

# PARADISE W.E.T. CENTER

## WATER EDUCATION + TREATMENT

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### PROJECT INFORMATION

LOCATION: PARADISE, CA  
PROGRAM: EDUCATION CENTER  
WASTEWATER TREATMENT

SIZE: 30,000 SQ.FT (BUILDING)  
180,000 SQ. FT. (SITE)

#### STORY:

The Town of Paradise currently relies on 11,000 septic tank systems for wastewater management. Septic tanks limit the degree and intensity of property use as the system dictates the capacity to safely dispose wastewater on site. The need for a better wastewater collection and treatment has become more urgent as it directly impacts the area's economy and environment. Many of the businesses in Paradise cannot afford the high cost of septic tank maintenance. It also limits their ability to increase their bottom line or create jobs. Furthermore, the lack of a viable sewer infrastructure also poses an environmental threat to the water resource.

#### GOAL:

Proper wastewater management is key to the health and safety of the community. This project aims to provide an alternative solution to the town's wastewater management system via the creation of a mechanically simple but biologically complex system capable of treating the most difficult contaminants in the wastewater. Patterned after John Todd's ecological design, the system is a hybrid between septic and sewage treatment systems bounded to the natural biological filtration via anaerobic digestion, constructed wetlands, and aerated lagoons. And in order to highlight the importance of water as resource, the building serves as a live demonstration area for water treatment and conservation methods. In addition, the building is also designed to harmonize with its surrounding environment, blending with the site and providing home for wetland species and migratory animals.

### PRECEDENT STUDIES



#### OMEGA CENTER FOR SUSTAINABILITY

Location: Rhineback, New York, USA  
Architect: BNIM  
Year Completed: 2009  
Size: 6,250 sq. ft.

The Omega Center for Sustainability is a wastewater filtration facility that utilizes biological methods of treatment via an Eco Machine. It replaces the current wastewater system for 119 buildings on a 105-acre campus, processing 32,000 gallons of water a day for garden irrigation and graywater recovery system. The 6,250 showcase room houses the primary treatment cells, a classroom/ laboratory, and a yoga room in an effort to educate local, visitors, and staff on local, regional, and global water issues. It is also purposely compact and organized to harvest straight, passive heating and cooling breezes to reduce energy needs. As a zeroenergy building, excess energy harvested by the photovoltaic systems is returned to the local utility. The building and the site are integrated as a single system, and the facility is also used to showcase the reuse of salvaged materials. The building is the first project to achieve both LEED Platinum and Living Building Challenge certification.



