OAKS AMPHITHEATER

A proposed design for Dorothea Dix Park

Raleigh, NC

By Sarah Followill

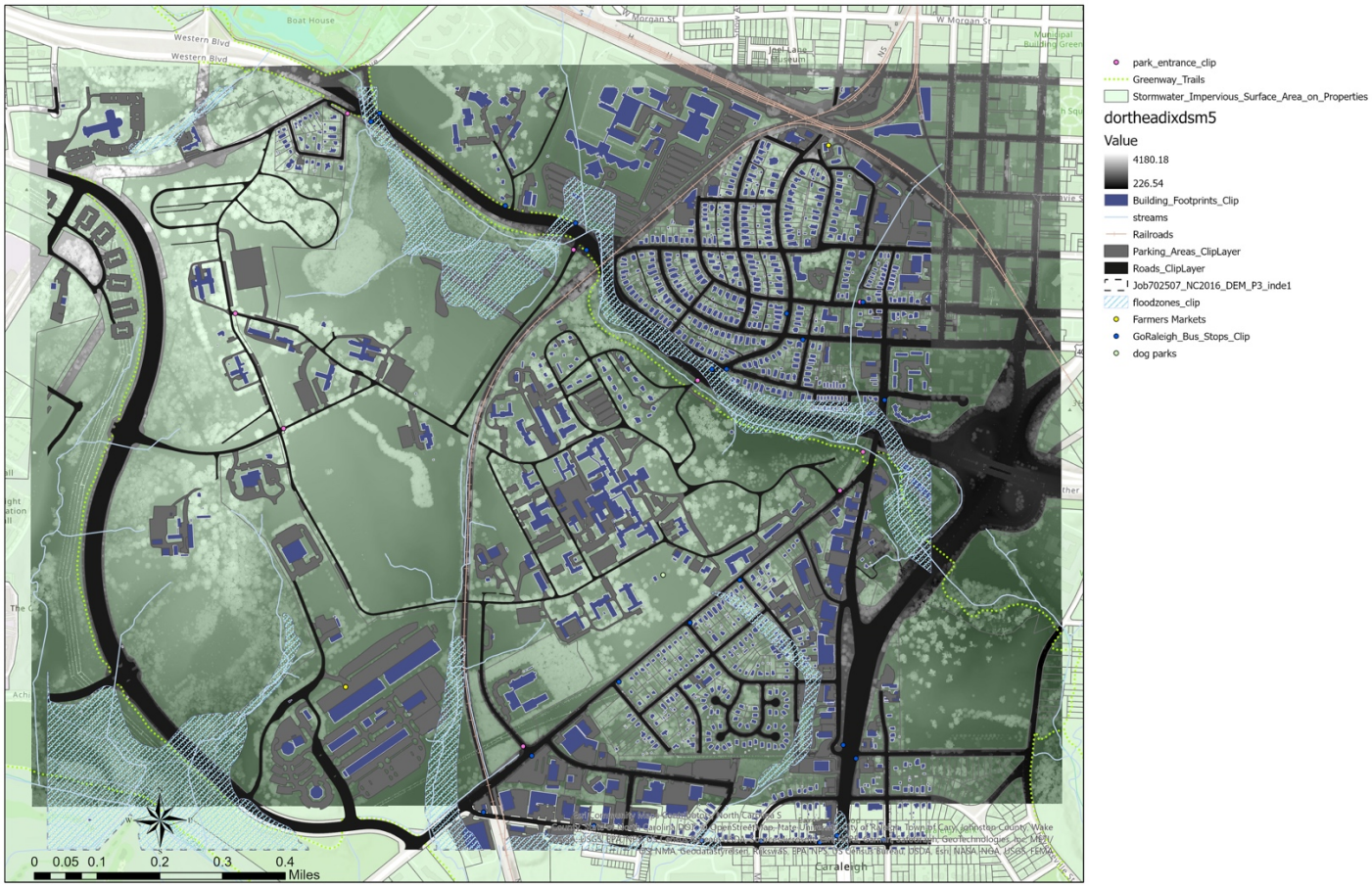
05/06/2022

SITE LOCATION

Dorothea Dix Park lies at the heart of Raleigh, North Carolina, and was once the site for Dorothea Dix Hospital, which specialized in care for the mentally ill. The hospital was closed permanently in 2012 due to lack of funding, and the land was purchased by the City of Raleigh in 2015. Currently, the City of Raleigh is working to develop the area into a beautiful, welcoming public space to bring people together to enjoy nature and each other's company. Pictured above is the Dorothea Dix Park Master Plan for the development of the space. Since 2018, the park greenspaces have been open for recreational use, and there is also a temporary dog park. The City of Raleigh, however, has bigger plans for the park, including innovative playgrounds, a water garden, and an amphitheater.

