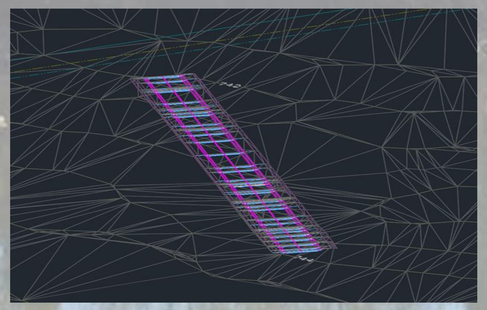
Spring City Kayak Launch & Amenities Design Project

Geotechnical Engineering

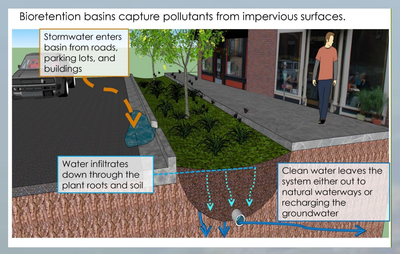
The map of a peninsula in Spring City shown above highlights the area to be used for the soil investigation as well as the boring holes that were created. After the investigation, it was determined that the soil on the location is classified as poorly graded sand.

Site Civil Engineering



For the construction of the access road, topographical data was converted to a surface by triangulation to develop a corridor from the construction of an elevation profile and a road assembly consisting of the parameters specified by TDOT . Material quantities can be obtained from the software to prepare a bill of quantities and perform a cost estimate

Water Resources & Environmental Engineering

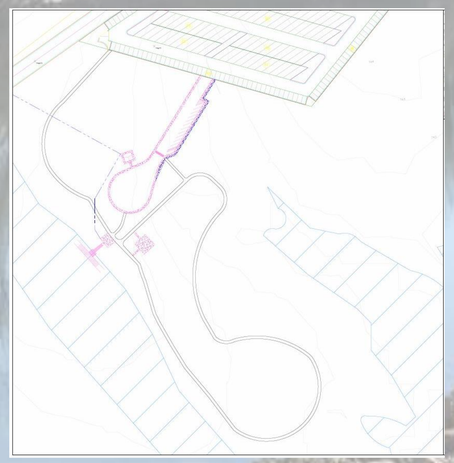


A bio retention area was designed according to Nashville's Storm water management design manual. The bio retention area was designed to accommodate the water run off from the roadway and structures.

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.

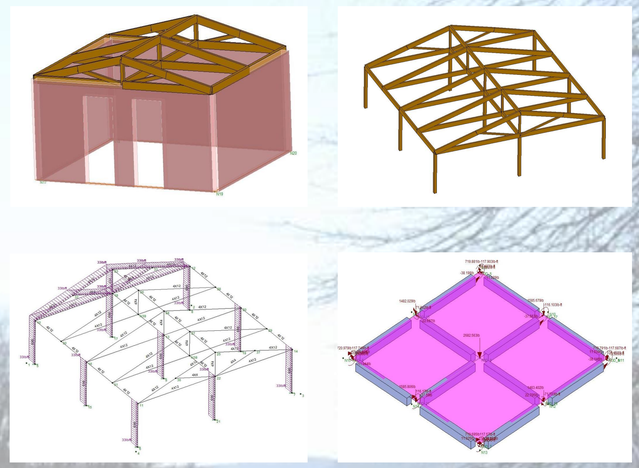
Proposed Layout



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.

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.

Structural Engineering



RISA3D is a structural analysis program that analyzes 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 RisaFoundation was used to design the turndown slab. RisaFoundation is connected to RISA3D to analyze the load path of the pavilion through to the foundation.

Construction Engineering

		FUNDING SEQUENCE		
		1	2	3
CONSTRUCTION SEQUENCE	Phase 1	Logging/clearing parking lot and path to dock	Logging/clearing greenway	Grading site area and install silt/tree protection
	Phase 2	Install EZ-Dock	Install gravel on road and parking	Install pavers
	Phase 3	Pour concrete for pavilion	Construct pavilion	Pave greenway
	Phase 4	Install septic tank	Pour concrete/ construct restroom	Pour concrete for sidewalk
	Phase 5	Pave road	Pour concrete around road	Pour concrete for launch pad
	Phase 6	Landscaping		

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: $ 294, 494