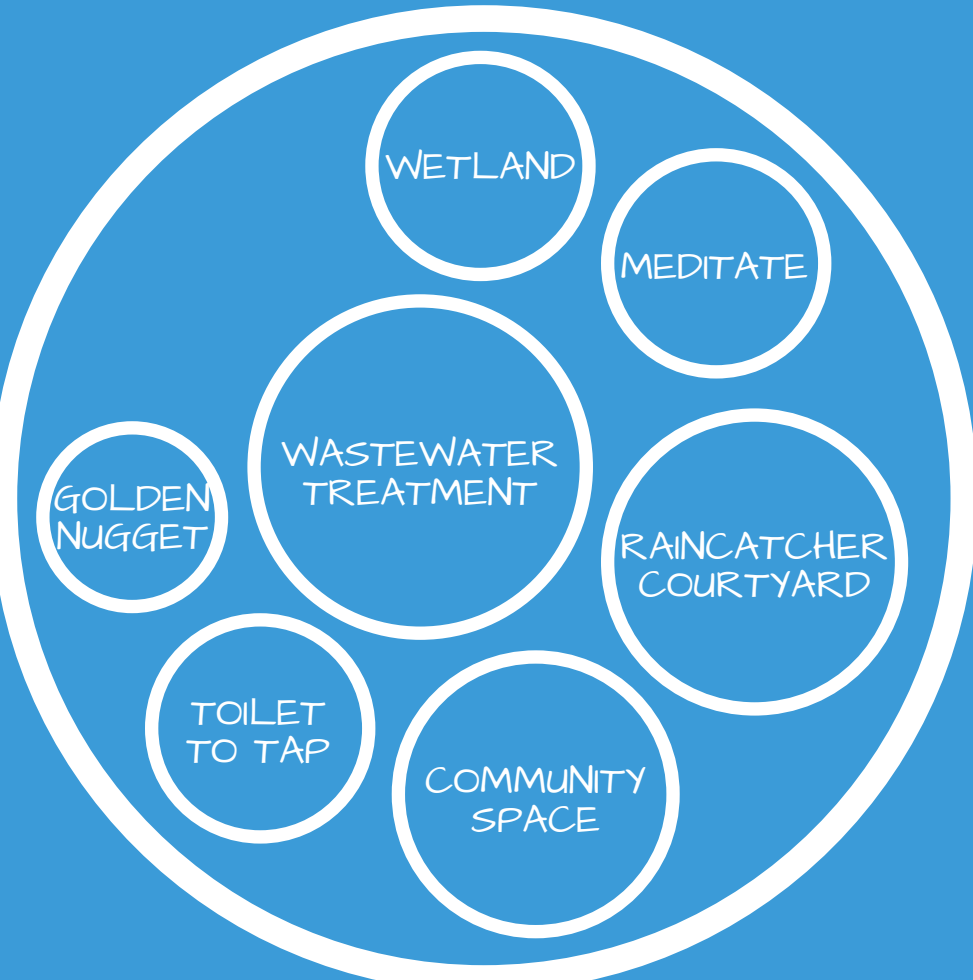
#### BRIGHTWATER ENVIRONMENTAL EDUCATION & COMMUNITY CENTER

Location: Woodinville, Washington, USA  
Architect: Mithun  
Year Completed: 2011  
Size: 40,000 sq. ft.

This complex is an extension of the Brightwater Wastewater Treatment Facility, serving as an education and community space to engage the public about the invisible process of wastewater treatment. Situated on former auto-wrecking yards, the complex is designed as a public parkland with educational trails, stormwater retention ponds, and restored salmon habitat. Achieving a LEED Platinum certification, most of the energy required to heat the building comes from the waste methane reclaimed from the wastewater treatment plant. Water is also reclaimed for toilet flushing and irrigation, reminding visitors to be mindful about a highly important natural resource.

