

environmental synergism

THE BLACK HILLS NATIONAL FOREST RESEARCH AND VISITOR CENTER

a design thesis by

Seth Brandsrud

problem statement

can architecture help people coexist with nature in a forest wilderness setting?



project typology

national park welcome, education, and research center

claim

as the black hills of south dakota are seeing an exponential growth in industry, tourism, and residency, the public is in need of education to understand how they can coincide with nature within a wilderness environment

justification

💧 the black hills are located on the madison aquifer. experts predict that in the near future, they will not be able to supply enough water to meet its demand

forestry and mining interests continue to make poor decisions when harvesting resources

those that live in the hills have no knowledge of how their lifestyle and residency will affect the environment

tourism will be the leading economic force

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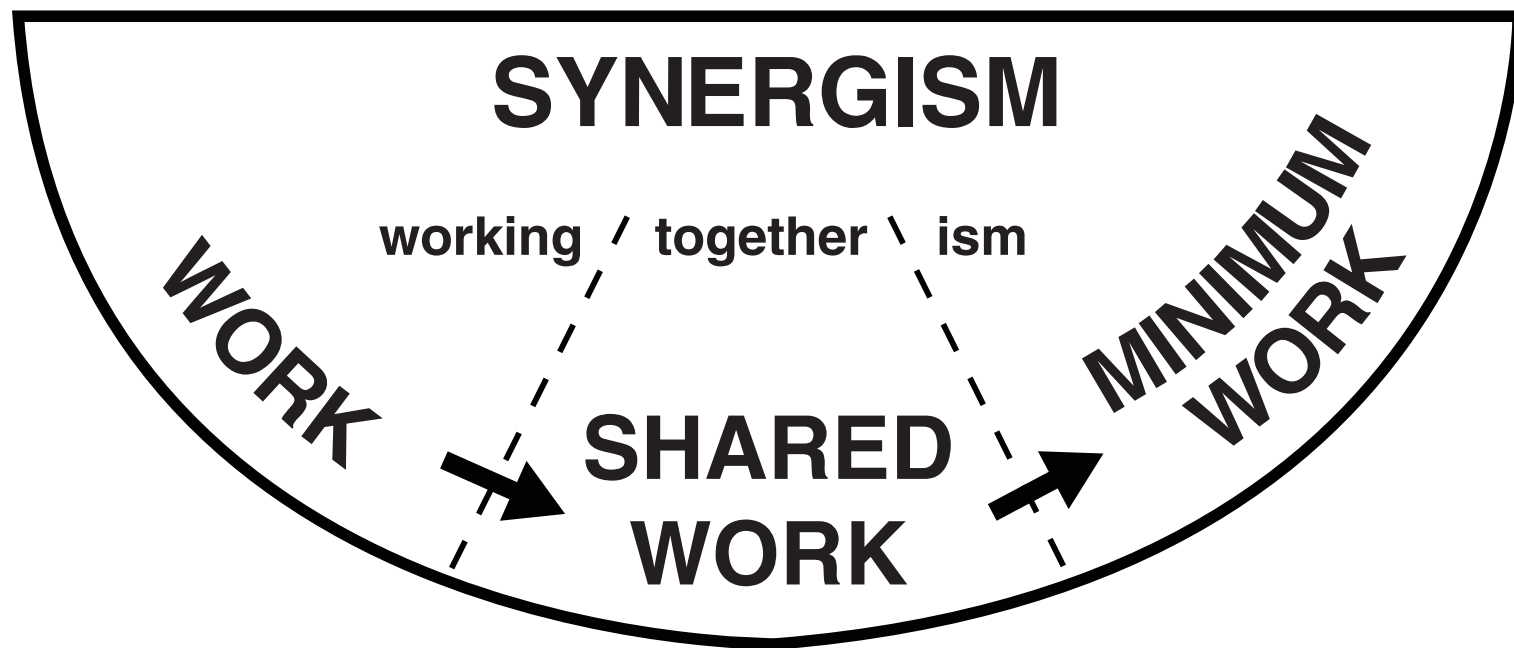
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what is enviornmental synergism?

synergism: when the effect of things acting together is greater than the total effect of those same things acting separately.



THE **3** QUESTIONS

1. does “wilderness” still exist?
2. what is our role in interacting with this environment?
3. is it possible to live sustainably within this ecosystem?

wilderness: an area essentially undisturbed by human activity together with its naturally developed life community



j. baird callicott



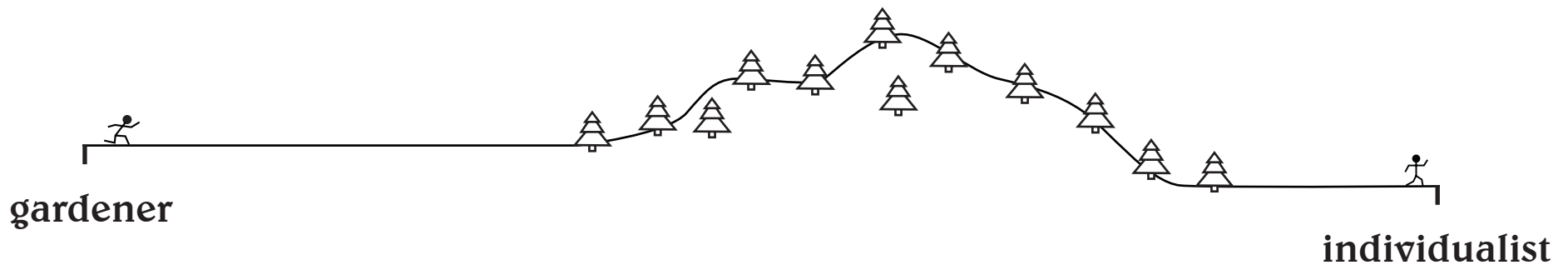
**there is no wilderness, but merely
“freeze-framed” ecology, to the
best of our abilities.**

holmes rolston



**our cultural focus should be that
biological changes in wilderness
areas should be driven by
evolutionary ecological processes,
not humans.**

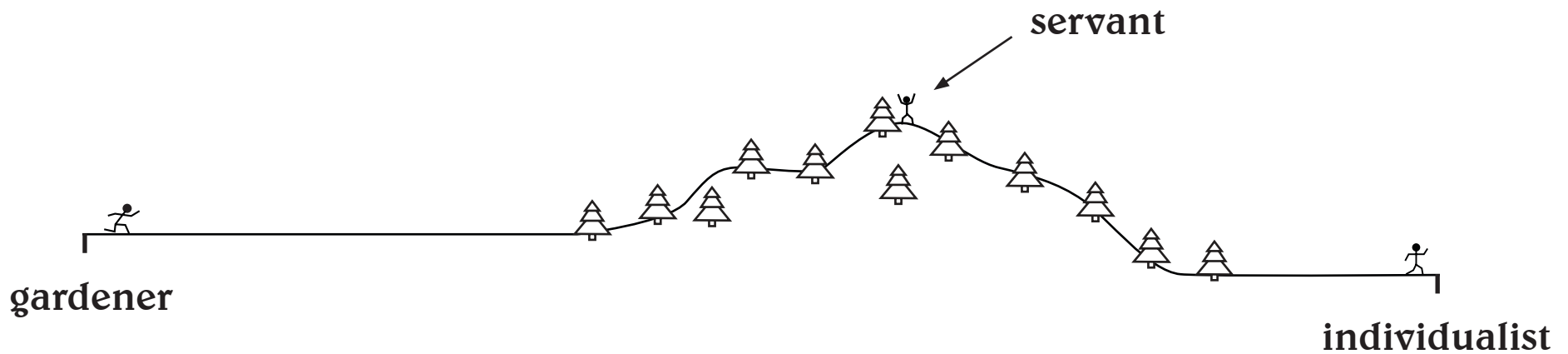
what is our role?



- ✓ tend to the wilderness and make sure no harm comes to it
- ✓ the wilderness is necessary and vital to us

- ✓ let nature govern itself
- ✓ we are just another species inhabiting the earth

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Custer & Pennington County South Dakota



Little
Devil's
Tower

Cathedral
Spires

Harney Peak
Lookout

Boundary Line between
Custer State Park, Trees Treated
Wilderness, Trees Untreated

