INTERIM HOUSING BUILDS A NEIGHBORHOOD

New Yorkers love their neighborhoods second only to their families. Our neighborhoods depend on durable social and physical infrastructure, great design, and most importantly a concentration and diversity of people. Rebuilding cities after disaster means rebuilding neighborhoods, and people need a way to stay close to home as their communities recover.

No existing federal options for interim housing will work for cities like New York. Typical post-disaster single-family trailers units cannot be configured with enough density or variety to work in an urban environment. A new prototype for post-disaster housing will address urban environments and to meet the unique needs of New Yorkers.

The exhibit explores the impact of placing this prototype on a variety of site types, using various building arrangements in a particular neighborhood, in this case Red Hook, Brooklyn. It explores working with the prototype module as a basic instrument of recovery and how it can be used to address needs and provide benefits to the residents and to their local economic and social networks.

This study was executed by students from Pratt Departments of Architecture and Planning and their Professors Deborah Gans and Jeremy Carvahlo as part of the RAMP (reconstruction adaptation mitigation planning) curriculum , a multi-disciplinary effort to address the challenges of climate change as part of equitable and inclusive urban planning.

INTERIM HOUSING SITES

LEGEND

1. OPEN ENCLAVE
2. PREPARED GROUND
3. RETROFIT
4. INFILL
5. COASTAL INTERFACE
6. RE-CENTER
7. SUPER BLOCK
8. DOUBLE PIER
9. PLUG-IN
10. CONTAINER PORT
11. SHARED GROUND
12. POP-UP

WATER

Coastal communities share many socio-economic characteristics and also environmental vulnerabilities, and will require shared strategies to adapt to the effects of climate change and rising sea levels. Red Hook, Brooklyn is a typical New York City waterfront area with many different communities and building types. The projects in this study investigate specific real-world site conditions that point to broadly applicable approaches for building coastal resiliency.

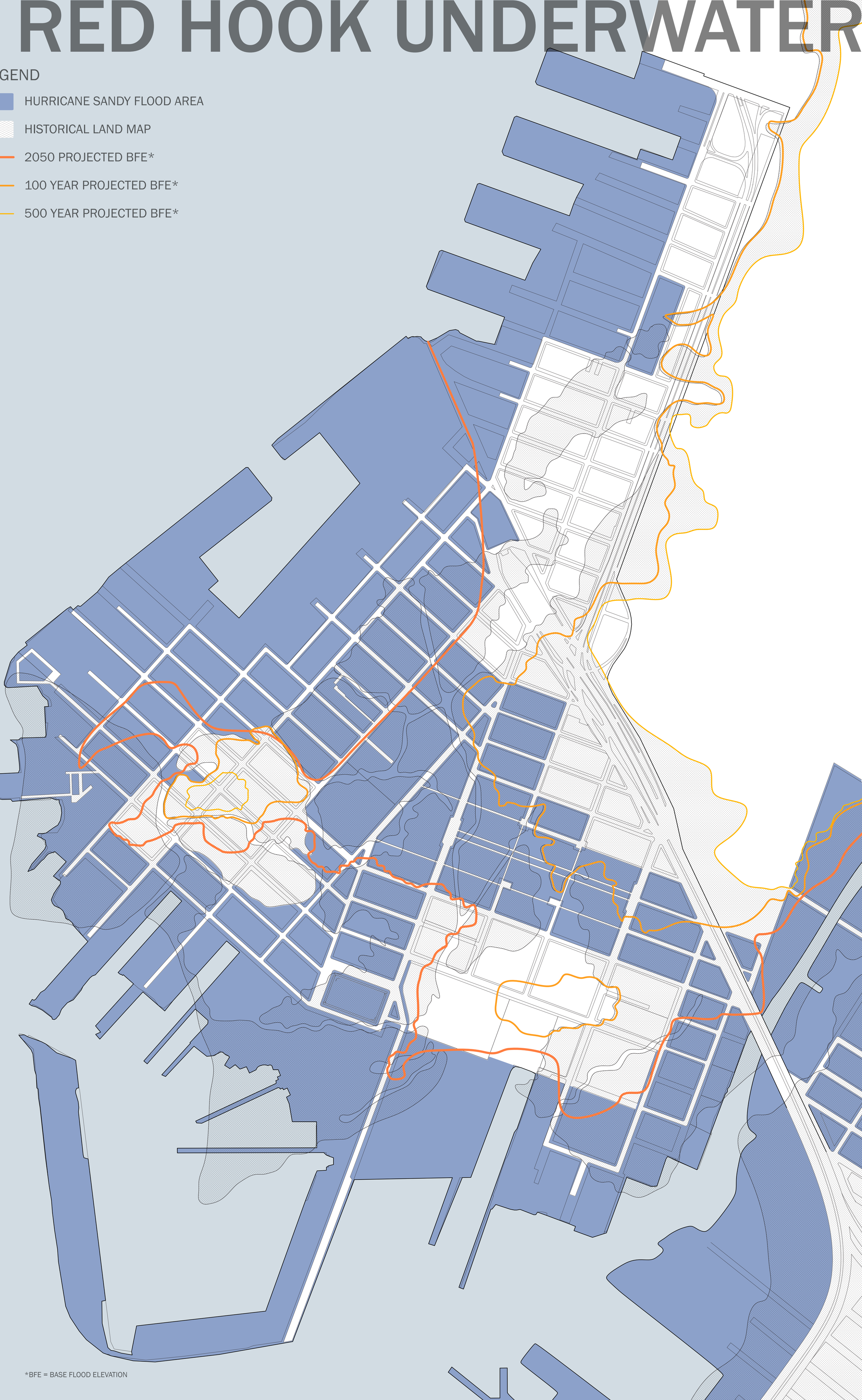
While the strategy for responding to climate change is still under development, the city has outlined what it considers to be likely measure at various scales. It calls for an “integrated” flood protection measure as a rim set somewhat in form the actual coast line and for a potential storm surge barrier across the Gowanus canal. It calls for the hardening of the coastline and the restructuring of flooded streets. Sensitive to the connection of emergency and daily infrastructure, it seeks improved transportation connections between Red Hook and the rest of Brooklyn as well as Manhattan.

This study includes strategies for interim housing that would also reinforce normal functioning and support the development of Red Hook in ways that integrate emergency and daily measures for an improved quality of life.

RED HOOK UNDERWATER

LEGEND

- HURRICANE SANDY FLOOD AREA
- HISTORICAL LAND MAP
- 2050 PROJECTED BFE*
- 100 YEAR PROJECTED BFE*
- 500 YEAR PROJECTED BFE*



*BFE = BASE FLOOD ELEVATION

INFRASTRUCTURES: A PHYSICAL, ECONOMIC AND SOCIAL PORTRAIT

Red Hook, Brooklyn is a typical New York City waterfront neighborhood. With strong maritime, industrial, and creative communities, Red Hook contains many types of social, economic, and housing infrastructures.

As a low-elevation, waterfront neighborhood, Red Hook is vulnerable to disaster in many ways. While housing is critical, a solution will have to do more than just provide housing units. It will have to encompass replacement of the complex social and economic networks that make life in New York what it is.

Rebuilding from disaster can provide opportunities for implementing more efficient and sustainable technologies than are usually attempted during typical planning and reconstruction. Likewise, social resiliency can be strengthened by inclusive community planning.

Renovating and rebuilding necessary services and infrastructure with these technologies can substantially change the direct and indirect impacts we have on our natural systems. Interim Housing Units should not only be equipped to function during a post disaster situation where infrastructure is limited or not available, but should be designed to ‘sit lightly’ for the entire life of their use.

