DEBRISIA

self sustainability net zero waste resident-run

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THESIS ADVISORY GROUP : *ARCHITECTURE AFTER SHARING*

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VACANT LOTS

Vacant spaces are the non-utilized or underutilized lands due to their parcel shape, size, or geographic location. These vacant lands are often associated with illegal dumping of construction and general waste due to avoidance of refuse collection fee payments, leading to social, environmental, and financial risks. With the rise in illegal dumping over the years, we aim to address this problem at the avoidance, minimization, and recovery level of waste management.

VACANT LOT CLASSIFICATION
ONE OR MORE TO BE CLASSIFIED AS VACANT PARCEL

ZERO DOLLAR BUILDING VALUE IN LOCAL TAX ASSESOR'S RECORDS

TAX PARCEL WITHOUT A STRUCTURE ON IT

CITY OWNED AND CONSIDERED VACANT AND DEVELOPABLE

TYPES OF VACANT LAND
AS PER RAY NORTHAM, URBAN ECONOMIST

REMNANT PARCELS

PARCELS WITH PHYSICAL LIMITATIONS

→ LIKELY TO BE ***PERMANENTLY*** VACANT

CORPORATE RESERVE PARCELS

PARCELS HELD FROM SPECULATION

INSTITUTIONAL RESERVE PARCELS

DERELECT LAND

→ INTENDED ***TEMPORARY***
MAY CONTINUE NONUSE FOR DECADES

EVOCATIONS
NEGATIVE

ABANDONMENT

DECAY

EMPTINESS

DANGER

CONDITIONS IN U.S. CITIES
CITIES WITH 50,000+ POPULATION LATE 1997- EARLY 1998
186 RESPONSES TO SURVEY

NOT LARGE ENOUGH	97/186
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OTHER CONDITIONS	60/186
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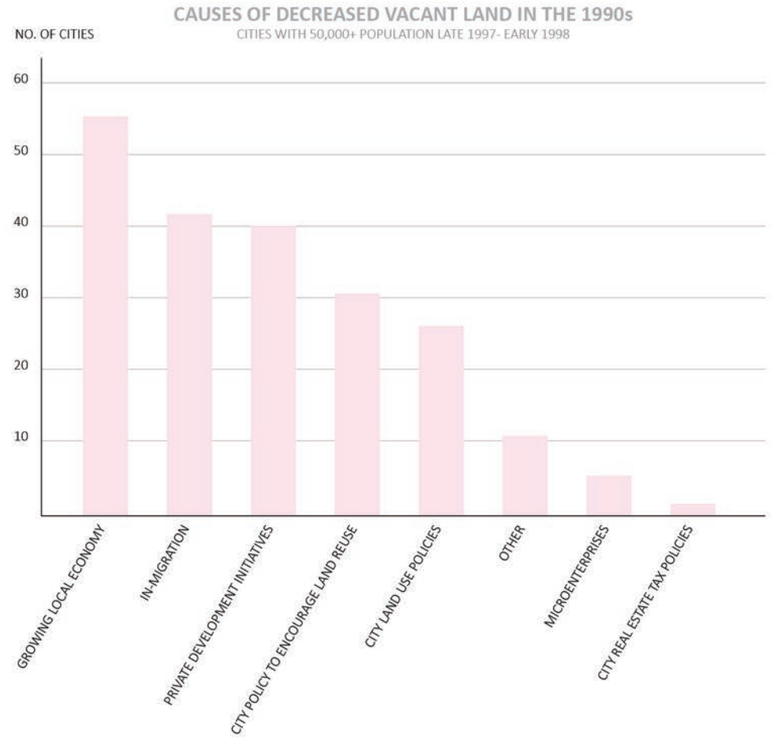
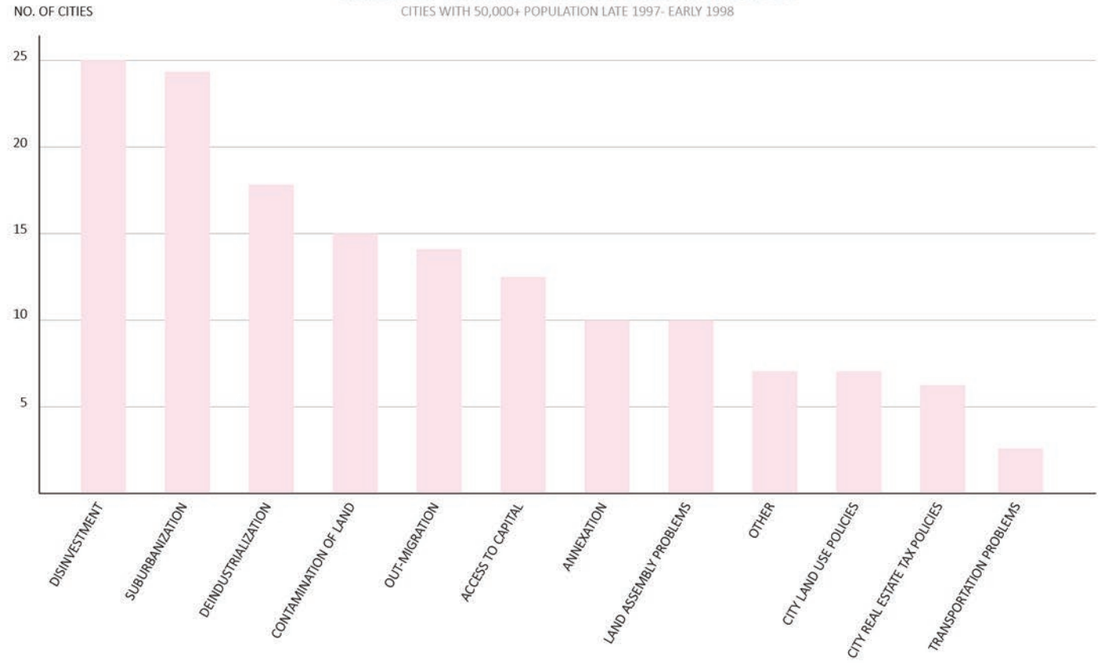




ILLEGAL DUMPING

WHAT ?

TERMS

"OPEN DUMPING"- DUMPED IN OPEN AREAS

"FLY DUMPING"- FROM VEHICLES ALONG THE ROADSIDES

"MIDNIGHT DUMPING"- LATE AT NIGHT

GENERAL GARBAGE DUMP

CONSTRUCTION AND DEMOLITION WASTE SUCH AS DRYWALL, ROOFING SINGLES, LUMBER, BRICKS, CONCRETE AND SIDING

ABANDONED AUTOMOBILES, AUTO PARTS AND SCRAP TIRES

APPLIANCES OR "WHITE GOODS"

FURNITURE

YARD WASTE

HOUSEHOLD TRASH

MEDICAL WASTE

TIME

AT NIGHT

EARLY MORNING HOURS DURING WARMER MONTH

COMMON POTENTIAL SITES

ABANDONED INDUSTRIAL, RESIDENTIAL OR COMMERCIAL BUILDINGS

VACANT LOTS ON PUBLIC OR PRIVATE PROPERTY

INFREQUENTLY USED ALLEYS OR ROADWAYS

NEAR JUNKYARD AND TEMPORARY DUMP AREAS AT CONSTRUCTION SITES

FACTORS WHY?

DEMOGRAPHICS

COMMUNITIES AREAS WITH LIMITED ACCESS TO WASTE DISPOSAL FACILITIES OR SERVICES AND RECYCLING PROGRAMS

LOWER-INCOME AREAS

DANGEROUS AND HIGH CRIME RATE AREAS WITH LOW PRIORITY BY LAW ENFORCEMENT

AREAS WITH A HIGH POPULATION OF RENTERS WHO HAVE LESS STAKE IN THE COMMUNITY

AREAS PHYSICAL CHARACTERISTICS

UNSECURED PROPERTIES
(UNDEVELOPED LOTS, ABANDONED STRUCTURES, UNUSED INDUSTRIAL FACILITIES AND REMOTE SPACES)

VACANT PROPERTIES WITH REDUCED POTENTIAL FOR DUMPERS TO BE SIGHTED

SPACES THAT ARE SPARSELY POPULATED AND DARK

BORDERS OF CITIES WITH LACK OF POLICE PRESENCE

NATURAL DISASTERS

RURAL ROADS AND RAILWAYS

LACK OF ... .

ALTERNATIVE WASTE DISPOSAL AND RECYCLING PROGRAMS

CONTRACT WITH A WASTE HAULER AND STANDARDIZED BILLING

SOLID WASTE CODES AND ORDINANCE

ORDERS THAT PROHIBITING OPEN DUMPING OR BURNING OF WASTE

DEPEND OF LOCAL CODES

WHO ?

TYPICAL OFFENDERS

CONSTRUCTION, DEMOLITION, REMODELING, ROOFING OR LANDSCAPING CONTRACTORS

WASTE MANAGEMENT COMPANIES OR GENERAL HAULING CONTRACTORS

OPERATORS OF TRANSFER STATIONS OR JUNKYARDS

AUTOMOBILE REPAIR OR TIRE SHOPS

SCRAP COLLECTORS

LOCAL RESIDENTS AND "DO-IT-YOURSELFERS"

HOW IS THIS A PROBLEM ?

HEALTH RISKS

PHYSICAL (PROTRUDING NAILS OR SHARP EDGES)

CHEMICAL HAZARDS (HARMFU FLUIDS OR DUST)

ATTRACTS RODENTS, INSECTD AND OTHER VERMIN

ATTRIBUTED TO DISEASE-CARRYING MOSQUITOES

OTHER AFFECTS

FIRE- SPONTANEOUS COMBUSTION AND ARSON

FLOODING (IMPACT PROPER DRAINAGE OF RUNOFF)

FOREST FIRE AND SEVERE EROSION

CONTAIMINATE WELLS AND SURFACE WATER

PROPERTY VALUES DECREASES

COST OF PUBLIC CLEANUPS INCREASES (TAX)

COMMON TYPES OF WASTE IN ILLEGAL DUMPING

PLASTIC

- PACKAGING
  - PET/ PETE
  - HDPE
  - PVC/ V
  - LDPE/ LLDPE
  - PP
  - PS
  - PLASTIC RESIN + ABS
  - UNIDENTIFIED PLASTIC
- PLASTIC FILM
  - PURE PLASTIC FILM
  - COMPOSITE PLASTIC

PAPER

- PAPER
  - PRESS/ PRINTING
  - MISCELLANEOUS PAPER
- BOARD
  - CORRUGATED BOXES
  - FOLDING BOXES
  - CARTONS, PLATES, CUPS
  - MISCELLANEOUS BOARD

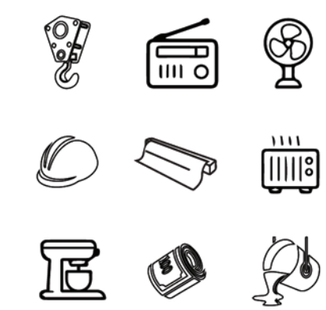
CONSTRUCTION

- ASPHALT
  - SHINGLES
  - MIXTURE WITH CONCRETE
- MATERIALS
  - STEEL
  - WOOD
  - BRICK AND CLAY TILES
  - DRYWALL AND PLASTERS

