

INTRODUCTION

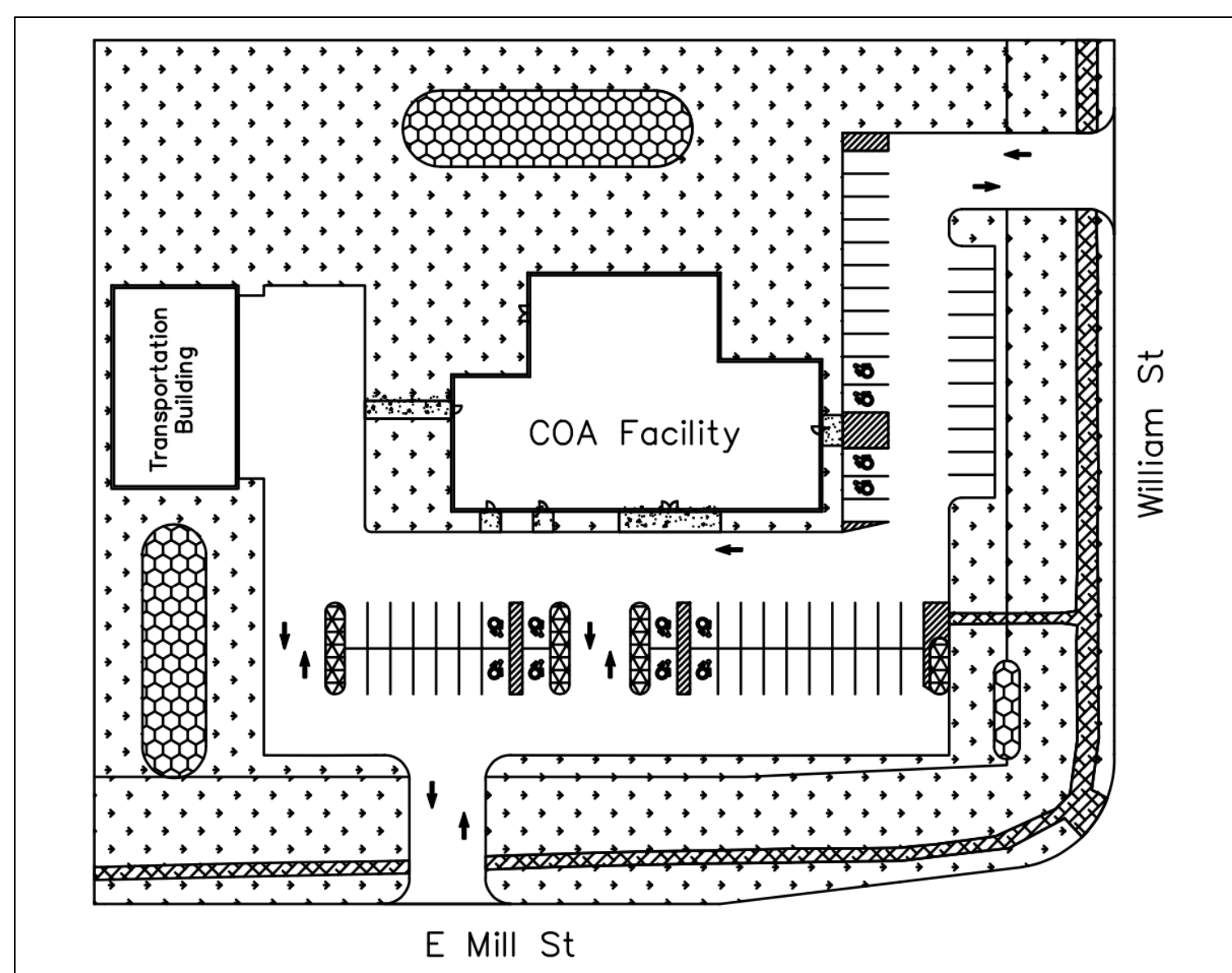
The Steuben County Council on Aging is currently located in the lower level of an outdated county building, which is inaccessible and sometimes hazardous to the senior community it serves. The COA is also required to lease space during harsh winter months to shelter the vehicles of their STAR Transportation fleet.

Our design project is the relocation and redesign of the Steuben County Council of Aging in Angola, Indiana. A new parking lot will be designed that is solely dedicated to the COA facility and will be much closer to the main building. The new COA site will have a transportation storage facility on site. This building will house the 13 STAR vehicles and provide a full wash-bay to maintain the fleet.