Mount
Rushmore

Needles Highway

Custer State Park,
Trees Treated

Wilderness,
Trees Untreated

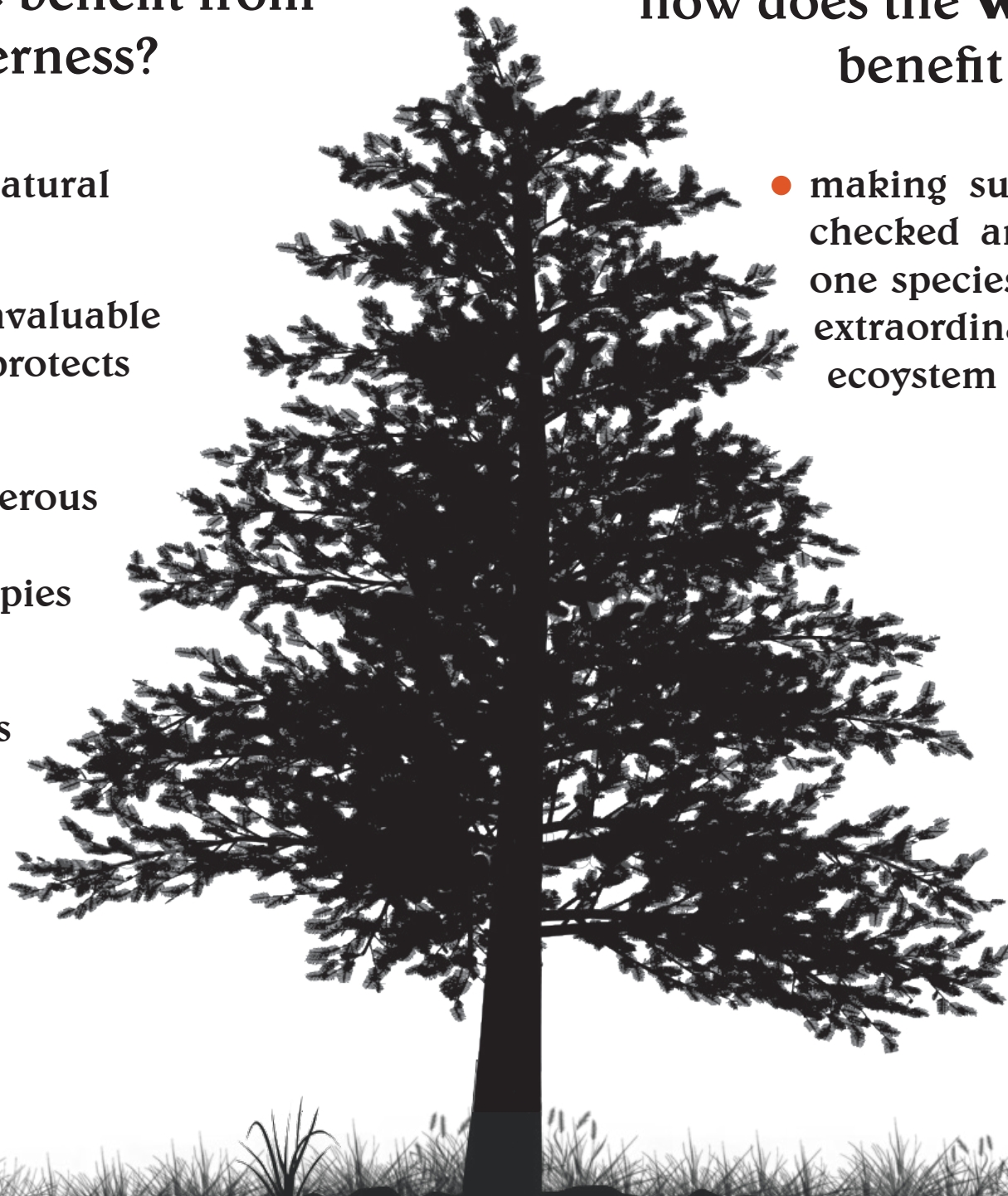
Photo looking north September 10, 2009

how do **we** benefit from wilderness?

- to preserve natural resources
- it offers an invaluable service that protects humans.
- it offers numerous physical and mental therapies
- it presents opportunities to learn
- they give our country national character
- its beautiful

how does the **wilderness** benefit from us?

- making sure everything is checked and balanced. no one species should pose an extraordinary threat to the ecosystem as a whole.



