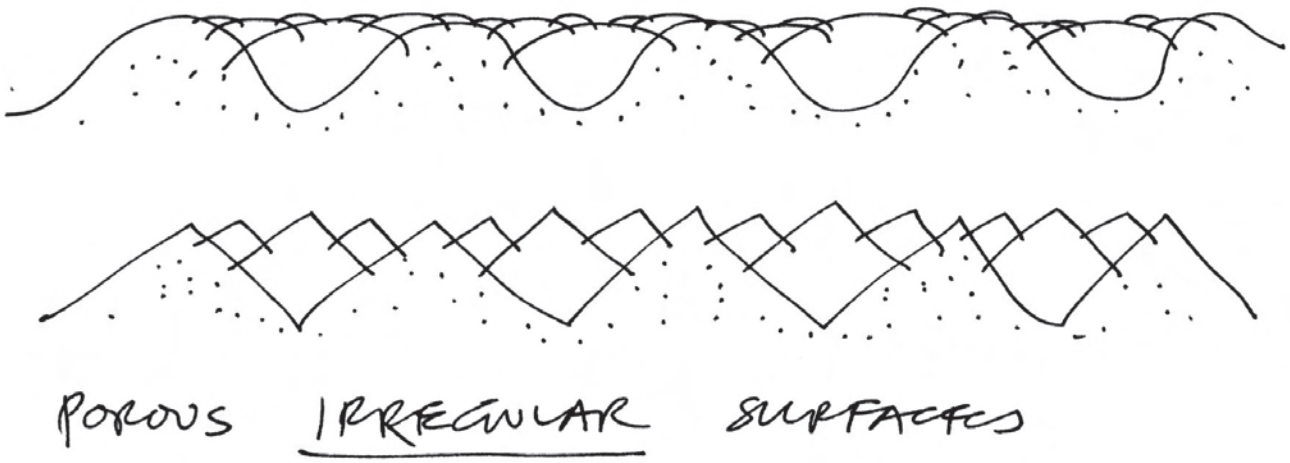
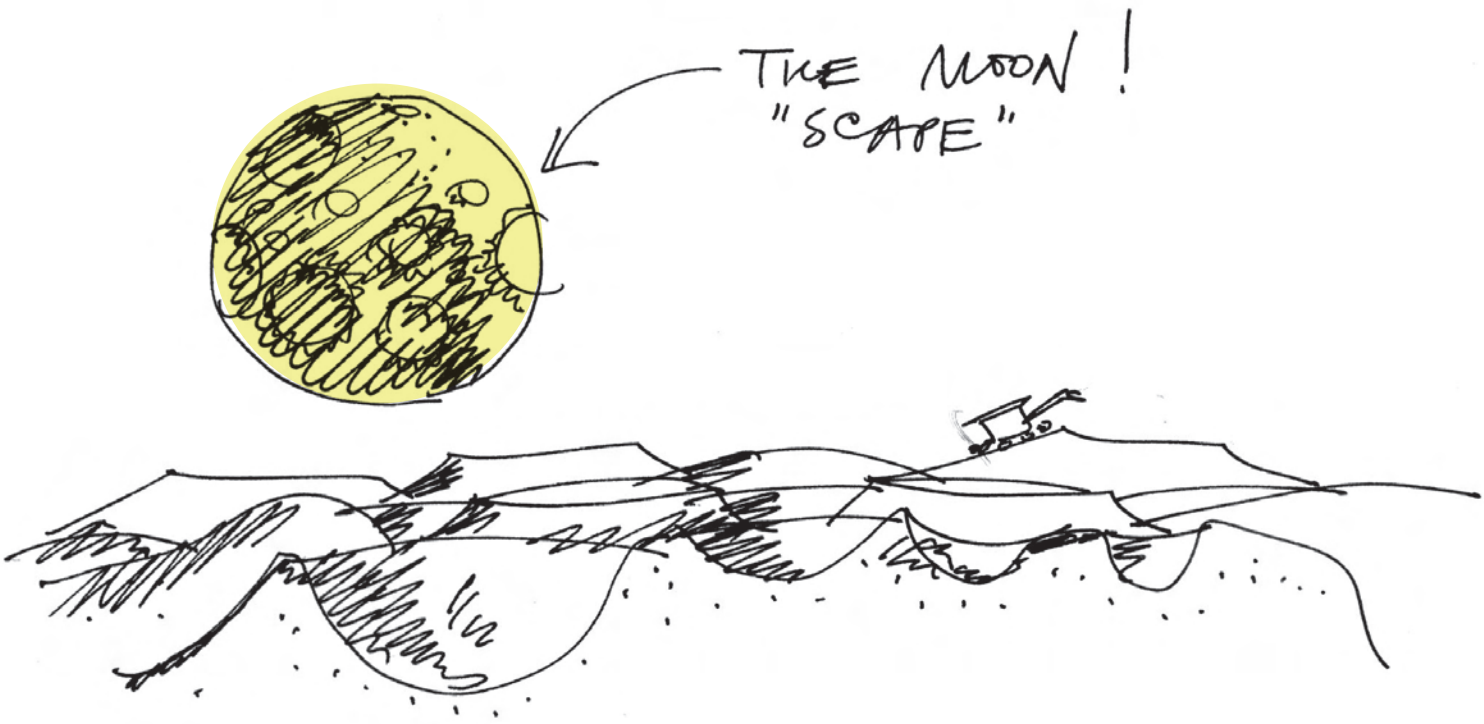
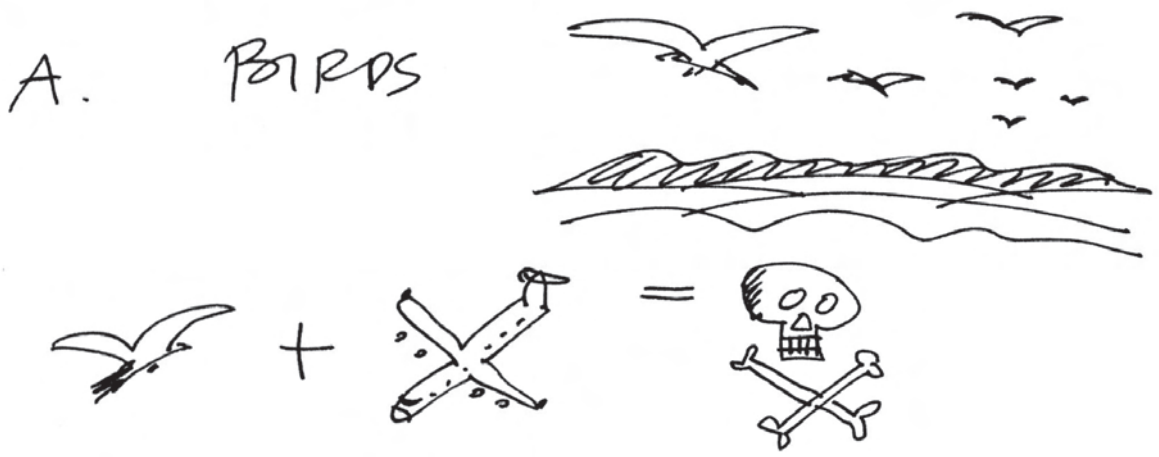
MOONscape™