### CONCEPT

#### EDUCATION



### PERFORMANCE

200,000+

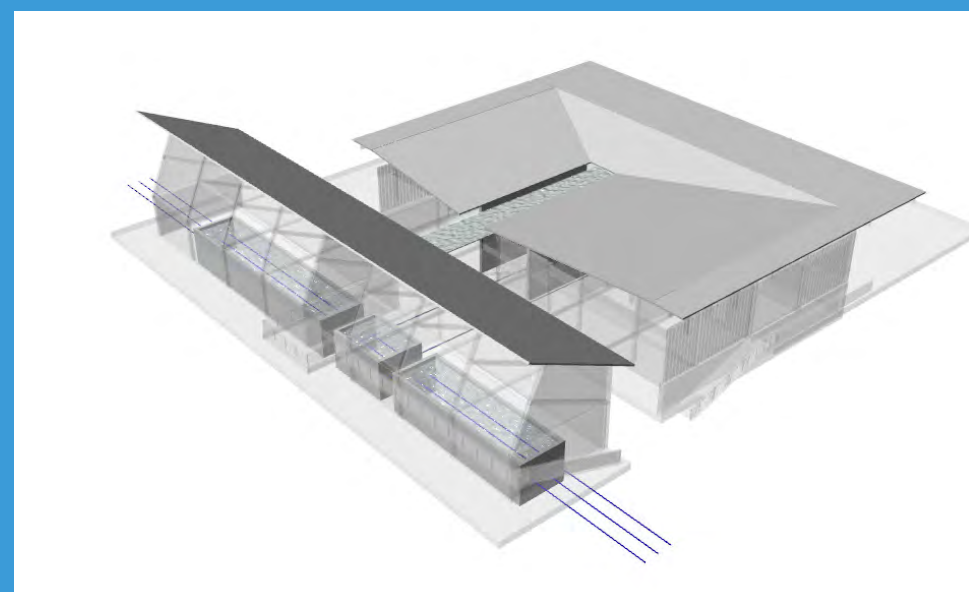
GALLONS OF WASTEWATER TREATED DAILY

~972,000

GALLONS OF RAINWATER HARVESTED ANNUALLY  
USED FOR IRRIGATION AND TOILET FLUSHING

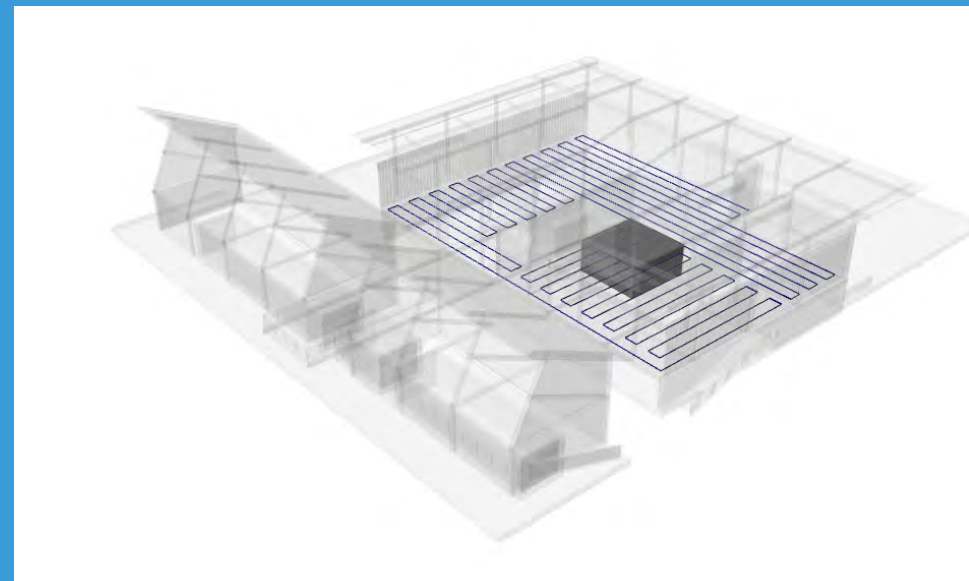
ELECTRICITY GENERATED ON SITE VIA SOLAR ENERGY AND  
METHANE GAS

CONSTRUCTED WETLANDS SUPPORTS LOCAL WILDLIFE AND  
MIGRATORY ANIMALS



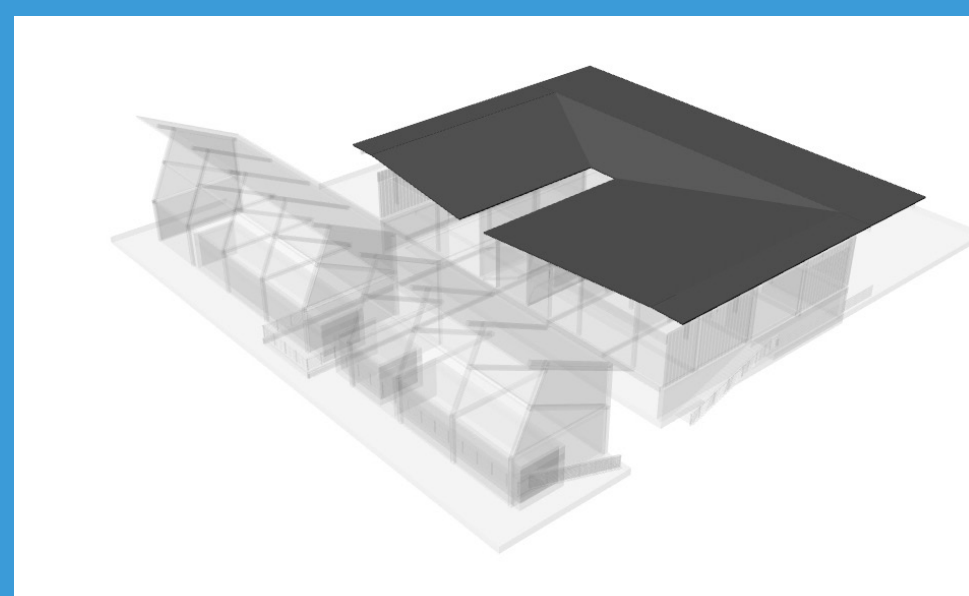
#### RAIN CATCHMENT + WATER TREATMENT

Use of rain/treated water "falls" run down the concrete walls to cool the building (evaporative cooling), then is directed it towards the in-house biological treatment system for wastewater before its release back to the aquifer.



