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masters project spring 2011

MARINE-BASED OIL RIG ECO-HOTEL

# CONCEPTUAL SITUATION

oil industry :: prior to 2010



Oil rigs scattered across the world's oceans have become the symbol of our dependency on oil and the oil industry. Prior to 2010, oil companies were the super powers. Americans didn't care where the oil came from, just how to get more!

# CONCEPTUAL SITUATION

gulf oil spill :: april 2010



Post April 2010 in the wake of the tragic Gulf of Mexico oil spill, America began to feel the outrage towards the oil industry and its methods.

# CONCEPTUAL SITUATION

resulting alternative energy sources

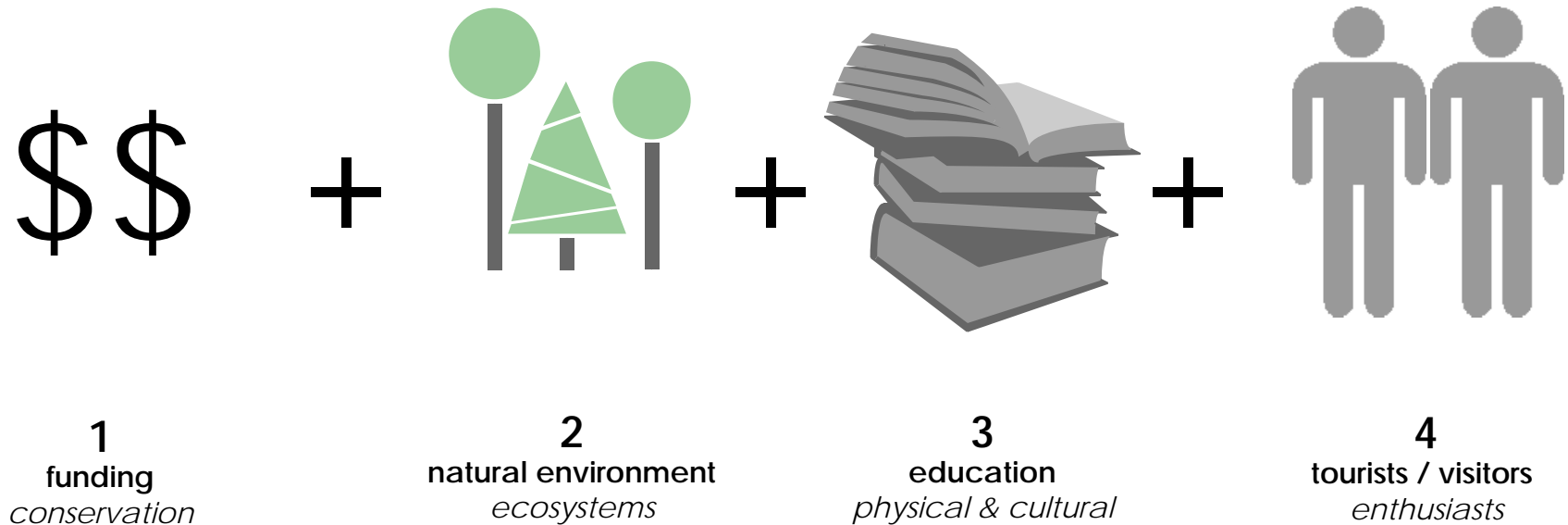


As a result of the 2010 oil disaster, Americans began to discover, invent and invest in new advances in renewable energy sources. In preparation for the day when oil dependency will become a thing of the past, technologies such as solar energy, wind energy and especially hybrid vehicles have become ever more prevalent. The new age of energy and sustainable education has begun.



# ECOTOURISM!

principles & criteria



From this new focus on sustainable living spawned the new experience of ecotourism. This excursion practice focuses on earning funding for conservation efforts, experiencing a natural environment and a full immersion in a local ecosystem. Ecotourists strive to educate one's self about a local culture and environment, becoming the new breed of environmentally responsible enthusiasts.

What constitutes an ecotourist destination? What constitutes a “natural” ecosystem?  
 Can an oil rig be transformed into a luxurious, educational and natural destination?  
 Whether the draw is the plant life, the wildlife or even the simple oddity of the environment,  
 an ecotourist destination is defined by its responsibility towards a culture and ecosystem  
 while entertaining visitors with a variety of attractions and entertainments.

# ECOTOURISM?

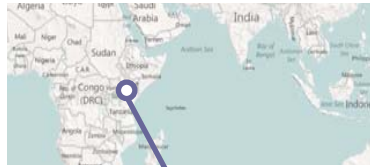
varying features & attractions  
 ?

## galapagos islands



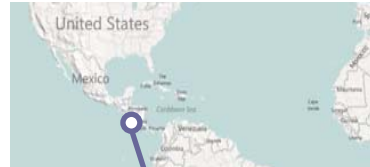
spanish *rules*  
 ENDEMIC SPECIES  
 marine reserve national park  
*archipelagos* barren

## kenya



tropical  
 tropical  
*open savannah*  
 BIG FIVE WILDLIFE

## costa rica



spanish  
 environmental performance index  
 TROPICAL CLIMATE  
*national parks* carbon neutral  
 land bridge

## socotra island, yemen



speciation  
 tropical desert  
 SCIENCE TRIPS *food exports*  
 monsoons  
 CAMPING

## thunderhorse rig

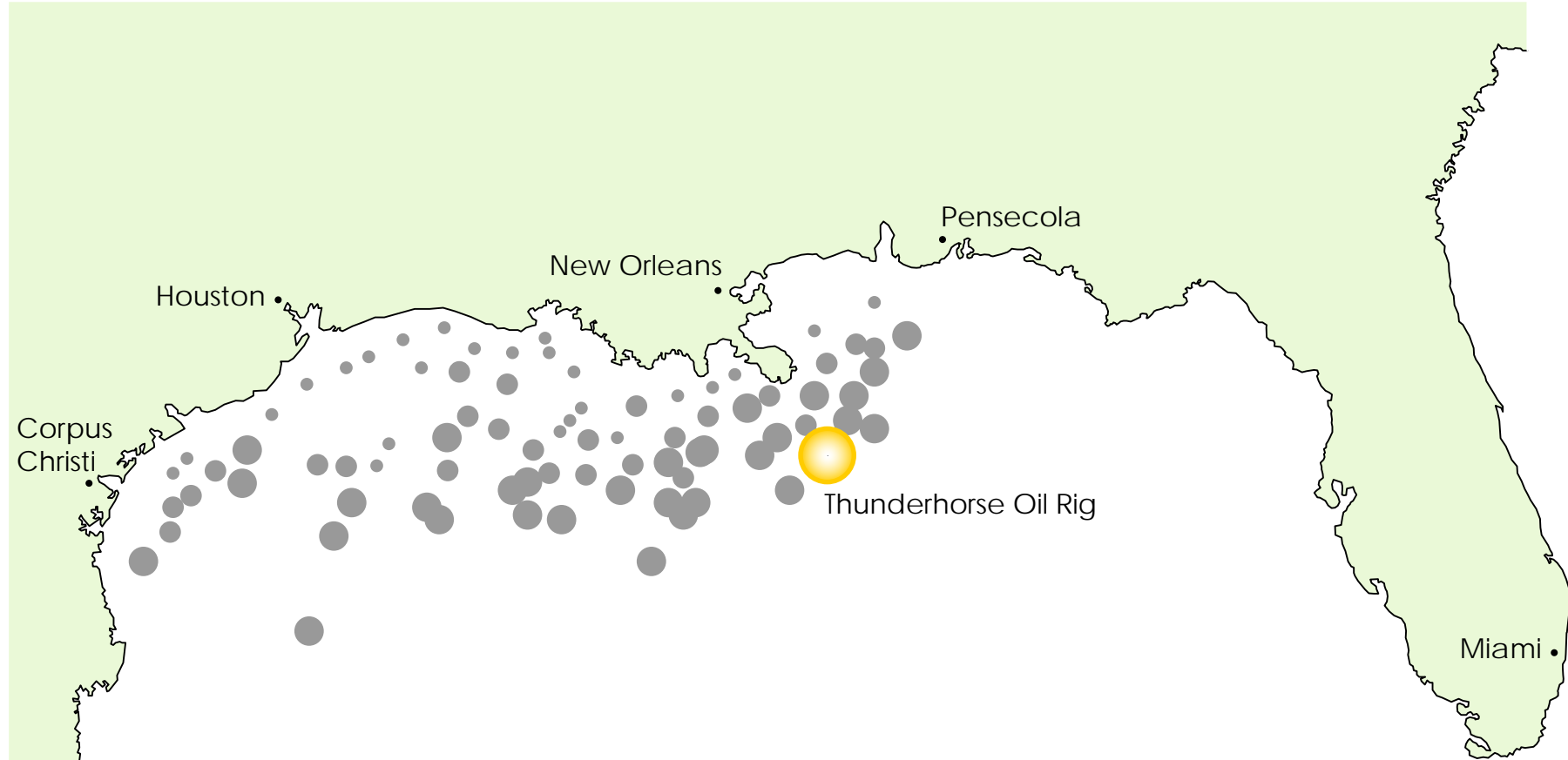


nature and wildlife  
 reclamation opportunity  
 TROPICAL CLIMATE  
*isolation* green technologies  
 floating city



# GULF OF MEXICO

oil rig "remains"



Suppose in the near future, America's dependency on oil will break, we will subsequently be left with the vast remains of oil rigs scattered across our oceans. If we were to select one oil rig to prototype as a new ecotourism hotel destination.



