



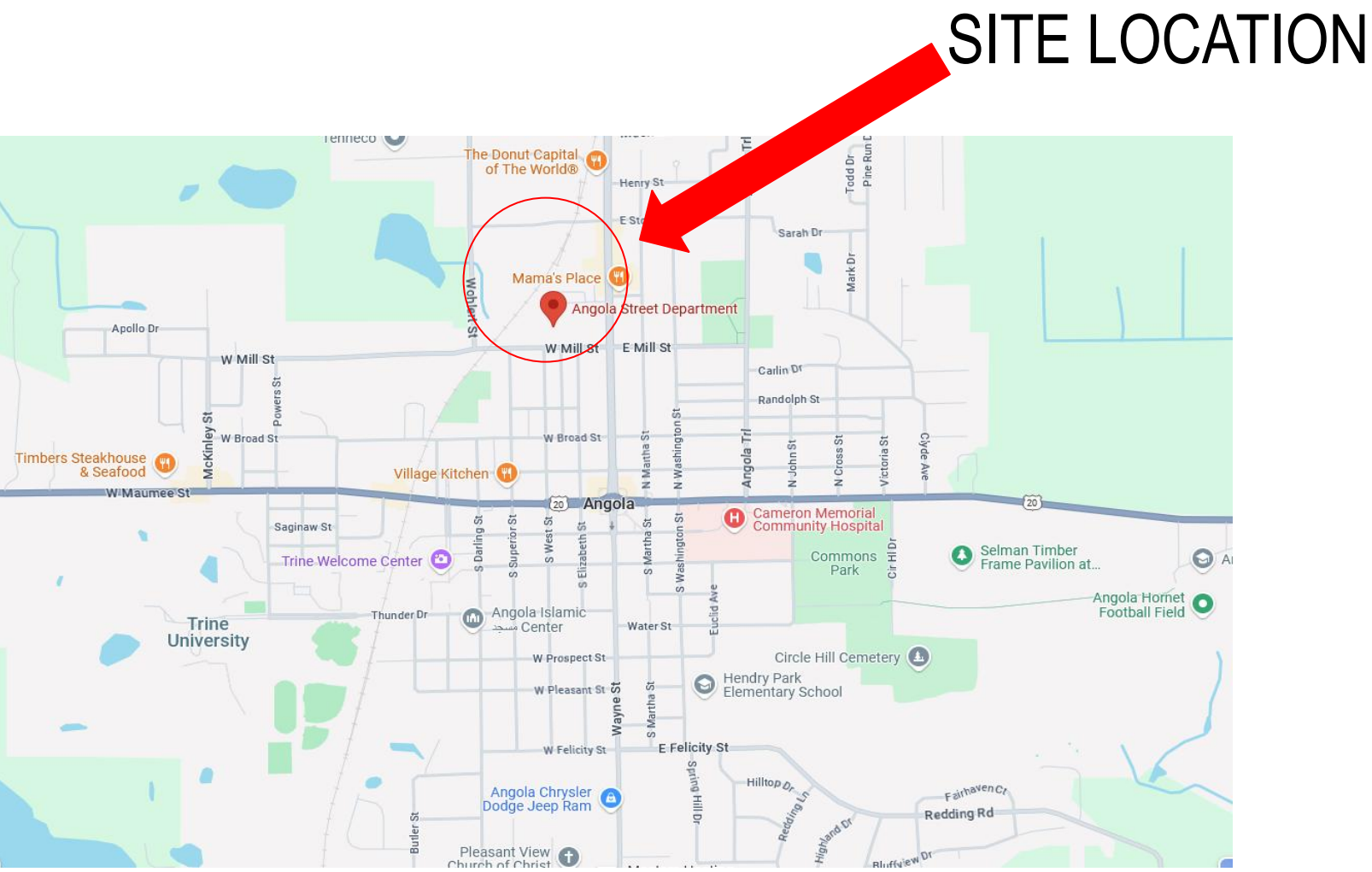
# Angola Streets Department Salt Storage