GLASS

- PACKAGING
  - CLEAR GLASS
  - BROWN GLASS
  - GREEN GLASS
- TABLE + KITCHENWARE
- OTHER/ SPECIAL

METAL



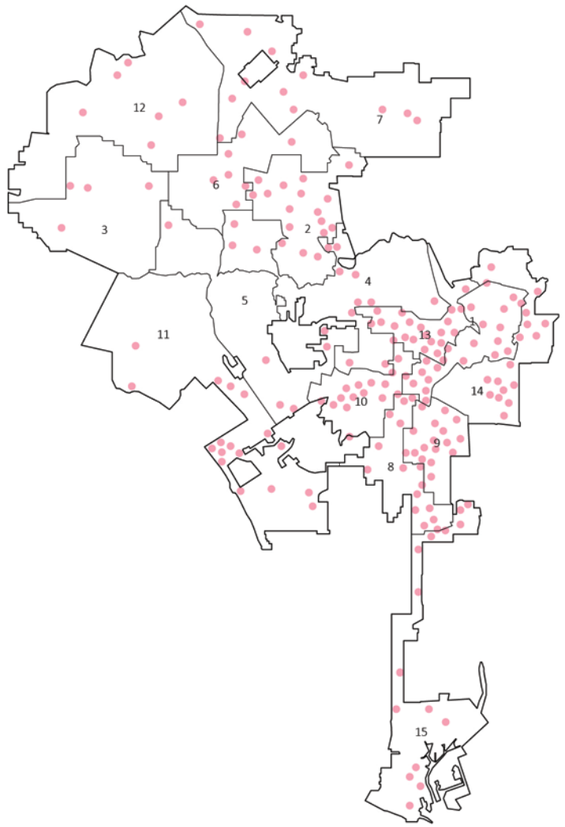
- FERROUS
  - PACKAGING
  - NON-PACKAGING
  - APPLIANCES
  - WRAPPING FOIL
- NON-FERROUS

BULKY ITEMS/ FOOD

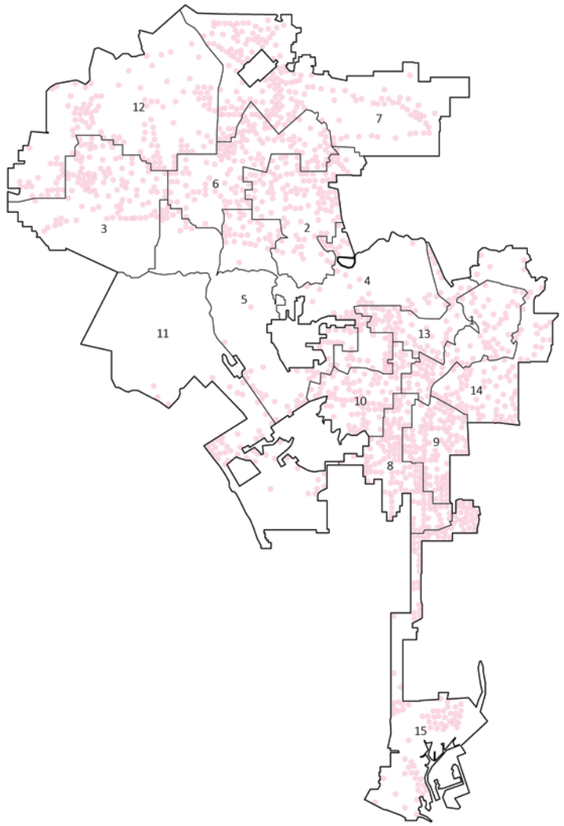
- FOOD WASTE
  - EXCESS LEFTOVER
  - HOUSEHOLD
- BULKY
- BANNED FROM LANDFILLS
- HARD TO DISASSEMBLE
  - TIRES/ INNER TUBES
  - FURNITURE
  - MATTRESS
  - CAR PARTS

ILLEGAL DUMPING SITE ANALYSIS

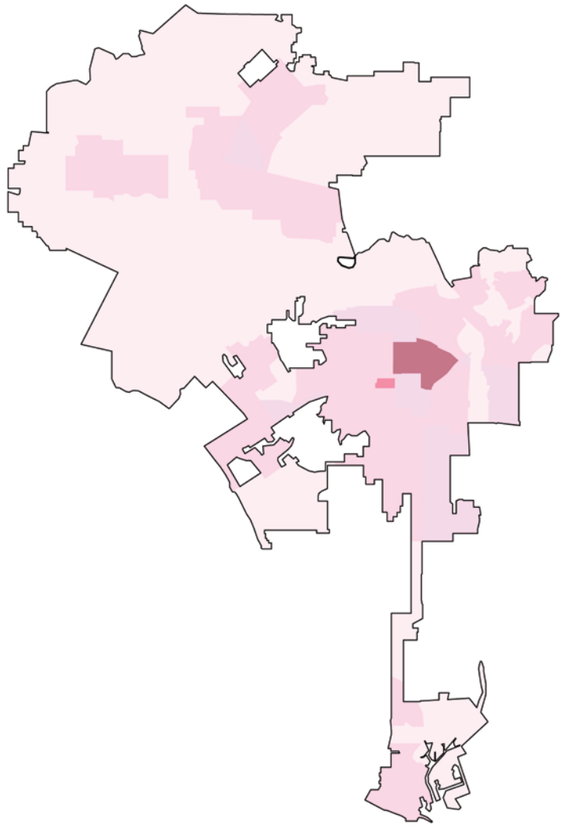
VACANT LOTS IN LOS ANGELES



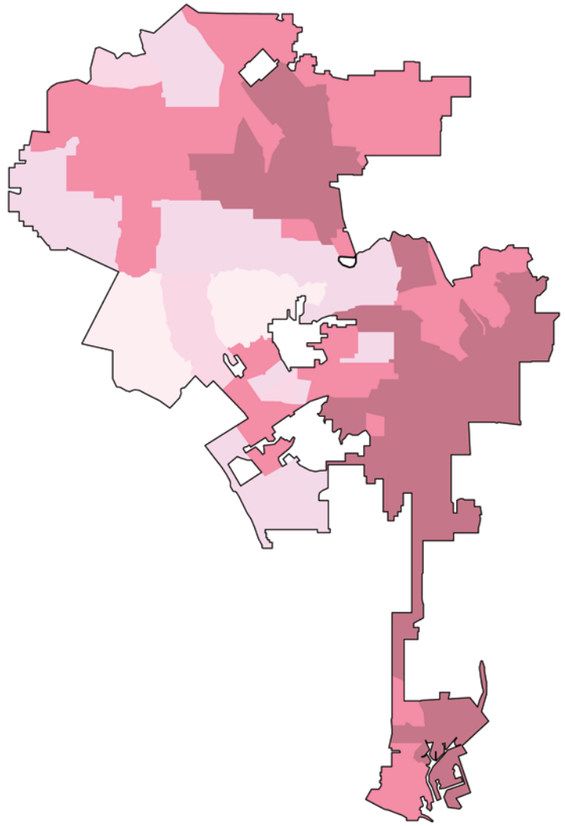
ILLEGAL DUMPING IN LOS ANGELES DISTRICTS



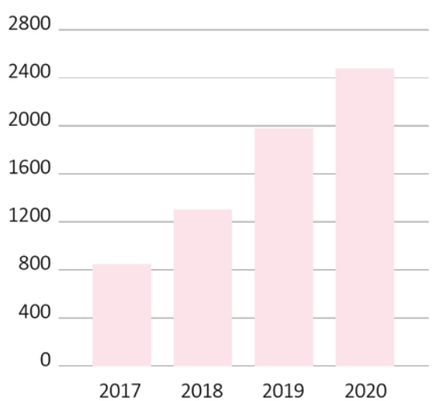
POPULATION DENSITY IN LOS ANGELES



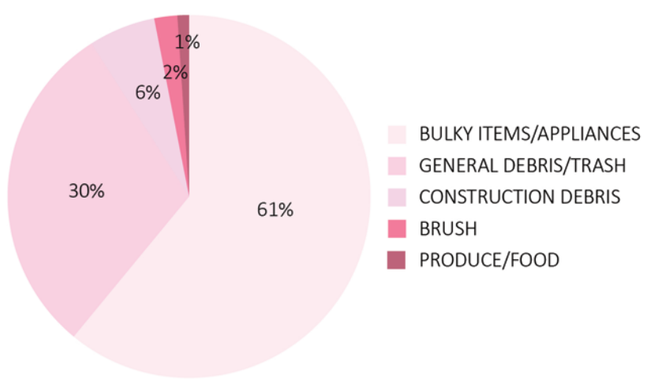
MEDIAN HOUSEHOLD INCOME IN LOS ANGELES



ILLEGAL DUMPING REQUESTS MONTHLY AVERAGES PER YEAR



COMMON TYPES OF WASTE



POPULATION PER SQUARE MILE OF LAND

- 0 - 9000
- 9000 - 17000
- 17000 - 26000
- 26000 - 34000
- 34000 - 43000

POPULATION IN 2020 : 3,898,747

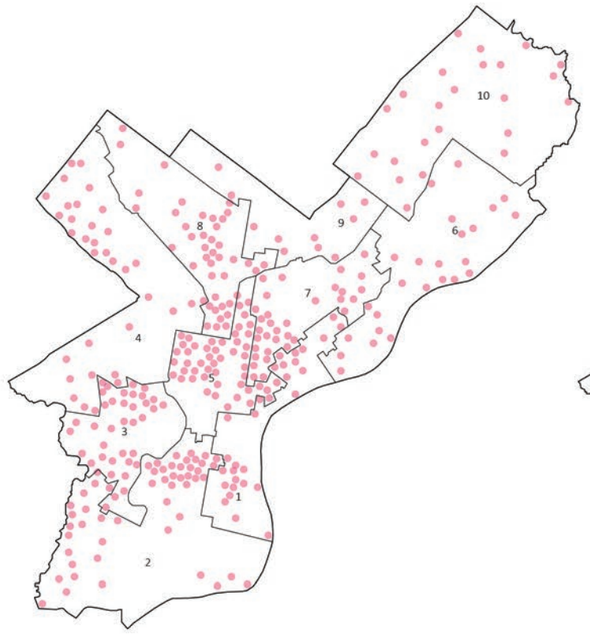
CITY AREA : 503 SQ. MILES

MEDIAN HOUSEHOLD INCOME BY NEIGHBORHOOD

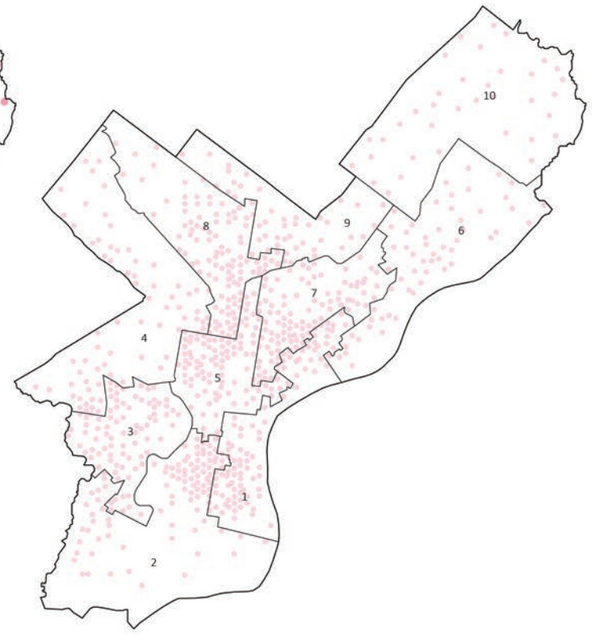
- $20,000 - $54,000
- $54,000 - $88,000
- $88,000 - $121,000
- $121,000 - $155,000
- $155,000 - $189,000