# SITE DOCUMENTATION

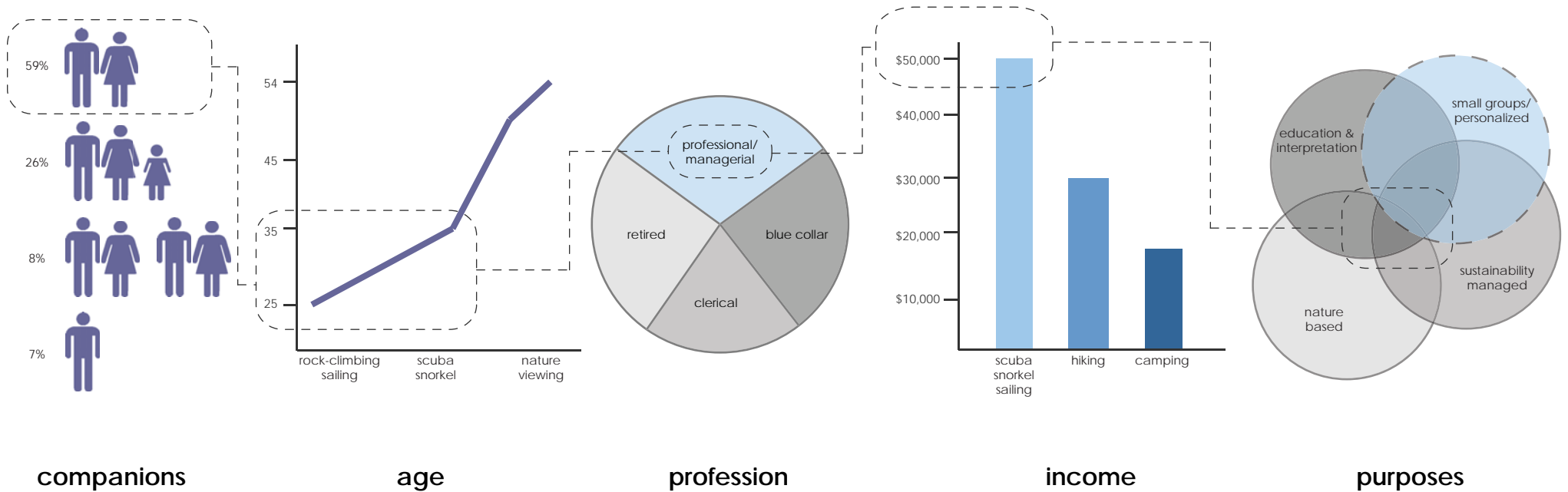
thunderhorse oil rig





# WHO ARE ECOTOURISTS?

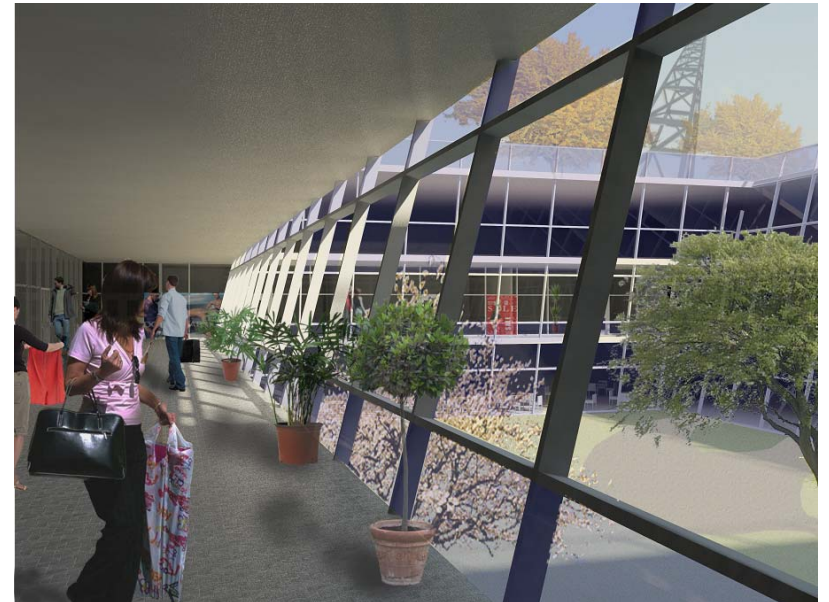
characteristics



In order to assess guest needs, typical guest characteristics must be determined. It is assumed, based on research and generalizations, that guests visiting this hotel will be couples in their late 20s and early 30s, will have professional managerial positions making a comfortable amount of money. They will be visiting this hotel with the desire for a well rounded, exotically experiential and educational vacation.

# FUNDING & CONSERVATION

partial structural reuse savings



Aboard the thunderhorse oil rig eco hotel, visitors can observe the transformation from a rugged and industrial form to a luxury hotel through adaptive reuse of structure and construction. This ideal will result in money savings for the conservation of a past icon.

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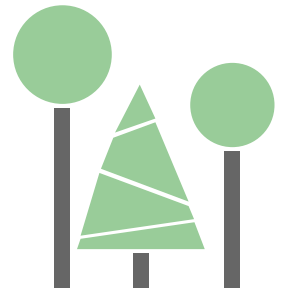
1  
funding  
conservation

# NATURAL ENVIRONMENT

sustainable man-made ecosystem



Guest's will be able to see and experience hands-on an active ecosystem in an isolated environment. This will illustrate a man-made, endemic and natural environment.



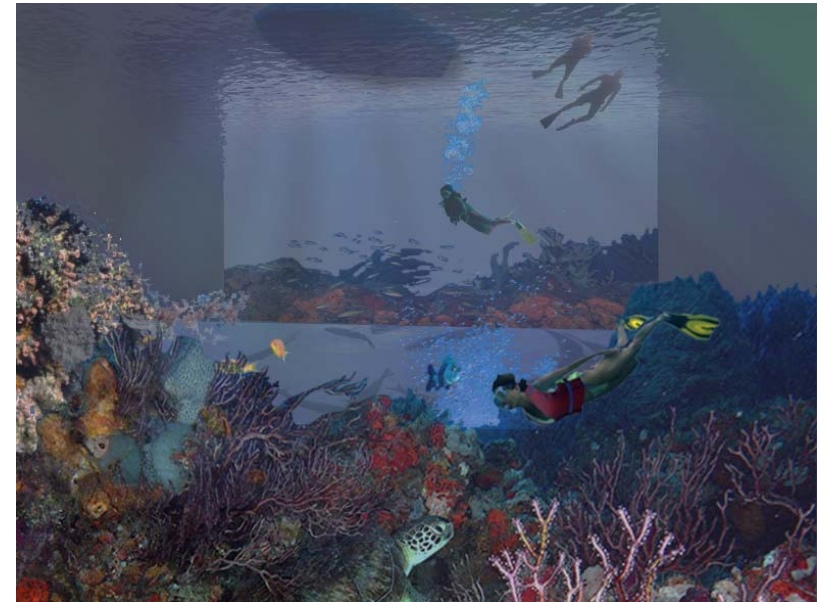
2

**natural environment**  
*ecosystems*



# EDUCATION & AWARENESS

patron interaction/connection



Guest will also begin to learn of their effect and interaction with a delicate system of live checks-and-balances. This will clearly show a single persons connection to a live ecosystem in an isolated environment.



**3**

**education**

*physical & cultural*

# THUNDERHORSE OIL RIG

program/organizational division

## ZIPLINING BOOM

previously the pinnacle of energy exhaust, the boom now centers on the beginning of the oil rig zip lining tour

## CREW ACCOMMODATIONS



aprox. 240

## VERTICAL GARDEN/GREENHOUSE

vertically stacked and tier planter boxes for all food, including herbs, fruit and vegetables

## 3 CRANES

help in building-out of eco hotel, loading and unloading as well as integration into zip lining track

1:1 ratio

## SUNKEN GARDEN

filter light into deck accommodations and interior program elements

## GUEST ACCOMMODATIONS



aprox. 240

## HELIPAD

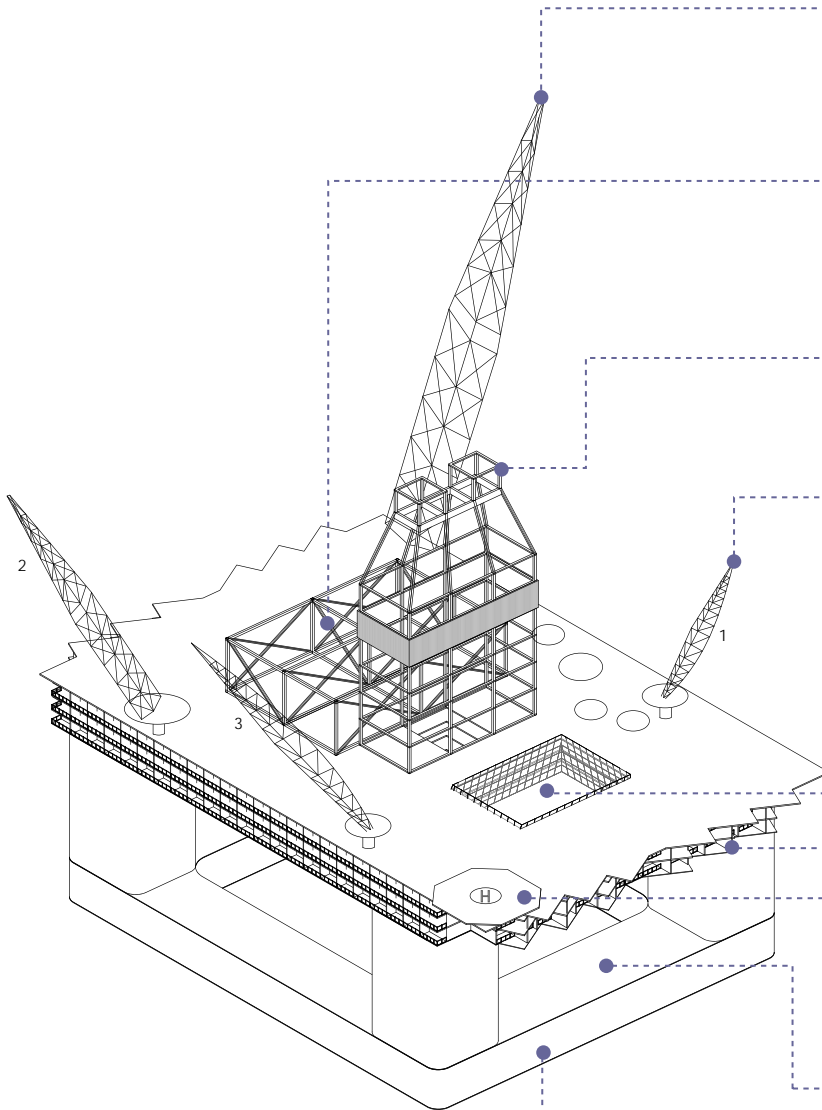
all air travel: 50' x 50'

## AQUATIC GARDEN

artificial reef balls, cages and new coral life will attract any number of caribbean salt water fish and other species.