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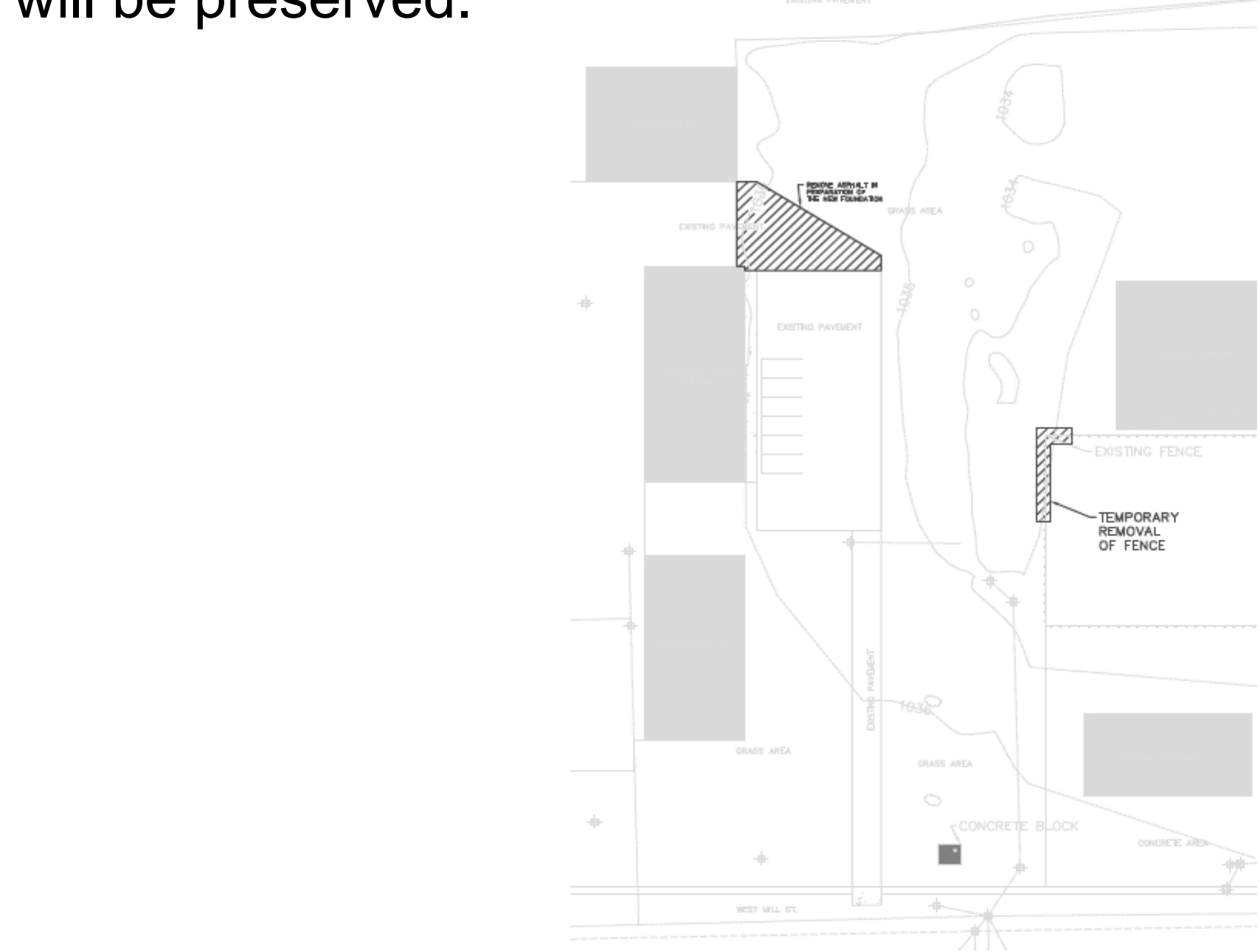
## INTRODUCTION

The City of Angola has requested a new salt storage facility to replace its outdated wooden structure and meet growing demands for winter road maintenance. The proposed facility, located in Steuben County, Indiana, will store up to 900 tons of salt and accommodate large trucks.