INFRASTRUCTURES

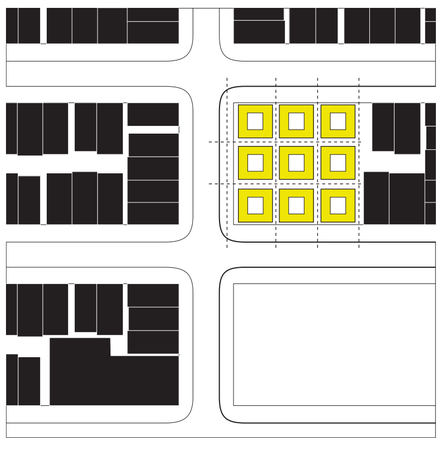
PEOPLE AND PLACES

LEGEND

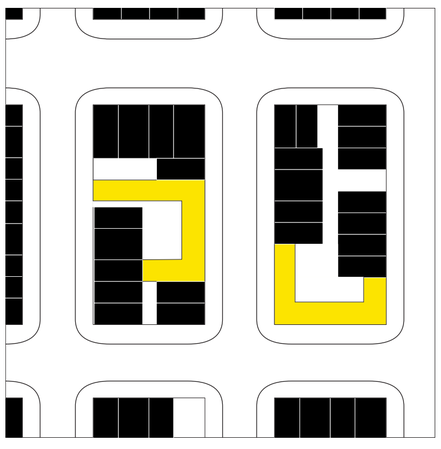
- SCHOOLS AND LIBRARIES
- COMMERCIAL
- PUBLIC GREEN SPACE
- SOCIAL SERVICES
- R5 ZONING
- R6 ZONING
- B61 BUS LINE
- FERRY ROUTE

SITES AND ASSEMBLIES

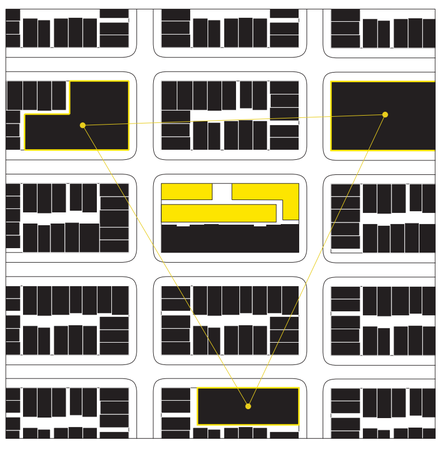
SITE TYPES AND CONFIGURATIONS



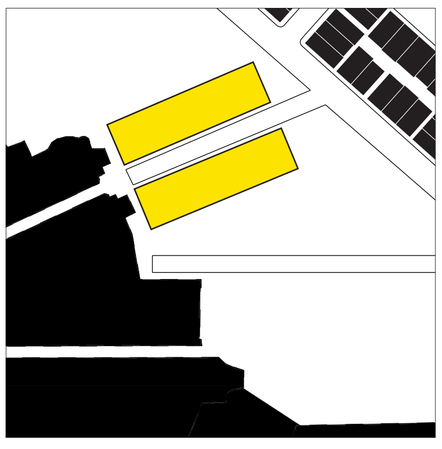
PARKS:
Public open space



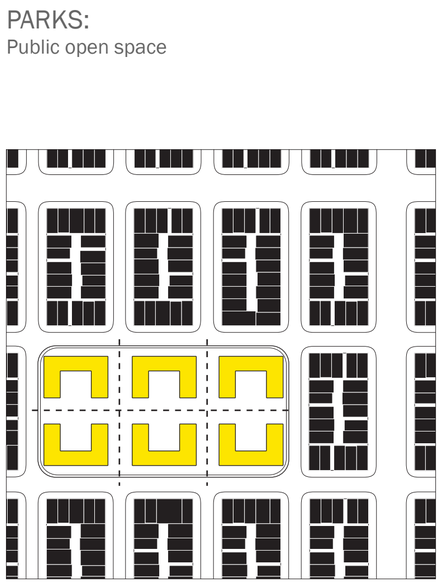
INFILL:
Cleared sites of damaged buildings with a dense fabric



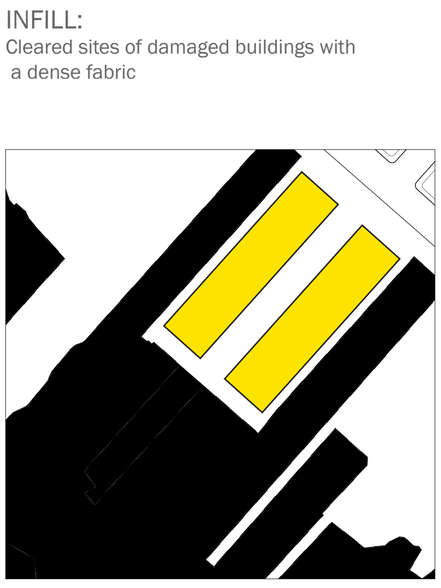
COMPLEX BLOCK:
Adjacent or proximate lots planned as housing complex



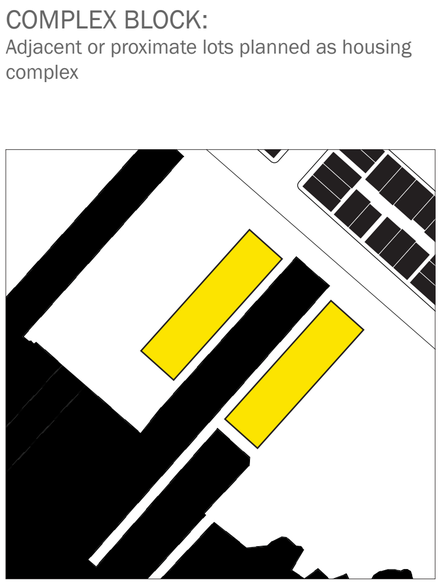
PORT:
Working ports such as airports and other transportaion infrastructures



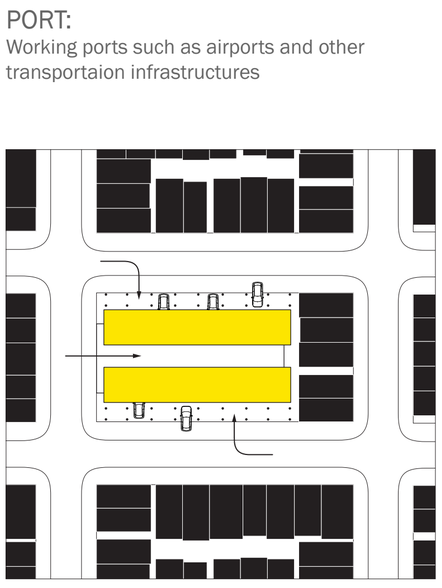
TEMPORARY SUPER BLOCK:
Land spanning temporarily closed streets



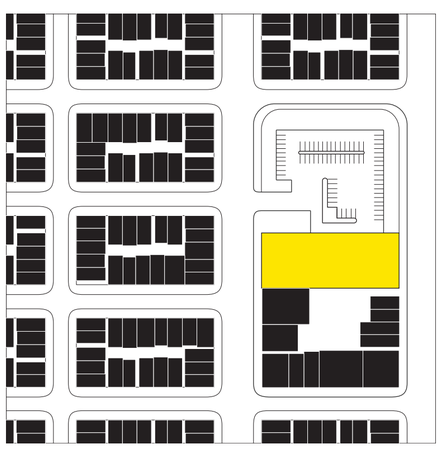
PIER:
Existing or new pier structures that can support housing



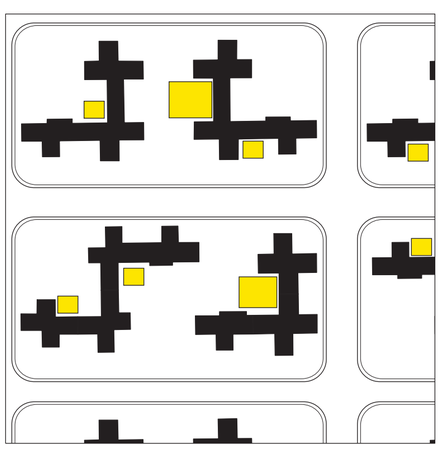
COASTAL INLET:
The zone along the waters edge



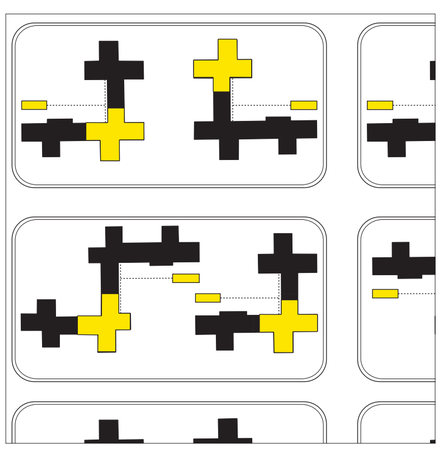
LOT:
Vacant lots including parking and development sites



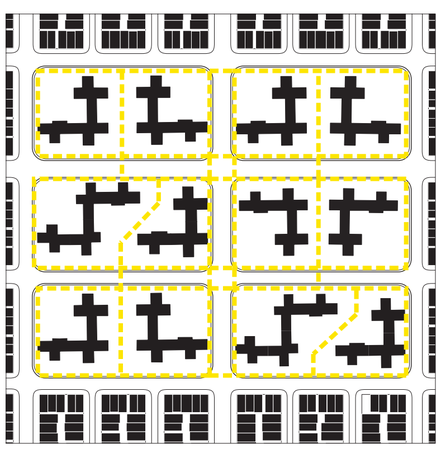
RETROFIT:
Existing building that can receive housing on its floors or roof



