

## INTRODUCTION

GSS-L wanted to make it easier and safer for the senior citizens of Angola, Indiana, and the surrounding area to enjoy a stand-alone senior center. Along with a safer and more accessible layout, GSS-L wanted to provide enough space within the transportation garage for the required number of vehicles as well as an efficient means to travel to and from the property. Star Transportation provided GSS-L a list of requirements for the transportation garage. The garage needed to be able to house 8 vans and 3 transit busses, it must have 3 garage doors (2 for exits, 1 for entry), and there must be room for a 12' by 22' storage loft.

## STRUCTURAL DESIGN

The structural design of the transportation garage was done from a "top-down" approach. This meaning the design started from the roof, with the design of the truss including: wind loads, snow loads, and roof live loads. Then next came the beam design considering the loads of the truss as well as internal beam loads. Followed by the design of the columns supporting the forces from both truss and beam. Finishing with the design of the foundation of the walls supporting the entire structure and the foundation of the interior of the transportation garage supporting the load of the transportation vehicles.

## SURVEY

The one and only trip to the field was completed to gather whole site data. This included topographical data used for stormwater management, and any obstacles for the site. The only obstacle being a sidewalk running along East Maume Street. Equipment used included one GPS rover used for shots-on-ground for the topographic survey as well as a data collector unit used in conjunction with the GPS rover.

