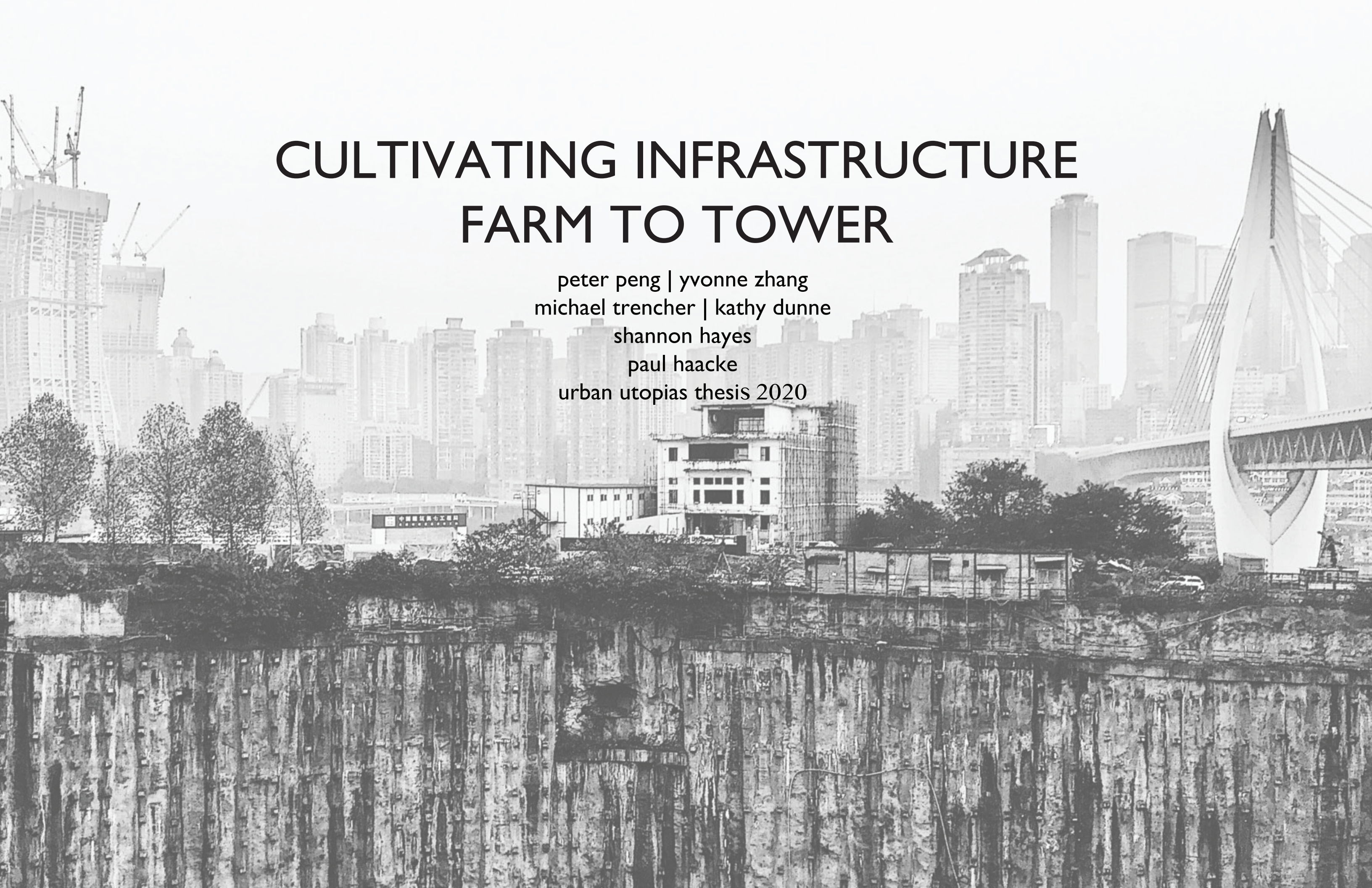


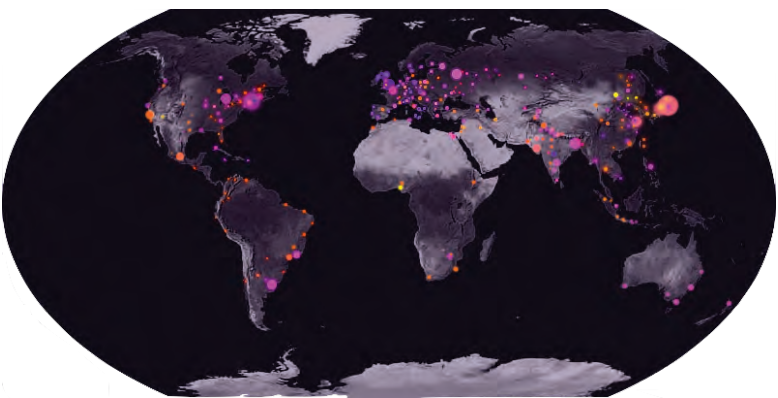
CULTIVATING INFRASTRUCTURE FARM TO TOWER

peter peng | yvonne zhang
michael trencher | kathy dunne
shannon hayes
paul haacke
urban utopias thesis 2020

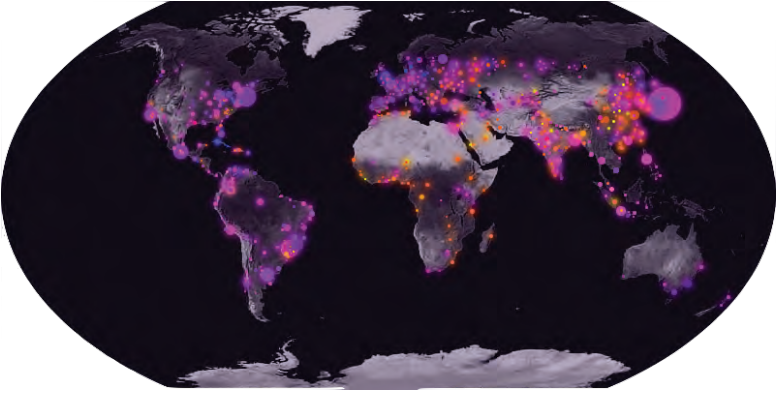


CONCEPT FRAMEWORK

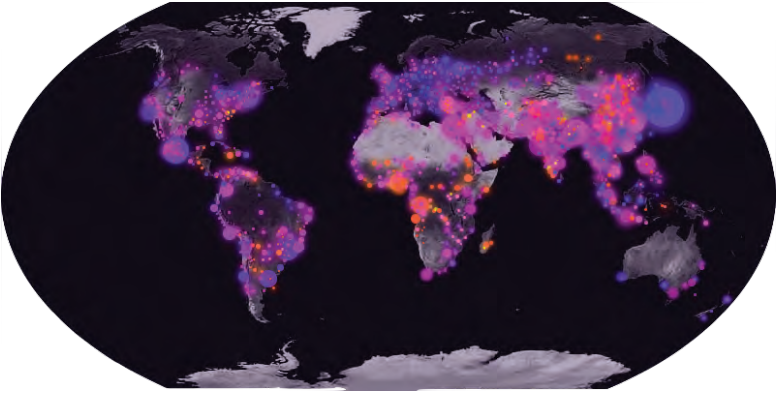
URBAN POPULATION: size and growth



1950



2010

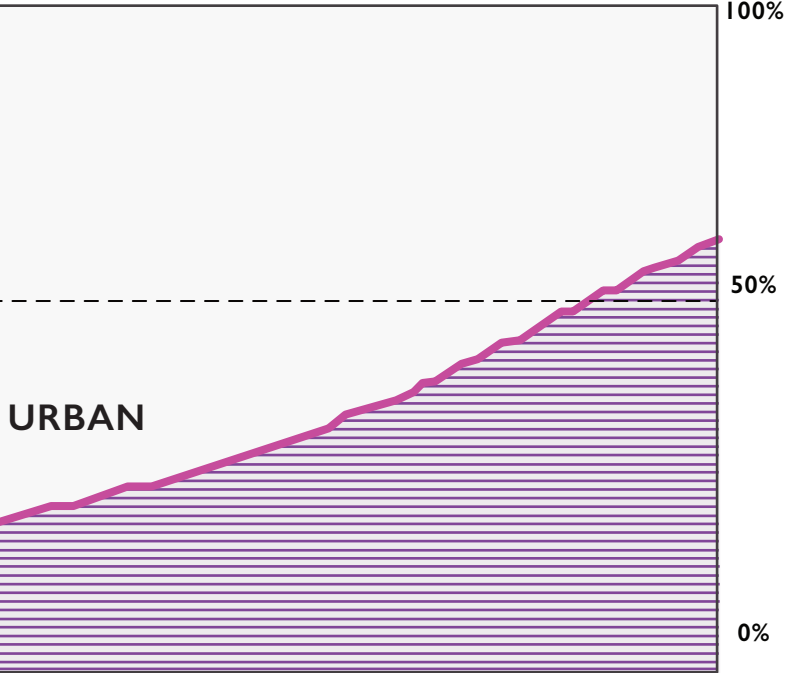


2020

Increase of industrial development and urbanization, rural areas and farmlands are decreasing. Earth has already lost a third of arable lands in the past 40 years. Cities are evolving and we need to focus on how to adapt to this rapid development with climate change.

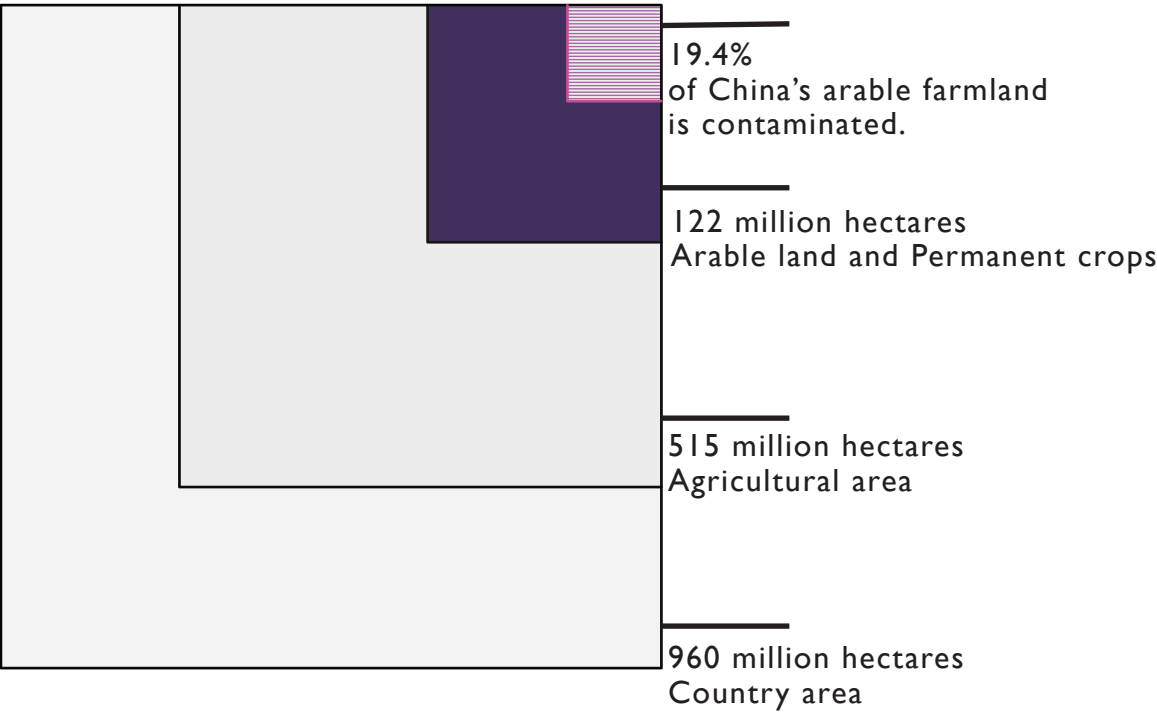
PERCENTAGE OF POPULATION

RURAL

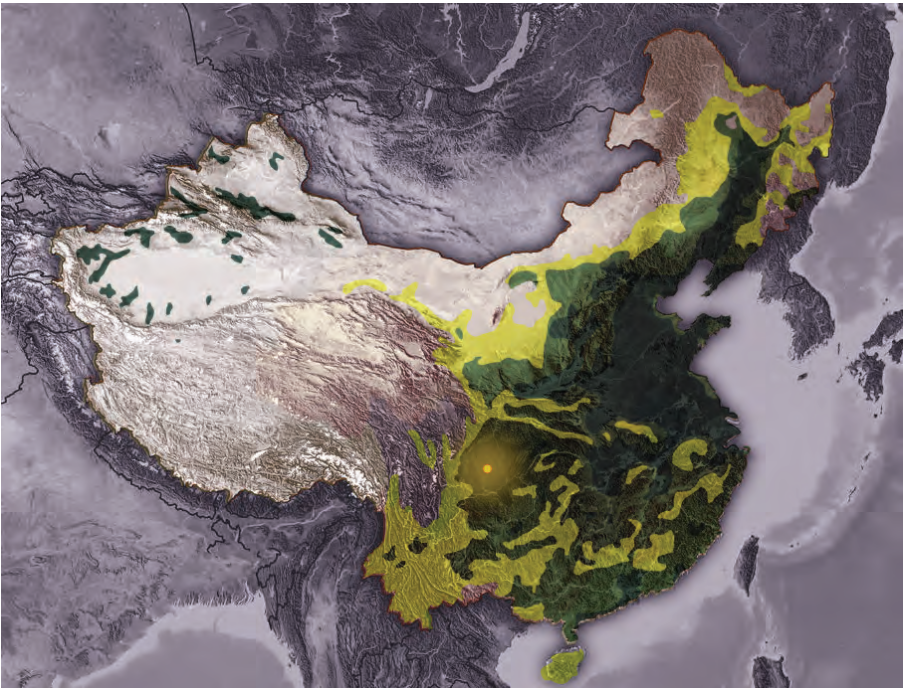


1980

2017



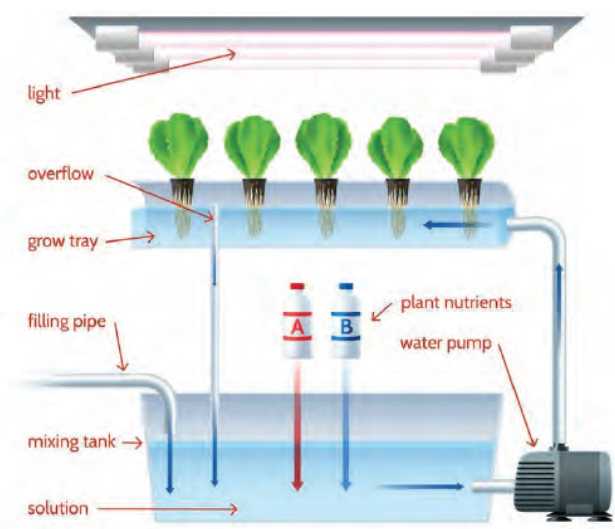
CHINA'S AGRICULTURAL REGIONS TAINTED FOOD AND POLLUTION



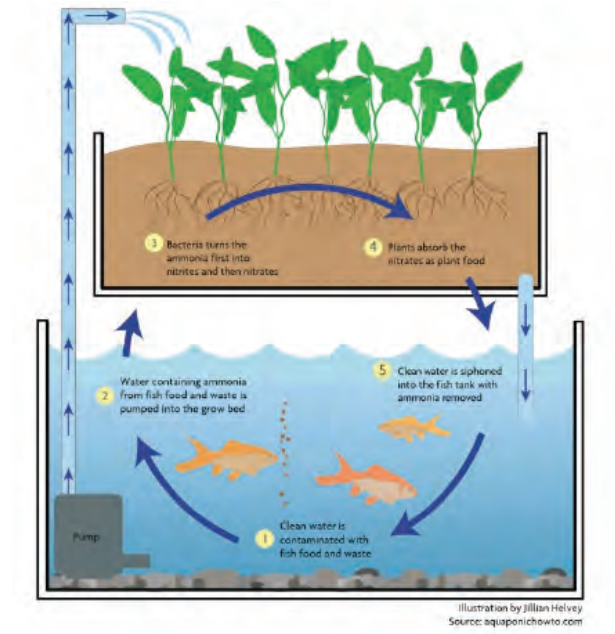
China's labor force is about 35% in agriculture. What will happen to farmers when their land is gone?

