Arch 464
ECS
Spring 2016

Name_____

Quiz #3

"Charging and Recharging"

Read and look at everything before you write!

Writer's Retreat

Architectare, Rio de Janeiro.

Site size:10,764 sf
Project size: 330 sf

Program: The client, a writer, wanted a place to rest and recharge that was separate from his work space.

Location: Itaipava, Rio de Janeiro, Brazil

Solution: The architects envisioned the house as a protective haven—akin to a cave—from which the client would emerge rested and inspired. A rectangular volume defined by the site's small buildable area, the house's cozy interior—the floor and ceiling is sheathed in wood—includes a bedroom, bathroom, and small pantry. One large window in the bedroom overlooks the lush landscape, allowing the writer to connect with nature while remaining secluded.

Construction and materials: The house's steel structure is clad with clay brick and stones found onsite, and topped with metal roofing.

—Architectural Record

Materials Detail

Structural System

Steel

Exterior Cladding

Masonry: Clay brick
Wood: Cumaru Timber
Stones found in the lot that were hewed to coat the masonry.

Roofing

Metal: Metal sheet

Windows

Metal frame: Aluminium and glass

Doors

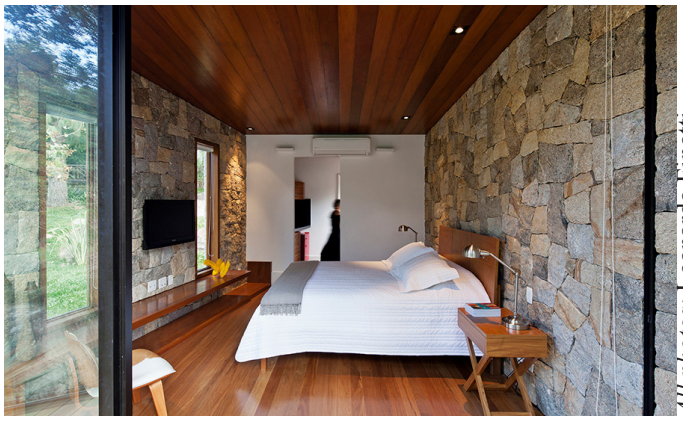
Entrances: Corten Steel
Sliding doors: Aluminium and glass

Interior Finishes

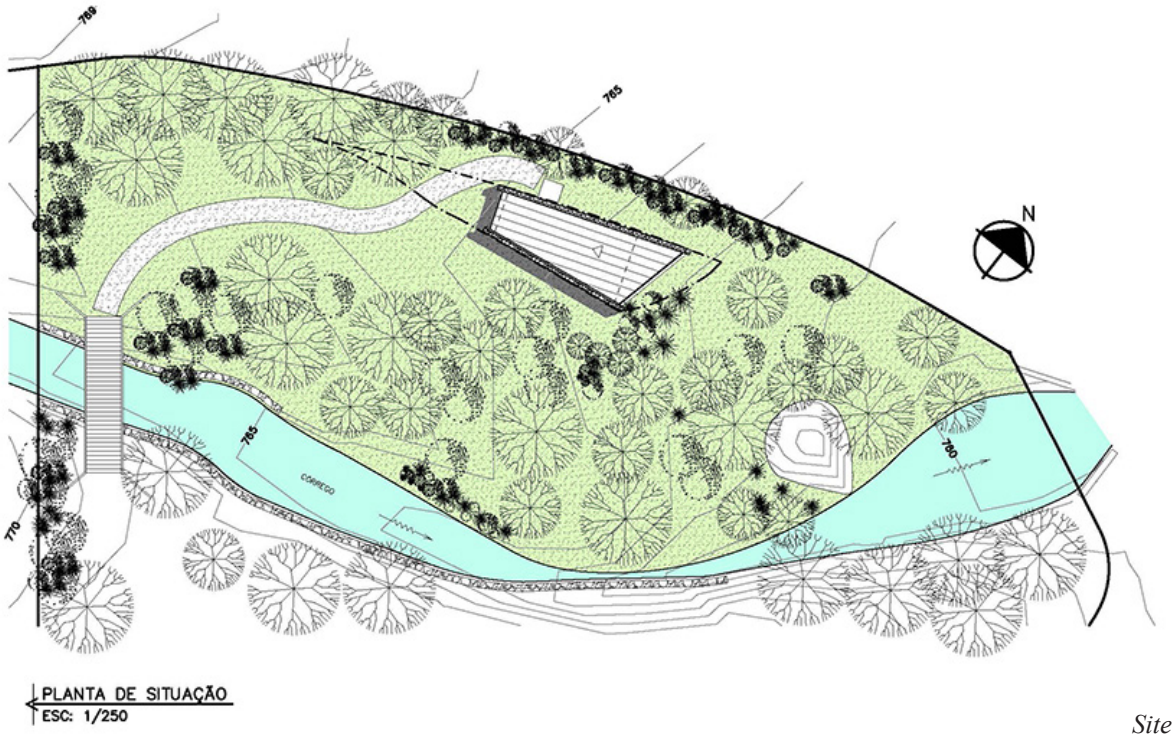
Wall coverings: Stones from the lot
Floor and wall tile: Peroba do Campo timber
Ceiling: Cumaru Timber

The well-shaded, east-facing window wall and balcony. Exterior (above) and Interior views (below).