ILLEGAL DUMPING SITE ANALYSIS

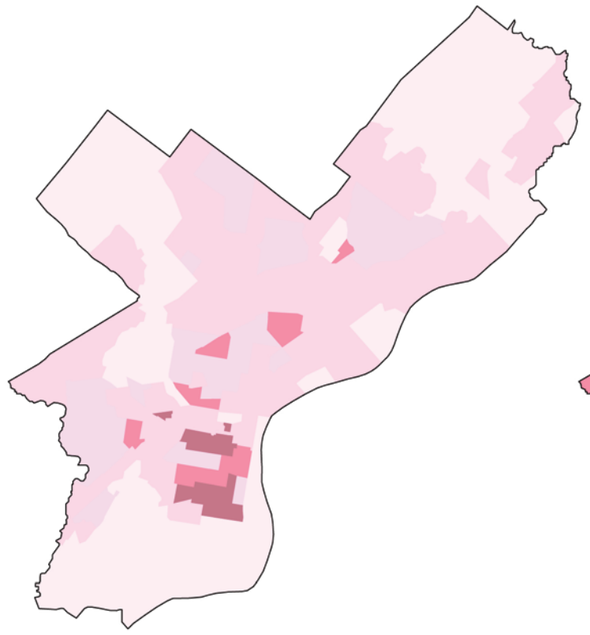
VACANT LOTS IN PHILADELPHIA



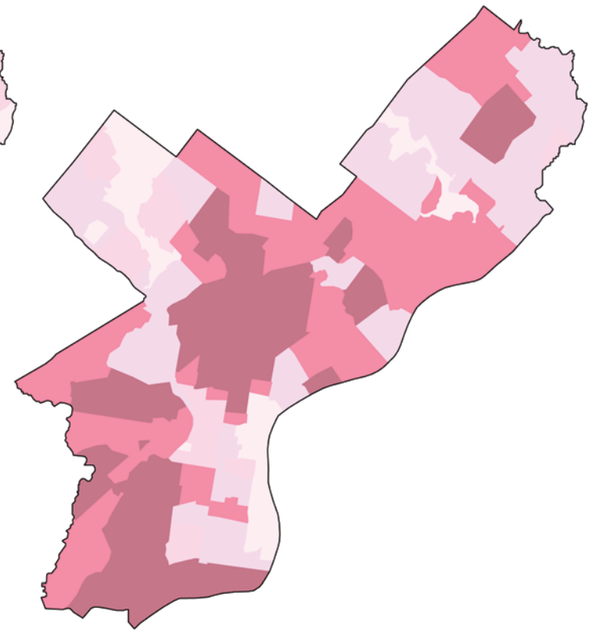
ILLEGAL DUMPING IN PHILADELPHIA DISTRICTS



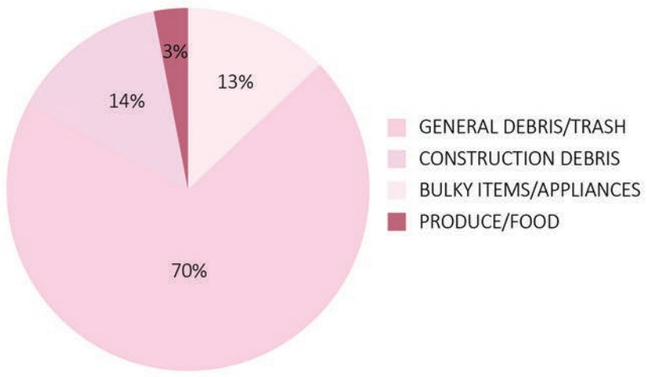
POPULATION DENSITY IN PHILADELPHIA



MEDIAN HOUSEHOLD INCOME IN PHILADELPHIA



COMMON TYPES OF WASTE



POPULATION PER SQUARE MILE OF LAND

- 0 - 9000
- 9000 - 18000
- 18000 - 27000
- 27000 - 35000
- 35000 - 45000

MEDIAN HOUSEHOLD INCOME BY NEIGHBORHOOD

- $13,000 - $31,000
- $31,000 - $49,000
- $49,000 - $67,000
- $67,000 - $85,000
- $85,000 - $103,000

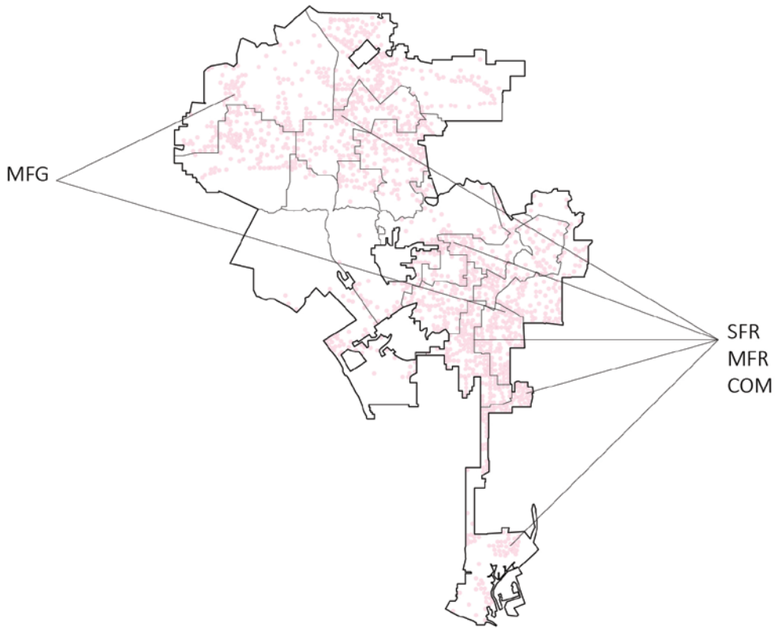
POPULATION IN 2018 : 1,585,010

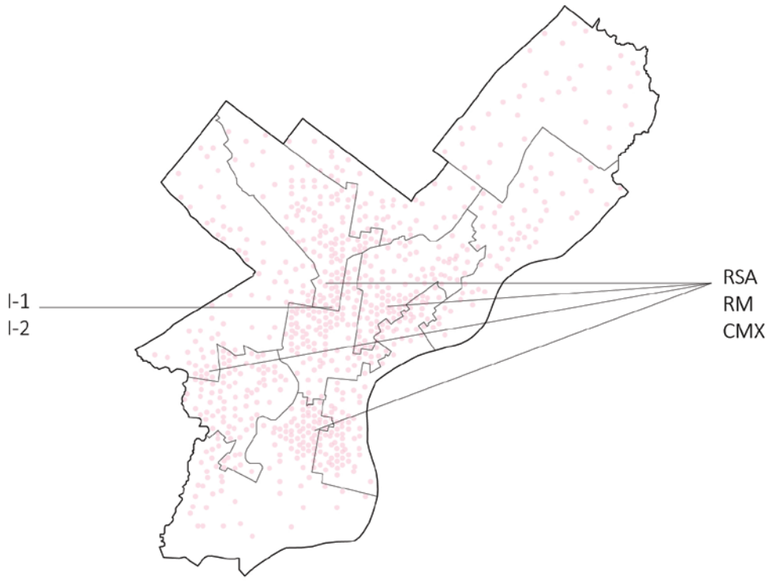
CITY AREA : 142 SQ. MILES

ILLEGAL DUMPING SITE ANALYSIS

	LOS ANGELES	PHILADELPHIA	NEW YORK CITY	CHICAGO
REFUSE COLLECTION FEES PER MONTH				
SINGLE-FAMILY UNIT	$36.32	-	-	$9.50
TWO-FAMILY UNIT	$36.32	$41.67	-	$19
THREE-FAMILY UNIT	$24.33	$41.67	-	$28.50
FOUR-OR-MORE FAMILY UNIT	$24.33	$41.67	-	$38

ZONING DISTRICTS



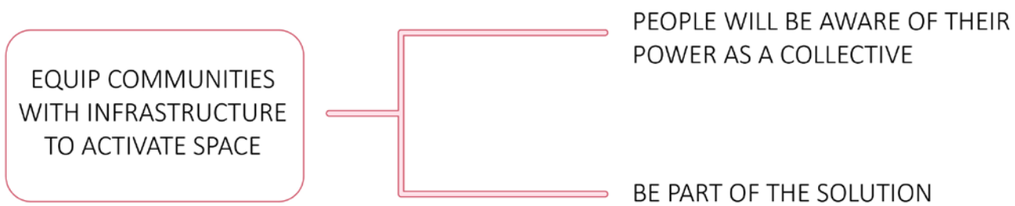


SFR: SINGLE-FAMILY RESIDENTIAL
MFR: MULTI-FAMILY RESIDENTIAL
COM: COMMERCIAL
MFG: MANUFACTURING

RSA: RESIDENTIAL SINGLE-FAMILY ATTACHED
RM: RESIDENTIAL MULTI-FAMILY
CMX: COMMERCIAL MIXED-USE
I-1: LIGHT INDUSTRIAL
I-2: MEDIUM INDUSTRIAL

REASONS FOR HIGH ILLEGAL DUMPING		
HIGH POPULATION DENSITY	2ND MOST POPULOUS US CITY IN 2020	6TH MOST POPULOUS US CITY IN 2020
	LACK OF L.A. SANITATION AND ENVIRONMENT WORKERS AND PUBLIC OFFICERS FOR INVESTIGATIONS AND ARRESTS OF ILLEGALDUMPERS.	RAISED FINES FOR ILLEGAL DUMPING, BUT THE SHORTAGE OF SURVEILLANCE CAMERAS MADE THE LAW RARELY ENFORCED.
	BUSINESSES HIRE PICKUP TRUCKS TO DUMP THEIR WASTES ON PUBLIC STREETS, ALLEYWAYS, AND VACANT LOTS.	‘BIG BELLY’ TRASH CANS INSTALLED IN 2017 WORSEN THE ILLEGAL DUMPING OF HAZARDOUS WASTE.
	BUSINESSES AND INDIVIDUALS AVOID PAYING REFUSE COLLECTION FEES TO LEGALLY DISPOSE OF THEIR WASTE.	BUSINESSES AND INDIVIDUALS AVOID PAYING REFUSE COLLECTION FEES TO LEGALLY DISPOSE OF THEIR WASTE.

PROPOSAL



COMMUNITY BENEFITS

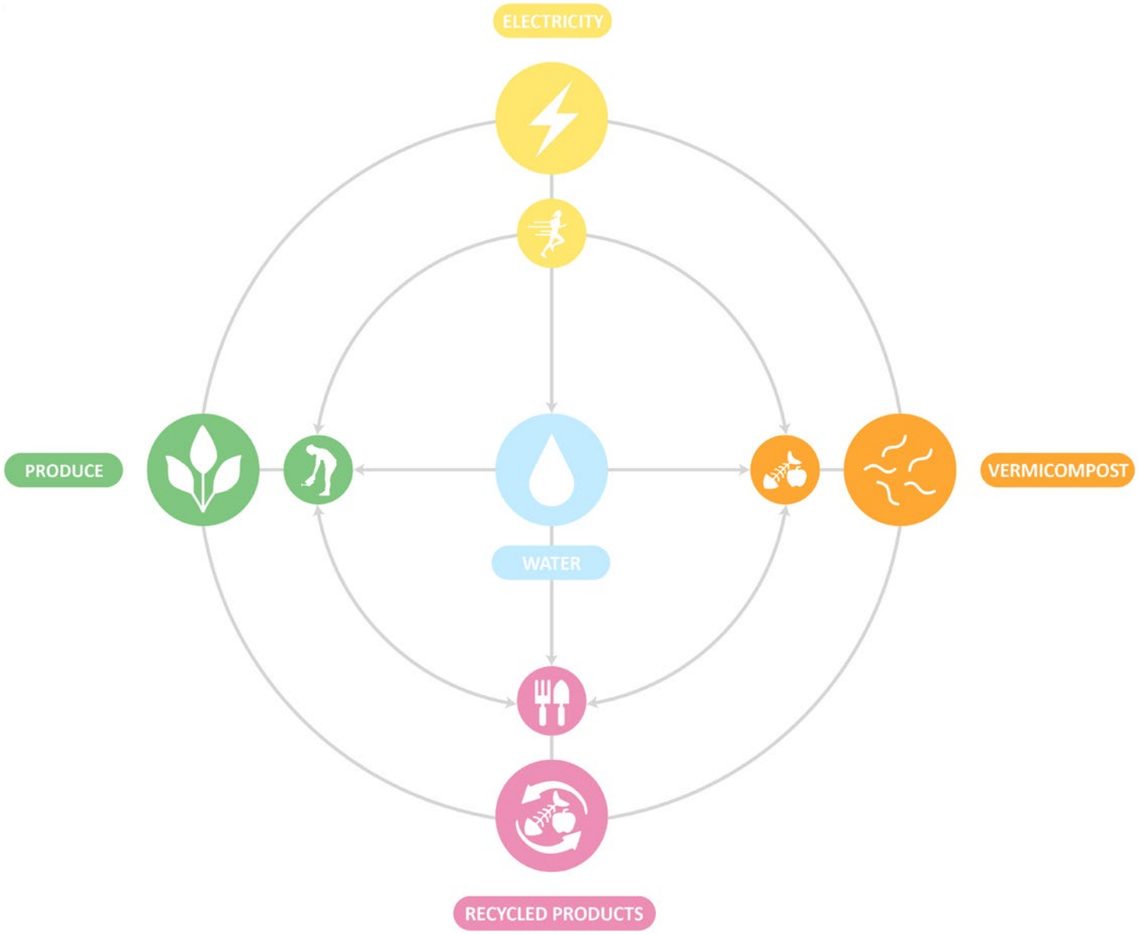
THESIS STATEMENT

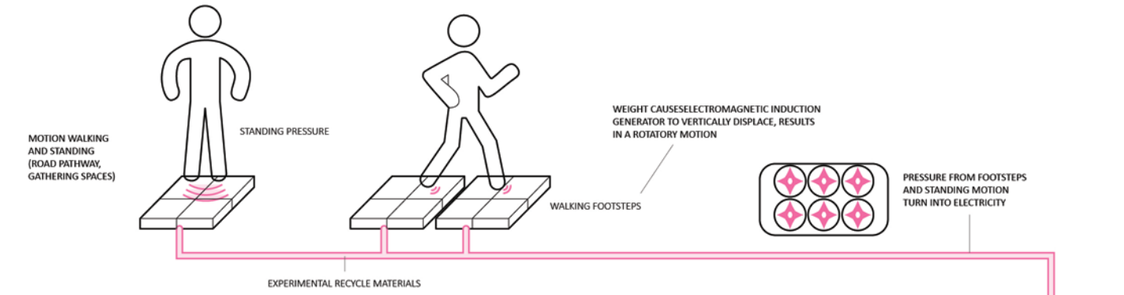
Vacant spaces are the non-utilized or underutilized lands due to their parcel shape, size, or geographic location. American cities are underdeveloping vacant lots, and as a result, many of these lots are being used for illegal dumping, harming communities in social, environmental, and financial ways. Debrisia aims to help each community reclaim their vacant lots by equipping them with curated infrastructure for intervention that will allow the people to activate the space themselves. Instead of waiting for institutions to do something, the people are taking action into their own hands.