## BALLAST TANKS

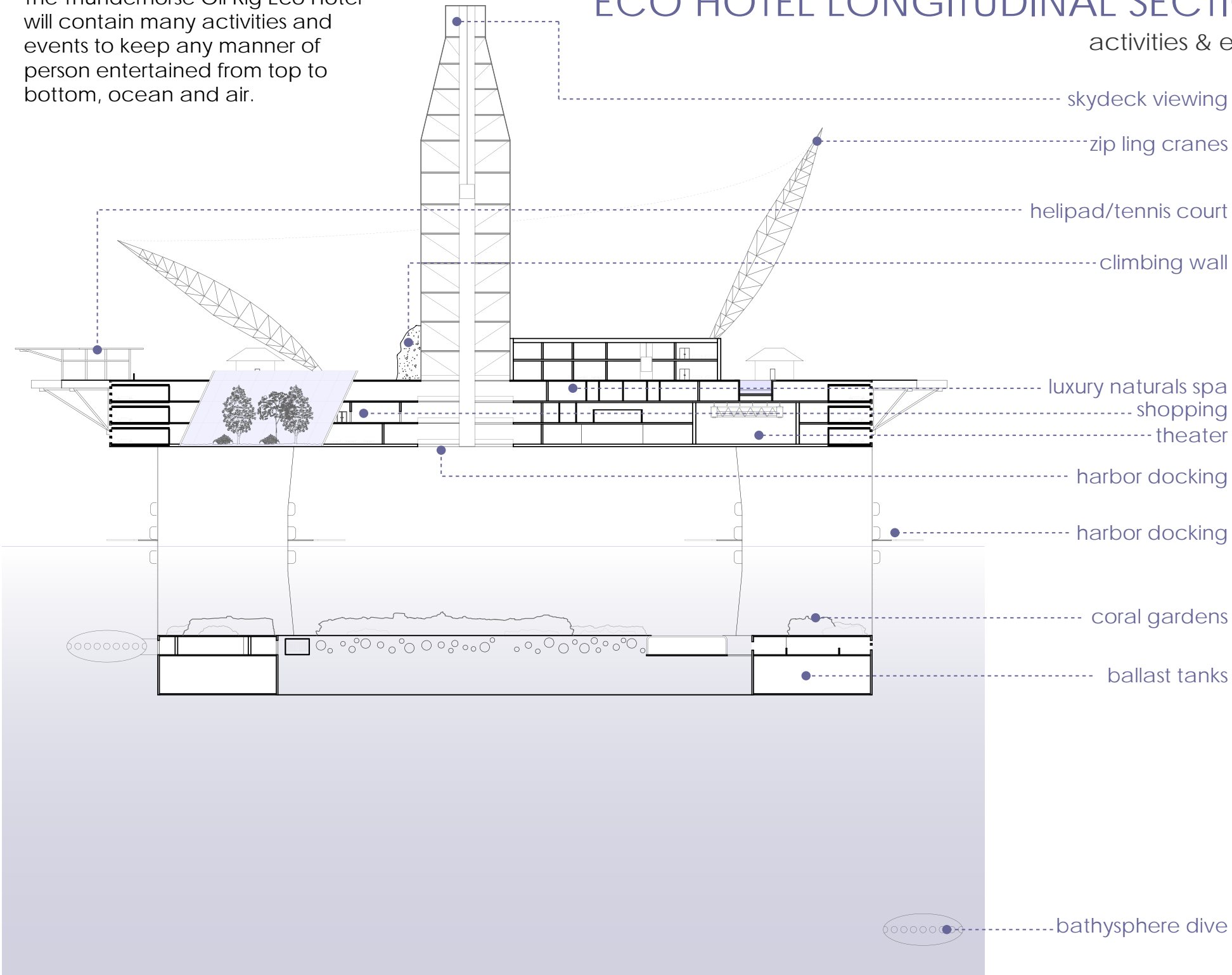
the ballast tanks are flooded with water to counterweight the oil rig for proper flotation.



The Thunderhorse Oil Rig Eco Hotel will contain many activities and events to keep any manner of person entertained from top to bottom, ocean and air.

# ECO HOTEL LONGITUDINAL SECTION

activities & events

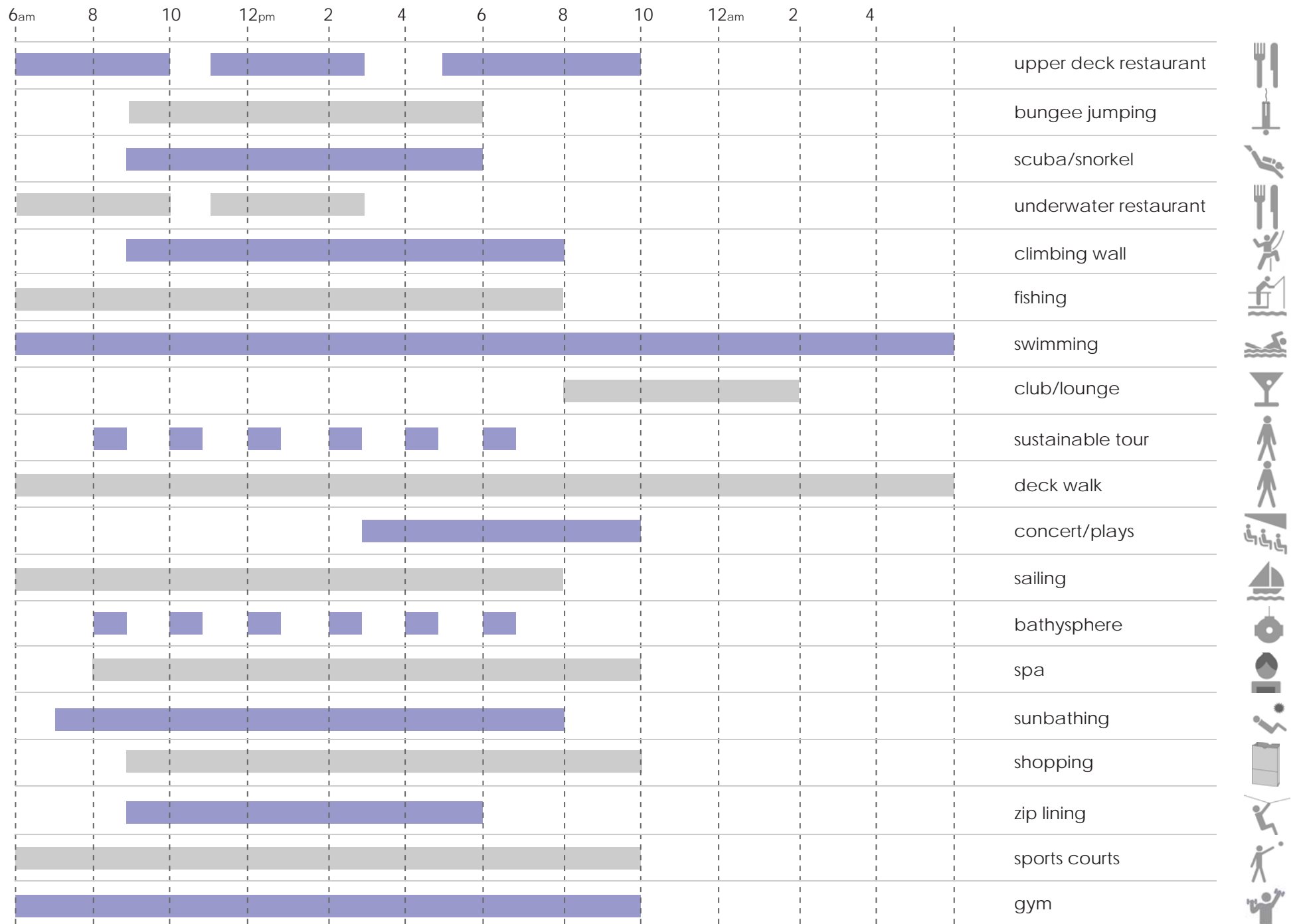




Daily activities will vastly range to take advantage of the local conditions and weather as well as newly added program elements.

