

**Stitching the Divide: Reconnecting the Segregated Neighbourhood of Red
Hook Back Into the City Fabric of Brooklyn, New York City**

by

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ABSTRACT

Red Hook, Brooklyn, is a neighbourhood characterized by the urban disconnection and urban decay caused by the Gowanus Expressway and Hamilton Avenue expansion. During the 20th century, federally funded highway expansion promised to connect the country on a regional scale, however, systematically dismantled lower income neighbourhoods, leaving long lasting effects on the built environment and residents. Border vacuum effects of highway infrastructure have permeated deep into Red Hook, leaving the neighbourhood in a state of neglect and disrepair.

This thesis explores Red Hook's connectivity back to Brooklyn. It specifically explores the urban disconnection due to inadequate transportation services, decaying streetscape conditions, and the Gowanus Expressway as the main contributor to the socio-economic and physical disconnection of Red Hook. Active transportation infrastructure is explored as an armature to reconnect Red Hook back to the city fabric of Brooklyn while providing moments to programmatically engage the community of Red Hook and Brooklyn.

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CHAPTER 1: INTRODUCTION

Infrastructural Divides

In the 20th century, highways, freeways, expressways, and parkways have offered people the freedom to travel long distances in the comfort of their own space. Yet as elements of a city, these pieces of infrastructure have imposed significant negative effects on neighbourhoods, urban street life, and the people living in the path of freeways, planned or built (Mohl 2002, 2). Throughout North America in particular, high-speed automobile infrastructure has penetrated most major cities, ripping through existing neighbourhoods and leaving lasting negative effects on the built environment (Mohl 2002, 1).



Terrain vague space underneath the Gowanus Expressway on Hamilton Avenue (Gragnani 2013)

When high-speed roads are cut through a neighbourhood — whether they are elevated on pillars or cut into canyons — they cut across existing streets and paths, severing one district from another, and leaving left over spaces, described by some as *terrain vague* (Busquets 2003). In designing the routes for highways, 20th century planners systematically located them in or near areas of “blight”, with the goal of improving urban conditions through either isolation of poor and neglected areas or urban renewal (Mohl 2002, 27). The areas of blight were home to low-income and ethnically diverse people (1). People who lived in these areas were displaced and had their living conditions further deteriorated (2).



Vacant industrial building is common in Red Hook (Google Maps 2018)

The following series of images illustrates the effects of highway expansion on the built environment.



Overgrown and polluted recreational field within Red Hook



Abandoned and decaying industrial pier in the Erie Basin, Red Hook



Vacant and undeveloped lots are prevalent throughout Red Hook (Google 2018)



“The Port of New York Authority Grain Terminal” has been left abandoned and decaying since the late 20th century. Old industrial buildings are scattered in what used to be the busiest industrial port in North America.

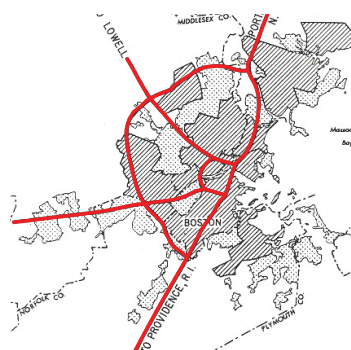
Global Effects

The routing of expressways through poor neighbourhoods is not unique to North America. It has been implemented in developing and developed countries across the world, and these tactics of segregation are still prevalent in developing countries today. The Lyari Expressway for example, in Karachi, Pakistan, cut through the city and demolished and displaced poor communities who had settled on river banks in informal settlements of shanty houses. These informal settlements were targeted for demolition in favor of the freeway (Hasan 2005, 127).



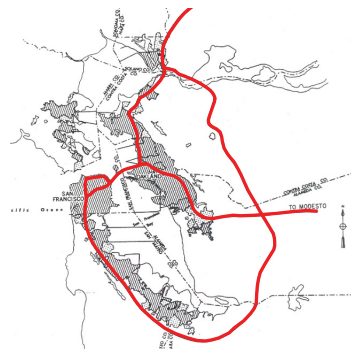
1980s highway expansion in Karachi, Pakistan (Hasan 2005)

The development of the federally funded highway expansion program in the 1930s not only carved through older cities, but by the 1950s to 1970s was instrumental in the formation of newer western cities (Mohl 2002, 2). The highway expansion program had multiple goals: to improve road infrastructure as automobiles became more affordable; to promote commerce; to facilitate regional defense systems; to build the country into a unified transportation network solidified by the federal government and accessible to most of the population (Semuels 2016; Stromberg 2016). New highways were built both around older cities and through them, cities such as Washington D.C., San Francisco, Boston, and New York City, leaving long lasting effects.



1950s highway expansion in Boston, MA, USA. (Public Roads Administration - Federal Works Agency 1955a)

New York City, as the nation's largest metropolis, was an important centre for new ideas in urban planning, exemplified by Robert Moses and Jane Jacobs. Moses, as the city's powerful Commissioner of Transportation, was highly influential in the automobilization of New York City (Flint 2009, xvi). His projects for the Cross-Bronx expressway, the Brooklyn-



1950s highway expansion in San Francisco, CA, USA. (Public Roads Administration - Federal Works Agency 1955b)

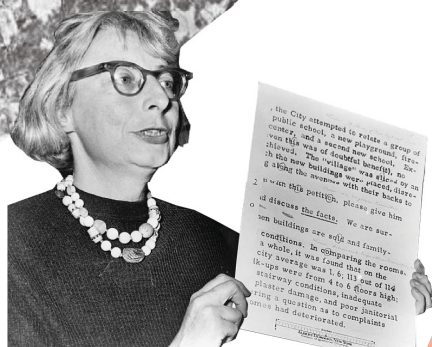
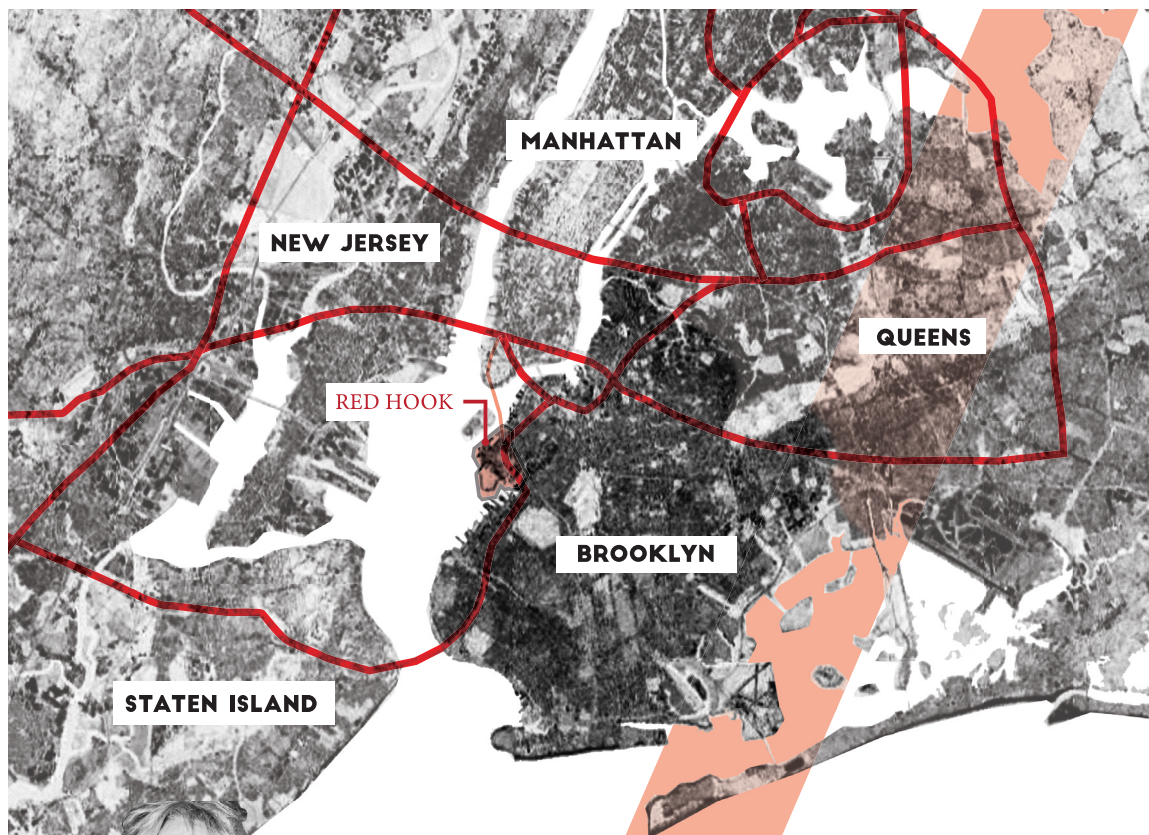
Queens Expressway, and the Staten Island Expressway were early demonstrations of how highways could be used as instruments of "urban renewal". A few decades later, these same projects were criticized by Jane Jacobs; a journalist and critic with bold views on planning and urban renewal strategies that were the polar opposites of Moses's. She stressed the importance of streets for everyday urban and civic life — for shopping, walking, socializing and children's play (Flint 2009, 185-6). This thesis looks to re-connect the divides created by Moses's expressways; to use Jacobs' ideas about street life to bridge the divide created by an inner-city freeway; and to "stitch" back together a separated neighbourhood.

Critical Position

Highway expansion represents a microcosm for ethnic segregation in America, and like other cities and neighborhoods that were radically transformed from highway expansion, negative effects are still evident today. Infrastructure not only presents an insurmountable physical barrier, but it also symbolizes a socio-economic barrier that continues to inhibit the vitality of the segregated communities and their relation to the rest of the city. This thesis aims to remediate the divide created by the highway infrastructure, using architectural intervention to act as a catalyst which helps reconnect neighbourhoods back to the city.

Thesis Question

How can architectural intervention be a catalyst in reconnecting segregated neighborhoods back into the city fabric?



JANE JACOBS

Life on the Street

Facilitating a good, safe, livable, desirable neighbourhood: Smart growth, mixed-use facilities, small city blocks, transit-oriented planning, sufficient density of people and buildings, and a mix of old and new buildings.

Automobilization
Regional connectivity with the use of automobiles. Replacing "blight" from New York City, with highway infrastructure.

ROBERT MOSES

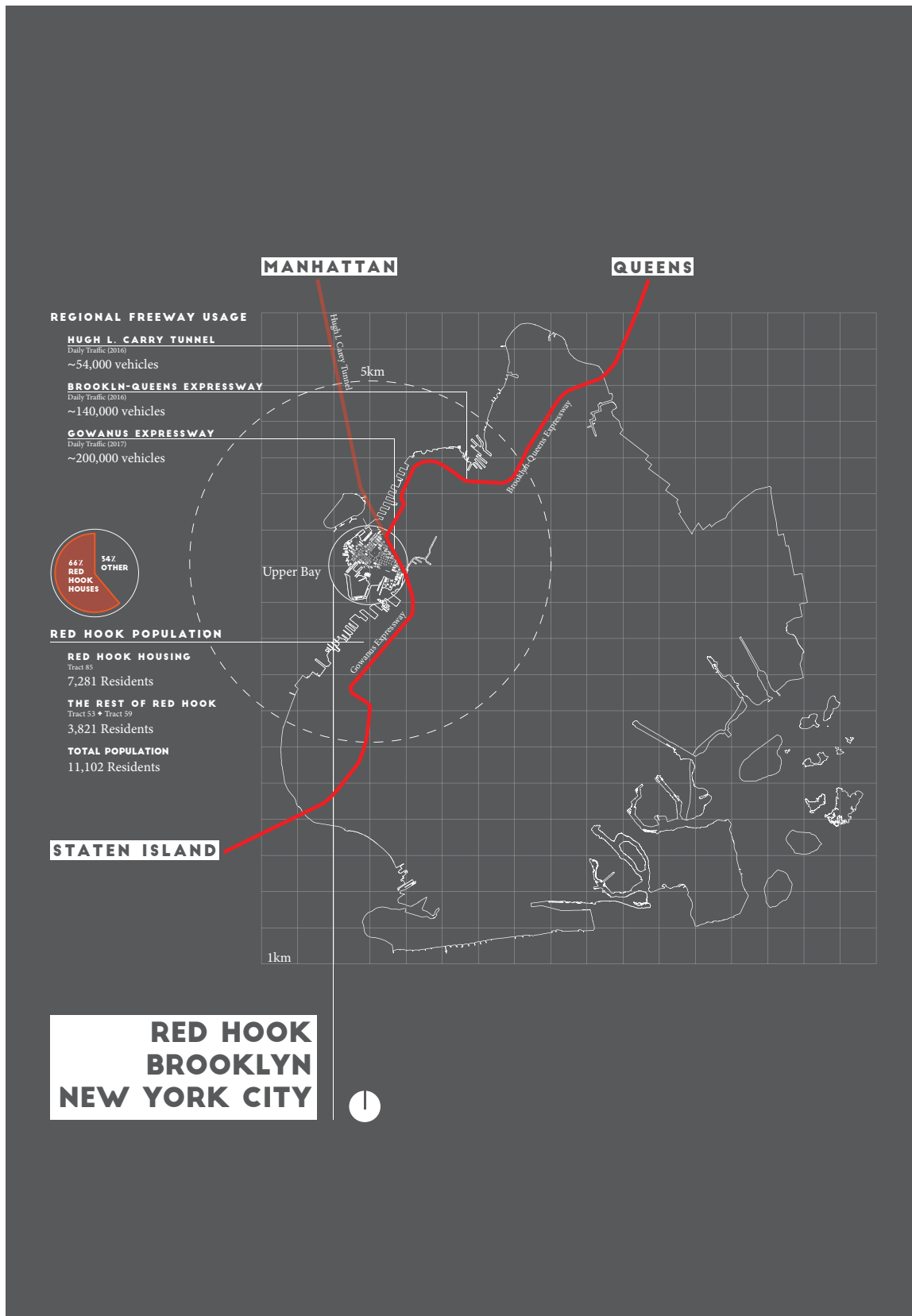


Robert Moses, New York's most influential urban planner, and Jane Jacobs, an urban activist, were both influential on the theories surrounding urban design. Jacobs countered Moses pro-automobilization tactics in favour of pedestrian oriented cities. (Flint 2009, 165, 185-6; Mohl 2002, 1,3)

CHAPTER 2: RED HOOK, BROOKLYN

This thesis question will be explored through a study of the neighbourhood of Red Hook, Brooklyn. Red Hook is an appropriate case study and project site for the thesis for two reasons:

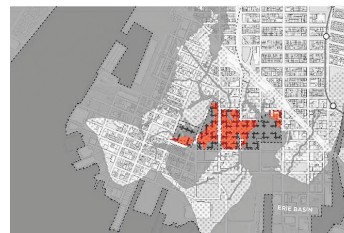
- It was severed from the rest of Brooklyn with the construction of the Gowanus Expressway, a massive elevated highway built by Robert Moses; and
- This structure, once completed, has caused border vacuum effects that have permeated deep into Red Hook, contributing to the neighbourhood's urban decay and inhibiting its social and economic development. In this respect, it is an excellent test ground to study some of Jane Jacobs's ideas about lively and liveable neighbourhoods.



Red Hook, Brooklyn population and adjacent vehicular infrastructure traffic (data from United States Census Bureau 2018; NYCDOT 2018, 196; Hu 2016; Anuta 2017)

Evolution of Red Hook, Brooklyn

With its earliest dwellings dating back to 1636, Red Hook was one of the first areas settled in Brooklyn. Originally settled for its marshy landscape which allowed for easy boat docking, as New York harbour grew, Red Hook became a prominent port location handling international cargo in the period between the American Civil War and the first half of the 20th century. The success of the port and the development of modern shipping and loading technologies dramatically altered all of the Brooklyn waterfront, with the construction of the Atlantic, Erie, and Brooklyn Basins (New York City Department of City Planning [NYCDCP] 2014a, 13).



Red Hook developed from a marshy landscape to a successful international shipping port. The Red Hook Houses (shown in red) became the focal point within the neighbourhood. Photograph by Richard Roark (Red Hook Water Stories 2018)

The industrial port of Red Hook was primarily comprised of warehouses for storage and shipping, and factories such as the “steam pump factory, the Esler and Company Boiler factory, the New York Patent Felt Company, and the Brooklyn Clay Retort and Fire Brick Company” (NYCDCP 2014a, 13).



Waterfront shanty housing. Photograph by Jenny Young Chandler (Red Hook Water Stories 2018)

The industrial growth and international commerce of Red Hook attracted immigrants to the neighbourhood, primarily from Italian and Irish heritage, as well as Scandinavian and Caribbean workers, creating an ethnically diverse area). Longshoremen and dockworkers lived in nearby shanty housing (NYCDCP 2014a, 13; Waterfront Museum).

By the onset of the depression, the NY State Housing Board began to explore Red Hook as a site for social housing, but it was not until FDR's election when Red Hook Houses were commissioned as a WPA project under an expansion of the United States Housing Authority in 1938 (Mahler 2012; Waterfront Museum). The project, designed by Alfred Easton Poor, comprised for roughly 2,500 apartments and



Life on the water. Photograph by Jenny Young Chandler (Red Hook Water Stories 2018)

5,000 residents, which represented approximately 25% of the estimated population living in shantytowns in Red Hook, which was estimated around 21,000 people (Waterfront Museum). When completed, the Red Hook Houses were “one of the first and largest Federal Housing projects” in the United States (NYCDCP 2014a, 13). This development of public housing changed the landscape of Red Hook and solidified its ethnically diverse and working-class identity.



Shanty housing which was replaced with the Red Hook Houses, 1938 (Red Hook Water Stories 2018)



Street view of the Red Hook Houses, 1939 (Library of Congress 1939)

The Impacts of the Gowanus Expressway

A Forgotten Landscape

Once known as one of the busiest ports in North America, Red Hook’s reputation began to decline in the mid 20th century, as a result of two factors: the decline of shipping industry and the construction of the Gowanus Expressway. As the ports of New Jersey modernized in the mid 20th century, shipping demand in Red Hook declined (NYCDCP 2014a, 13). Robert Moses,

one of the most influential figures of urban planning, sealed the fate of the industrial neighborhood with his plans for the Gowanus Expressway. This project, which opened in 1941 (and the associated Brooklyn Battery Tunnel, which opened in 1950) created a multi-lane elevated and channelled high-speed barrier that severed the neighborhood from the rest of Brooklyn (NYC DCP 2014b, 14; New York City Department of Transportation [NYSDOT] 1997, 1; Waterfront Museum). In his 1974 biography of Moses, Robert Caro referred to the highway as a “Chinese wall”, symbolizing an insurmountable barrier imposed on the Red Hook residents, many of which who lived in the Red Hook Houses social housing projects (Jelly-Schapiro and Solnit 2016, 163).



Construction of the Gowanus Expressway and expansion of Hamilton Avenue (Gowanus: Neighborhood History Guide 2005)

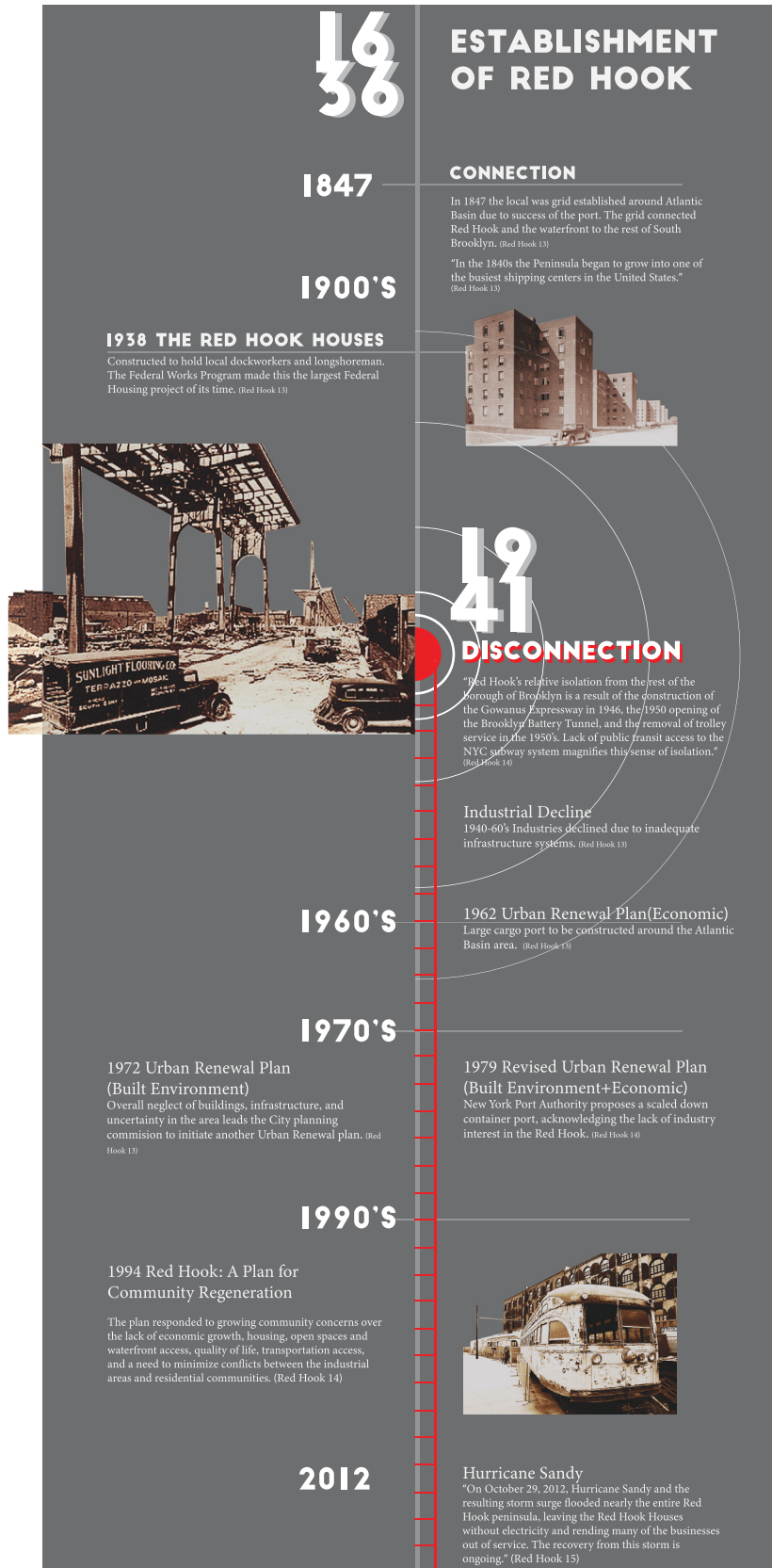
While both the expressway and the tunnel effectively connected the borough of Brooklyn to the other New York boroughs as a system, at the local level, Red Hook became completely isolated from the rest of the city, leading to a steady decline for 50 years. To combat the socio-economic and environmental deterioration of Red Hook, urban renewal projects were attempted periodically from the 1960s to the 1990s. These renewal projects aimed to attract economic interest to the area by updating old shipping technologies but they were not successful (Sze 2007, 128-9).