The project aims to explore the potential of enhancing vacant lots to the benefit of the community and achieve net zero waste by introducing a self-sustaining system. Debrisia acts as a prototype that addresses local needs and adapts to different scales of community. There are five networks supporting each other: energy, water, agriculture, livestock and recycling workshops. The locals will generate electricity collected by motion, manage the livestock, produce fertilizer for vegetation, and create products from their food waste. Emphasis is placed on participation from the residents, and such, the residents will get to receive back what they help produce at the facility.

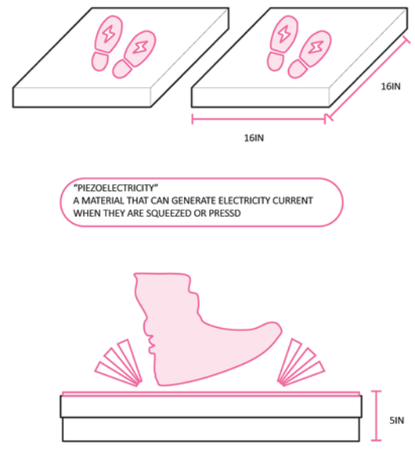
Through the implementation of Debrisia, and through the lens of illegal dumping, people will become aware of the power they have. Instead of unconsciously throwing things away, they can participate in an initiative that repurposes waste, and draws awareness to sustainability. Instead of contributing to a problem by illegal dumping, they can be part of a collective that is a solution for creating a better space to live.

SELF-SUSTAINING SYSTEMS





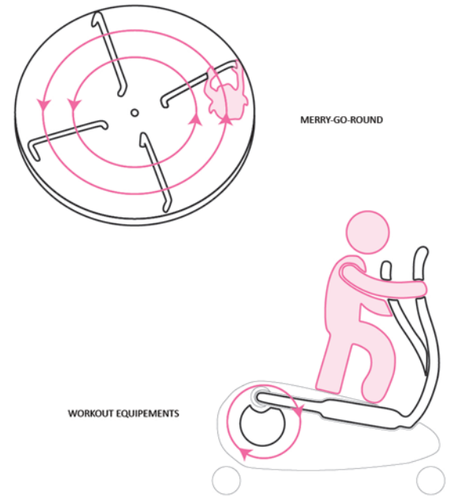
FLOOR TILES



PATHWAY TILES DIMENSION
- AREA OF THE SQUARE TILE = 16" X 16"
- DEPTH OF THE TILE = 5"

AVERAGE AMOUNT OF ELECTRICITY GENERATE
- GENERATE 3 WATTS PER FOOTSTEP
- GENERATE 7 WATTS WHILE WALKING

RECREATION AREAS

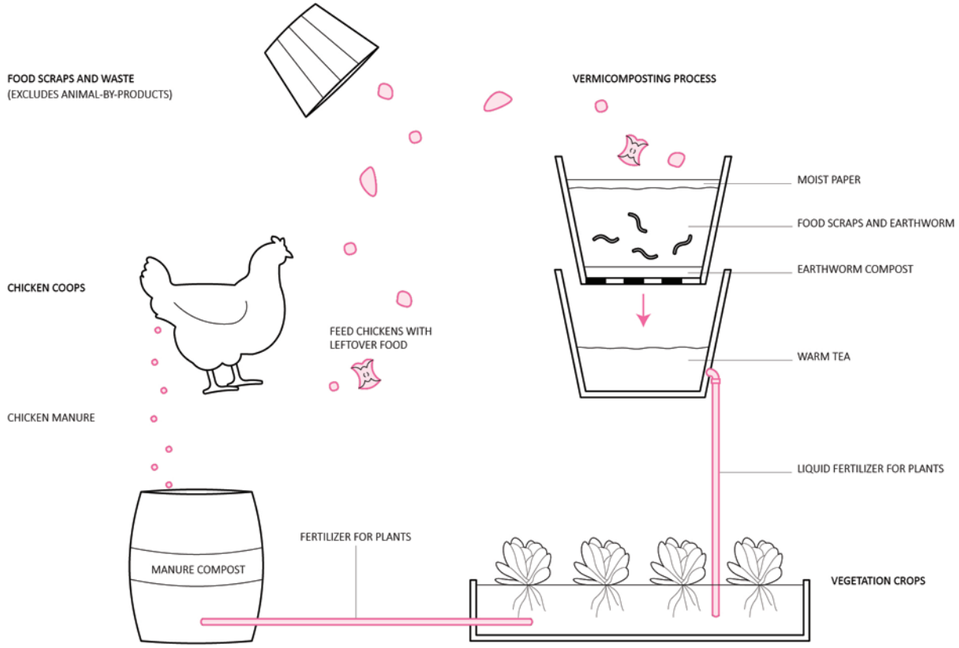


WORKOUT EQUIPMENT
- ENERGY HAND BIKE/ ENERGY CROSS TRAINER
- ENERGY GENRATED AVERAGE = 40 WATTS PER 10 SPINS
- POWER GENERATED MAX = 100 WATTS (MAX 30V)

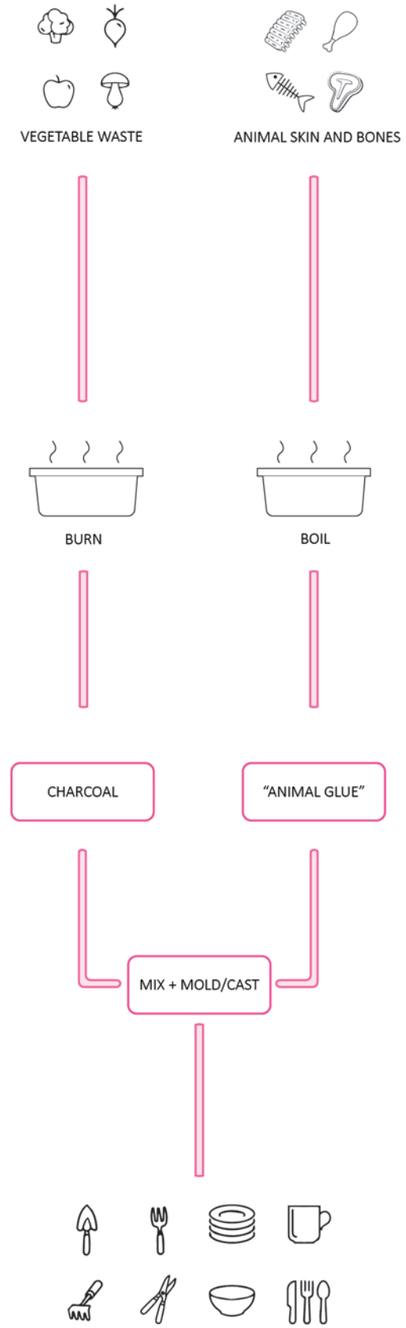
PLAYGROUND
- MERRY-GO-ROUND
- GENERATE 4 WATTS TO 16 WATTS PER SPIN

SELF-SUSTAINING SYSTEMS

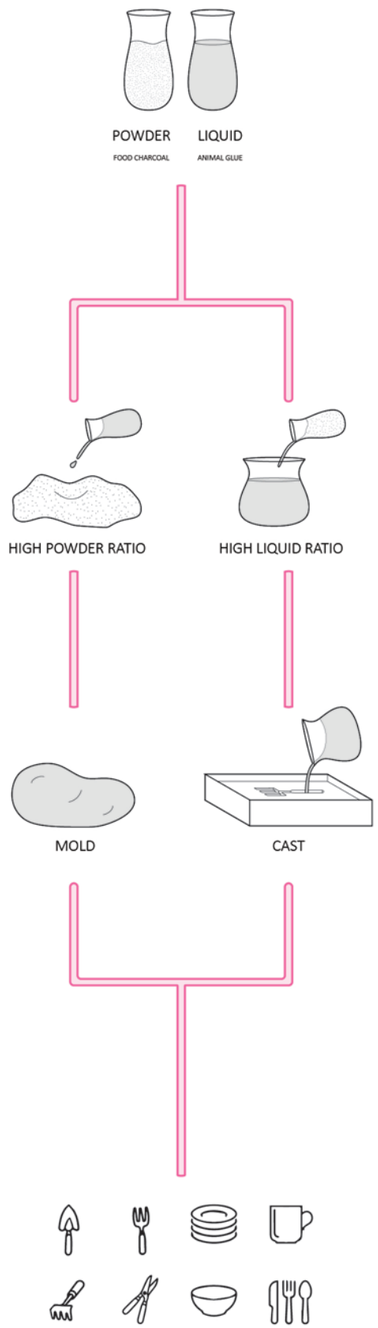
VERMICOMPOST+PRODUCE



RECYCLED WORKSHOP

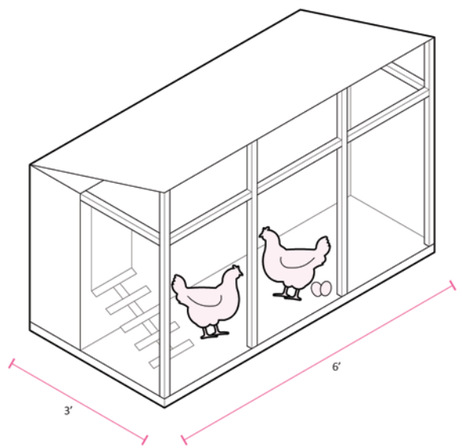


UTILIZING FOOD WASTE



MIXING METHODS

CHICKEN COOP

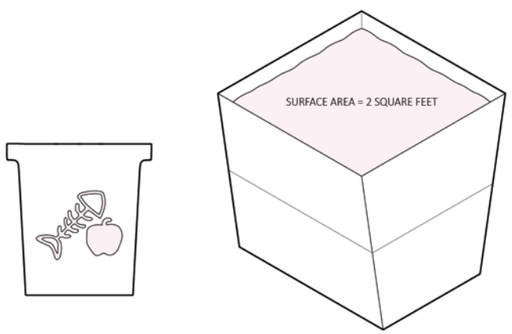


CHICKEN BREED = LEGHORN
- LAY AVERAGE OF 4+ EGGS PER WEEK
- AVERAGE HEIGHT = 16"