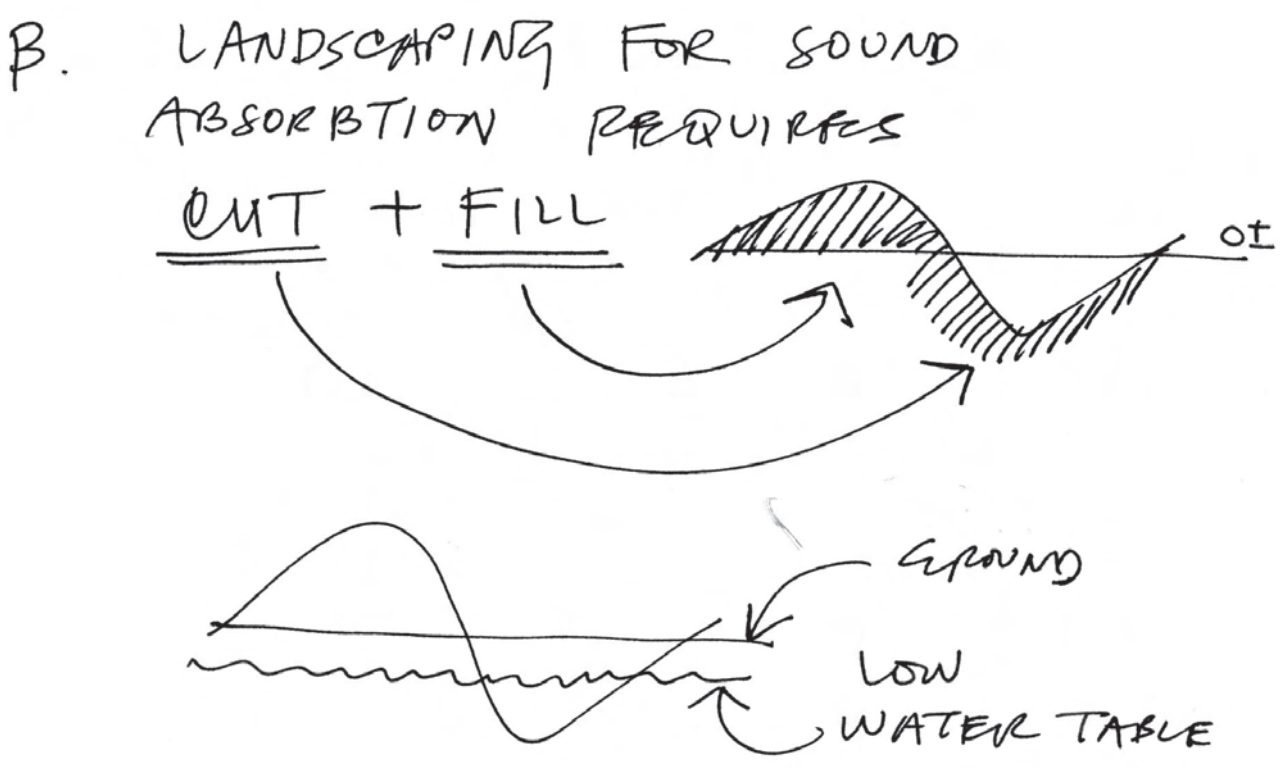
1. What is the ideal sound absorber?





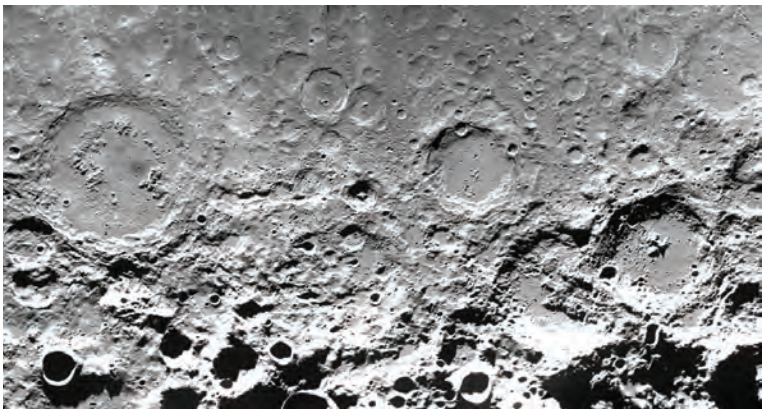
2. The problems with the landscape approach





Local water table is high, therefore, cut cannot equal fill. The situation where fill is brought in from elsewhere creates a waste of energy.

3. Solution



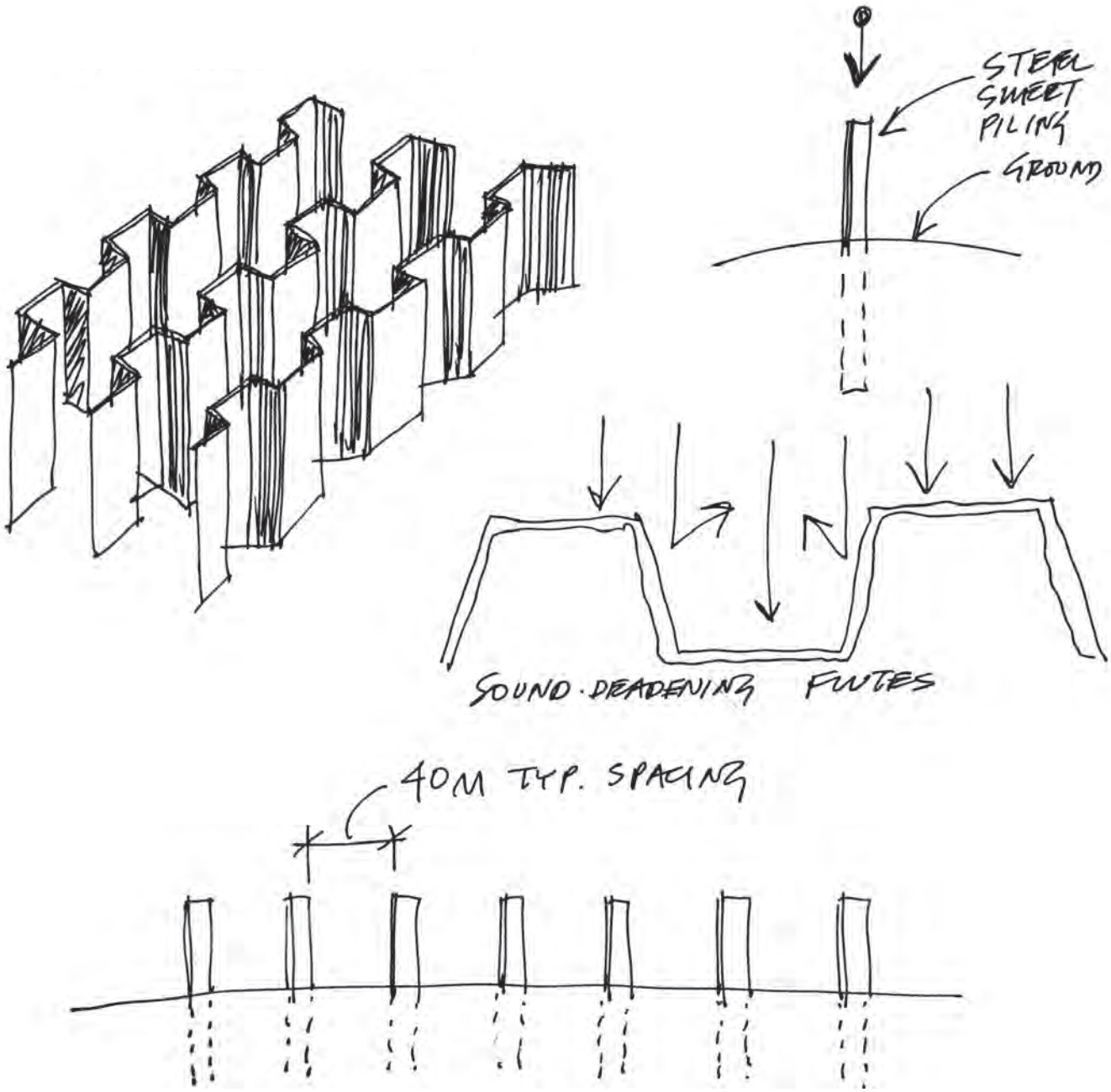
An acoustically absorptive “land”scape not made of “land”