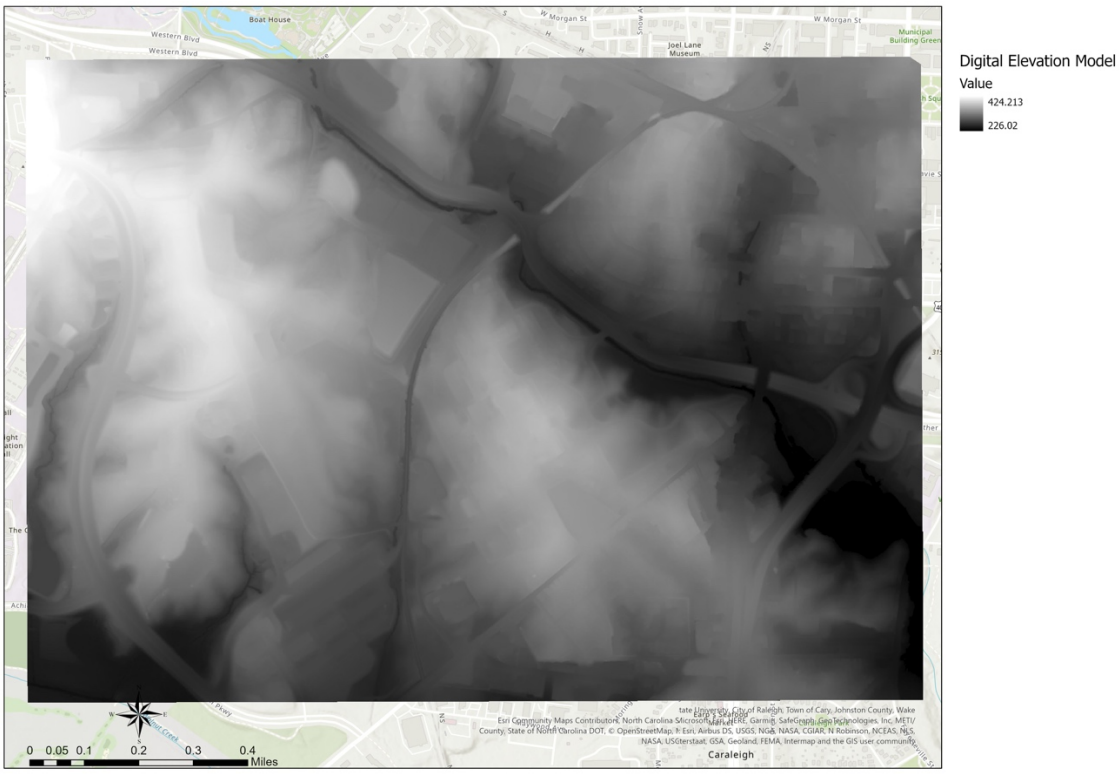
GIS MODELING

During my independent research study, I worked under the guidance of Eric Thomas, who is a Project Manager and Design Specialist at the University of North Carolina's School of Government Development Finance Initiative, the organization currently partnering with the City of Raleigh working to attract private investment for the development of Dorothea Dix Park. I chose to undertake this study in order to expand my knowledge of the architectural development process, and to create finalized architectural and GIS portfolio work. Under Professor Thomas' instruction, I first worked to compose a comprehensive GIS basemap of Dorothea Dix Park, shown below, as well as other GIS analyses using ArcGIS Pro to help me make informed design choices.

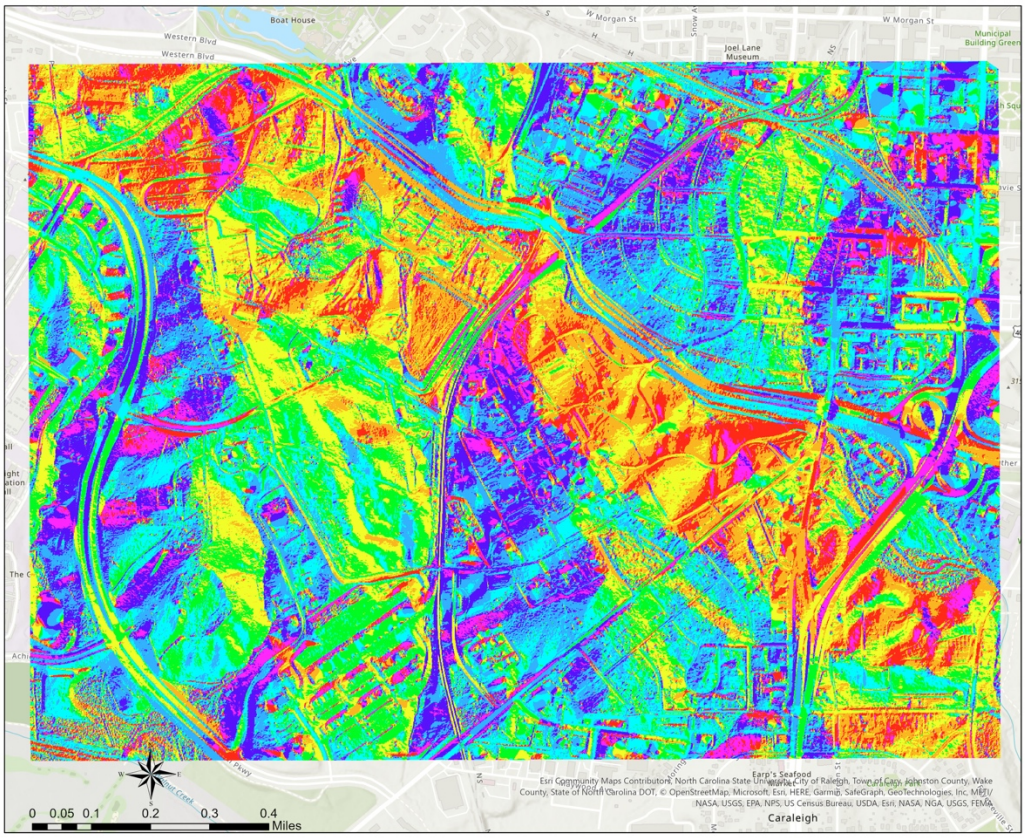


This map shows all important site element data accessed via Open Data Raleigh, including flood zones, streams, railroads, park trails and entrances, existing building footprints, and existing roads.

I also created a Digital Elevation Model, or DEM, of the park, which displays the land elevation across the site, as well as a slope model, which acts as a digital topographic map and shows the land slope variation.



Additionally, I rendered a hillshade analysis, which is a 3D representation of the terrain's surface and how sunlight will hit the land, and an aspect raster analysis, which shows which direction the land faces as the slope changes, and a vegetation height model, showing the height of vegetation across the site.

