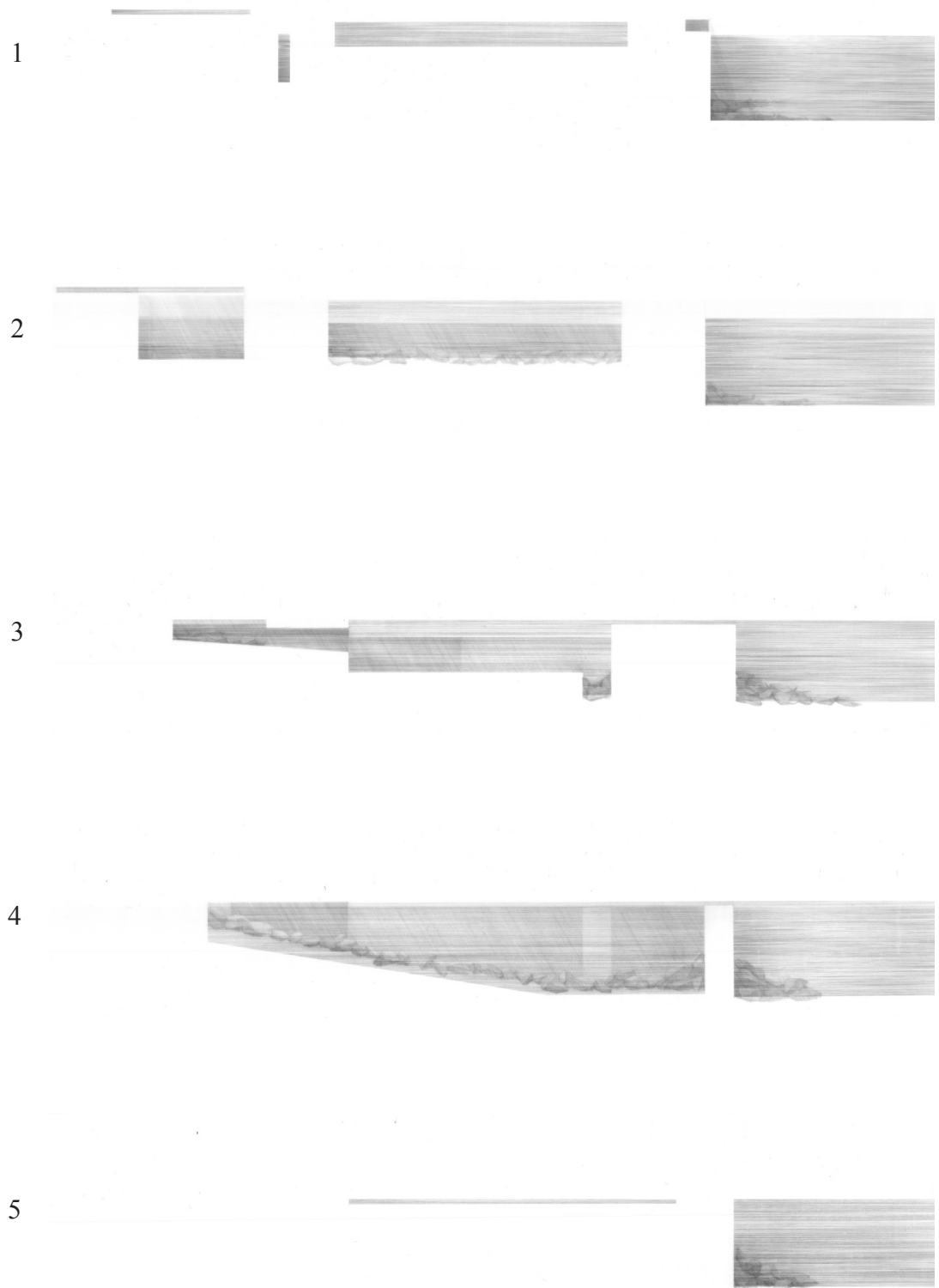
The Pools are constructed as a relic at the shoreline. The site of cyclical tidal dissonance at the urban edge.

At peak high tide the network of basins is completely consumed by the sea, the reflective surface obscuring the complexity found below. All the individual vessels are now connected by free-flowing seawater, the connecting medium. Protruding metal ladders and rails are all that imply their existence.