a MOONscape, made of mundane everyday agrarian materials typical to the area. Vast storage sheds, built of recycled materials, filled with recycled permanent content (i.e. construction rubble) in the areas where sound reduction is most needed.

The roofscape is used to create the iconic image of the moonscape, as well as control storm water flow.

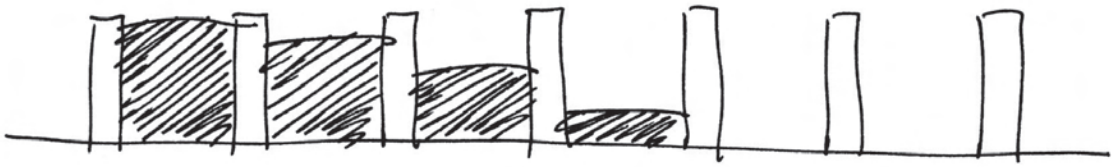
Step I

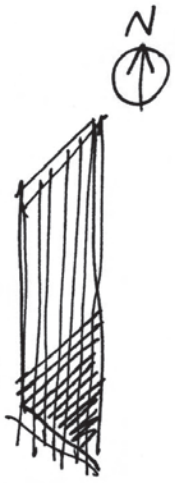
using corrugated recycled steel sheet piling (normally used for retaining sea-walls), create rows of barriers, parallel to the runway



Step II

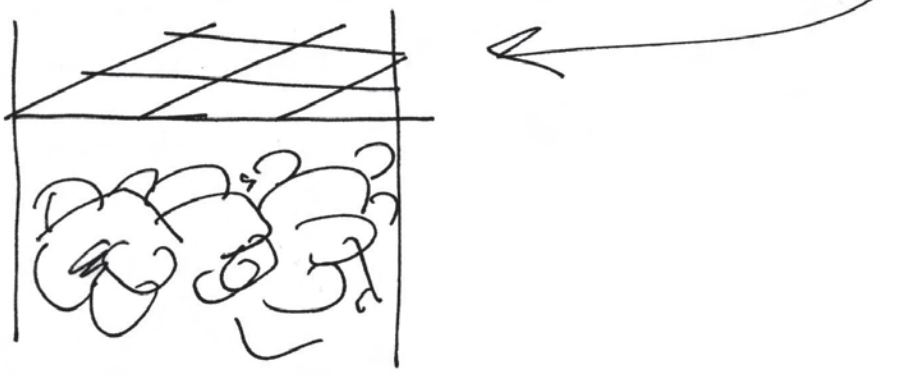
Introduce permanent FILL* where sound absorption is critical (south side)





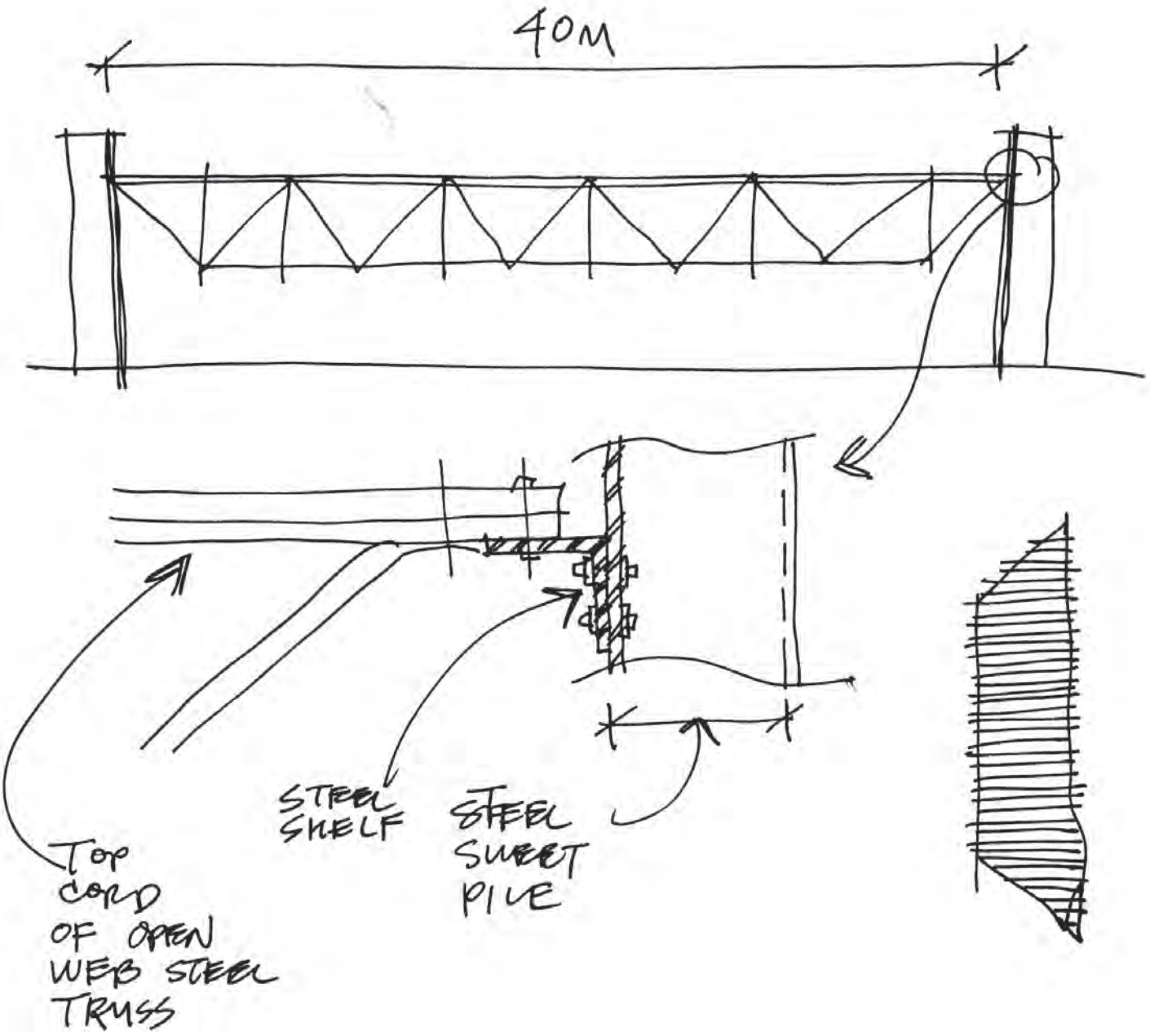
* FILL — CRUSHED CONCRETE, CONSTRUCTION DEBRIS, TIRES, ETC.