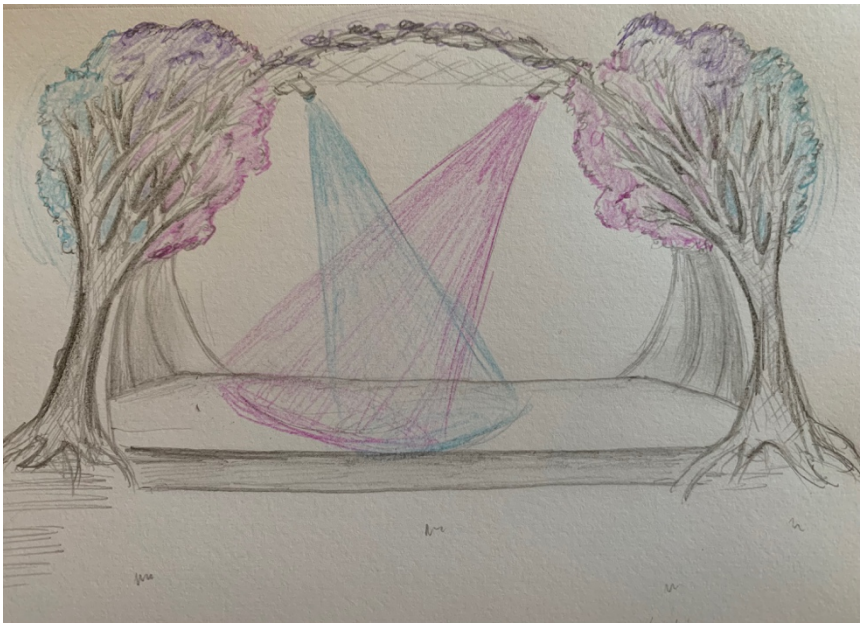

Boat House
Western Blvd
W Morgan St
Joel Lane Museum
Municipal Building Green
Earp's Seafood
Caraleigh
0 0.05 0.1 0.2 0.3 0.4
Miles
Aspect
Value
Flat (-1)
North (0 - 22.5)
Northeast (22.5 - 67.5)
East (67.5 - 112.5)
Southeast (112.5 - 157.5)
South (157.5 - 202.5)
Southwest (202.5 - 247.5)
West (247.5 - 292.5)
Northwest (292.5 - 337.5)
North (337.5 - 360)


Boat House
Western Blvd
W Morgan St
Joel Lane Museum
Municipal Building Green
Caraleigh
0 0.05 0.1 0.2 0.3 0.4
Miles
Vegetation Height
Value
-22.3383 - 5
5.00001 - 10
10.0001 - 25
25.0001 - 50
50.0001 - 3,901.95

Choosing a Site Based on Informed GIS Analyses

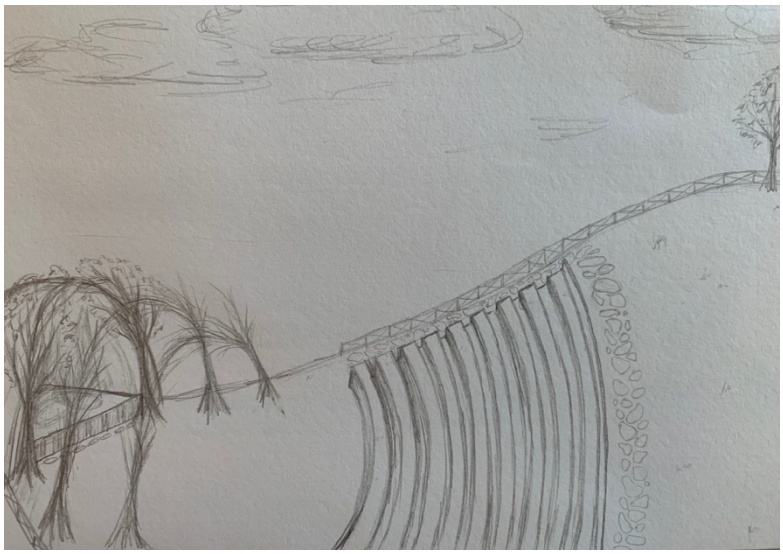
After conducting my GIS studies, I decided to focus in on the idea of designing an amphitheater in Dorothea Dix Park to act as a live music venue and outdoor event space. I also wanted to use elements of green architecture and incorporate nature as much as possible into my design in order to promote sustainability and not distract from the park's natural landscape. I chose the Grove area of the park, shown to the right, as it is already a beautiful, lush green space surrounded by trees with a strong sloping hillside that would lend itself well to having amphitheater seating built into it. Additionally, it is not directly on a flood zone and is near a park entrance, multiple GoRaleigh bus stops, and an existing greenway trail, making it an ideal location for a social gathering and concert space.

PRELIMINARY DESIGN SKETCHES



Before designing my proposed amphitheater in Google SketchUp, I decided to first sketch out my idea for the seating space and the bandshell. I researched other famous concert venues, like Red Rocks Amphitheater in Colorado, and decided that I wanted to incorporate the surrounding natural landscape in a way that makes a bold statement. Since Raleigh is known as the "Oak Tree City," I decided that my design would center around two faux oak trees placed on either side of the stage, their branches creating an arc over an arched bandshell. Ideally, these faux trees would be made of steel, and would

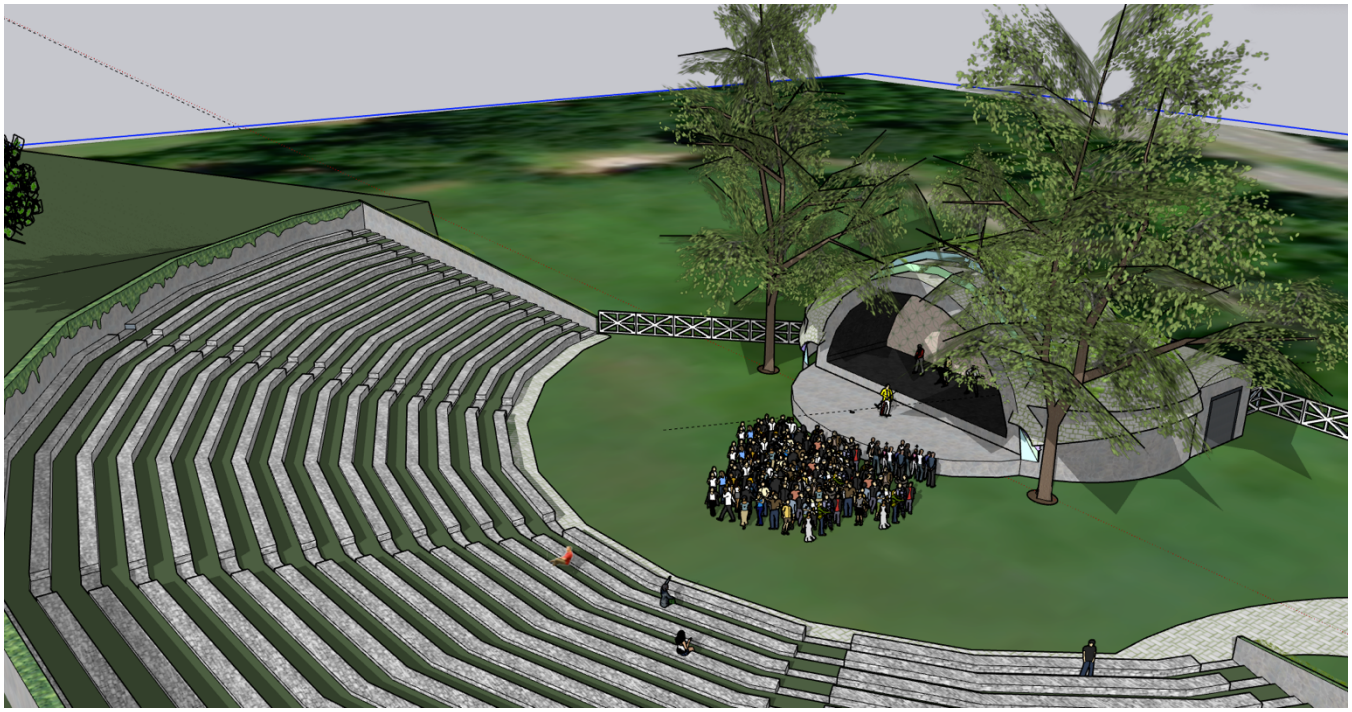
contain lighting for the stage and also have color-changing lights strung into the branches that could be programmed to enhance the lighting effects of the concert. Additionally, I wanted the venue seating to blend into the natural slope of the landscape and avoid using pavement as much as possible to minimize impervious surfaces that can block groundwater recharge zones and aid runoff in carrying pollutants into waterways. I chose to create long benches from local granite and fill in the walking areas between the benches with artificial turf that drains water efficiently. Initially, I also considered creating more faux oaks to arch out from the stage, as shown to the right, but then thought about how people sitting farther up the hill might have their view obstructed by them, so I removed that from the final design. Also, I initially wanted to have an inner general admission standing room space near the stage, followed by the stone bench seating, and then another standing room lawn space behind that, but in my actual design, I realized that the final space might require some alterations so that patrons could still have a view, which I will elaborate on more in subsequent sections.