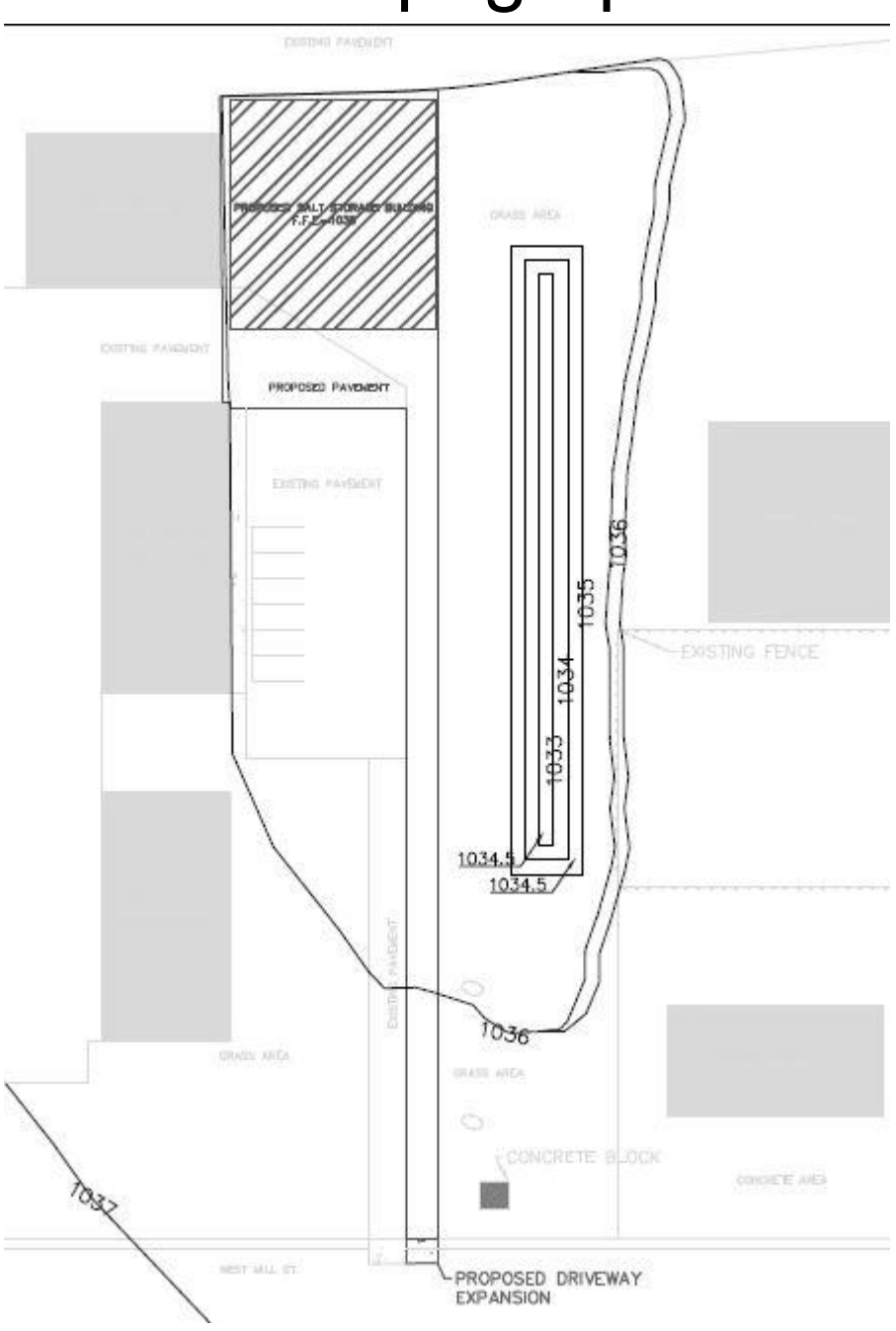
## EXISTING CONDITIONS/DEMO

Approximately 1,572 sq ft of asphalt pavement will be removed to accommodate the salt storage building foundation. The existing parking lot, driveway, and path will remain, with six parking spots preserved. A fence along the east property line will be temporarily removed for grading. The driveway will be expanded but not removed. Existing buildings (grey boxes) and a concrete block sign will not be touched. Two trees will remain, as they do not interfere with construction. Stormwater grates and drains will be preserved.