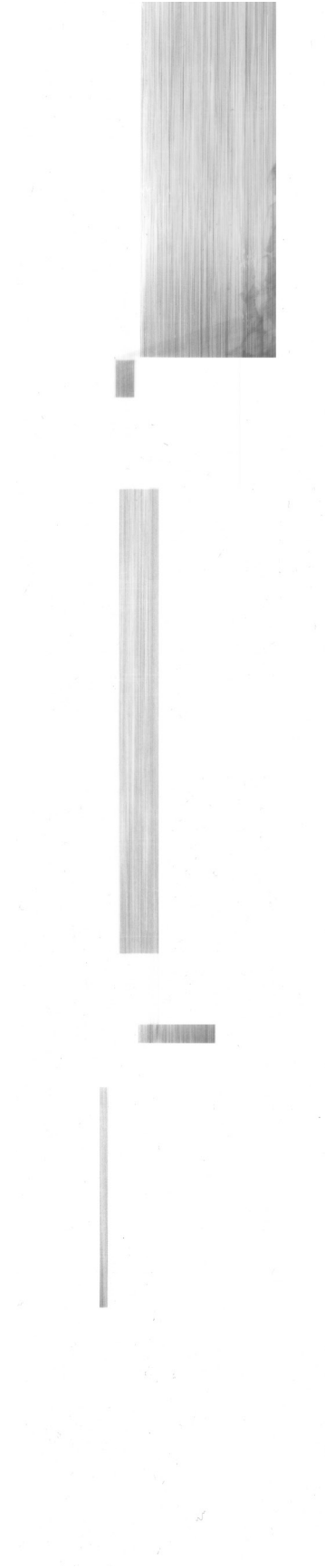
At low tide, the extent of the architecture is revealed. The textures and materials of the vessel linings emerge saturated and wet, slowly drying in the sun they leave the sea behind. The seaward retaining structures of the city detain isolated volumes of the sea.



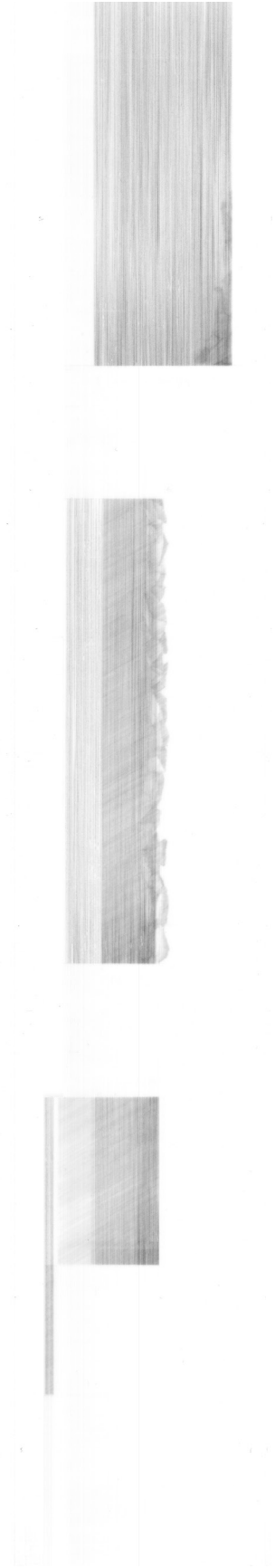
Plan of the collection of pools at Lower Water street, showing the change in depth and basic materials of the different volumes.



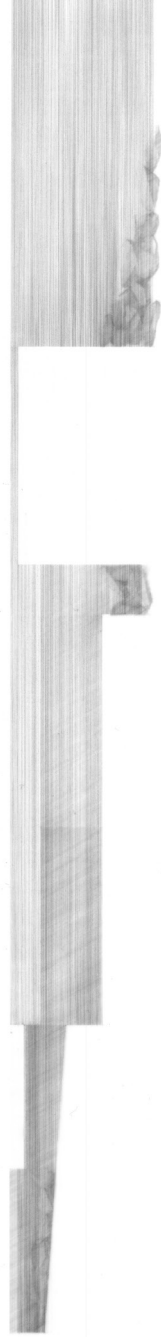
Sections through the pools from North to South, highlighting only the volumes of water in each pool and the open harbour at the right