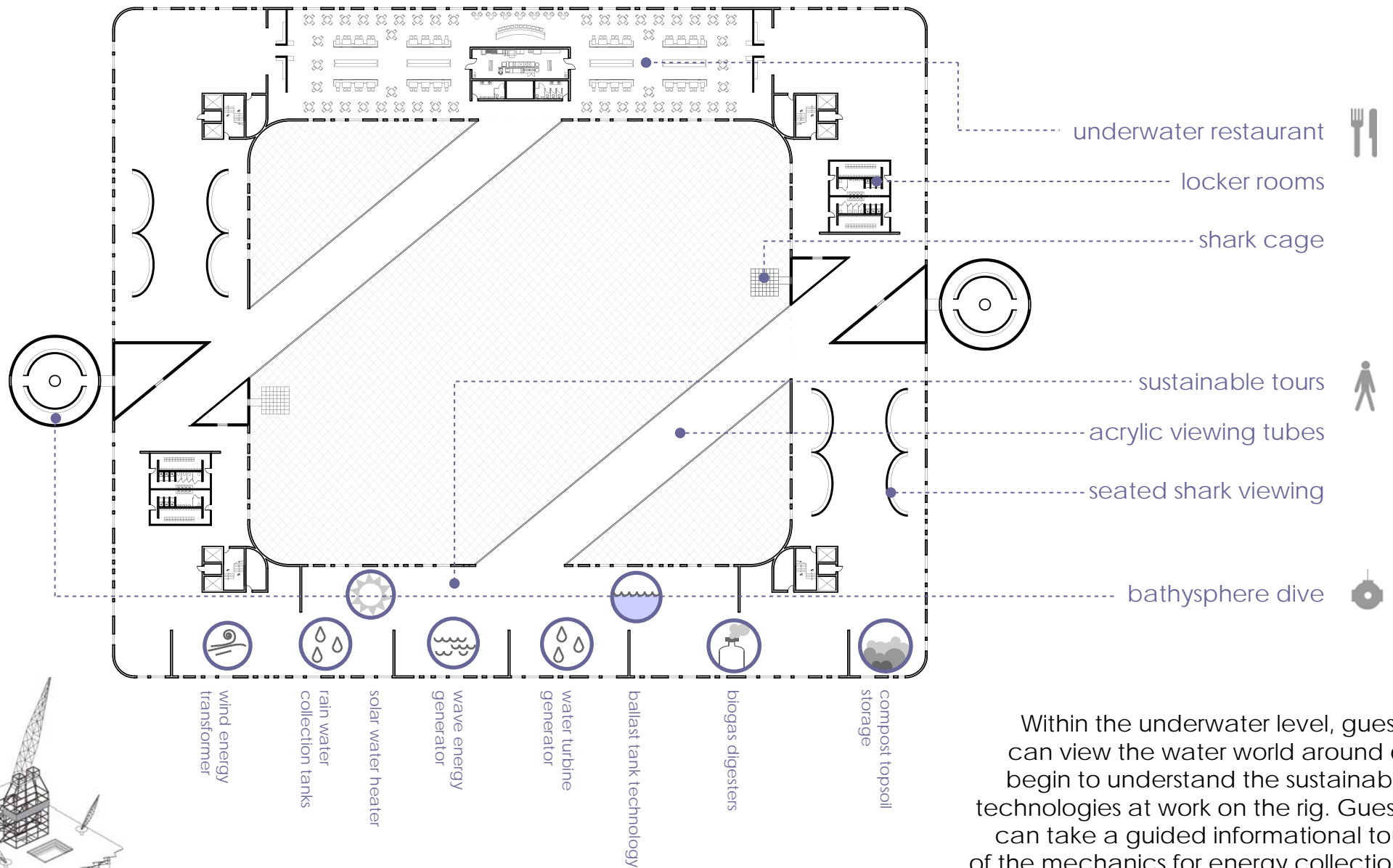
# DAILY ACTIVITIES

schedule of events



# UNDERWATER ACTIVITIES LEVEL

el: -60'-0"



el: -60'-0"

Within the underwater level, guests can view the water world around or begin to understand the sustainable technologies at work on the rig. Guests can take a guided informational tour of the mechanics for energy collection, water cleansing and clean waste management and energy production.

# UNDERWATER ACTIVITES LEVEL

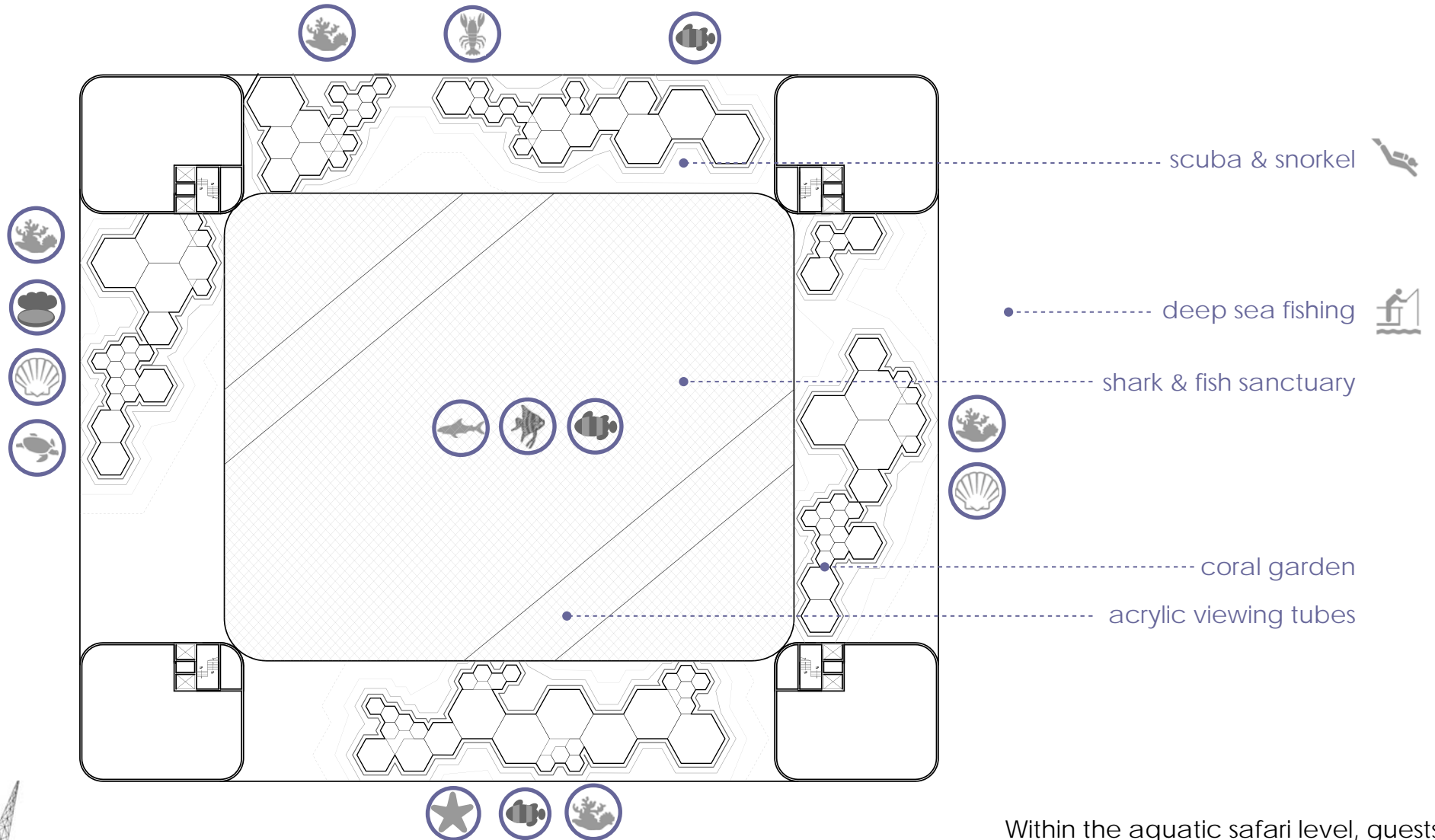
underwater restaurant





# AQUATIC SAFARI LEVEL

el: -45'-0"

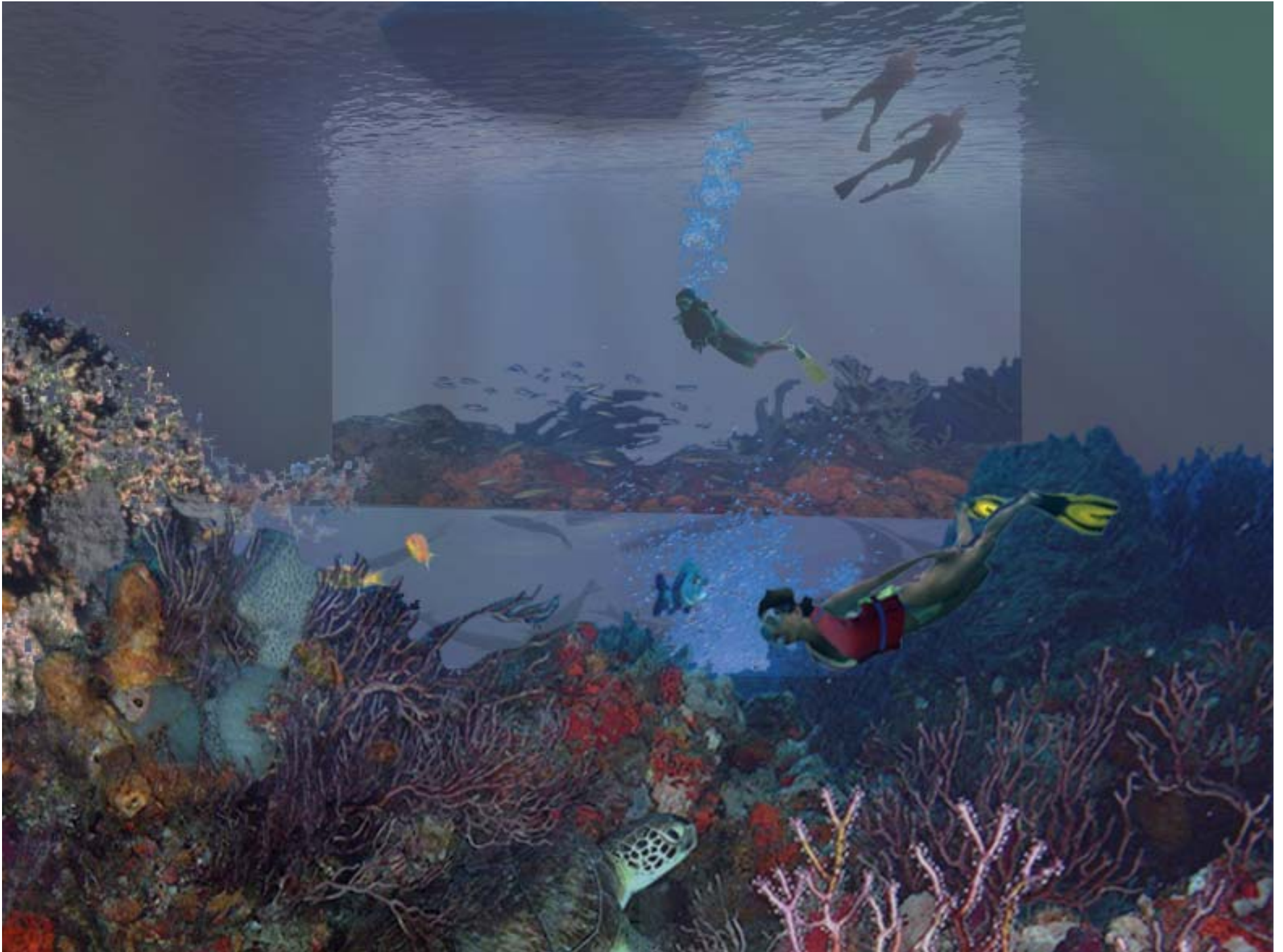


Within the aquatic safari level, guests can directly interact with the coral garden life. The coral growths would be formed to become habitats for specific species of fish and sea life. Lobsters, clams and any manner of seafood delicacies can be found on the aquatic safari.