Robert Moses (far left) demolishing homes to make way for vehicular infrastructure, 1959. Photograph by Meyer Liebowitz (Mahler 2012)

Segregation

Many scholars have associated the creation of urban expressways with the physical and socio-economic devastation of low-income and racially marginalized neighbourhoods from the 1940s to the 1960s. Automobiliation supporters and city planners often envisioned the interstate expressways as tools to systematically segregate neighbourhoods and clear slum

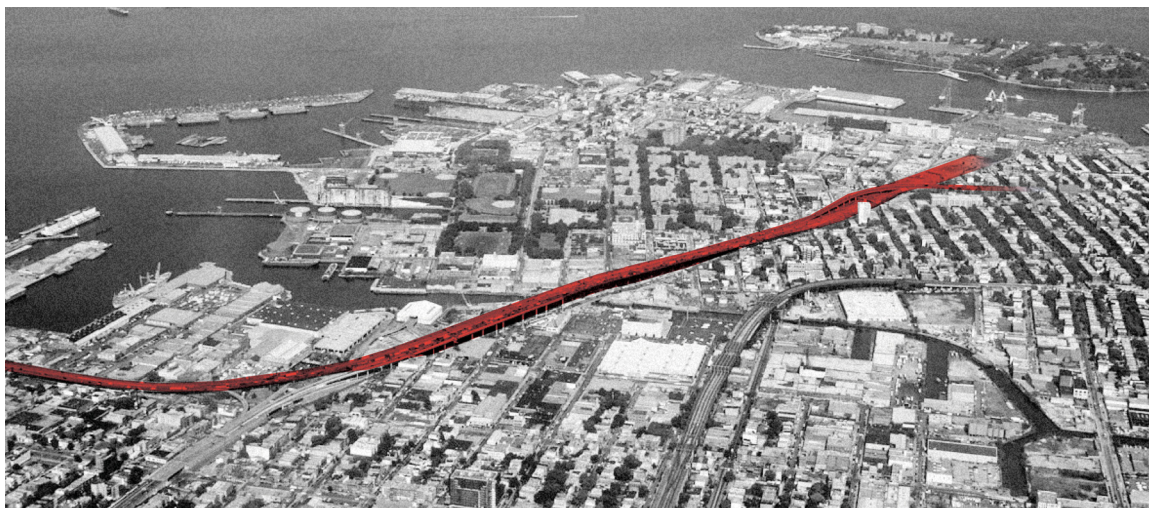


Timeline of Red Hook, Brooklyn (data from New York City Department of City Planning 2014a)

housing. The goal of re-making the slum neighbourhoods “for higher and better uses” was often never achieved (Mohl 2002, 1-4,21). Red Hook is one of many neighbourhoods that still suffers from the enduring negative effects of highway infrastructure.

Disconnection

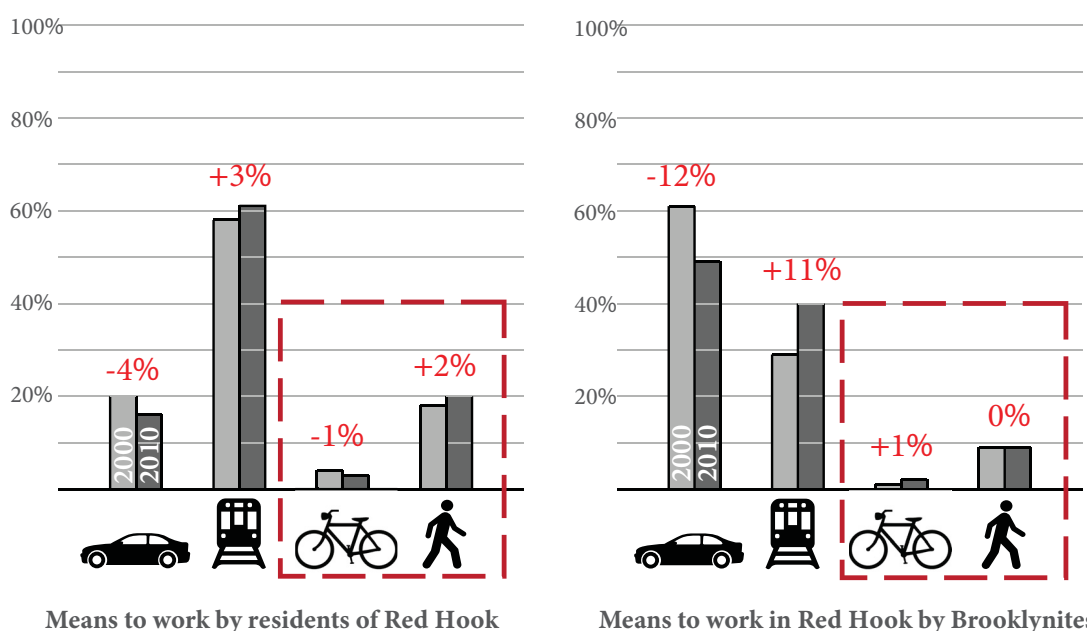
In many areas of New York, public transportation is a key piece of infrastructure for daily travel, especially for low-income residents. The disconnection caused by the Gowanus Expressway has reduced to two: the bus routes in to Red Hook: the B61 and B57 (NYCDCP 2014b, 62) — leaving the low income residents of the Red Hook Houses (who are heavily dependant on public transportation) underserved with necessary public transportation (Khan 2015). In addition, the low income demographics of Red Hook highlights the need for affordable public transportation services (NYCDCP 2014b, 42). In terms of the subway, the closest station to Red Hook is the Smith-9th Street Subway Station — this, too, is difficult to reach, since it is located on the north side of the Gowanus Expressway, in the neighbourhood of Carroll Gardens.



The peninsula of Red Hook disconnected from adjacent neighbourhoods by the Gowanus Expressway, Brooklyn-Queens Interchange, and Hugh L. Carey Tunnel (highlighted in red). (Schumacher 2008)

At the pedestrian scale, the Gowanus Expressway and Hamilton Avenue form the northern border of Red Hook for a length of 1.25km. This barrier impedes 84% of the publicly accessible paths (a length of 1.48km) that cross from Red Hook into its adjacent neighbourhoods of Carroll Gardens and the Columbia Street Waterfront District. The expressway and the surface road of Hamilton Avenue are heavily used by commuters and are a main trucking route, but they are poorly maintained and accompanied with pollution, noise, and poor lighting (NYC DCP 2014b). The ramps and barriers flanking these roads make any journey between Red Hook and Carroll Gardens unpleasant and unsafe.

Active transportation in Red Hook is also not well supported. The pedestrian thoroughfares Van Brunt Street and Hamilton Avenue are dominated by vehicles. Unprotected bike lanes share the road with vehicles and are often blocked by parked cars and trucks. The neglected streetscape, traffic, and vacancy in Red Hook has also contributed to low pedestrian



Changing transportation preferences in Red Hook and Brooklyn, 2000 to 2010 (New York City Department of City Planning 2014b, 25)

circulation. Currently, walking usership is at 20% and bicycling at 3% — indicating there is potential to dramatically increase cycling and walking as means of circulating through the neighbourhood (NYCDCP 2014b, 7-8, 24-5, 42).

Border Vacuums

Vehicular side effects dominate the Gowanus Expressway and Hamilton Avenue, which has created a “border vacuum” effect along the expressway and adjacent side streets. For pedestrians and bicyclists, the harsh conditions of the expressway signify a dead end; a barrier that is uninviting and unpleasant to experience (Jacobs 1992, 259). The unpleasant condition of border vacuums furthers the neighbourhood isolation by deterring walking and cycling, leaving the streets barren and sparsely populated (Jacobs 1992, 263). For many, the conditions are avoidable, they simply do not go near or cross over into Red Hook, however, the invisible barrier is a daily hurdle for Red Hook residents who need to cross Hamilton Avenue for work or other reasons.

Experience Crossing Hamilton Avenue

When traveling into Red Hook, I crossed Hamilton Avenue as many would, coming down Smith Street from the Smith-9th Street subway station in Carroll Gardens. My initial impressions on approaching Hamilton Avenue was the overwhelming scale of the Gowanus Expressway; it was the tallest structure in the vicinity. While large, it was not intimidating until I approached the highway and searched for a pedestrian crossing along Hamilton Avenue — up close, the height of the Gowanus Expressway and expanse of Hamilton Avenue left me feeling exposed and out of place. This feeling was magnified by the potholed street, decaying sidewalks,

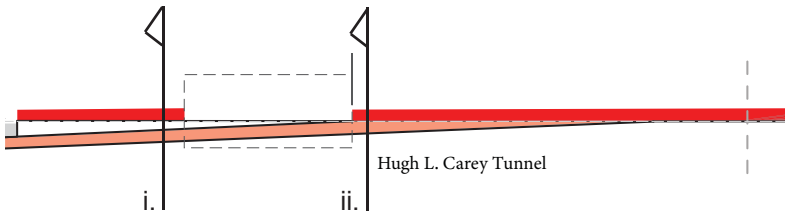
and lack of protection from fast-moving vehicles. When I found a marked crosswalk, the time allotted for crossing roughly 12 lanes of traffic did not allow for a comfortable walking pace, making this a nerve-wracking experience. This was my first real understanding of the Gowanus Expressway as a physical barrier. Once I was in Red Hook, the effects of this barrier became even more apparent, not by what I saw, but by what was lacking. When walking in Carroll Gardens, I saw lots of people everywhere and busy commercial activities. As soon as I crossed Hamilton Avenue into Red Hook, streets were empty and commercial spaces and warehouses shuttered or empty. It was as if the desolate atmosphere of the Gowanus Expressway had permeated into the streets of Red Hook.

My experience as a pedestrian crossing under the Gowanus Expressway helped me see that scale and street conditions create the desolation of a border vacuum. To prevent this became a critical objective of my into design proposals discussed later in this thesis.



Terrain vague along the underpass on Hamilton Avenue (Taferner 2015)

The following series of images describes the unique variation of site characteristics along the Gowanus Expressway. The extent of highway approaches, offramps and bypasses limits the opportunity for pedestrian crossings between Red Hook and Carroll Gardens.



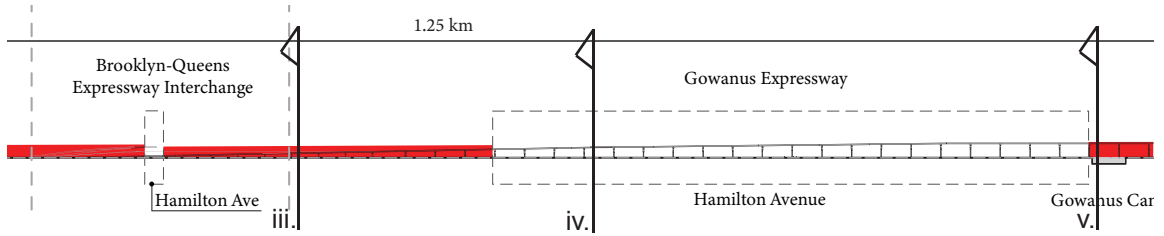
Before the Hugh L. Carey Tunnel, typical street conditions enable pedestrian crossing. (Google Maps 2018b)

i.



The Hugh L. Carey Tunnel is a major vehicular threshold. It is not accessible to pedestrians. (Google Maps 2018b)

ii.



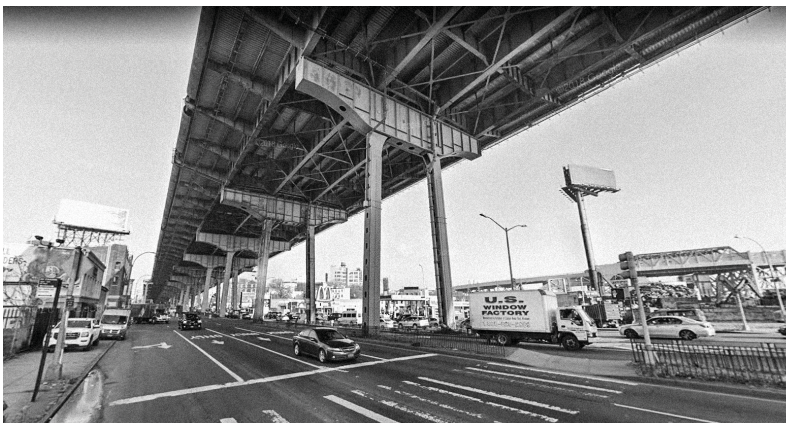
The Hamilton Avenue Pedestrian Bridge is embedded in the Brooklyn-Queens Expressway Interchange. This bridge must cross a complex series of thresholds and harsh conditions, and is uninviting to pedestrians. (Google Maps 2018b)

iii.



The underside of the Gowanus Expressway varies greatly along its length in height, sound, and lighting. This means that the underpass presents a unique condition at each block. (Google Maps 2018b)

iv.

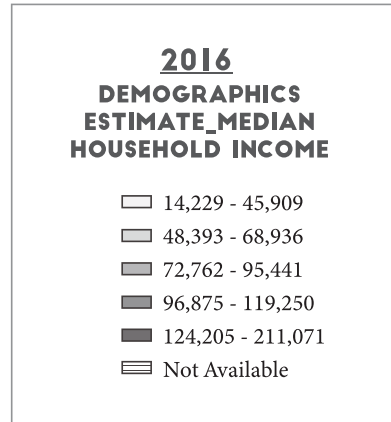


The Gowanus Expressway is highest over the Gowanus Canal. While this condition allows plenty of light and space under the overpass, eight lanes of heavy traffic create a poor pedestrian experience along Hamilton Avenue. (Google Maps 2018b)

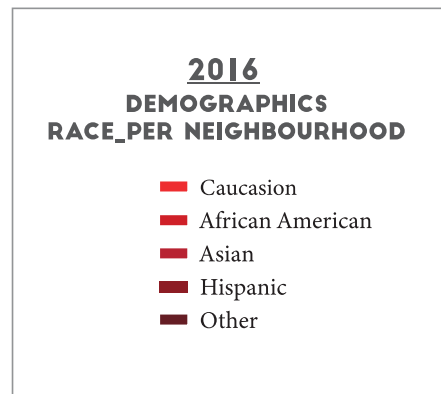
v.

Social Divide: "Yankees" vs. "Yuppies"

Gentrification — which has begun to emerge along Van Brunt Street and the western portion of Red Hook — is changing the identity of the traditionally working-class neighbourhood. A new IKEA, Fairway Market, ferry terminals, and the Gowanus Canal remediation project have attracted affluent residents to the neighbourhood. These newcomers are increasing the demand for housing in Red Hook, raising the living costs for all residents in the area and threatening to displace current residents. Further pressure is being applied by the new private-public ferry partnership between IKEA and the city of New York ferry services, while this service increases access to and from Red Hook, the price per ride and the irregular hours do not cater to the lower-income residents (Kisner and Lonoff 2017). In eastern Red Hook, the Gowanus Canal Remediation project has also attracted economic investment to the area, transforming what was a toxic wasteland to high demand real-estate. The remediation of the canal will increase the likelihood of future gentrification, furthering widening the socio-economic disparity between long-standing low-income residents and new affluent ones.



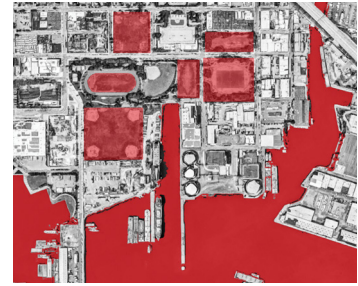
Economic Divide - Median Household Income in Red Hook and Carroll Gardens, 2016 (United States Census Bureau 2018)



Racial Divide - Race in Red Hook and Carroll Gardens, 2016 (data from United States Census Bureau 2018)

Urban Decay

Red Hook's industrial history has left many abandoned industrial buildings and landscapes along its waterfront (Berger 2006, 65). As the waterfront de-industrialized, the city began to imagine its future development, converting some sites for recreational and leisure activities. However, after soil testing in the 2010s, many of these fields have been shut down due to contamination (NYCDCP 2014a). For example, the Columbia Smelting and Refining Works contaminated an extensive area of the Red Hook fields rendering these unusable for residents until costly remediation is completed (Stapinski 2018).



The Red Hook recreational fields and adjacent bodies of water suffer from contamination due to a long history as an industrial port; red indicates contaminated sites. (Google Maps 2018a)

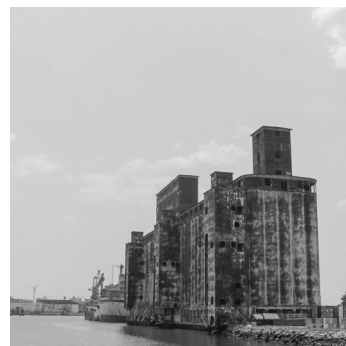
Similarly, the many hazardous chemicals dumped into the waters of Red Hook over the 19th and 20th centuries have rendered the Erie Basin, Gowanus Bay, and Gowanus Canal some of the most polluted waterways in the United States. Some efforts have been made to clean these, but much remains to be done (United States Environmental Protection Agency [USEPA] 2019).



Local community initiatives to improve the environmental conditions of the Erie Basin.

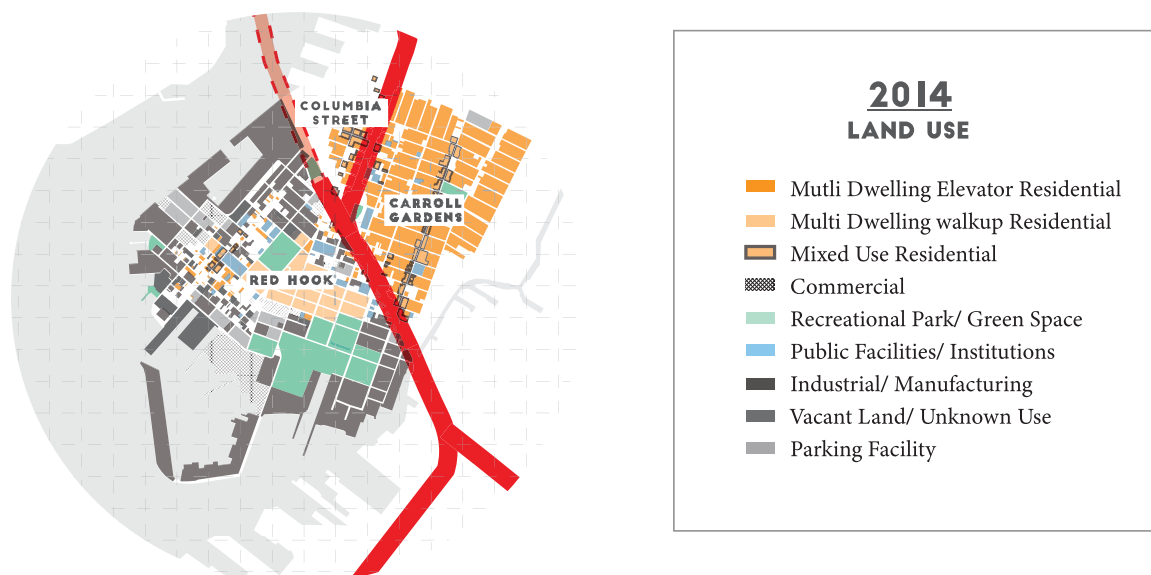
Red Hook also has a high vacancy rate, particularly of its industrial heritage buildings. The reason dates back to urban renewal projects that were implemented from the 1960s to 1990s, which entailed the purchase and demolition of industrial buildings, however, many of these properties were left undeveloped (Sze 2007, 128-9). Such vacant sites disrupt neighbourhoods and attract crime and unsafe activities (NYCDCP 2014b, 45). Such "blighted" spaces, however, also offer opportunities for imagination and innovation to take over. This thesis explores how the *terrain vague* might be a catalyst in the positive transformation of an area (Fialová 2003, 273).