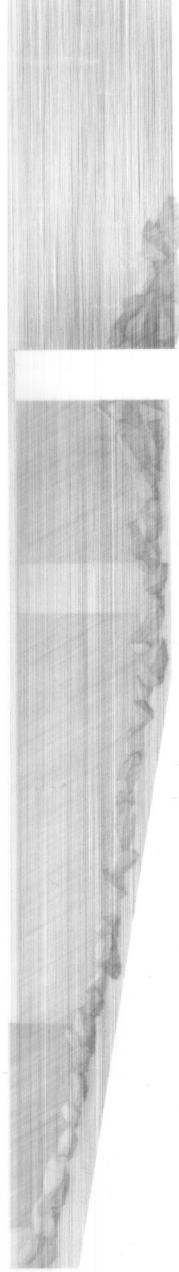
Section through the street level pool, Olympic pool, and harbour



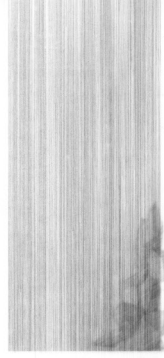
Section through the street level pool, natural floor of the Olympic pool, and harbour



Section through the Lido pool and harbour.



Section through the diving pool and harbour.



Sections through the reflecting pool and harbour.

Describing the Pools

The complex composes 5 individual pools, each with their own material characteristics. Depending on the tides, the pools may be isolated bodies of water or connected at the surface. The following descriptions are in order from North to South.

The deck of the Olympic pool is composed of concrete and steel grate. Holding filtered seawater one meter above high water line, the concrete container is concealed at the pool edge by steel grate 50 cm above the water line. Less of a place for pool side leisure, the pool is oriented towards exercise. There are no steps leading into the water only ladders spanning the space between the surface and thin grate. Without the ladders the pool could be mistaken for a reflecting pool, purposed with introspective qualities but not entered. These qualities reference the solitary nature of lap swimming. At sunrise and sunset the depth seems limitless. The pool lining is black concrete, and the sea floor is exposed immediately under the springboards.

The Lido deck is composed of wooden deck boards and steel grate at the base of the building. Seawater from the pool flows in channels under the deck and below the building, exposed by the grate and audible under the deck boards. Under outdoor showers on the exterior changing room wall, swimmers rinse off the salt water over the grate after leaving the pools. The wooden deck boards are comfortable underfoot, softer under laid out towels and not prone to the heat of exposed concrete. At the urban edge, the lido gradually steps down into the water, concrete platforms leading comfortably down. Inside the seaward wall of the lido, the sea floor is exposed to remind swimmers that the pools span the urban

edge and water's edge, rather than belonging to one or the other.

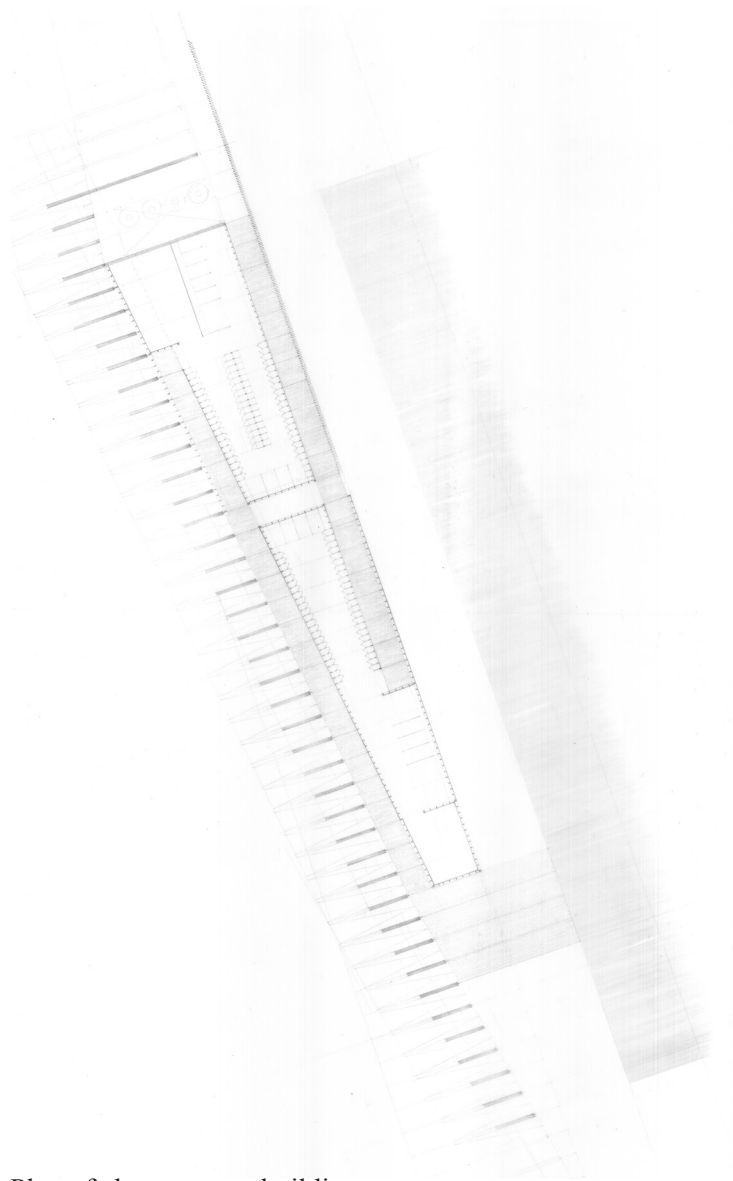
The diving pool, aligned with the Salter street axis, is a place where pool and deck conditions come together. Long and narrow, after exiting the change room passageway at the urban edge it is the hub of access for all the pools. The deck is steel grate over shallow water and black rock, signalling the blending of land and sea. The seaward edge is a thin grate over a concrete retaining wall, the point where the seawater enters the pools and is contained as the tide recedes. The bathymetry of the diving pool is revealed only by ascending the diving platform, where the steep vantage point overcomes the surface reflections and the depth is visible. Thin steel railings line the rest of the pool.