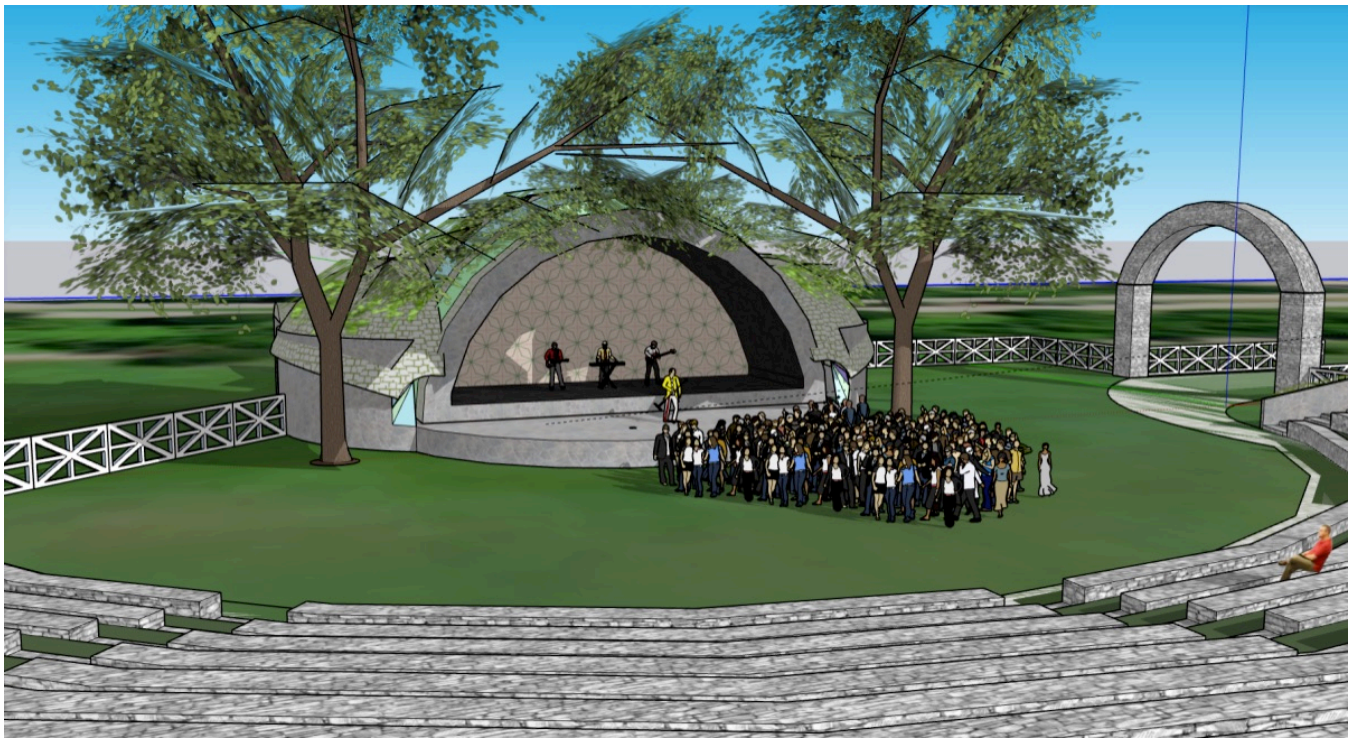
GOOGLE SKETCHUP RENDERING

I then put my ideas into action and designed my amphitheater, which I named Oaks Amphitheater, using Google SketchUp. I geolocated my base image to the Grove area of Dorothea Dix Park, and built on top of the 2D land image. It would be more difficult to build on top of the 3D terrain, but I did switch it on to build out the slope of the Grove's existing hill from 2D planes so I could see how

the seating would recess into the hillside. Below are some of my final images.