- FILL IS THEN COVERED BY METAL NETTING TO PREVENT BIRDS ROOSTING



Step III

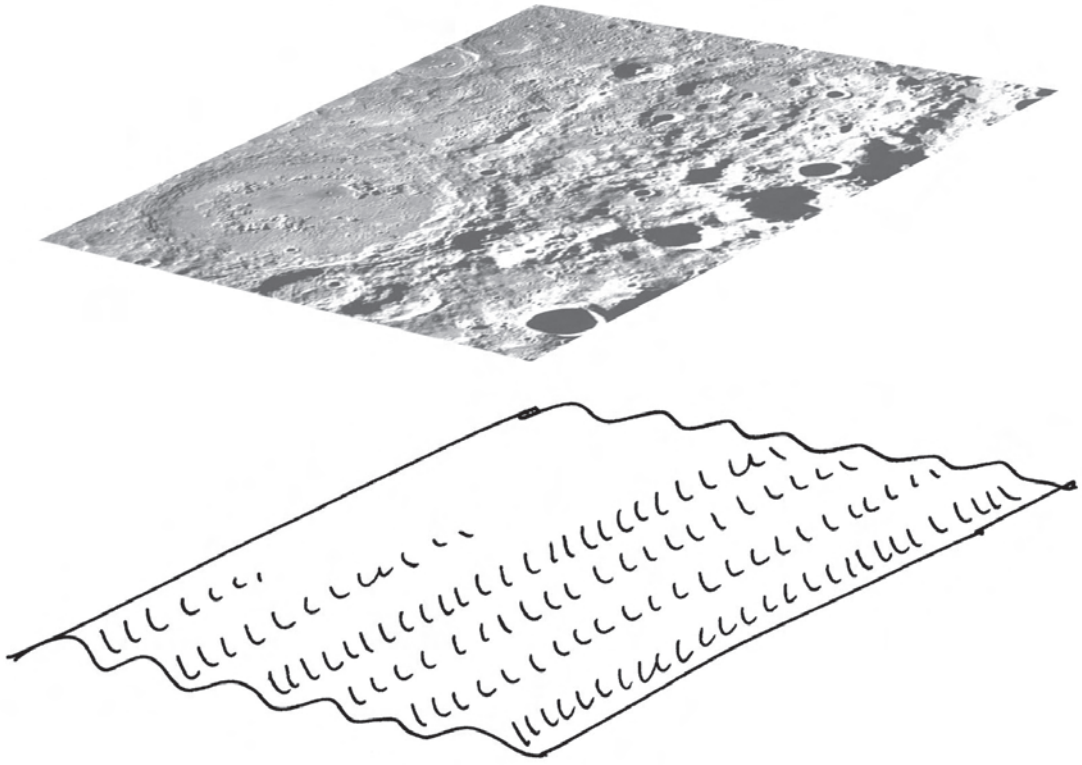
Deck over sheet pilings with DL (deep / long) open web joists (max. span 40 meters)



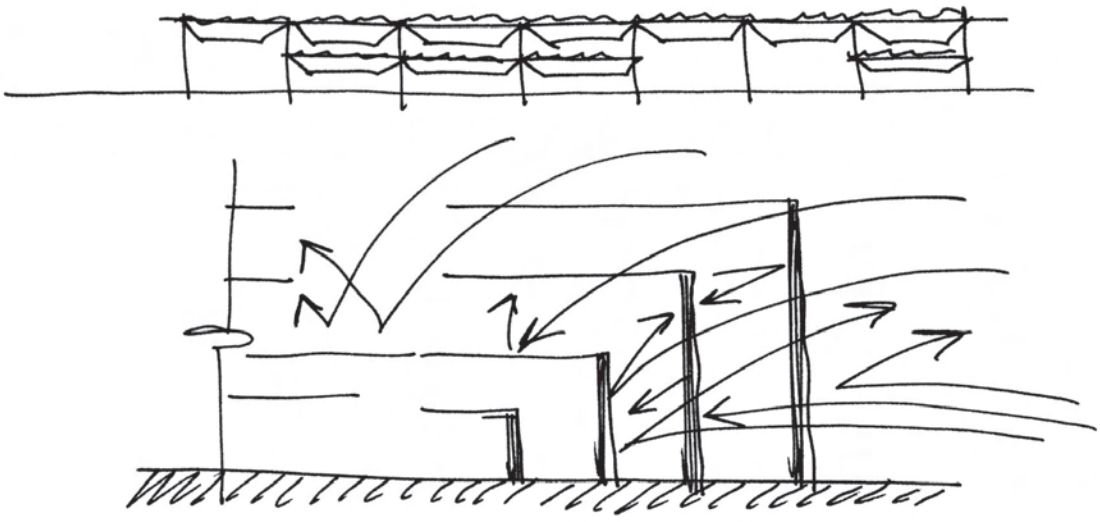
Step IV

Roof over (certain areas - see plan) joists with recycled corrugated fiberglass sheets (typical in agrarian accessory buildings)

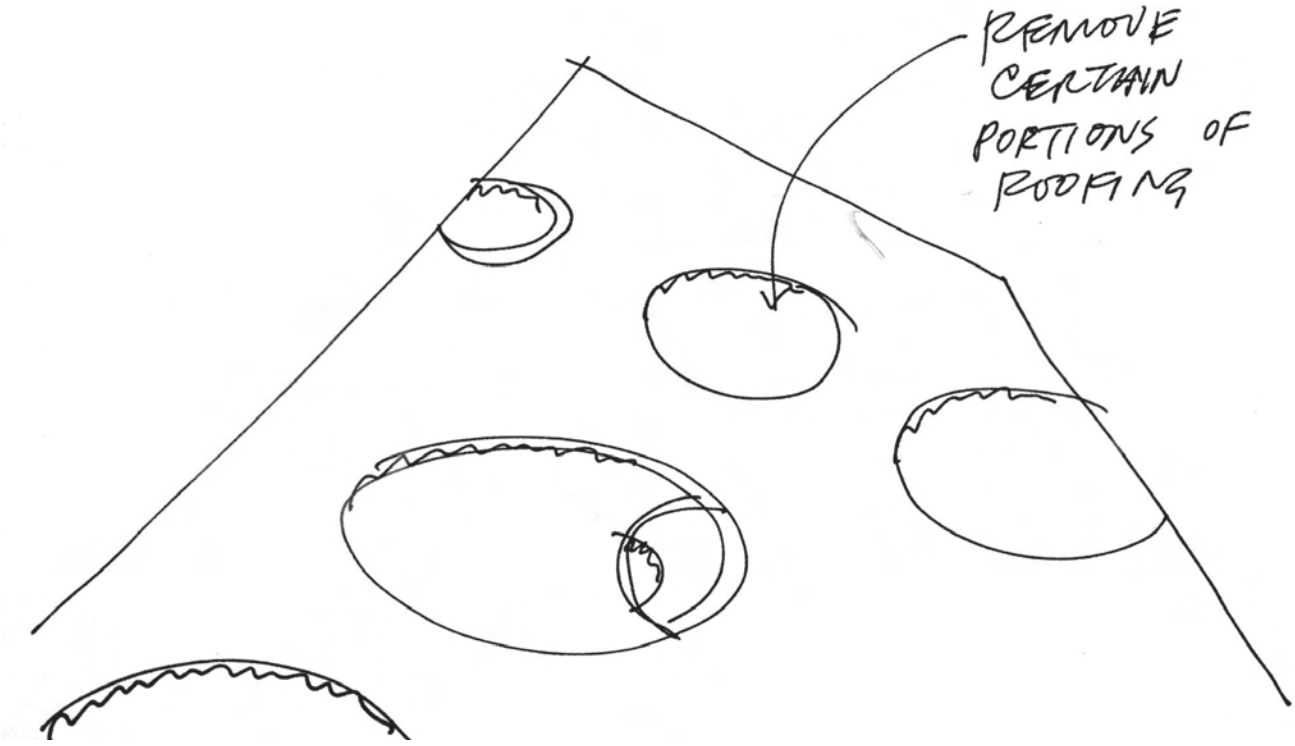
Before installation, fiberglass sheets are pre-printed with images of Moon surface. Together with the images, layering of roofed areas and their overlap will construct the iconic image of the moonscape when see from the plain, and create a multi-layered sound-trapping device on the ground.