TECHNOLOGY AND DEVICES

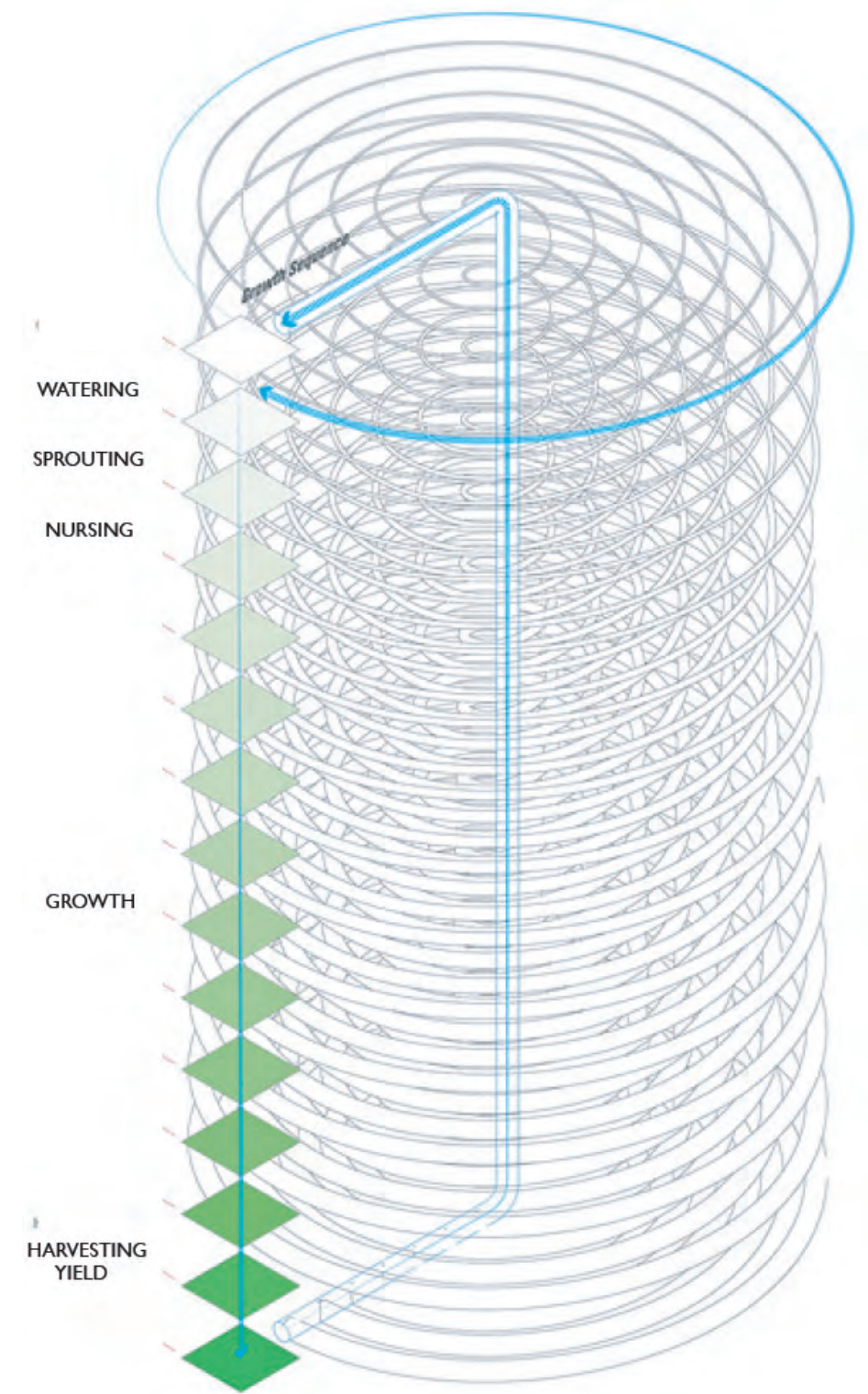
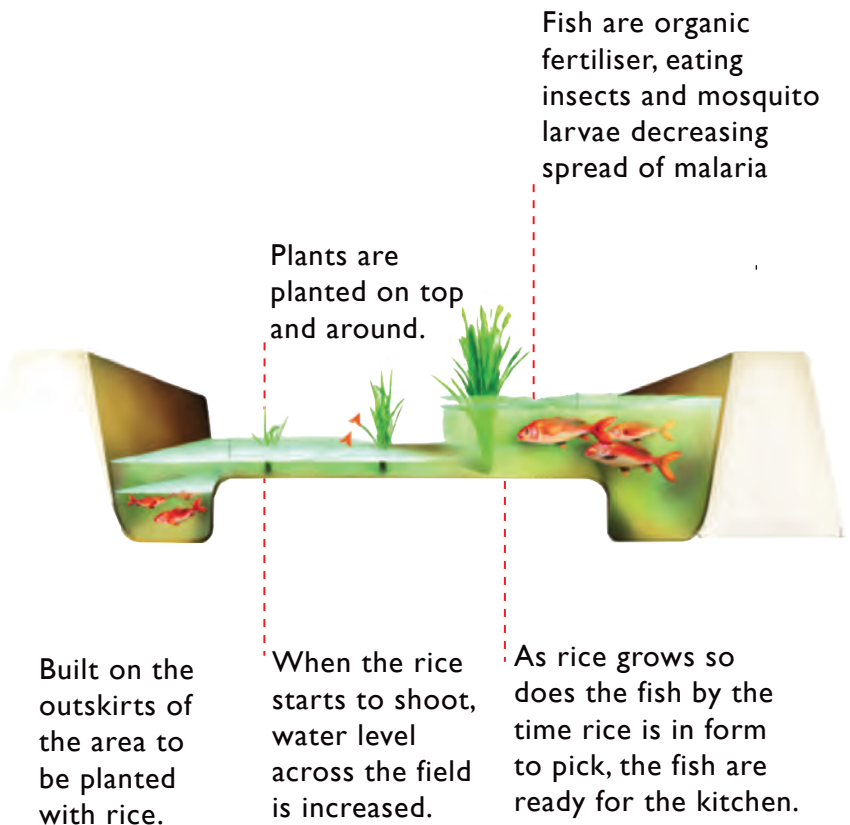
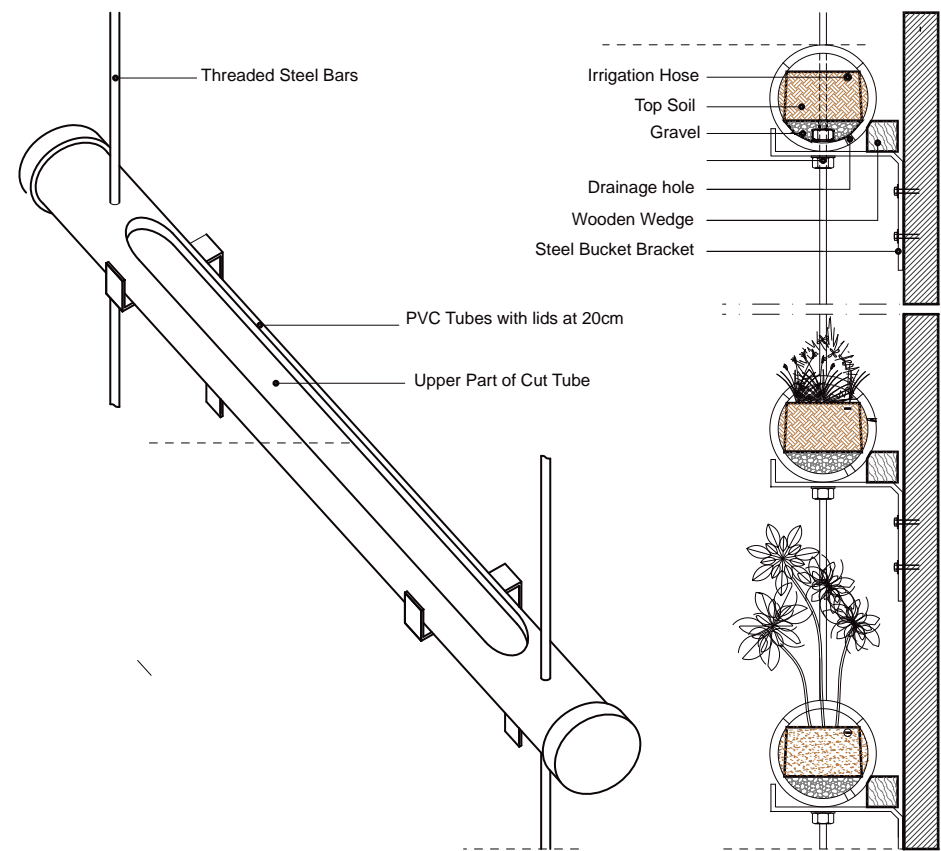
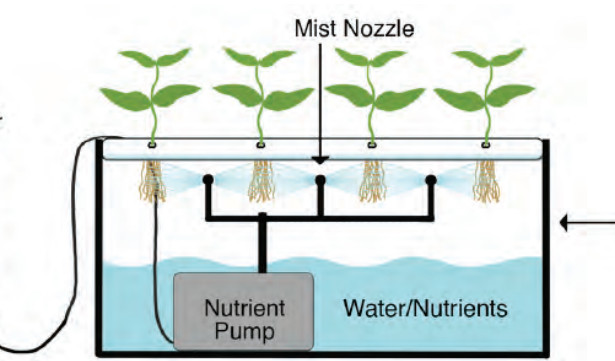
HYDROPONICS