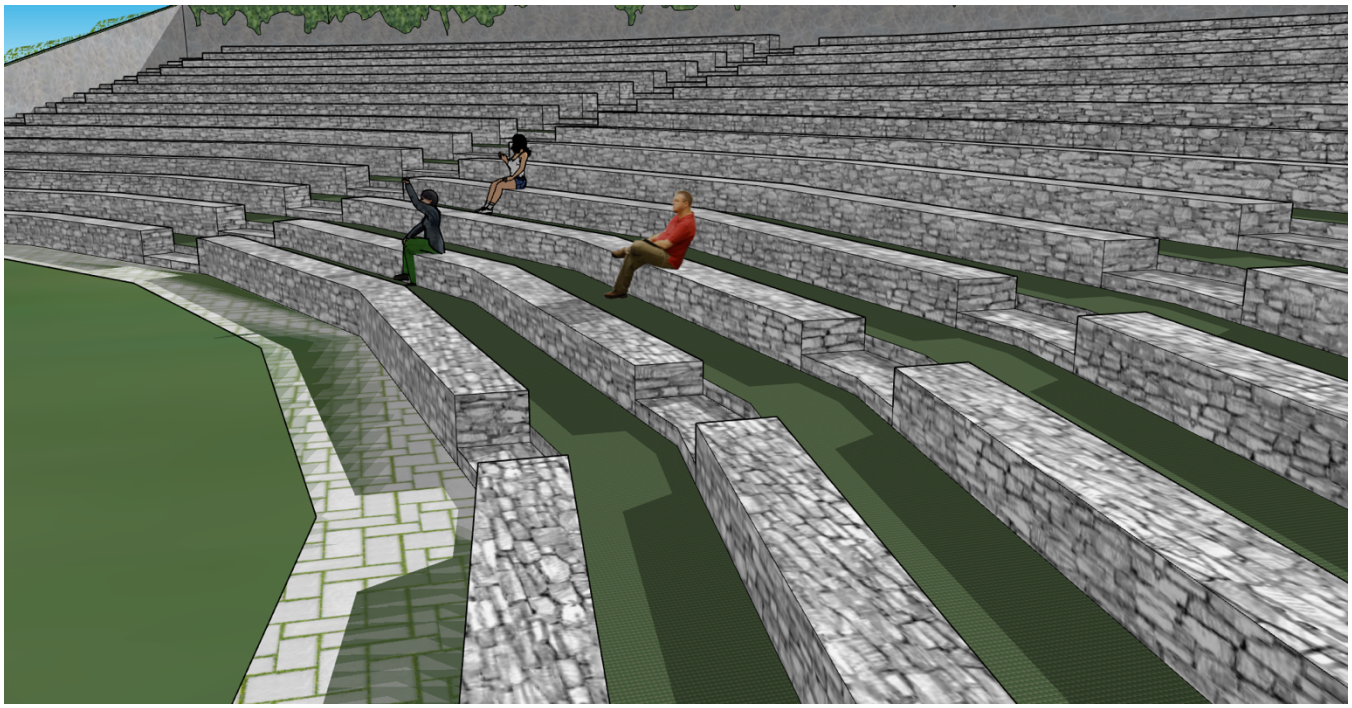
Overview of the amphitheater. The elevated area includes fifteen rows of seating in four different sections, separated by five staircases.



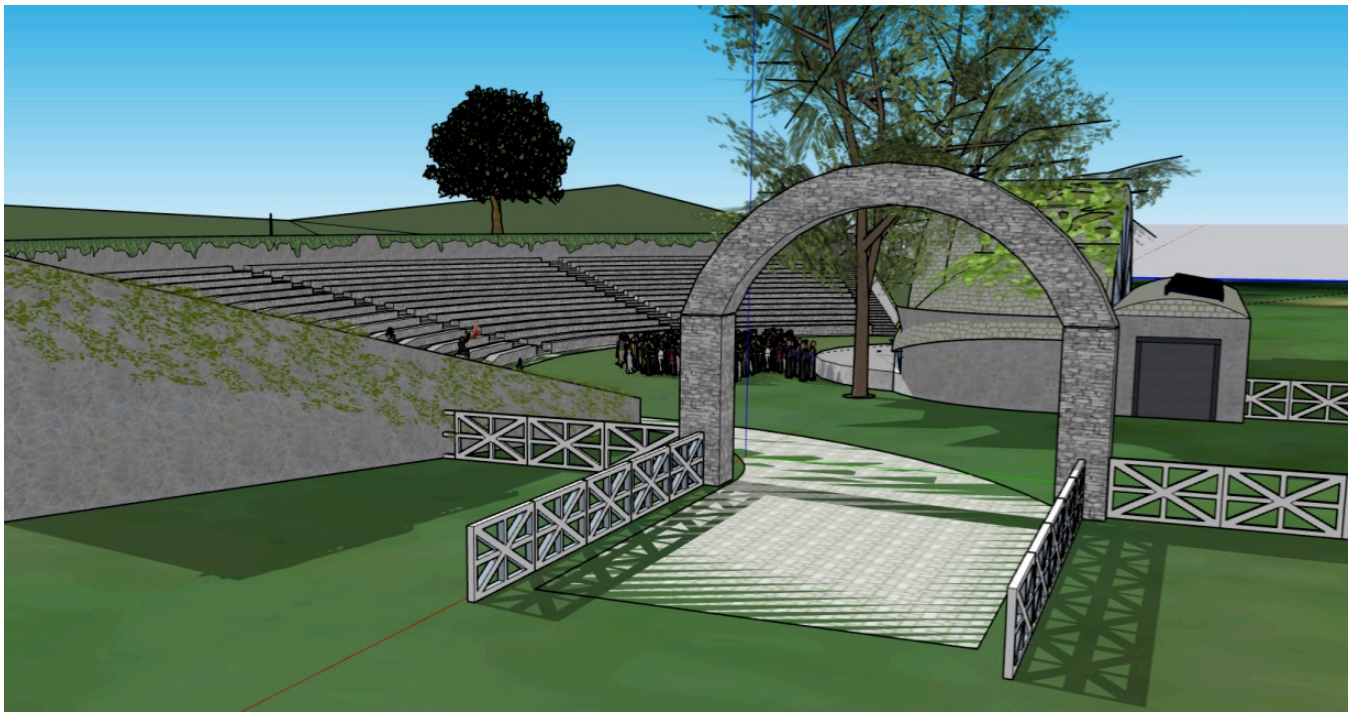
Seated view of stage from one of the upper rows.