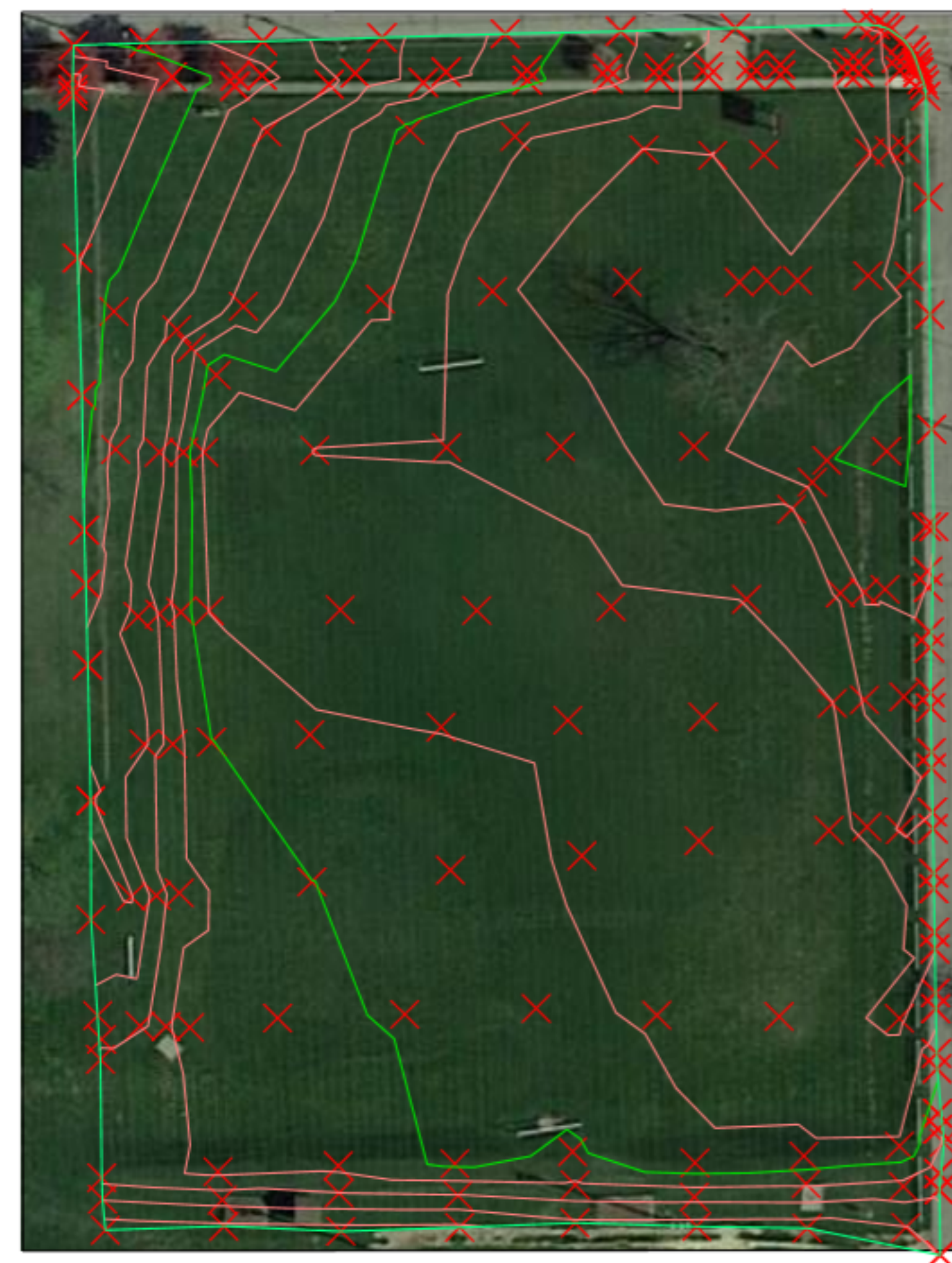


Figure 1: Point Cloud Generated from Survey

## SITE DESIGN

The location of the site was classified as a Commercial 1 (C1) Zone as per Angola Municipal Code. Once the zone was classified, the amount of parking spaces could be calculated. The Angola Municipal Code Title 18 dictates the types of zones and their respective standards and uses. The parking standards for a C1 zone require a minimum lane width of 24' with parking spaces a minimum of 9' wide by 18' long for 90 degree parking. The design calls for the minimum values for each standard. No other scenarios were considered. The minimum amount of parking spaces requires 1 space per 3 persons of maximum occupancy for club land use according to Angola Municipal Code Title 18. With an estimated maximum occupancy of 100 persons and adding 1 spot to account for errors in estimation, a total of 34 parking spaces was calculated. ADA requirements call for a minimum of 1 handicap space and 1 van-accessible handicap space for 34 total spaces. However, considering the people using the facility being senior citizens, a total of 6 handicap