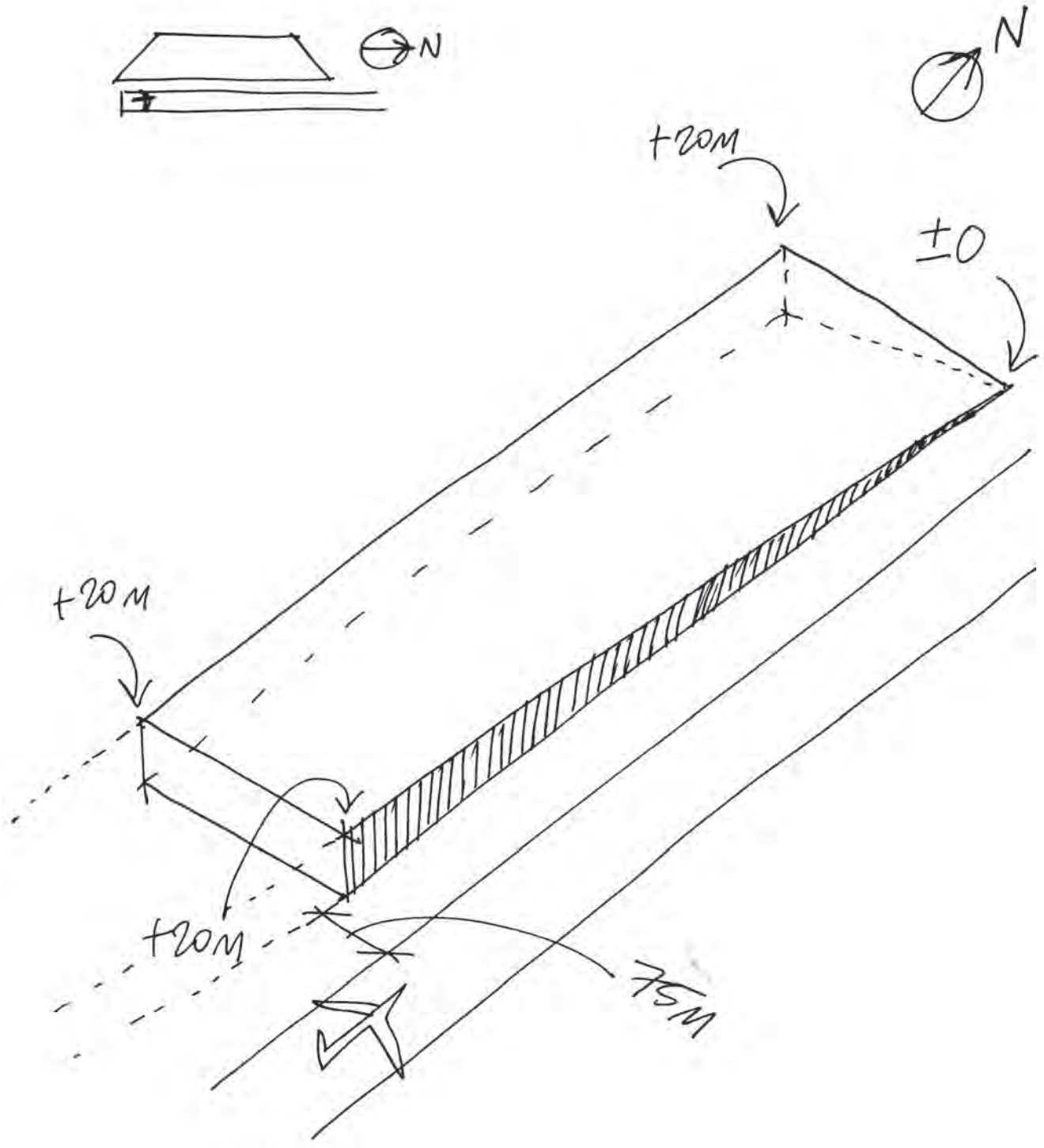
Step V

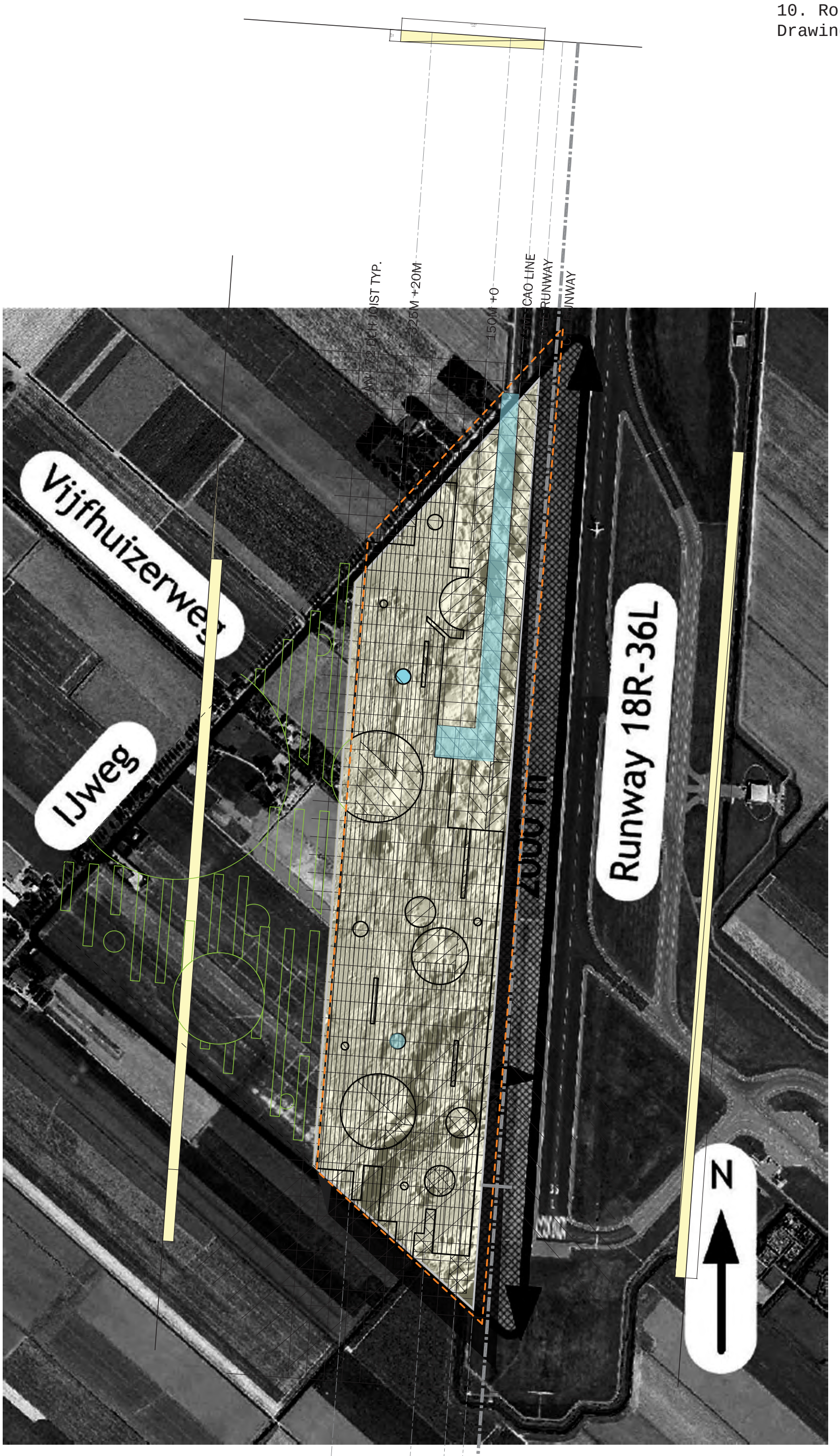


• SOUND ABSORPTION STRATEGY IN SECTION

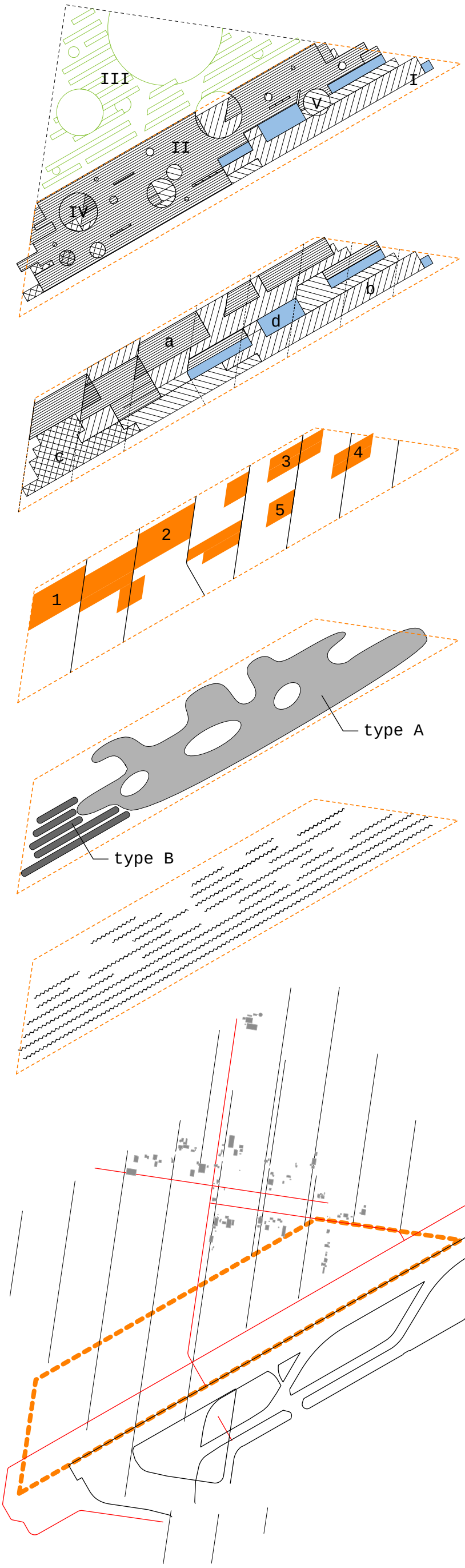


Overall Geometry
based on municipal and aviation regulations




Vijfhuizerweg
IJweg
Runway 18R-36L
2000 m
325M +20M
150M +0
CAO LINE
RUNWAY
N

site plan



moonscape (multi-functional storage, research and recylcling landscape)

I	on-grade roofscape access (exterior)
II	outer crust of fiberglass roof sheathing; pvc panels interspersed
III	future residential/research development; moonscape - Phase II
IV	large light voids - daylight filter
V	program voids (exterior spaces for community; amphitheatre, skatepark, etc.)

roofscape textures

a	corrugated fiberglass roof sheathing; pvc panels interspersed
b	land-fill landscape; covered with gabion wire or netting to prevent wildlife habitat (partial acessbility to public)
c	high-contaminant waste (inaccessible to public)
d	stormwater management ponding (research and recreation)

storage facilities

1	sound research laboratories
2	waste/recycling management
3	community maintenance
4	community recreation
5	sustainable energy storage (i.e. pvc panels, etc)