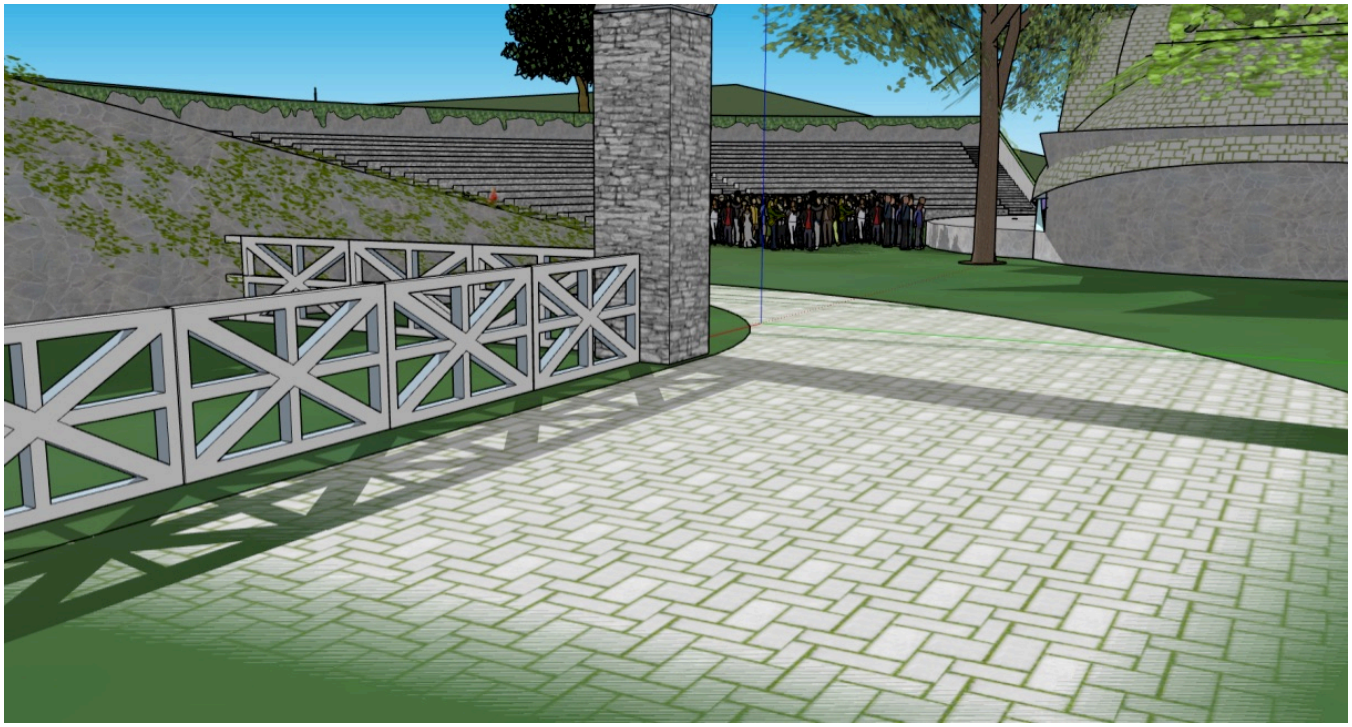
Seated view from seventh row. The bandshell is made of stone and features a two-tier stage, a large, semicircular screen behind the band, and smaller lighted screens built into the two recessing arcs on the bandshell roof (shown in green and blue). Two faux oak trees flank the stage, their branches arching overhead. In the actual design, these will be strung with lights.

View of the band from close up, in first general admission section.

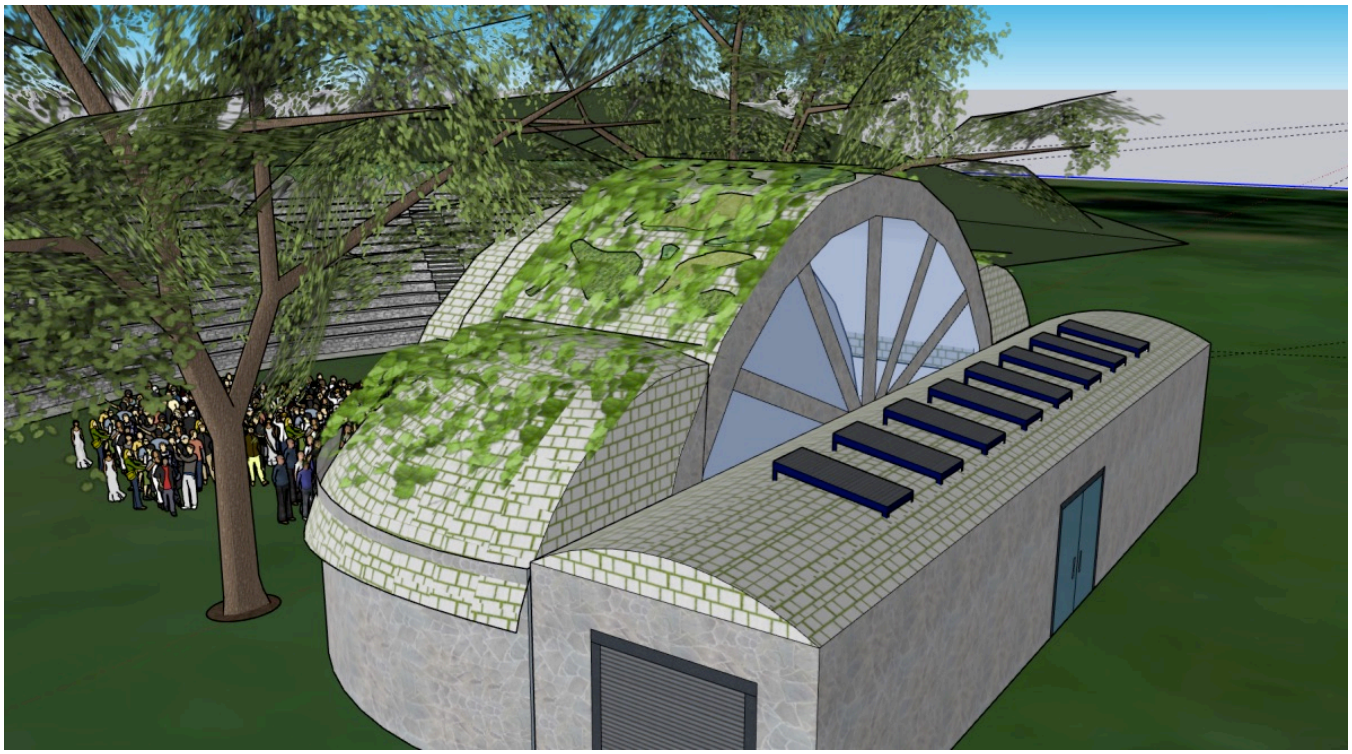


Stone bench seating and pathway. This design provides ample seating and leg room, creating a more relaxed overall feel of the venue.