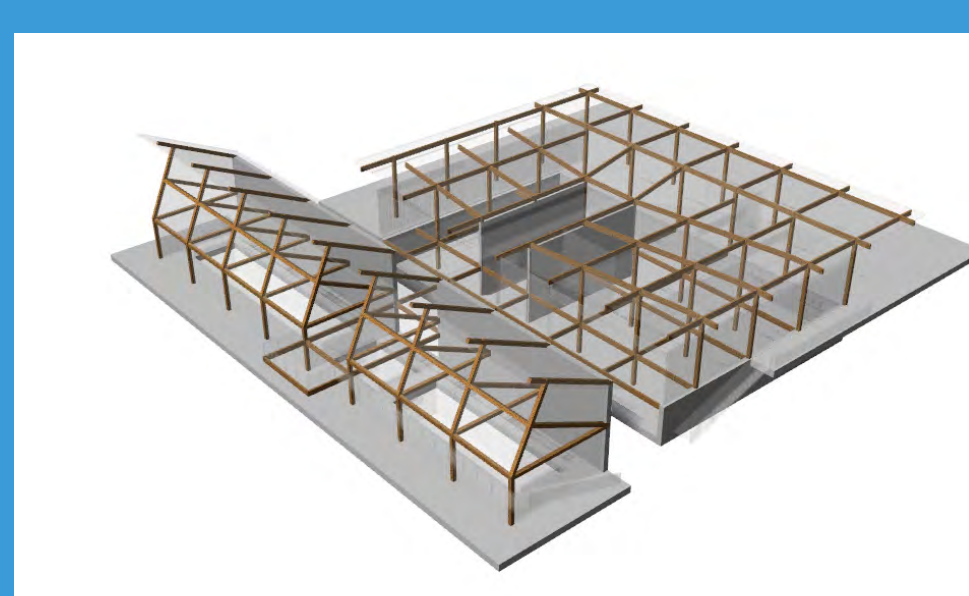
#### HVAC

Mechanical Room (basement) and use of radiant heating/cooling via groundwater heat exchange.



