

Challenge exercise

Create a site layout in an arid climate in Forma Site Design

Part of learning how to develop a comprehensive analysis for site layout is understanding how to work toward the extremes of conditions. Using Forma Site Design in a wide range of locations will evolve your understanding quickly by studying the diversity of responses created by the software, and removing your assumptions and preconceived notions, forcing you to study the data. The diversity of data from the Midwest of the United States, to coastal climates, vertical sites, or arid environments all have different data sets, macro climates, and micro climates, requiring you to generate different design responses. The more diversity you see as a designer, the more comprehensive your abilities will be to find creative solutions.

For that reason, this challenge exercise is asking for a comprehensive look at simulations and site layout in an arid climate in Utah at Zion National Park, known for its hiking, cliffs, canyons, and temperature swings from over 100 to 20 degrees Fahrenheit. This is a location that requires a strong understanding of the context and buildings that have successfully worked with the climate (especially considering natively constructed work predating architectural design), the environmental data, views away from and to the site, and circulation. To focus on the site layout, the program will be kept simple.

Design the site layout for a new 4000 square foot museum and Ranger Station at the East Rim Trailhead at Zion National Park: East Entrance Ranger Station, Orderville, UT 84758, Latitude: 37.2332143 Longitude: -112.8765627. Note, the address above will not take you to the site location. Use the latitude and longitude values as comma separated values to navigate to the site location in Forma - 37.2332143, -112.8765627.

- The building can be one or two stories tall for a total of 4,000 square feet.
- The site layout should accommodate parking for 20 cars and provide trees/shade in or around the parking area.
- A successful site layout will take advantage of the scenery of the park and will manage sun and wind for protection of both humans and buildings. It will introduce new trees to help balance temperatures, but will not interrupt the natural setting and views. It will have clear path connections to parking, trails, and exterior spaces.

- Both existing buildings can be kept, or their functions can be considered part of the new design, removing and replacing the structures as part of the new site layout.
- The exterior will have two primary spaces:
 - A 500 square foot exterior pack and prep location for those preparing for or returning from a hike. This is a location to lay out gear, gain instruction from a guide or ranger, and get access to water and restrooms.
 - A 500 square foot exterior space adjacent to the building with outdoor space that frames views into Zion National Park.

Complete the required activities:

1. Create the site in Forma Site Design with the topography and satellite imagery on the ground plane.



Figure 1. Zion National Park Site

2. Add a site limit around the perimeter of the site.

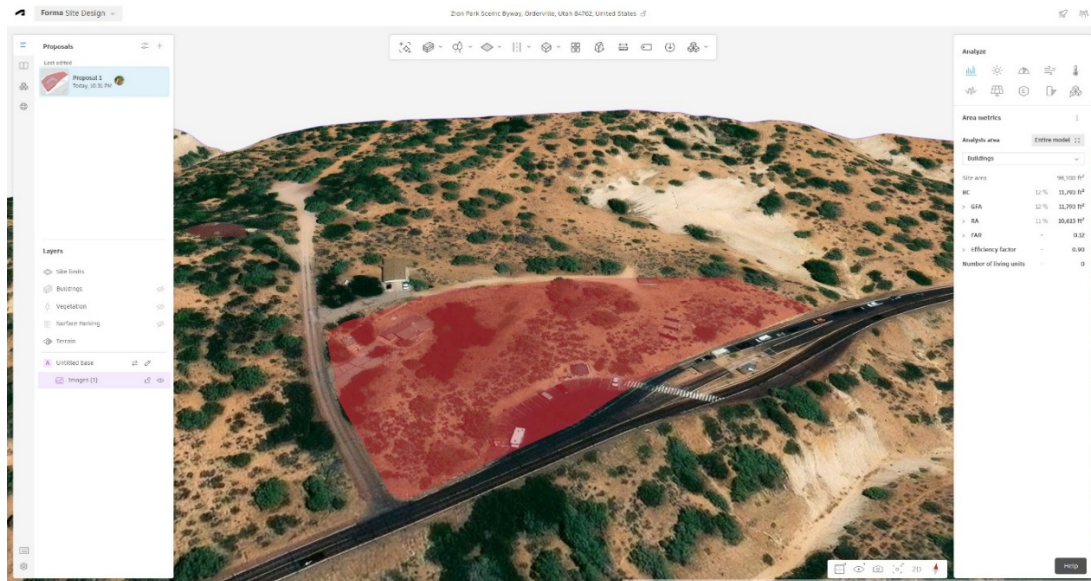


Figure 2. Zion National Park Site Limit

3. Add geometry for the building.
4. Add parking.
5. Add two regions for the exterior spaces.



Figure 3. Zion National Park Museum Site Layout

Grading Rubric:

	Advanced	Proficient	Basic	Emerging
Build program accurately followed	Well considered idea that meets the program criteria	Follows the program closely, but perhaps some odd decisions	Missing some or incomplete elements of the building program	The design lacks a connection to the building program
Clarity of the model elements – with appropriate functions and colors added	The building massing has been given functions and is schematically clear	Completed, but not all of the functions clear or applied	Completed massing, not clear on functions within the design	The model is missing, incomplete, or not available
Response to the formal context on the site	The design engages the surrounding context in an appropriate and interesting way	The project responds to the site edges and streets	The design is missing opportunities and understanding of the context	Incomplete or not withing the site parameters
Creativity in the overall building design form	The building form shows innovative thinking, and design the begins to respond to both environmental and local contexts	There is quality to the design and creativity	Quality in the design, but it does not yet consider the local or environmental contexts introduced	The design is either incomplete, or lacks any connection to the goals and contexts of the project