Red Hook's isolation has resulted in neglected infrastructure and buildings which can be considered "*terrain vague*" or "in-between" spaces. *Terrain vague* can be helpful in understanding the potential of left-over spaces in urban development. Exactly because they are not actively used, valued or instrumentalized as part of the city, they have a potential to be imagined in completely new ways — ones that can "trigger" new directions or developments in urban planning and design (Fialová 2003, 273; Busquets 2003, 280). Red Hook abounds in such terrains vagues — underutilized areas such as vacant lots, abandoned buildings, contaminated outdoor spaces, and the margins of the Gowanus Expressway.



Vacant Grain terminals in Red Hook. This facility was vacated shortly after its completion due to economic decline in the neighbourhood.

"Drosscape" is a term coined by the landscape theorist Alan Berger, to describe a design pedagogy that emphasizes the productive integration and reuse of waste landscapes in urban settings (Berger 2006, 236). For Berger, "drosscapping" allows one to re-imagine wasted landscapes as catalysts that transform areas and the communities near them (237). Underutilized areas such as vacant plots of land, parking lots, and underpasses can be filled with programs that help



Stagnant Growth - Land Use in Red Hook, 2014 (New York City Department of City Planning 2014b, 19)

mitigate the effects of *terrain vague* and convert these spaces into productive and exciting locations (36).

A Thread of Hope: Emergence of Community Activism

The Gowanus Expressway's impact on Red Hook is still very present today — not only as an insurmountable physical barrier, but also as a social and economic barrier that continues to isolate and marginalize Red Hook and its residents.

As in many American cities, well-intentioned urban renewal projects have not been successful in overcoming these challenges. According to William Sites, this failure is due to a disconnect between state initiative and community involvement (Sites 2003, xvii). Nonetheless, Red Hook has a well organized and unified community voice, which speaks out to improve health and social conditions (Sze 2007, 129; Red Hook Initiative). Such local community groups represent a thread of hope for residents of Red Hook, advocating for recognition of unique identity of the district and improve extremely poor living conditions. According to Julie Sze,

For Bautista, based on his experiences in Red Hook, the city was a force of either neglect or active destruction that must be counterbalanced by community activism. (Sze 2007, 130)

Such activism has lifted the neighborhood out of despair. In the 1980s and 1990s, Red Hook suffered from “high crime and drug violence, poverty and unemployment, illegal dumping, and the decay of the built environment”. According LIFE Magazine, Red Hook was the “crack capital of America”. While residents of Red Hook have endured many hardships, the activism of community groups such as The Red Hook Initiative and Joseph Miccio Community Center are improving the quality of life in Red Hook (NYCDP 2014, 14).

CHAPTER 3: RE-URBANIZATION STRATEGIES

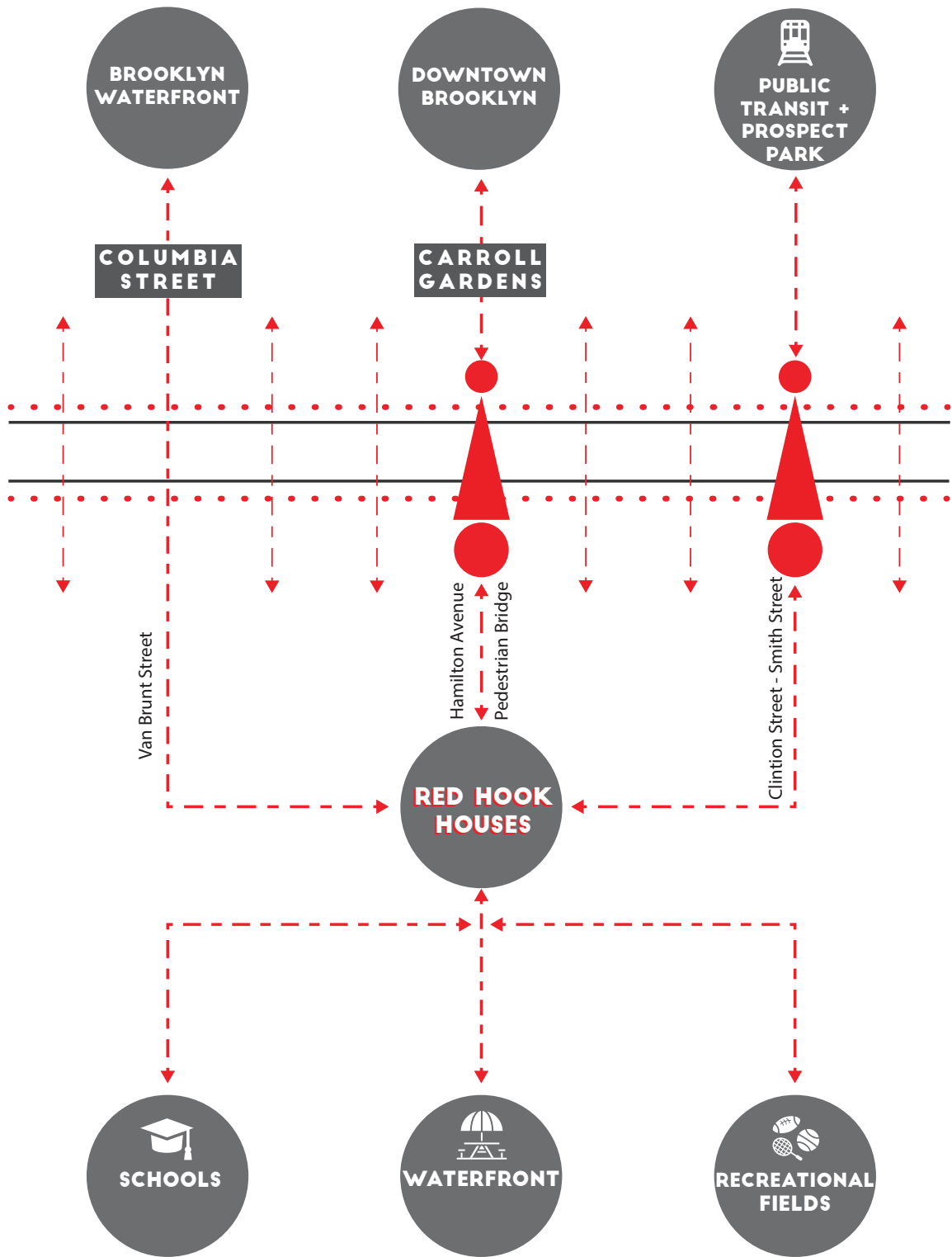
District Strategy: "Stitching the Divide"

Creating an Active Transportation Network

In order to reconnect Red Hook back to Brooklyn, this thesis proposes, at an urban scale, to greatly improve the active transportation network throughout the district. Connected to existing bike paths, and including major streets and landmarks, the waterfront, public transit hubs and passage across the expressway to Carroll Garden and the subway, a highly visible and well-developed active transportation network will improve local and regional connectivity, enhance street life, and improve social cohesion.

Within Red Hook, the armature will connect the schools, social housing projects, commercial storefronts on Van Brunt Street, recreational fields, ferries, and waterfront access along the Erie Basin. Improving accessibility to common destinations ensures that the new infrastructure will serve residents' needs and be heavily used. The placement of Red Hook Houses as the heart of the network will ensure that the majority of population has easy access to the infrastructure.

Outside of Red Hook, the armature will connect across the Gowanus Expressway to common commercial and leisure hubs such as the Brooklyn Waterfront, downtown Brooklyn, the Smith-9th Street subway station, and Prospect Park. This cycling and walking network will also bring more visitors into Red Hook from surrounding communities.

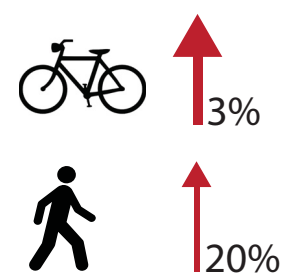


Unifying Framework. This diagram shows the urban strategy that connects local and regional destinations. The Gowanus Expressway is identified as a major threshold that will require additional exploration in order to ensure the usage of the transportation infrastructure is utilized.

The armature will be comprised of: a) bike lanes and pedestrian pathways separated from vehicles when necessary, b) street lighting to foster a safe streetscape at night, and c) vegetation for beautification and as a buffer between pedestrians and vehicles. Spaces provided along the armature can be programmed or used by adjacent activities (e.g. commerce, sport, education) to create a more enjoyable street experience and a safer, more populated, street. These continuous programmatic nodes will enhance the experience of moving along the network to and from destinations (Kent 2007).

Impact on Urban Revitalization and Social Connectivity

Implementation of an active transportation network will contribute to revitalization of Red Hook's streets, making them safer to travel along, more active and populated, and punctuated with unique and location-specific activities. It will link Red Hook with its historic waterfront and its open spaces and parks, and incentivize remediation of the polluted Red Hook Recreational Fields. This system will attract visitors from across Brooklyn, to experience the New York Harbour.



Strengthening active transit systems into Red Hook (New York City Department of City Planning 2014b, 25)

An active transit network, linked to public transportation infrastructure, also serves as a space for the “social commons” — one which all people can access and are welcome (MIT 2016, 20). Developing the commons is critical in districts that have suffered from segregation (16). A strengthened “social commons”, enjoyed by a variety of social classes, helps lower income youth to thrive and develop (Semuels 2016), and contributes to a sense of unity within the neighbourhood (Hayden 1997, 45).

Active Transportation Case Study: Superkilen Park in Copenhagen, Denmark (2012)

A relevant urban design precedent — which shows how active transportation infrastructure can transform a terrain vague train corridor into a unifying social commons for a fragmented neighbourhood — is Superkilen public park in Copenhagen, designed by the arts group Superflex in collaboration with the architecture firm BIG and landscape architects Topotek 1 (ArchDaily 2012).

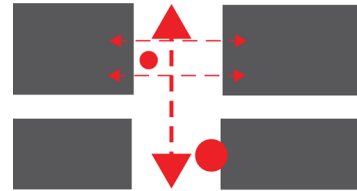
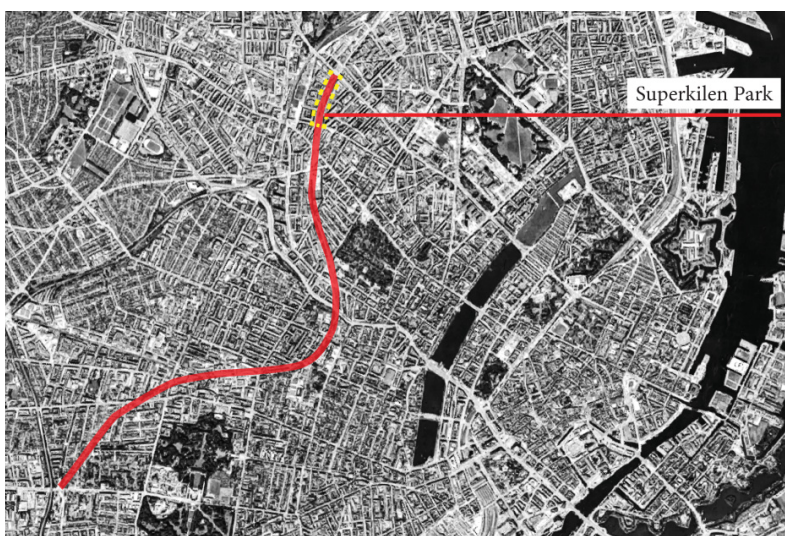


Diagram of Superkilen Park connectivity, programmatic anchors, and context

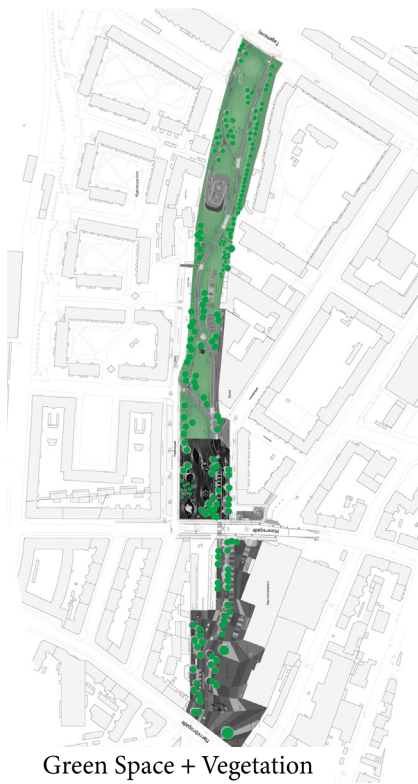
In this project, opened in 2012, the designers repurposed an inactive train corridor to engage local residents in a social commons. The park has three distinct zones, unified through active transportation, vegetation, and lighting. It caters to a great demographic variety through the provision of various activity nodes along the length of the park. “Red”, “Black”, and “Green” squares respond to diverse community needs and activities. Learning from Superkilen park, this thesis proposes a unified active transit armature populated with activity nodes that vary to meet more specific and variable community activities (ArchDaily 2012; Realdania 2018).



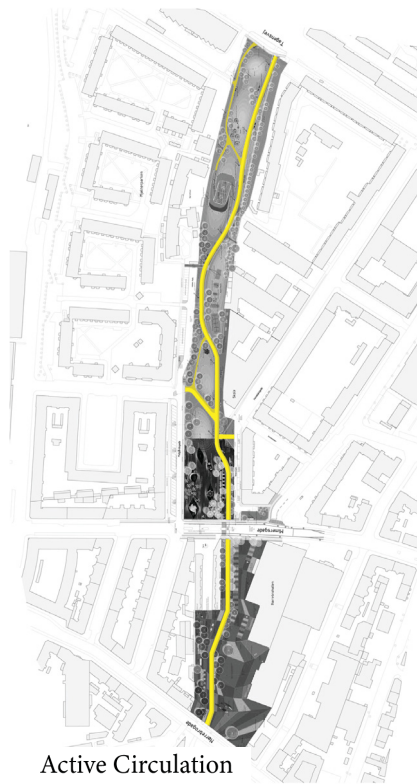
Red Square. One of 3 distinct areas in Superkilen (ArchDaily 2012)



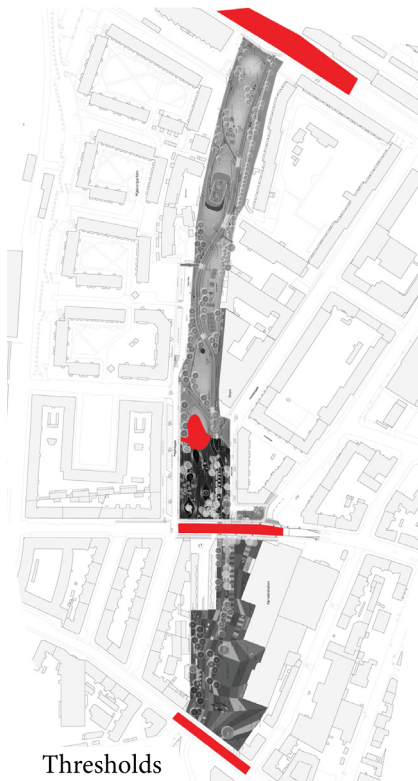
Superkilen Park, Copenhagen. The park anchors a repurposed urban train corridor that now serves as an active transportation corridor. (Google Maps 2019a)



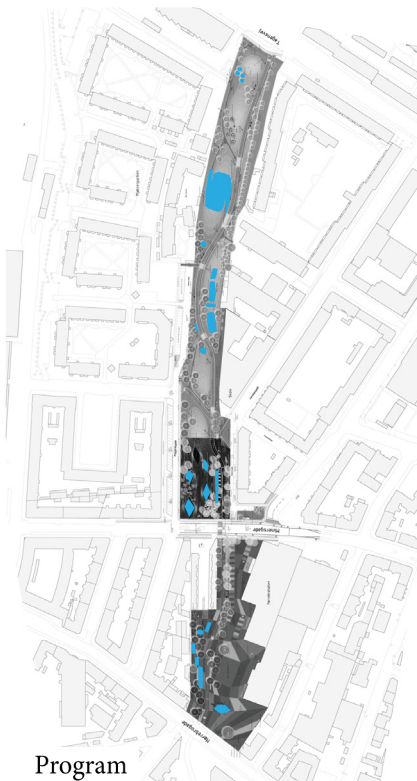
Green Space + Vegetation



Active Circulation



Thresholds



Program

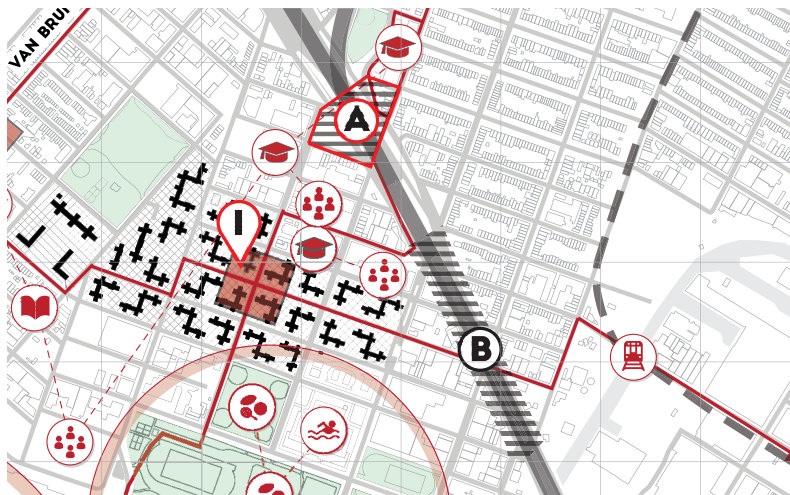
Consistent urban park infrastructure includes landscape elements, bicycle and walking throughout Superkilen. These elements create a consistent language that unifies the three areas of the park. (ArchDaily 2012)

Highway Strategy: "Breaking Down the Barrier"

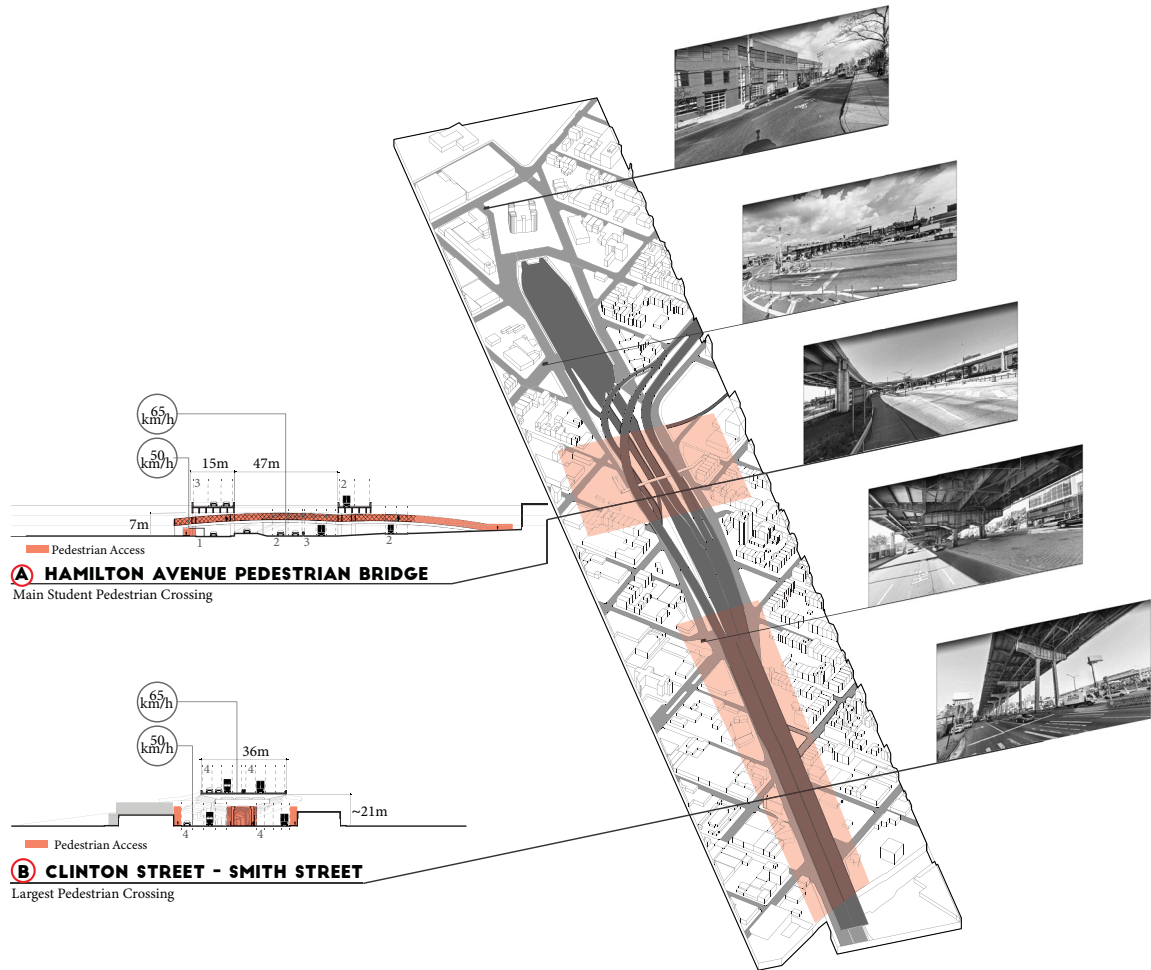
The Gowanus Expressway is the main contributor to Red Hook's disconnection from Brooklyn. Before the expressway was built, Hamilton Avenue was a commercial street full of community activity, but today it is desolate, engulfed by traffic noise and pollution, and crisscrossed with on- and off-ramps which impeded movement across Hamilton Avenue (Caro 1974, 523).