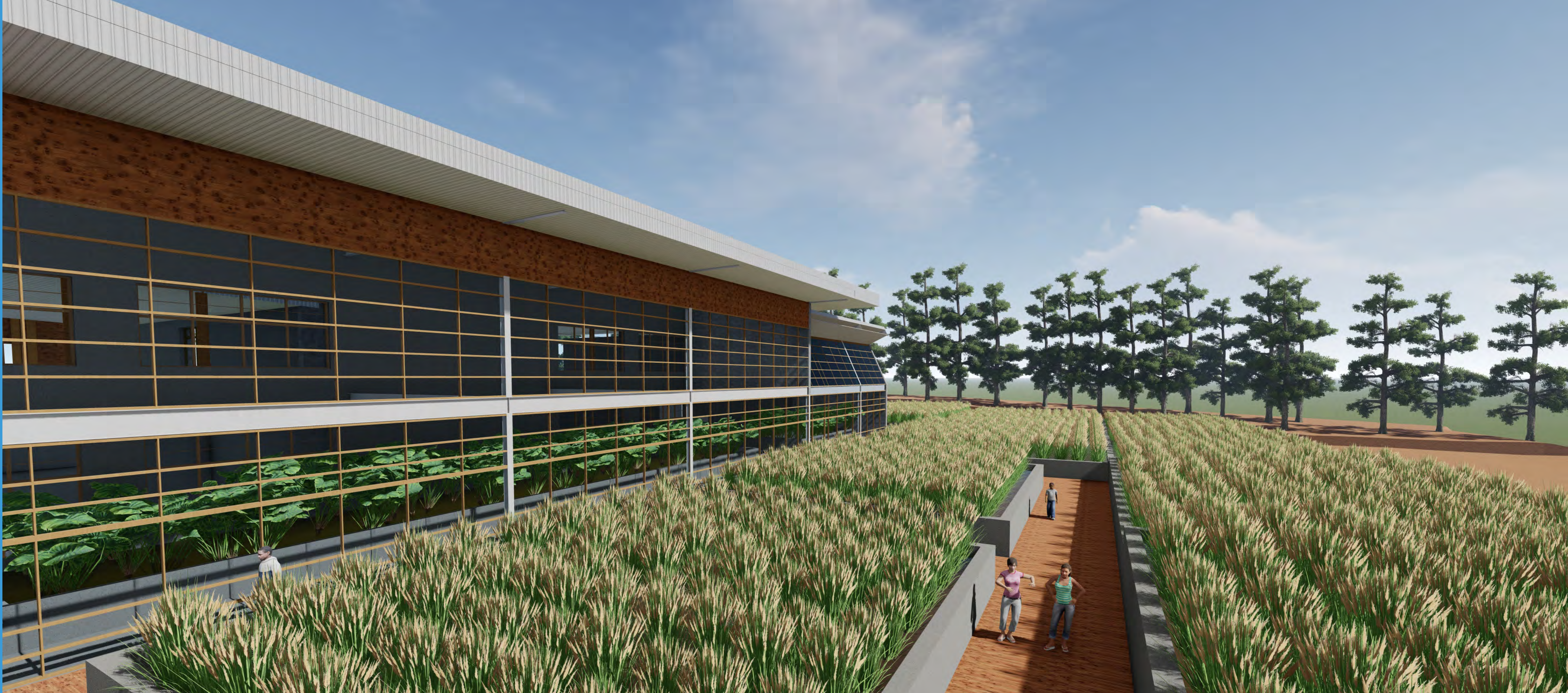
#### SOLAR

Solar roof that doubles as rain catcher.

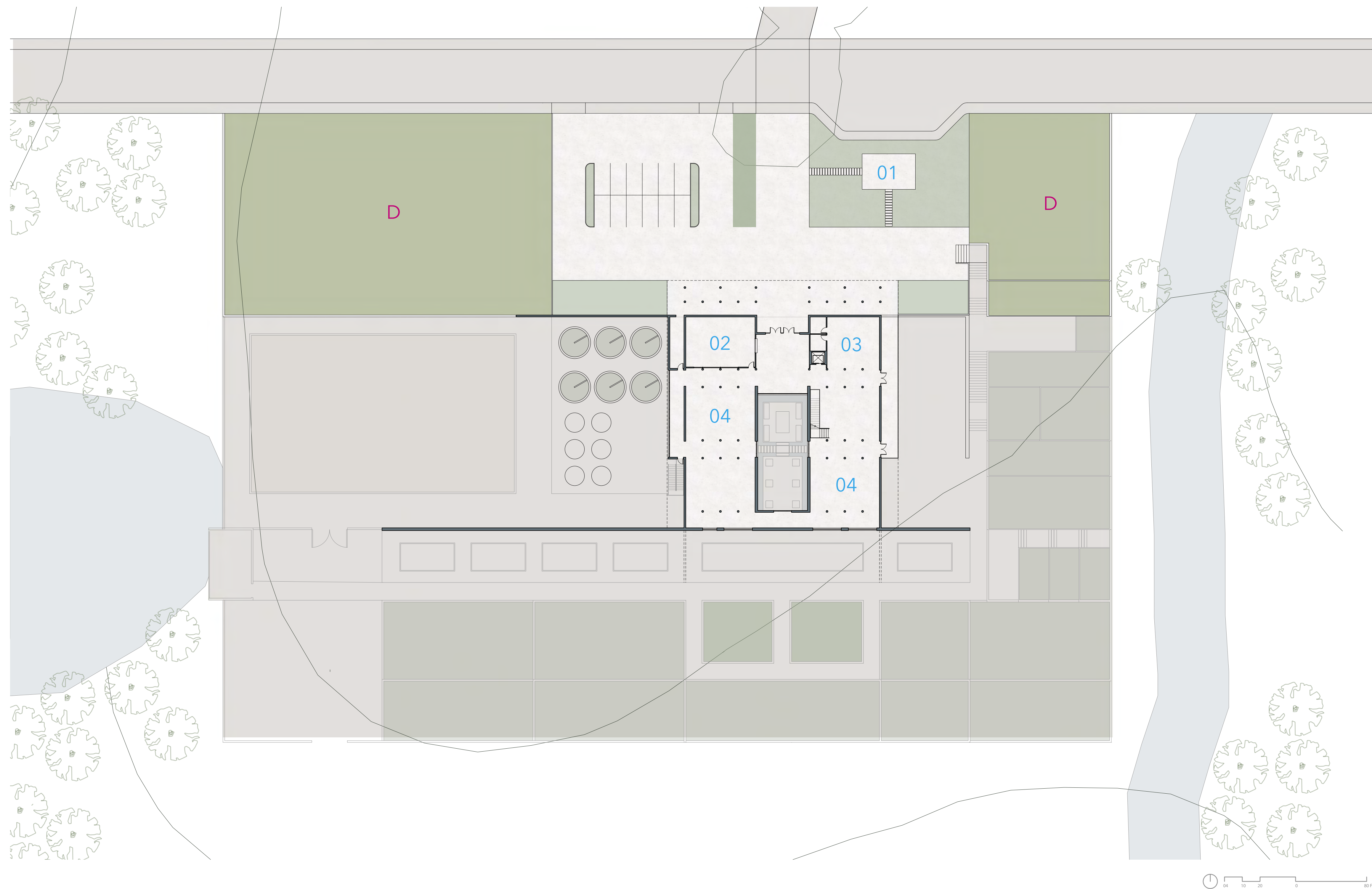


#### STRUCTURE

Glue-laminated beam girder system and mass timber (locally sourced) for columns, concrete for thermal walls, and mat foundation (site sits above water table).