The children's pool is shallow and lined with small, smooth stones. On both the urban and seaward decks of the pool wooden deck boards run to towards waters edge, capped with steel angle to avoid splinters. In the pool the small stones are a less harsh surface for children, soft and warm underfoot. A temperature gradient in coloured stones can ease children into the deeper cooler water at the center. A thin railing separates the pool from the deep water diving pool at the north edge, although the surface water spans both. From a child's perspective the pool extends far beyond in confines.

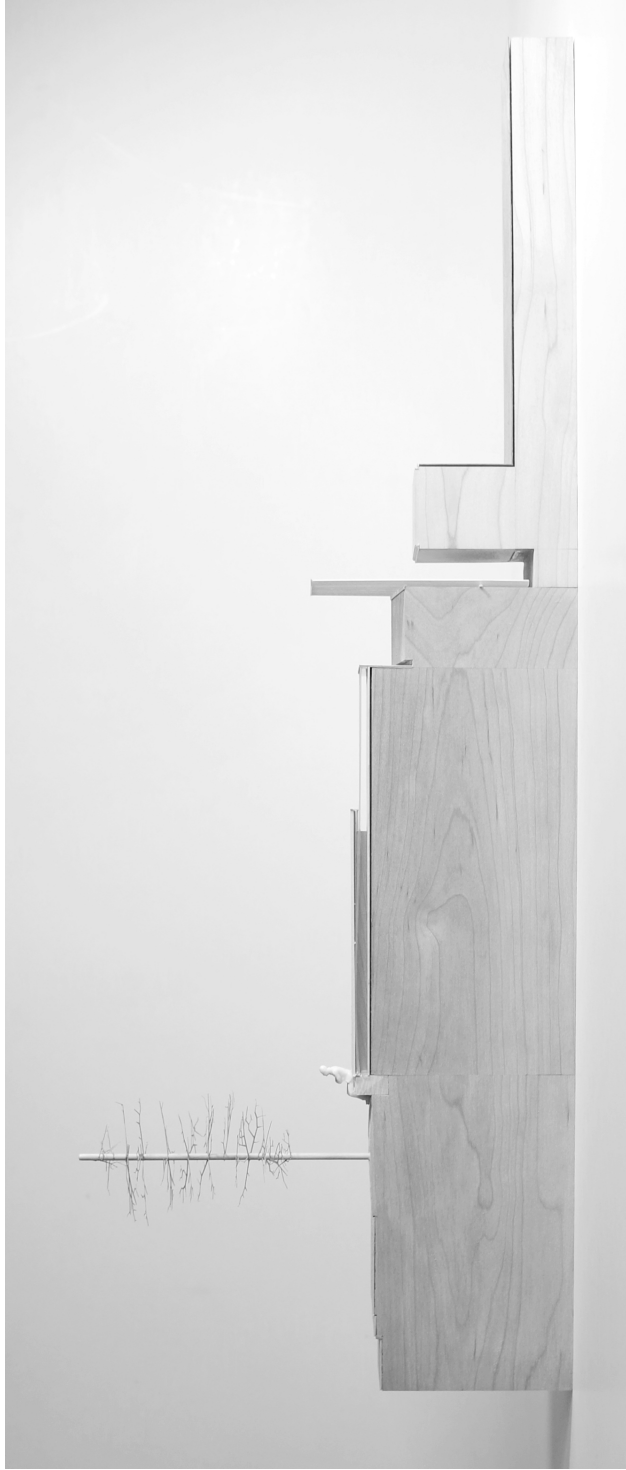
The Reflecting pool is a shallow rectangular indent in a uniform concrete slab south of the children's pool. Contained at the seaward edge by a plain concrete walkway, at the urban edge a gentle slope washes the water to the base of the concrete fins supporting the boardwalk above. Ankle deep, the water would warm quickly and is meant stroll through. The row of benches at the center suggests a shal-