AQUAPONICS



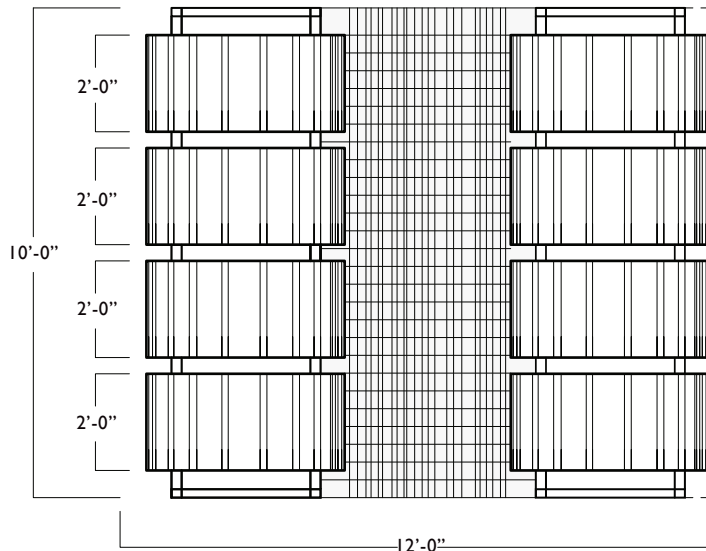
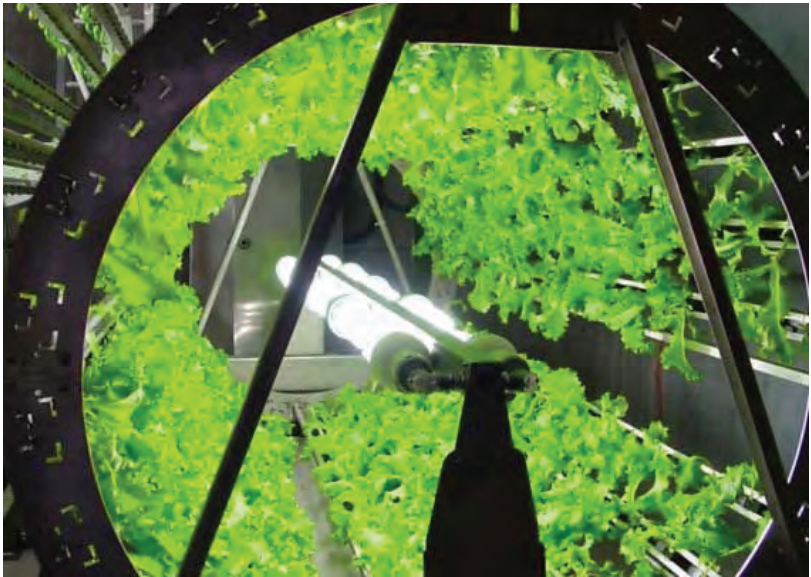
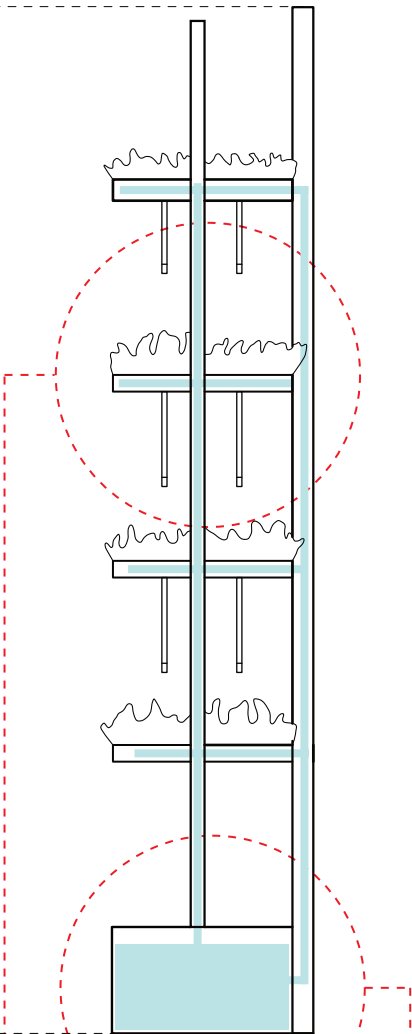
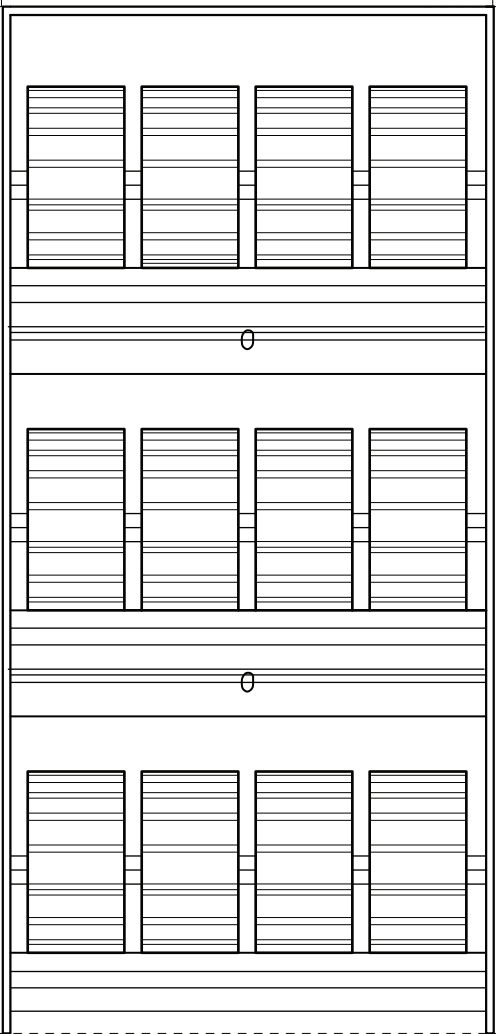
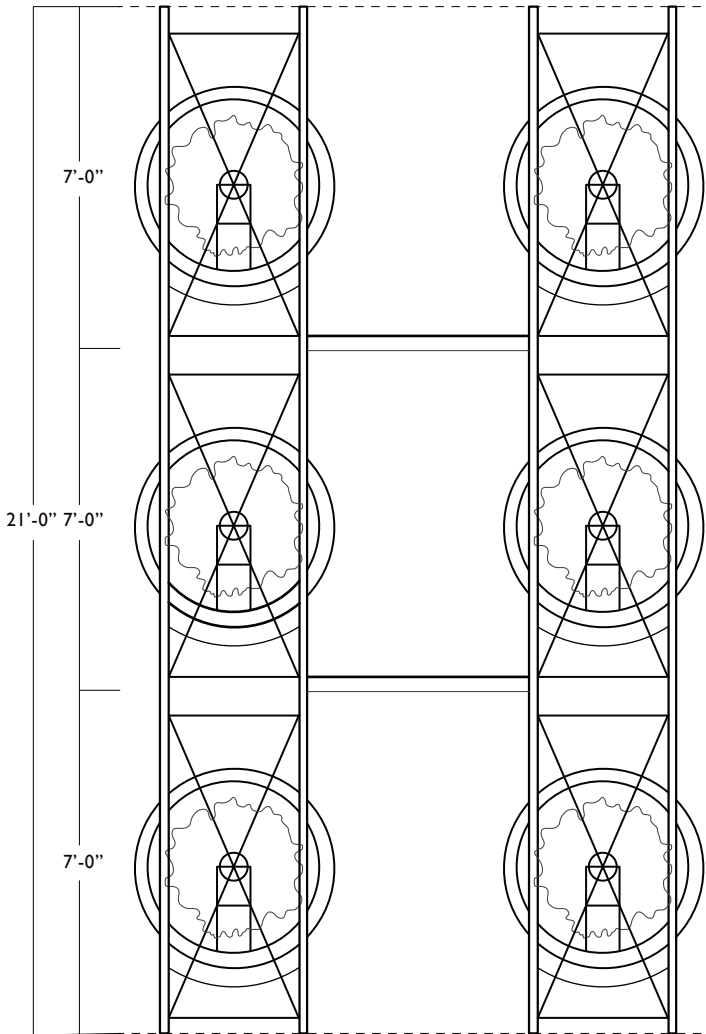
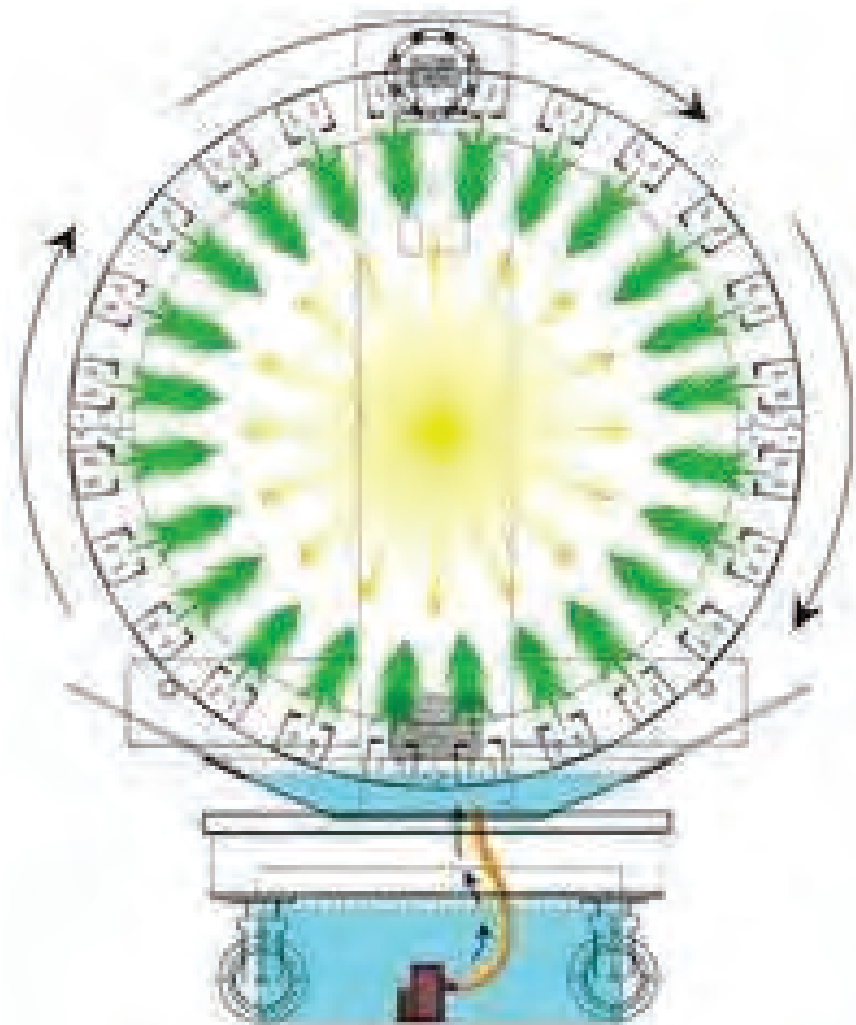
AEROPONICS



NUTRIENT FILM TECHNIQUE (NFT) RUN-ON-WASTE SYSTEM AEROPONIC RECYCLING SYSTEM

VOLKSWAGEN HYDROPNIC SYSTEM

AQUAPONICS AND AEROPONIC SYSTEM



AEROPONICS

AQUAPONICS

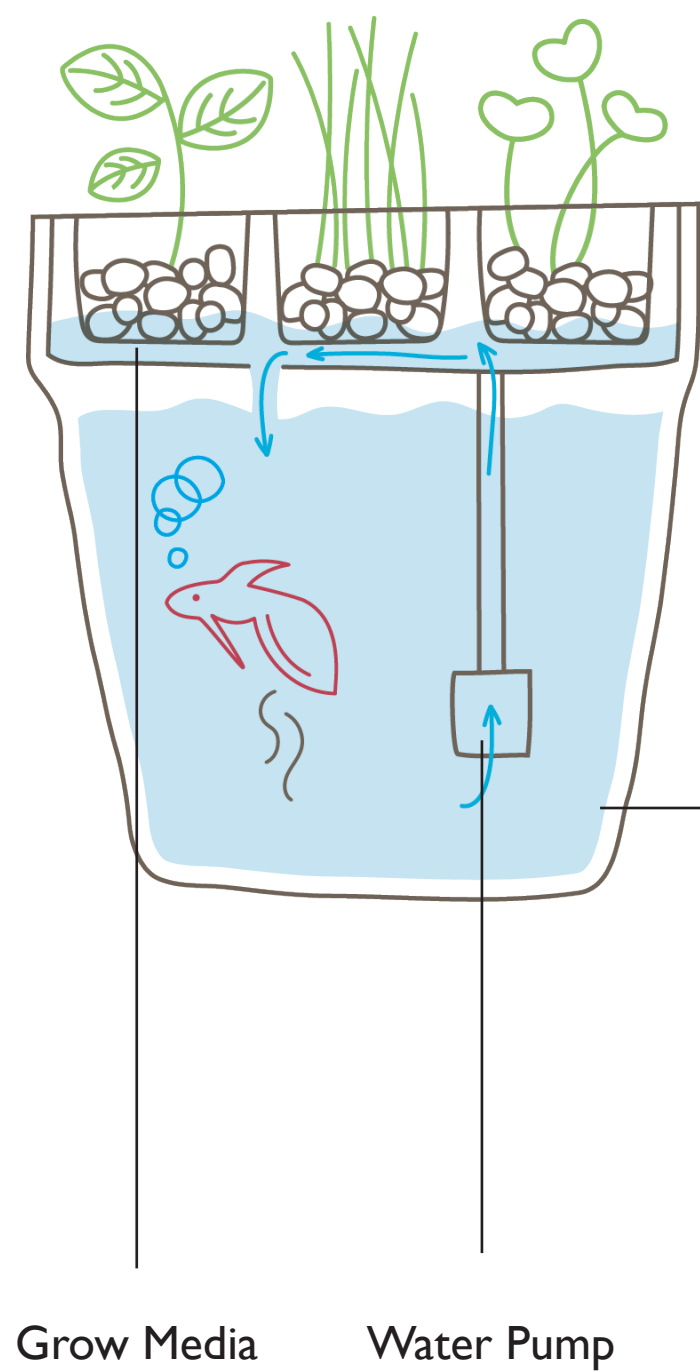
CROP SELECTION

Lettuce		Bitter melon		Basil		Grass Carp	
Kale		Cucumber		Cilantro		Bass	
Pak Choi		Potato		Parsley		Catfish	
Watercress		Onion		Chrysanthemum		Trout	
Tomatoes		Peppers		Rice		Koi	
Spinach		Scallions		Wheat		Prawns / Shrimp	
Blueberries		Coriander		Corn		Goldfish	
Strawberries		Chives		Soy beans		Murray Cod	

AQUAPONIC / HYDROPONIC SYSTEM - EXPERIMENT



AQUAPONIC / HYDROPONIC SYSTEM - EXPERIMENT



Requirements:
Water Pump
Heater
Air Pump
Filter

Waste water gets pumped directly to the grow bed. The grow media breaks the ammonia from the waste water into nitrites.



SITE



- PARK
- MAIN ROADS AND BRIDGES
- SMALL PATH
- WATERBODY

SHIFTS OF THE CITY

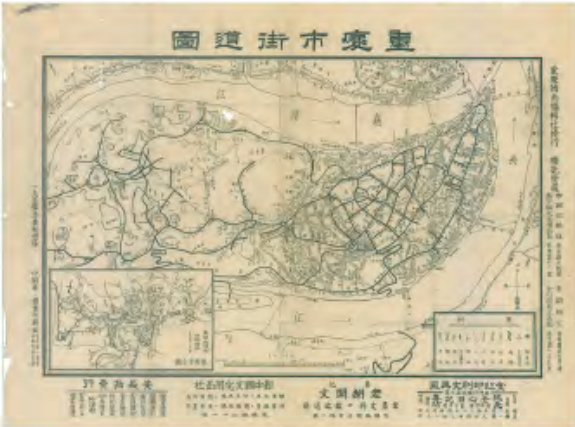
MAP OF 1925
FARMLAND OCCUPY
MARJORITY OF
LAND



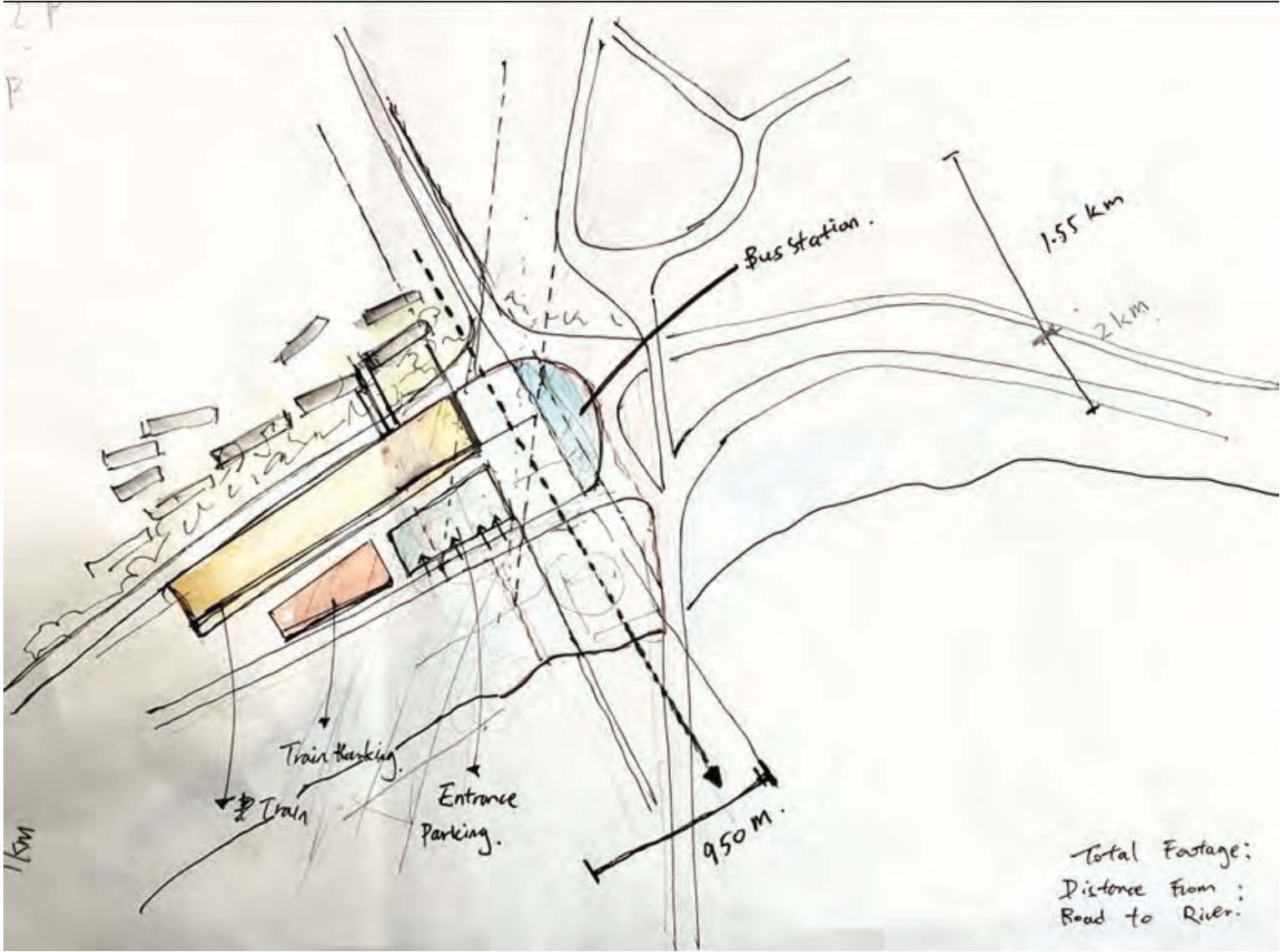
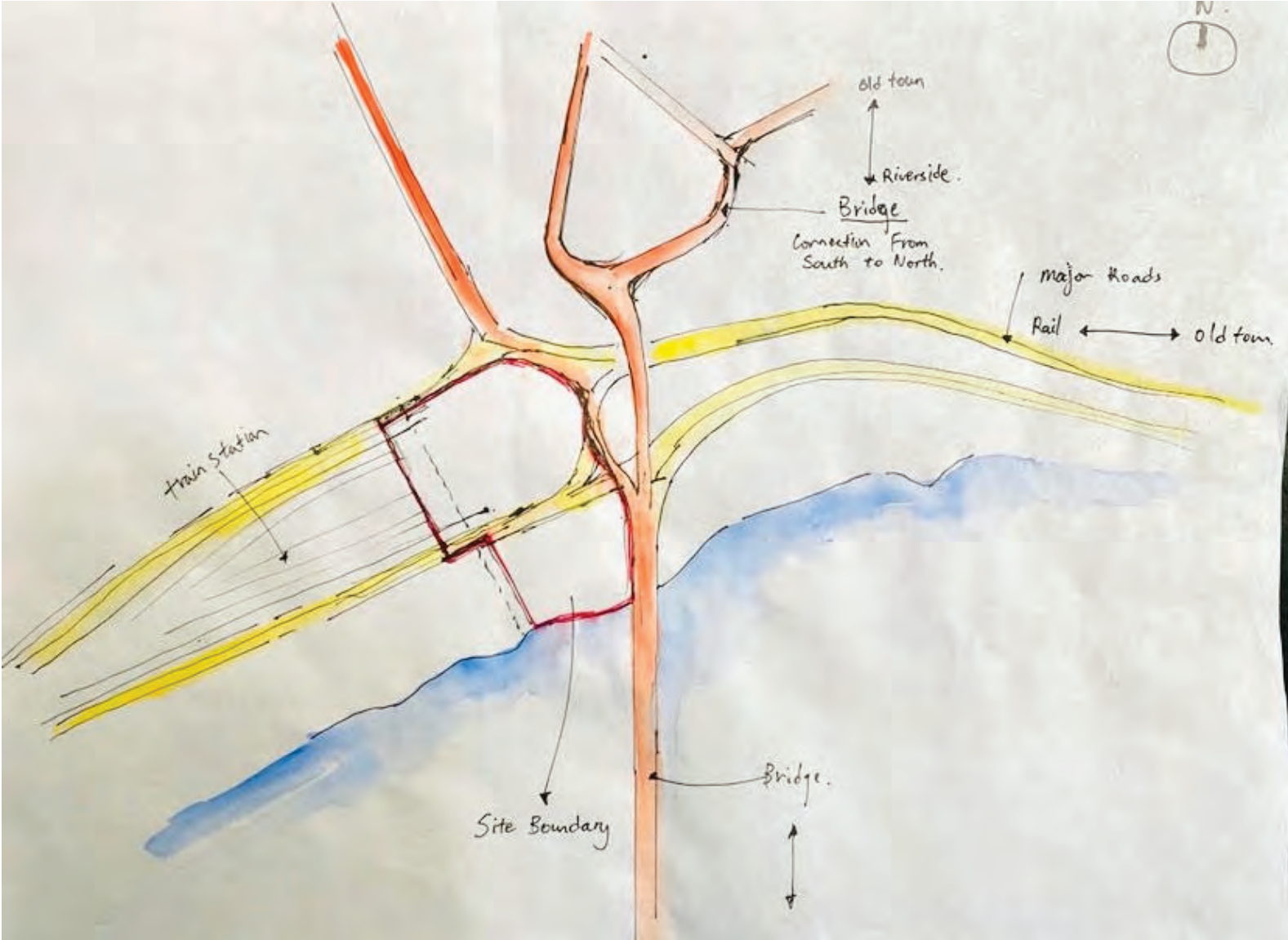
MAP 1940
ZONING
COMMERCIAL
RESIDENTIAL