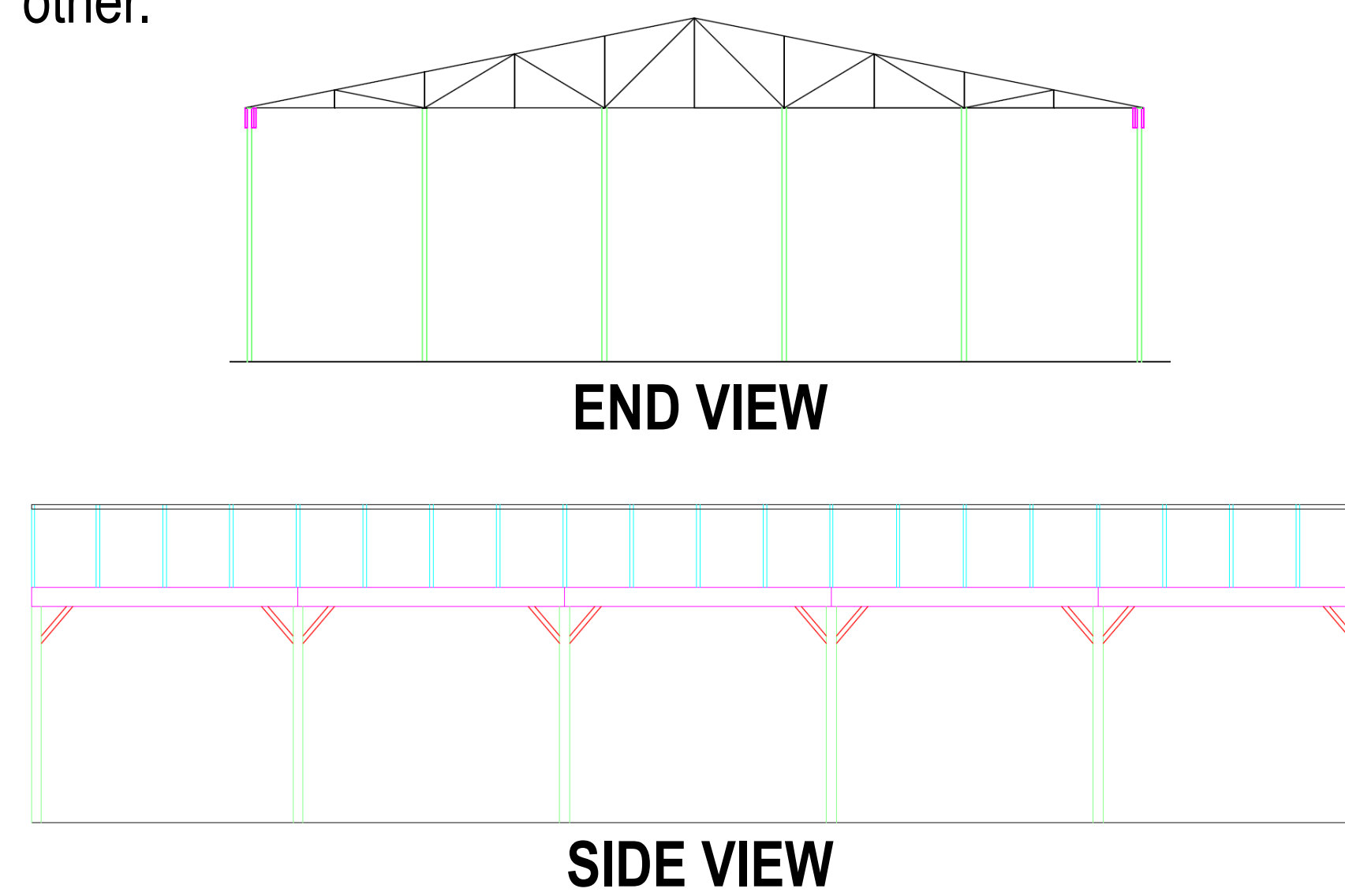
SITE LAYOUT

The required 50' setback from the road was maintained. For ADA compliance, we designed our sidewalk with a width of 8 feet. The COA Facility has 10,000 ft², so we must have a minimum of 35 parking spaces. In our design we have a total of 63 parking spaces. The parking lot design will comply with the 2010 ADA parking standards by having 38 handicap accessible parking spaces.