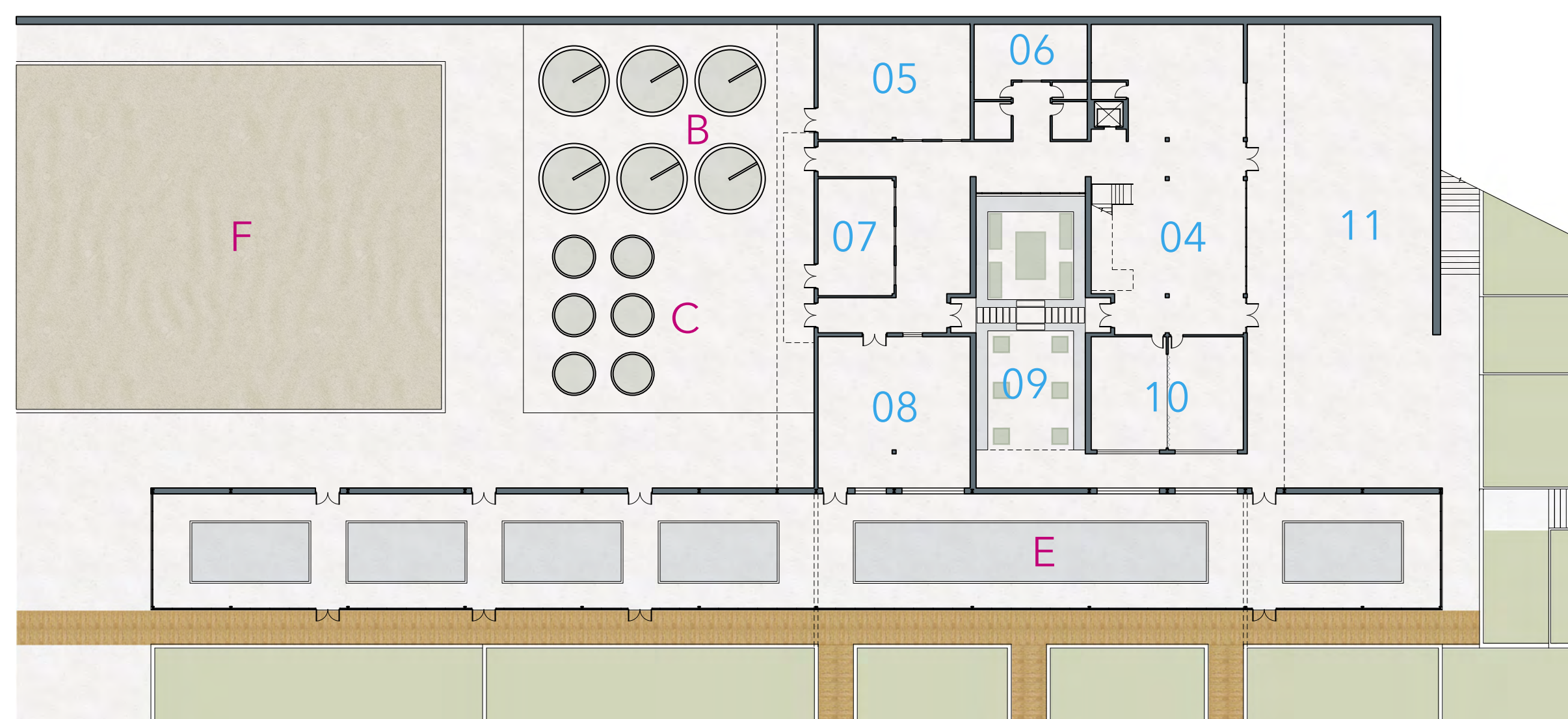
### SITE / MAIN FLOOR LEVEL



### LOWER FLOOR LEVEL

#### PROGRAM

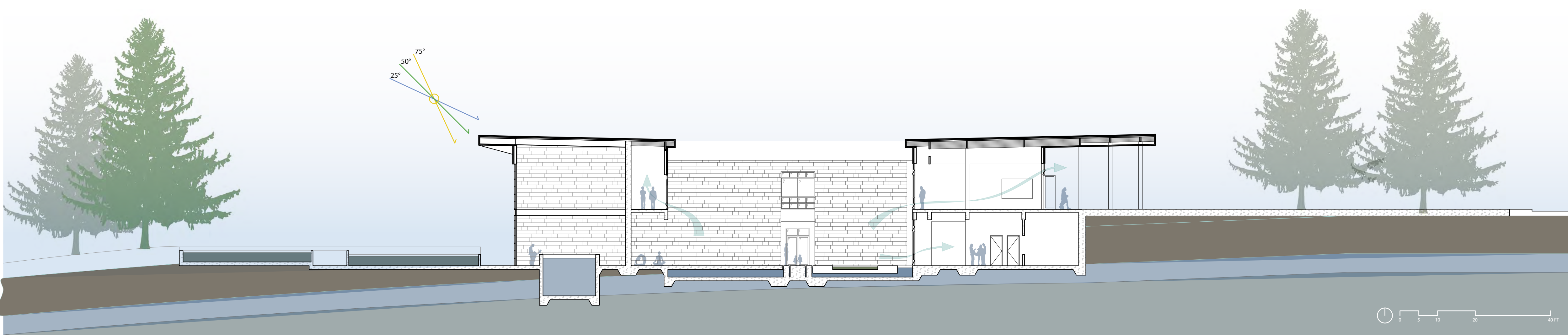
- 01 GOLDEN NUGGET MEMORIAL
- 02 ADMIN
- 03 CAFE
- 04 GALLERY
- 05 MECHANICAL
- 06 RAIN STORAGE
- 07 POTABLE WATER TREATMENT
- 08 LABORATORY
- 09 RAIN COURT
- 10 CLASSROOM