craig thomas discovery and visitor center



zion national park visitor center



snaefellsstofa visitor center





custer, sd



cluster

site



bismarck lake

us highway 16

stockade lake





e

s



w

n



program elements

public

private

facility management

entrance/reception

exhibit gallery

art gallery

information kiosk

bookstore/gift shop

indoor/outdoor

classroom

presentation space

restrooms

hiking trail

administration

research laboratory

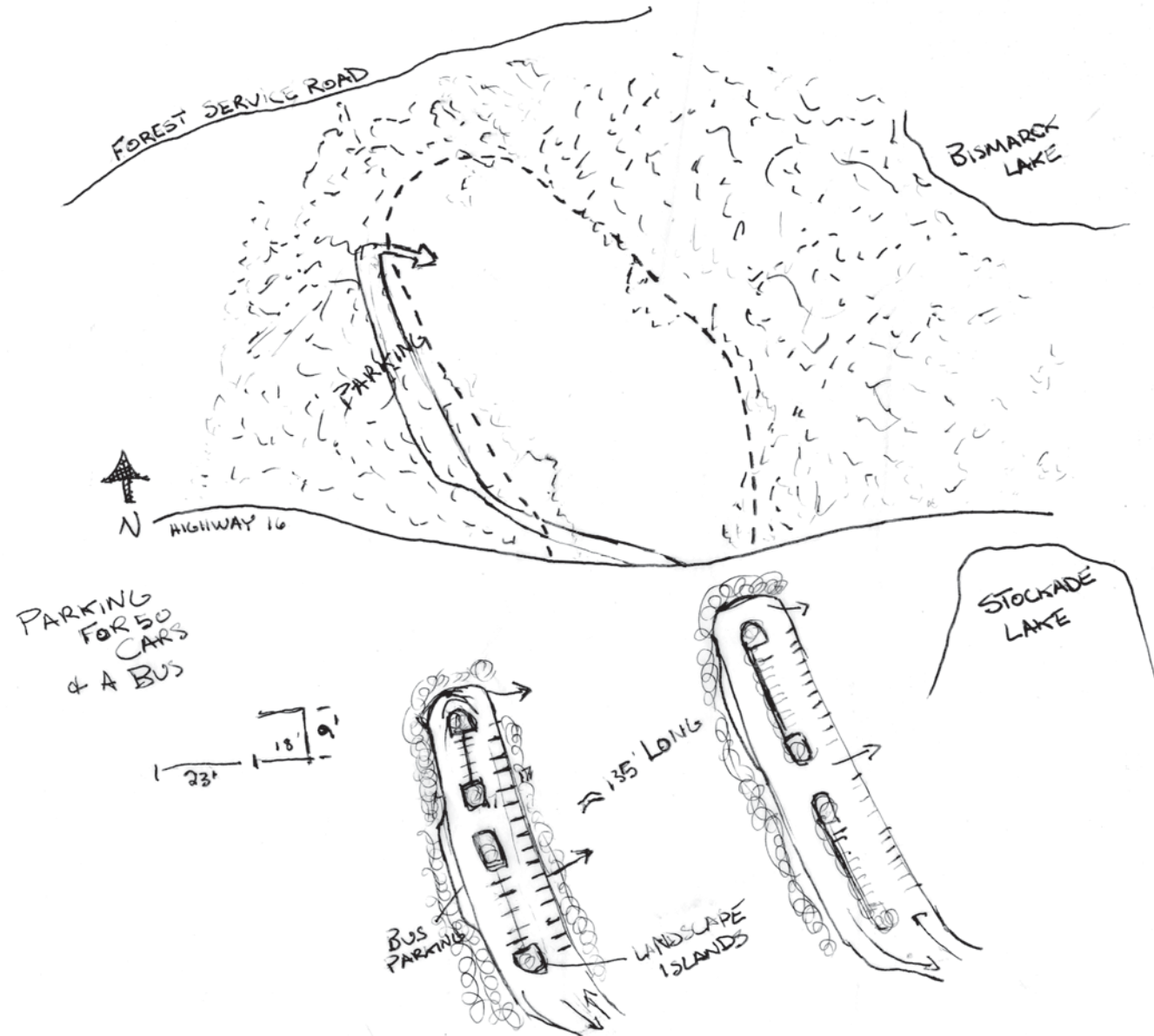
lab administration

greenhouse

mechanical

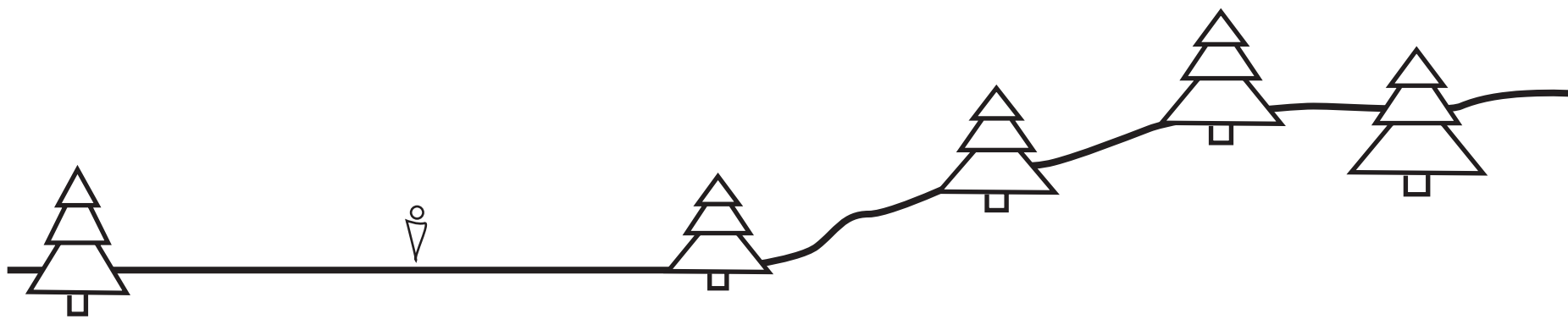
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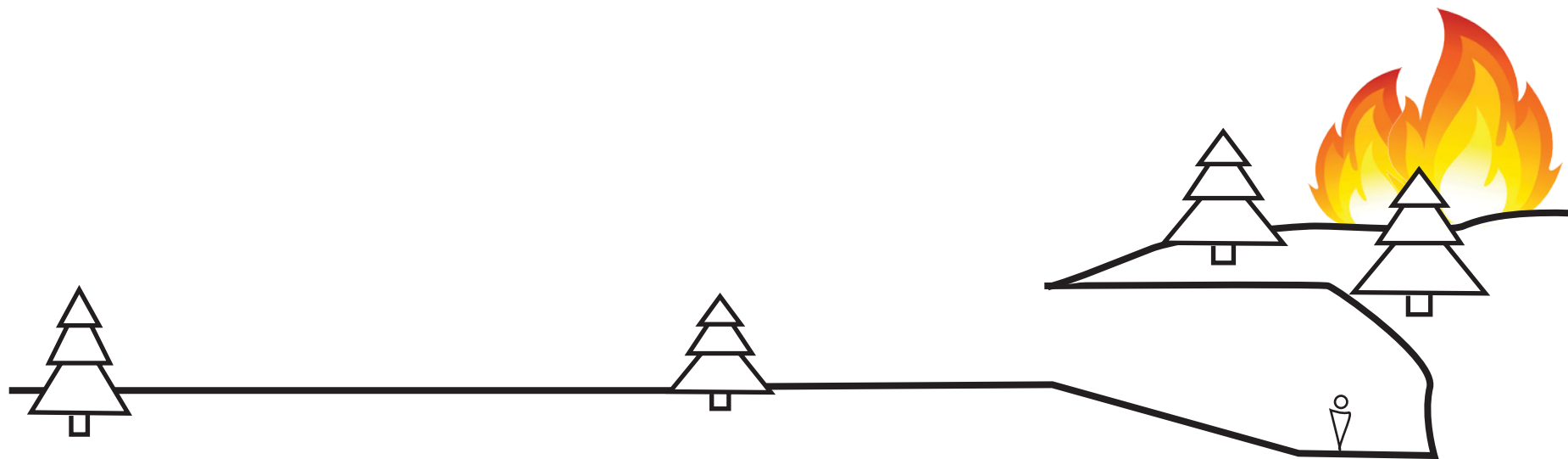
design process

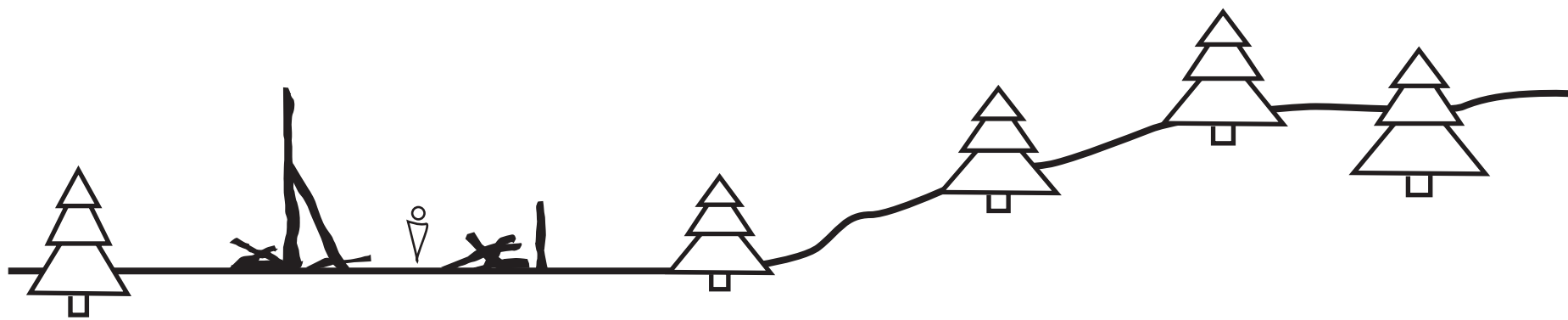


design process

how can a building cooperate with the inevitable forest fire?