Re-Connect Across the Gowanus Expressway

To re-urbanize this zone, and re-connect Red Hook to Carroll Gardens, it is essential to find a way to make passage across the expressway easy, inviting, and readily visible. One possibility is to depress the freeway, but this is an expensive and therefore unlikely municipal investment. Instead, this thesis proposes a surface passage across the expressway, which would be universally accessible to pedestrians and cyclists. There are only a few points which could accommodate a surface crossing — a) near the current Hamilton Avenue pedestrian bridge, and b) at the intersection of Clinton and Smith Streets.

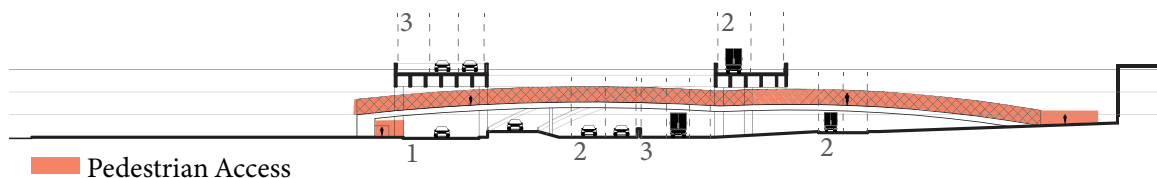


The Gowanus Expressway intervention sites A and B: Hamilton Avenue pedestrian bridge and the Clinton to Smith Streets crossing.



The existing experience of the Gowanus Expressway, locating crossing opportunities at Sites A and B (Google 2018b)

The Hamilton Avenue pedestrian bridge is the only pedestrian bridge across the Gowanus expressway, linking Red Hook and Carroll Gardens. It is intensively travelled by students travelling in both directions, but the bridge is in a state of disrepair — with poor lighting, harsh materials, confined spaces, poor sight lines, safety concerns, and noise and air pollution (NYCDP 2014b, 75-6). The second crossing location — intersection of Clinton and Smith Streets — forms the largest at-grade pedestrian crossing under the Gowanus Expressway. Many Red Hook residents use this crossing to reach the subway station, making it a vital connection between Carroll Gardens and the rest of Brooklyn. Both crossings are engulfed in the vehicular realm. For them to be re-imagined as effective and inviting crossings, a bold vision is required. Small remedies will not be sufficient to repair the disconnect wrought by the Gowanus Expressway.



Section across the expressway at the Hamilton Avenue pedestrian bridge

To overcome and counteract the inertia of a terrain vague — particularly one that has created such a strong disconnection and vacuum as the Gowanus Expressway — Irena Fialová argues that to overcome the inertial resistance, one must look back to the history of the place and the primary cause of the disconnection:

“If this resistance is too strong, which means in other words that the transformation idea is too weak, I think we should wisely leave the area to the creativity of future generations”.
(Fialová 1996, 273)

She suggests that a powerful concept is needed, one that is sensitive to the memory, history, and identity of a place.

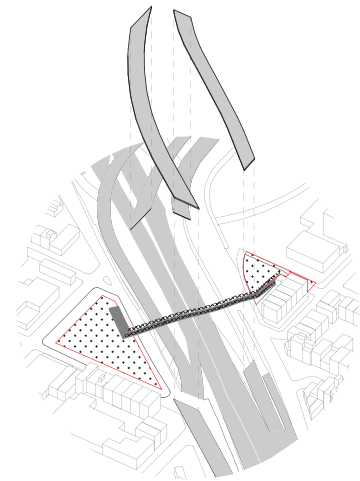
Re-Establish the Urban Fabric

For this thesis, I have chosen to focus on one site as a case study into how one can cross the Gowanus Expressway and reconnect Red Hook back to Brooklyn — the site of the existing Hamilton Avenue pedestrian bridge. To cross the expressway, a small pedestrian bridge is — in Fialová’s words — “too weak” of an idea to generate a transformation (both actual and perceptual) of this urban condition. A stronger idea is required.

One possibility is to draw from the “memory of place.” According to Dolores Hayden, people’s lives and experiences of their neighbourhood are linked to the urban landscape as it has changed over time. She also argues that designers can call on the features of historical urban landscapes as a powerful tool to nurture public memory and foster feelings of belonging — even in newly-designed settings (Hayden 1997, 46-7).

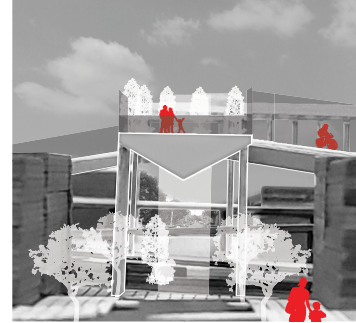
One of the most characteristic and important historical urban landscape features in Red Hook is the urban street grid. The grid is shared by Red Hook, Carroll Gardens, and in fact, all of New York City. It provides the fundamental armature for street navigation, and it serves as the social commons for all social classes. Ruptured by the creation of the Gowanus Expressway, its re-introduction at points of crossing will establish prominent and legible gateways into Red Hook (Lynch 1960, 2).

This thesis proposes to bridge the Gowanus Expressway with a highly visible pedestrian/cyclist bridge which is aligned with the historical street grid, as an extension of Henry Street. Pedestrians descending Henry Street towards Red Hook



Existing Hamilton Avenue pedestrian bridge crossing

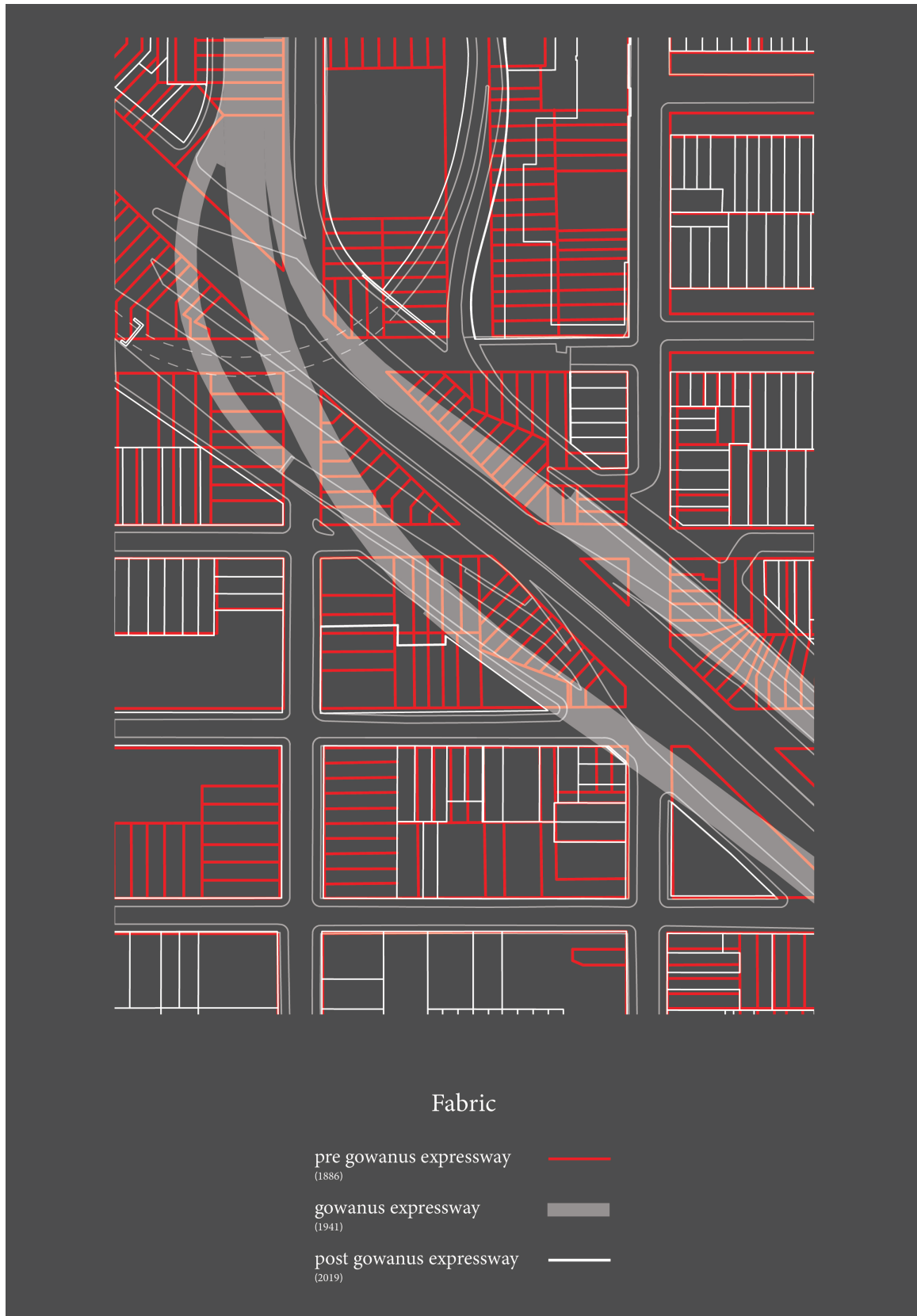
would encounter an elevator at the sidewalk, just before the Gowanus Expressway. Ascending this elevator, they would cross the bridge — at the other end, they enjoy a panoramic view of Red Hook and the waterfront from a projecting look-off, before returning to street level by one of two options: a gradual descent down a grand public stair through the adjacent public library, or directly to the street via a second elevator.



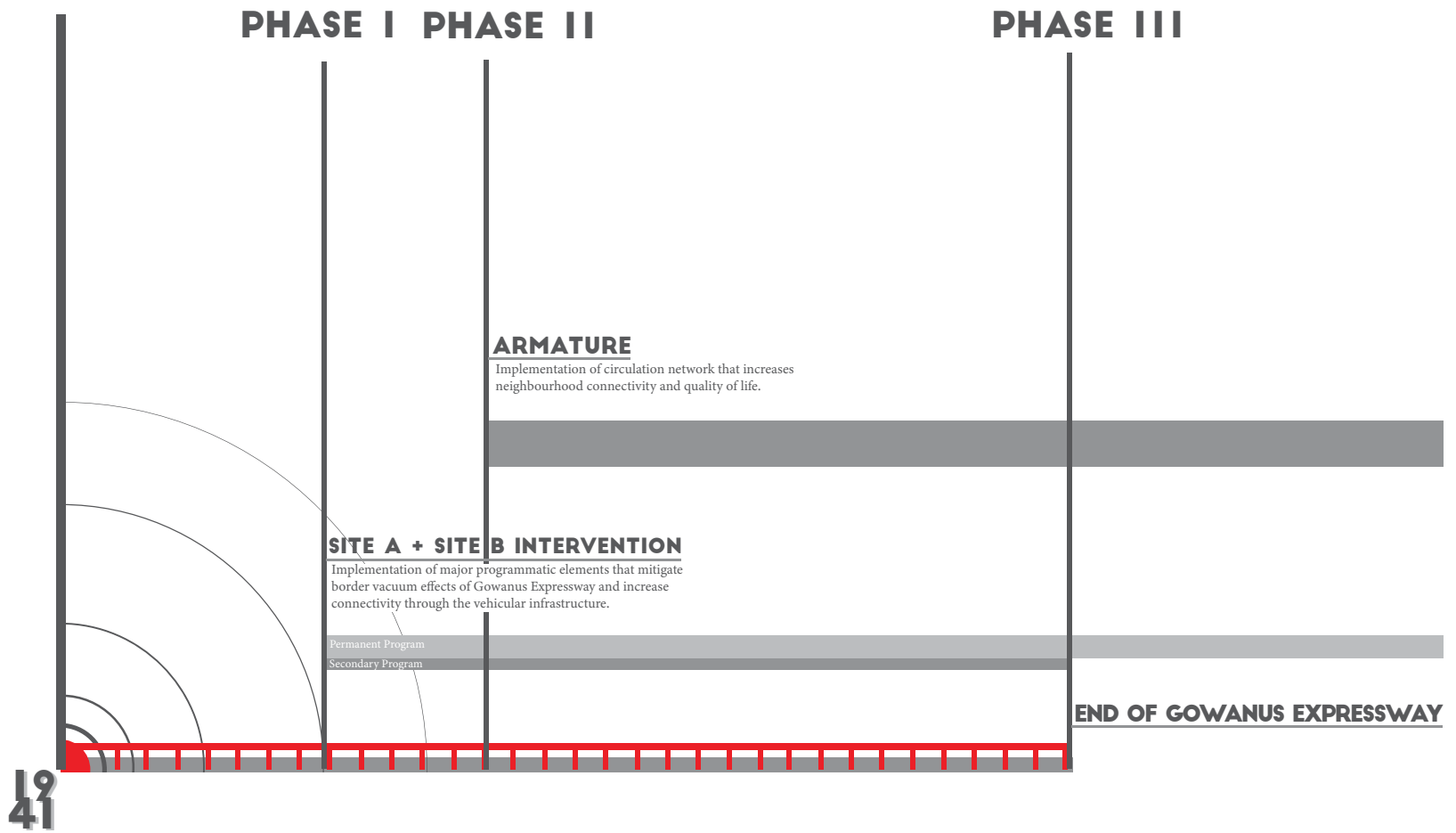
Bridge access from Henry Street in Carroll Gardens



Hamilton Avenue and Rapeyle Street, 1940. Before the construction of the Gowanus Expressway (Brooklyn Public Library 1940)



Urban Fabric. This framework guides the site strategy. It illustrates Red Hook's historic street grid in relation to current site conditions (data from The New York Public Library 1884)



Past, Present, Future. A phasing timeline that considers the relationship of urban and Gowanus Expressway interventions and their relationship to the temporary vehicular infrastructure.

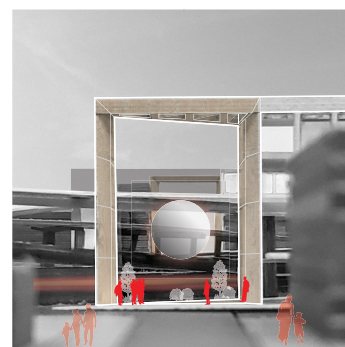
Re-Populate the Void

In creating a new active transit link across the Gowanus Expressway and developing it in alignment with the historic street grid, it is also critical to consider the adjacent building uses and activities at this “bridge” between Red Hook and Carroll Gardens. Appropriate social and public building programme is essential to attract and support pedestrian traffic across the expressway. The public building would need to attract a broad demographic that is diverse in ethnicity, gender, age, economic background, and so forth (Jacobs 1992, 259).

The proposed program anchor for the Hamilton Avenue crossing is a large branch public library, connected to local community initiatives and nearby schools. The current library in Red Hook is outdated with minimal amenities, and strategic investment in a new facility will directly integrate youth, health, community development, education, and recreation. It will also attract non-residents to Red Hook.

The library would also operate outdoor public art spaces. These “cultural portals” would be venues for short term art installations and events; they will support the social and cultural exchanges so characteristic of the New York City art scene and attract locals as well as audiences from outside of Red Hook. Aligned with Luquer Street on either side of the Gowanus Expressway, the portals will also serve as landmarks of Red Hook — they will be visible to expressway commuters, serve as a reminder of the historic street grid and lost urban fabric, and re-populate Hamilton Avenue.

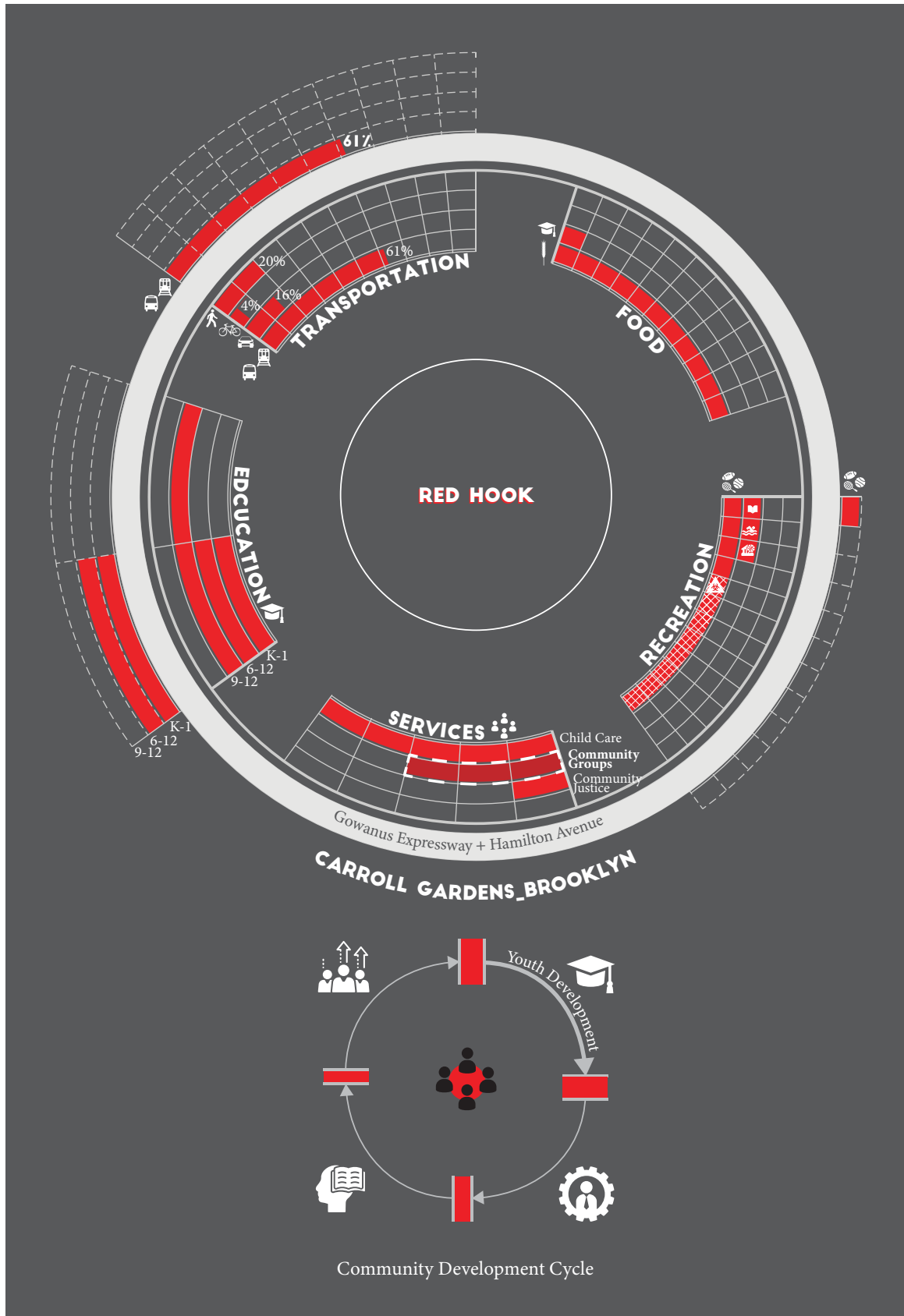
The pedestrian/cyclist bridge is also populated with secondary programme elements, largely related to adjacent activities,



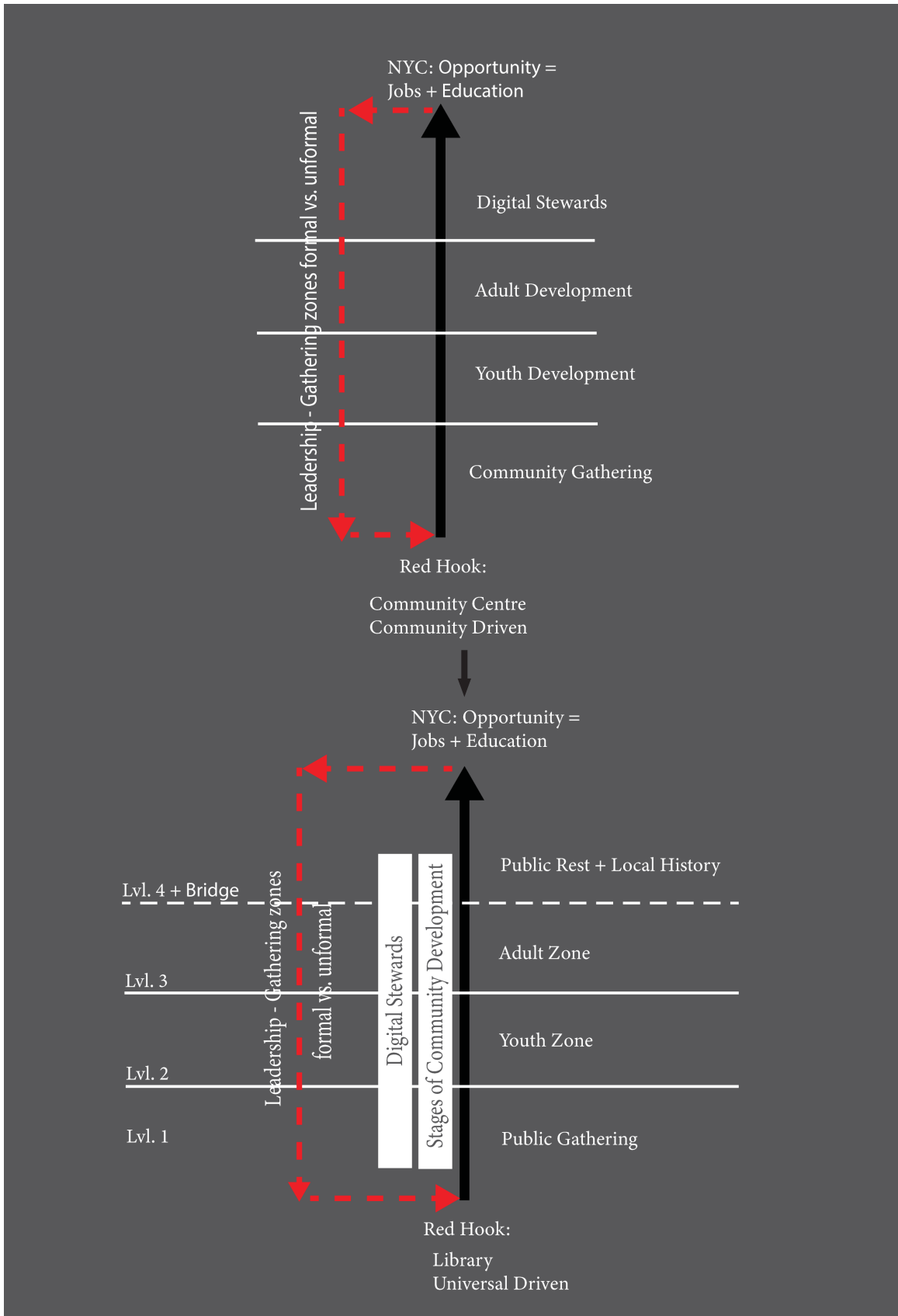
Short term art installation in the Red Hook Cultural Portal

e.g. the nearby schools and library, art installations, the green corridor used by cyclists, and of course, the Gowanus Expressway. These programs will act as an extension of the public library. Three zones — a study zone, mixing zone, and greenway — are designed to appeal to different user groups, to ensure that everyone has a place on the bridge, continuous usership and a safe journey. The zones also help to reduce the monumental scale of the bridge to a human-oriented scale. The bridge's design is carefully considered to control the sound, light, and views of the Gowanus Expressway, so that the bridge is a pleasant place to spend some time. Walls, night time lighting, and vegetation also ensure a safe crossing.