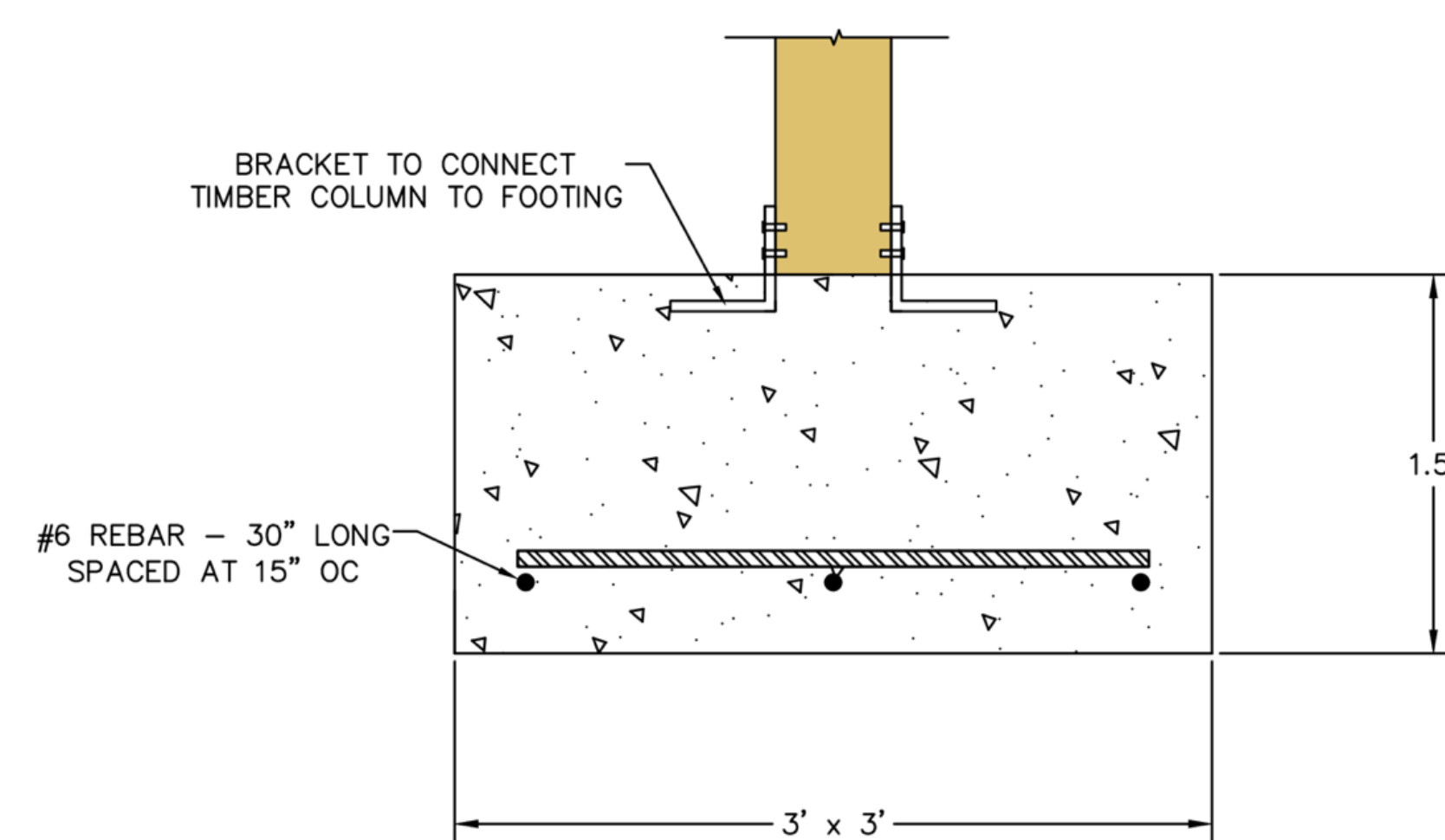
STRUCTURAL DESIGN

The COA transportation facility will be a storage garage used to provide shelter for the STAR Transportation vehicles. Its dimensions were predetermined by the COA to be 50 ft. wide and 80 ft. long. There will be five (12 ft. x 12 ft.) overhead garage doors used in the design. The design draws heavily upon typical pole barn structural systems which were studied in detail. Our design procedure will consider three main subsections. These are truss design, beam design and column design. Special attention was also paid to how the geometry of the overall structure and how each of these members will transfer loads to each other.



FOUNDATION DESIGN

The transportation facility will utilize a total of 20 columns, that will each transfer an axial load of 22.3 kips to the attached footing. Footings will be founded at 3 ft. deep (frost depth) to negate the damaging effects of frost action. Per the soil boring report, a net allowable soil bearing capacity of 2000 psf was used. We chose to use square footings for our design. These were sized to meet an adequacy check considering factored shear force from the column load and the nominal concrete shear strength.