CAMPUS INFILL:
Landscape surrounding buildings like dormitories or public housing

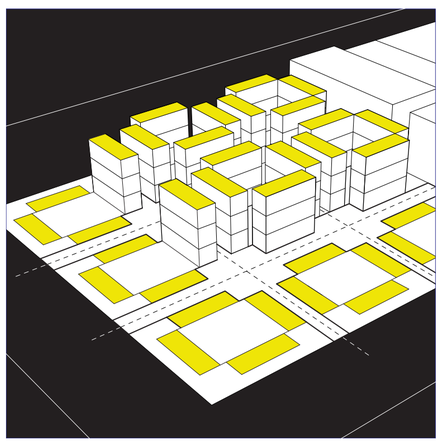


ACCESSORY:
Addition to an existing building within the zoning lot open space

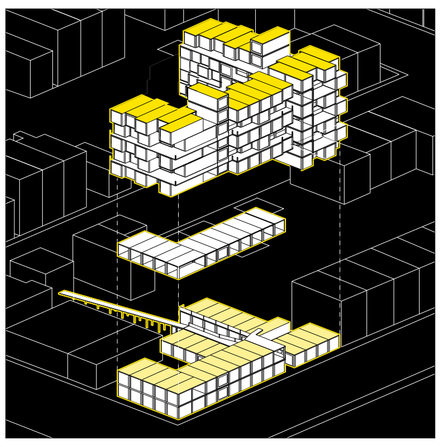


STREETS:
Medians, parking medians, sidewalks

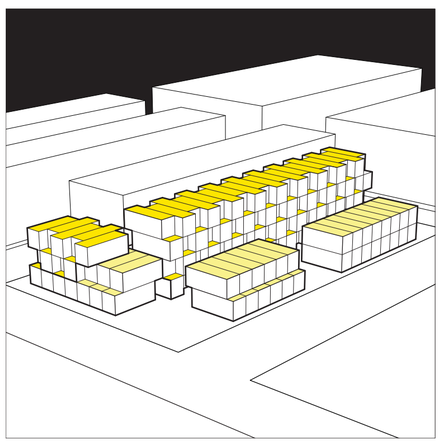
BUILDING ARRANGEMENTS AND ASSEMBLIES



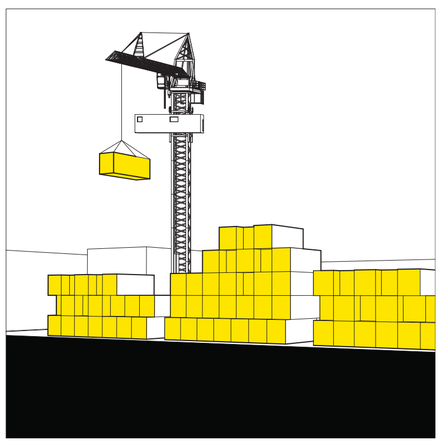
COURTYARD:
Housing arranged in relation to private and public courts



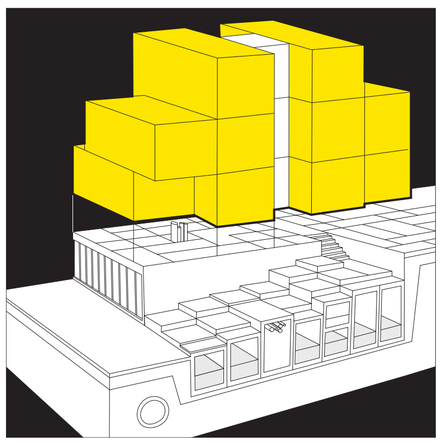
SUPER-STRUCTURE:
Interim housing installed on top of a new but permanent base building



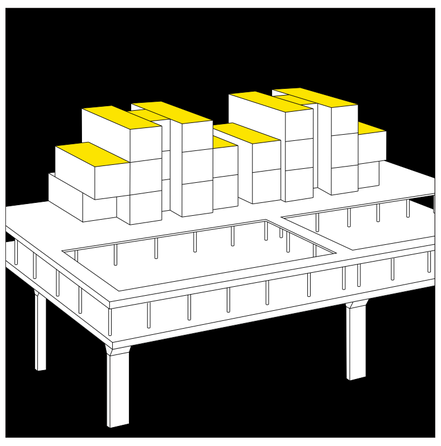
MEWS:
Housing and services arranged to create internal pedestrian streets or mews



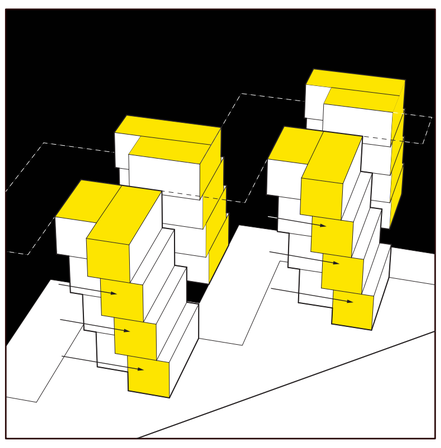
CONTAINERIZED:
Housing delivered, installed and arranged as containers



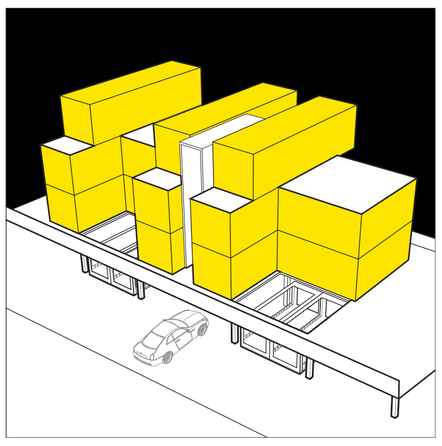
TIE-IN:
Housing delivered with plan and infrastructure connections to a previously prepared site



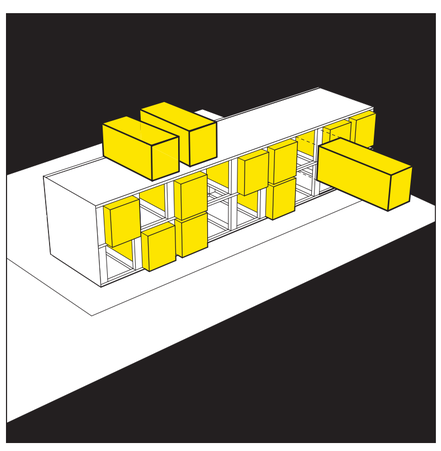
PLATFORM:
Housing installed on a new or pre-existing platform at designated flood elevation



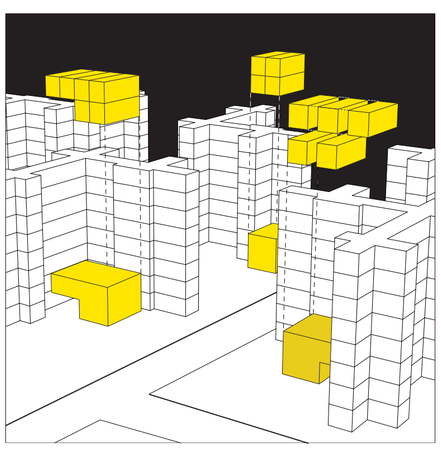
COASTAL:
Housing whose ground floor manages and contains water flow



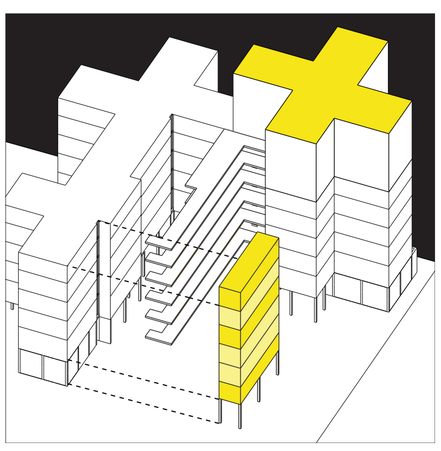
SYSTEMS:
Housing combined with other pre-fabricated systems to create a settlement



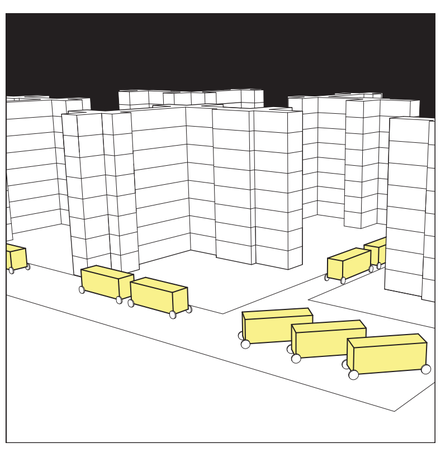
INSERT:
Housing units inserted within or on top of an existing building