This thesis adopts the site of the Hamilton Avenue pedestrian bridge as its design focus, but entirely reimagines this vital connection as an experiential and inviting anchor point between Red Hook and Carroll Gardens, connected to a new public library. Together, the library and event space, cultural portals, and activated pedestrian bridge will be a catalyst in re-populating the void caused by the Gowanus Expressway.



Program Development. Library space supports community activism



From community centre to library space. Developing a universal program for a public corridor

Re-Population Case Study: A8ernA in Koog aan de Zaan, Netherlands (2003-2006)

A relevant urban design precedent — which shows how a desolate freeway underpass can be transformed into a focal point for community leisure and commerce — is the A8ernA park and community facilities in Koog aan de Zaan, a small city just northwest of Amsterdam, within the commuter corridor to that city. Designed by NL Architects, this project aimed to reconnect two neighbourhoods that were ruptured with the construction of the A8 elevated expressway and, relevant to this thesis, it introduced a rich mix of public and civic activities to attract a diverse and active public to this once neglected area (Baratto 2013).

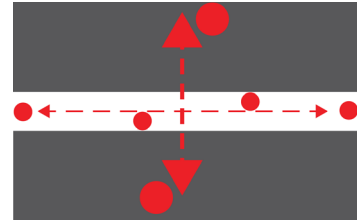


Diagram of A8ernA connectivity, programmatic anchors, and context

The 7 meter height under the freeway was tall enough to permit for occupied spaces beneath the structure. To identify what kinds of public programming would be effective in transforming this space — which had been underused for 30 years — into an attraction, the designers held community workshops. The outcome was to divide the underpass into zones, each of which attract a different demographic — a



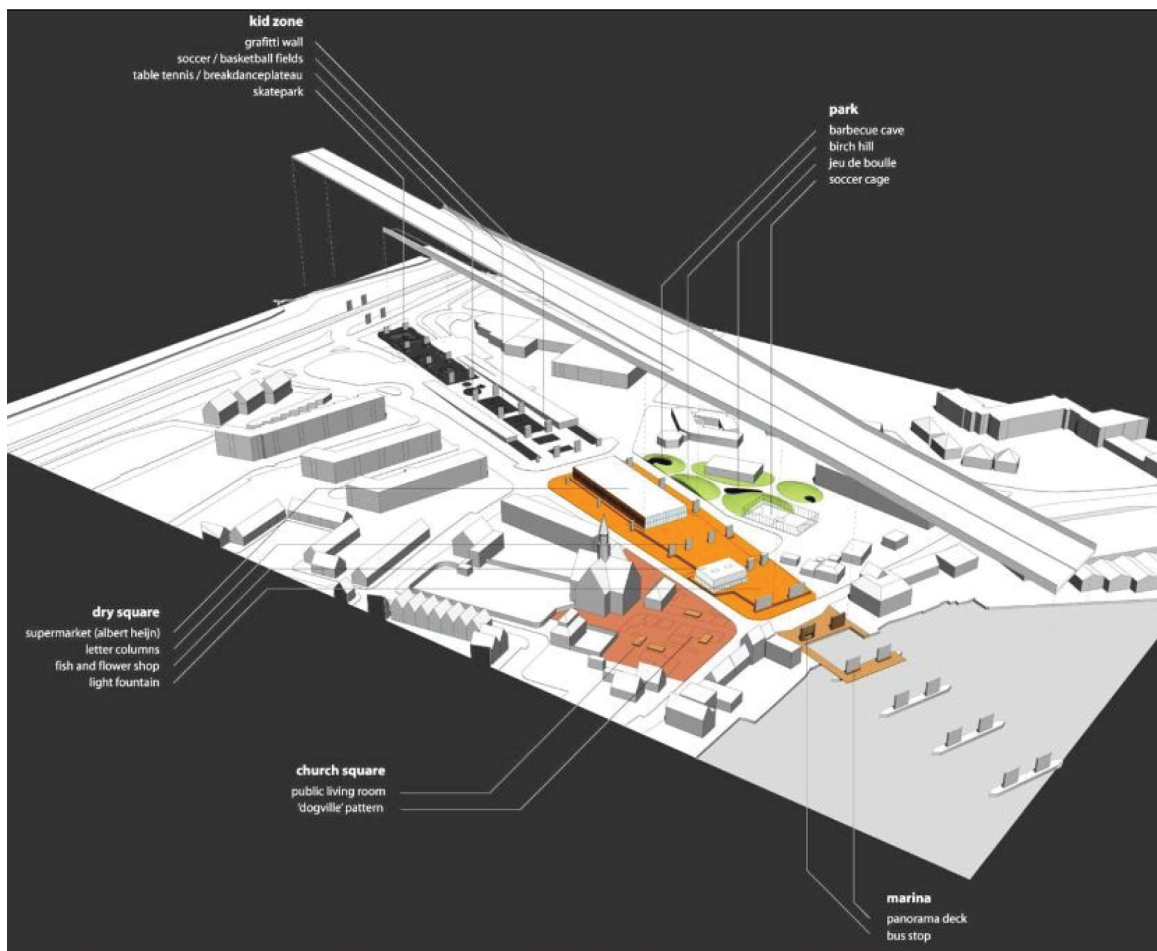
Repurposed underpass of A8ernA (Baratto 2013)

Kids Zone, Park, Dry Square, Church Square, and a Marina — ensuring that the street level is busy day and night. Each zone actively connects with its adjacent neighbourhood, and reduces users' awareness of the overhead traffic, through a thoughtful coordination of programmed activity, daylight and electric light, use of building and ground materials and vegetation. The result is a terrain vague put back into use and transformed into a comfortable and welcoming urban environment (Baratto 2013).



Neighbourhoods ruptured by the A8 expressway, Koog aan de Zaan, Netherlands. (Google Maps 2019b)

Learning from A8erna, this thesis incorporates a rich variety of programs to attract wide use, and to reduce the apparent scale of the Gowanus Expressway.

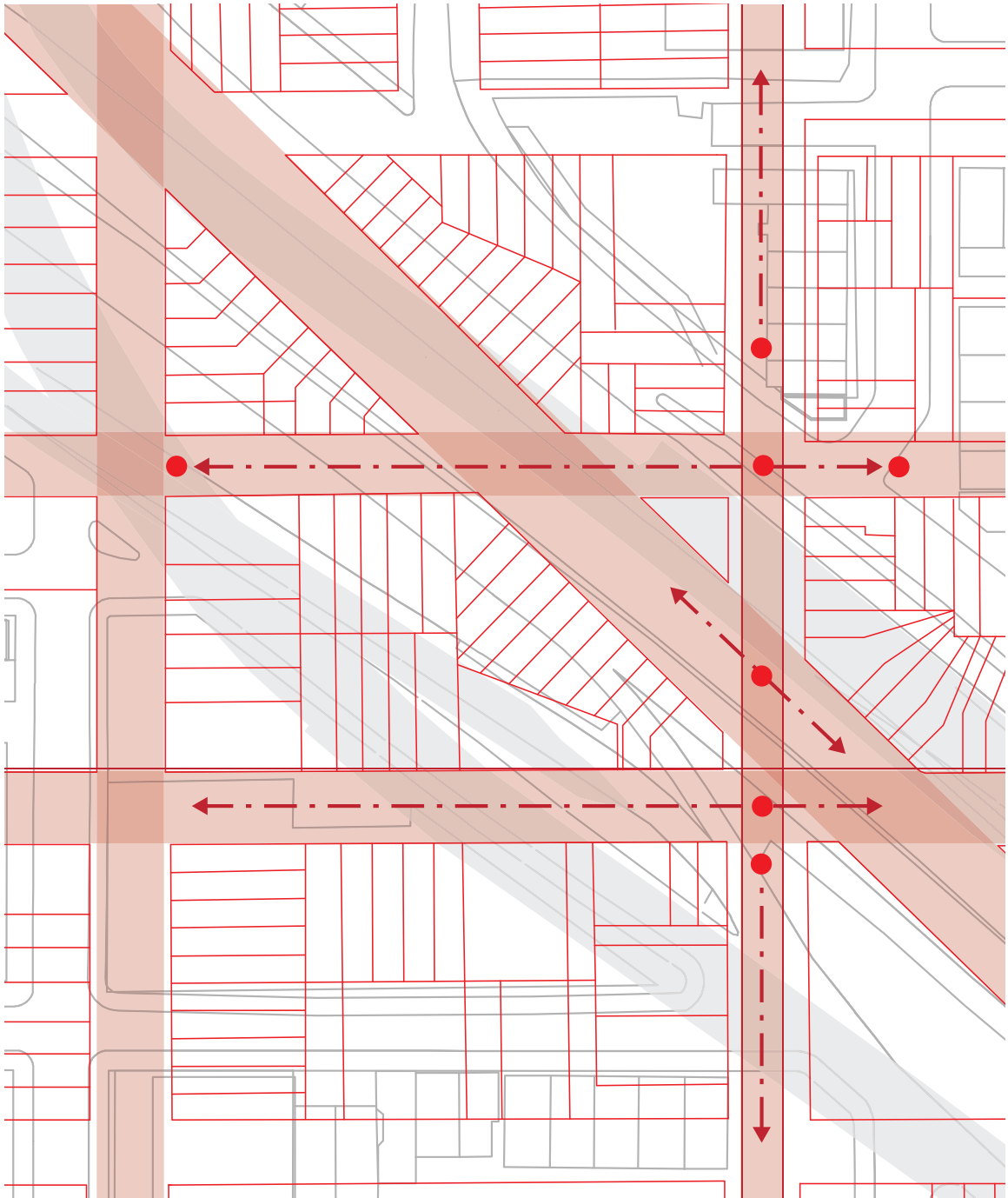


A8erna's programmatic zones break down the monumental size of the underpass to a more human scale. (Baratto 2013)

(Re)Connect: The People

The existing pedestrian bridge is located off the street grid, making it difficult to find and navigate around. Re-aligning the bridge with the historic grid, along Henry Street, will improve its visibility and urban continuity. “An edge may be more than simply a dominant barrier,” writes Kevin Lynch, “if some visual or motion penetration is allowed through it — if it is, as it were, structured to some depth with the regions on either side. It then becomes a seam rather than a barrier, a line of exchange along which two areas are sewn together” (Jacobs 1992, 267). The connection will re-affirm that Red Hook is part of Brooklyn (Lynch 1960, 106). The physical connection will be achieved through elevators, bike lanes, and stairs, ensuring the bridge will be universally accessible day and night through continuous access.

Visual connections can also help break down barriers, where physical connections are not possible. When combined with public programming, they are even more effective in connecting ruptured neighbourhoods and patching activity across *terrains vagues*. The visual connections proposed in this thesis include the raised pedestrian bridge, the cultural portals, and the glass-enclosed public stair that descends the library facade along Nelson Street.



Physical and visual connections can be re-established, using Red Hook's historic streetscape (data from The New York Public Library 1884)

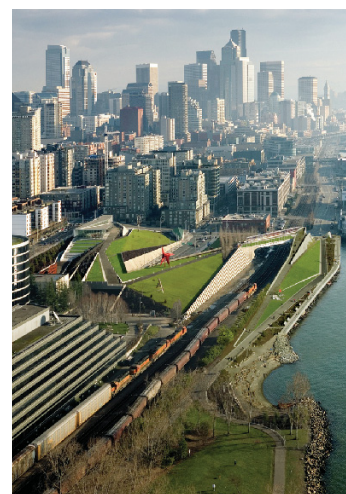
Re-Connection Case Study: Olympic Sculpture Park, Seattle, WA (2007)

One well-known urban design precedent, which reconnects urban districts ruptured by transportation infrastructure, is Olympic Sculpture Park in Seattle, Washington. This project, designed by Weiss Manfredi is a hybrid building, bridge and park that cuts across a major freeway and a heavily used rail line with an extension of the municipal art museum and a public art park. The park allows for public access across both pieces of infrastructure, reconnecting downtown Seattle to its waterfront. Residents enter the park via the museum (programmatic anchor) that serves as a gateway to the park. A pathway (bridge) guides the users over the freeway and rail lines while offering views of the city, the waterfront, the site, and of course, the art. The landscaped park buffers visitors from transportation infrastructure, creating an enjoyable experience that is natural, soft and welcoming (Minner 2011).

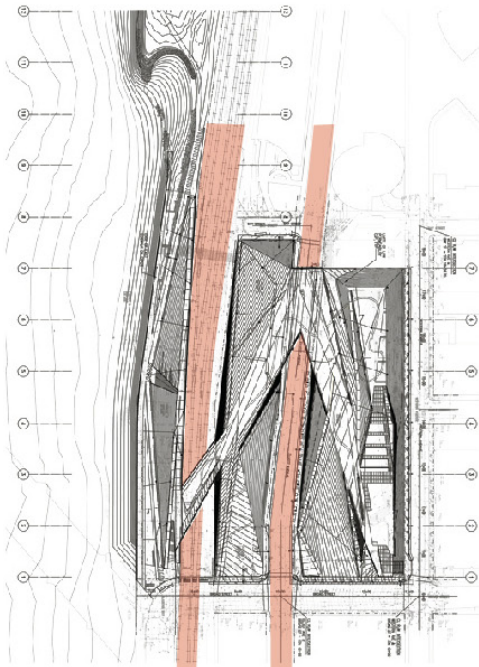
This thesis also uses some of the features of Olympic Sculpture Park. The library serves as a programmatic anchor leading to the pedestrian bridge, the bridge is also designed with activities and carefully selected views, and the library garden is protected from freeway sound by a large freestanding glass wall — which provides visual connections while rendering the freeway silent.



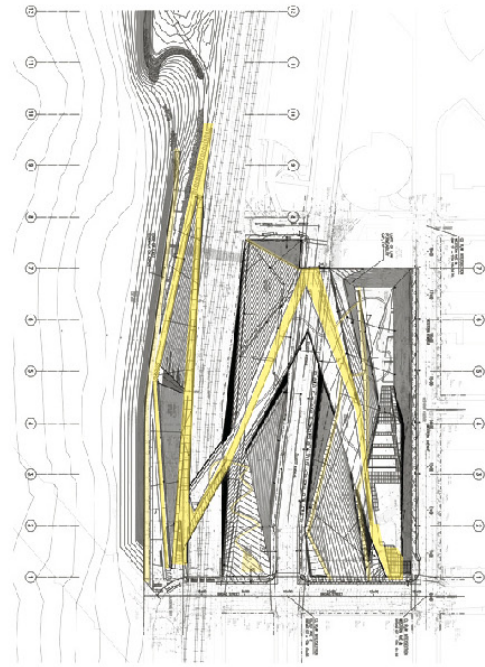
Diagram of Seattle Olympic Sculpture Park connectivity, programmatic anchors, and context



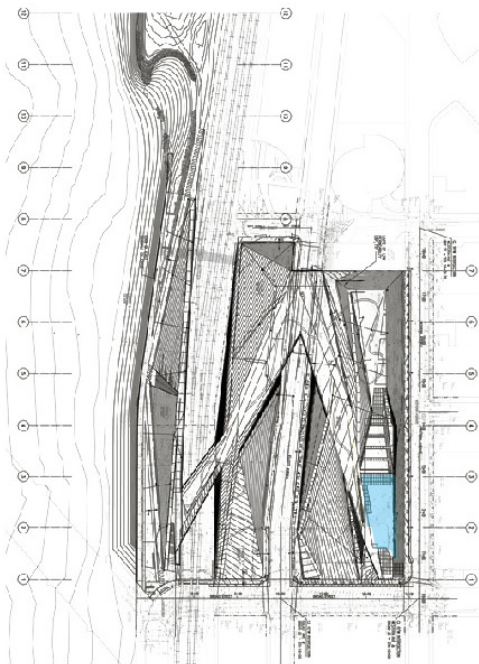
Buffer zones protect pedestrians crossing highway and rail lines to reach the waterfront. Photograph by Benjamin Benschneider (Minner 2011)



Problematic Threshold



Pedestrian Circulation



Programmatic Anchor



Green Space Buffer Zone

CHAPTER 4: DESIGN PROPOSALS

Active Transit Network as a Unifying Armature

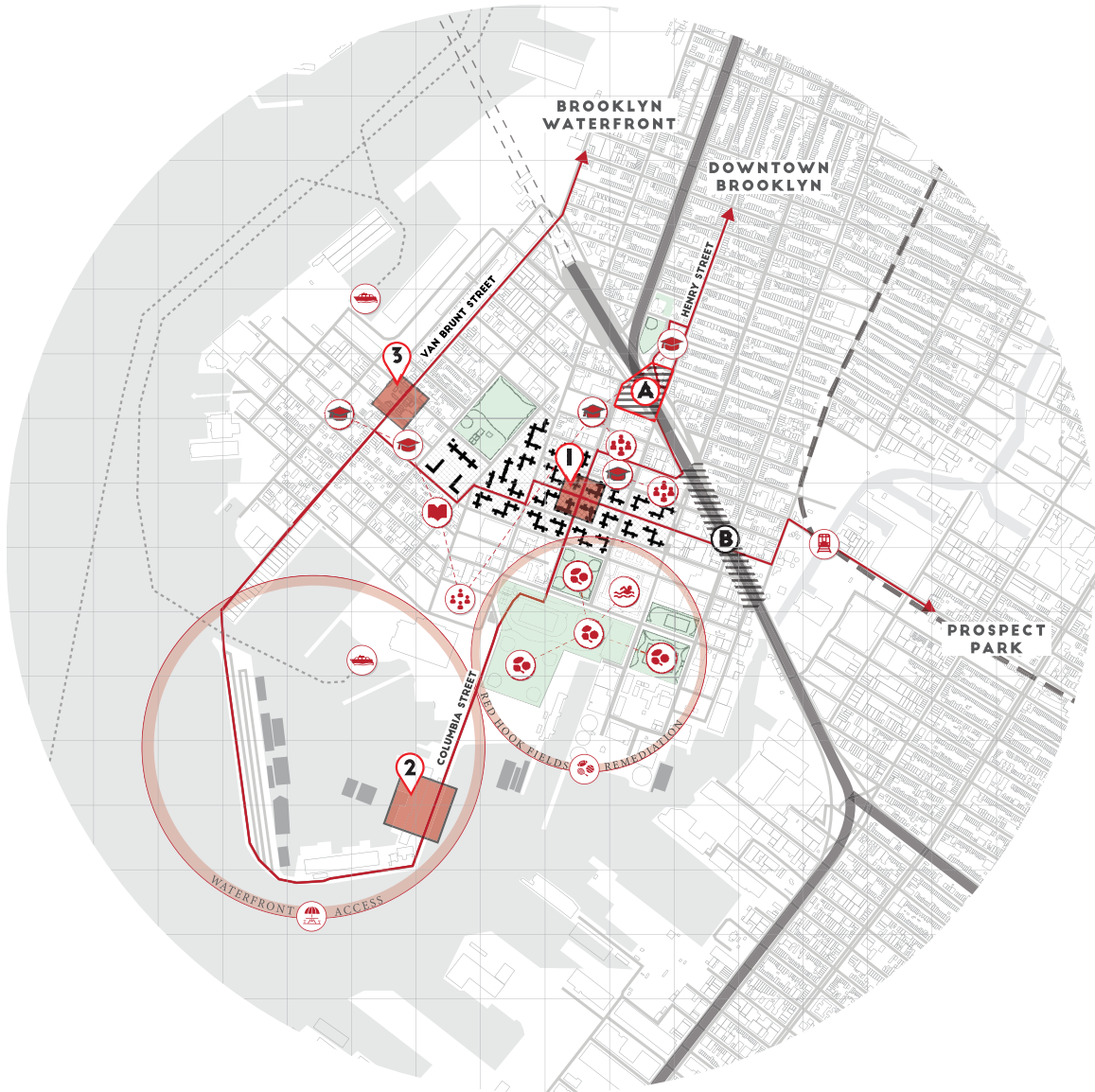
The active transportation network forms a unifying armature to knit Red Hook back to Brooklyn, creating active transit corridors and associated public spaces. It will increase pedestrian traffic on all of Red Hook's streets, and support cycling that is linked to district greenways and public parks, connecting Red Hook up to the regional systems.