HYDRAULIC DESIGN

Our hydraulic design considered only stormwater management and the implementation of low impact design (LID) in these management systems. Per the Angola code, sites that are being developed must compare pre-construction and post-construction runoff volumes. Adequate detention measures must be implemented to meet the requirements of the Angola code.

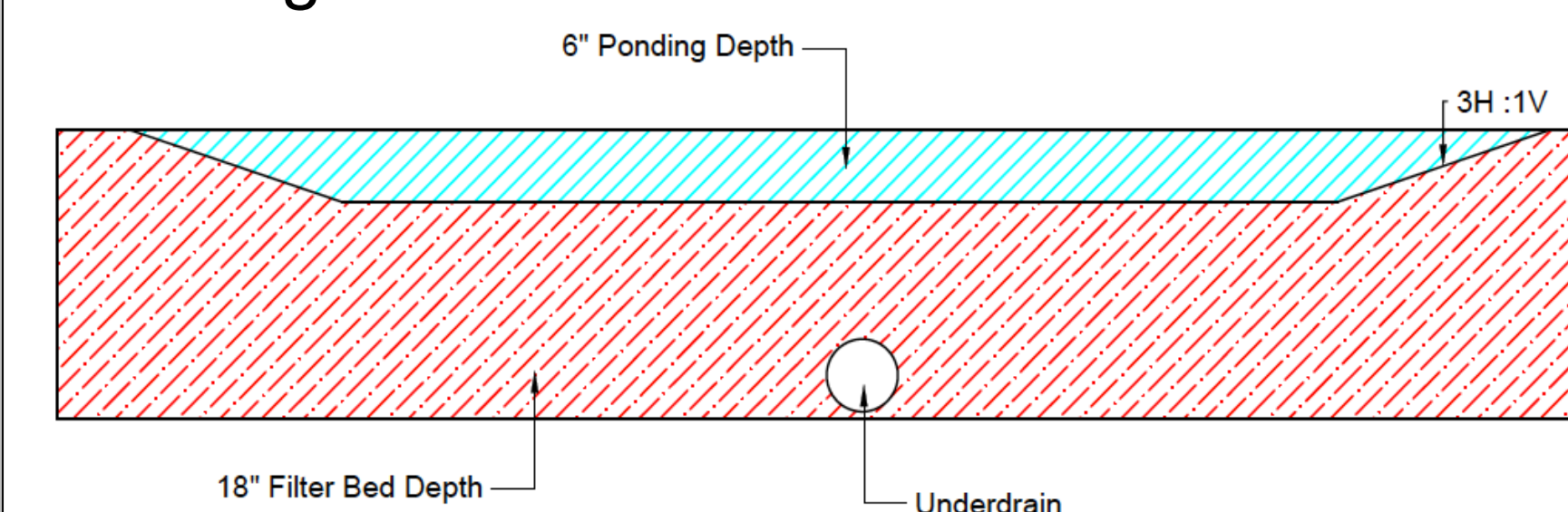
EROSION CONTROL

The site was analyzed to determine low points which could be at risk of ponding. In accordance with the EPA Best Management Practice, 1000 ft of silt fence will be placed in J-hook shapes as detailed in the map below.