el: -45'-0"

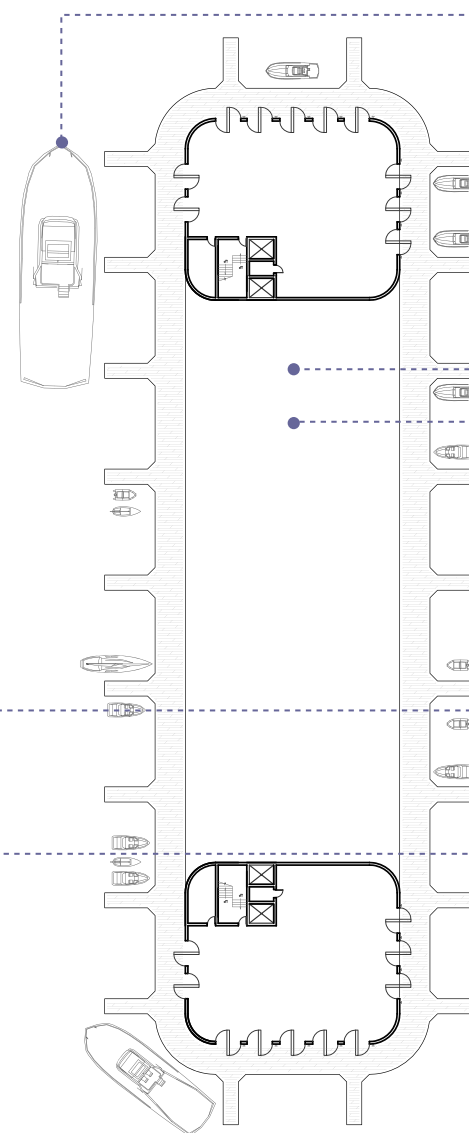
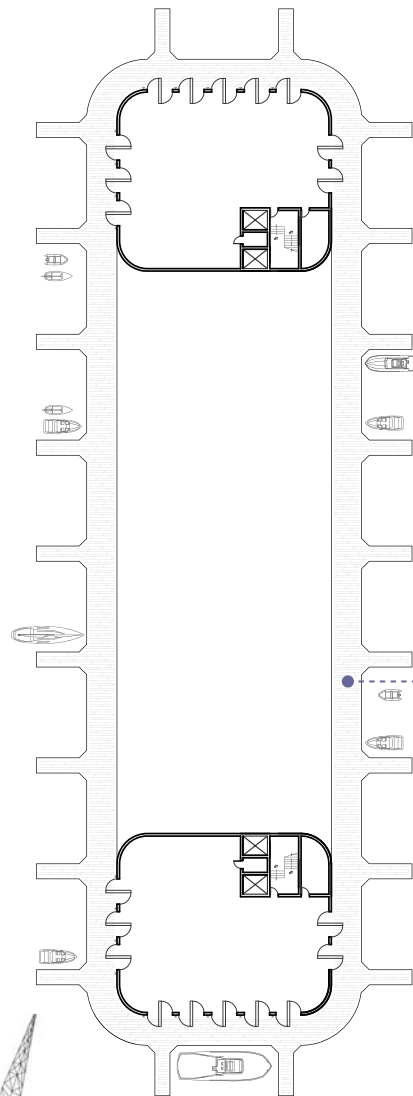
# AQUATIC SAFARI LEVEL

coral garden scuba diving



# HARBOR LEVEL

el: 0'-0"



harbor docking

snorkelling



deep sea fishing



open air deck walk



sailing & water sports



wave & wind  
energy harvesting



el: 0'-0"

At sea level, guests can partake in any manner of water activity. Parasailing, waterskiing and deep sea fishing are but a few of the amenities. Guests can also witness new arrivals to the rig via sea and air transportation.