Interior view toward bathroom/pantry (below).



All photos: Leonardo Finotti



Site Plan

All drawings: Architectare

View of the retreat from the path from the southwest.

Site Energy

1. The architect did not opt for any on-site energy generation, but the building could easily harvest sufficient site energy to be net zero and off the grid. (1) ***Discuss*** the merits, placement, and drawbacks of solar thermal and photovoltaics. (2) ***Discuss*** the merits, placement, and drawbacks of an in-stream turbine. & (3) ***Discuss*** the merits, placement, and drawbacks of a wind turbine. Use diagrams and the site plan to ***illustrate and locate*** your ideas.

3 points

1

2

1

2

Regeneration-Based Checklist for Design and Construction

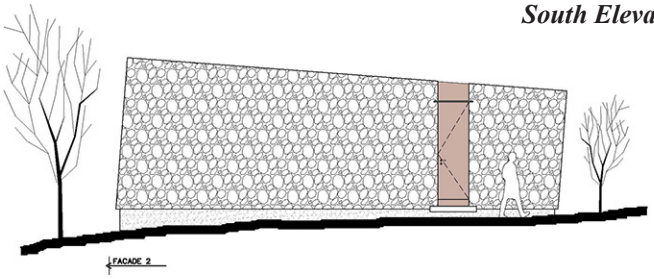
Project:

	degeneration				sustainability					regeneration
	-100 always	-75 usually	-50 sometimes	-25 a bit	0 balances	25 a bit	50 sometimes	75 usually	100 always	
the site										pollutes air
										cleans air
										pollutes water
										cleans water
										wastes rainwater
										stores rainwater
										consumes food
										produces food
										destroys rich soil
										creates rich soil
										dumps wastes unused
										consumes wastes
										destroys wildlife habitat
										provides wildlife habitat
										imports energy
										exports energy
										requires fuel-powered transportation
										requires human-powered transportation
										intensifies local weather
										moderates local weather
the building										excludes daylight
										uses daylight
										uses mechanical heating
										uses passive heating
										uses mechanical cooling
										uses passive cooling
										needs cleaning and repair
										maintains itself
										produces human discomfort
										provides human comfort
										uses fuel-powered circulation
										uses human-powered circulation
										pollutes indoor air
										creates pure indoor air
										is built of virgin materials
										is built of recycled materials
										cannot be recycled
										can be recycled
										serves as an icon for the apocalypse
										serves as an icon for regeneration
										is a bad neighbor
										is a good neighbor
										is ugly
										is beautiful

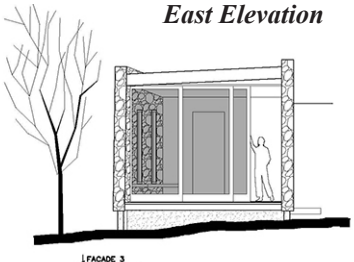
negative score	positive score
2200 possible	2200 possible

final score:

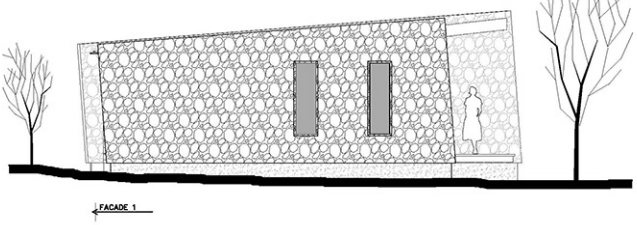
South Elevation



East Elevation



North Elevation



Regeneration

2. Rio de Janeiro is at about 23 degrees south lattitude and has a hot humid maritime climate. The retreat is located in hilly countryside north of Rio. Given the building plan and orientation ***point out and discuss two*** features of the **site design** that would earn positive points on the SBSE checklist (facing page) and ***two*** features of the **building design** that would earn positive points on the SBSE checklist.

4 points

1

2

1

2

Design Critique

3. ***Critique two*** of the architect's design strategies:
   a.) Daylighting
   b.) Water use

Comment on what is evident and improvements that could be made.

3 points

a.)

b.)