ADD-ON:
Units that are an addition to existing housing



PLUG-IN:
Independent units attached to existing housing infrastructure

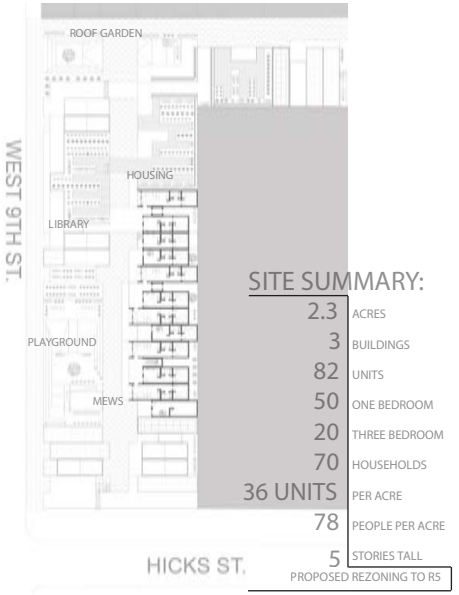


POP-UP:
Mobile units with off the grid infrastructure

SUPER BLOCK

VIEW FROM MEWS

VIEW FROM COMMUNITY ROOF GARDEN



THIRD FLOOR PLAN

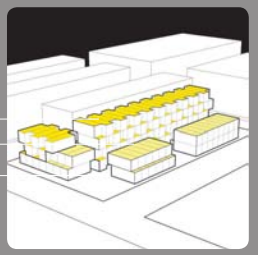
SITE SUMMARY:

2.3	ACRES
3	BUILDINGS
82	UNITS
50	ONE BEDROOM
20	THREE BEDROOM
70	HOUSEHOLDS
36 UNITS	PER ACRE
78	PEOPLE PER ACRE
5	STORIES TALL

PROPOSED REZONING TO R5

SITE TYPE:
COMPLEX BLOCK

The site is located on high ground, in close proximity to the largest concentration of population in Red Hook, and the social institutions that accompany it. It uses the site to make positive urban as well as social connections, placing the housing along the street above a commercial base with a playground directly opposite the school. In order to maximize the population, there is a mid block mews lined with housing that provides a pedestrian path for the children to move from one school to the other.



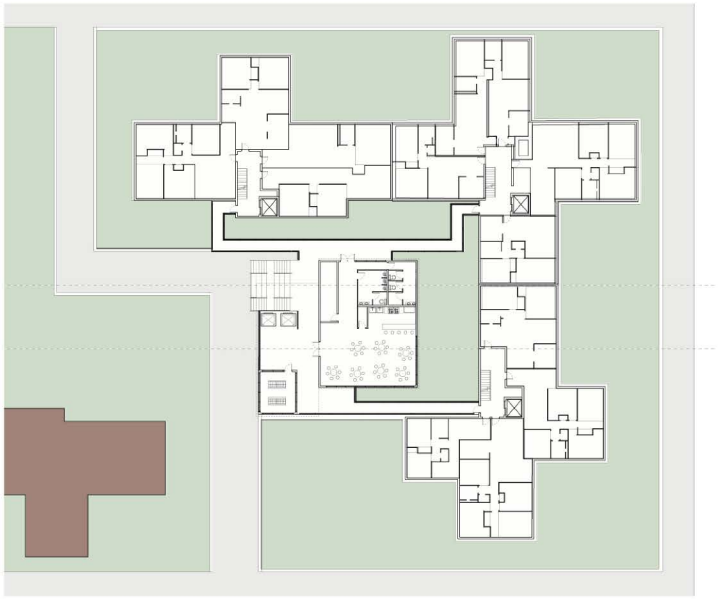
ASSEMBLY:
MEWS

In response to the Red Hook Houses' rejection of the street grid, the project proposes that "su - per block" should refer not to size but the su - per-saturation of program – for example a corner market that sells the products from the housing roof garden, a shared community dining room, and a library with classrooms bordering the playground that can serve the schools to either side of the site.

CHIN LAU + VALERIE BUSTOS

RE-CENTER

VIEW OF INTERIM LOBBY AND CIVIC CENTER



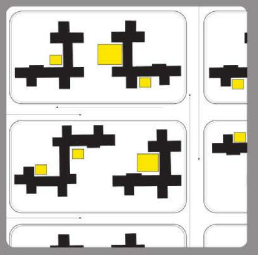
PARTIAL CAMPUS PLAN

VIEW: WET

SITE SUMMARY:

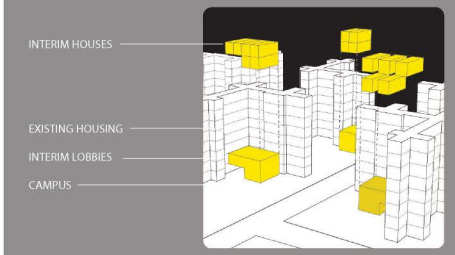
5.76	ACRES
28	BUILDINGS
35	UNITS
35	SHELTERS
2,016	HOUSEHOLDS
6 UNITS	PER ACRE
231	PEOPLE PER ACRE
7	STORIES TALL

COMPLIES WITH R6 ZONING



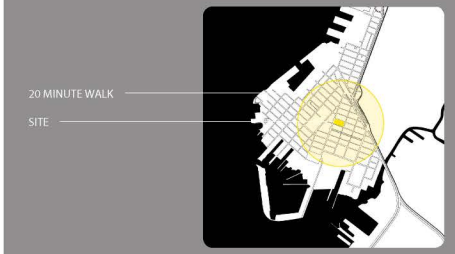
SITE TYPE:
CAMPUS INFILL

The ground floors of the Red Hook Houses were flooded, damaging apartments and also interrupting the public entry sequence to the upper floors. The repetitive arrangement and appearance of the brick buildings can impede way finding and a sense of identity even under normal conditions. This project creates social and physical centers for clusters of buildings that have value beyond a temporary state of emergency and could be seen as permanent additions to the campus.



ASSEMBLY:
ADD-ON

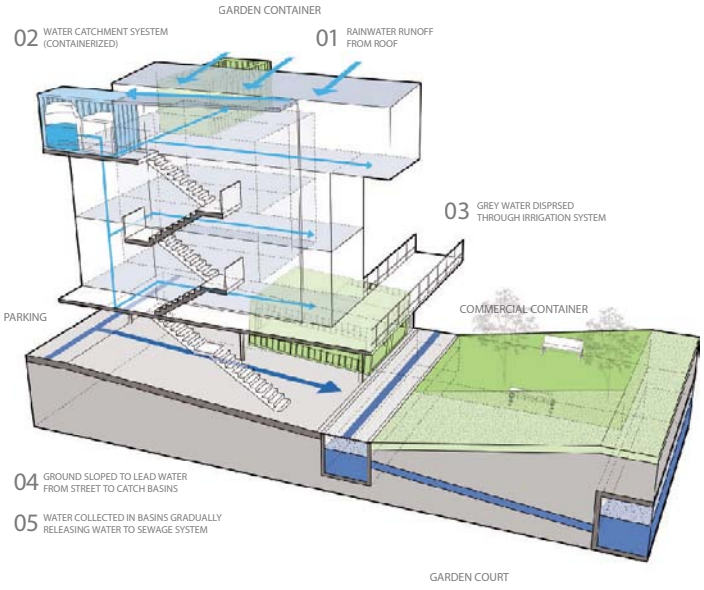
Interim units on raised pre-fab decks replace flooded lobbies, mailboxes, security, entry lounge, and provide a public sequence to the upper story apartments. They also provide emergency accommodation in the immediate aftermath of the storm in the form of a collective shelter with soup kitchen/café and medical facility for displaced residents of the houses.