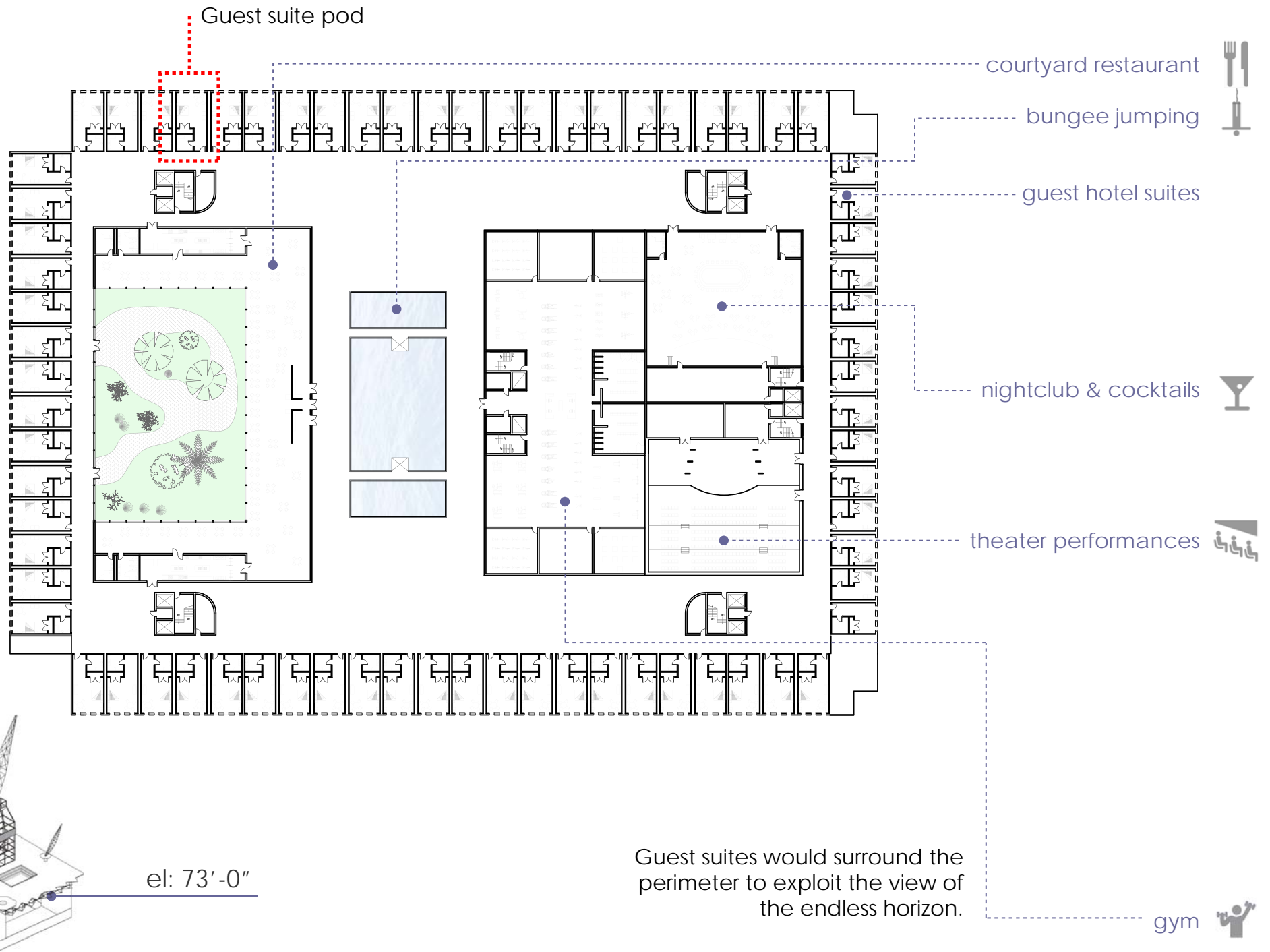
# HARBOR LEVEL

water activities



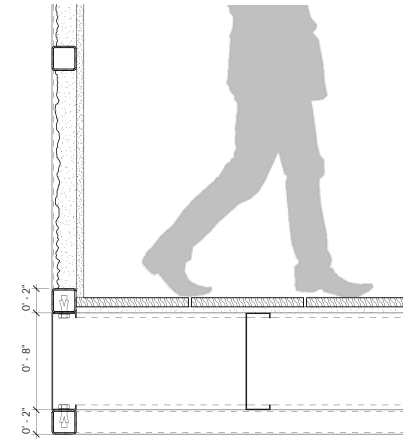
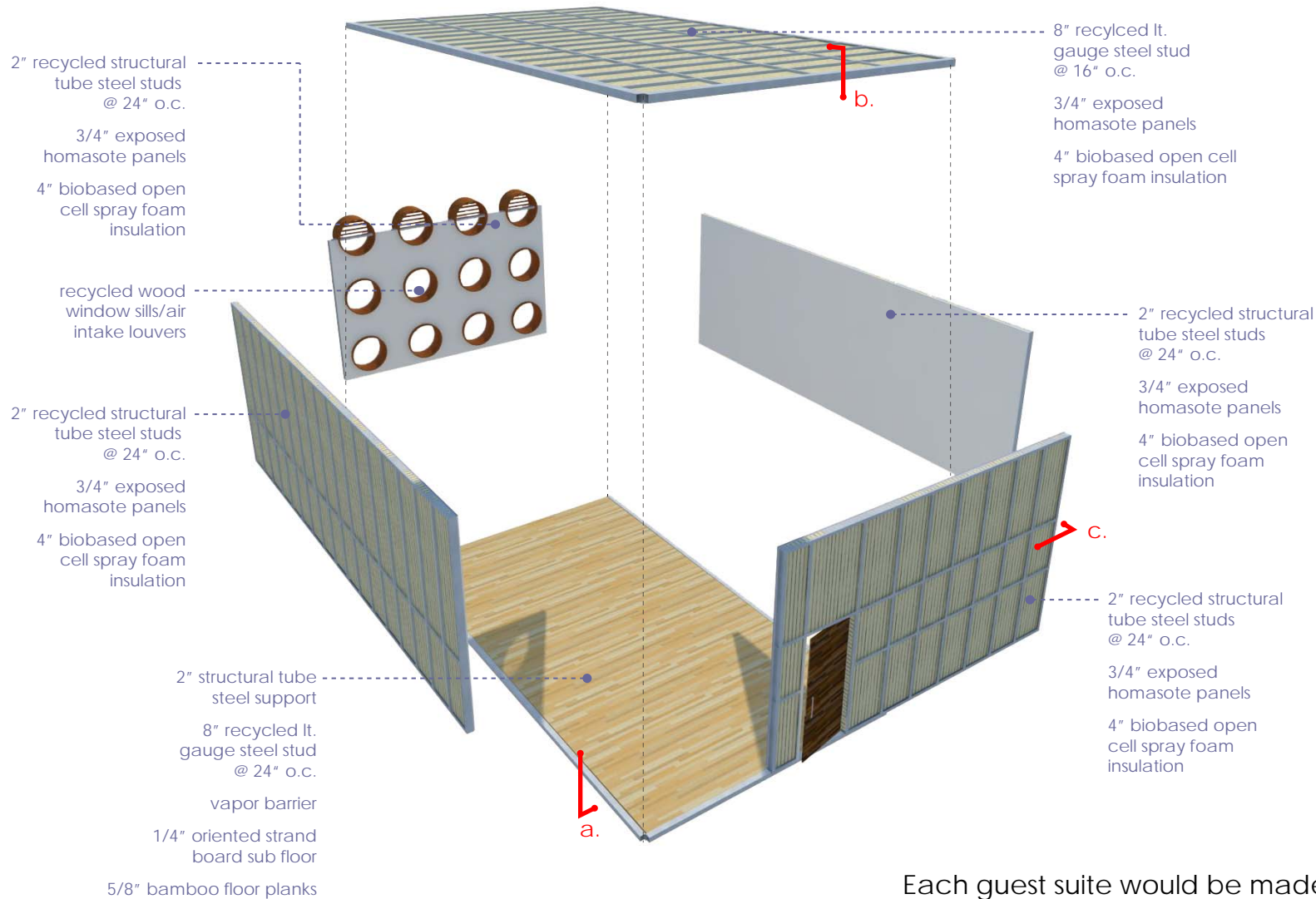
# HOTEL/ENTERTAINMENT LEVEL 1

el: 73'-0"

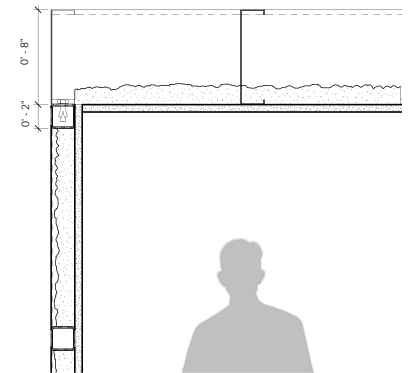


# PRE MANUFACTURED SUITE POD

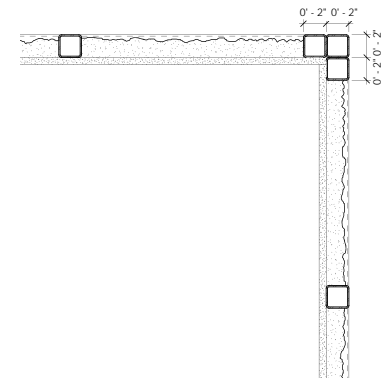
construction and assembly



a. floor-to-wall connection



b. wall-to-ceiling connection



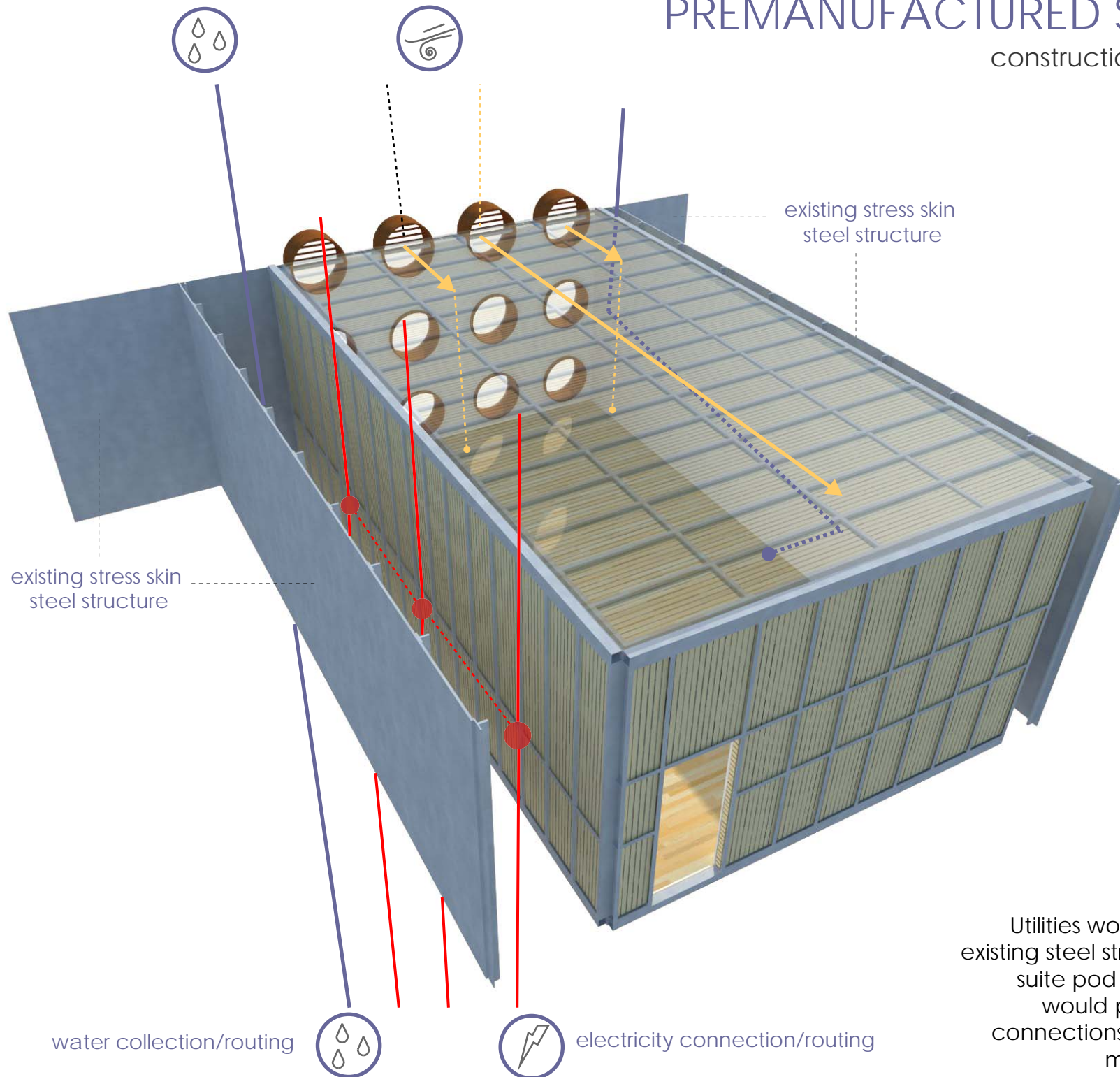
c. wall-to-wall connection

Each guest suite would be made of pre manufactured floor, wall and ceiling panels. Each panel would be constructed of recycled light gauge steel studs, recycled newspaper walls and soy-based foam insulation.



# PREMANUFACTURED SUITE POD

construction and assembly



Utilities would run between the existing steel structure and the new suite pod construction. Utilities would plug into preinstalled connections, whether electrical, mechanical or waste.

While within the eco hotel, there will be a series of incongruous juxtapositions on new, existing and adaptively reused spaces. Guests will experience the natural and unpredictable weather outside, the luxurious and high-quality interiors of the suite pods and even the mazework of former oil rig piping, ductwork and industrial equipment.