Procession From Land to Sea.

The building is constructed with delicacy in mind. In the timeline of the urban coastline, the building is consciously sacrificial, made from thin steel angle and wood. Conceptually the building is a moored vessel alongside the shore acting primarily as a filter in the procession from land to sea. Constant turns allow pauses on the approach and focus the sensory experience of inhabiting the threshold between the city and the sea.



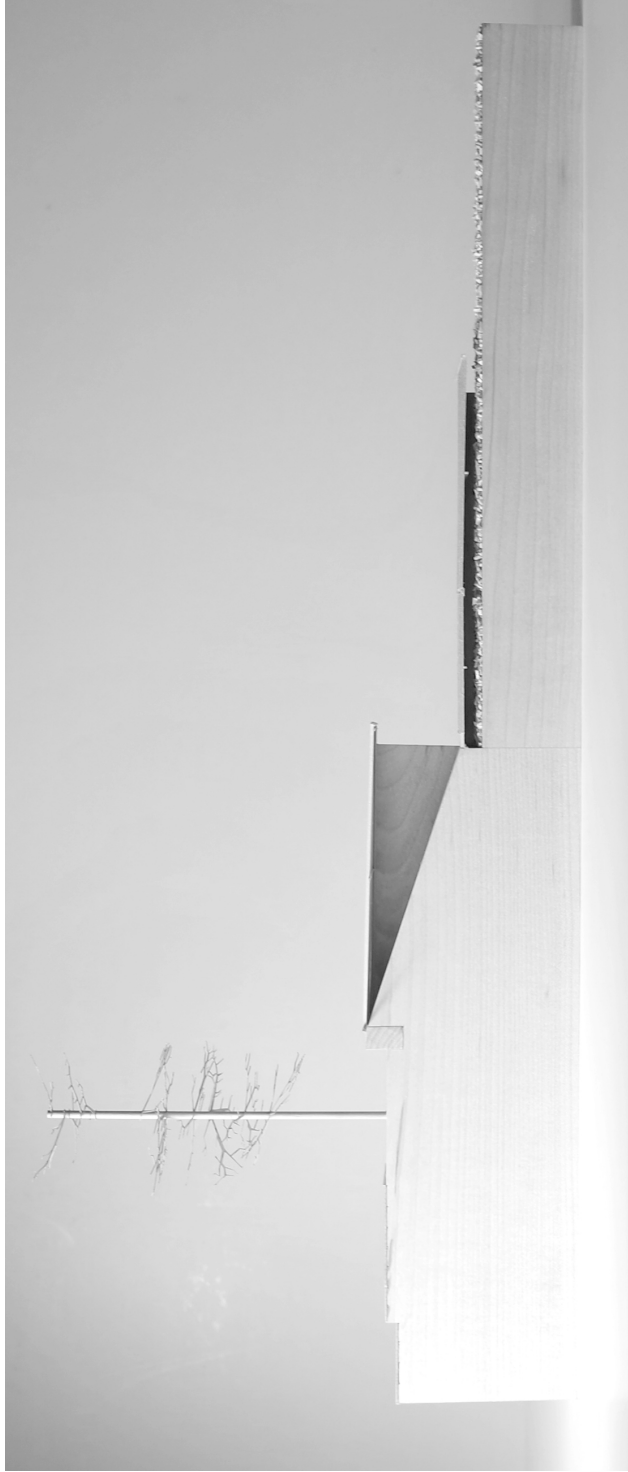
Plan of change room building.