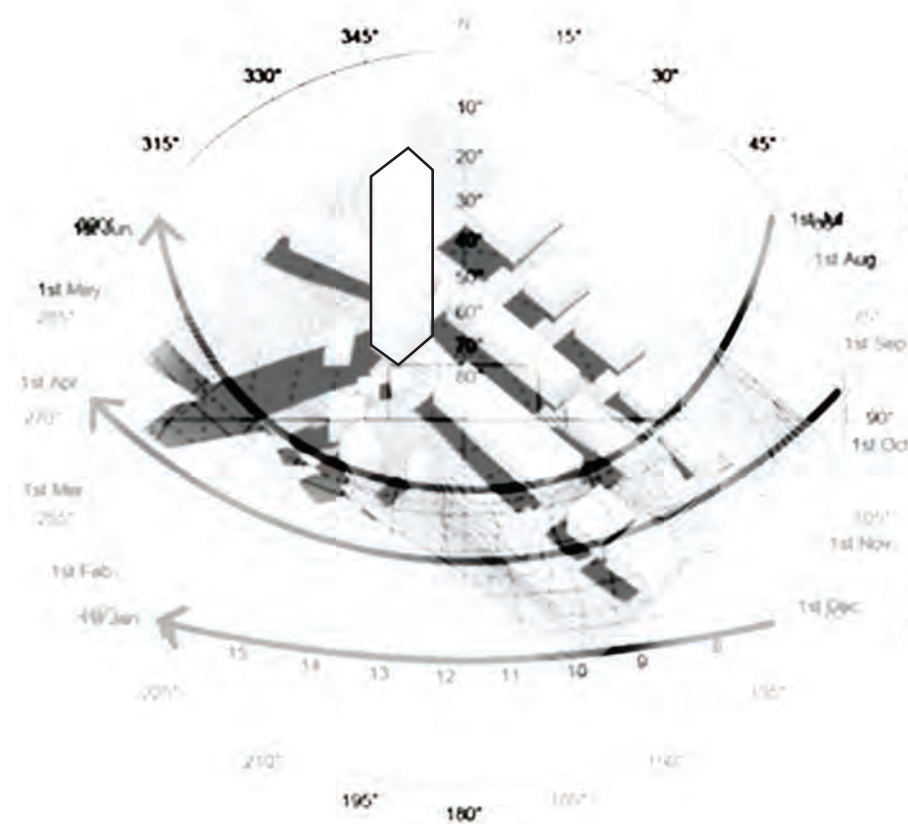
MAP 1955
DEVELOP INTO
INLAND



SITE



SUN STUDY

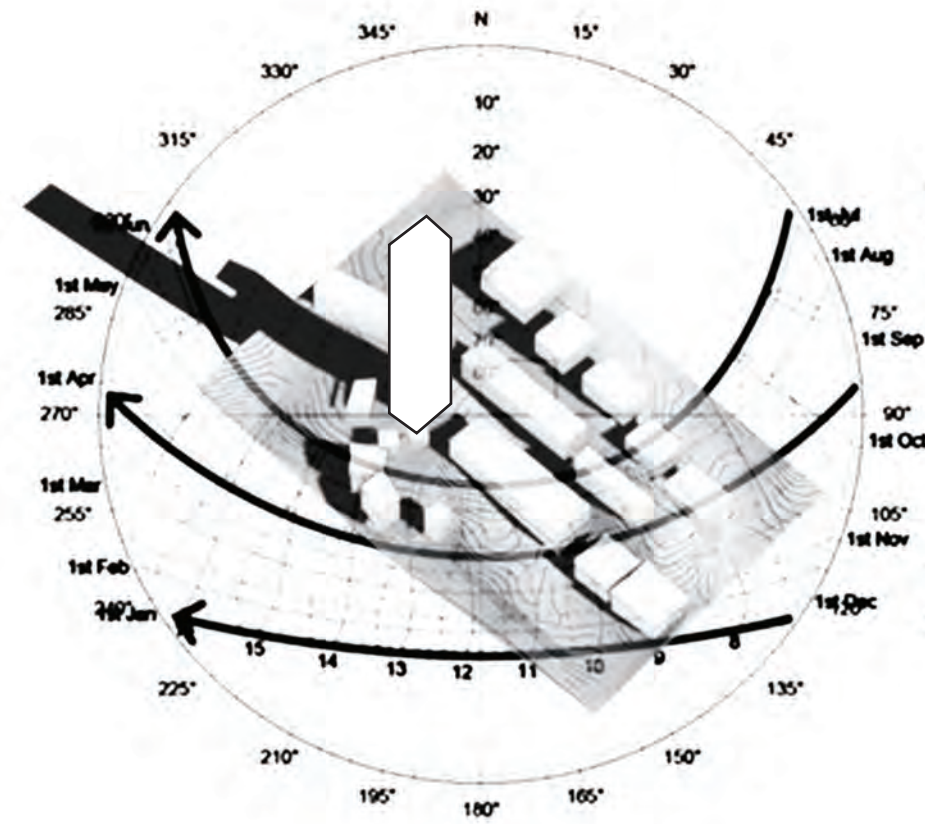


SUMMER SOLSTICE
21 JUNE

VERNAL EQUINOX
21 MARCH

WINDER SOLSTICE
21 DECEMBER

SUMMER JULY 4PM

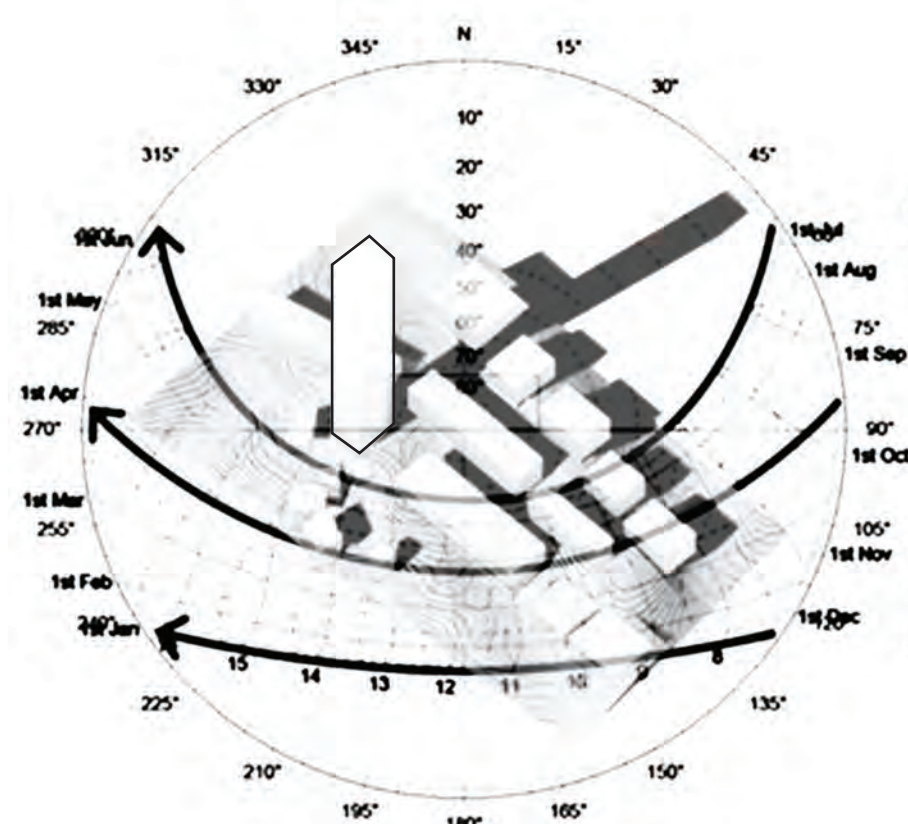


SUMMER SOLSTICE
21 JUNE

VERNAL EQUINOX
21 MARCH

WINDER SOLSTICE
21 DECEMBER

WINTER DECEMBER 11 AM