CHICKEN COOP DIMENSIONS:
- AREA NEEDED FOR ONE CHICKEN = 8 SQUARE FEET
- DIMENSION CALCULATION = L x W

EXAMPLE:
6' x 3' = 18 SQUARE FEET
18 / 8 SQUARE FEET = 2 CHICKENS

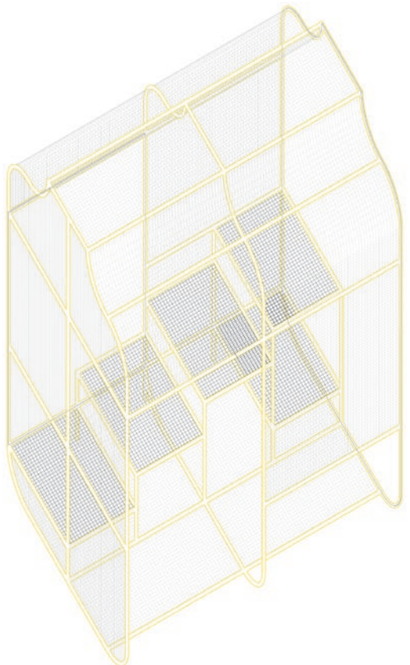
VERMICOMPOSTING



FOOD WASTE
- DAILY AVERAGE FOOD WASTE CREATED PER PERSON = 1 LB
- EARTHWORM CAN CONSUME 50% OF THEIR WEIGHT DAILY

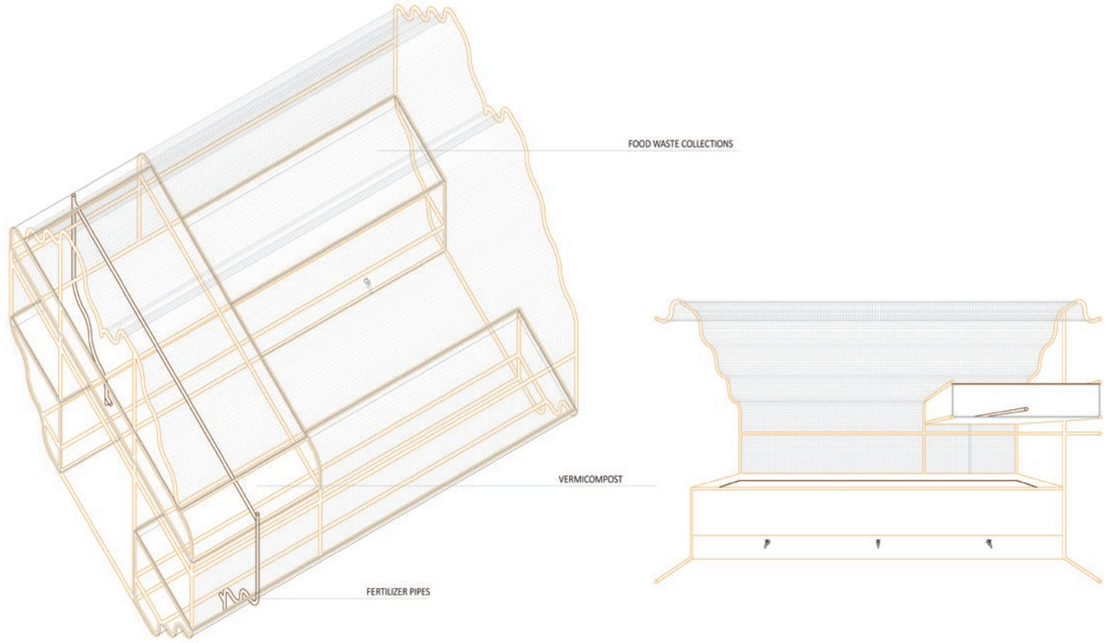
COMPOST DIMENSIONS:
- SURFACE AREA OF COMPOST PER 1 LB OF EARTHWORM = 1 SQUARE FEET
- DIMENSION CALCULATION = 1 LB OF FOOD WASTE = 2 LBS OF EARTHWORM = 2 SQUARE FEET SURFACE AREA

PROGRAM PROTOTYPES

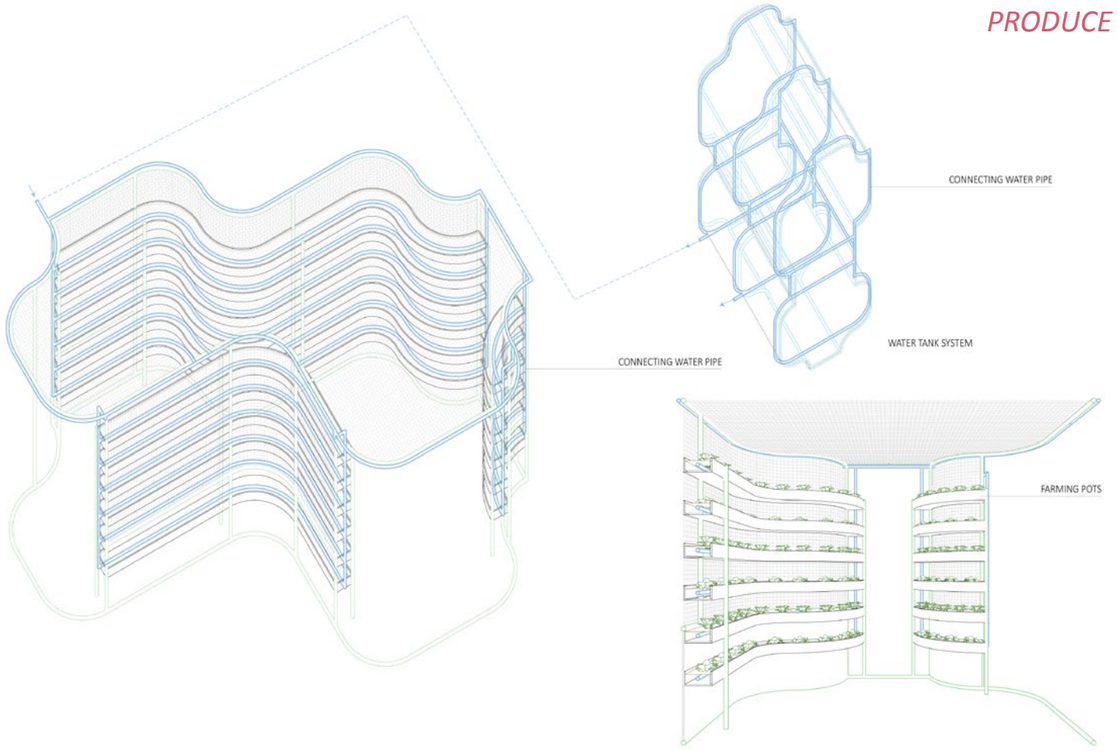


ELECTRICITY

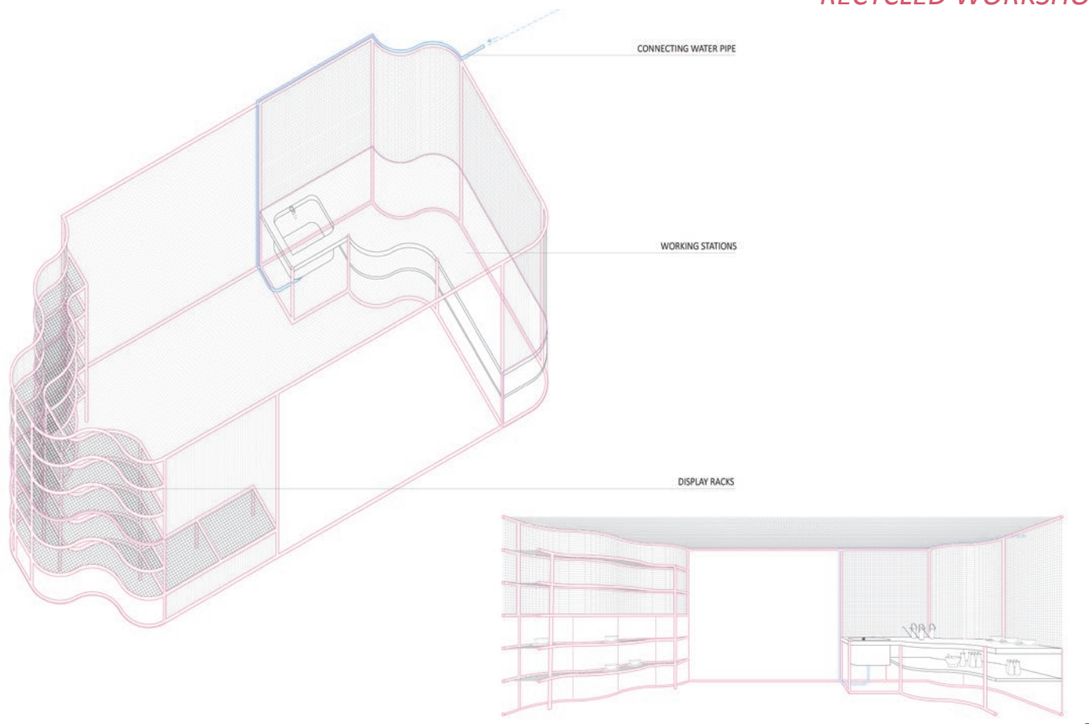
VERMICOMPOST



PRODUCE



RECYCLED WORKSHOP



IMPLEMENTATION PROCESS

ORGANIZE

DEBRISIA

FREE LOTS ANGELES (FLA)

CITY COUNCIL

BUILD

RECYCLE FACILITY

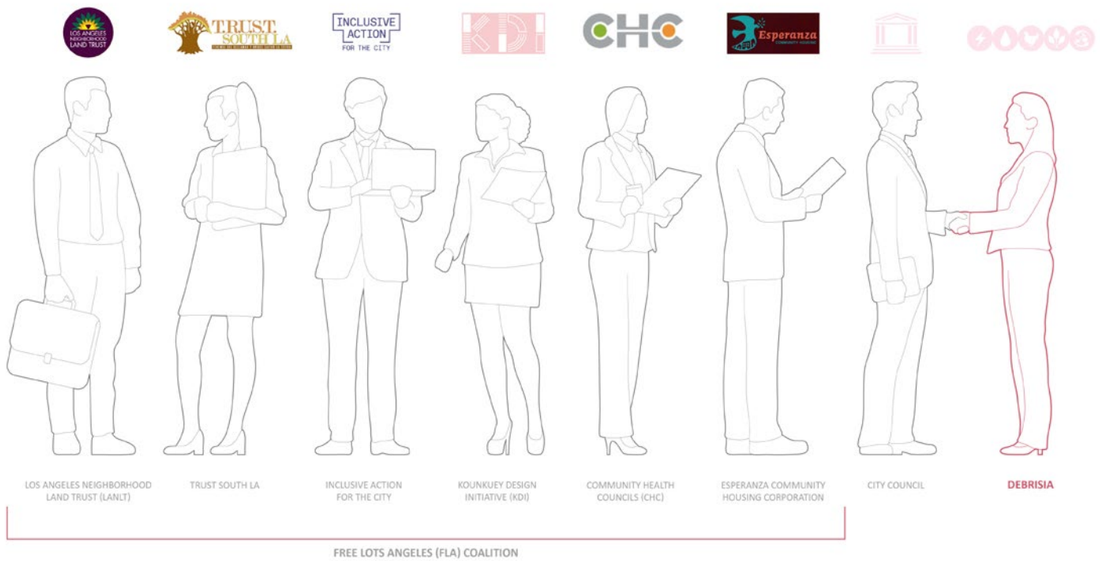
SPECIALISTS + COMMUNITY

MAINTAIN

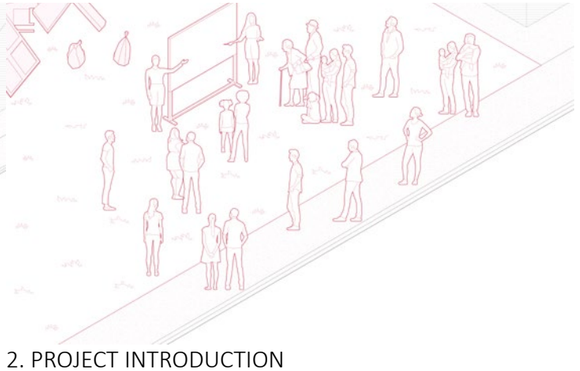
CITY COUNCIL + SPECIALISTS

VOLUNTEERS + COMMUNITY

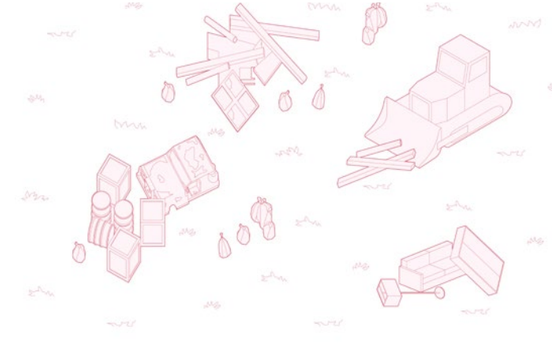
DEBRISIA, FREE LOTS ANGELES (FLA), AND CITY COUNCIL MEET TO IDENTIFY AND DISCUSS POTENTIAL LOTS FOR ACTIVATION