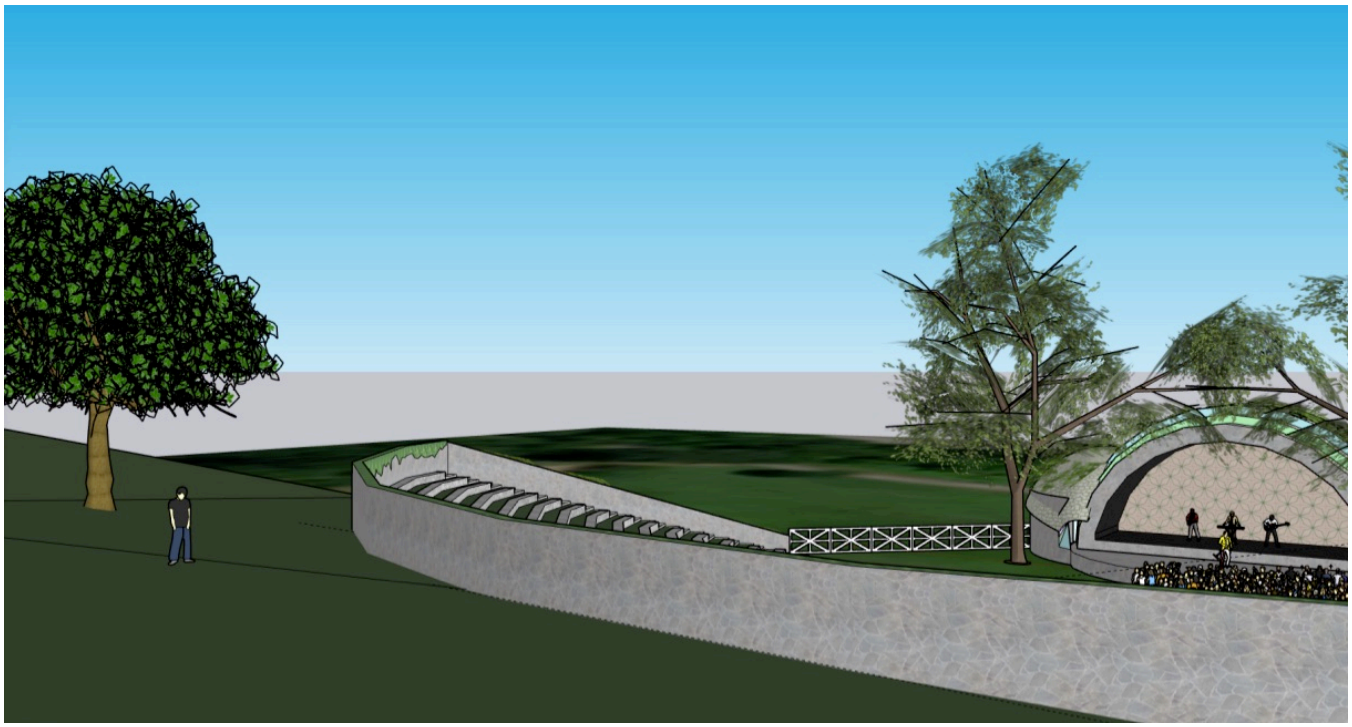


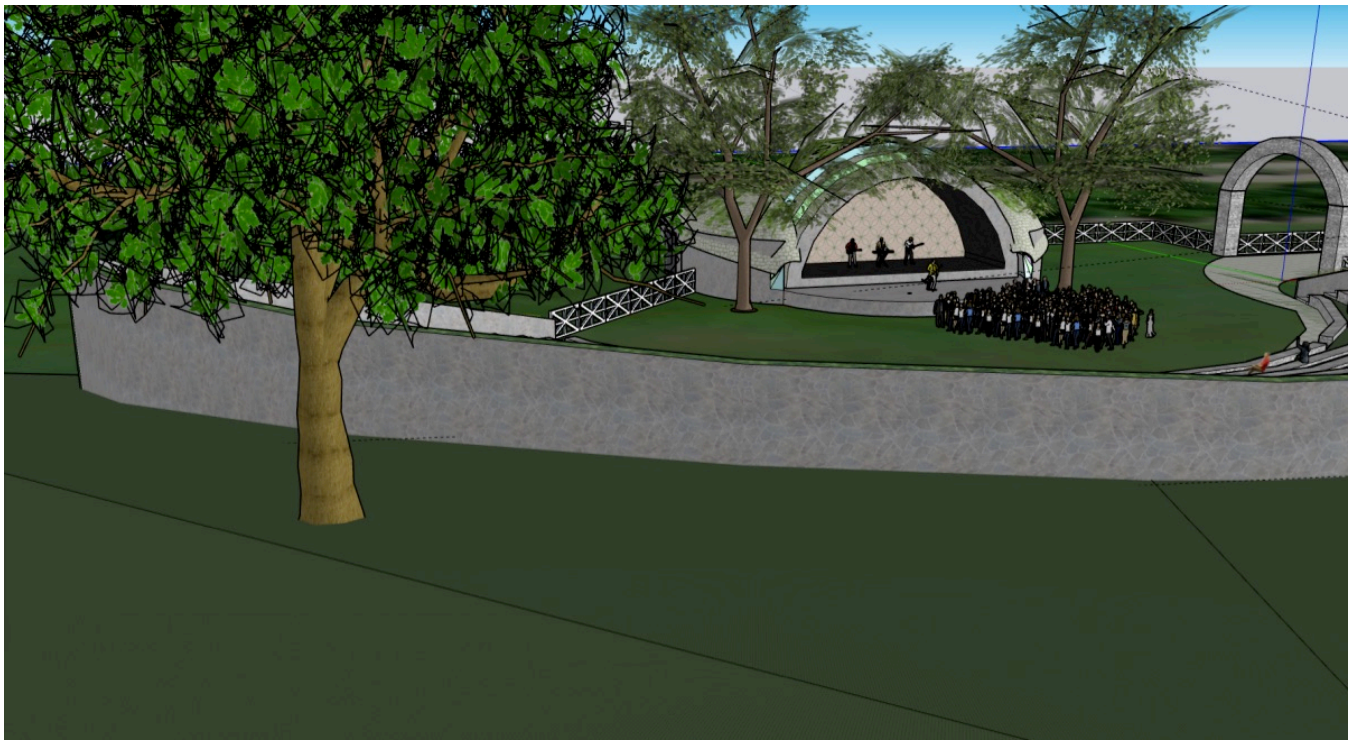


Arched entrance and pathway. This entrance is where event attendees can have their tickets scanned, and the pathway continues around the base of the seating area. I fenced off the area with a white wooden fence, and there are ivy vines growing on all walls of the seating area, both of which add to the venue's natural aesthetic.