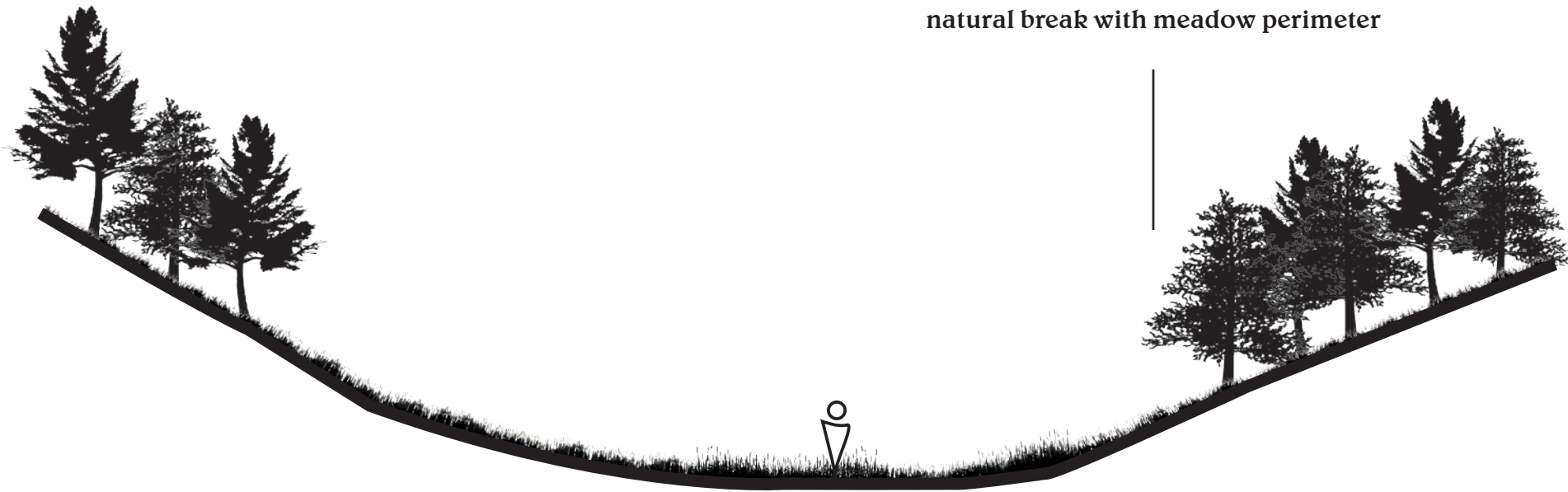






hottest point of fire is at ridge

natural break with meadow perimeter



design process



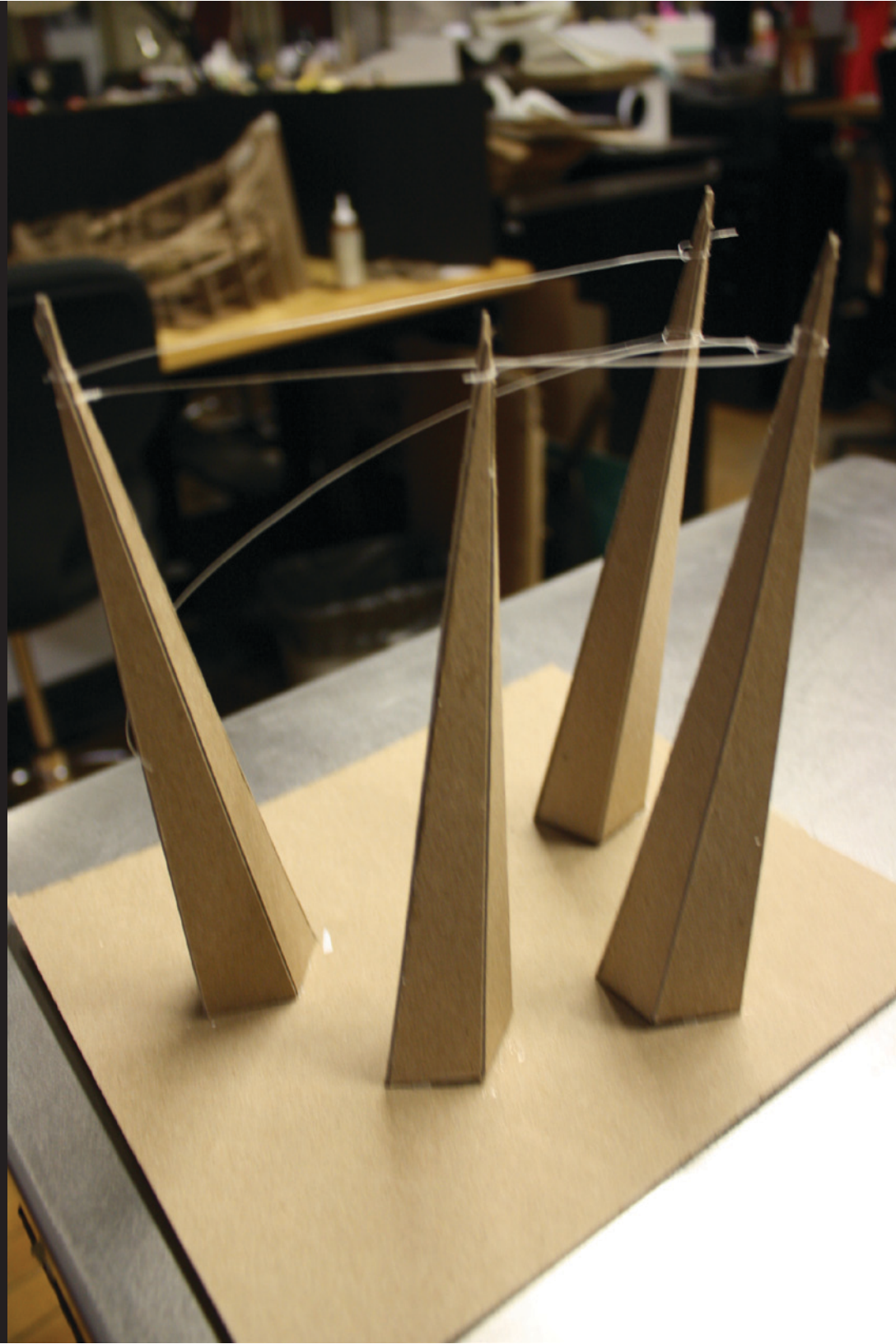
design process

Goals: To make the building not only
speak to the landscape, but to
function as the starting point
for a visit to the park and a
starting point for education,
inspiration, and lasting memories
of the Black Hills.

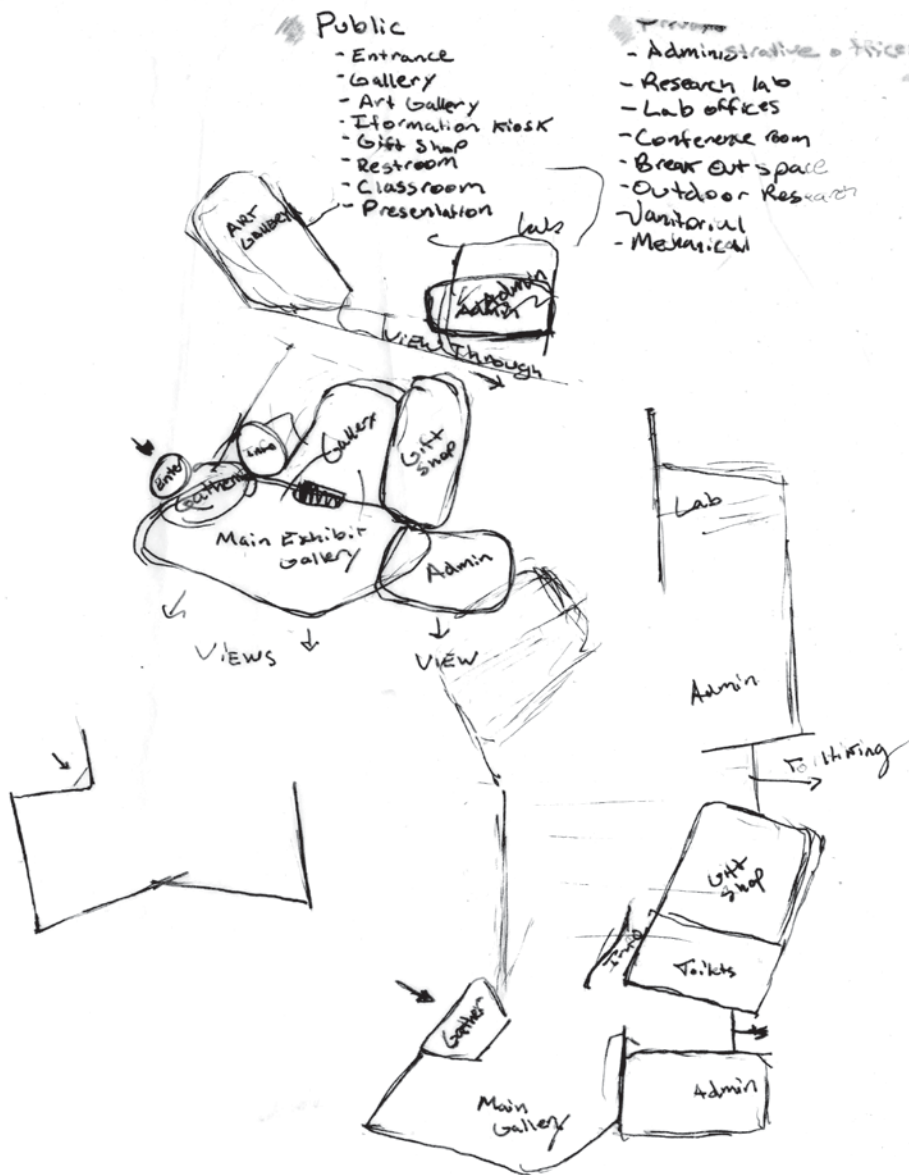
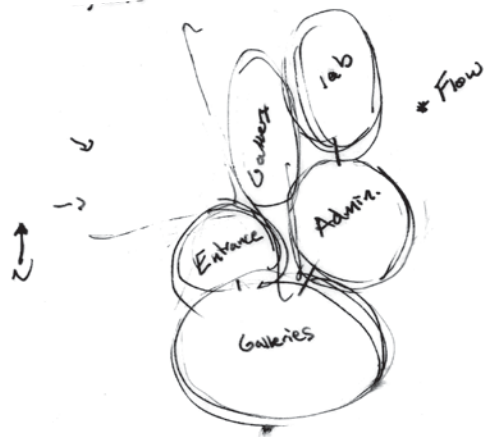


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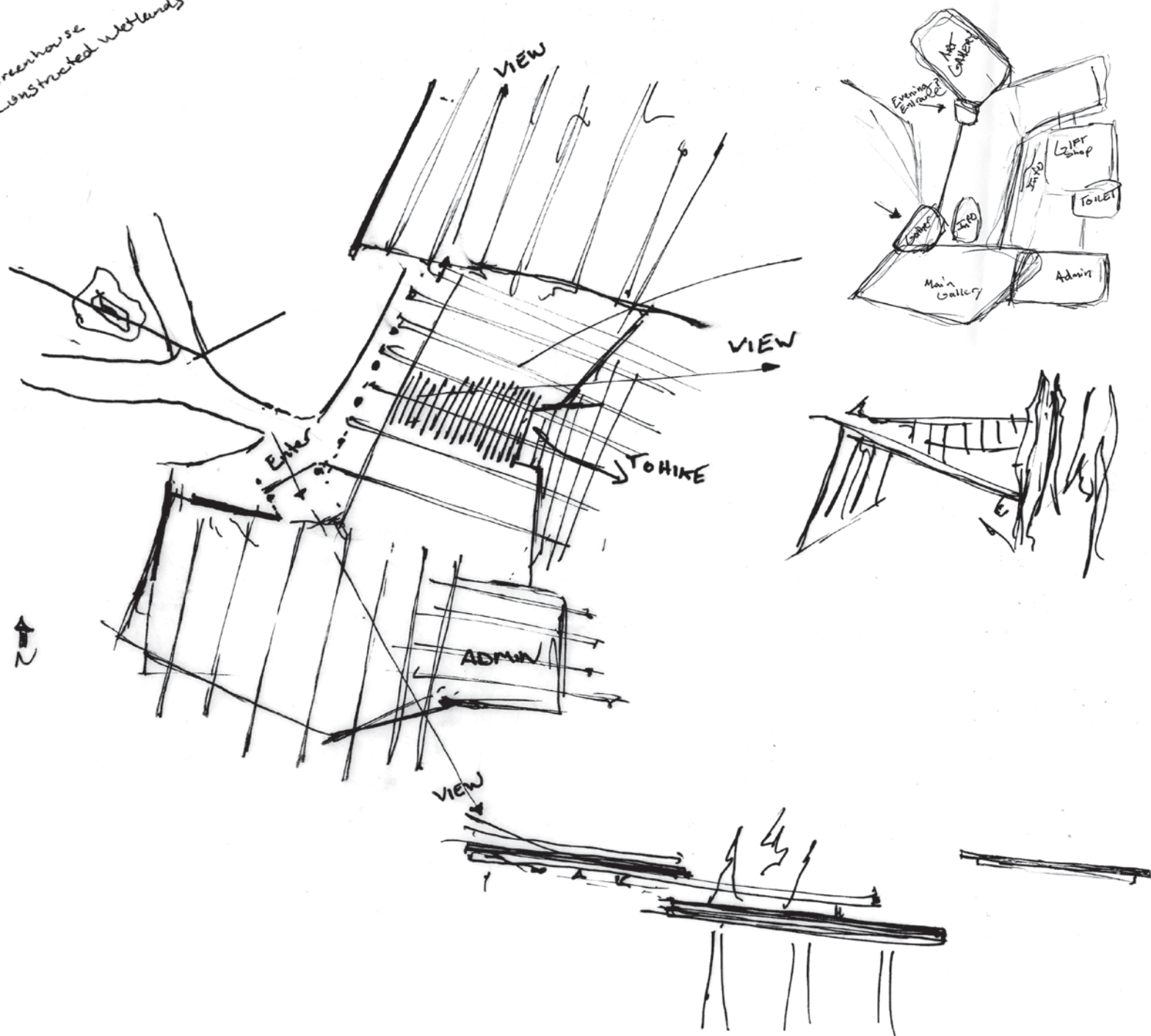