land-fill topography

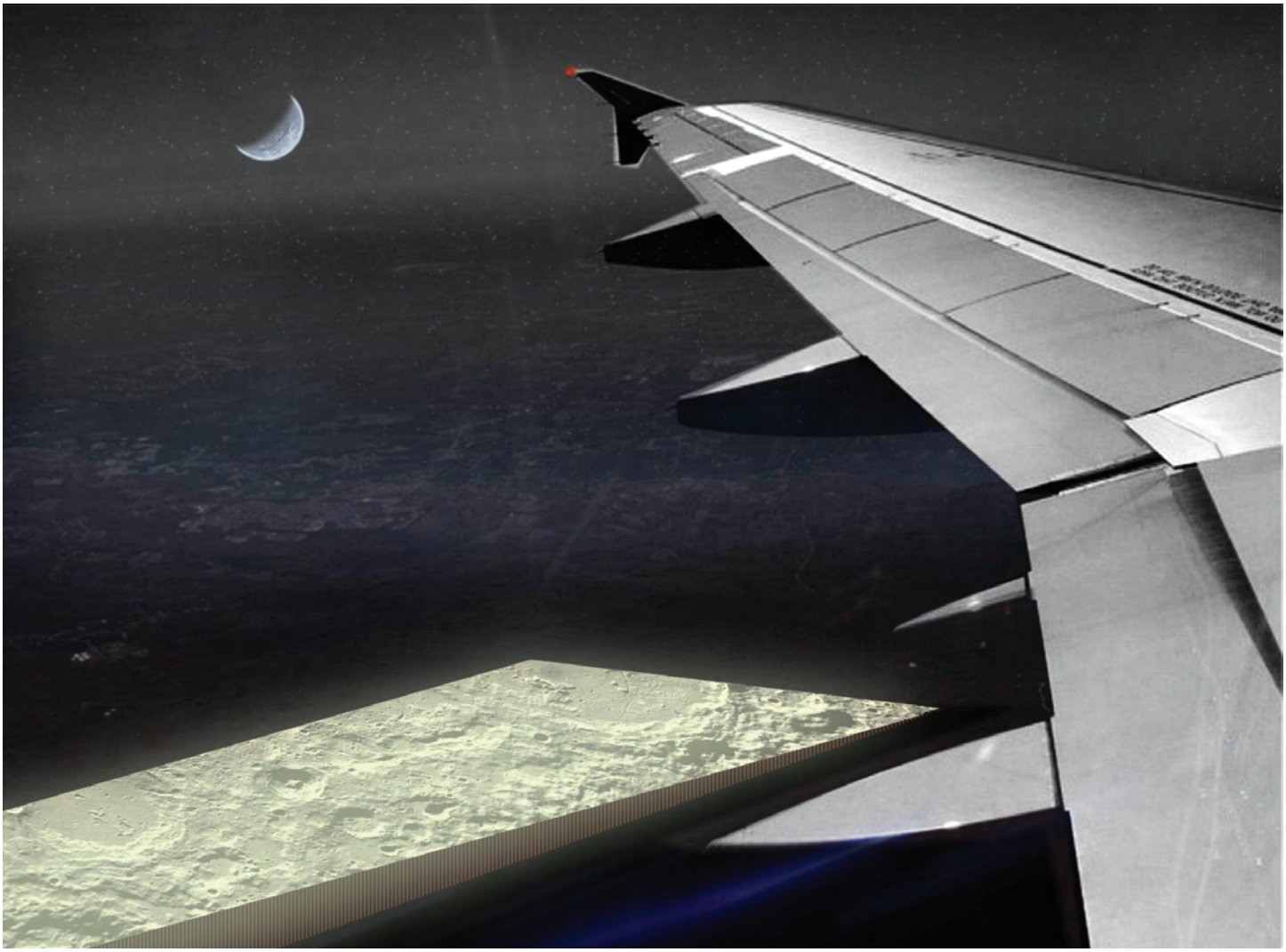
type A	short-term storage for recyled content -dredge, asphalt, broken concrete gravel or similar
type B	long-term storage (radioactive material or similar)

field of vertical screens

-corrugated metal sheet piling, 40m spacing

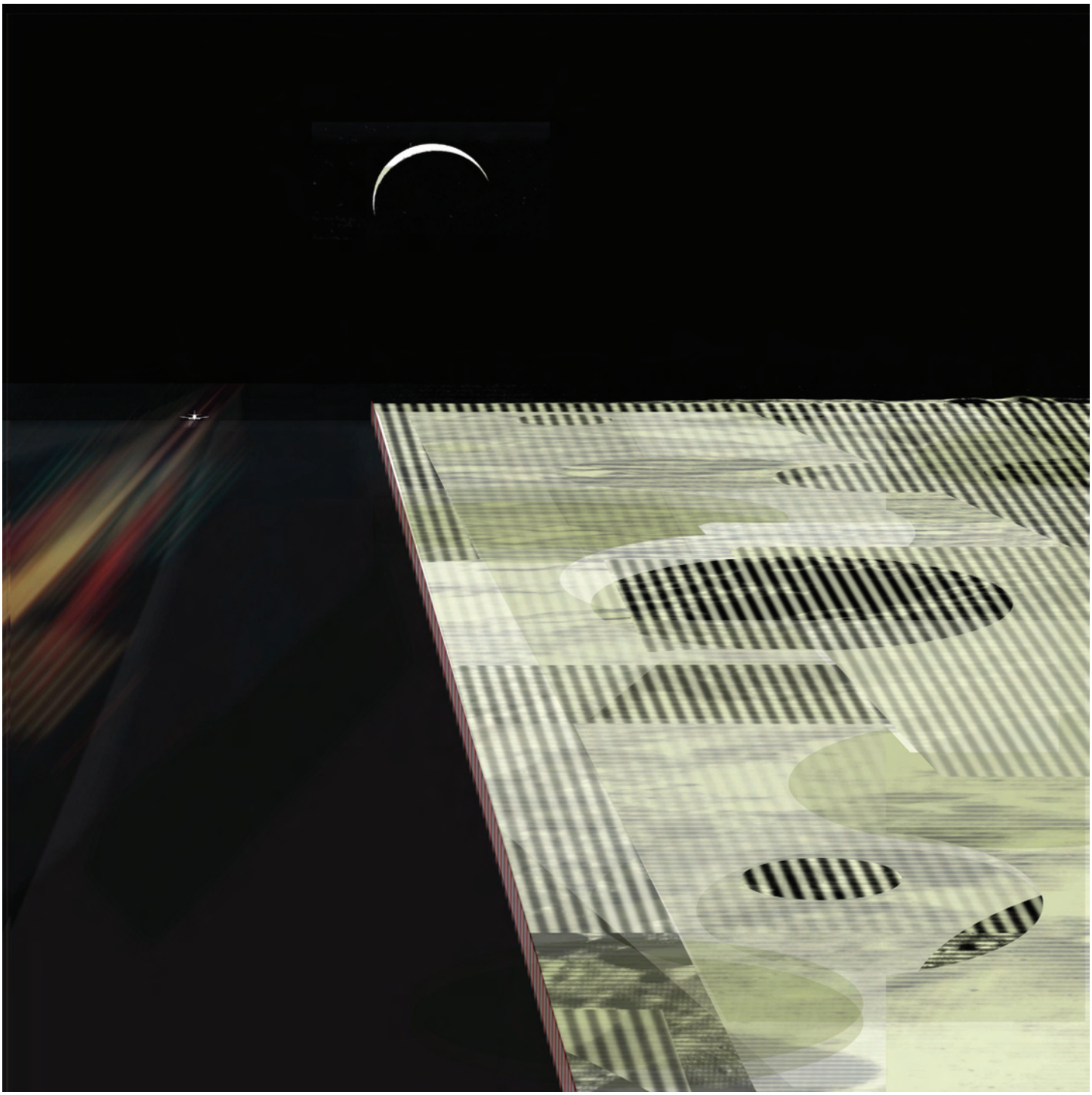
designated competition site for sound barrier

MOONscape™
11. Rough Plan
Description



View from above

MOONscape™
11. Rough Plan
Description



View from the ground

MOONscape™
12. Rough Plan Features

1. Vertical Sound Barrier Walls

corrugated sheet piling for retention of landfill storage and support of roof structure below 10 meters

2. Steel Frame Construction

use of recycled steel structural members for large interior programmed spaces
structural grid set at 40 m

2. Corrugated Fiberglass Roof Paneling

moonscape image is digitally printed on the corrugated roofing with recycled ink

the play of light and shadow is achieved by overlap of roof panal, solids, and voids

transparency factor of roofing varies according to adjacent programs below
used for natural daylighting and nighttime glowing

4. Recycled Dredge Spoil Fill Materials

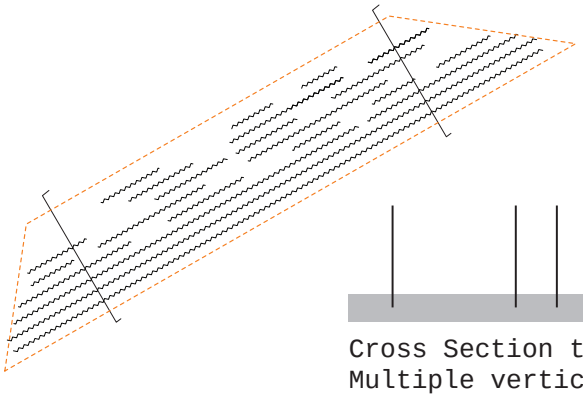
lightly contaminated dredge material mized with sand