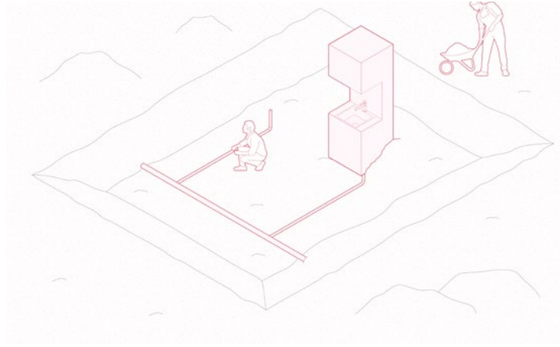
1. NEIGHBORHOOD VISIT



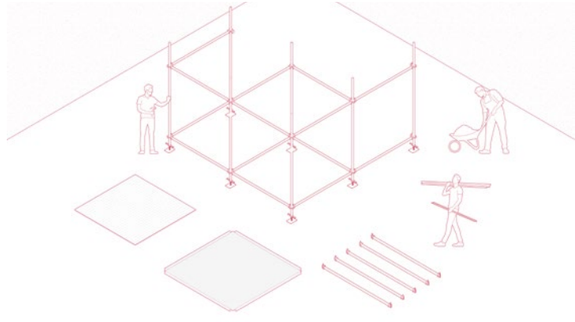
2. PROJECT INTRODUCTION



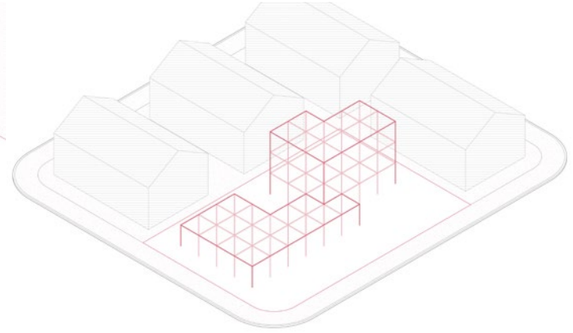
3. LOT CLEAN UP



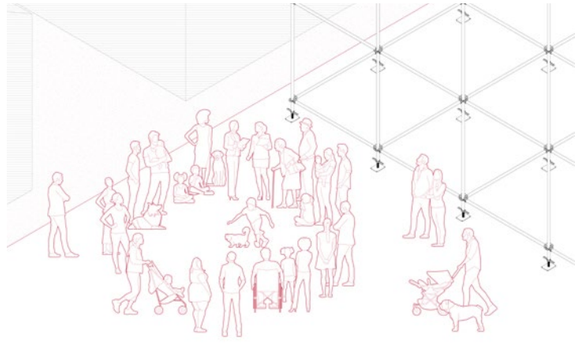
4. MECHANICAL INSTALLATION



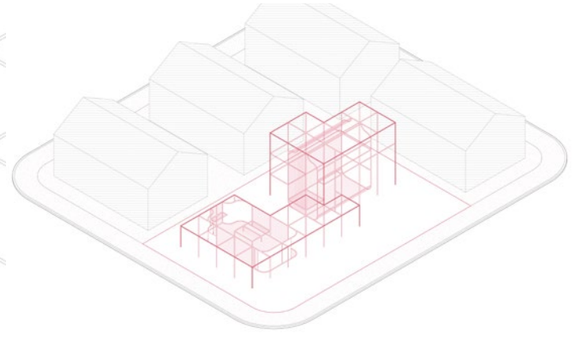
5. SCAFFOLDING CONSTRUCTION



6. INITIAL SCAFFOLDING FRAMEWORK



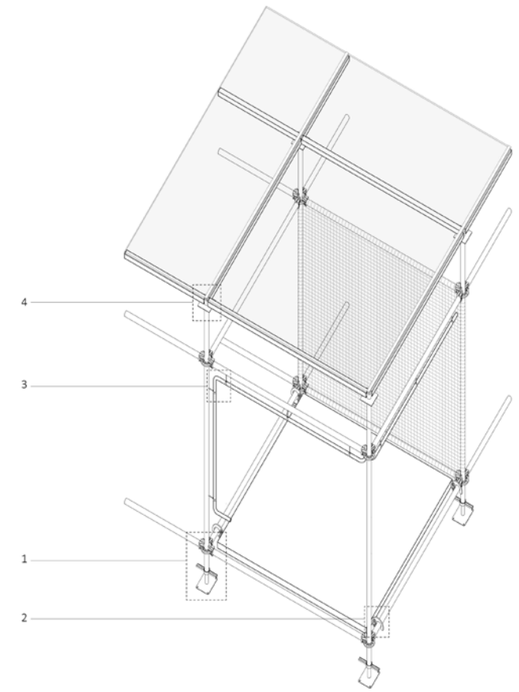
7. COMMUNITY MEETING

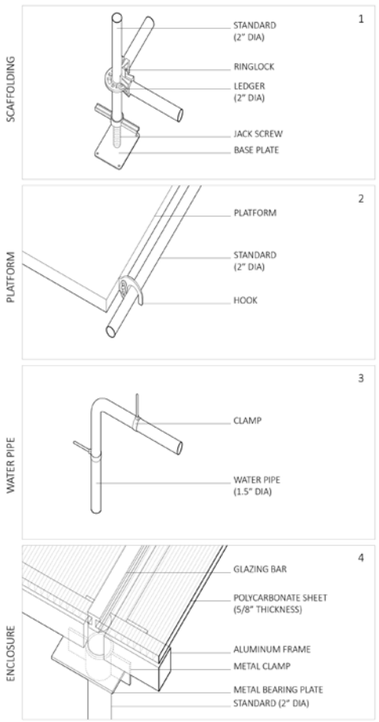


8. POST IMPLEMENTATION

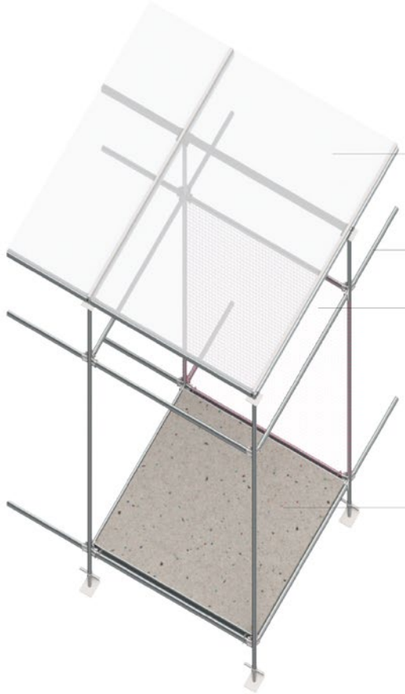
STRUCTURES AND MATERIALITY

FRAMEWORK STRUCTURE





MATERIALITY

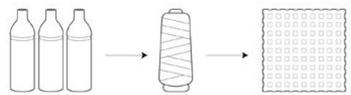


POLYCARBONATE SHEET

STEEL SCAFFOLDING STRUCTURES

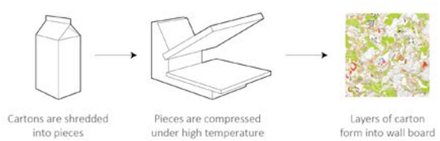
RPET NET

The net is made from recycled polyester that each foot is made from 3 plastic bottles.

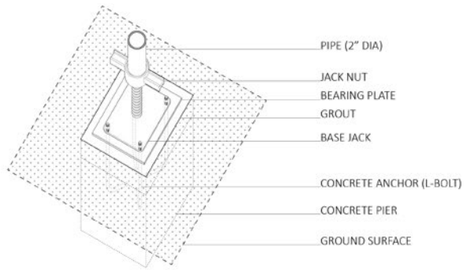


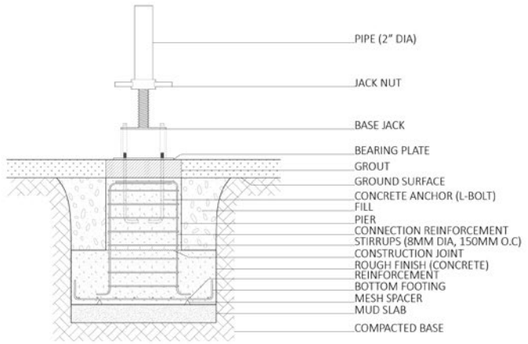
RECYCLED BEVERAGE CARTONS

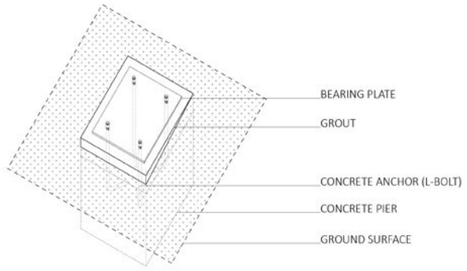
ReWall® NakedBoard is made of recycled cartons which is durable and moisture resistant.