To inform the design of the armature, three distinct areas in Red Hook have been selected for development of this system: a social housing district, the waterfront zone, and a heavily used mixed-use and commercial street (Van Brunt Street).

Active Transit Corridors

An East-West active transit corridor extends eastwards across the Gowanus Expressway to the Smith-9th Street subway station in Carroll Gardens, and to the west, it links Red Hook Houses to the schools and Van Brunt Street. This corridor establishes Red Hook Houses as the focal point of active transit in Red Hook, ensuring lower-income residents can use this new infrastructure.

A North-South active transit loop connecting Van Brunt Street to Columbia Street along the Gowanus Bay and back onto Henry Street, links Red Hook outwards to the Brooklyn Waterfront, Carroll Gardens, downtown Brooklyn and Prospect Park. Within Red Hook, it links up the Red Hook Houses, commercial streets, schools, the recreational fields and the waterfront. On the waterfront, the loop is completed at the Erie Basin, by repurposing a car impound lot into public space, providing continuous circulation throughout Red Hook.







STITCHING THE DIVIDE

RED HOOK_BROOKLYN






INTERVENTION

-  Armature/Active Transportation
-  Primary Intervention
-  Destinations/ Amenities
-  Armature Callout

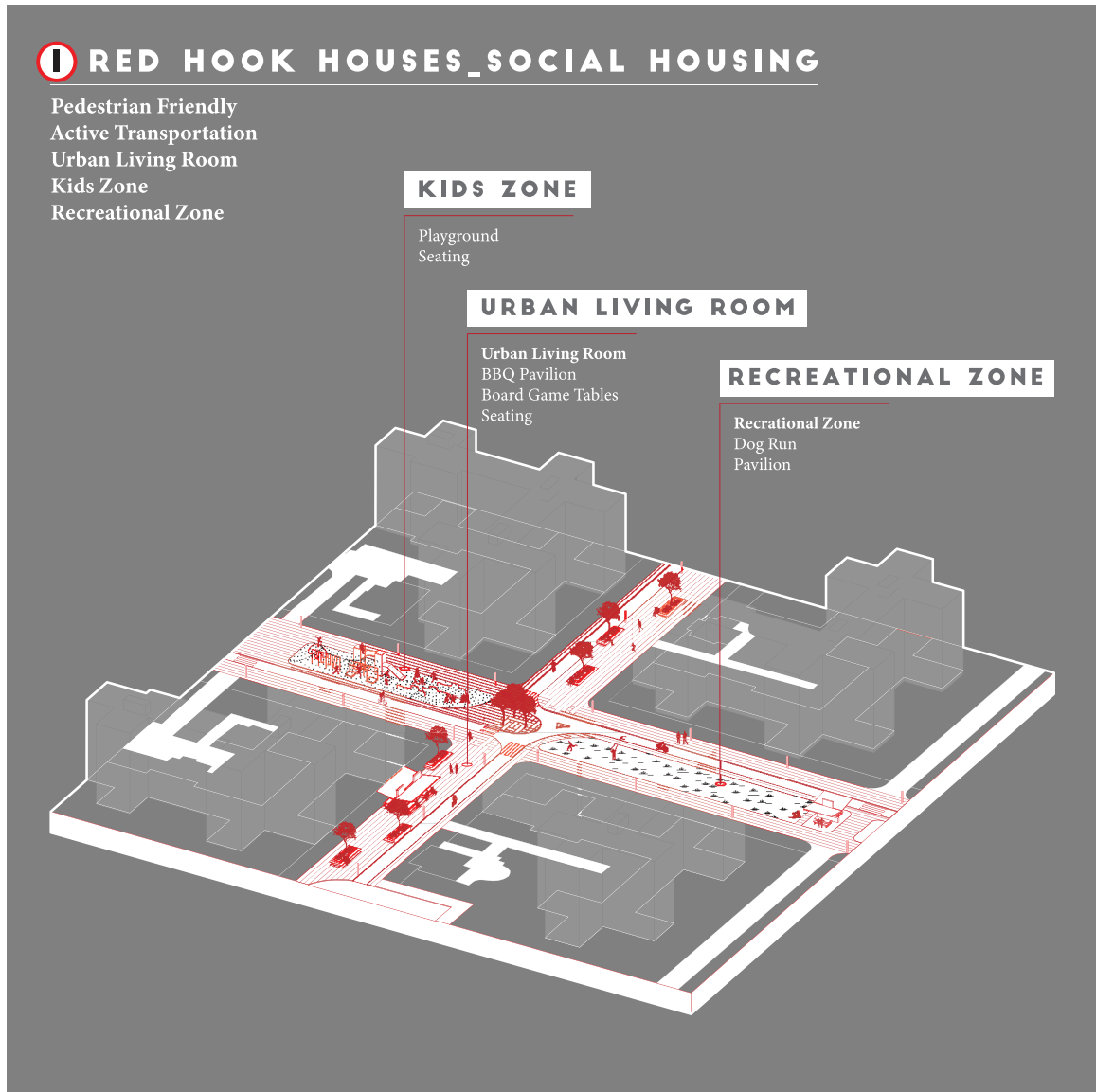
SOCIAL HOUSING

-  Red Hook Houses

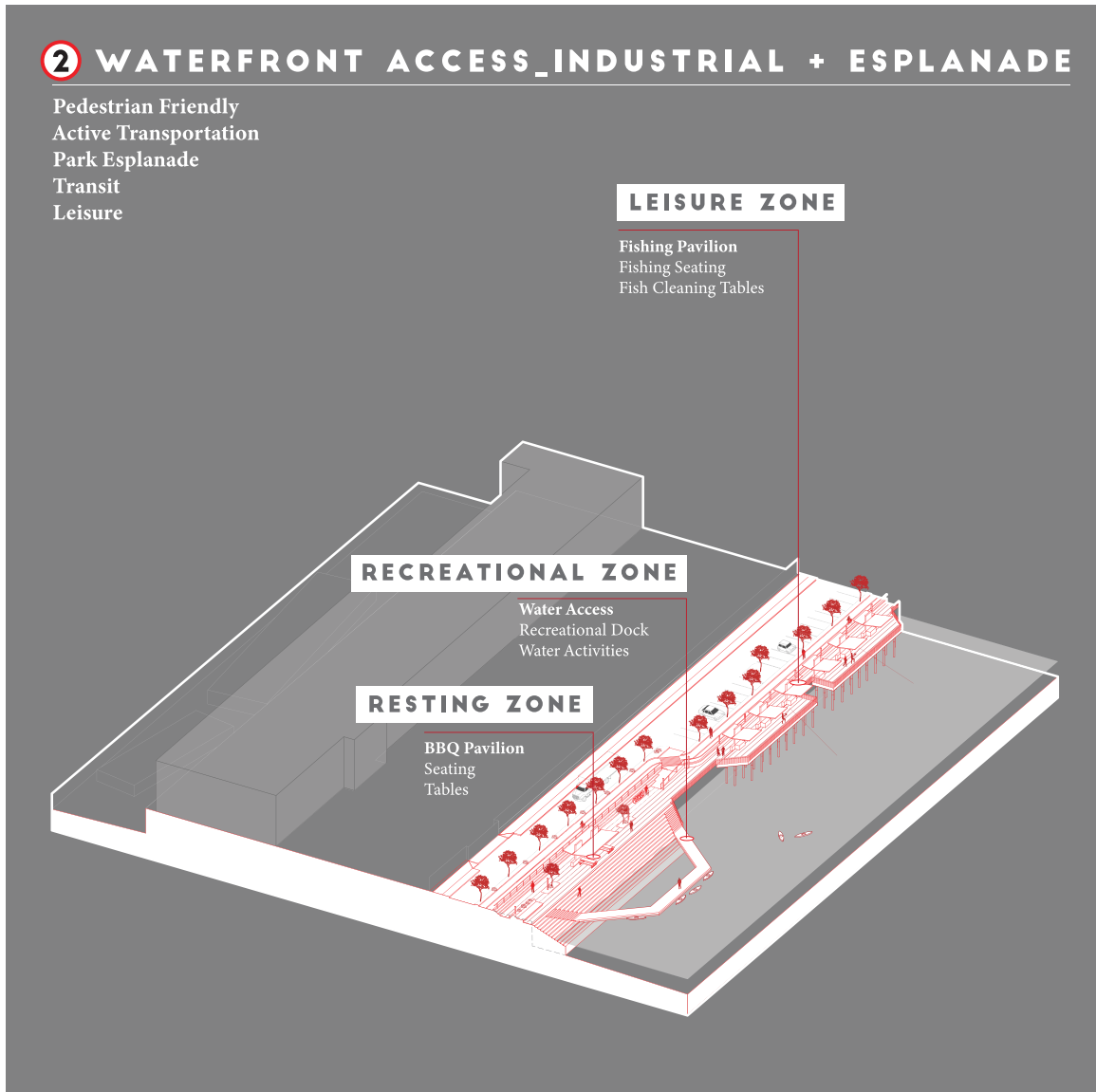
EXISTING TRANSPORTATION

-  Vehicular Infrastructure/ Gowanus Expressway
-  Ferry Pathway
-  Train Pathway

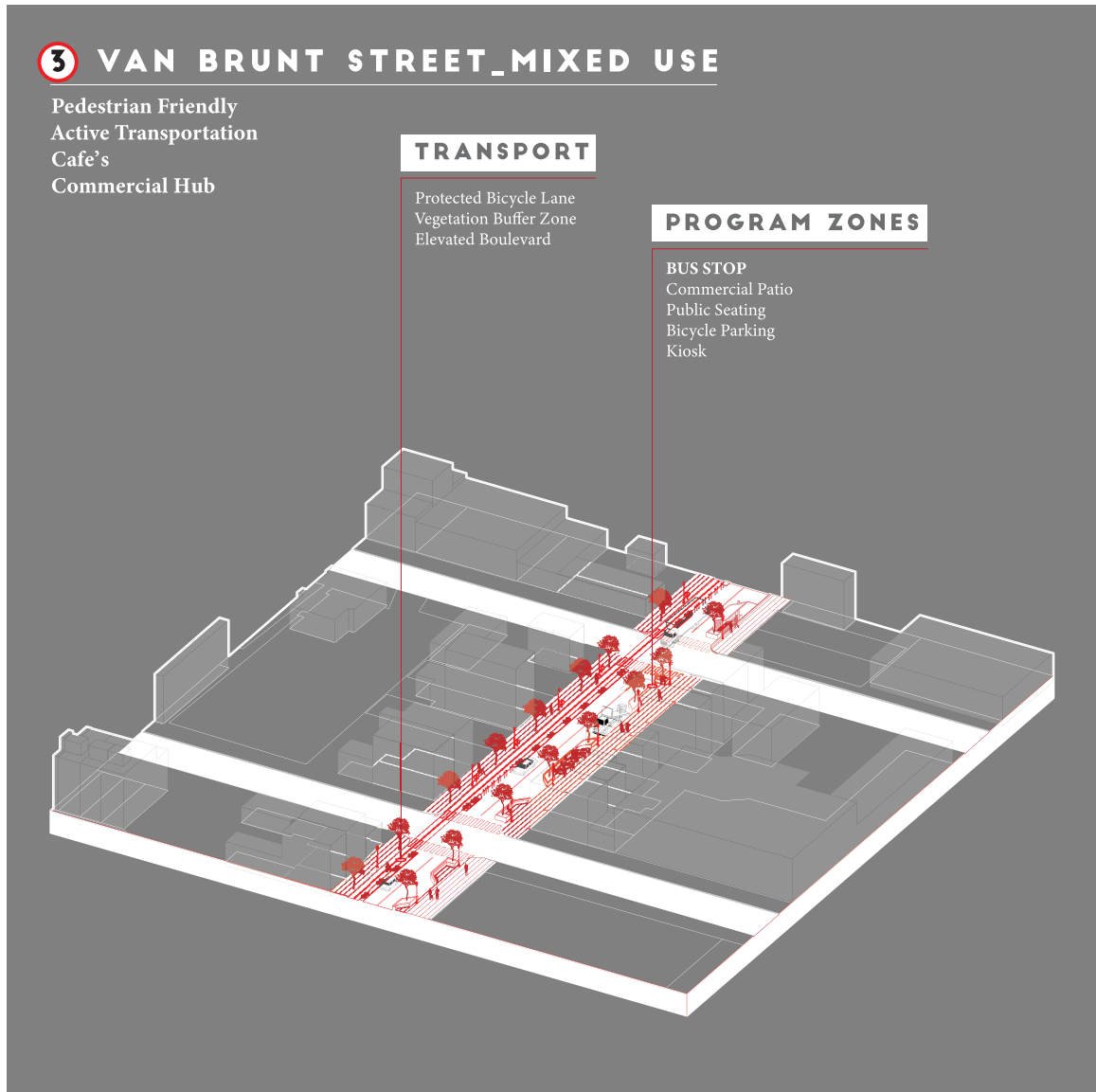
Stitching the Divide. The unifying framework that stitches Red Hook back into the city fabric of Brooklyn and New York City



Red Hook Houses – social housing. The social housing complex of Red Hook Houses is located in the heart of the active transportation network. Here, the E-W and N-S active transit corridors intersect, affirming Red Hook Houses as the heart of the neighbourhood.



Waterfront Access – industrial, leisure, and tourism. Red Hook residents need access to their waterfront. It was the reason for the community’s settlement, it provides a window onto New York’s harbour, and it accommodates most of Red Hook’s park and leisure spaces. Improved waterfront access will also attract visitors into Red Hook, both from Brooklyn and from Manhattan, on the ferry.



Van Brunt Street – commercial and mixed use. Revitalizing Van Brunt Street will transform a vehicle-dominated commercial street back to a pedestrian-friendly street, that is inviting for Red Hook residents and visitors.

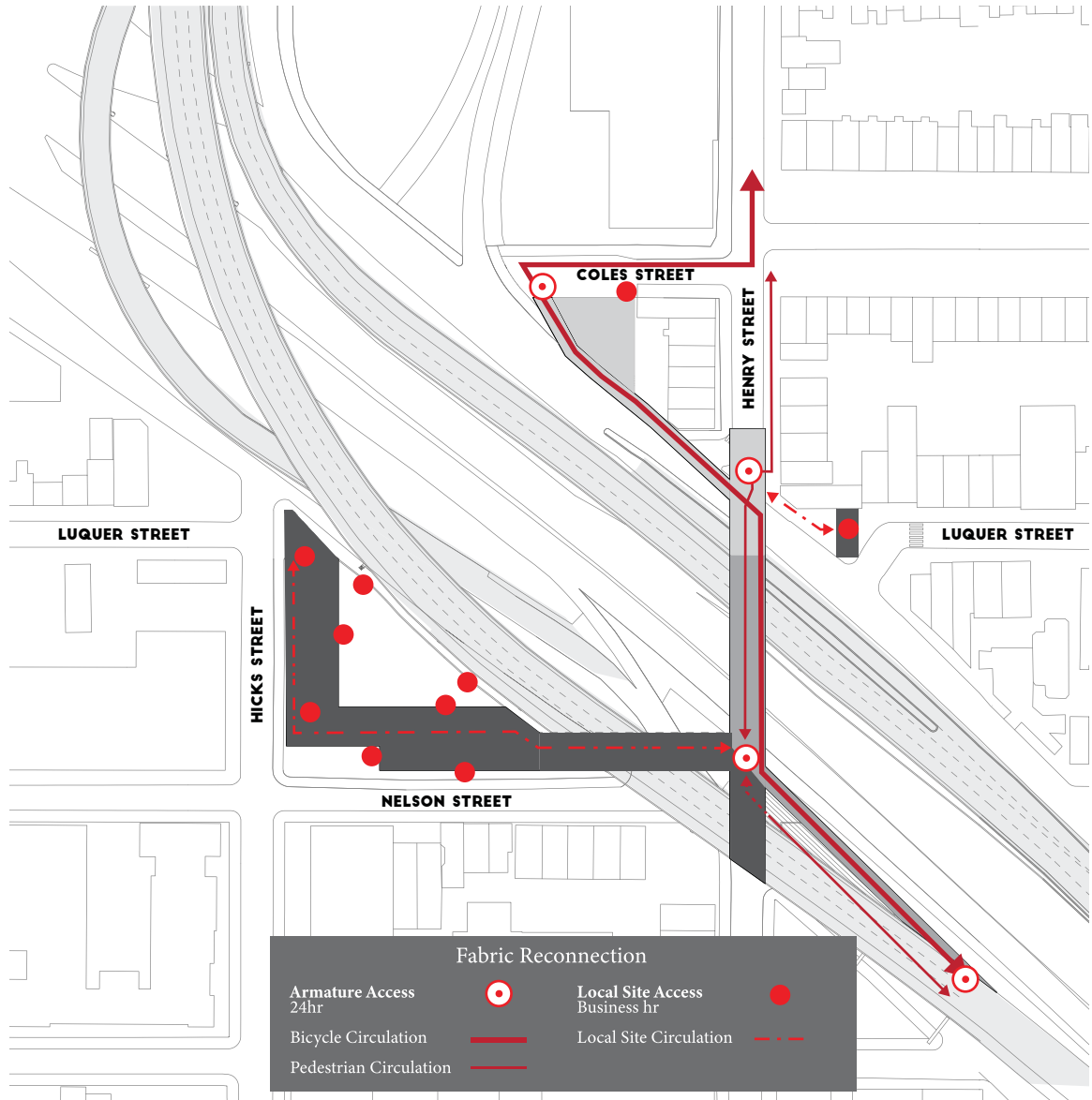


Van Brunt Street – Section. A consistent set of design elements (bike lanes, widened sidewalks, vegetation, and lighting) can improve the pedestrian and cyclist's experience of the street. Heterogeneous program elements enable adjacent uses to integrate and benefit from the new street infrastructure.

Building Design

Fabric Reconnection

Re-establishment of the historical city grid is an essential precondition for reconnecting Red Hook to the rest of Brooklyn. While complete resurrection of the street grid would only be possible if the expressway were tunnelized, this thesis proposes that the street grid be used to re-establish several pedestrian crossing points along major circulation arteries. These would be physical bridges or strongly defined surface crossings at Van Brunt, Henry, and Centre Streets; and landmark visual linkages at Luquer, Henry and Nelson Streets. Resurrecting the historic grid allows new development in Red Hook to make use of the historical fabric to overcome the isolating and anti-urban effects of 20th century transportation infrastructure. Nelson Street, Hicks Street, Luquer Street, Cole Street, and Henry Street will be repaired through visual and physical connections of the intervention. The library and its associated public spaces form the programmatic anchor for the project. It connects to public schools on each side of the expressway, and would serve as an extension of school/ educational programming for students and the general public.