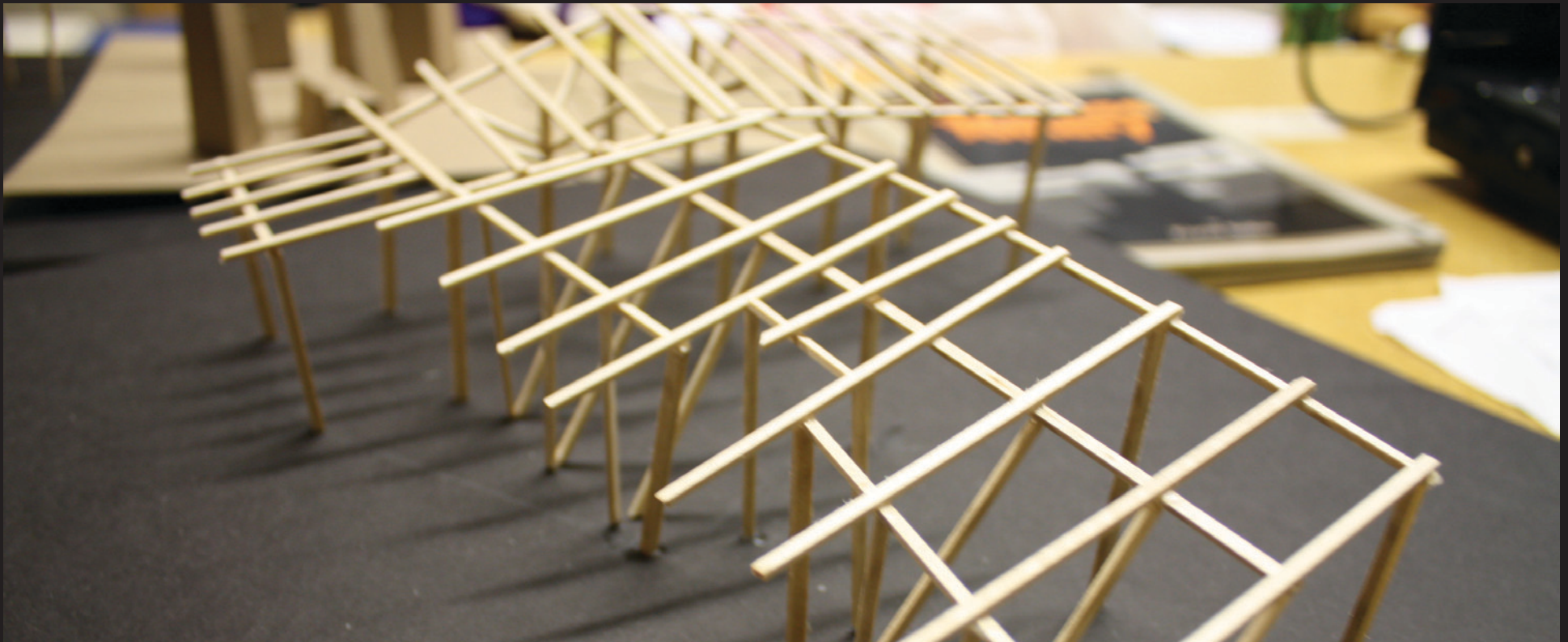
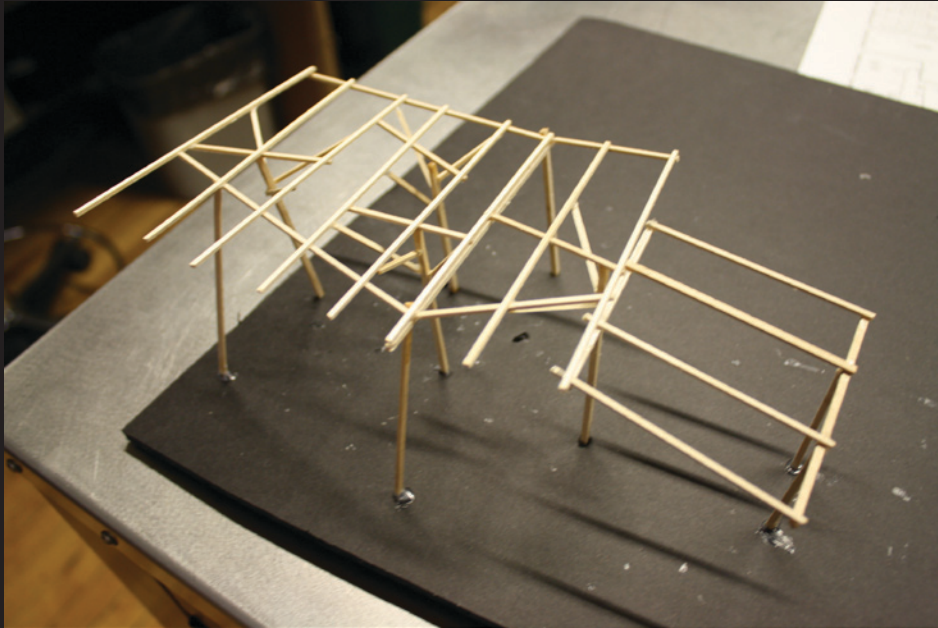
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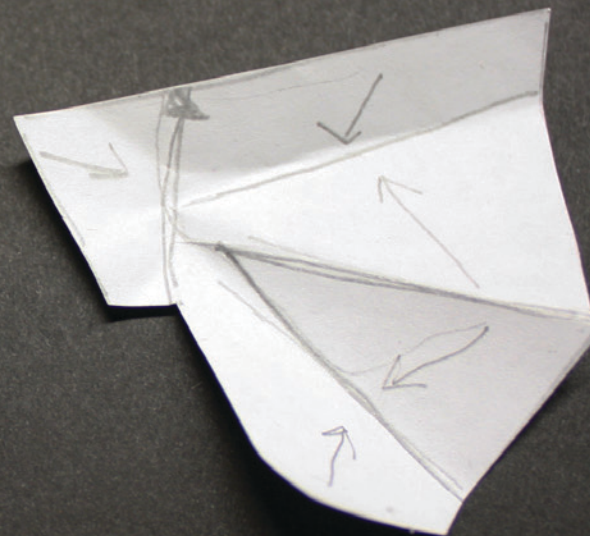
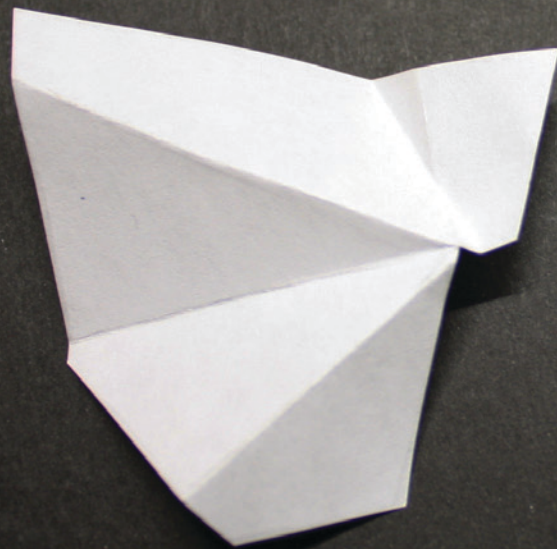