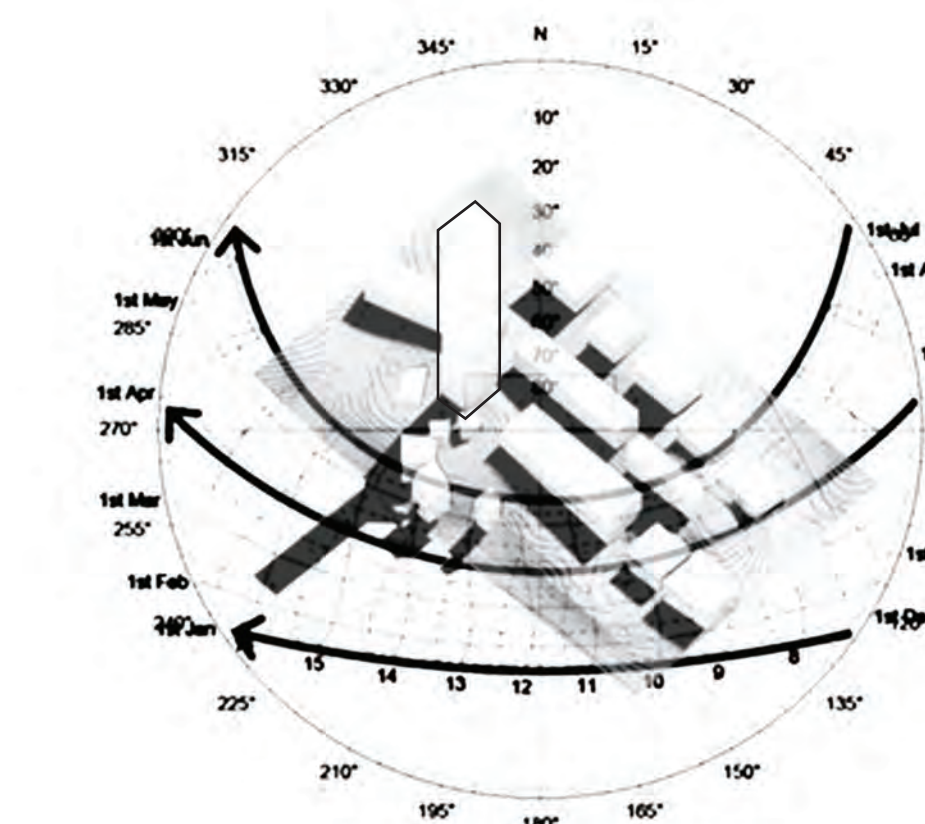


SUMMER SOLSTICE
21 JUNE

VERNAL EQUINOX
21 MARCH

WINDER SOLSTICE
21 DECEMBER

SPRING APRIL 4PM

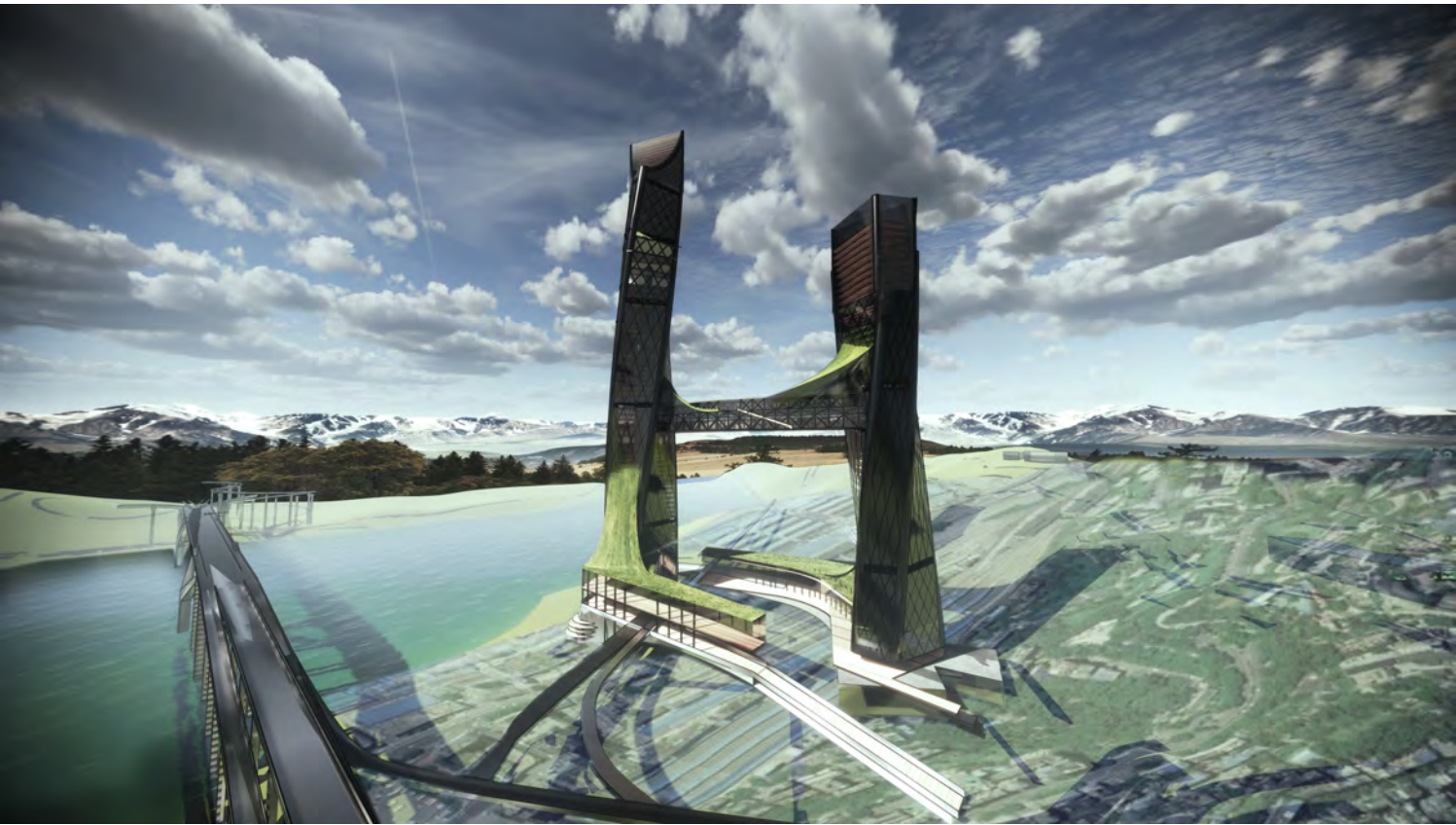
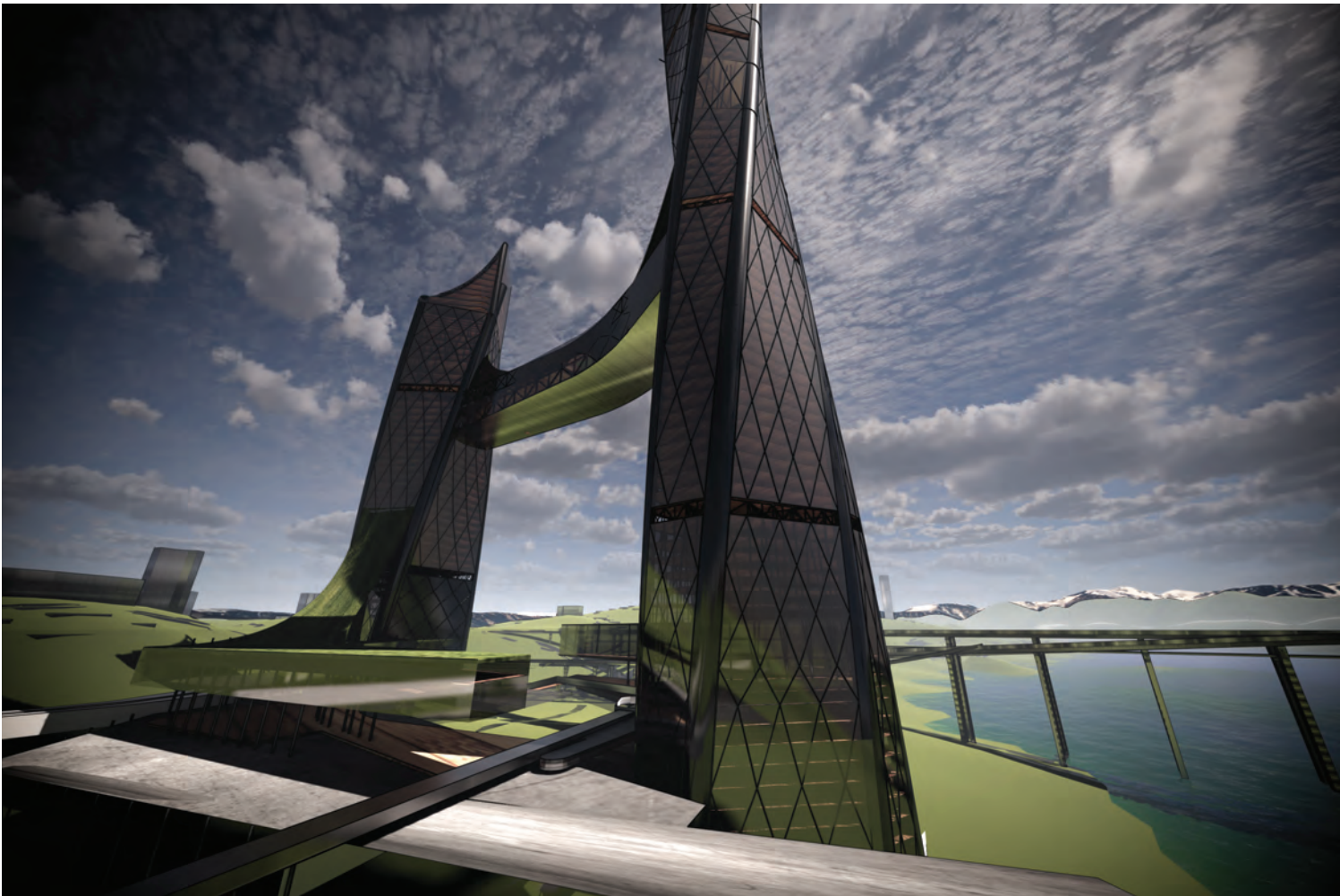
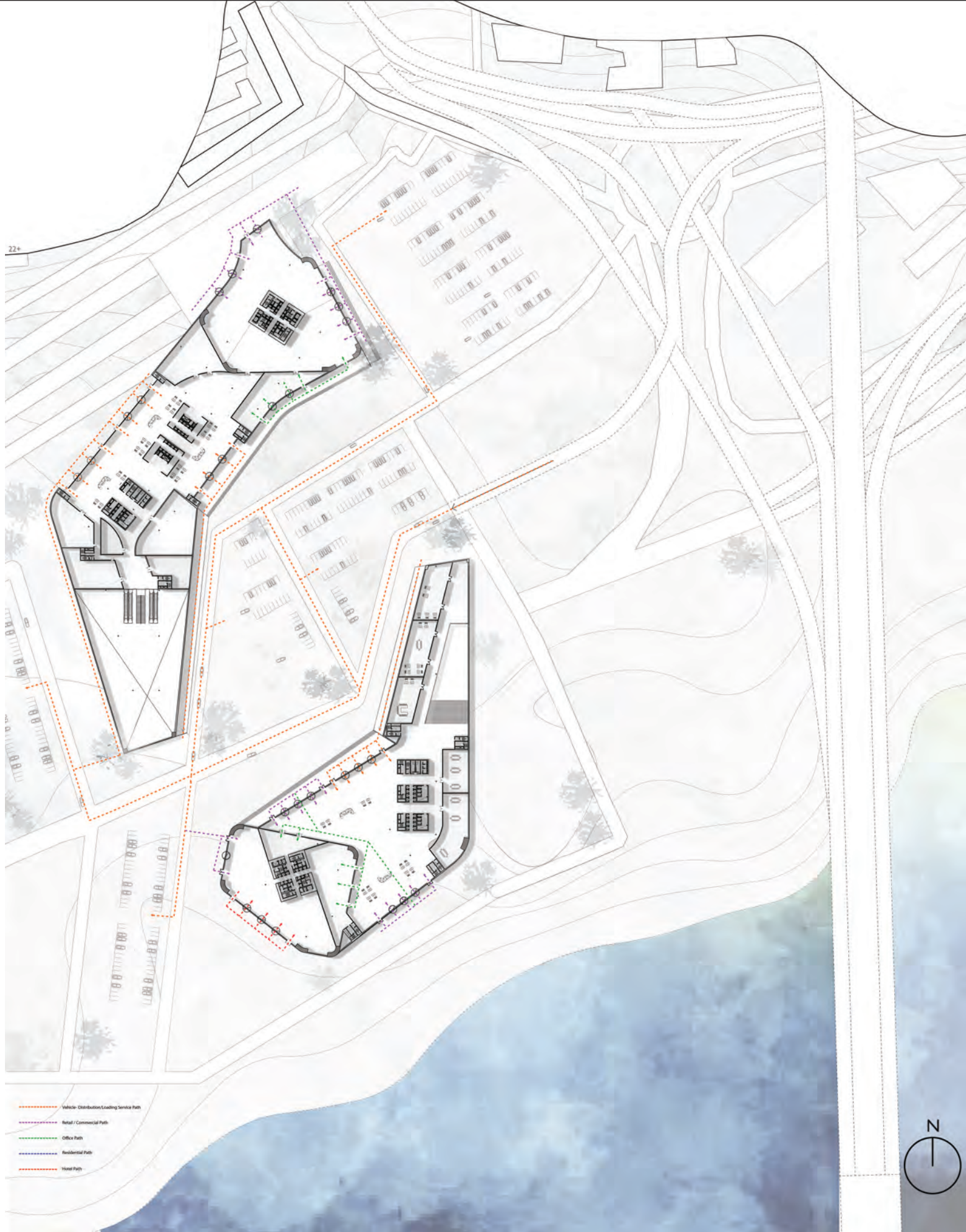


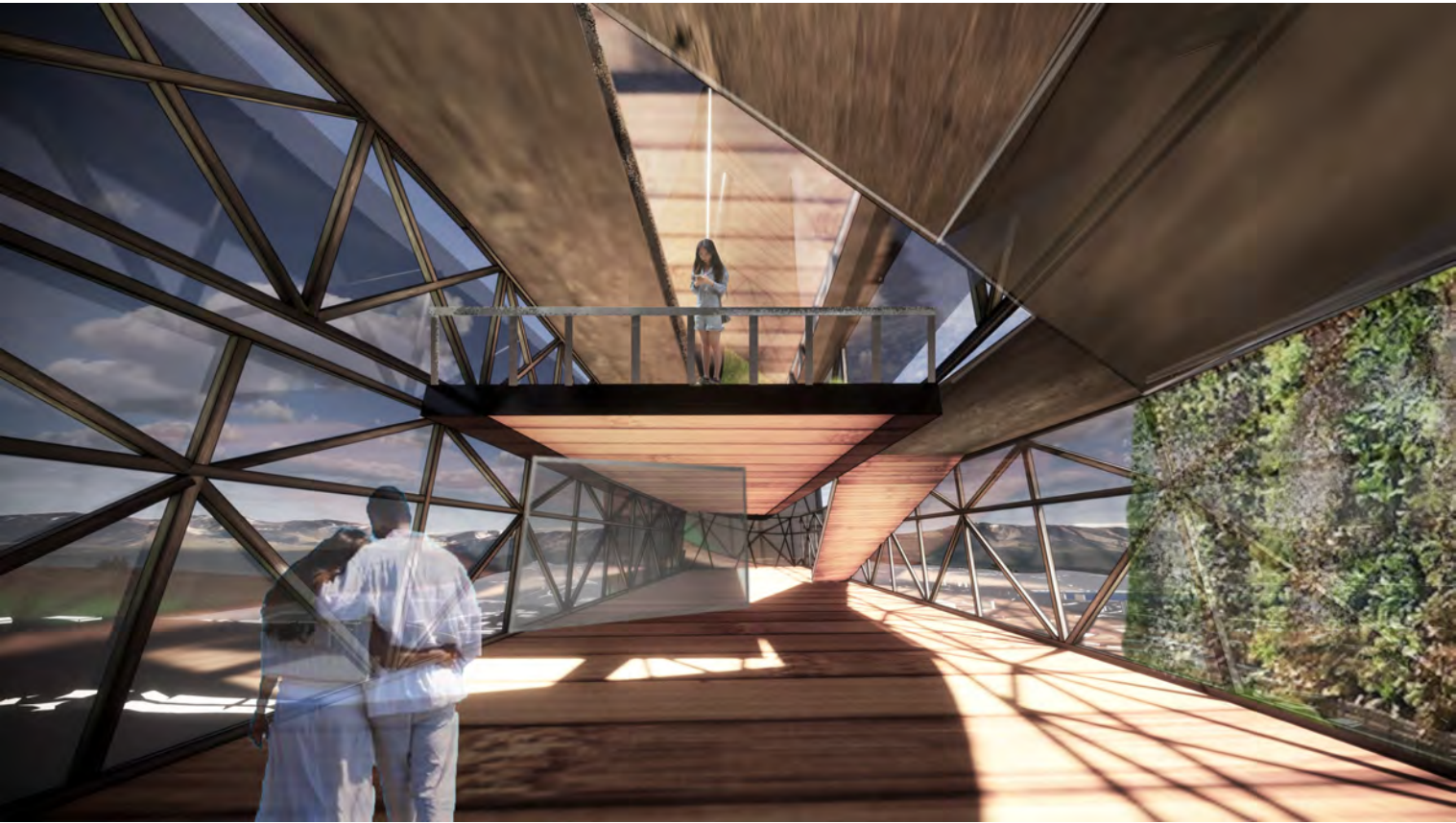
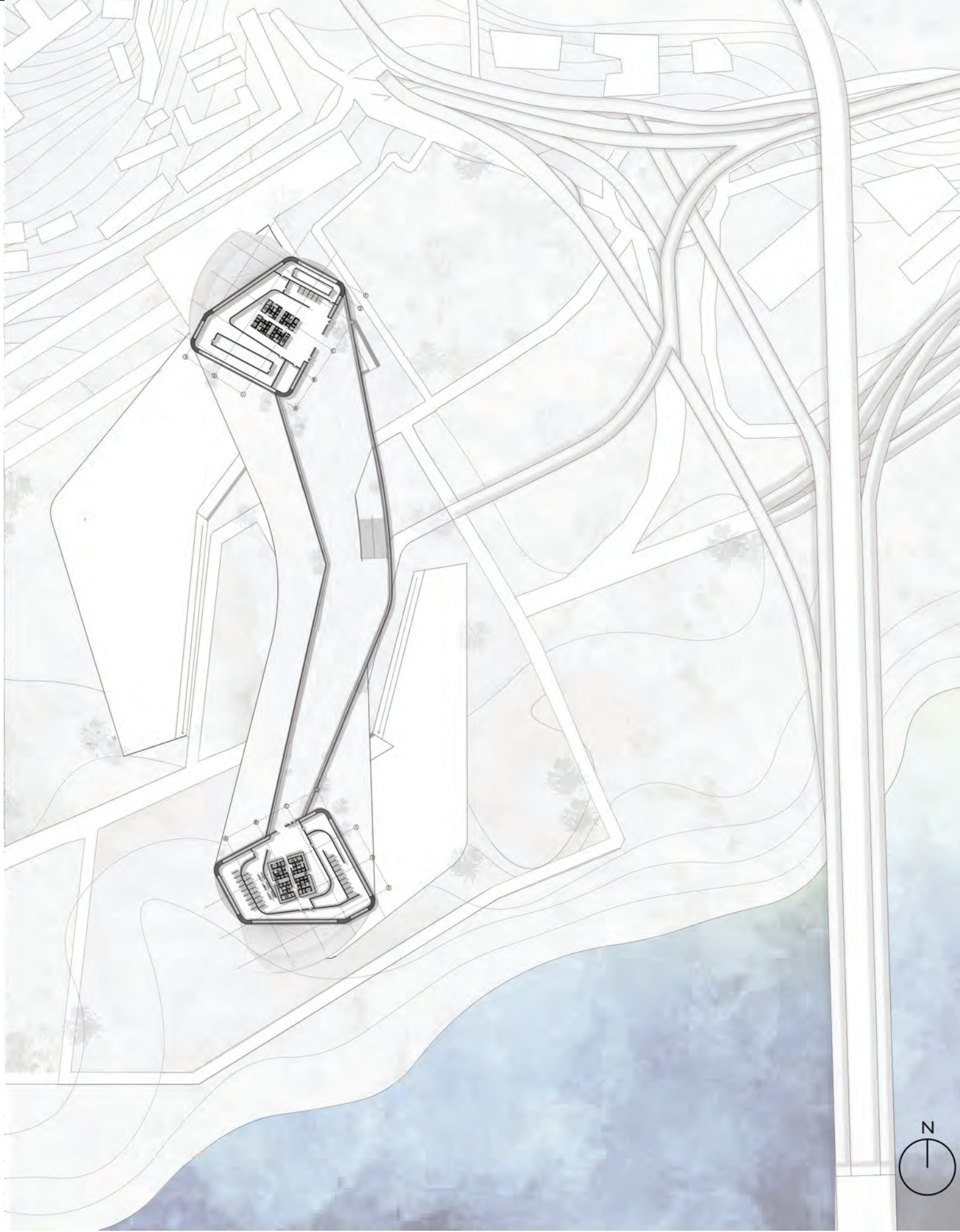
SUMMER SOLSTICE
21 JUNE