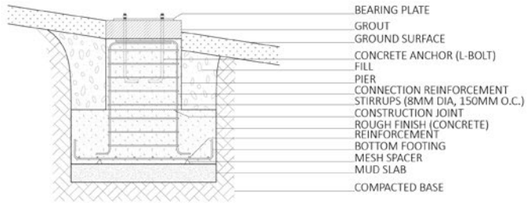


STRUCTURE FOUNDATION

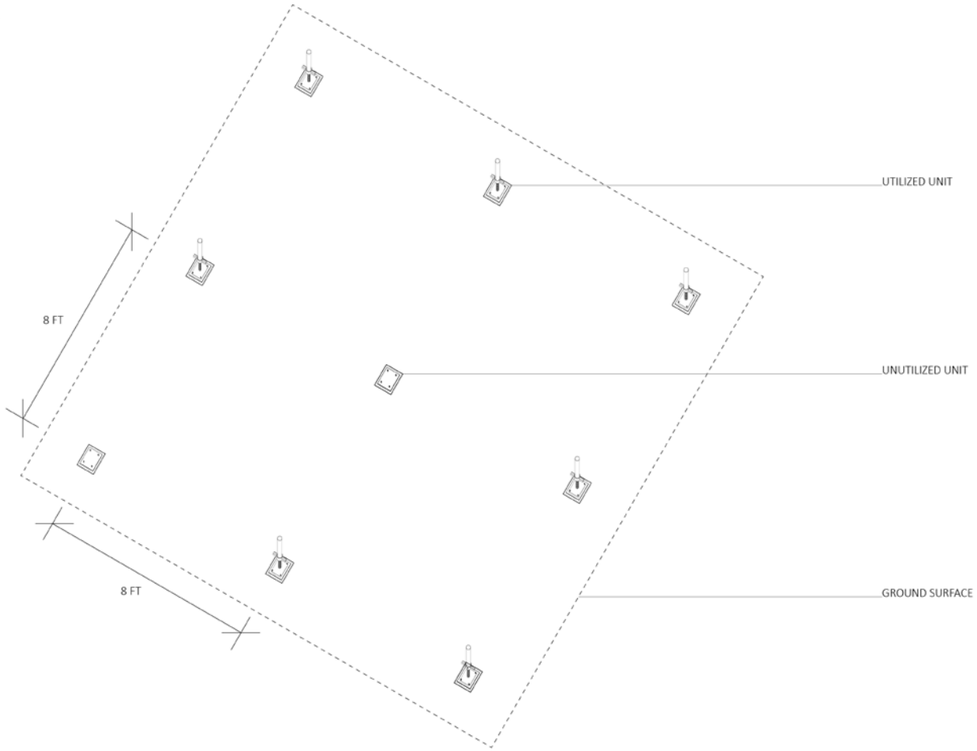








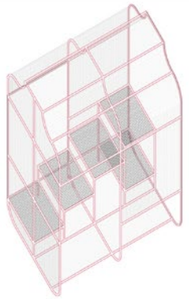
SAMPLE LOT



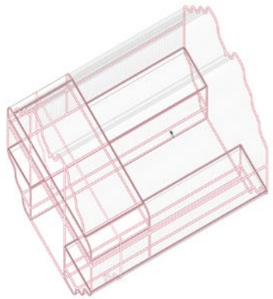
DESIGN CATALOG

PROGRAM PROTOTYPES

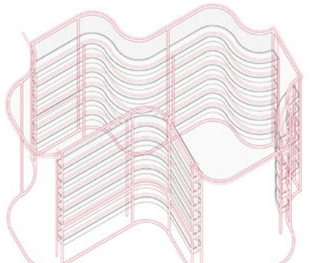
ELECTRICITY



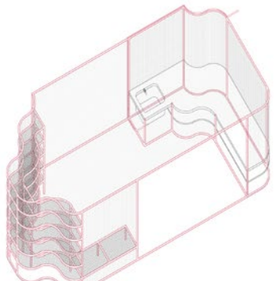
VERMICOMPOST



PRODUCE



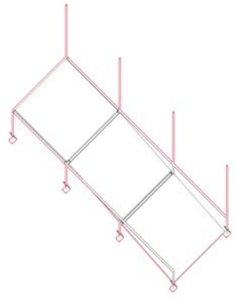
WORKSHOP



GROUND CONDITIONS

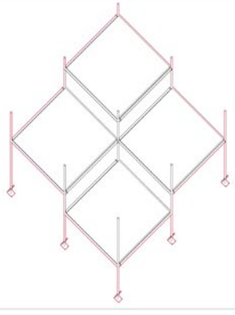
CANTILEVER PLATFORM

RAMP



STAIRS

UNEVEN PLATFORMS

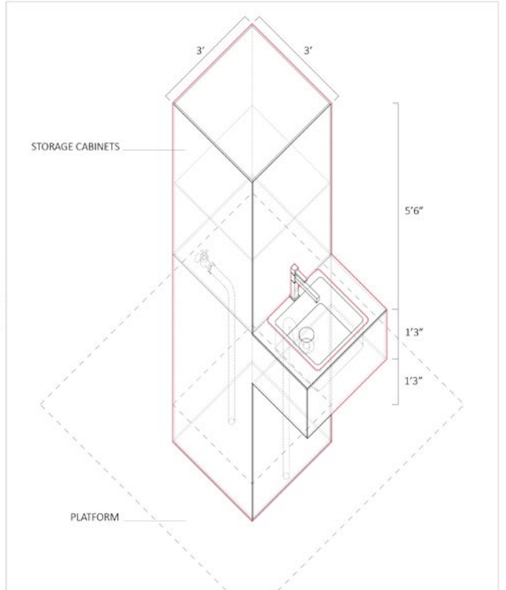


ROPE TUNNEL

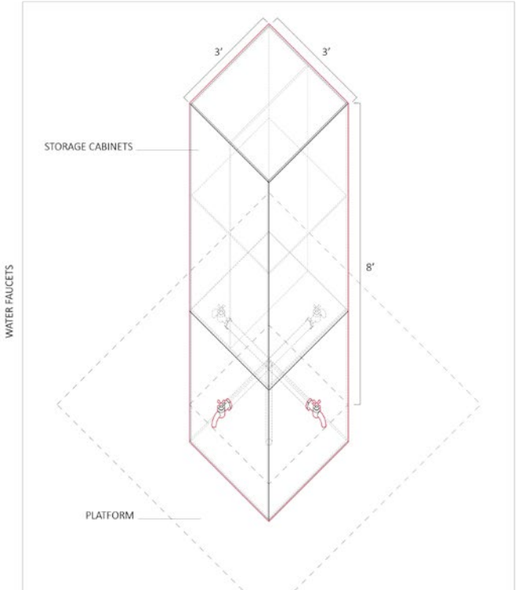
HAMMOCK PLATFORM

MECHANICAL BOX - WATER SYSTEMS

WORKSHOP SINK

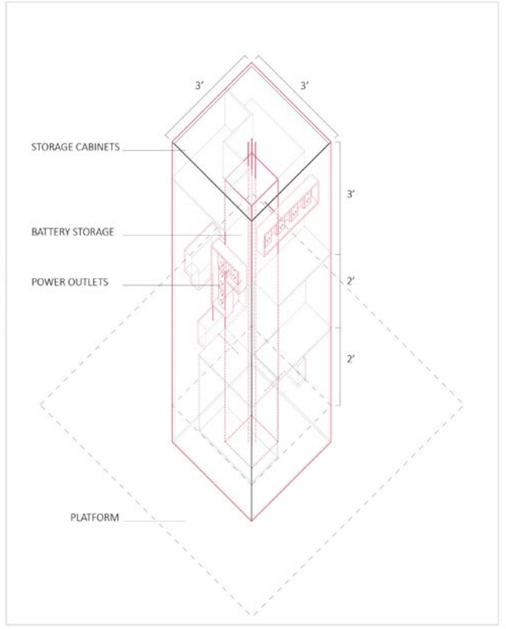


WATER FAUCETS

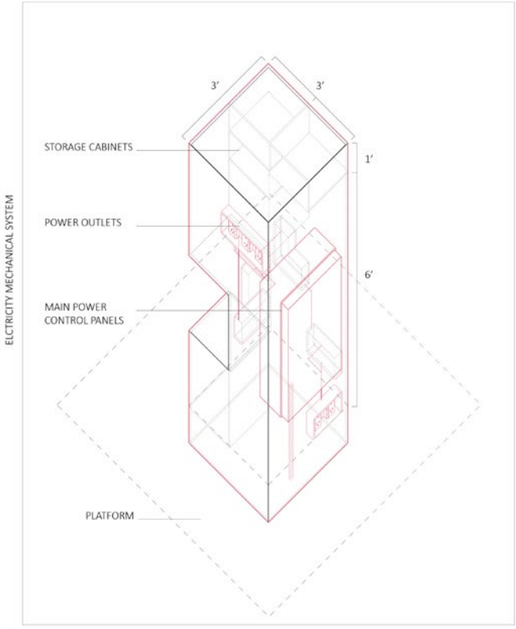


MECHANICAL BOX - ELECTRICITY SYSTEMS

ELECTRICITY STORAGE