CARLA PEREZ

SHARED GROUND

PERSPECTIVE VIEW OF GARDEN CONTAINER



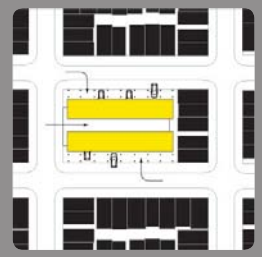
WATER SYSTEMS AXONOMETRIC

PERSPECTIVE VIEW

SITE SUMMARY:

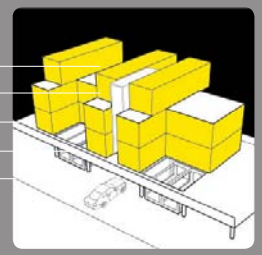
1.72	ACRES
3	BUILDINGS
58	UNITS
22	ONE BEDROOM
22	THREE BEDROOM
44	HOUSEHOLDS
34 UNITS	PER ACRE
77	PEOPLE PER ACRE
4	STORIES TALL

PROPOSED REZONING TO R5



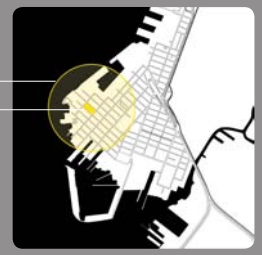
SITE TYPE:
LOT

This project explores the possibility of creating public ground and community space through the arrangement of the interim housing. The housing borders and defines two central garden courts that lead from one street to another and can be gated. The housing itself sits on a pre - fabricated deck that has controlled from these gardens access via private access. Beneath the deck, parking and commercial space line the street but can also open on to the interior of the block.



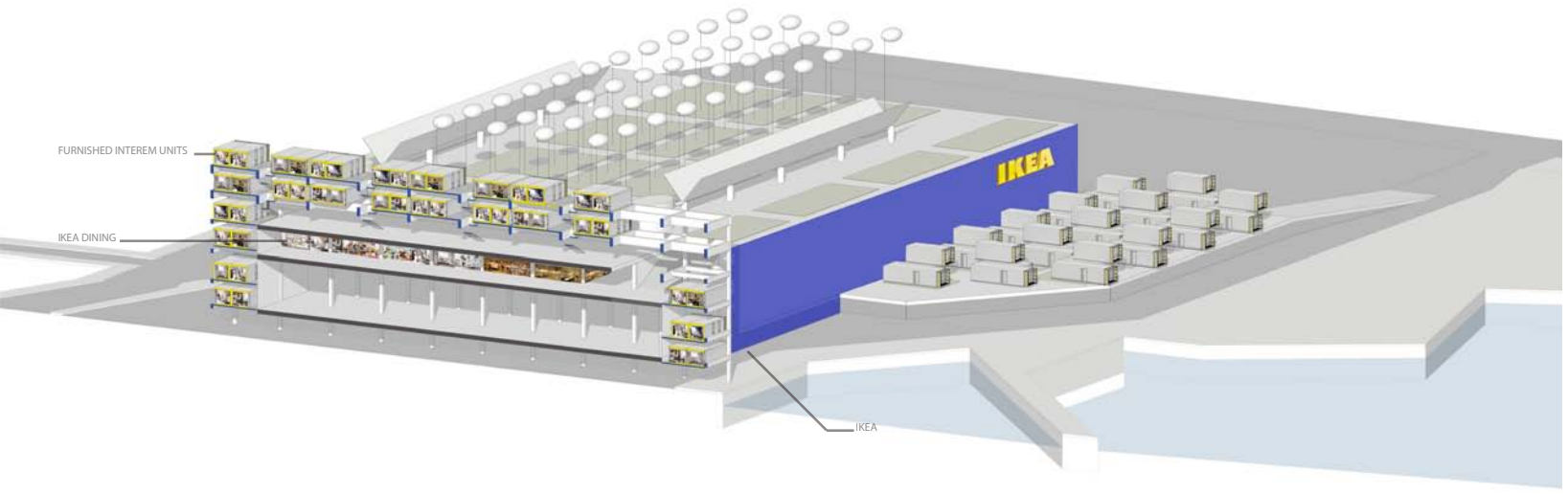
ASSEMBLY:
SYSTEMS

The project stresses the assembly of the entire complex from readily available but creatively applied systems. The parking lot bollards double as water management devices. Prefabricated containers holding a variety of infrastructures, such as generators, cisterns and even small gar - dens are distributed throughout the project. This complex could house the local businesses dam - aged by the storm as well as temporary services. It provides an informal gathering space and focal point for the community.

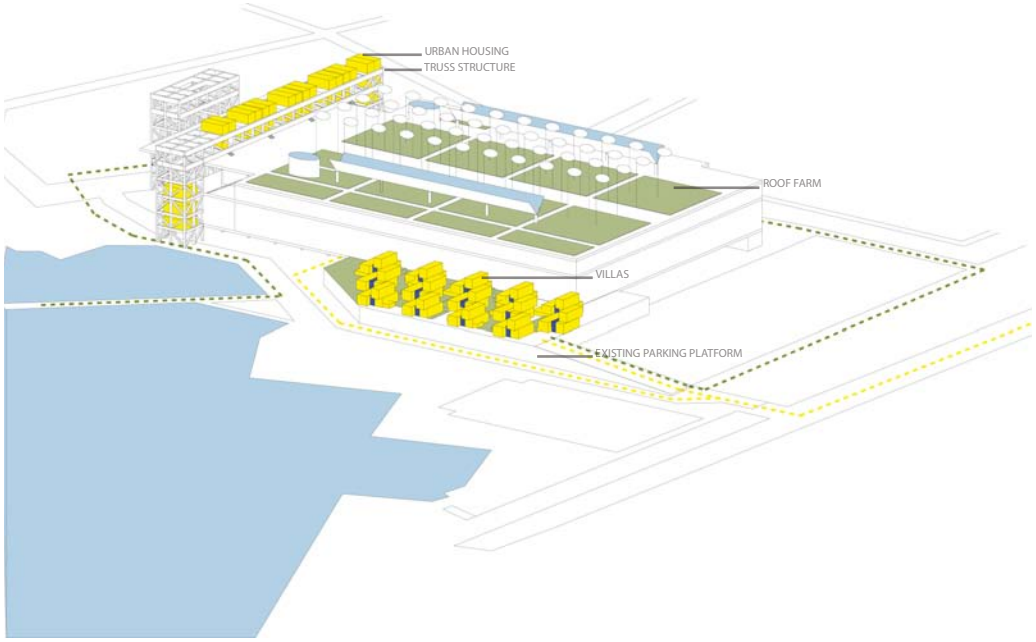


JASPER HAYES + MICHELLE ROJAS

RETROFIT



SECTION AND VIEW OF IKEA



VIEW OF IKEA FROM WATER

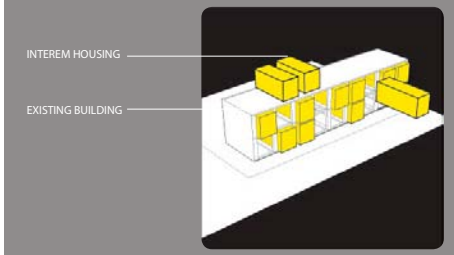
SITE SUMMARY:

3.2	ACRES
15	BUILDINGS
37	UNITS
23	ONE BEDROOM
14	THREE BEDROOM
37	HOUSEHOLDS
11 UNITS	PER ACRE
32	PEOPLE PER ACRE
7	STORIES TALL

PROPOSED REZONING TO R6 WITH COMMERCIAL OVERLAY

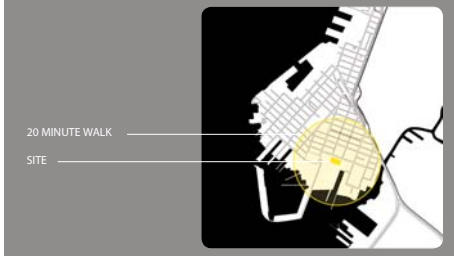
SITE TYPE:
RETROFIT

The project offers a general site strategy of in - dustrial retrofit. There are many underutilized robustly constructed factories and warehouse spaces in Red Hook where interim units could be placed inside on each floor as well as the roof. In this case, the retrofitted warehouse is IKEA, which did not flood during Sandy because of its raised deck. While it is not as structurally robust as the concrete structures of Red hook, it pro - vides a forward thinking patron who often builds on coastlines and might consider extending its potential as emergency provider in the future.



ASSEMBLY:
INSERT

This project both celebrates the assembly strat - egies and landscape of IKEA by situating the in - terim housing on its parking deck and in a truss structure that recalls the industrial artifacts in the sites current state. The units would be fur - nished with Ikea products—perhaps even built by IKEA who has entered the pre-fab housing busi - ness. The residents would dine in the IKEA cafe - teria on vegetables harvested from the roof-farm that would also supply water via cisterns and power via wind.