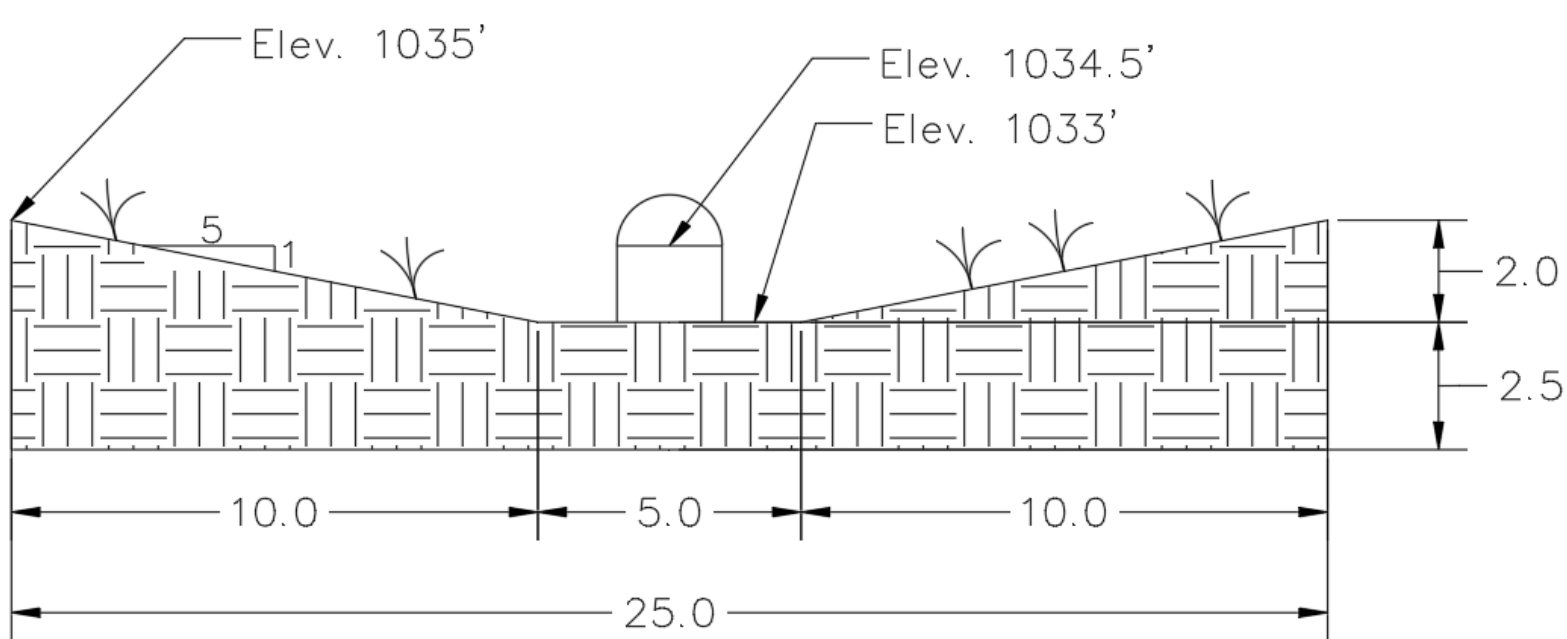
## FIELD WORK

The site was surveyed using a GPS Topcon system, capturing 315 points in a 15' x 15' grid. The survey included the building area, pavement, driveway, and parking areas for expansion, mapping key features like trees, poles, drains, and manholes. Data was imported into Civil 3D to create a detailed topographic map for site planning.