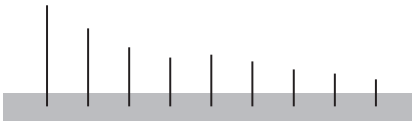
additional storage space for concrete and asphalt waste

ground noise reduction strategy

MOONscape™
12. Rough Plan
Features

1. Sound Barrier Screens - vertical walls arrayed across site

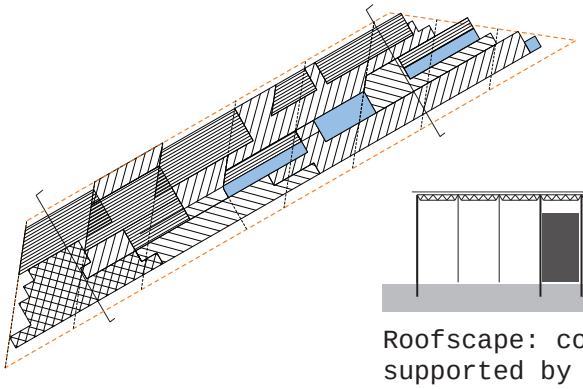




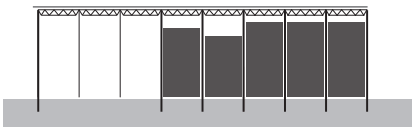
Cross Section through North End
less dense vertical retention walls
line North portion of site ranging
in height from 5 to 20 m

Cross Section through South End of Site
Multiple vertical walls 20 m tall border the take off zone
at South end of site aborbing highest amount of ground noise

2. Varied Topography - horizontal variations disperse sound waves

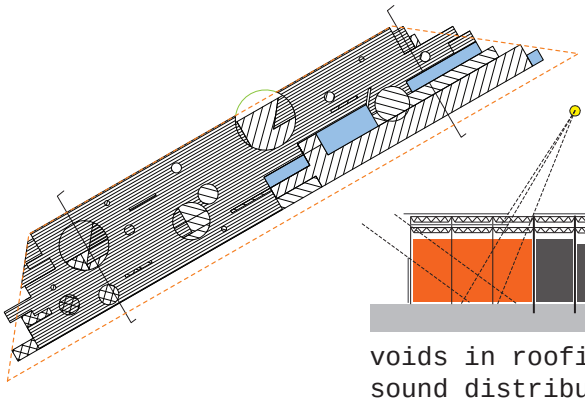


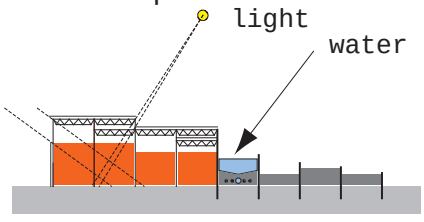
Landscape: solid fill within
retention walls
creates occupiable landscape



Roofscape: corrugated plastic roofing
supported by columns creates
interior spaces

3. Porous Landscape - voids within the surfaces absorp noise





voids within solid fill
funnel stormwater runoff
to prevent water
accumulation / freezing

voids in roofing allow light penetration
sound distributed into voids is dispersed
through interior walls

1. New Programmatic Combinations

MOONscape™ integrates noise reduction mechanisms, waste recycling facilities, water filtration, scientific research, public program and public park.

2. New Material Combinations

MOONscape™ establishes a new relationship between building and landscape. In this case, open space is not desired. Waste will become fill. Rooms are solid. Interior walls are made out of exterior materials. Interior and exterior is blurred.

3. Simple Proven Construction Methods

MOONscape™ creates an acoustical barrier between the airport and the surrounding agricultural area. It employs the construction techniques used in both airplane hangars and agrarian barn - and creates a conceptual link between the two areas.

A Multi-functional Storage, Research, and Recycling Facility

1. Public Functions and Research Programs

Open spaces within sound barrier walls will house research facilities for noise mediation technology, bio-remediation of waste as well as public programs such as indoor sports courts and community entertainment centers

2. Storage of Toxic or Contaminated Waste

Narrow openings between the dense sound barrier walls (in the high decibel level zones only) allow for sealed storage areas for highly controlled toxic waste collection. A no-man’s land. A lunar desert.

3. Storage of Dredge Spoil

Intensive water management underlies all built development along the coast of the Netherlands. Sustainable maintenance of the hundreds of kilometers of waterways is essential for the nation’s future. Necessary dredging of waterways yields approximately 35 million cubic meters of dredge spoil annually, one of the largest waste flows in the nation. With relatively simple remediation technologies, this material can be cleansed and recycled.

The exterior low lying framework of retention walls on the North end of the site would be used as storage for lightly contaminated dredge spoil. Mixing the dredge spoil with sand and allowing it to settle for 20 years within the sound barrier walls creates an artificial landscape that functions to remediate the dredge waste into reusable material, such as bricks, soil, concrete. As the spoil settles, the surface topography will shift over time, creating depressions that act to absorb and disperse ground noise. This landscape can be partially occupied as a public park.

4. Storage of Stormwater and Sustainable Energy

Voids within the fill, both open and solid, serve to funnel, filter and store stormwater on site. Additionally, they may house photo-voltaic panels for solar energy collection and storage. These voids also allow natural light to penetrate facilities, thus reducing overall energy needs.

Icon

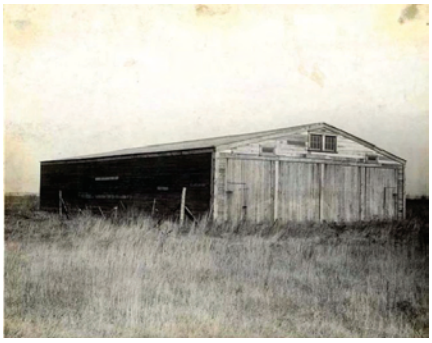
MOONscape™
12. Rough Plan
Features

Destination - the moon

Void / solid relationship - reversed

Artificial landscape - a local tradition

Vernacular - airplane hangar / farm house architecture



MOONSCAPE

Phase 1 - Preliminary Pricing Estimate (includes labor costs)

General Site Work (grading, sub-base, on-site stormwater, etc.)
(650,000 sq m x $20/sq m) = 13,000,000 USD

Site Work - Fill (can be staged in multiple phases)
(includes building site preparation, moving of waste(fill) on site, etc)
300,000 sq m x 5m (average depth) = 1,500,000 cubic meters
1,500,000 cubic meters x $12/cubic meter = 18,000,000 USD

Sound Barrier
(includes installation of corrugated sheet piling)
10,000m x 8m (average height) = 80,000 sq.m
80,000 sq m x $150/sq m = 12,000,000 USD

Steel Frame Construction
(includes steel structure, roof joists, concrete foundations/slabs as necessary, roof sheathing, etc)
250,000 sq m x $300/sq m = 75,000,000 USD

Preliminary Total Costs = 118,000,000 USD (76,400,000 Euro)