VERNAL EQUINOX
21 MARCH

WINDER SOLSTICE
21 DECEMBER

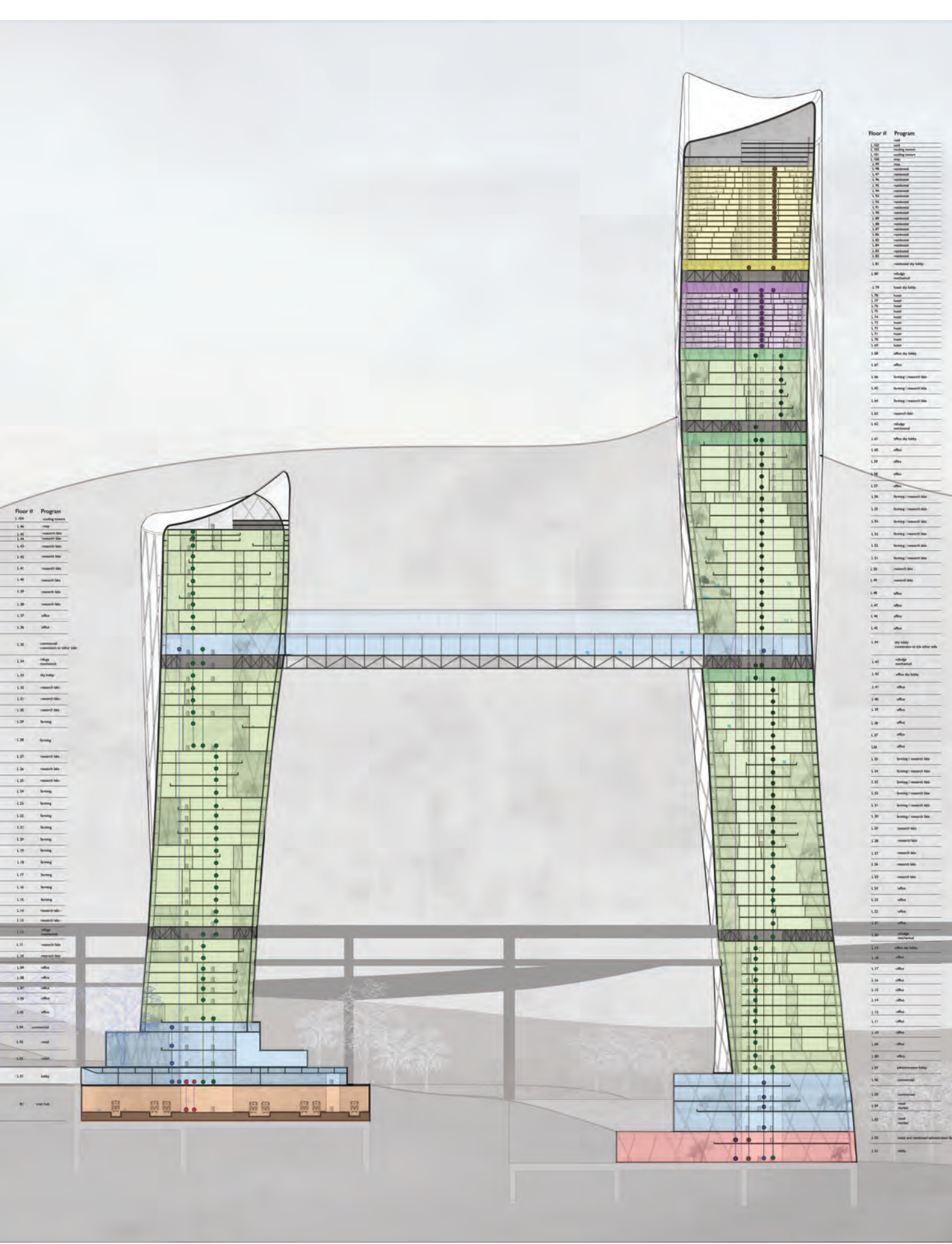
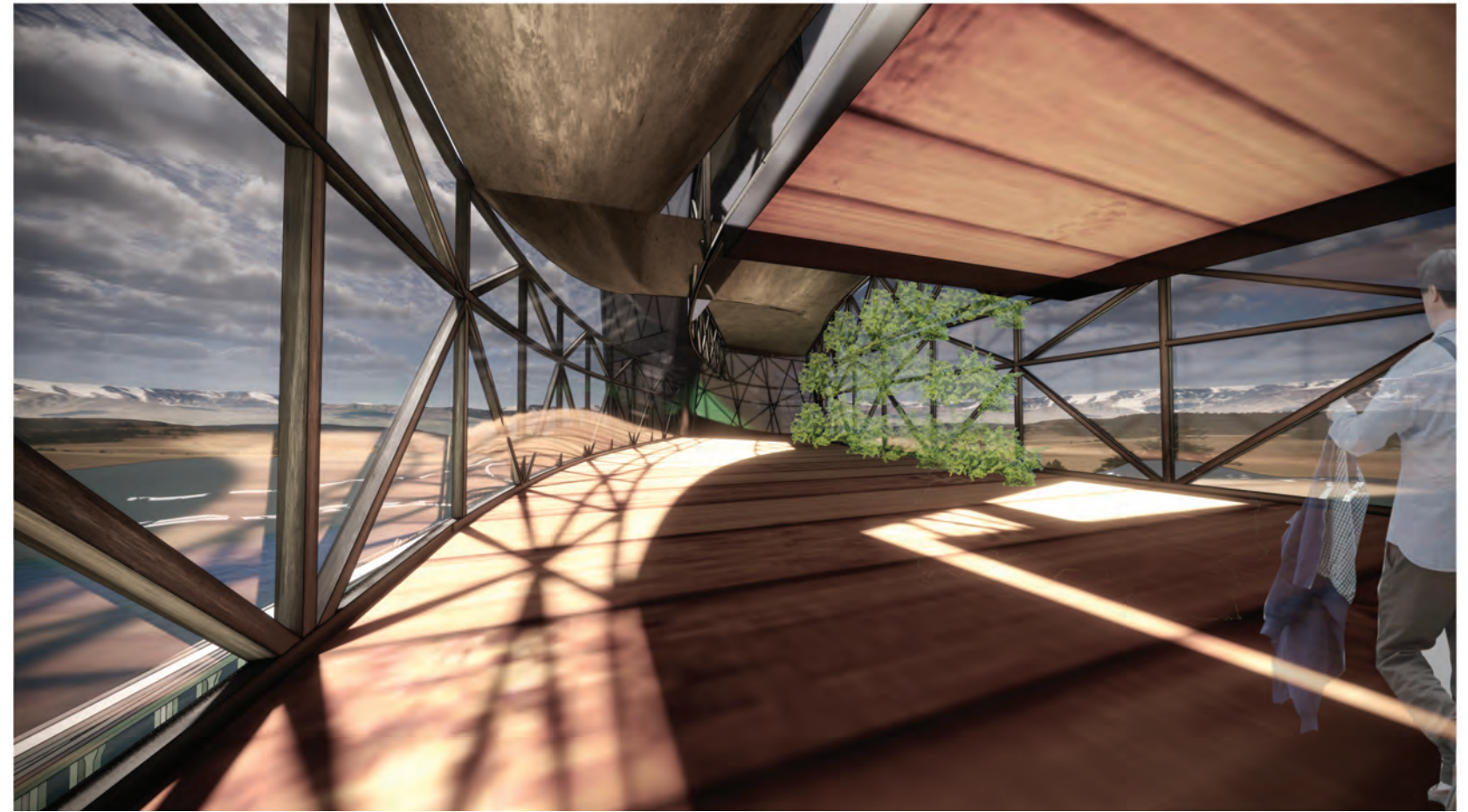
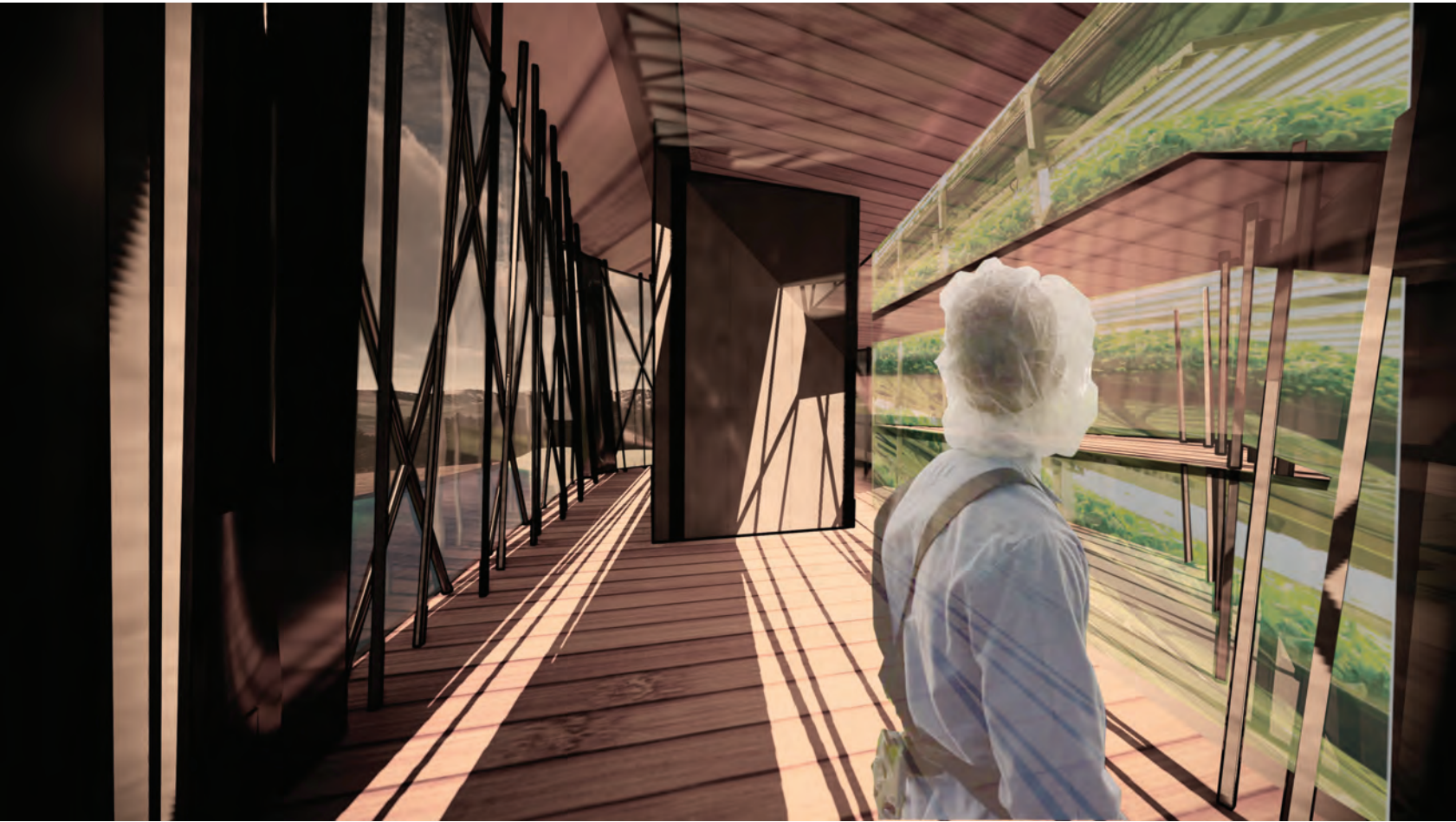
SUMMER JULY 7AM