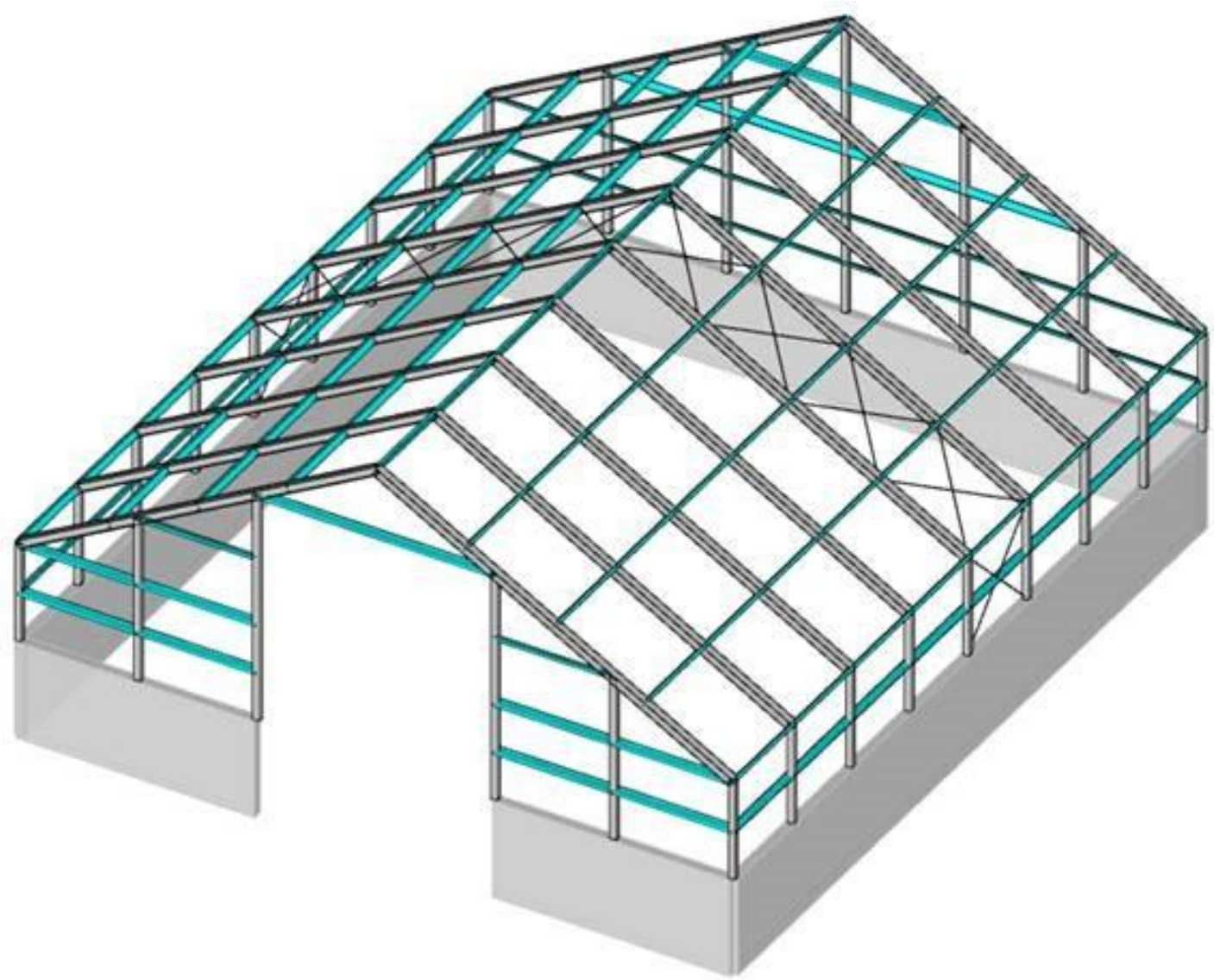
## STORMWATER MANAGEMENT

To manage stormwater runoff, a Low Impact Development (LID) approach was used. A vegetated swale was designed to treat runoff from the new impervious areas. The swale slows water flow, promotes infiltration, and filters pollutants using native, salt-tolerant plants. A Rational Method analysis was used to make sure the peak flow did not exceed the capacity of the overflow structure. The swale meets Angola's stormwater standards and provides sustainable, low-maintenance drainage to protect nearby infrastructure and natural resources.