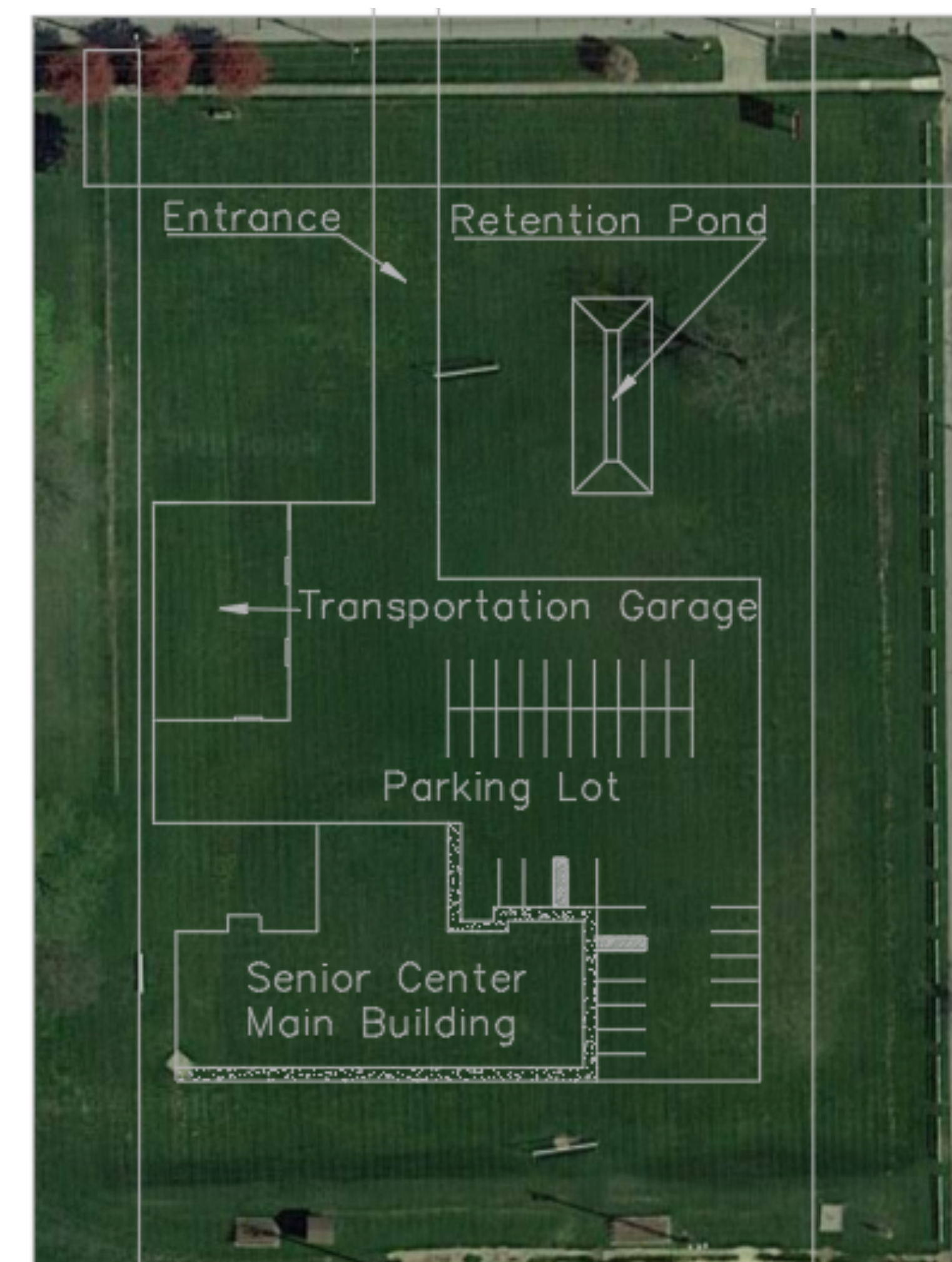


Figure 2: Final Site Layout

## COST ESTIMATE

The first part of construction is establishing a level base by grading the landscape. This will be completed for the entirety of the site. We estimate the size of the lot to be approximately 67,000 square feet. The cost estimate for grading only includes labor and equipment rental. According to Home Advisor, the median cost for a small lot to be graded is \$0.50 per square foot. Therefore, the cost for grading is approximately \$33,500.

The parking lot on the site is approximately 32,000 square feet. According to ProMatcher, the cost of paving a new construction parking lot ranges from \$2.25 to \$3.00 per square foot. This includes labor and materials. For our estimate calculations, we used \$2.50 per square foot to estimate a cost of \$80,000.

The Transportation Garage was estimated for the construction (garage and foundation), labor, and materials. Air Fixture estimates commercial garages to cost \$16 to \$20 per square foot. If the garage needed additional finishing, the cost might increase to \$30 per square foot. However, the design of the transportation garage is fairly simple with a typical loft storage. Therefore, we estimated the cost of the detached garage to be \$20 per square foot. The garage will have a total square footage of 4,000. This makes the estimate for the transportation garage to be \$80,000.

## CONCLUSION

We believe the senior citizens of Steuben County deserve to have a safe, fun, and sociable place to gather around. The current senior center does not provide enough activities and could potentially have more participants if it were bigger and provided more opportunities. Providing good sustainability to buildings, parking lot, and the green space around the building is essential to a sustainable senior center. Finally, we are proposing a new senior center to replace the current senior center that is in the basement of the Steuben County Health Department. In our efforts, we will have the following goals: (1) Provide a safe spacious facility to the elderly, (2) design so we can provide no water run-off, (3) make the project as economical as possible, and (4) design to make the project as sustainable as possible.