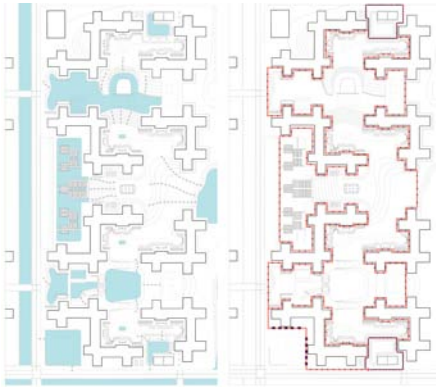


ALEX RESTIVO + ANA MONTEVERDE

POP-UP

VIEW OF POP-UP MARKET ALONG MEDIAN

VIEW OF CAMPUS WITH BERMED BUILDINGS



RETAINING PONDS

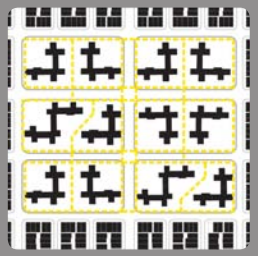
POP UP MARKET

CAMPUS LANDSCAPE PLAN

SITE SUMMARY:

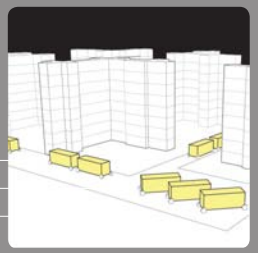
5.76	ACRES
28	BUILDINGS
280	UNITS
280	STORE FRONTS
2,016	HOUSEHOLDS
48 UNITS	PER ACRE
231	PEOPLE PER ACRE
7	STORIES TALL

PROPOSED COMMERCIAL OVERLAY ON R6 ZONING



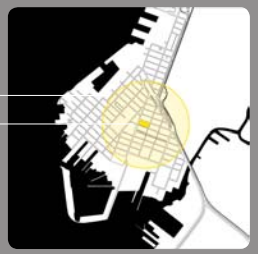
SITE TYPE:
STREETS

This project proposes that interim units be installed in the paved parking and thoroughfares within the Red Hook Houses as a pop-up market to replace the local stores shuttered by the storm. It also explores ways in which the landscape of the NYCHA campus is a valuable water management device. Sunken skate parks become water retention in the storm; landscape swales direct water to underground systems; new plantings can uptake thousands of gallons a day ; and earth berms protect the ground level apartments and services from flooding.



ASSEMBLY:
POP-UP

A historic vulnerability of the Red Hook Houses has been the limited presence of commercial goods and services- from fresh food to laundries and banks, which the storm exacerbated. Here interim units provide a pop-up market placed on available parking and paving that, once the interim need subsides , could become institutionalized as a weekly flea market.

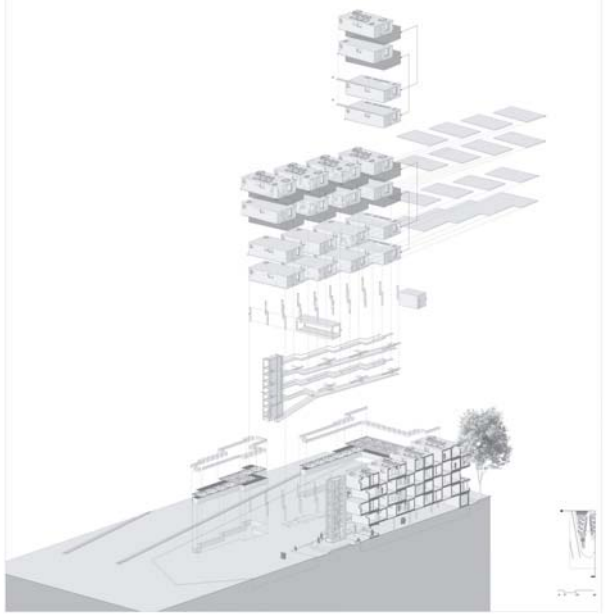


ASHLEY CONNELY + JILLIAN DeLUCA

CONTAINER PORT

SECTION THROUGH UNITS

PLAN



EXPLODED AXONOMETRIC

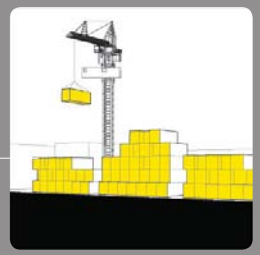
SITE SUMMARY:

1.3	ACRES
11	BUILDINGS
176	UNITS
44	ONE BEDROOM
132	THREE BEDROOM
176	HOUSEHOLDS
135 UNITS	PER ACRE
474	PEOPLE PER ACRE
5	STORIES TALL

PROPOSED REZONING TO R5

SITE TYPE:
PORT

The site of the container port begs the possi - bility of using retrofitted containers as interim housing but it also argues of the advantage of using port shipping and delivery strategies for any pre-fabricated interim unit. The site comes equipped with cranes for off loading and reas - sembling units. It is an inter-nodal connection for trucks and ships that can import and receive or transport any goods that might be needed by the temporary population.

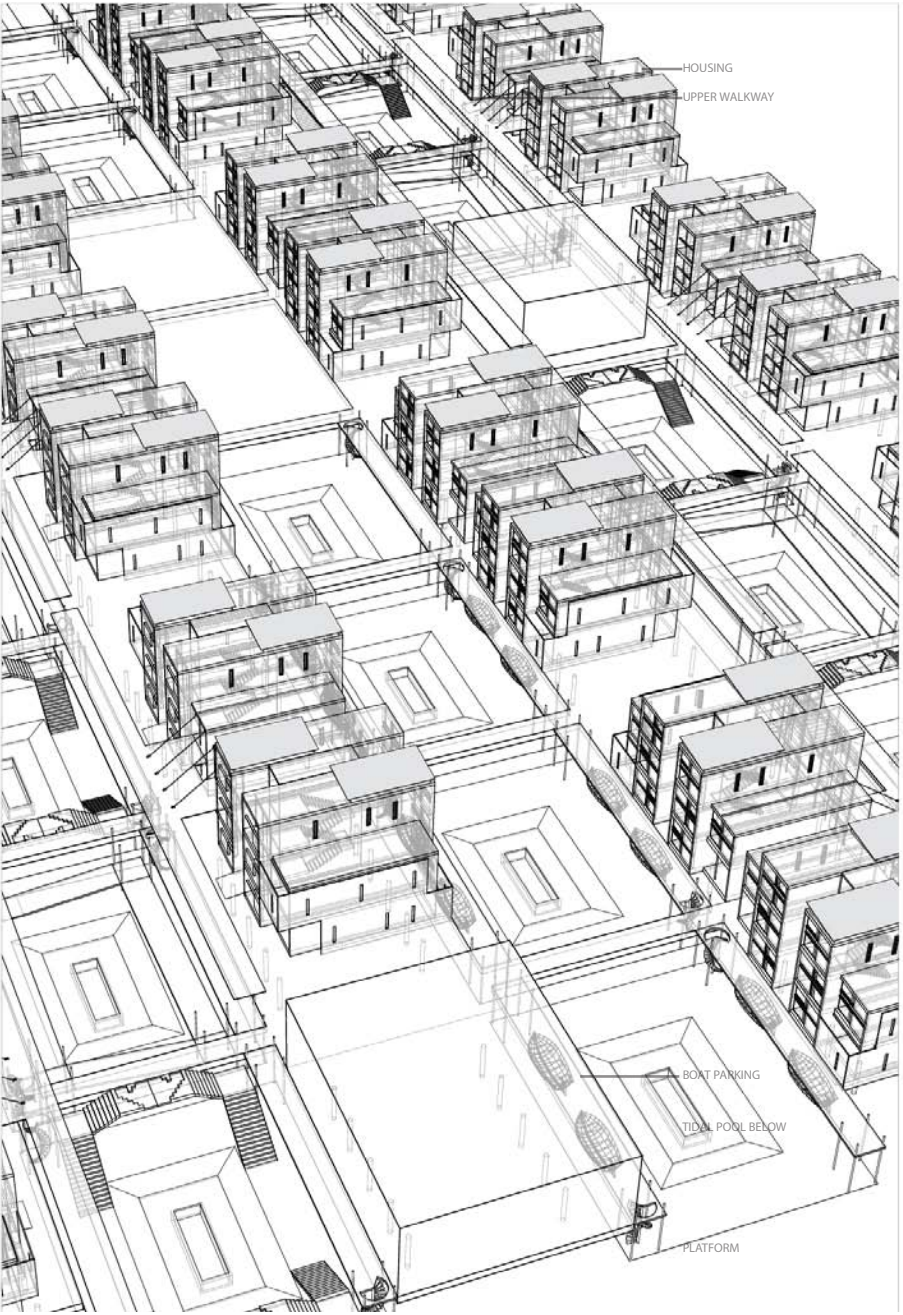


ASSEMBLY:
CONTAINERIZED

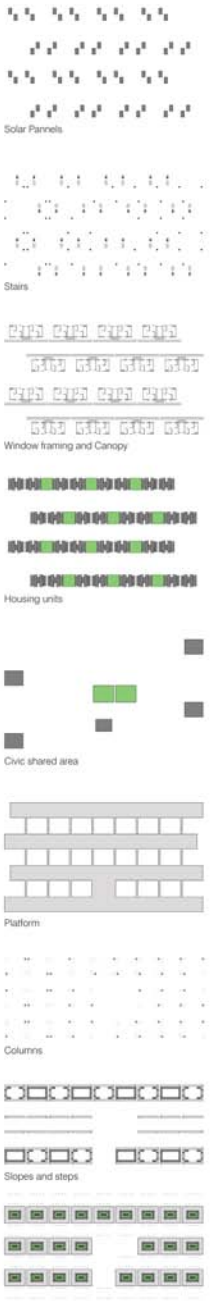
The housing system makes use of the equip - ment and structures associated with the port equipment to assemble large blocks of units rationally; but it also takes into account the spectacular views possible and the public spac - es afforded by the shape of the site.