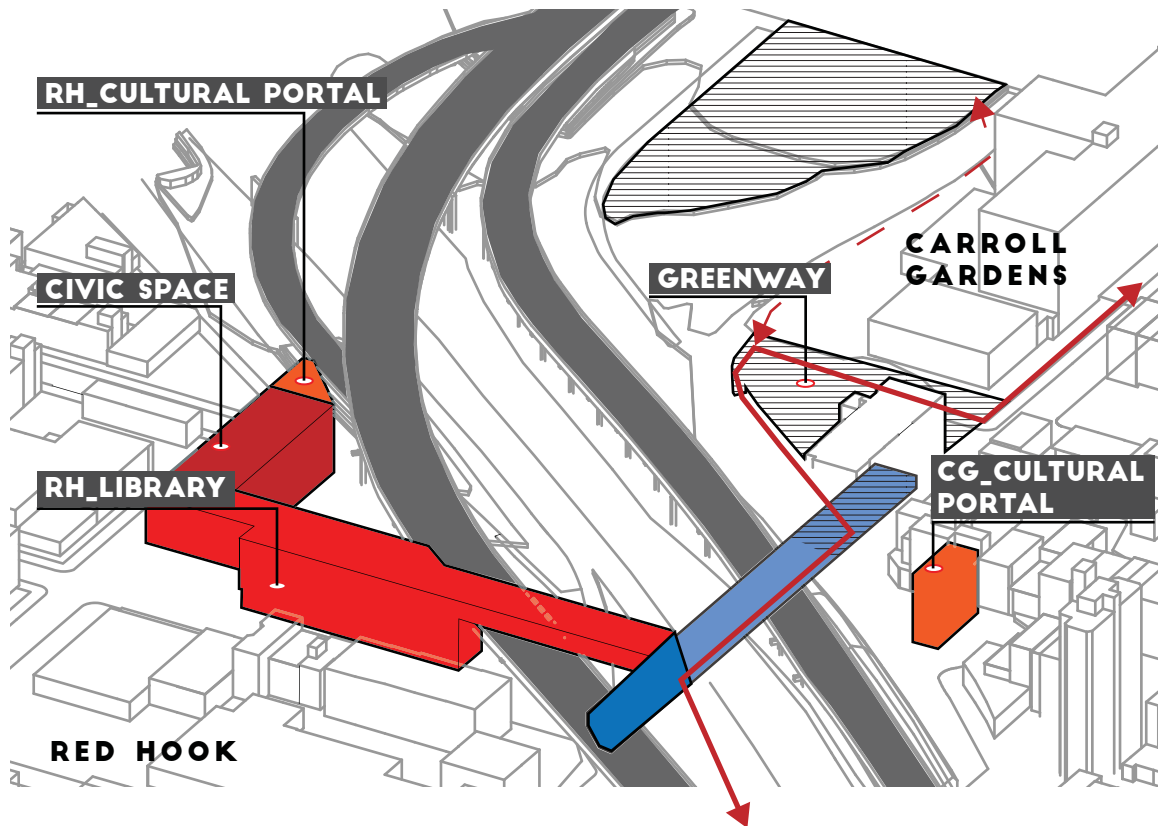
Fabric Reconnection. This diagram illustrates how the crossing strategy repairs the historic fabric while improving local connectivity through pedestrian and bicycle circulation. The strategy consists of 3 components: programmatic anchor, bridge, and cultural portals, all of which help break down the barrier and reconnect Red Hook back to Brooklyn and New York City. The 3 components will simultaneously repair the streetscape along Nelson Street, Hicks Street, Luquer Street, Cole Street, and Henry Street.

Program: Library and Bridge Programming

The library and its associated public spaces form the programmatic anchor for the project. It connects to public schools on each side of the expressway, and would serve as an extension of school/educational programming for students and the general public.

The main level of the library is dedicated to public gathering and library services, the second level is for children, youth and school programming, the third level is focused on adult education and community initiatives, and the fourth floor — which offers pedestrian access to the bridge — is for leisure, views and Red Hook history. Each floor is provided with meeting rooms and informal gathering areas, making a variety of meeting spaces for library users.

Public programming continues along the bridge — a study zone, a mixing zone, and a greenway will attract a diverse user group to the crossing, ensuring that the bridge is continually populated and therefore safe to use. In the study zone, an enclosed theatre that is accessible 24/7 serves as a programmatic anchor for the bridge; the mixing zone has picnic tables and BBQ spaces for family use; and the greenway is envisioned as an extension of the Brooklyn's park and greenway network, providing shade, seasonal variety and delight. Continuous activities on the bridge ensure that it is safe day and night.



PROGRAMMATIC INTERVENTION

PROGRAMMATIC ANCHOR

■ RED HOOK LIBRARY	■ CIVIC SPACE	■ CULTURAL PORTAL
Youth Centre	Flexible Event Space	Rentable Outdoor Space
Lvl.4 Public-Rest-Local History	Auditorium	Art Installation
Lvl.3 Adult Zone	Art Space	Pavilion
Lvl.2 Kids Zone	Library Office Space	Lookout
Lvl.1 Public Gathering		

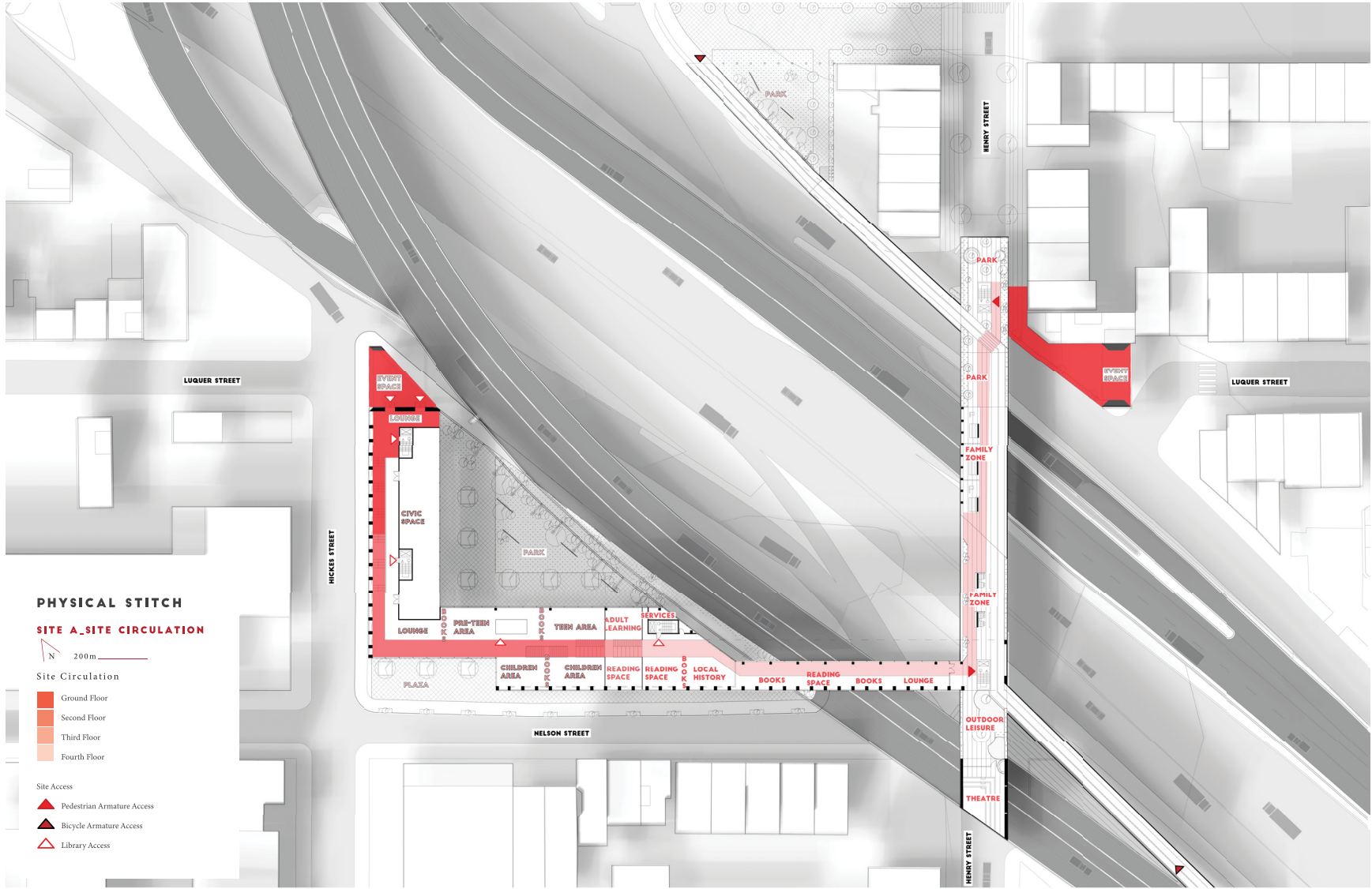
ARMATURE EXTENSION

■ STUDY ZONE	■ MIXING ZONE	≡ GREENWAY
Bridge Program Anchor	Gathering Space	Expanded Park Network
Study Space	Resting Space	Recreation
Resting Space	Look Outs	Dog Run
Viewing Space	Light Program	Resting
Theatre	Vegetation	
	Art Installation	

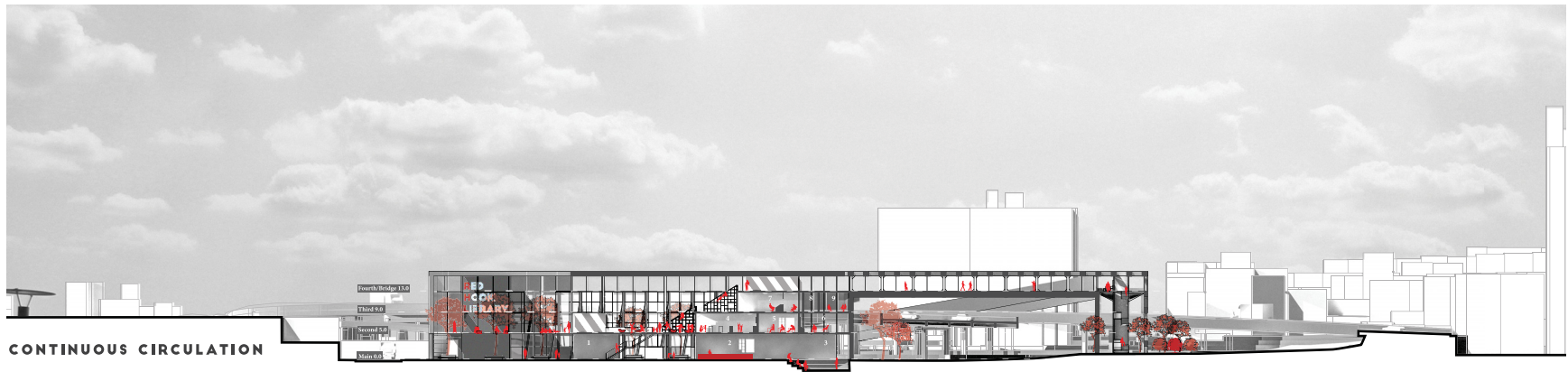
Programmatic Intervention. The public programme of the thesis site — the library as an anchor supports a variety of activities that mitigate the border vacuum effects of the Gowanus Expressway.

Urban Circulation

The bridge is an extension of the active transportation network, making crossing the expressway easy, safe, and delightful; and improving urban connectivity. It will be open and universally accessible path 24/7 through the use of elevators, protected bike lanes, walkways, and stairs. By incorporating the all-hours public circulation network into the library, walking to Carroll Gardens becomes a more social experience — one that engages with local history, and brings pedestrians into contact with community members in the library and along the bridge. Buffer zones made of glass and landscaping will protect travellers from the expressway noise and fumes. This continuous pathway will greatly improve the daily experience of crossing the Gowanus Expressway.



Physical Stitch – Plan of pedestrian bridge and public path through library



CONTINUOUS CIRCULATION

SITE A_LIBRARY SECTION

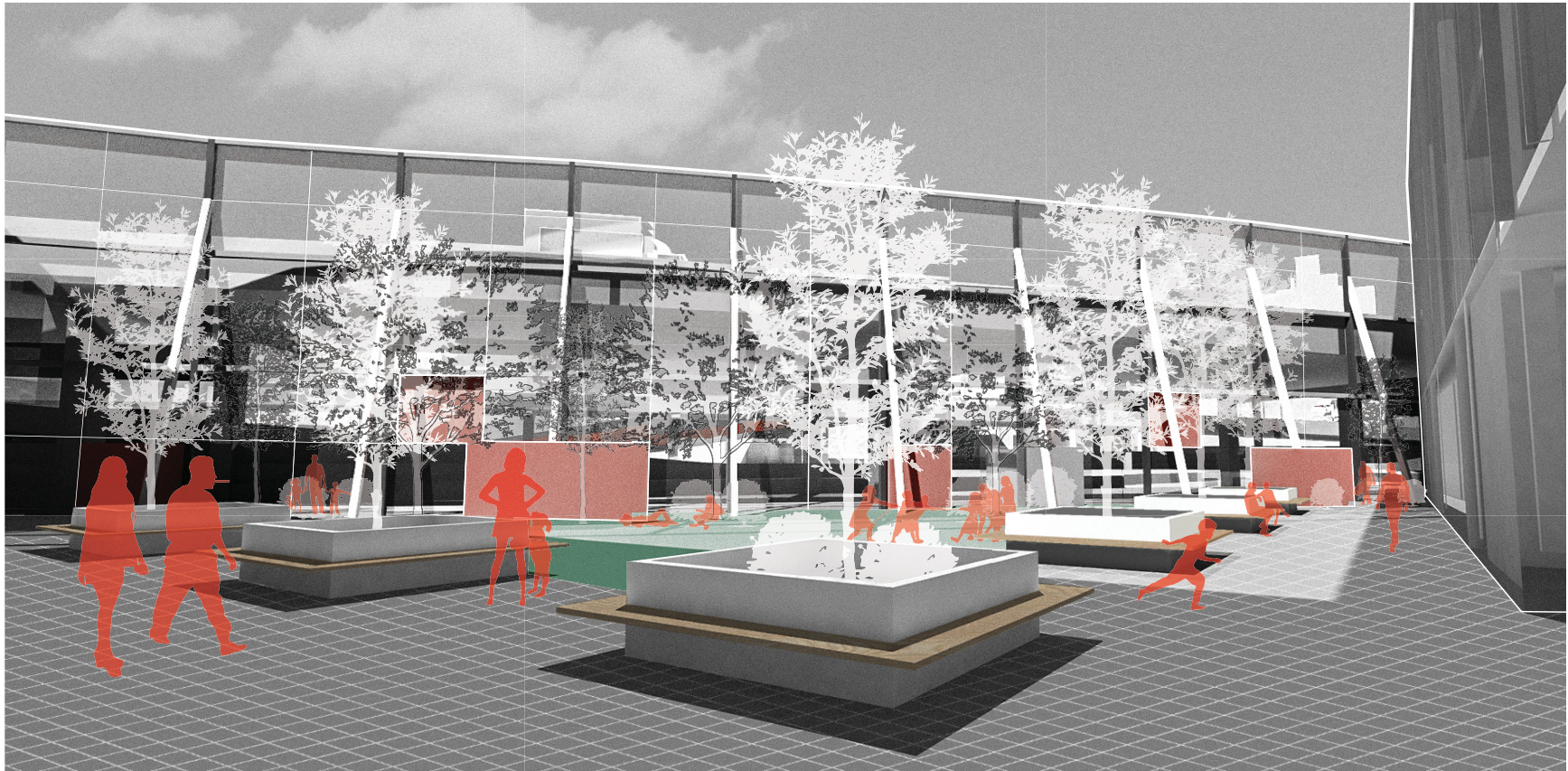
Program

- 1 Lounge
- 2 Computers
- 3 Theatre
- 4 Creative Space
- 5 Classroom
- 6 Media Space
- 7 Multimedia
- 8 Small Meeting Room
- 9 Large Meeting Room

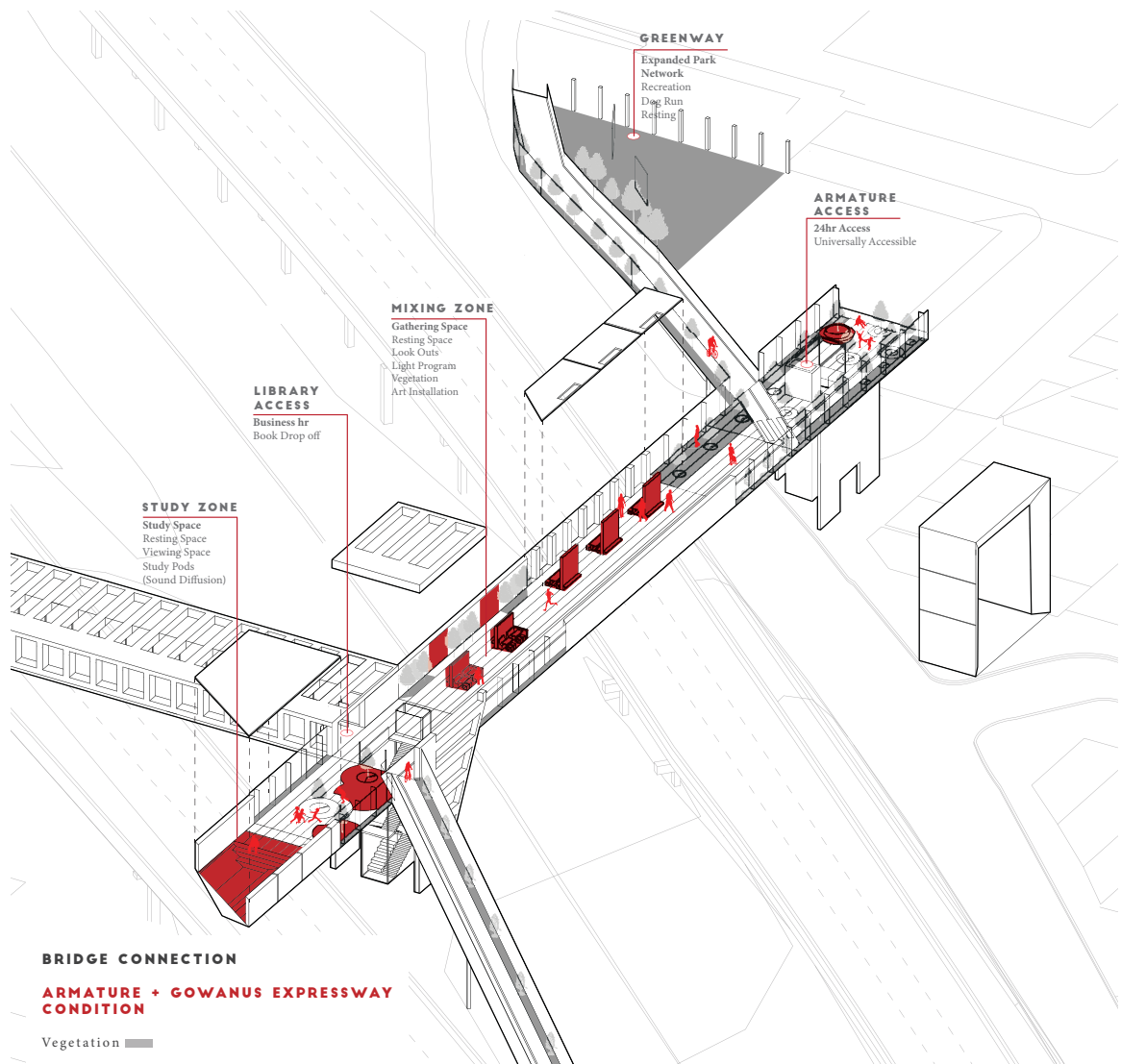
Continuous circulation – Section showing public path through library



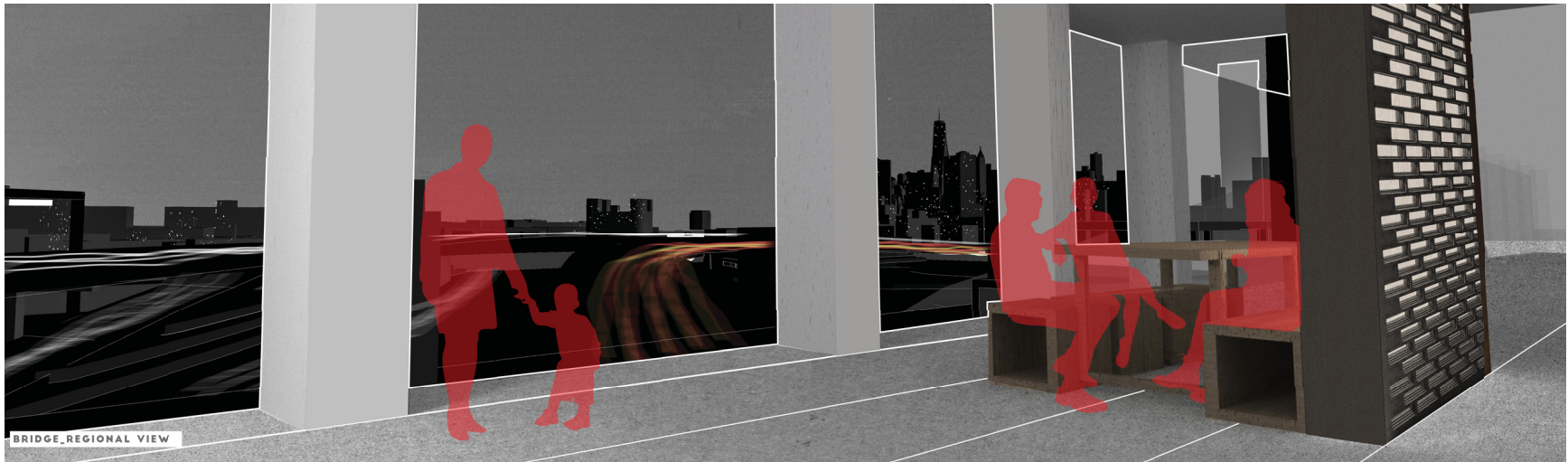
Library interior perspective, showing public path



The combination of a sound barrier and vegetation create a buffer zone to mitigate harsh effects of the Gowanus Expressway and Hamilton Avenue. The transparency of the sound barrier allows light to illuminate the underpass, in result, providing a safe place for pedestrian access. Light panels (indicated in red) illuminate the underpass and courtyard.