#### WATER TREATMENT

- A SEPTIC TANK (OFF SITE)
- B EQUALIZER TANKS
- C ANOXIC TANKS
- D CONSTRUCTED WETLANDS
- E AERATED LAGOONS
- F SAND FILTER

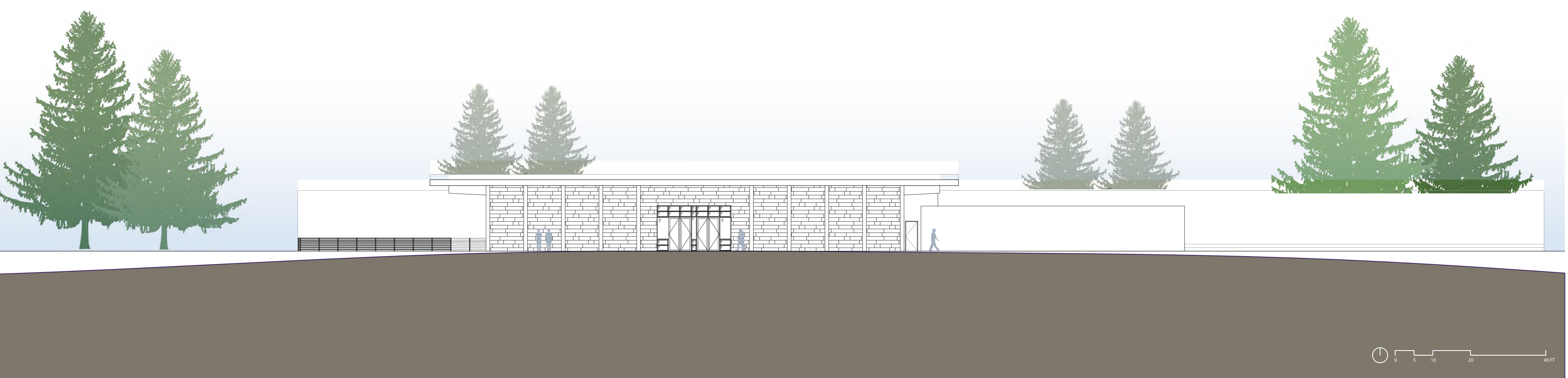
### SECTION CUT LOOKING WEST



### SECTION CUT LOOKING NORTH



### MAIN ENTRY ELEVATION



### RAIN COURT



### AERATED LAGOON GREENHOUSE