CHONGQING'S PORTAL THROUGH CULTIVATION
yuzhong district, chongqing, china

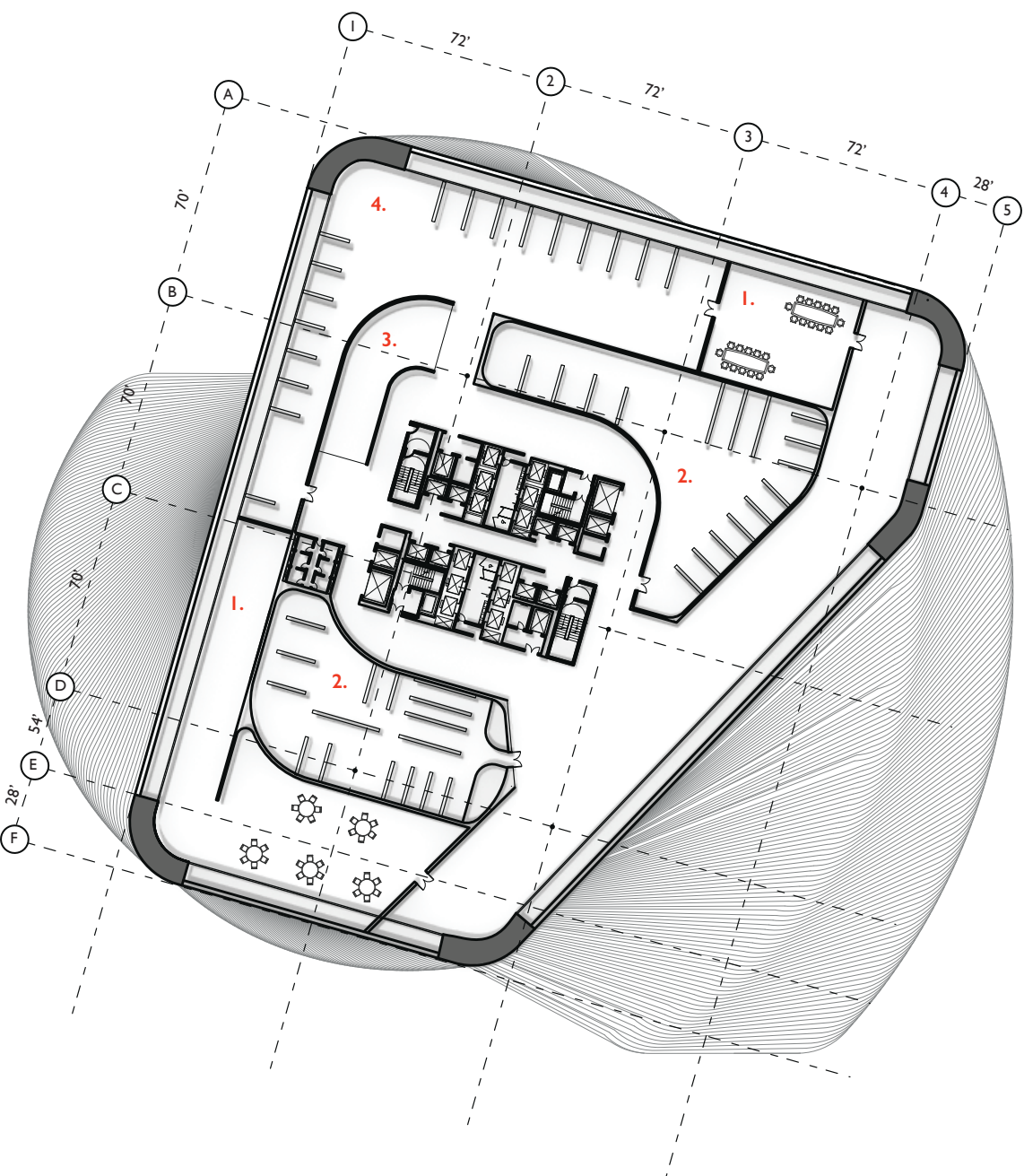
ground floor plan and bridge connection plan
peter peng | yvonne zhang | michael trencher | kathy dunne



Floor #	Program
1.00	entrance
1.01	entrance
1.02	entrance
1.03	entrance
1.04	entrance
1.05	entrance
1.06	entrance
1.07	entrance
1.08	entrance
1.09	entrance
1.10	entrance
1.11	entrance
1.12	entrance
1.13	entrance
1.14	entrance
1.15	entrance
1.16	entrance
1.17	entrance
1.18	entrance
1.19	entrance
1.20	entrance
1.21	entrance
1.22	entrance
1.23	entrance
1.24	entrance
1.25	entrance
1.26	entrance
1.27	entrance
1.28	entrance
1.29	entrance
1.30	entrance
1.31	entrance
1.32	entrance
1.33	entrance
1.34	entrance
1.35	entrance
1.36	entrance
1.37	entrance
1.38	entrance
1.39	entrance
1.40	entrance
1.41	entrance
1.42	entrance
1.43	entrance
1.44	entrance
1.45	entrance
1.46	entrance
1.47	entrance
1.48	entrance
1.49	entrance
1.50	entrance
1.51	entrance
1.52	entrance
1.53	entrance
1.54	entrance
1.55	entrance
1.56	entrance
1.57	entrance
1.58	entrance
1.59	entrance
1.60	entrance
1.61	entrance
1.62	entrance
1.63	entrance
1.64	entrance
1.65	entrance
1.66	entrance
1.67	entrance
1.68	entrance
1.69	entrance
1.70	entrance
1.71	entrance
1.72	entrance
1.73	entrance
1.74	entrance
1.75	entrance
1.76	entrance
1.77	entrance
1.78	entrance
1.79	entrance
1.80	entrance
1.81	entrance
1.82	entrance
1.83	entrance
1.84	entrance
1.85	entrance
1.86	entrance
1.87	entrance
1.88	entrance
1.89	entrance
1.90	entrance
1.91	entrance
1.92	entrance
1.93	entrance
1.94	entrance
1.95	entrance
1.96	entrance
1.97	entrance
1.98	entrance
1.99	entrance
2.00	entrance

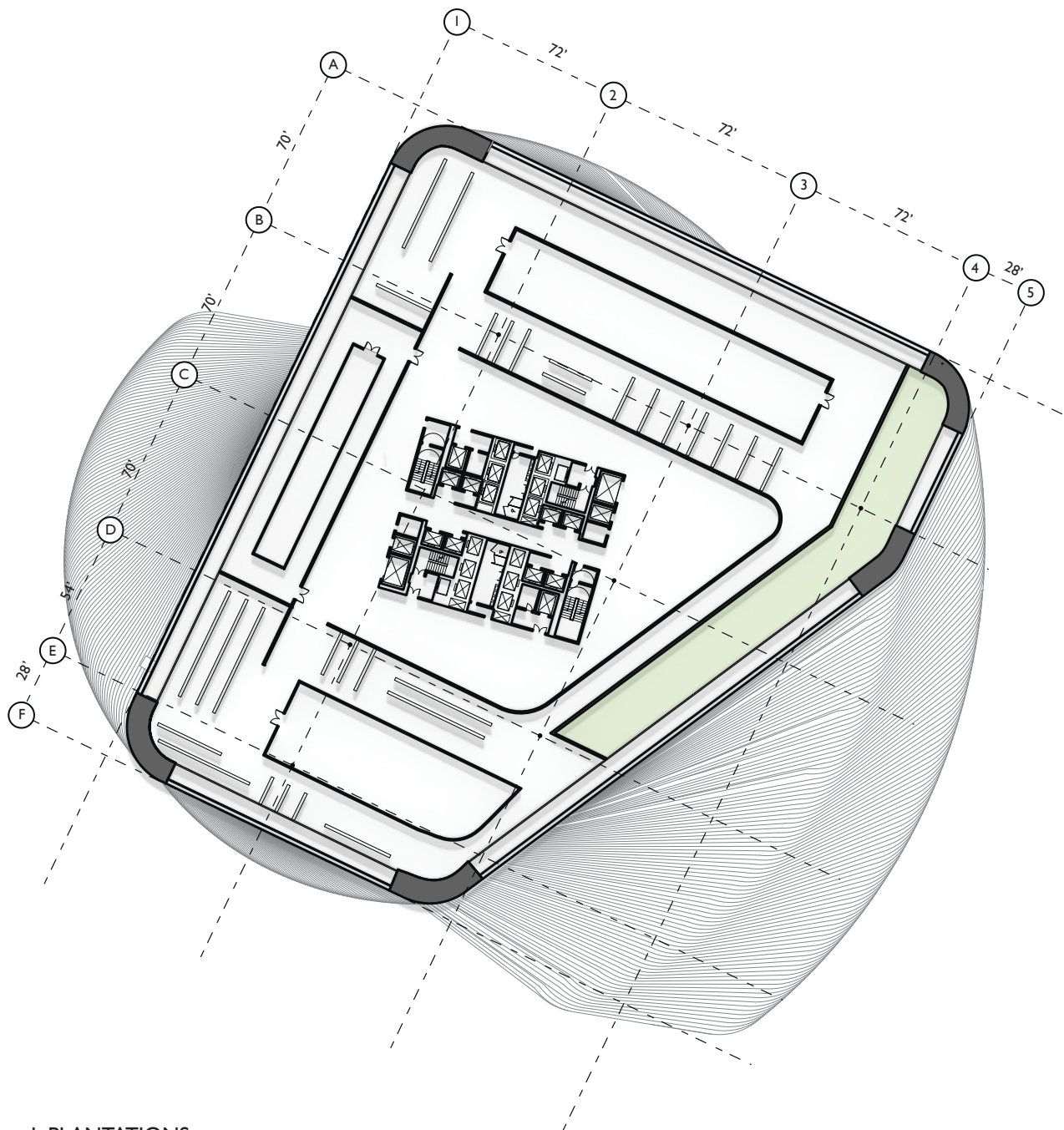
Floor #	Program
1.00	entrance
1.01	entrance
1.02	entrance
1.03	entrance
1.04	entrance
1.05	entrance
1.06	entrance
1.07	entrance
1.08	entrance
1.09	entrance
1.10	entrance
1.11	entrance
1.12	entrance
1.13	entrance
1.14	entrance
1.15	entrance
1.16	entrance
1.17	entrance
1.18	entrance
1.19	entrance
1.20	entrance
1.21	entrance
1.22	entrance
1.23	entrance
1.24	entrance
1.25	entrance
1.26	entrance
1.27	entrance
1.28	entrance
1.29	entrance
1.30	entrance
1.31	entrance
1.32	entrance
1.33	entrance
1.34	entrance
1.35	entrance
1.36	entrance
1.37	entrance
1.38	entrance
1.39	entrance
1.40	entrance
1.41	entrance
1.42	entrance
1.43	entrance
1.44	entrance
1.45	entrance
1.46	entrance
1.47	entrance
1.48	entrance
1.49	entrance
1.50	entrance
1.51	entrance
1.52	entrance
1.53	entrance
1.54	entrance
1.55	entrance
1.56	entrance
1.57	entrance
1.58	entrance
1.59	entrance
1.60	entrance
1.61	entrance
1.62	entrance
1.63	entrance
1.64	entrance
1.65	entrance
1.66	entrance
1.67	entrance
1.68	entrance
1.69	entrance
1.70	entrance
1.71	entrance
1.72	entrance
1.73	entrance
1.74	entrance
1.75	entrance
1.76	entrance
1.77	entrance
1.78	entrance
1.79	entrance
1.80	entrance
1.81	entrance
1.82	entrance
1.83	entrance
1.84	entrance
1.85	entrance
1.86	entrance
1.87	entrance
1.88	entrance
1.89	entrance
1.90	entrance
1.91	entrance
1.92	entrance
1.93	entrance
1.94	entrance
1.95	entrance
1.96	entrance
1.97	entrance
1.98	entrance
1.99	entrance
2.00	entrance

PROGRAM:
FARMING + OFFICES



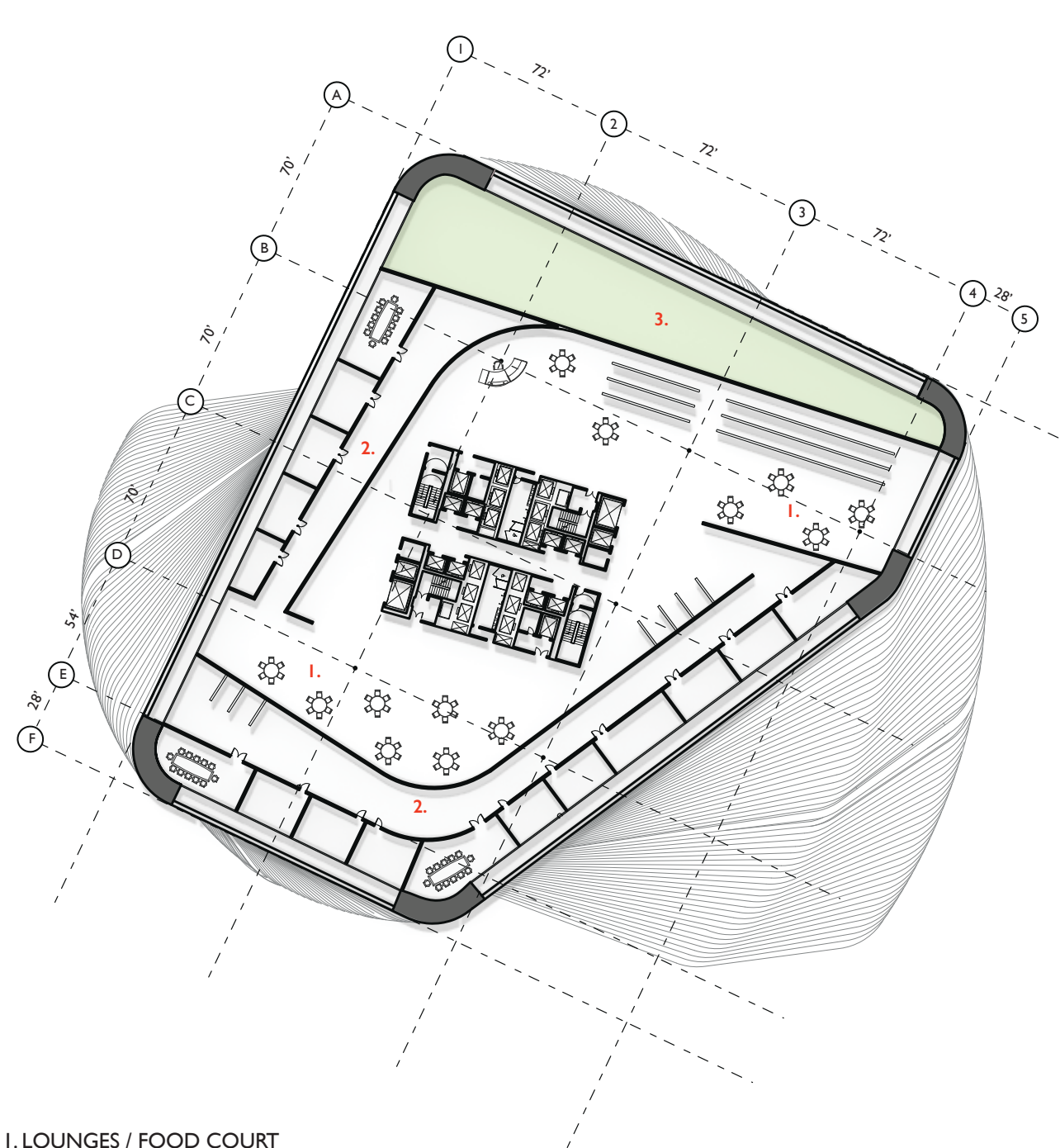
- 1. CONFERENCE ROOM / LABORATORY
- 2. INDOOR FARMING STORAGE
- 3. WATER PROCESSING WATER RESERVOIR
- 4. LOUNGE / LIBRARY
- 5. OUTDOOR GARDEN TERRACE