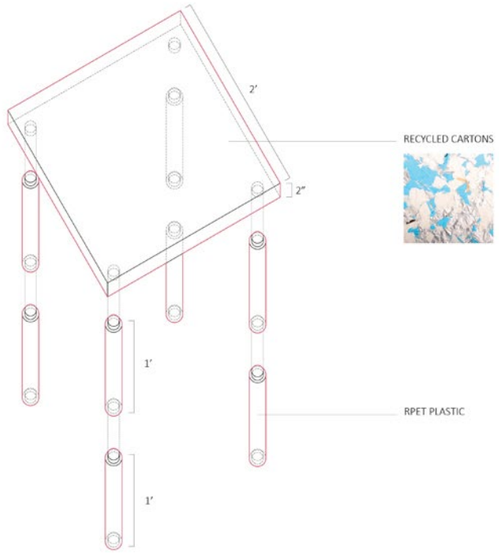


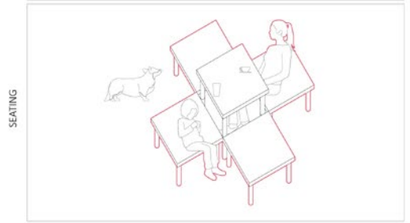
ELCTRICITY MECHANICAL SYSTEM

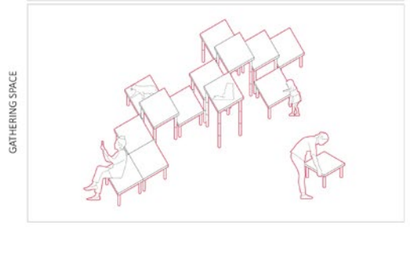


DESIGN CATALOG

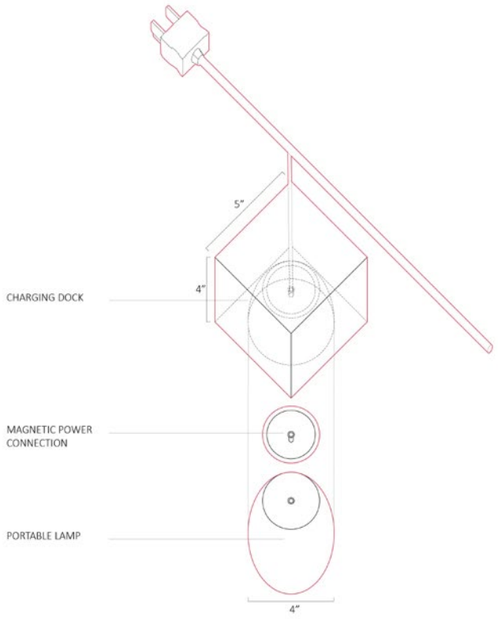
MULTIPURPOSE PLATFORMS

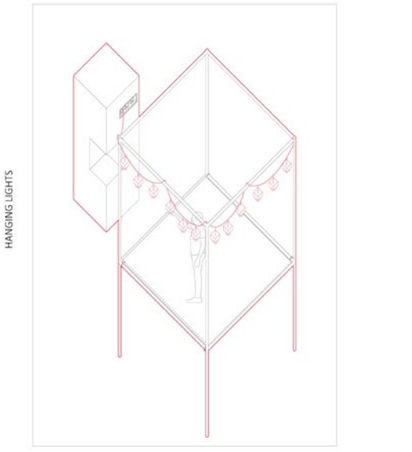


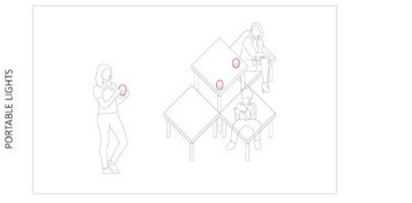




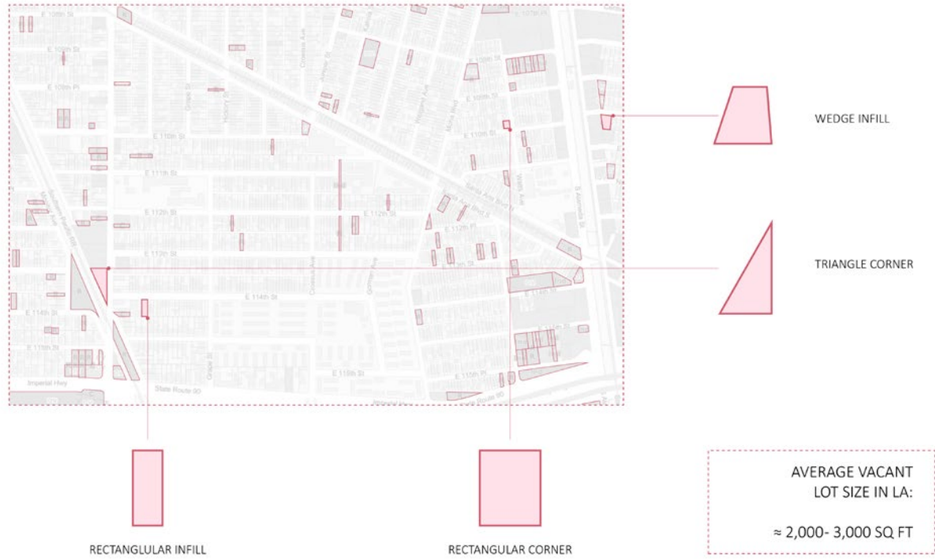
MULTIPURPOSE LIGHTING







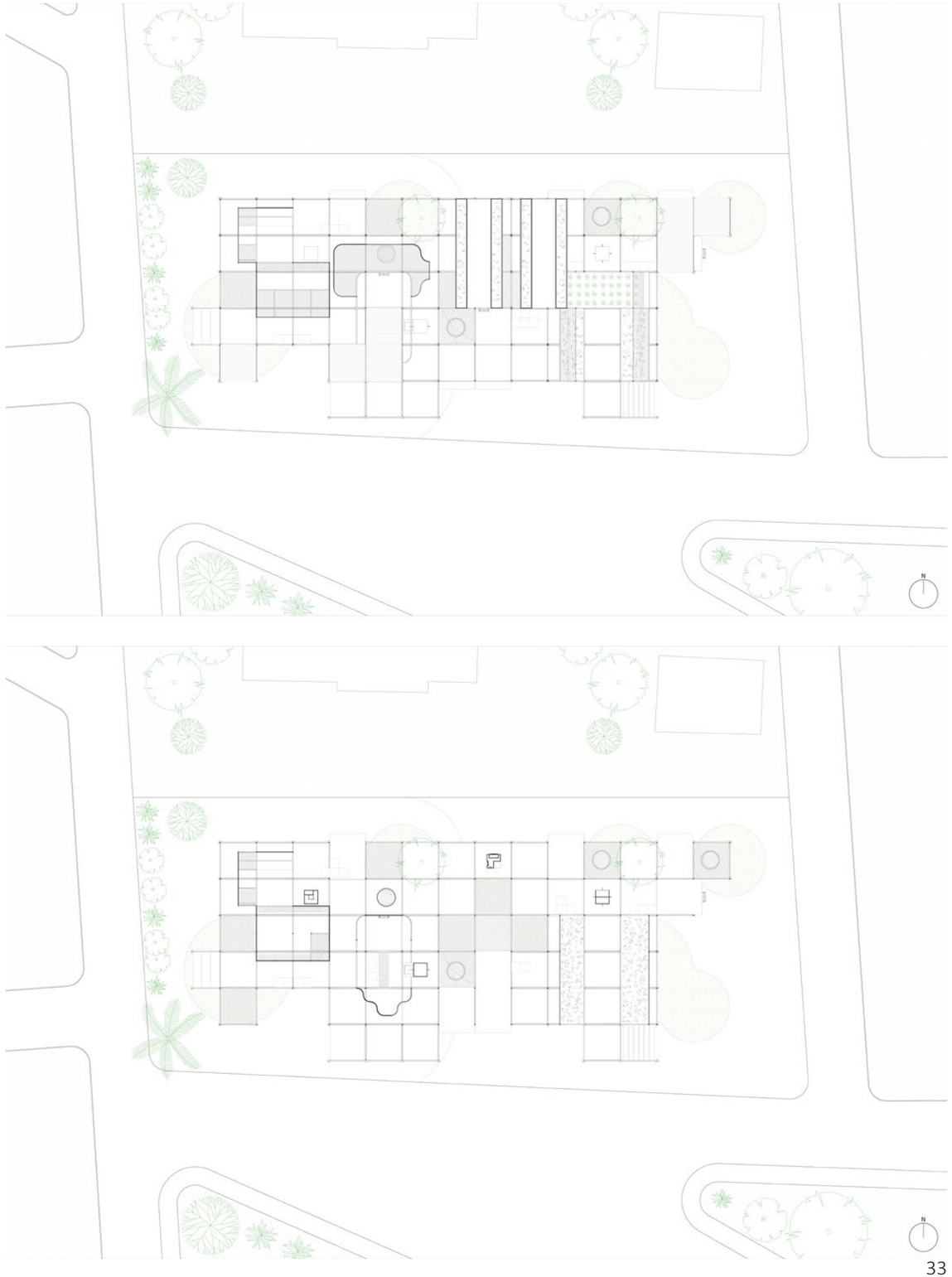
TYPICAL VACANT LOT SHAPES FOR LOS ANGELES NEIGHBORHOOD



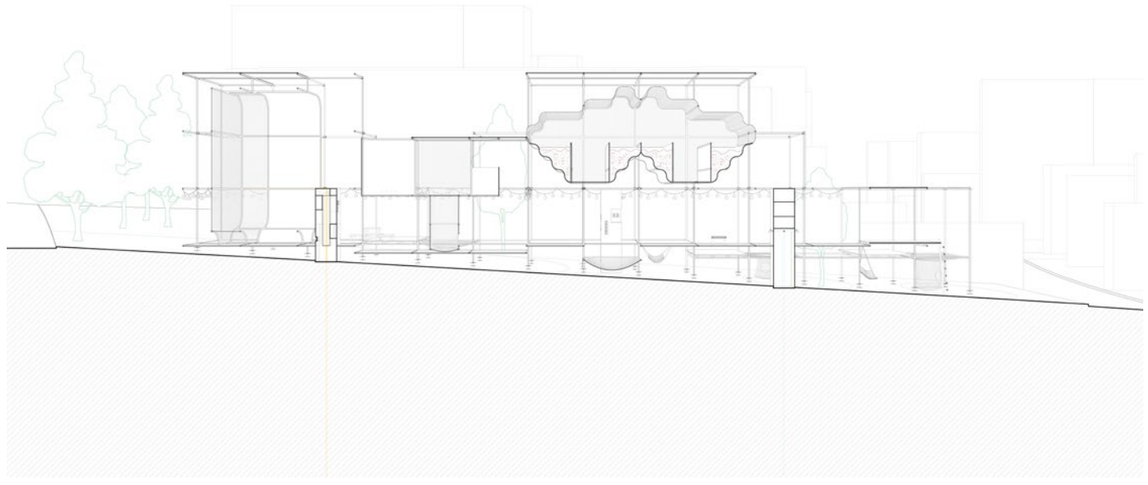
SITE SPECIFIC DESIGN

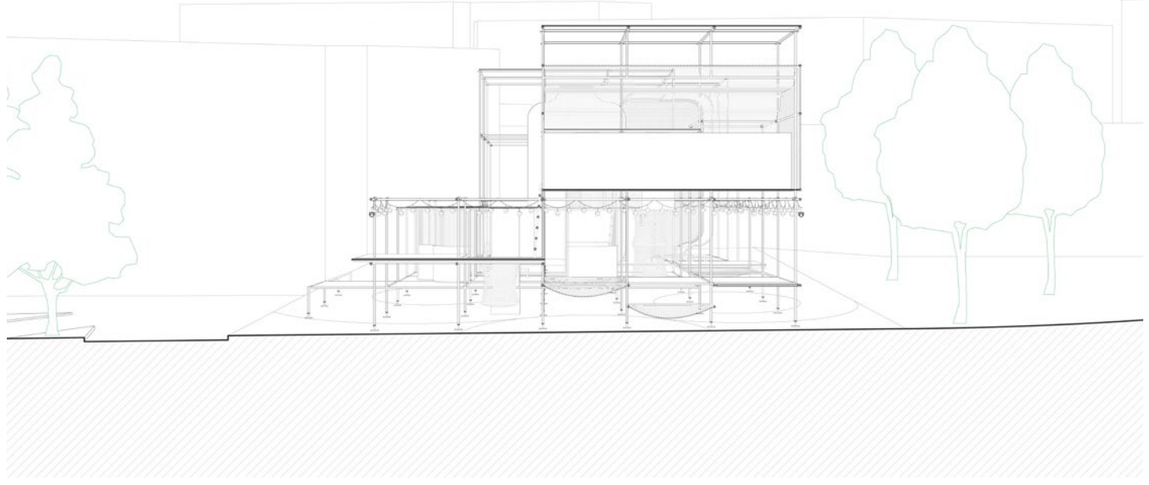
POSSIBLE SITE IN LOS ANGELES

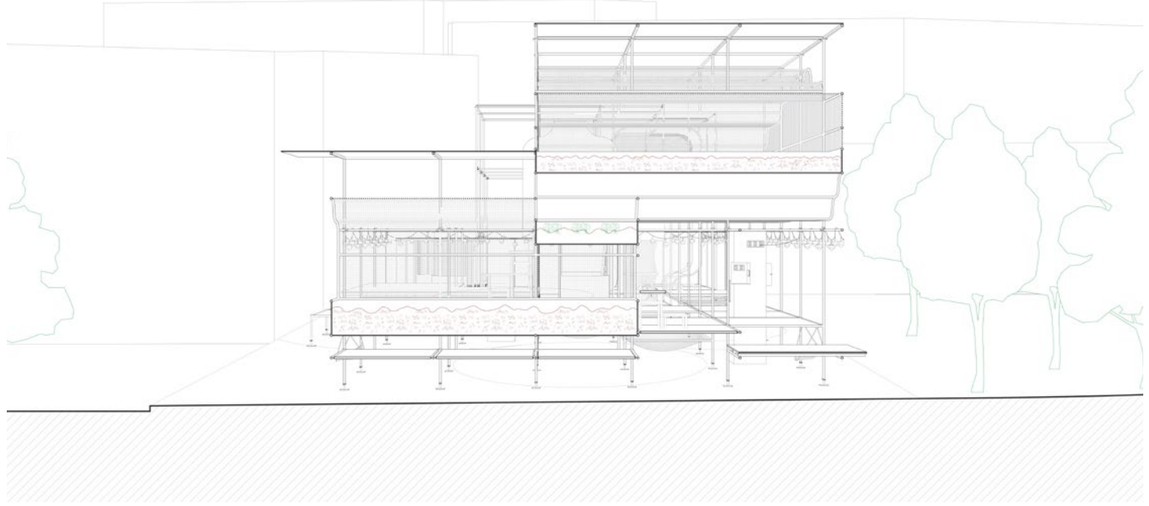
BELMONT AVENUE, LOS ANGELES



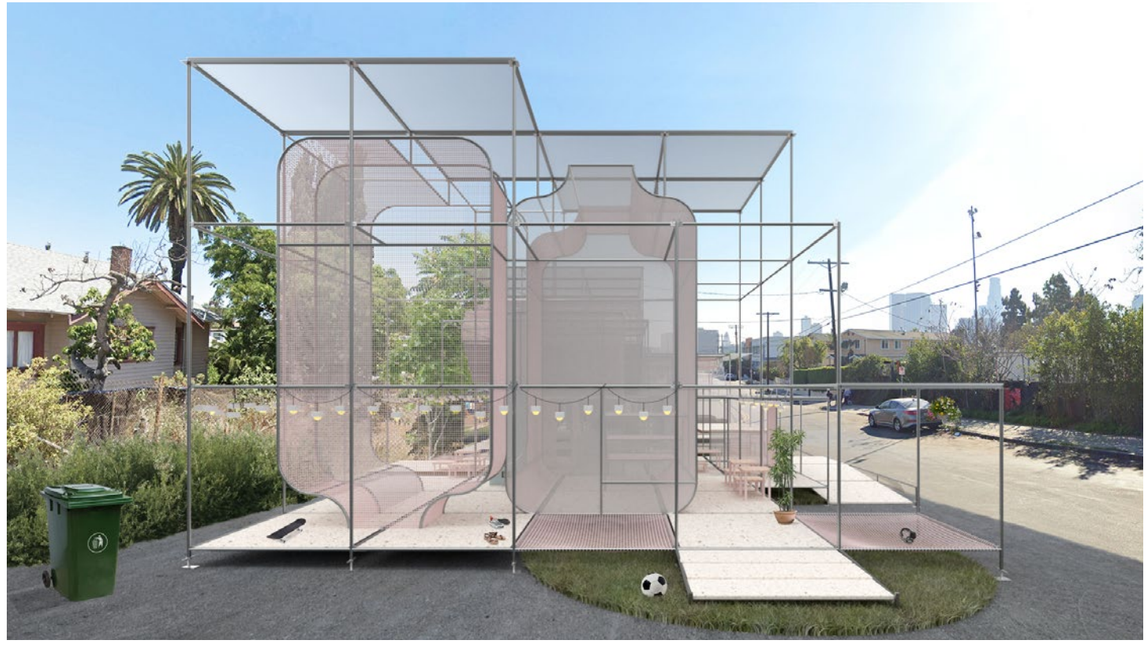
SITE SPECIFIC DESIGN







SITE SPECIFIC DESIGN



SITE SPECIFIC DESIGN

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