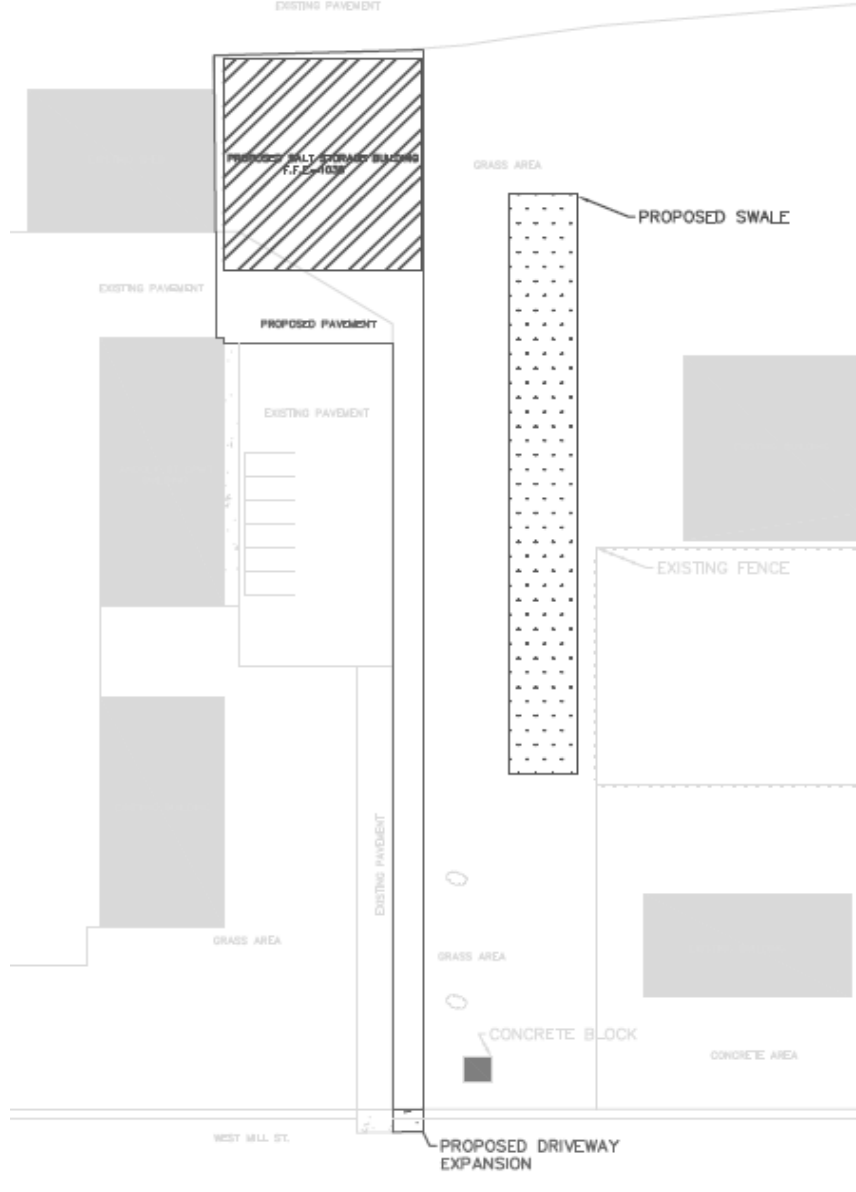
## SALT BARN

The proposed salt barn will be a 72' x 80' prefabricated fabric structure mounted on 10-foot reinforced concrete walls. The building is designed to store up to 900 tons of road salt. The structure includes a 24' x 33' main entry door. A stainless-steel frame will support the fabric membrane, providing long-term durability and resistance to corrosion caused by salt exposure. The building design was performed using RISA 3D and is shown below.