ALEX LEE

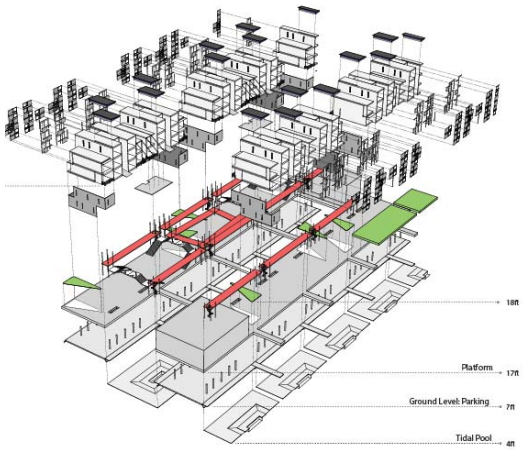
DOUBLE PIER



VIEW



CATALOUGUE OF SYSTEMS



AXONOMETRIC OF SYSTEMS

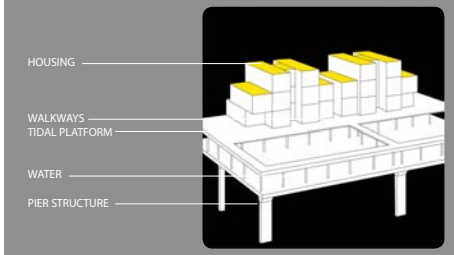
SITE SUMMARY:

7.3	ACRES
16	BUILDINGS
102	UNITS
34	ONE BEDROOM
68	THREE BEDROOM
102	HOUSEHOLDS
14 UNITS	PER ACRE
47	PEOPLE PER ACRE
6	STORIES TALL

PROPOSED REZONING TO R6

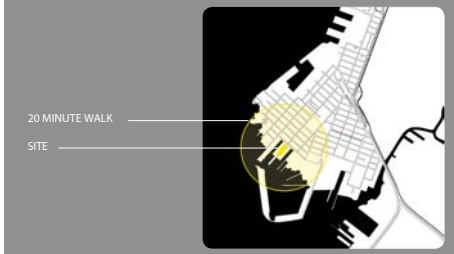
SITE TYPE:
PIER

The example of IKEA, which survived the storm, suggests that properly designed waterfronts and even piers can be suitable sites for housing. They offer advantages difficult to find elsewhere in many costal neighborhoods such as extremely large acreage and transportation via water for goods and people when roads might be impass- able. This project takes advantage of the large unoccupied sites along the waters edge of Red Hook that are on landfill or watery ground and proposes a double-pier, meaning an elevated deck for housing and a lower watery ground, with tidal pools and parking for both boats and cars.



ASSEMBLY:
PLATFORM

The size of the site, its distance from the center of Red Hook and the potential number of res - idents that could be housed there all demand that the project behave like a small neighbor - hood- with a school, community center, market and other services. The housing has been ar - ranged in urban blocks adjacent to small parks or gardens. Connection between the upper and lower decks is via both private stair from the housing to the boat park below or via grand pub- lic stair from public square to tidal pool.

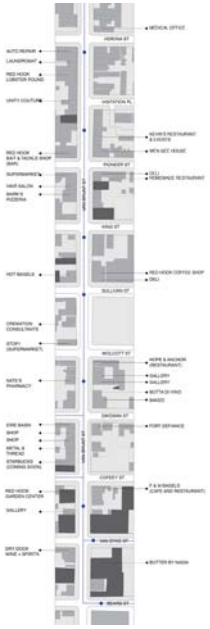


JOOP PYO

INFILL

AERIAL OF HOUSING AND COURTYARDS ALONG VAN BRUNT

VIEW OF ELEVATED WALKWAY OF INTERIOR COURT

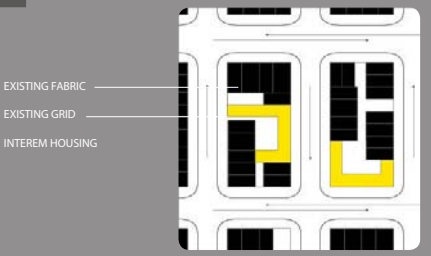


VAN BRUNT FABRIC AND INFILL

SITE SUMMARY:

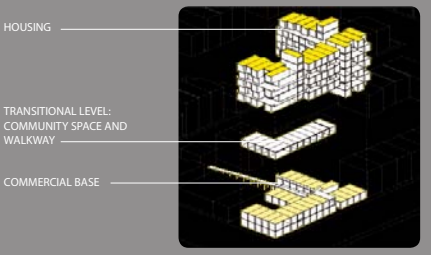
2.3	ACRES
4	BUILDINGS
217	UNITS
55	ONE BEDROOM
100	THREE BEDROOM
155	HOUSEHOLDS
94 UNITS	PER ACRE
222	PEOPLE PER ACRE
8	STORIES TALL

PROPOSED REZONING TO R8 WITH COMMERCIAL OVERLAY



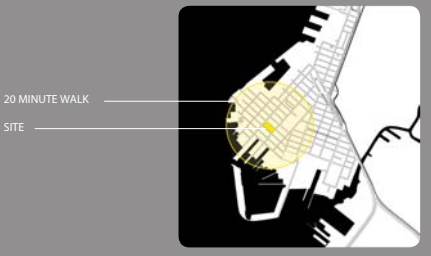
SITE TYPE:
INFILL

Locating interim housing in neighborhoods will sustain the local economy but the reciprocal is also true: the rapid restoration of local com - merce will sustain the return of residents. This project has chosen a site very well suited to that reciprocal formula- Van Brunt street which is the commercial life blood of Red Hook. It has locat - ed two substantial infill sites that ,if developed, will benefit the mixed use fabric of the street and the neighborhood.



ASSEMBLY:
SUPER STRUCTURE

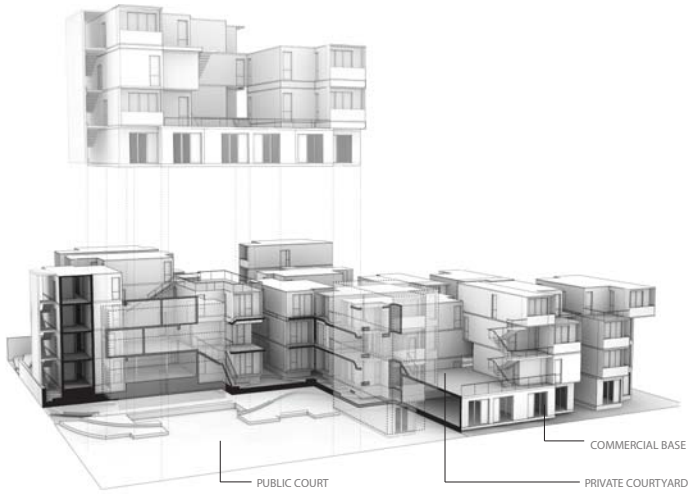
The project suggests that a permanent commer - cial base could be developed prior to the storm with the intent and capacity to receive interim housing above it if required. This housing would be above design flood elevation requirements. The commercial base, while subject to flooding, has been designed as duplex lofts, so that per - ishable goods can be stored out of harms way. The project takes advantage of the sites' config- urations to create social spaces for the housing and small "bazaar-like" shopping connectors perfect for the local artisanal merchandise and art fairs that would normally take place on the waterfront piers.



