

## INTRODUCTION

The Fishing Line Trail is a popular trail that traverses through portions of Kendallville, Indiana. Currently, there is no trailhead for people to park cars or for users to stop for a break and use a restroom. The purpose of this project was to design a new trailhead to provide easy access to the trail while also providing a recreational space for the surrounding community. The photo below shows the site selected for the trailhead in red, with the trailhead just to the north.



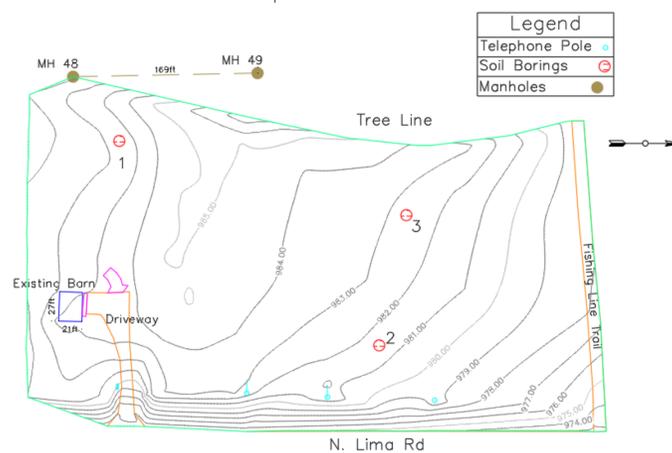
## EXISTING CONDITIONS

The site currently consists of approximately 2.1 acres of land, most of which is covered by grass and a former corn/soybean field. There is currently a driveway on the south end of the property consisting of both gravel and asphalt. A barn is also located at the south end of the property and is what remains of a house that burned down. The current zoning for the property is R1 (Residential), which will not need to be rezoned for the proposed trailhead. The two adjacent properties of concern are the trail to the north, which is incorporated into the design of this facility, and the Carriage House Apartments to the west. A closeup of the site is shown below.



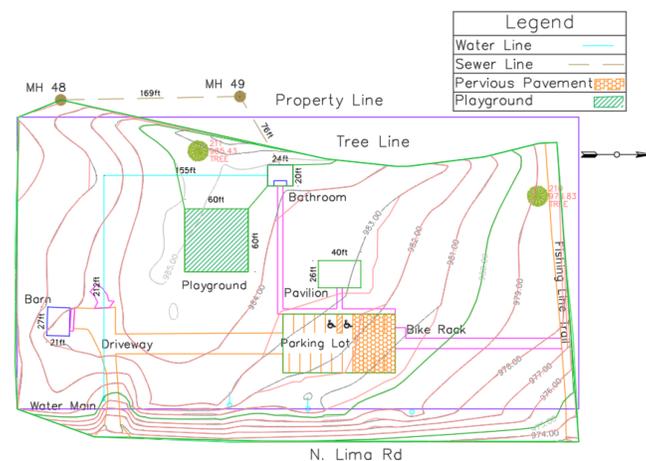
## FIELD WORK

A topographic survey was performed to obtain current ground surface contours and existing site conditions. Shallow soil borings were also performed to a depth of 5 feet for pavement design purposes. The soils at the site were found to consist of lean clay and silty sand. Groundwater was not observed to a depth of 5 feet. The topographic map of the site is shown below. Note that north is to the right.



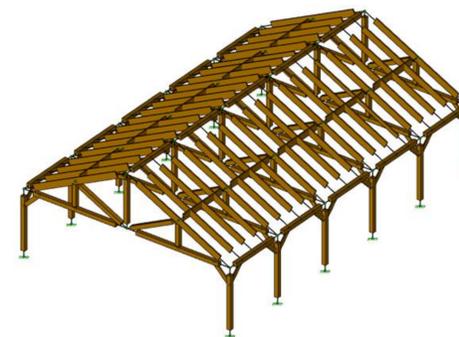
## PROPOSED LAYOUT

Several iterations were performed to develop a layout of the site and discussed with the client. The final layout is shown below and consists of a timber pavilion, restrooms, a playground, and a parking lot. Note again that north is to the right.



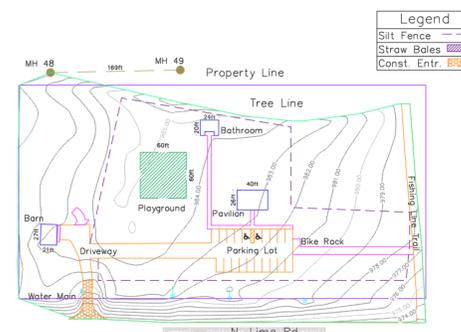
## PAVILLION

The pavilion was designed using Douglas Fir-Larch NO. 2 species. We used the American Society of Civil Engineering (ASCE 7-10) code and Design of Wood Structures Manual which has references to the National Design Specifications (NDS) code. These codes enabled us to find the loads and appropriate members for the final design. The computer program RISA 3D was used to calculate the wind loads and perform structural analysis. The pavilion will have twelve 6x6 inches columns, the beams connecting the columns will also be 6x6 inches, the ridge board connecting the rafters will be 2x10 inches and the purlins will also be 2x10. A 3D rendering of the timber framing is shown below.



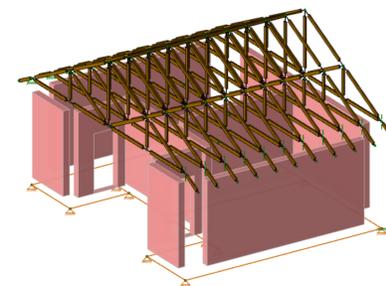
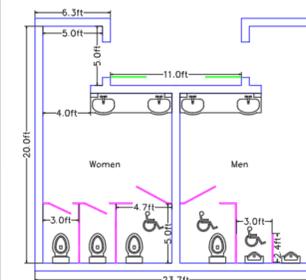
## EROSION CONTROL

Sediments and contaminants must be contained on the site during and after construction. The erosion control plan is based on 200 IAC standards. During construction, the site will utilize silt fences, straw bales, and a construction entrance as shown. Following construction, exposed soil surfaces will be sown with seed to prevent erosion and allow for an open space for recreation. A drawing showing the recommended erosion control is shown below. North is toward the right.



## BATHROOM

The floor plan of the bathroom was determined based on the ADA requirements for a small bathroom. The bathroom was designed with two materials, standard 8 x 8 x 16 concrete masonry units (CMUs), and Douglas Fir-Larch NO. 2 timber. Masonry was used for the walls of the bathroom, and timber was used for the roof. For masonry design, we used The Masonry Society (TMS) 402 as the code, which itself referred to ASCE 7-10 for loading. RISA 3D was used to calculate the wind loads and perform structural analysis. The roof was designed as a series of ten Howe trusses, spaced at 2 feet off center. The roof will be made of standard asphalt shingles. The floor plan and 3D rendering of the bathroom are shown below.



## CONSTRUCTION COST ESTIMATE

The following approximate costs were estimated using the 2022 RSMeans Building Construction Costs data. The costs shown below should be re-evaluated at the time of construction, especially the cost of the parking lot.

Total Construction cost	
Bathroom	\$24,234
Pavilion	\$19,219
Parking Lot	\$4,521
Playground	\$10,000
Others	\$15,210
<b>total=</b>	<b>\$73,185</b>