PROGRAM:
PLANTATION TO MARKET



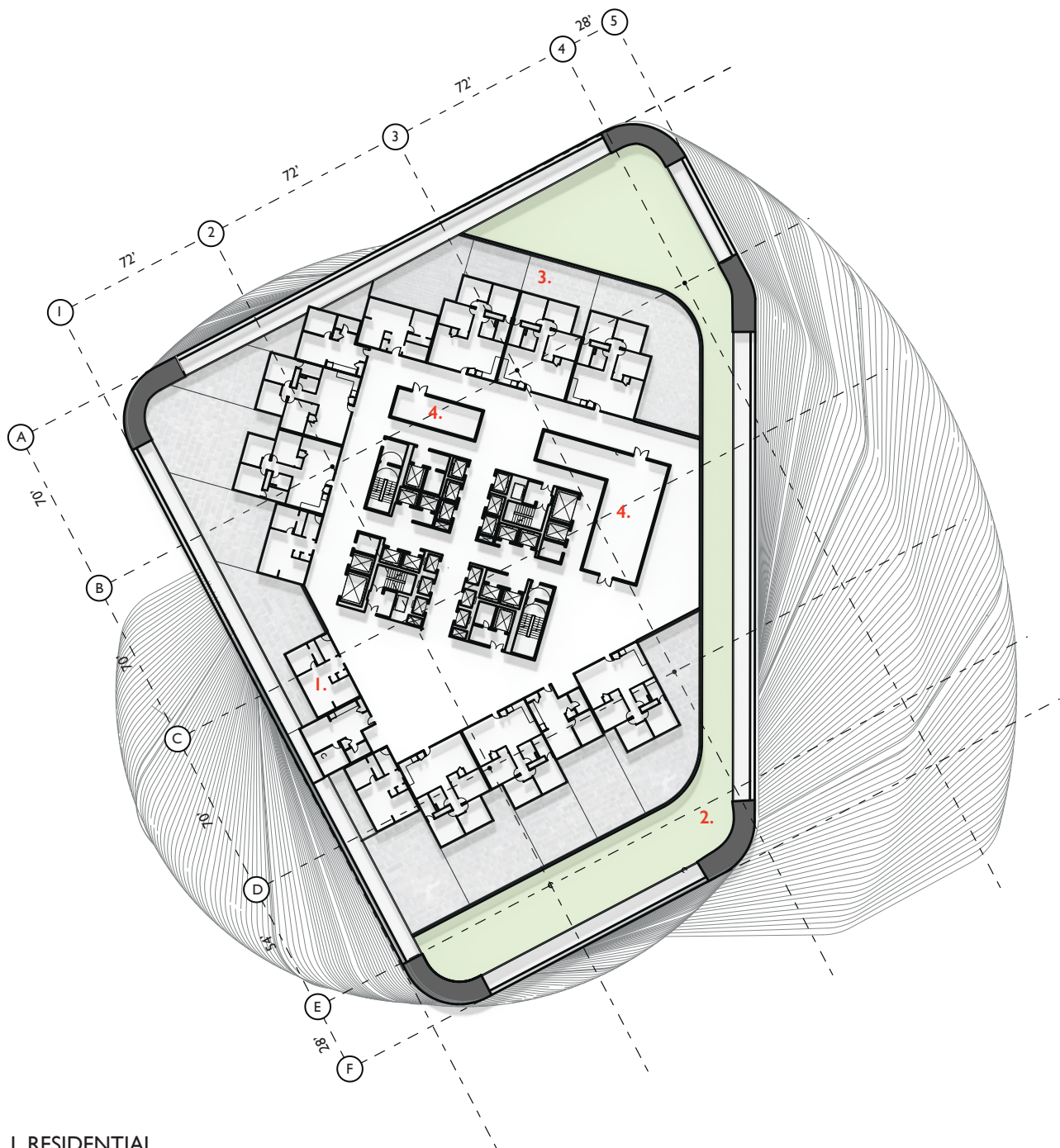
- 1. PLANTATIONS
- 2. FOOD PROCESSING
- 3. HARVESTING
- 4. ATRIUM

PROGRAM:
OFFICE + LEISURE



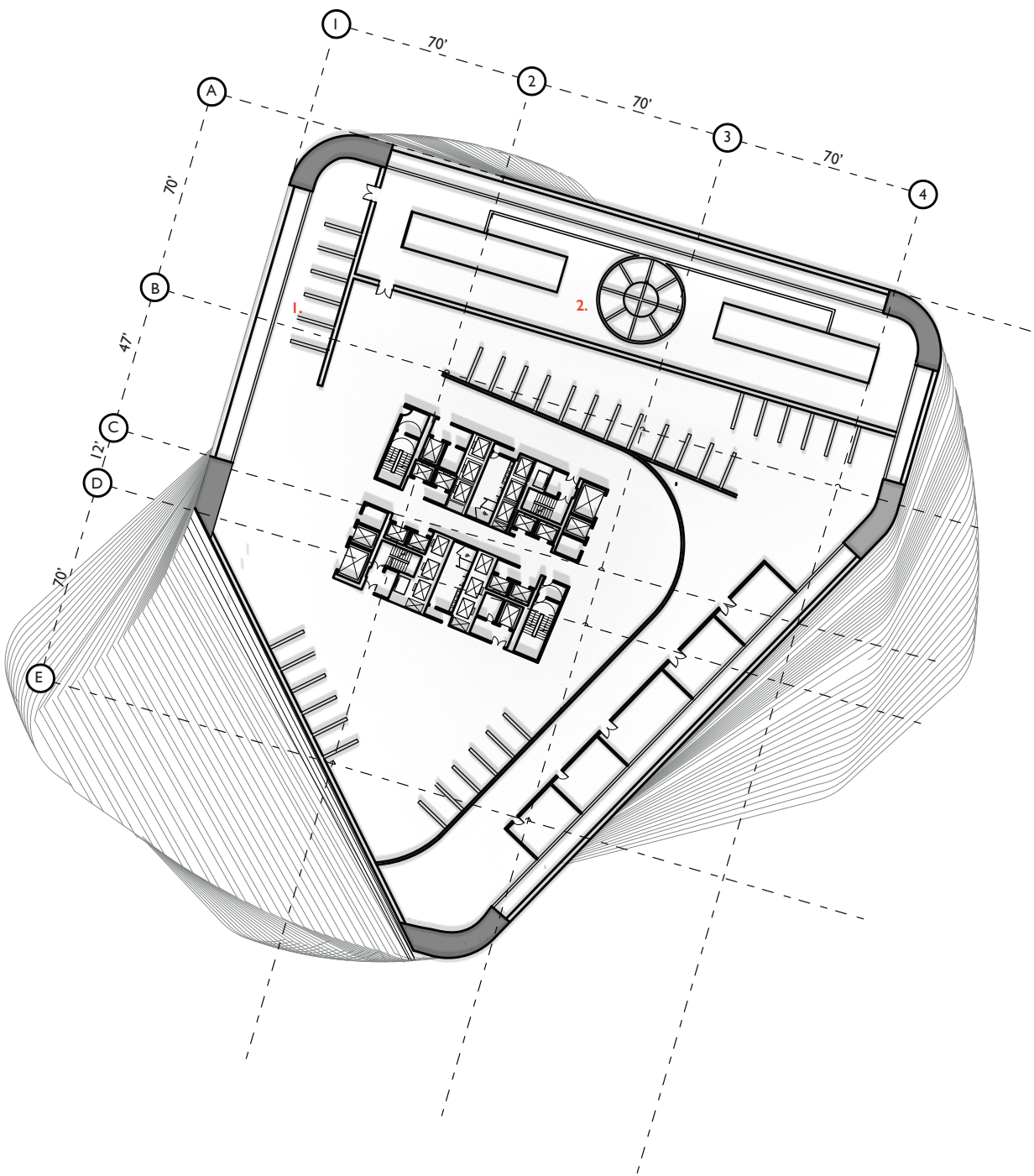
- 1. LOUNGES / FOOD COURT
- 2. PRIVATE BELCONY + GARDEN
- 3. OFFICES

PROGRAM:
RESIDENTIAL + LEISURE

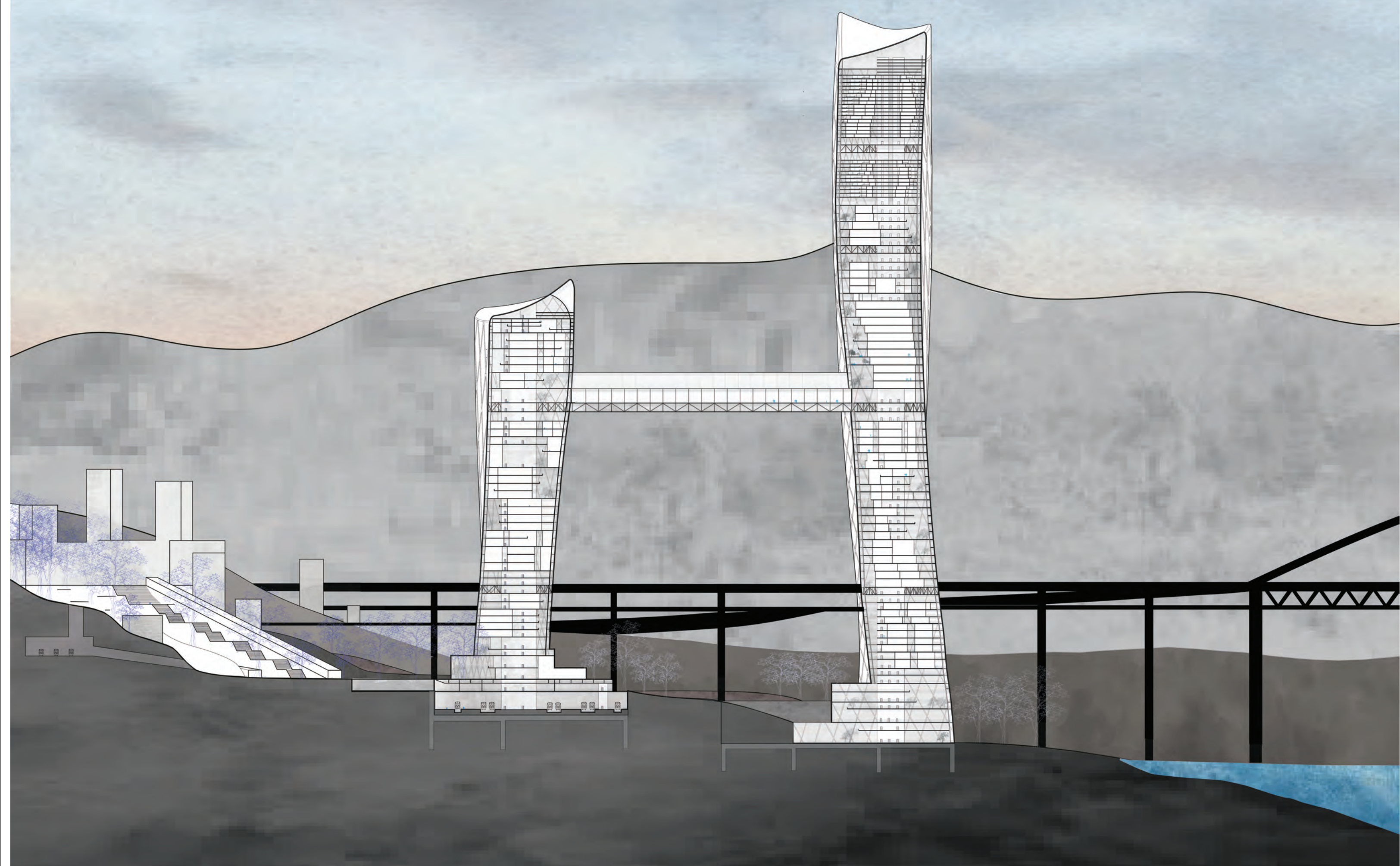


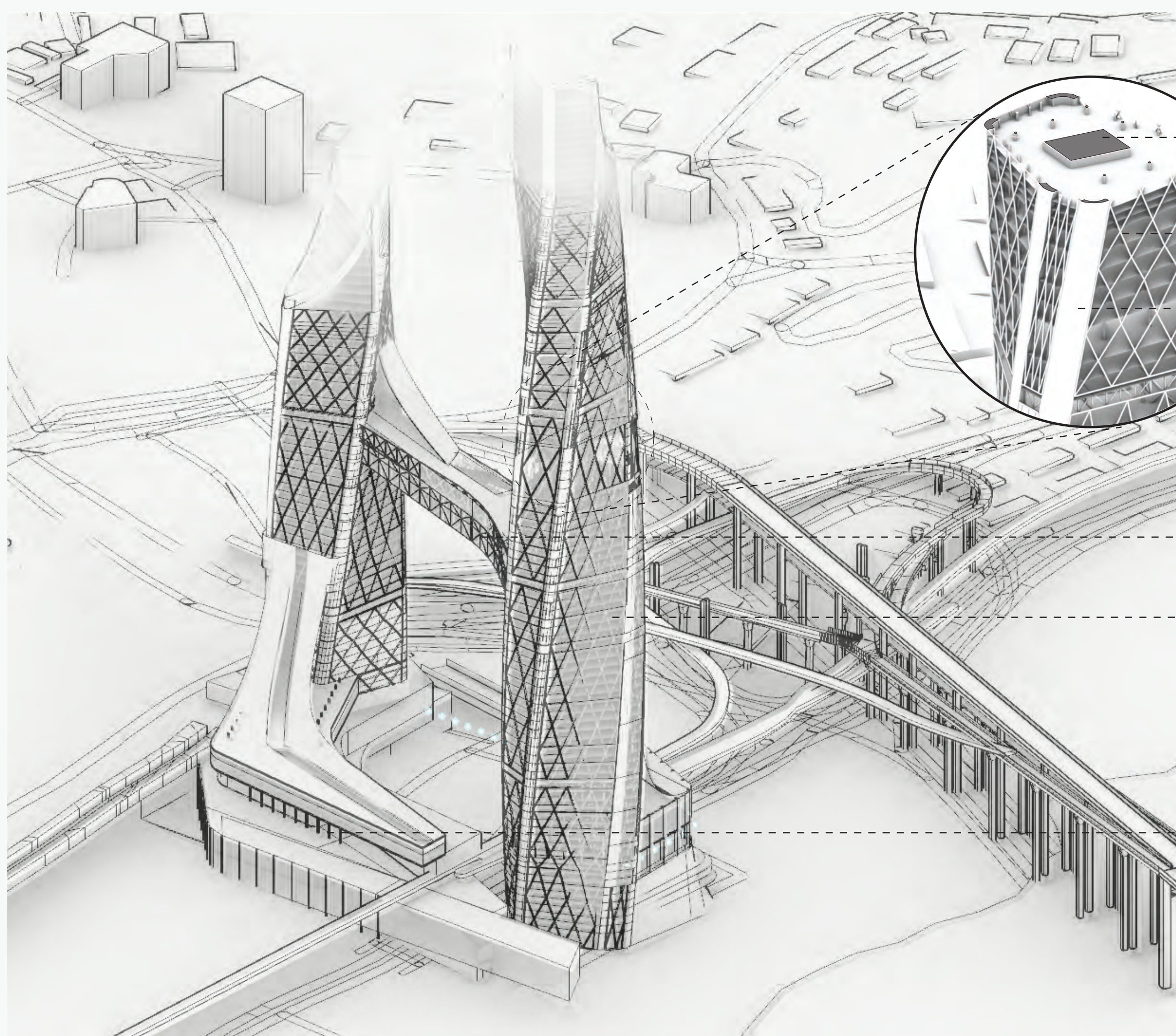
- 1. RESIDENTIAL
- 2. ATRIUM
- 3. PRIVATE BELCONY / GARDEN
- 4. LOUNGE / LAUNDRY ROOM

PROGRAM:
FARMING + WATER COLLECTION



1. FARMING - GROWING STACKS
2. WATER COLLECTION





● building core

● diagrid

● megacolumns

● truss (tension)

● diagrid

● base / foundation

