Spring City Kayak Launch & Amenities Design Project

Project Objectives

- Design a recreational area surrounding a kayak launch for the town of Spring City, TN.
- Evaluate existing land and conduct a soil investigation.
- Provide research and calculations for design of access road, utilities, and structures for the area.
- Determine efficient construction phasing and material selection to derive cost breakdown of entire project.

Geotechnical Engineering

- The map of a peninsula in Spring City shown above highlights the area to be used for the soil investigation as well as the boring holes that were created. After the investigation, it was determined that the soil on the location is classified as poorly graded sand.

Site Civil Engineering

- For the construction of the access road, topographical data was converted to a surface by triangulation to develop a corridor from an elevation profile and a road assembly consisting of the non-water specified by T.O.D.T. Material quantities can be obtained from the software to prepare a list of quantities and perform a cost estimate.

Water Resources & Environmental Engineering

- A bio retention area was designed according to Nashville’s Storm water management design manual. The bio retention area was designed to accommodate the water run off from the roadway and structures.

Proposed Layout

- The proposed site layout includes an access road with parking spaces, a greenway, pavilion, bathroom, and kayak launch. The layout was designed to correlate with the existing parking lot on the site area.

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Construction Engineering

- RISA3D is a structural analysis program that analyses design loads, load path, and load combinations. The pavilion was modeled and analyzed using design loads to determine if the structure was suitable for construction. Then Reif-foundation was used to design the turndown slab. Reif-foundation is connected to RISA3D to analyze the load-path of the pavilion through to the foundation.

Funding Sequence

- The construction phasing is based on available funds. This table shows the order of phases chosen for the project. Each phase has 3 steps within itself. Once each phase is completed, funds are gathered until the next phase can begin. The phasing was chosen based on necessity and priority.

Final Project Cost

- After researching several types of docks, the EZ Dock was chosen for its durability, ADA accessibility, and the low maintenance upkeep cost. It is also easy to install and has minimal environmental impact.

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