

Regarding the *ECM* threshold for an eastbound left-turn lane, the laneage plan shows a shared approach lane. Given the low straight through and right-turn volumes, the CDOT Access Code provision allowing a left-turn lane to be dropped when opposing through traffic is low, would apply.

Monument Hill Road/Nees Drive

Based on projected total volumes, auxiliary turn lanes would **not** be required on any approach at the intersection of Monument Hill Road/Nees Drive. Based on the recommended classification of this new segment/new north terminus of Monument Hill Road (Urban Local), the design speed will be 25 mph.

Monument Hill Road/Misty Acres Boulevard (South/Existing Intersection)

No modifications would be required by the applicant at the intersection of Monument Hill Road/Misty Acres Boulevard despite additional site-generated traffic from this development.

Intersection Configuration and Traffic Control

County Line Road/Misty Acres Boulevard Proposed Intersection Location

All proposed site-access points would be two-way, stop-sign-controlled intersections.

Regarding the intersection of County Line Road and Misty Acres Boulevard, the project team has determined that a roundabout option for traffic control would not be feasible. The following are a list of pros and cons comparing a modern roundabout intersection to a conventional intersection with two-way, stop-sign control and the potential for future signalization once MUTCD warrant(s) are met.

Roundabout Intersection

Cons:

- Grades would not meet the established guidelines for grades. The following is criteria from the *Wisconsin DOT Roundabout Design Manual* (used by El Paso County, Colorado):
 - Entry grade profiles (approximately 2 car lengths from the ICD) are not to exceed 4%, with 2% being the typical maximum.
 - Roundabouts typically should be constructed on relatively flat or rolling terrain with an approach grade that is typically less than 3%, but not greater than 5%. Grades approaching 4% and steeper terrain may require greater transitions to provide an appropriate grade through the intersection. The profile grades along the central island should generally not exceed 4%, (typically 3% or less).

- A roundabout centered on the existing County Line Road would force realignment of the existing north leg [at the current County Line Road/Monument Hill Road intersection] into conservation easement on the north side of County Line Road, which is prohibited.
- If a roundabout circle were shifted south to avoid the conservation easement, then the grading for the roundabout footprint would encroach into the wetlands located southeast of the intersection, which would also not be feasible.
- Projected volumes are higher on County Line Road than Misty Acres approach. Balanced volumes are ideal for roundabouts.

Pros:

- Generally, roundabouts are self-regulating and offer safety advantages over conventional intersections.
- The LOS would potentially be better than the conventional intersection for the northbound approach before a signal warrant is met, and potentially after signalization as well.

Conventional Intersection

Pros:

- The intersection would be similar to the existing intersection, will little modification needed on the north leg.
- A signal would not likely need to be installed in the short term – could remain TWSC.
- The LOS is shown to be D or better, based on the short-term scenario.
- There are likely more precedent cases for signal installation at intersections with grades over 4 percent than with roundabout grades over 4 percent.

Cons:

- Installation of a signal at an intersection with approach grades over 4 percent is not ideal, and would require a deviation (county intersection maximum intersection grade is 4 percent)
- Generally, El Paso County staff has indicated that an intersection cannot be signalized until warrants are met. The LOS would potentially be worse with the conventional intersection for the northbound approach before a signal warrant is met. The short term shows LOS D for the northbound approach.
- The conventional intersection would require auxiliary turn lanes on the intersection legs as shown on Figure 11,

The intersection of Misty Acres Boulevard/County Line Road will likely need to be signalized in the future. Based on projected volumes the volumes for the AM and PM peak hours would meet the Warrant No. 2 (Four-Hour Volume) threshold. The volume threshold would need to be met for two other hours of the day, such as the afternoon “school” peak hour and two hours during the late afternoon/evening peak hour.

County Line Road/Misty Acres Boulevard **Alternate** Intersection Location – Per CDOT Comments

The CDOT comments and follow-up meeting identified the need to consider shifting the intersection of Misty Acres Boulevard about 575 feet to the east and the Misty Acres Boulevard shown on the Preliminary Plan would be modified to an alignment more to the east to connect to this alternate intersection location. Lastly this alternate intersection would be constructed as a modern roundabout. Please refer to **Deviation No. 3** included with this submittal, which describes this alternative, includes the reasons this alternative is not viable - as summarized below, request for deviations to intersection spacing and intersection grade *ECM* criteria to allow the proposed intersection location as presented in this TIS report.

- The floodplain would present significant issues to this alignment.
- An alignment of Misty Acres more to the east to connect to this alternate intersection would be significantly closer to the existing homes west of Doewood. This alignment would have significant negative implications to the Preliminary Plan.
- A roundabout intersection would not likely fit without encroaching in the conservation easement and/or the Woodmoor Water & Sanitation property.
- The alternate alignment would need to have sharper reverse curves in order to connect to the alternate intersection location.
- The Doewood Drive/County Line Road intersection would likely need to be closed as this intersection would be only 250 feet from this alternate intersection location. The Doewood connection to County Line Road would need to be rerouted through an east-west connection to Misty Acres Boulevard.
- The Misty Acres/County Line intersection, as proposed, would meet the minimum CDOT 550-foot distance from end of the radius at the I-25 off-ramp intersection.

Other Recommendations

LSC recommends MUTCD horizontal curve warning signage be installed on Monument Hill Road for traffic on the northbound approach to the proposed curve to the east adjacent to the site. The specific signs and sign placement can be included for review as part of the construction plans.