Sectional model. From left to right, sidewalk, boardwalk, wading pool, ramp, intake trough, Olympic deck and pool.



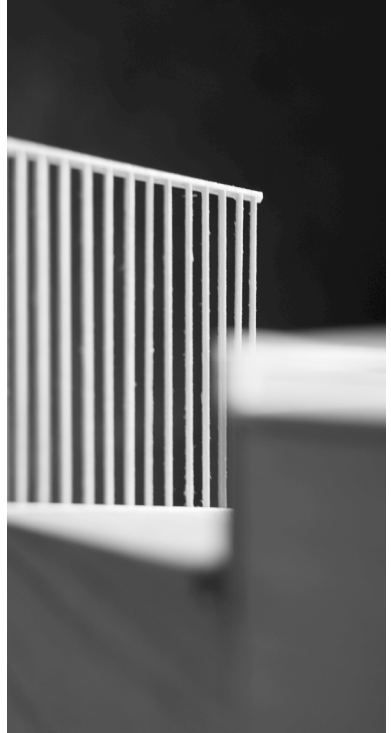
Sectional model. From left to right, sidewalk, boardwalk, arcade behind change room, change room interior, lido deck and pool.



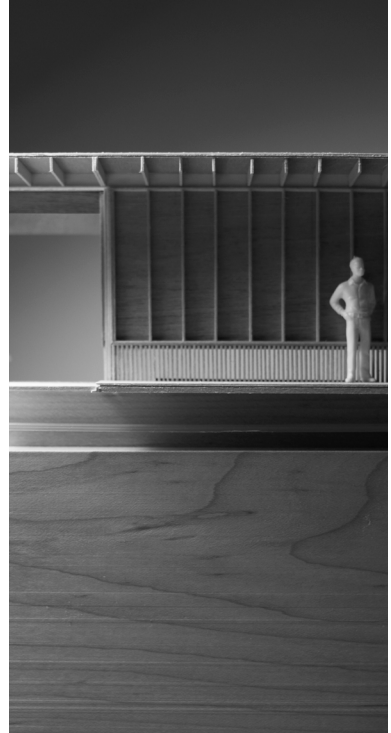
Sectional model. From left to right, sidewalk, boardwalk, childrens deck and pool.



Looking seaward over the granite threshold to the ramp from the sidewalk.



Entering the ramp leading to the change room building, looking through the copper grill.



Arriving at the hall at the center of the building. The method of construction is exposed within the building.



In the change room, thin reveals between the walls and ceiling allow a stream of light to enter above grates over the water flowing below.



Reentering to the hall



Turning back to the city, a gap in the boardwalk above allows a sightline to the underside of the trees above and the downtown beyond.



Emerging into the light from the covered arcade. The boardwalk is transparent, filtering light onto the concrete incline.



From the lido deck the building is nondescript, acting only as a backdrop pool side life.

CHAPTER 3: CONCLUSION

This thesis provides a model for an alternative to the current programming of the Halifax waterfront. The test site is one of the many underused parking lots between the city and the sea.

Initially the thesis emerged as a socially democratic way for public engagement with the harbour. However, as the project developed, this direction became more of a jumping off point for further studies, the social stance was a way of justifying the rest of the design.

It became clear that my interests lay in the arranging of the spaces between the city and the sea and the experience of transition from one to the other. My interests grew in blending the built with the natural within the confines of the pools, drawing on the experiential qualities of inhabiting the edge of land and sea and the architecture below the waters surface. I began to view the design more as an alternate reality that could have always existed in the city fabric, rather than proposing a new design that would amend the real issues of the waterfront. This mind set would play a large role in the design of the pools and the change room building, where each existed as a more of a ruin than a new proposal for a civic project. This approach provided insight into the detailing and material choices throughout the design, where the intended aging and weathering of the architecture became a primary design challenge.

In the end I feel the project is now on the right track to achieve a proper level of completion, however the many tangents that are not explicitly documented here play a si-

lent role throughout this thesis. While this thesis is not complete, the time invested in research, design, and representation has solidified architectural values in my work that I will continue to develop.

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