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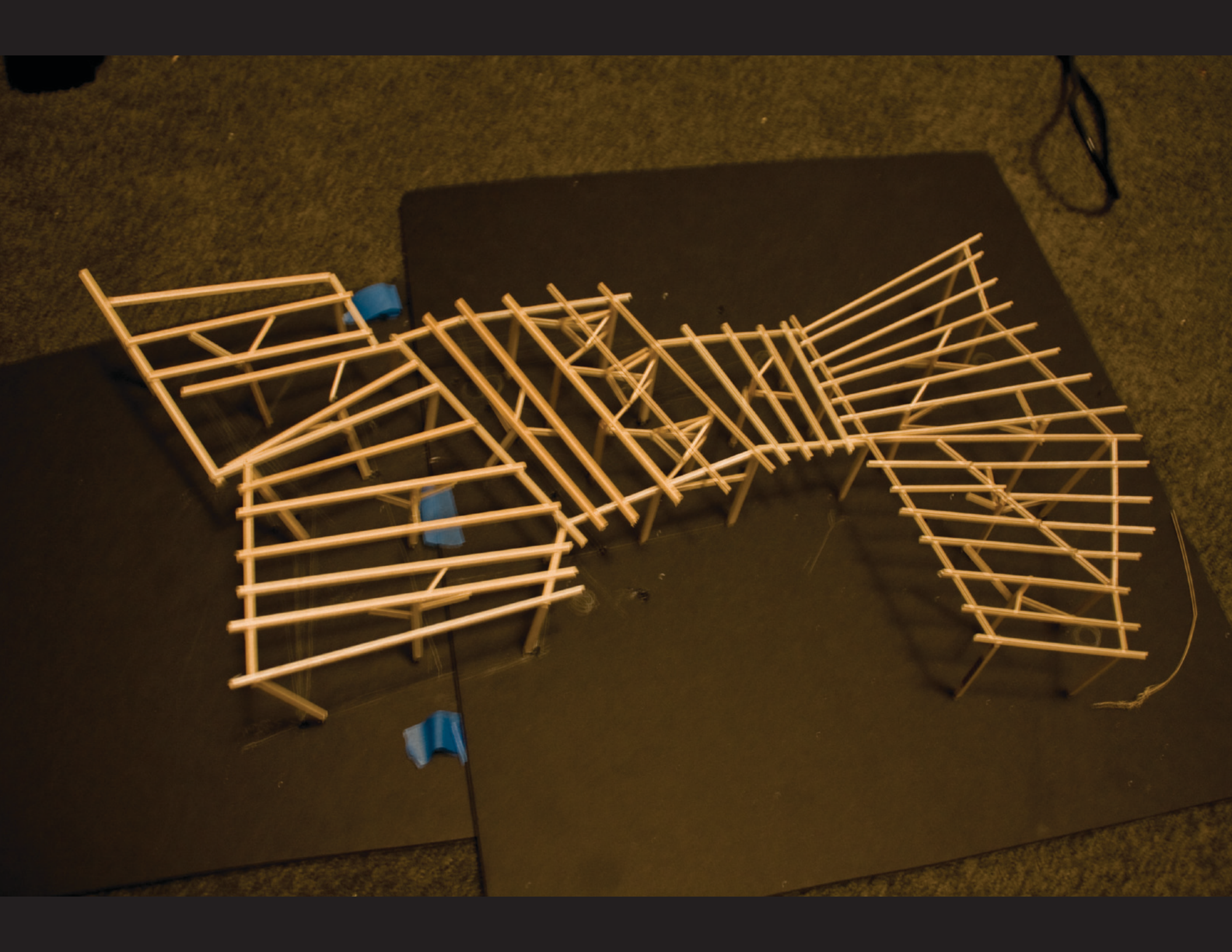
- Greenhouse
- Constructed Wetlands











final design



backup generator/
portable water pump
storage

geothermal well
field

us highway 16

program in plan

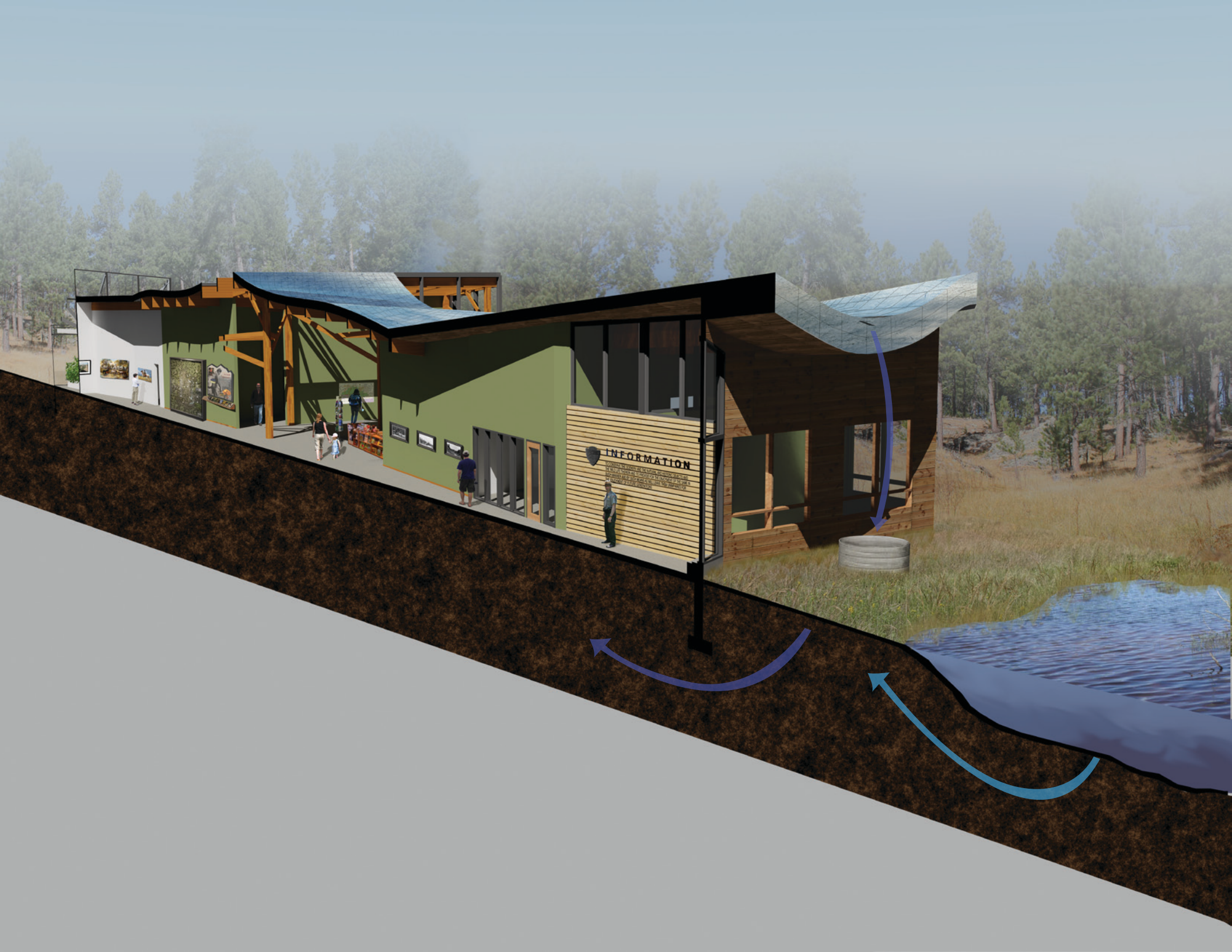
- 1) main gallery
- 2) information kiosk
- 3) administration
- 4) mechanical
- 5) bookstore/giftshop
- 6) trailhead deck
- 7) toilet rooms
- 8) laboratory administration
- 9) art gallery
- 10) research laboratory
- 11) classroom
- 12) greenhouse



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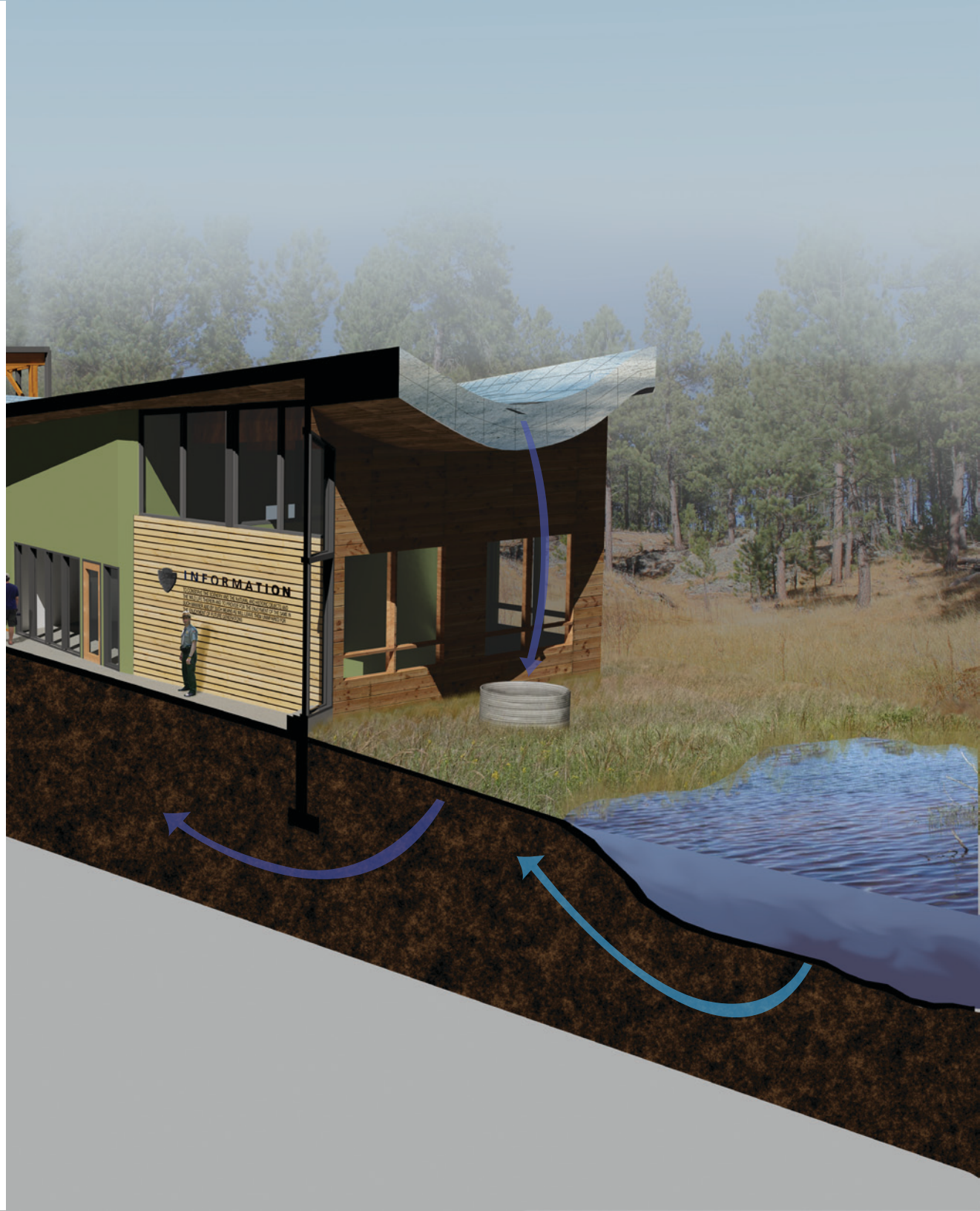
roof sprinkler

