SCOUT CAMP STEAM BUILDING

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INTRODUCTION

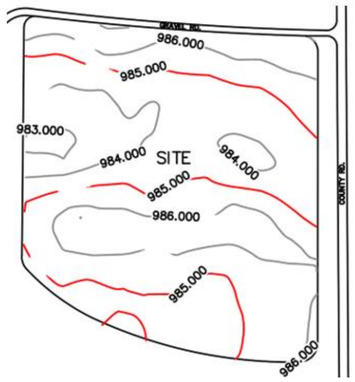
The Anthony Wayne Scout Reservation, located south of Angola, Indiana, provides a year-round camping experience with over 1200 acres of wooded land, multiple lakes, and a river available to troops and families of the Anthony Wayne Area Council. The reservation houses three camps, one being Camp Chief Little Turtle, which is the focus of this project. As the camp grows every year, there is a need for a larger structure to house their activities. A new STEAM center (Science, Technology, Engineering, Arts, and Mathematics) is proposed to handle the additional size requirements and new activities. The overall task of this project was to design a new STEAM center that will adequately house the STEAM-related activities.

EXISTING CONDITIONS

The property is an existing agricultural field with a gravel path as its northern border, trees on the west and south borders, and a county road as its eastern border. The size of the property is 9.2 acres, which consists of almost entirely farmland with no pavement, no existing buildings, and a slope of 1.5% toward the south. The current zoning of the property, which will remain the same, is Environmental Conservation or EC. This is an area where the conservation of soil, water, and vegetation is desirable for recreational use. Adjacent properties are currently zoned as LR, EC, 12, and A. A small lake is located south of the site.

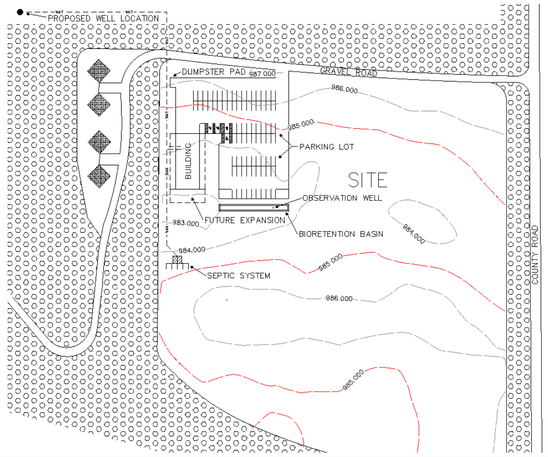
FIELD WORK

A topographic survey of the existing field and borders was performed using a TOPCON Hyper SR GPS Rover. A topographic site map was then created in AutoCAD Civil 3D to display an accurate site drawing for the site plan design. Five soil borings were also performed by hand to determine the subsurface conditions to a depth of 5 feet. For each boring, we took samples at one-foot increments accompanied by hammer blow counts obtained with a dynamic cone penetrometer (DCP). The soil consisted primarily of sand with trace clay and gravel. Groundwater was not encountered.



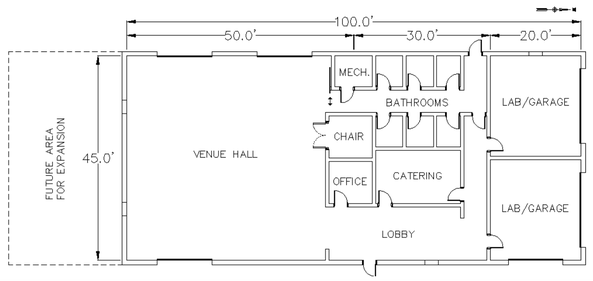
OVERALL SITE LAYOUT

The site layout design for the STEAM facility included careful consideration of the placement of the building, parking lot, bioretention basin, water well, and drain field. Through multiple iterations and discussions with the client, we developed the proposed site layout design shown below.



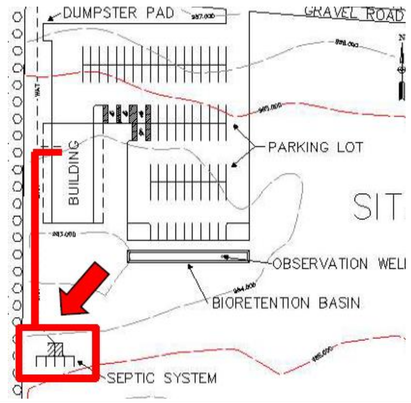
BUILDING FLOOR PLAN

Following multiple meetings with the client, a floor plan was developed as shown below. On the southernmost end, there will be an open room (Venue Hall) for big events. On the northern end of the building, two lab spaces for vehicle projects are provided. The building will also include a mechanical room, six individual bathrooms containing a toilet and a sink, a storage room, an office space, a catering kitchen, and a small lobby. There is also the possibility of future expansion of the building as shown in the figure.



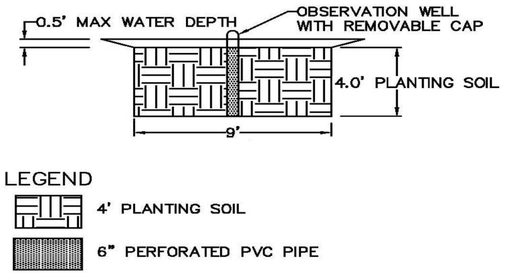
SEPTIC SYSTEM DETAIL

Initially, the client's goal was to connect the sanitary sewer from the new STEAM building to the existing wastewater system. However, we determined that the wastewater generated from this new facility would be too much for the current systems to handle. Therefore, an on-site conventional gravity-fed septic field will be needed for this project. This system will utilize two 2600-gallon tanks and 4-inch perforated PVC ASTM D 2655-12 pipes for the drain field, backfilled with gravel to allow infiltration and percolation. The system is highlighted in red below.



BIODETENTION BASIN

For stormwater management, we designed a bioretention basin that provides sustainable practices such as mitigating natural resource depletion because the basin mimics the natural process of recharging groundwater aquifers through infiltration. In addition, a bioretention basin provides removal of pollutants from the parking lot to avoid contamination of the surrounding agricultural field and groundwater. It will also have aesthetically pleasing features. The cross-section of the bioretention basin and some typical plantings are shown below.



Typical Bioretention Basin Plantings

CONSTRUCTION COST

The following approximate costs were estimated based on values from the 2010 RSMeans Heavy Construction Cost Data, 2019 ENR Square Foot Costbook, and 2022 RSMeans Building Construction Costs. Costs shown below may vary based on supplier and time of purchase. The total construction cost was estimated to be approximately $734,177.

Item	Total Estimated Construction Cost
STEAM Building	$596,290
Utilities	$37,400
Site Work	$100,487
Project Total Estimated Construction Cost	**$734,177**