## WALL SECTION

natural, new, existing



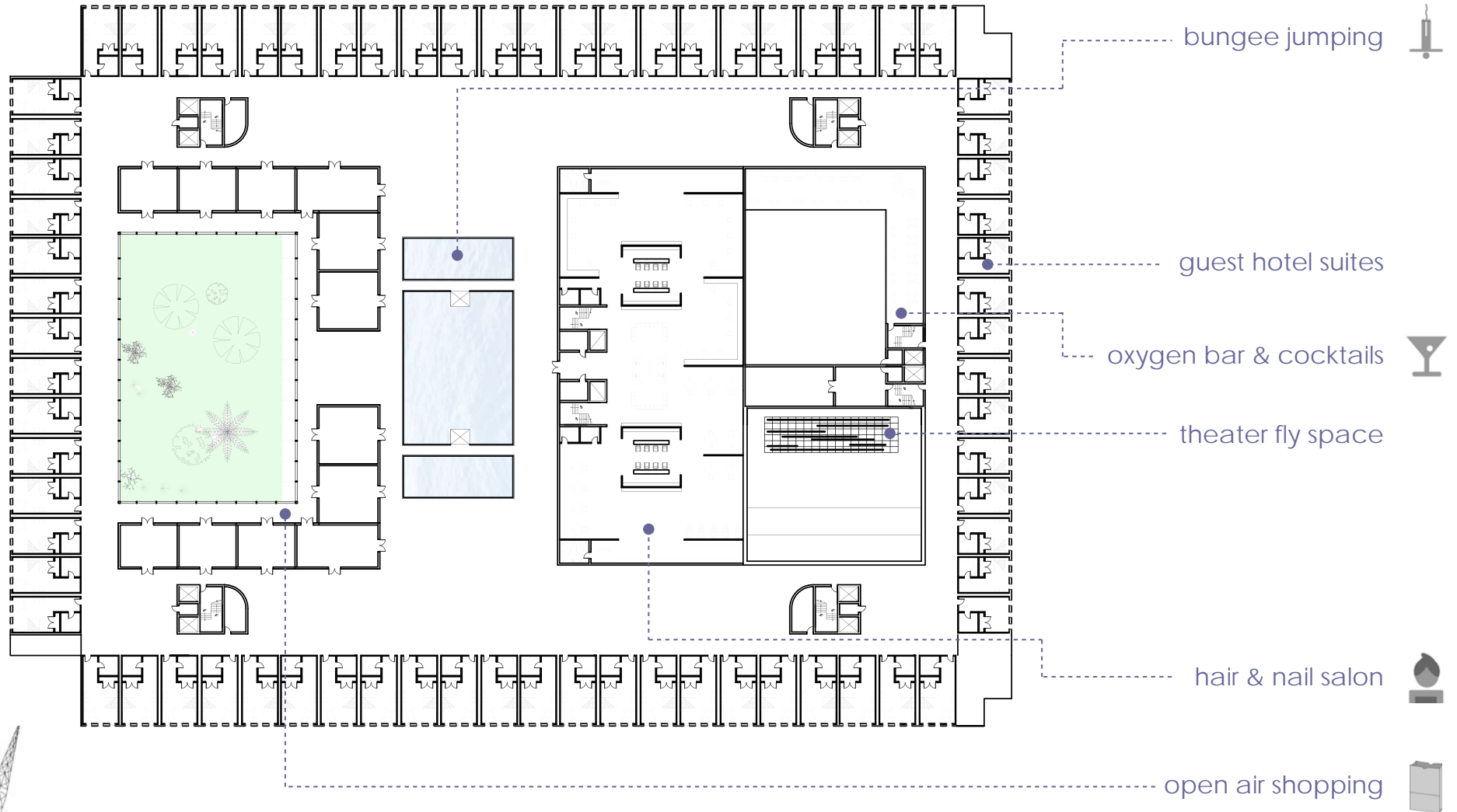
**exterior**  
*natural weather*

**interior**  
*new hotel suite*

**interior**  
*existing hull labyrinth*

# HOTEL/ENTERTAINMENT LEVEL 2

el: 85'-0"



On the second level of guest suites will also be a covered, open-air shopping center for those less-than-perfect weather days. Guests can experience the outdoor environment while still being protected from the harsh weather.



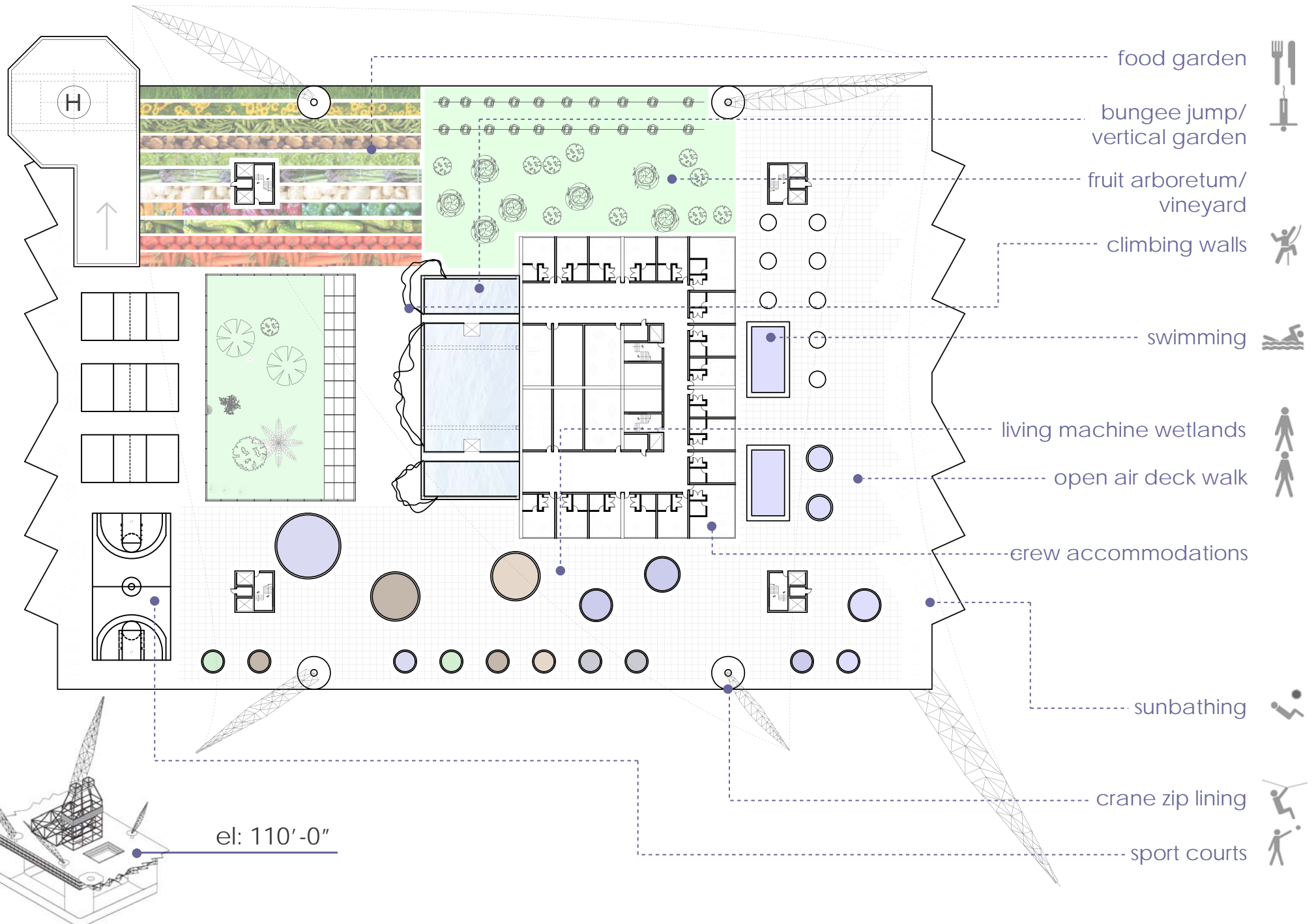
# HOTEL/ENTERTAINMENT LEVEL 2

garden shopping streets



# ACTIVITIES DECK

el: 110'-0"





# ACTIVITIES DECK

living machine tour

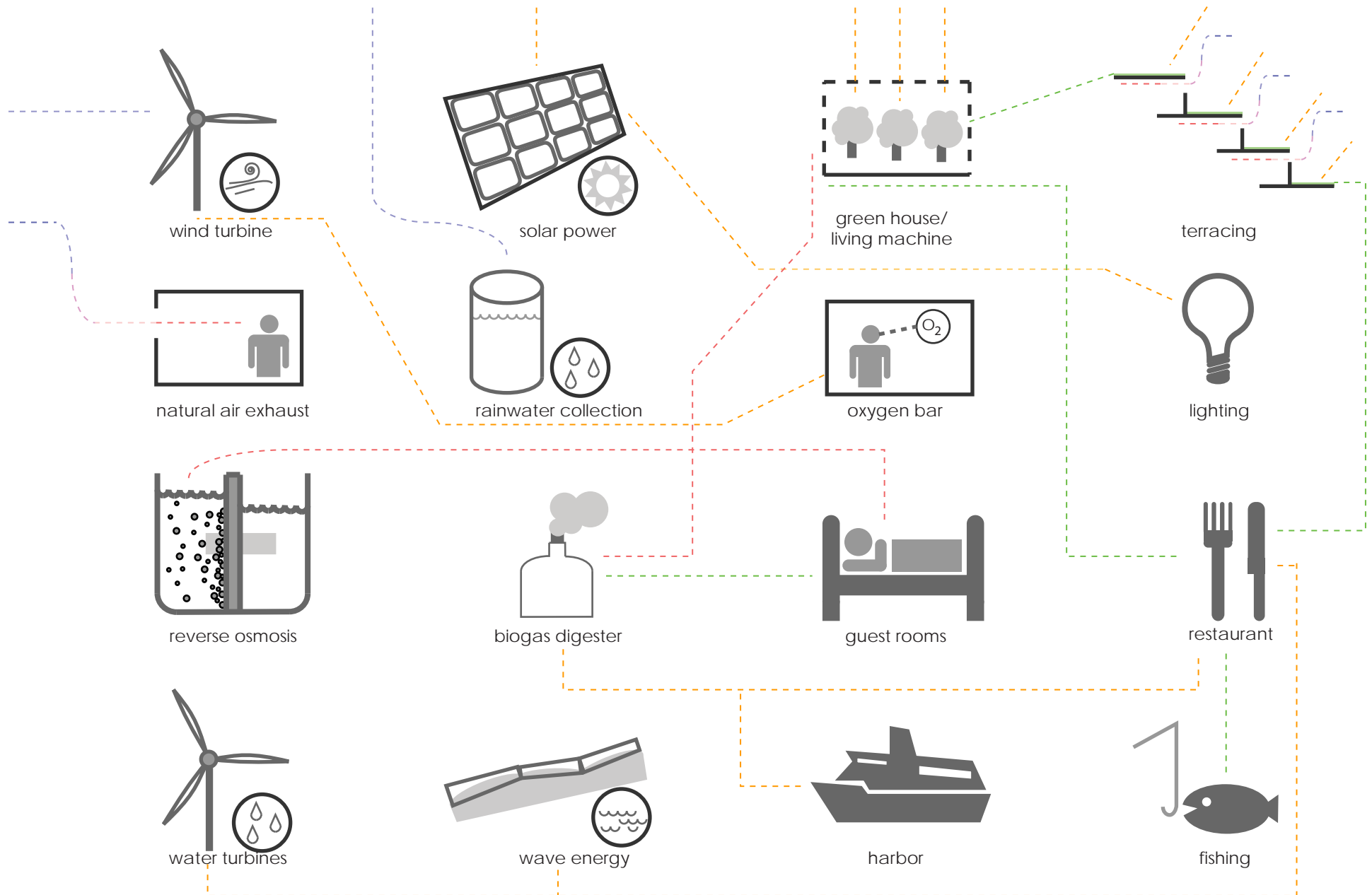




While the oil rig is already a self-sustaining structure, the eco hotel will transformed into an ecologically friendly and completely cyclical system of energy inputs, guest outputs and constant checks, balances and connections.