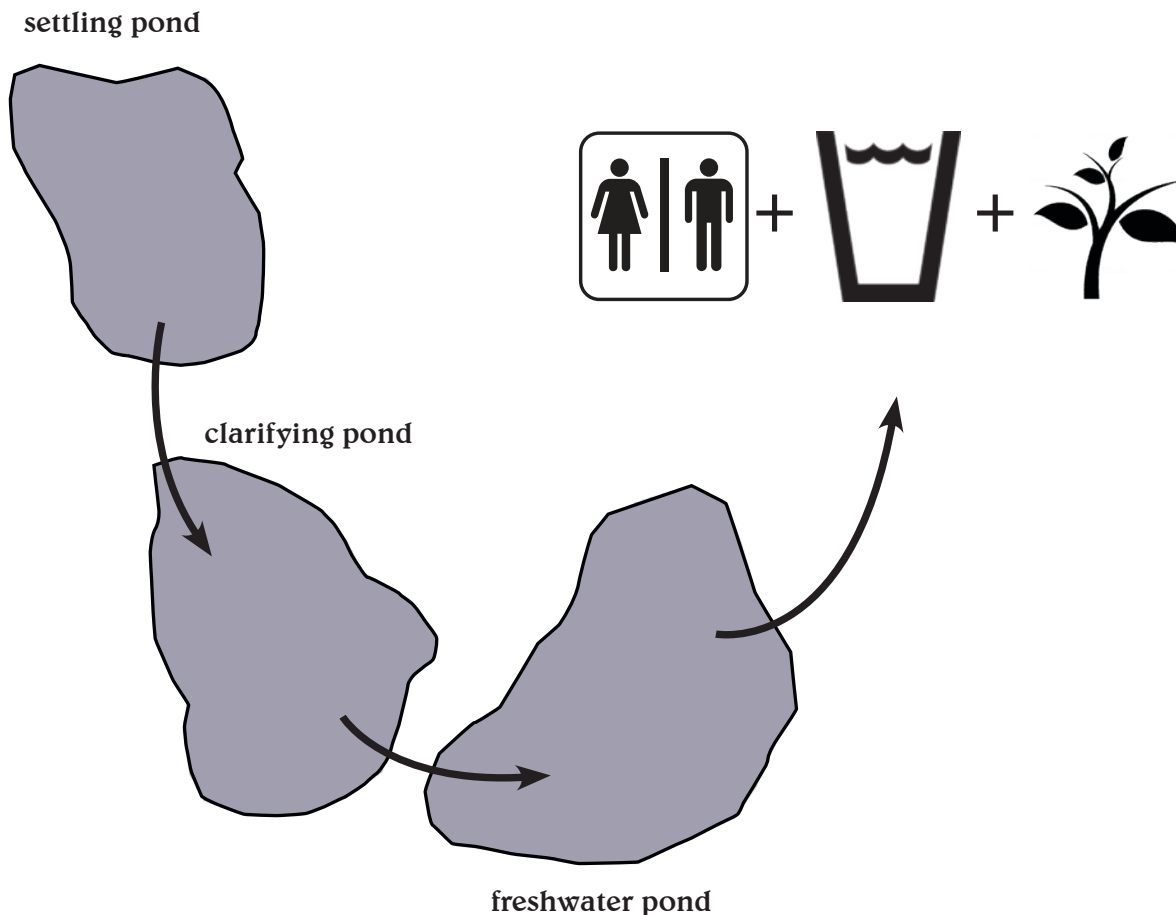


soffit sprinkler



ground sprinkler



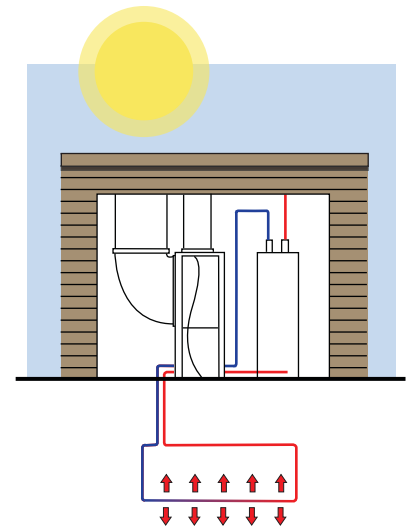
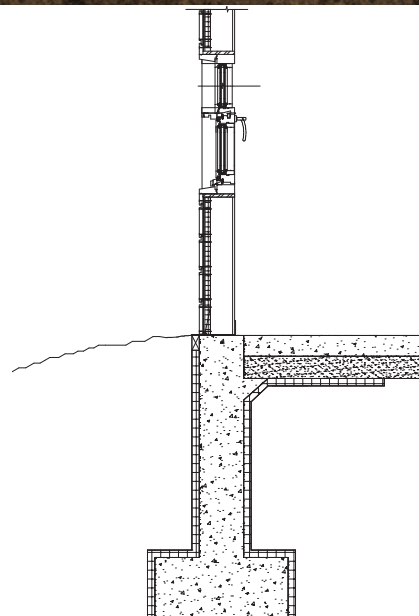
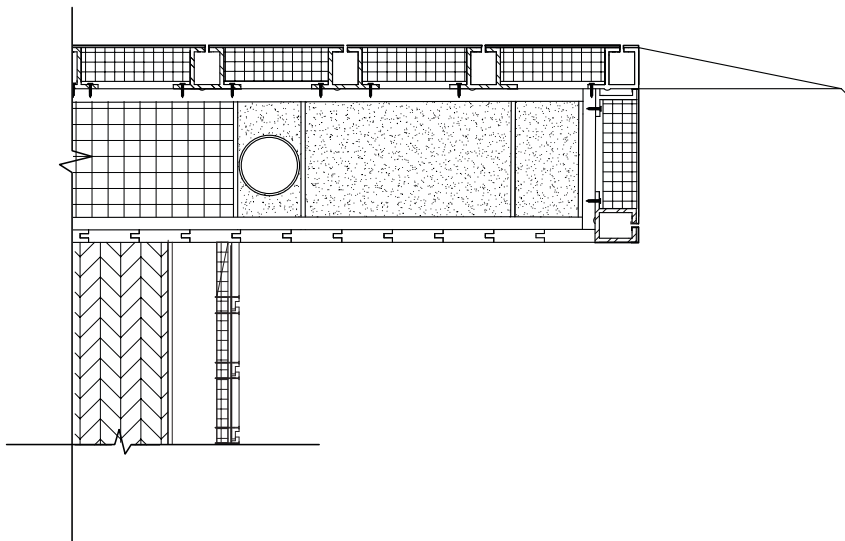