Bandshell green roof. I wanted to incorporate sustainable architecture into my design, so first I decided to add a planted roof, with vegetation like moss and ivy on the arched area to soak up stormwater to minimize runoff, and to reduce solar UV reflection into the atmosphere from gray infrastructure. I built out hemi-domed areas on the sides of the stage for the crew and equipment that will also be planted. Additionally, I built a back area that would be an area for performers and the crew to prepare, as well as for storage, and this building would be topped with solar panels to reduce energy consumption from fossil fuels at the venue. According to my aspect analysis, most of this area faces East, Northeast, and Southeast, which is not quite as ideal as South-facing solar panels, but it can still help to offset energy usage. Finally, the large semicircular glass window is not only beautiful, but will also allow more light to enter the inner building and reduce the need for lighting during the day and extra heating during the colder months.



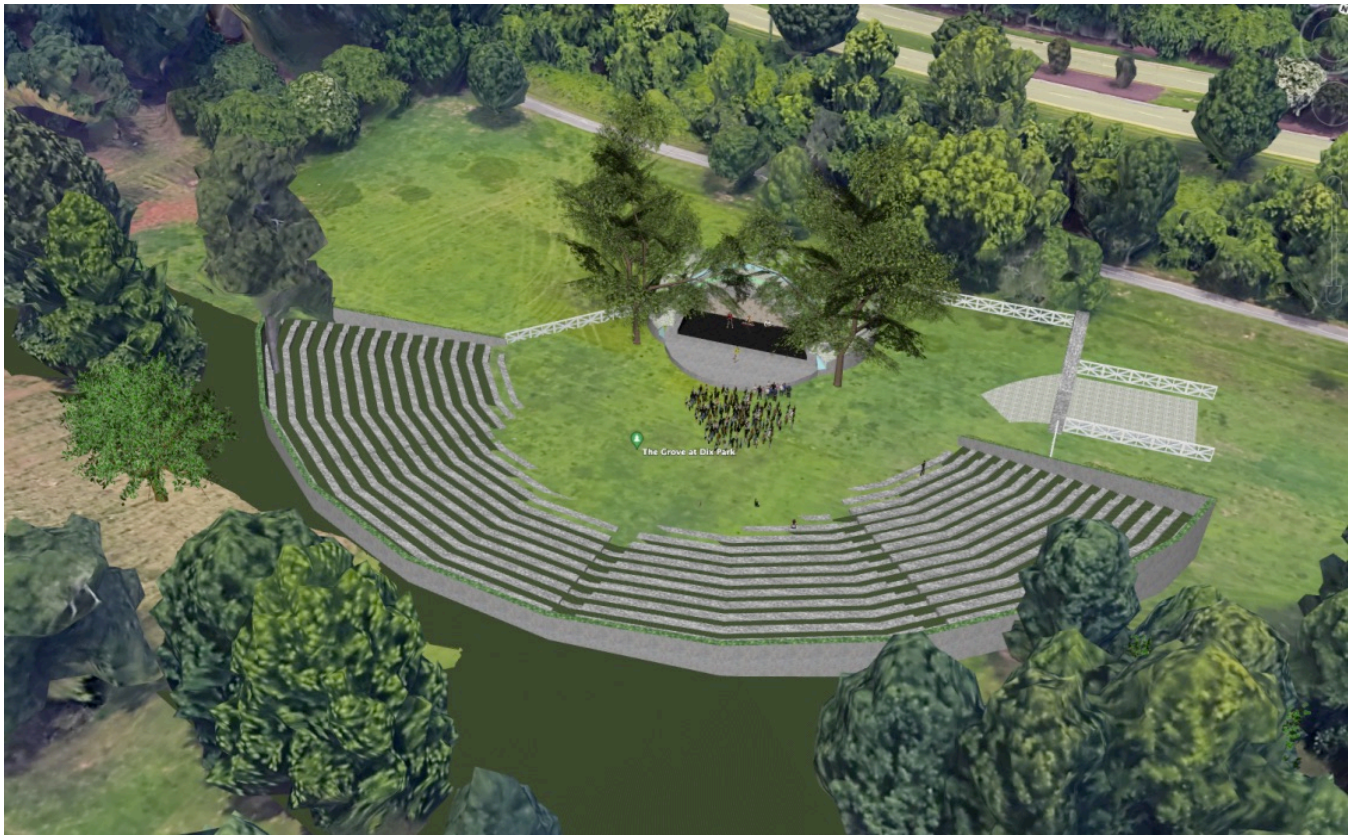


Views from behind the seating area. This region has some potential to be used as another general admission space, but the land behind the retaining wall might have to be built up a bit more to create a better view. However, the retaining wall behind the seating area is necessary so that

people sitting in the upper rows, especially on the far left and right ends, do not fall backwards and get injured.

GOOGLE EARTH PRO MODEL

Next, I exported my SketchUp model and imported it into Google Earth to be able to see the venue in context with the terrain and vegetation.



Bird's eye view. As you can see, most of the elements fit well into the terrain, except the land at the bottom of the seating area might have to be levelled out a bit, or the seating area could be built starting from a slightly higher elevation. Additionally, only one tree that appears to be protruding out of the top left corner of the seating area would have to be felled to account for an amphitheater of this size.

Views of the general admission area. The venue flows with the natural landscape very nicely and fits well alongside the surrounding trees.

FINAL THOUGHTS

I believe that this design for Oaks Amphitheater could be successfully implemented into the plans for the development of Dorothea Dix Park in Raleigh. With a few landscaping adjustments, including perhaps moving some earth from the bottom of the hill to behind where the seating area will go, this concert venue could be able to hold two separate general admission areas as well as a sizeable, yet spacious seating area. Additionally, the venue is designed to complement the landscape instead of disrupting it, as the materials used contribute to the natural aesthetic of the park, and the amphitheater is built into the existing hillside. The area will also incorporate many sustainable elements such as the bandshell planted roof and solar panels as well as the minimal use of impervious materials. Overall, this design plan for Oaks Amphitheater will help contribute to the City of Raleigh's Master Plan for Dorothea Dix Park and the city's goals of creating productive space to foster social interaction and encourage recreation in nature, as nothing brings people together like experiencing music together in a beautiful, earth-friendly space.

SOURCES

Dorothea Dix Park Master Plan : https://dixpark.org/master-plan

Raleigh Today Dorothea Dix Park History: https://raltoday.6amcity.com/dorothea-dix-park/