# SELF-SUSTAINING TECHNOLOGIES

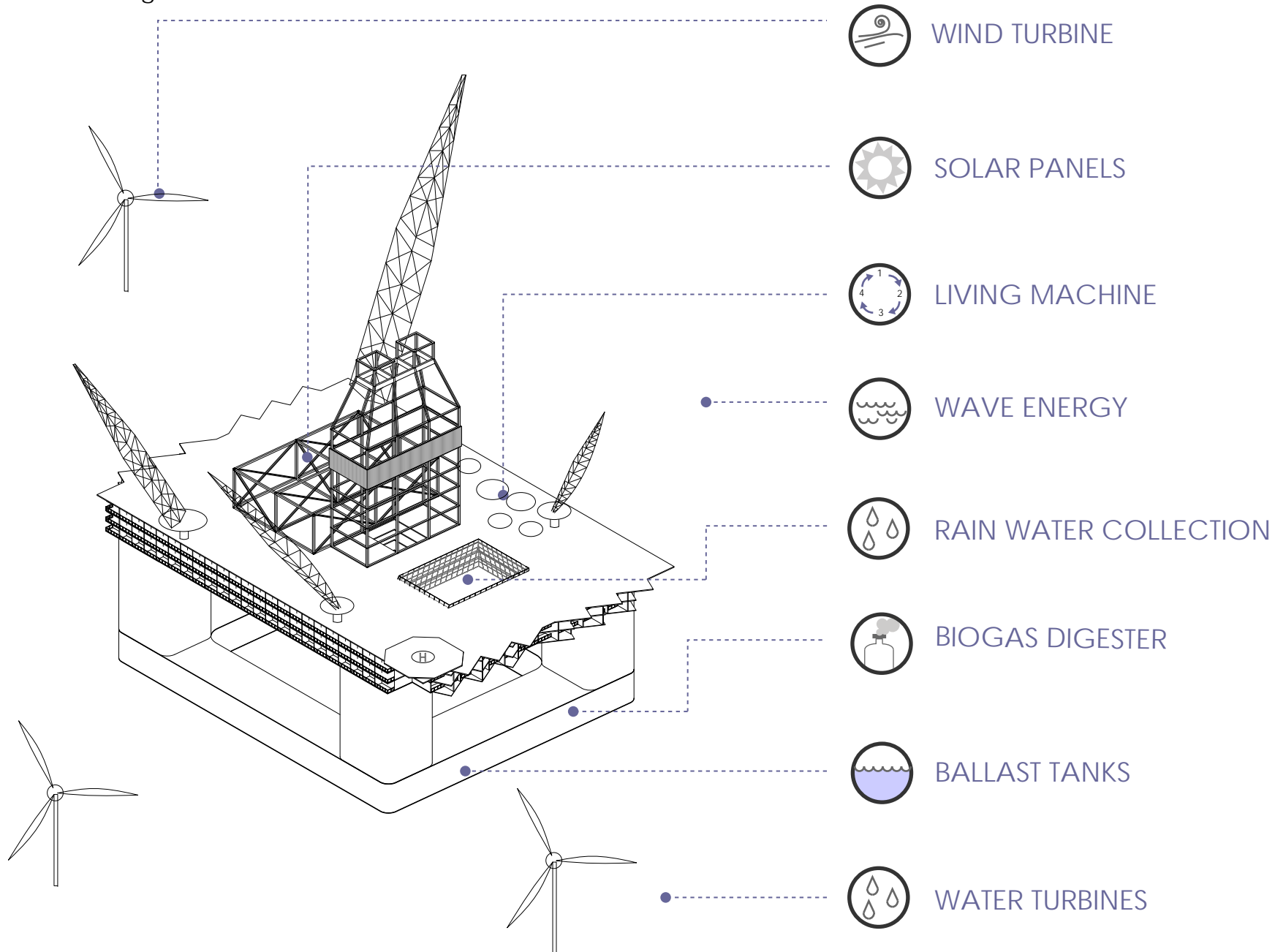
program and energy matrix



Power for all manner of equipment and lighting will be harnessed from wind, water, wave and solar energy as well the result of a biogas digester process of waste management. Rainwater will be collected for reuse, while greywater is cleansed through a series of living machines.

# ECO HOTEL

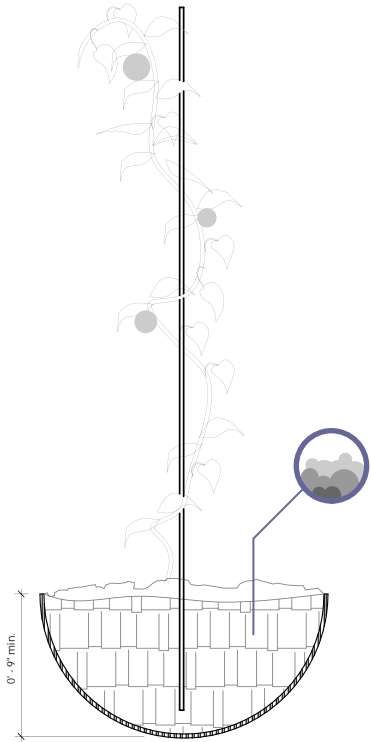
passive sustainable strategies



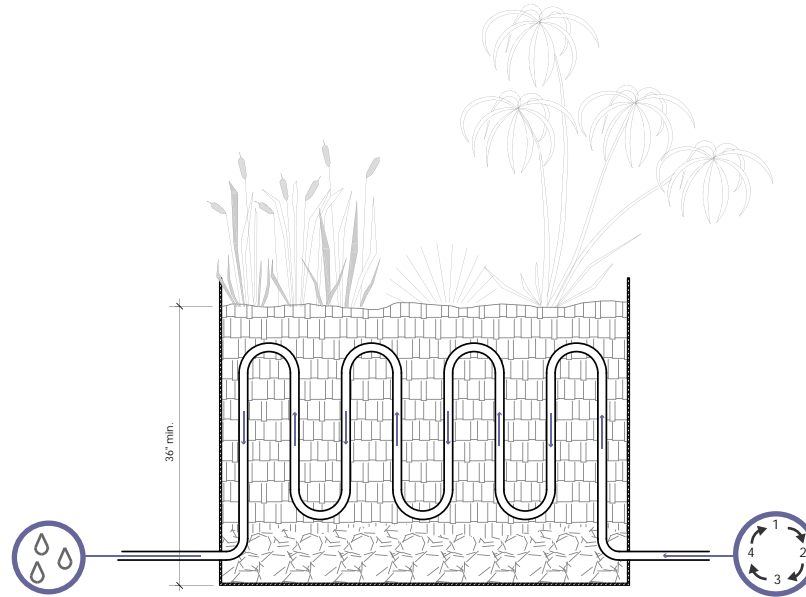
Through adaptive reuse, items on board the initial oil rig would be transformed into new program elements. Former piping could be cut in half, filled with soil and used for growing the hotel's food, oil tank ends could be used to purify water through a living machine process, while former ductwork could be abandoned in place and cut from below to create skylights.

# ADAPTIVE REUSE

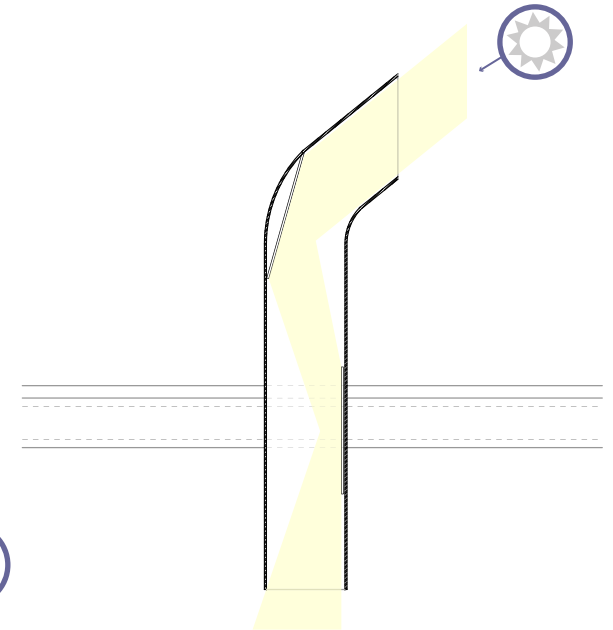
new program element accommodation



**garden planters**  
vs.  
*mechanical piping*



**living machine tanks**  
vs.  
*oil tanks ends*



**skylights**  
vs.  
*exhaust piping*





Hotel guests will find their relationship and connection to the bigger ecosystem in every corner of the hotel. Whether taking a tour of the sustainable technologies, seeing the inner workings of the systems, interacting with the top deck activities or even observing what happens to leftovers and waste, a guest will feel the connection and impact of their daily activities.

# BUILDING SYSTEMS

hotel ecosystem

