

June 19, 2019

Greg Bickford  
Sycamore Township  
8540 Kenwood Road  
Sycamore Township, Ohio 45236

RE: Mini Roundabout and Kenwood Square Driveway

Dear Mr. Bickford:

TEC has completed the work for the Kenwood Square (previously referred to as Sycamore Plaza) Mini-Roundabout including a design estimate, preliminary plan, and design vehicle checks. The files for this work are attached to an email along with this letter.

Based on our work we estimate the Mini-Roundabout will cost between \$425,000 and \$475,000 not including right of way costs.

Below is a discussion of the basis of design and vehicle turning checks.

Sheet 1 – Layout and Mini-Roundabout Design:

The design is based on a mini-roundabout to be used as an entrance/exit for Kenwood Square and as a turnaround for southbound-to-northbound Kenwood Road traffic. TEC kept the two westbound lanes from the roundabout to the traffic signal as is the current condition. Not shown on this sheet but on others the concrete median at the traffic signal is removed and the south edge of pavement line moved north to shrink the inbound lane. This allows for reconstruction of the southwest corner at the traffic signal to help push traffic away from the signal pole and allows larger trucks the ability to use the opposing lanes to make turning movements.

The mini-roundabout itself is a little bit larger than a typical mini-roundabout but is designed to allow for a box truck, larger passenger vehicles, and fire trucks to make a complete 180 degree turn without jumping curbs. Splitter islands and the center circle are to be 4 inches tall to deter passenger vehicles from crossing but allowing larger trucks to traverse.

The design does not allow for internal crossing of parking rows but instead forces drivers to use the roundabout at the extreme west end. If internal movements are necessary then the design will need to be modified which will reduce the number of available parking spaces.

We suggest that discussions with the property owner be had to determine if changes to the plans outside the permanent right of way limits need to be made to accommodate their parking strategy.

Sheet 2 – Automobile Turning Movements:

This drawing shows that passenger vehicles will not have any difficulties maneuvering the roundabout using the designated lanes and without need to jump curbs.

Sheet 3 – SB-30 (Box Truck) Turning Movements:

This drawing shows that a 30' box truck is able to traverse the roundabout and make a complete 180 degree turn without jumping curbs or traversing the center island. Any overlap seen on the plan designates the bumper overhang while tire tracks are kept within the curb lines. This truck and its turning movements are the basis of design for the outer curb lines and the diameter of the center circle.

Sheet 4 – WB-40 Semi Truck Turning Movements:

Due to the size of this vehicle TEC did not design to accommodate all turning movements throughout the mini-roundabout. Instead we considered only the inbound right and outbound left movement to/from the driveway along I-71. This appears to be the most common delivery route for trucks of this size.

Northbound trucks turning into Kenwood Square would necessarily either use both northbound lanes of Kenwood Road or extend their turn into the outbound lanes in order to make the right turn at the signalized intersection. While this is not an ideal situation we are working under the assumption that no additional right of way can be purchased at the southeast quadrant and that the design should include provisions to protect the existing signal pole in that same quadrant.

At the mini-roundabout an inbound truck turning right will be able to negotiate the turn without jumping curbs or traversing the traffic islands.

For outbound trucks turning left at the mini-roundabout the truck will necessarily need to traverse the center circular island in order to make the turn. The situation shown is a bit extreme but traversing the island is necessary in any case.

Sheet 5 – WB-62 Semi Truck Turning Movements:

ODOT uses this vehicle for their basis of design and it is very common in large deliveries so consideration of this vehicle in this area is warranted. The turning movements considered follow those of the WB-40 above.

For the right hand turn at the signalized intersection the WB-62 would necessarily require use of all northbound lanes and would still crossover outbound traffic lanes in order to avoid jumping the curb on the southeast quadrant. Again, this is not an ideal situation but is required in order to make the turn.

At the mini-roundabout the inbound truck will need to traverse the south traffic island to avoid jumping the curb in the southwest quadrant. Consideration was given to a traversable concrete curb/pad at the southwest quadrant but right of way is very limited in that corner.

For an outbound truck turning left at the mini-roundabout the back tires of the truck would ride on the curb in the southeast quadrant so a concrete pad and rolled curb is provided here to allow for this movement but to discourage other vehicles from its use. The WB-62 would also need to traverse the center circle to make the left hand turn similar to that of the WB-40 above.

#### Right of Way Considerations:

Permanent right of way was extended to extreme end of the traffic islands to ensure maintenance of the islands by the Township or County. With right of way being a considerable cost to this project TEC recommends possibly shrinking the length of these islands to reduce the amount of permanent right of way. Consideration could also be given to having the islands outside of right of way but that could lead to confusion as to who controls and maintains the islands.

Temporary right of way encompasses the remaining work including grading, construction of grass islands, and parking lot reconfiguration.

#### Pedestrian Considerations:

This route has potential need to accommodate pedestrian movements but none were added to the proposed layout. The most logical location would be on the north side of the driveway but there are large trees that would need to be removed and potential right of way impacts. A sidewalk on the south side of the drive is a very viable option but a crossing would be needed just west of the mini-roundabout. In any case if we add for pedestrian accommodations there is not a logical terminus for those accommodations or any connection to existing pedestrian infrastructure.

#### Cost Estimate:

Two construction cost estimates were prepared for the proposed work. The first estimate assumed reuse of as much pavement as possible and the second assumed full depth replacement for the entire project. TEC recommends the latter as the cost difference is minimal and the final product would be easier to construct and have a better overall look and feel.

Allowances for drainage, lighting, and landscaping are added to the estimates for potential work in those areas of construction.

A contingency cost of 20% is added to the construction cost estimate to account for additional work or other missing items of work.

Right of way will be a big factor on this project. TEC included an estimate of \$40 per square foot of permanent right of way and is based on costs from a previous project on the opposite side of Kenwood Road. This cost seems excessive for the property to be purchased as compared to the total area of the property and its associated land value. TEC recommends further investigation of the property costs by an expert in this area to verify or modify these costs prior to a decision to move forward with the project.

Thank you for the opportunity to be involved with this project and please feel free to call or email should you have any additional questions or comments.

Sincerely,

A handwritten signature in blue ink that reads "Bryan Bender". The signature is written in a cursive style with a large initial 'B'.

Bryan Bender, PE  
Project Manager