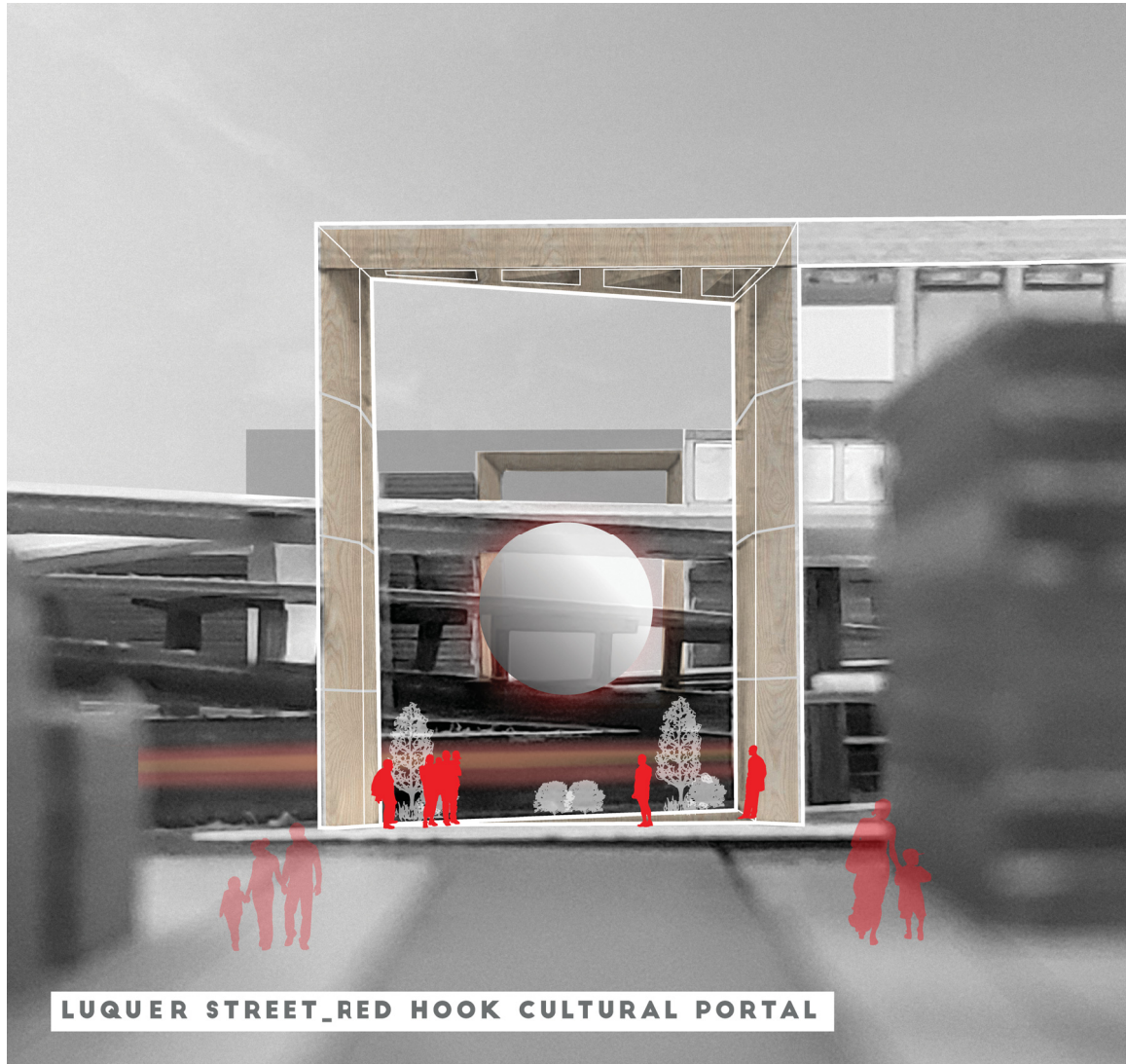
Bridge connection acts as an extension of the armature that provides a safe and experiential journey across the Gowanus Expressway. A buffer zone consisting of vegetation and glass walls help mitigate the harsh conditions of the highway, facilitating an enjoyable experience while dwelling on the bridge. The bridge is broken up into 3 separate zones that help break down the scale of the connection and return it to human scale.



View from pedestrian bridge. Framing the historic streetscape views on the bridge extends visual connectivity on a regional scale.

Cultural Portals

The “cultural portals” are large landmarks positioned along Luquer Street on each side of the expressway. These visual markers help remind viewers of the historical street grid that was disrupted when the expressway was built. They would be managed by the Library, as installation and performance spaces — much like MoMA’s PS1 in Long Island City or First Street Green Art Park in Manhattan. Framing the lost streetscapes, the cultural portals help link Carroll Gardens to Red Hook, stimulating visual memory and serving as a reminder of the urban disruption caused by the expressway.



Red Hook Cultural Portal and Luquer streetscape reparation



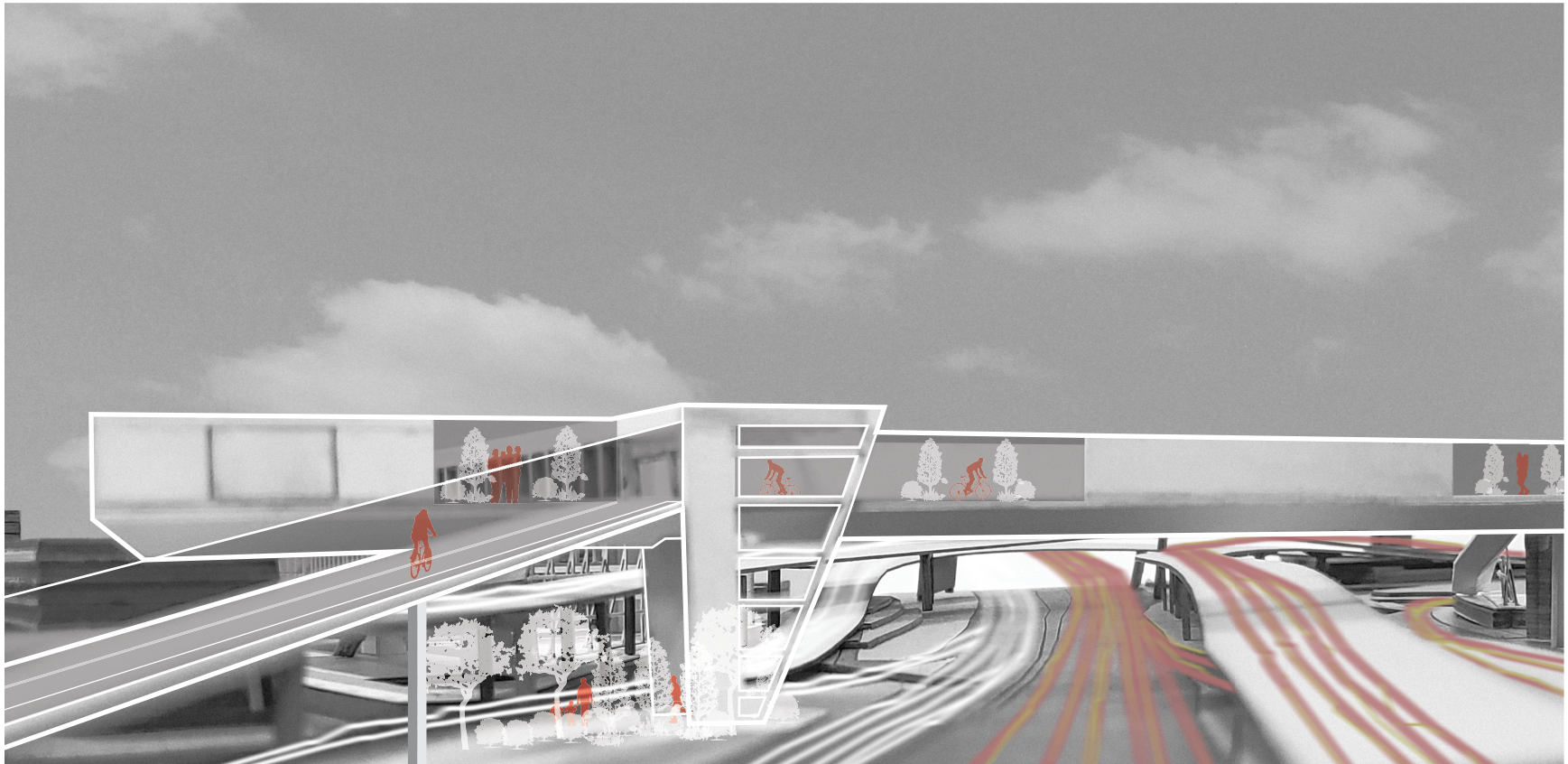
Carroll Gardens Cultural Portal and Luquer streetscape reparation



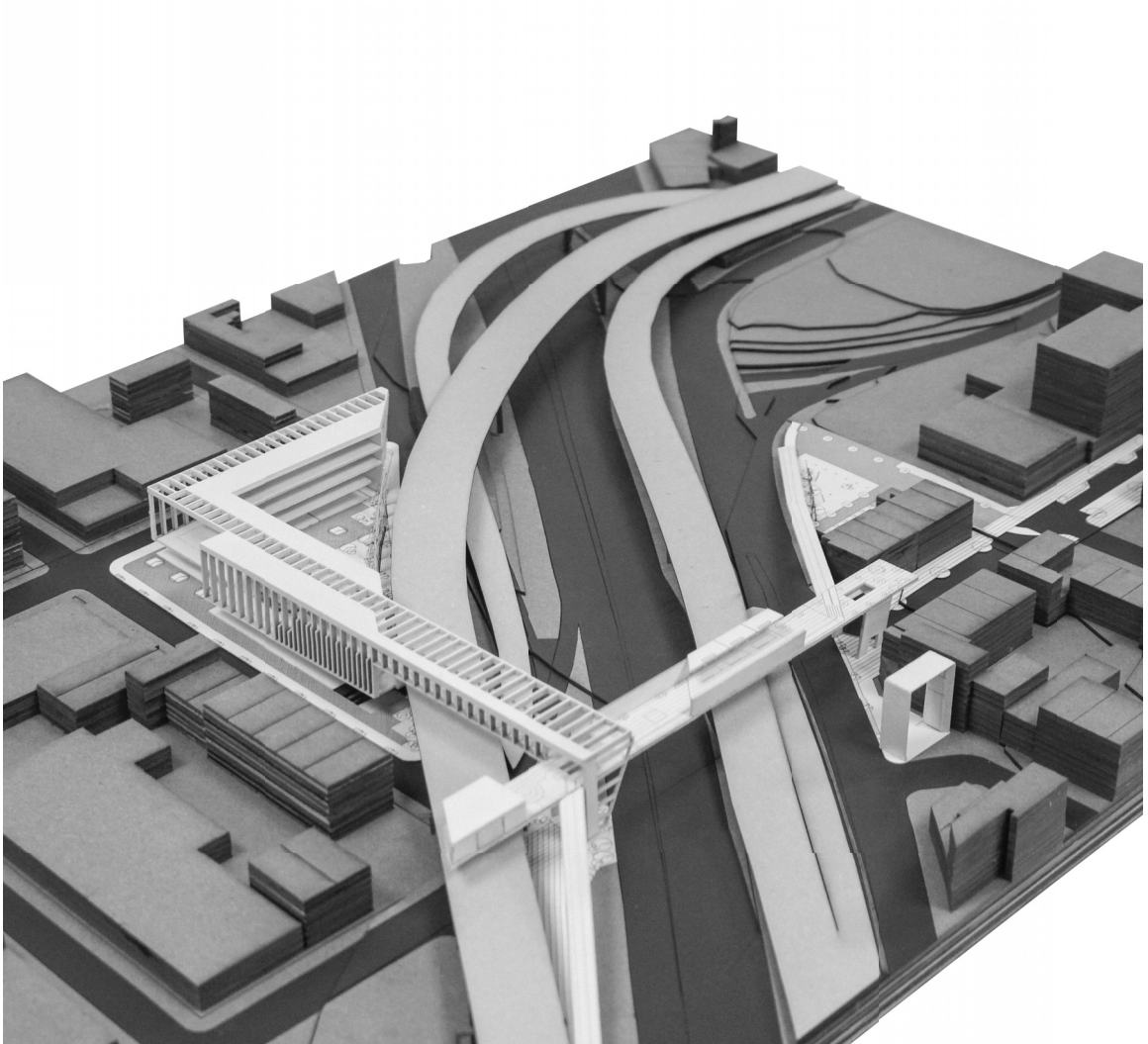
Nelson streetscape repair



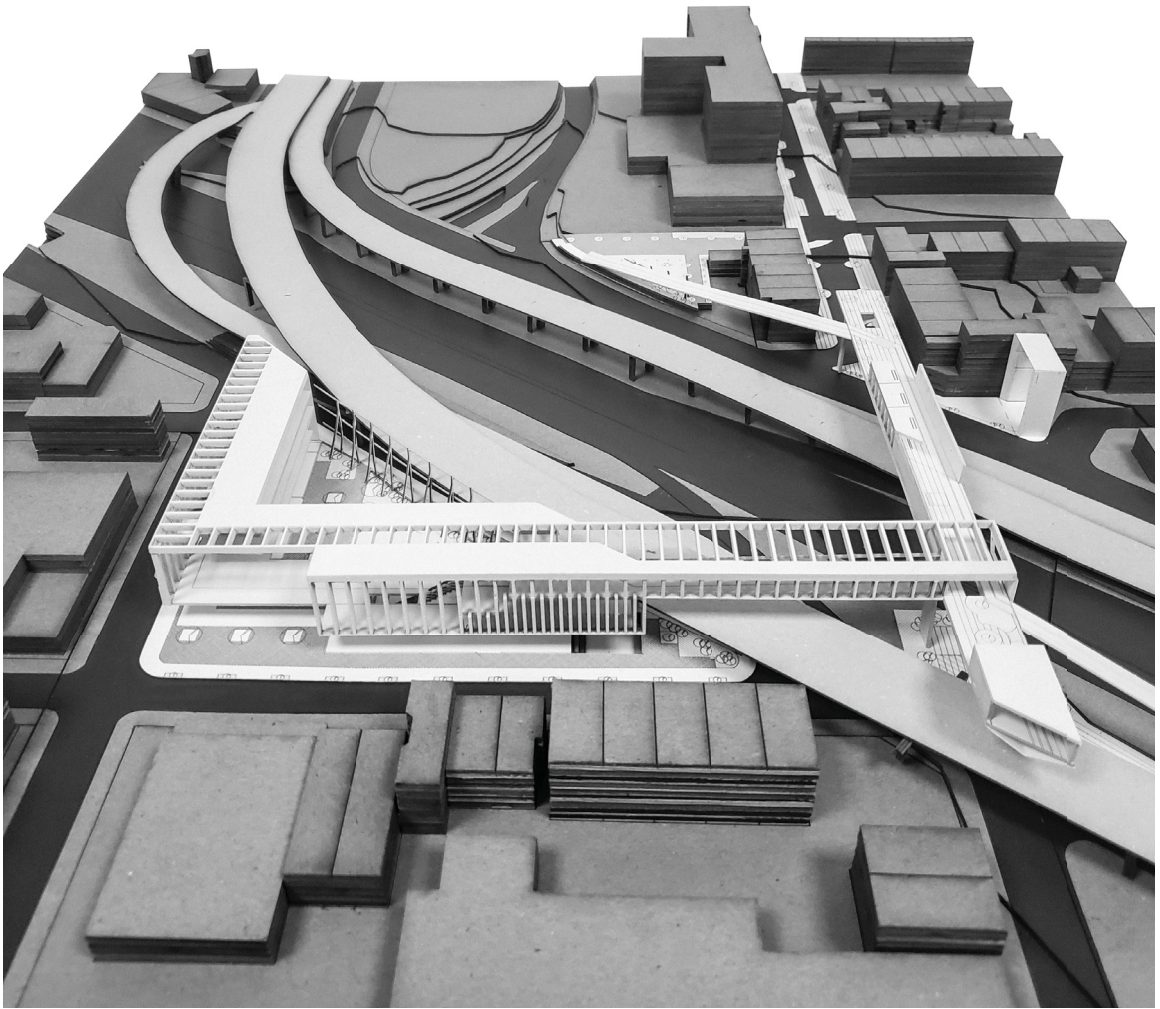
Henry streetscape repair



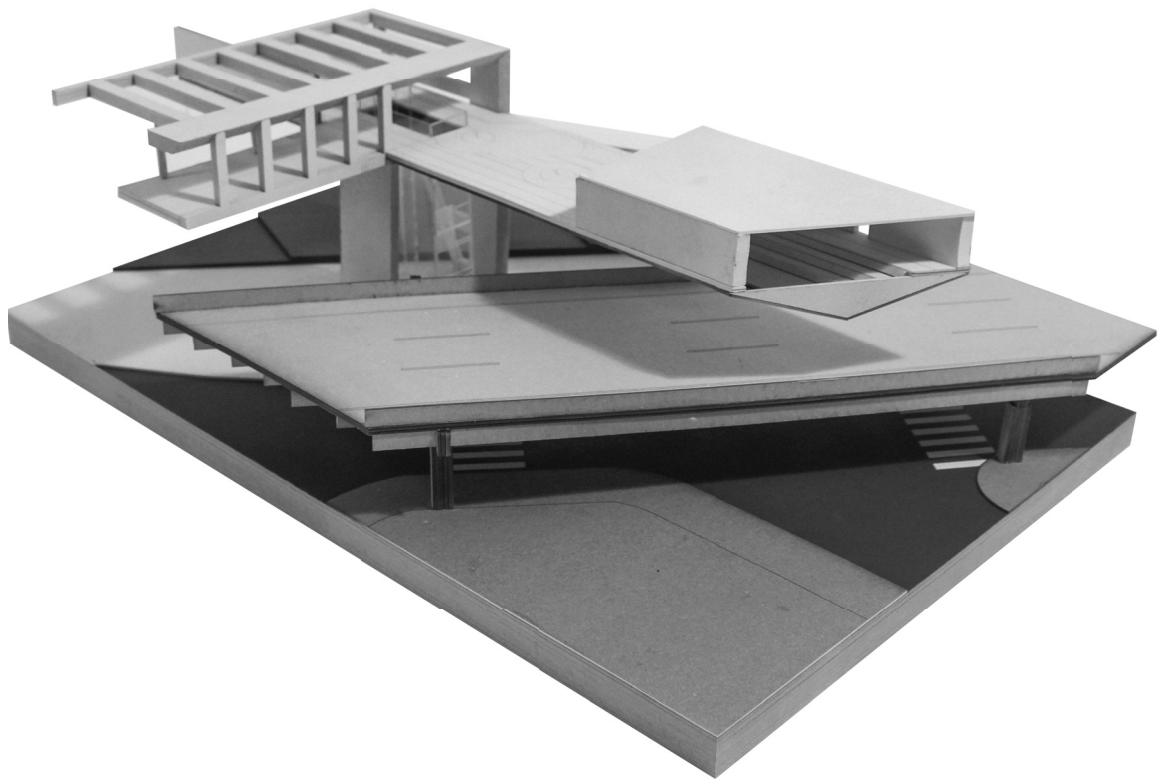
Automobilist's view of the Pedestrian Bridge



1:500 Model – View of the Library-Pedestrian Bridge intersection



1:500 Model — View of the Library facade along Nelson Street



1:100 model — Pedestrian Bridge overlook and vertical circulation at Henry Street, Red Hook side

CHAPTER 5: CONCLUSION

This thesis aimed to understand the disconnecting effects of vehicular infrastructure on the built environment and on the surrounding communities, specifically in Red Hook, Brooklyn. The intent of this thesis was to address the Gowanus Expressway as the inhibiting barrier preventing the development of the neighbourhood and reconnect Red Hook through a community engaged urban active transit network.

The design framework demonstrates that active transportation can be used as an armature to increase connectivity, mitigate urban decay, instigate social cohesion, improve local programmatic adjacencies, and reconnect a segregated neighbourhood.

Identifying the severity of the disconnection is essential in providing a sufficient response to counter-balance the disconnecting effects. Highway infrastructure often offers complex and challenging site conditions that repulse human engagement, which makes achieving connectivity a difficult task. In certain cases, it is not the physical barrier that creates the greatest impact on the built environment, but the urban decay that's emitted and perpetually worsens over time, forming *terrain vague*. Realizing the transformative opportunities of such landscapes can change the perception of the space from a barrier to a focal point of the surrounding communities.

Using a contextual and historically driven framework can enhance the new pieces of infrastructure by re-establishing what was lost when the fragmentation occurred. Addressing the moment of disconnection can offer a guide that allows for architectural intervention to re-establish the connection,

re-populate the void, and re-connect the disconnected neighbourhood. Furthermore, utilizing site specificity to inform programmatic opportunities along the network will instigate exciting public space that benefits locals and attracts visitors to the area.

While the framework and design strategies put forth focused around Red Hook and the Gowanus Expressway, they could also be applied to other areas of New York City and abroad that have been confronted with inhibiting infrastructural barriers. It should be noted that the success of the strategy is reliant upon counteracting the *terrain vague* space and engaging with the local community. The intervention needs to be strong enough and be utilized by the local community or else it has the risk of contributing to the already present border vacuum effects. By addressing the contextual issues that surround the barriers, architectural intervention can begin to catalyze the reconnection and the detrimental effects on surrounding communities can begin to heal.

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