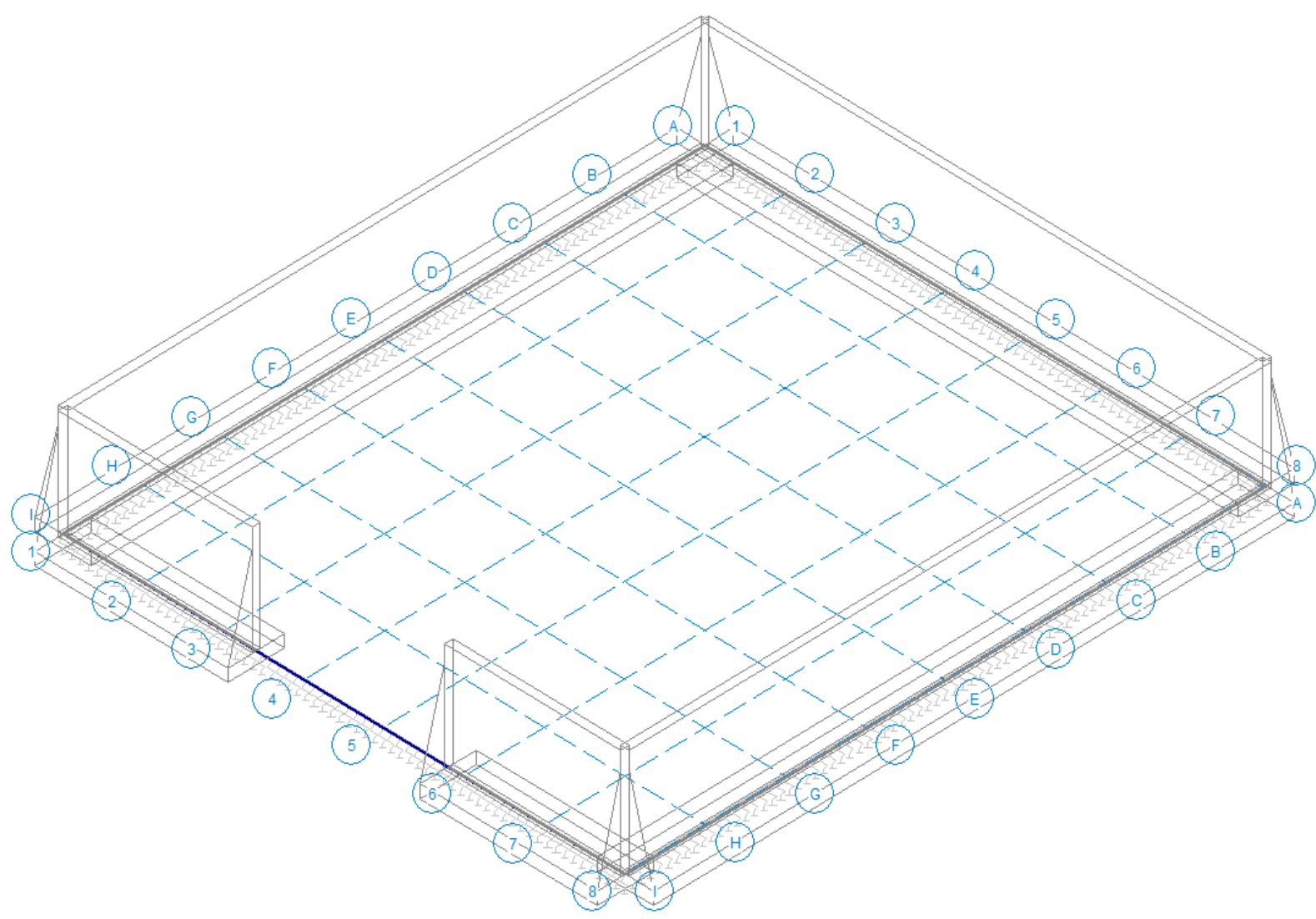
## PROPOSED LAYOUT

The salt storage building will be located in the northern area of the site. The parking lot and driveway will be expanded, nearly doubling the existing asphalt. Concrete expansion will be added along the driveway for better access. A new swale will be constructed for efficient stormwater management and drainage.



## FOUNDATION DESIGN

.The foundation includes 13' tall reinforced concrete retaining walls on 7' wide strip footings, designed in RISA Foundation to resist lateral pressure from stored salt. Walls are embedded 3' below grade per frost depth standards. A 12" thick sloped slab supports 900 tons of salt in the rear and heavy equipment in the front. Reinforcement meets ACI 318 and was optimized through iterative modeling for strength and serviceability.



## FINAL COST ESTIMATE

Sidewalk	Erosion and Siltation	Soil Movement
\$ 20,108	\$ 4187	\$ 111,604
Demolition	Tanks	Miscellaneous
\$ 5,753	\$ 145,974	\$ 393,724

Final Cost	
Total	\$ 681,349.79
10%	\$ 749,484.77
Contingency (4%)	\$ 779,464.16
City Indices (.882)	\$ 687,487.39

\$687,500