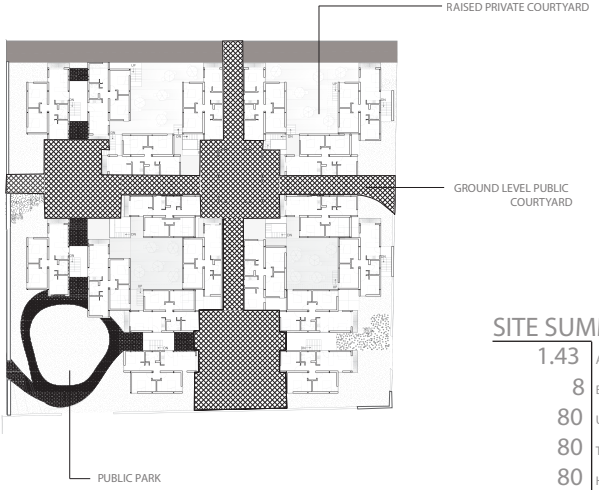
MARTHA MADRID + WILFRED YENKO

OPEN ENCLAVE

VIEW OF PUBLIC COURTYARD



PERSPECTIVAL SECTION

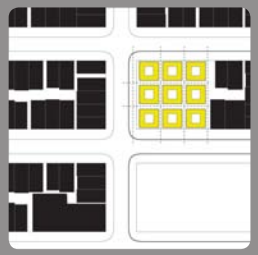


SECOND FLOOR PLAN

SITE SUMMARY:

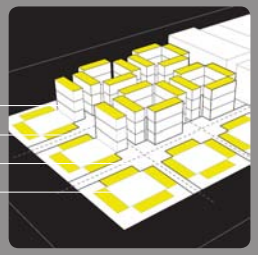
1.43	ACRES
8	BUILDINGS
80	UNITS
80	THREE BEDROOM
80	HOUSEHOLDS
56 UNITS	PER ACRE
157	PEOPLE PER ACRE
4	STORIES TALL

COMPLIES WITH R5 ZONING



SITE TYPE:
PARK

This project defines many of the desirable attributes of an interim housing site in any neighborhood: high ground, adjacency to a public park, and propinquity to a major church that provides social services.



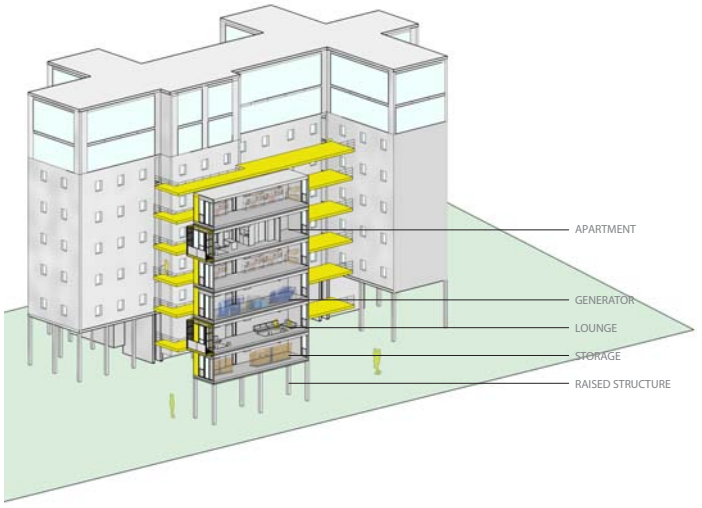
ASSEMBLY:
COURTYARD

The housing is arranged in relation to two sets of courts: one at ground level that defines a public path through the block and is bordered by collective services like laundries ; the other that provides private courtyards for the residents on the roofs of those services. These private courtyards also define clusters of housing within the larger scale of the block that could house former neighbors and help sustain their social networks.

EUNHAE OH + LAURA SILVERA

PLUG-IN

VIEW OF PLUG-IN

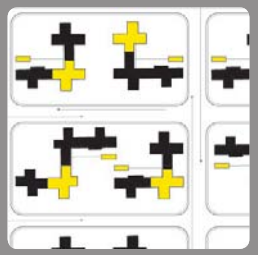


SECTION OF PLUG-IN

SITE SUMMARY:

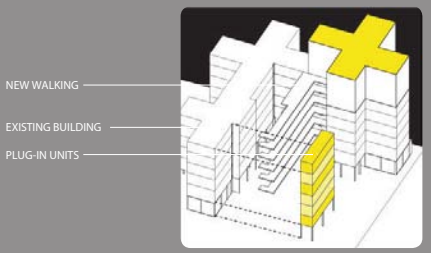
5.76	ACRES
28	BUILDINGS
180	UNITS
160	ONE BEDROOM
2,016	HOUSEHOLDS
31 UNITS	PER ACRE
231	PEOPLE PER ACRE
7	STORIES TALL

COMPLIES WITH R6 ZONING



SITE TYPE:
PLUG-IN

The Red Hook Houses are home to over half of Red Hook's population so that to shelter them in place means to anchor the neighborhood. To provide off site shelter requires serious in - frastructure, land and replacement units. The houses are multi-story buildings that stand on relatively high ground so that damage from Sandy was limited to basement infrastructure and ground floor apartments . This project pro- poses that first floor families occupy on site interim housing and that emergency generators in additional pre-fabricated units restore elevator and power infrastructure so that the upper level residents can remain in place.



ASSEMBLY:
PLUG-IN

The units are outfitted to fit the building needs. They include an empty storage unit for ground floor residents furnishings that won't fit in their interim apartments, a shared lounge, emergency boiler and generator. The rendering also shows additional roof top units as potential permanent replacements for the ground floor apartments that are vulnerable to future floods.

AZHAR KOTADIA + ABRAHAM DREAZEN

PREPARED GROUND

PERSPECTIVE: COURTYARD WITH PREPARED GROUND

DIAGRAM

DRY VIEW

WET VIEW

SITE SUMMARY:

2.75	ACRES
6	BUILDINGS
48	UNITS
18	ONE BEDROOM
30	THREE BEDROOM
48	HOUSEHOLDS
17 UNITS	PER ACRE
57	PEOPLE PER ACRE
3	STORIES TALL

PROPOSED REZONING TO R4

SITE TYPE:
TEMPORARY SUPER BLOCK

This project proposes the creation of a tempo - rary super block of clustered housing on an open field that has been previously prepared as for water management infrastructure. In anticipa - tion of an event, a commercially produced pre - fabricated concrete water trap system that has the capacity to filter and hold rain fall or surge is laid across two abandoned former warehouse sites transforming it into a temporary park- much like the Redhook community farm.

ASSEMBLY:
TIE-IN

The system is equipped with building hookups and the capacity to service at least 200 units per acre of interim housing. In case of an event, the housing is simply plugged in to the prepared ground. The housing is arranged in courts in order to create smaller social groupings. Their u-configuration define a public street wall on one side and capture some of the internal block landscape as a semi-private courtyard.

DAVID MARTINEZ

COASTAL INTERFACE

VIEW OF WATER GARDEN

ELEVATION ALONG DESCENT TO WATER

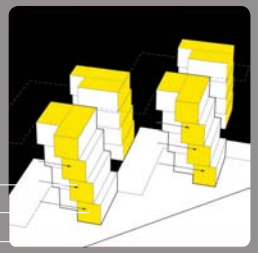
SITE PLAN

SITE SUMMARY:

.68	ACRES
2	BUILDINGS
80	UNITS
60	THREE BEDROOM
60	HOUSEHOLDS
118 UNITS	PER ACRE
353	PEOPLE PER ACRE
4	STORIES TALL
	PROPOSED REZONING TO R4

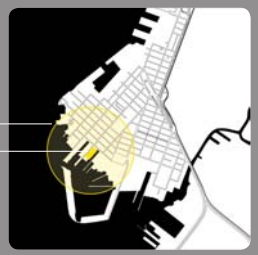
SITE TYPE:
COASTAL INLET

The project takes advantage of the open coast - al parkland throughout Red Hook to propose housing that can help shape a more resilient coastline in its infrastructures and soft scape strategies. The siting reinforces the formal axial relationship between the inlet and the Redhook pool complex and suggests that there could be a water management strategy connecting them as wel l.



ASSEMBLY:
COASTAL

The housing steps down via a series of plant - ed water terraces to the inlet. The base of the housing units are a series of empty prefabricat - ed units designed to capture and control runoff **or flooding. They could potentially operate in** synch with the Red Hook pool if they were con - nected by culvert. In this project, the budgetary and temporal limits of the interim housing units are repressed in favor of suggesting the potential qualities that the architecture could achieve.



NILASHA SRINIVAS + SUNG-JUN PARK