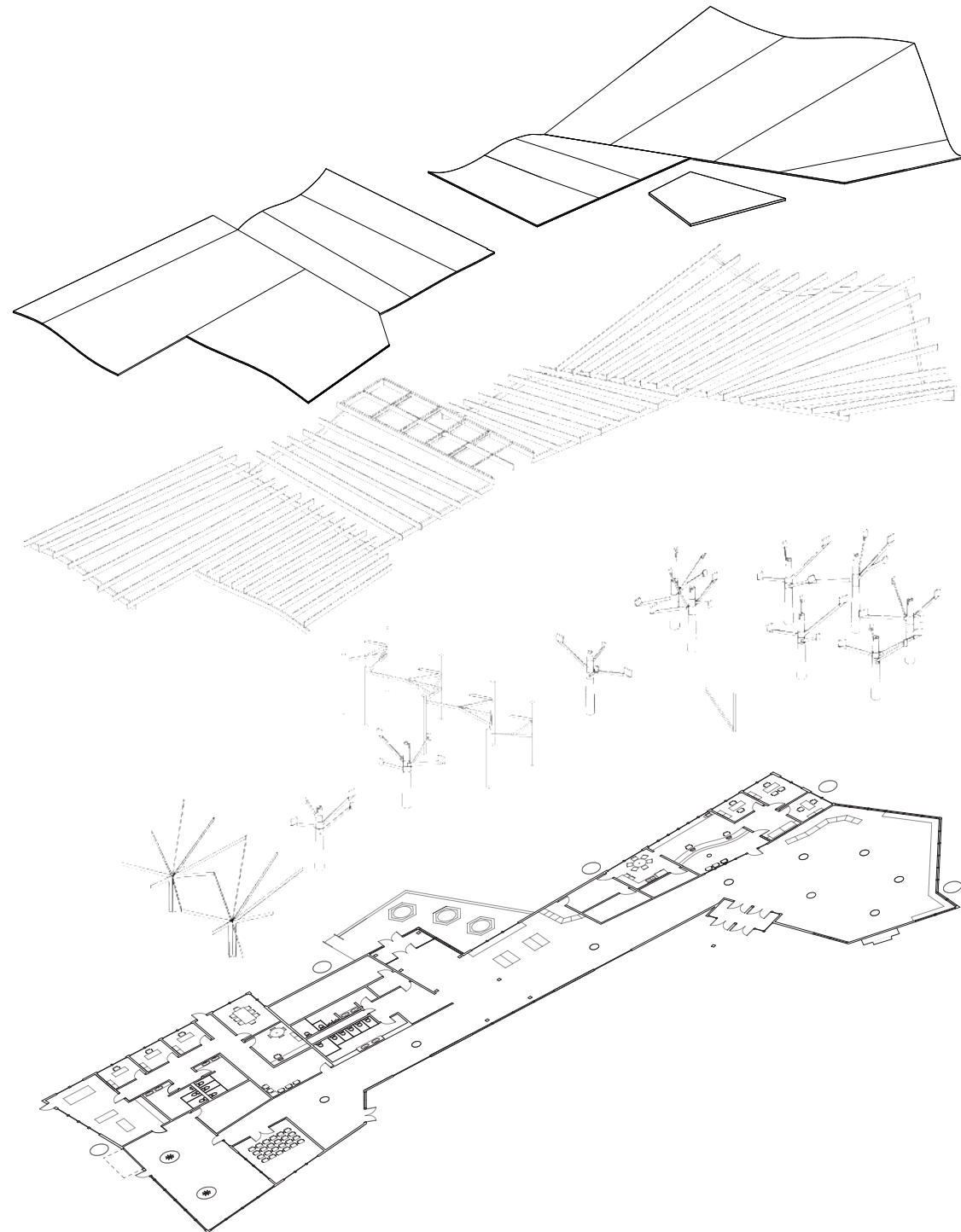
1 rain water is directed by roof slope to a scupper

2 rain water falls into collection tank immediately below

3 collection tanks are pumped to the first pond in the constructed wetland clarifying system

4 once contaminants have been removed by this process, the water is pumped from the last pond to the building. the water is split into two systems. one system filters the water and stores it in tanks to be used for potable uses while another system directly uses the gray water to be used for non potable uses such as toilets and watering plants











A VISION FULFILLED

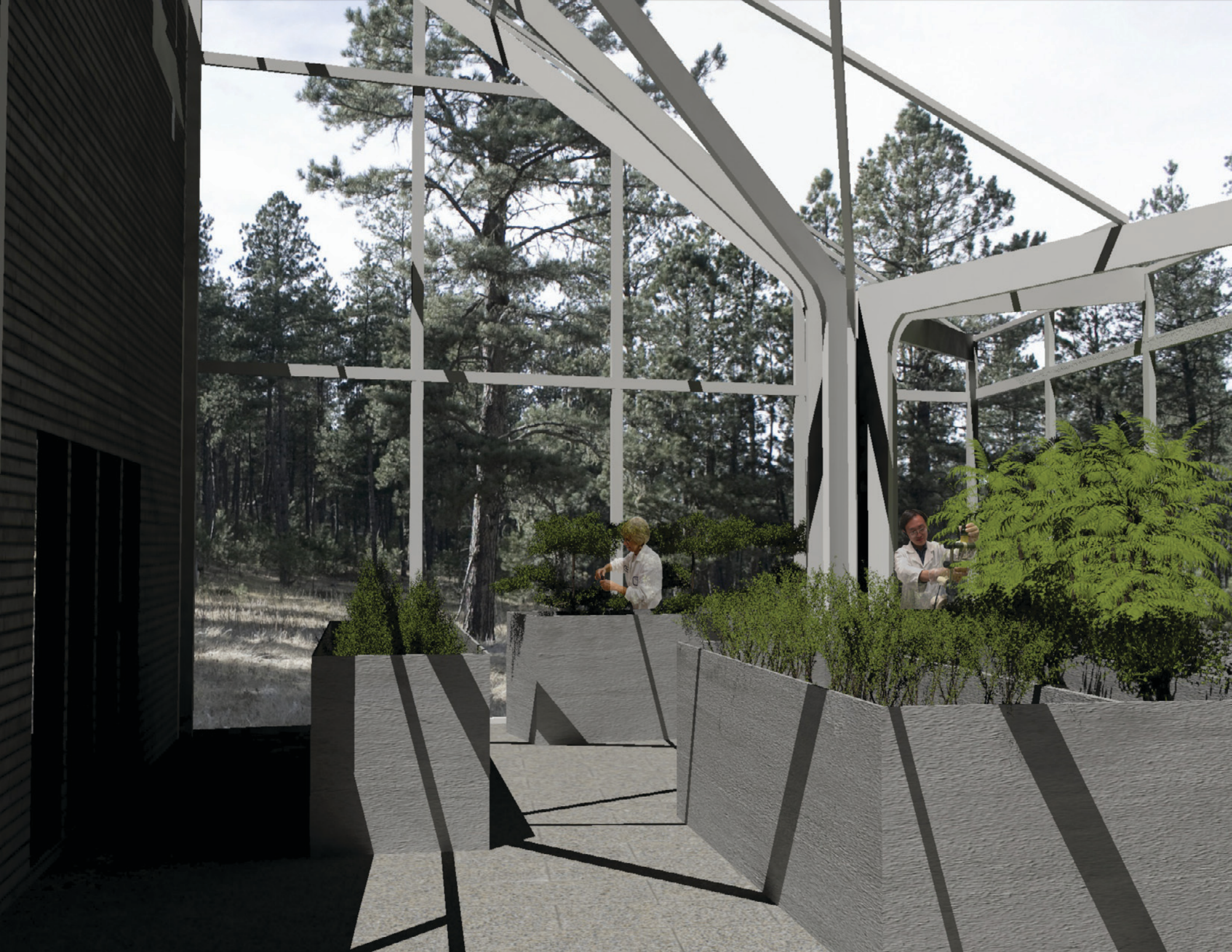
It took more than 100 years for the stunning landscape of a vast area might not have been preserved for all to enjoy. Yet Grand Staircase-Escalante National Park was born out of conservation. Wilderness became a national park in just two years, while the battle for this park lasted more than 50 years. In the end, competing interests forged a compromise through the efforts of determined people, who devoted themselves to protecting the rugged peaks, the lakes, and the spacious valleys.

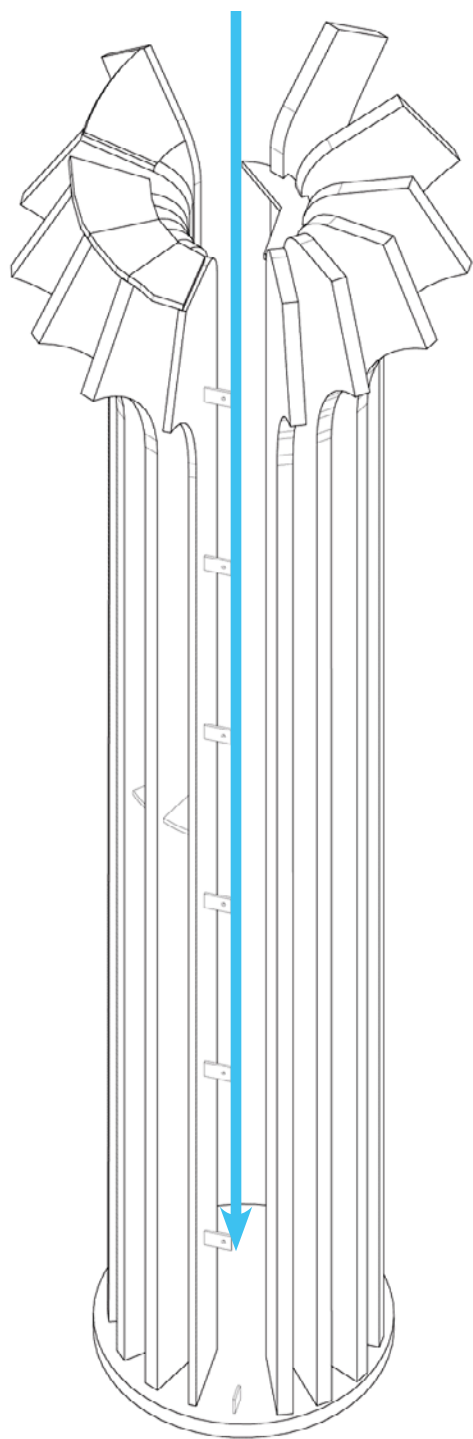
PLACE

Grand Staircase-Escalante National Park

CARING FOR OUR PARKS

National parks are our nation's public treasures. They are places where we can learn about our history and the natural world. They are places where we can enjoy the beauty of the outdoors. They are places where we can find peace and tranquility. They are places where we can connect with nature and each other. They are places where we can all find a sense of wonder and awe.







thank you!

comments and questions