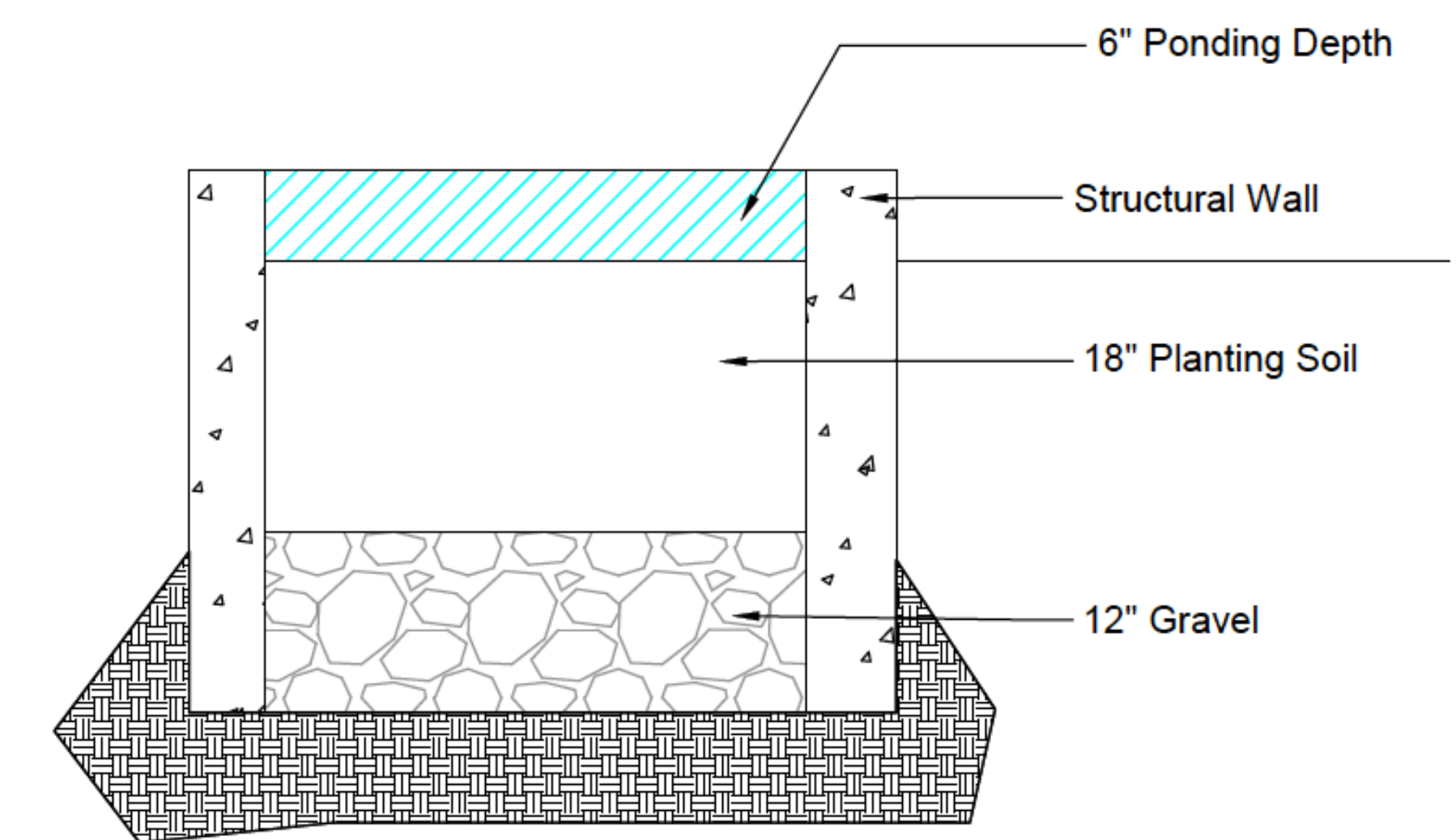
LOW IMPACT DESIGN

As an alternative to typical retention ponds, which pose several threats to the local ecosystem (harmful to fish populations, result in dehydration of local groundwater, etc.), we chose to implement rain gardens into our site. We will use a total of 3 rain gardens on our site to disperse the area that replenishes the groundwater and to ensure maximum site coverage.



MORE LOW IMPACT DESIGN

We also chose to use infiltration planter boxes in our parking lot to decrease total runoff and improve site aesthetics. Planter boxes will be located at each end of each row of parking spaces in the parking lot as shown in Figure 7. The infiltration planters are designed to reduce the storage load of the rain gardens. By adding infiltration planters, we will decrease the amount of impervious area and increase the aesthetics of the parking lot.



CONCLUSION

JSQ was able to design a fully functional senior center facility that met all of the client requirements and City of Angola specifications. The buildings and parking structure were oriented and designed in a manner that allowed for ease of access and safety for all those who will utilize the facility. The parking structure was designed to exceed both its structural requirements and maximum parking capacity, with excess spaces included for potential growth of the senior center. The transportation facility was designed to effectively handle environmental loads through the use of a timber frame system. This structure includes 5 12 ft. by 12 ft. overhead garage doors, and it is constructible with materials that could be found at your local hardware store. The square footings used for this structure adequately transfer loads to the surrounding soil without compromising the integrity of the building. JSQ was not only able to effectively handle all stormwater runoff on site, but we were able to do so by utilizing low impact designs only, without the use of retention ponds. These designs reduce the negative effects of the facility on the environment and improve the site aesthetics. The proposed facility has a total materials cost, considering our design portion, of \$182,629.