

Attachment D



STRATEGIES FOR TODAY. INSIGHT FOR TOMORROW.

February 28, 2023

Ms. Tamika Graham
Midcounty Planning Division
2425 Reedie Dr., 14th Floor.
Wheaton, MD 20902

Re: Belward Campus Drive
Site Plan #820220250
Design Waiver.

Dear Tamika,

On behalf of our Client, TC Mid-Atlantic Development V. Inc., we are submitting a Design Waiver for the above referenced project. The Site Plan has been submitted to MNCPPC for their review.

The following information is provided to justify a waiver to the Chapter 50 regulations.

1. **Montgomery County Code Chapter 50, Division 50.4, Section 4.3.E.2.g.– “The Board must specify greater radii when safety requires. A tangent at least 100 feet long must be used between two reverse curves, except in a Neighborhood Street or a Neighborhood Yield Street. The Board may specify a lesser radius when the Department of Transportation has previously issued a design exception for a similar design.”**

- a. *Written explanation describing the proposed modification.*

This application proposes a reverse curve without a 100-foot tangent on Belward Campus Drive which is a four-lane median divided highway, with a design speed of 30mph. The geometrics of the reverse curve are as follow: Point of curvature (PC) begins at station 0+59.02, point of reverse curve (PRC) begins at station 3+9.04, point of tangency (PT) begins at station 7+03.74. Station 0+00.00 begins at the intersection of Belward Campus Drive and Muddy Branch Road. See attached plan for reference.

- b. *Rationale for the request.*

The current proposed design is based on the preliminary plan (#11996110A) approved by MNCPPC On March 8th, 20¹². The design is

also based on a *subdivision plat prepared by Pennoni, titled "Subdivision Record Plat The Johns Hopkins University Belward Research Campus Parcels "A" & "B", Block "C", and dated 03-03-22 (plat is currently under review). This record plat creates the tracts of land for Parcel "A" through which lease agreements have been established between our Client, TC Mid-Atlantic Development V. Inc. and JHU. In addition, the Phase 1 site plan (#820220250) and forest conservation plan are also currently in review with MNCPPC. The addition of a 100-foot tangent will present a hardship and delay to this project.*

- c. *Measures that were evaluated to avoid the need for the modification(s) and why they were determined unacceptable.*

The impacts to the plans referenced in Section b. above were considered with the assessment for the need of this modification along with the impacts this would have to Parcel "A" and Parcel "B" developable areas and impacts to project schedule and deliverables.

- d. *Anticipated impact on vehicular, bicycle and pedestrian traffic.*

We researched AASHO "A Policy on Geometric Design of Highways and Streets" 2018 7th edition. Below we have cited specific sections of the code with our justification for the design waiver approval for the design waiver approval, to demonstrate that the design waiver will result in acceptable vehicular, bicycle and pedestrian traffic conditions.

1. *Per 3.3.13 General Controls for Horizontal Alignment.*

"In addition to the specific design elements for horizontal alignment discussed under previous headings, a number of general controls are recognized in practice. These controls are not subject to theoretical derivation, but they are important for efficient and smooth flowing highways. Excessive curvature or poor combinations of curvature limit traffic capacity, cause economic losses from increased travel time and operating costs, and detract from a pleasing appearance. To avoid these poor design practices, the general controls that follow should be used where practical."

“Abrupt reversals in alignment should be avoided. Such changes in alignment make it difficult for drivers to keep within their own lane. It is also difficult to superelevate both curves adequately, and erratic operation may result. The distance between reverse curves should be the sum of the superelevation runoff lengths and the tangent runout lengths or, preferably, an equivalent length with spiral curves, as defined in Section 3.3.8, “Transition Design Controls.” If sufficient distance (i.e., more than 100 m [300 ft]) is not available to permit the tangent runout lengths or preferably an equivalent length with spiral to return to a normal crown section, there may be a long length where the centerline and the edges of roadway are at the same elevation and poor transverse drainage is likely. In this case, the superelevation runoff lengths should be increased until they adjoin, thus providing one instantaneous level section. For traveled ways with straight cross slopes, there is less difficulty in returning the edges of roadway to a normal section and the 100-m [300-ft] guideline discussed above may be decreased.”

In response to this part of AASHTO we note that the proposed road is not superelevated and therefore the tangent section is not required to meet any superelevation runoff lengths or tangent runout lengths.

2. *Per 4.2.2.1 Rate of Cross Slope*

“On paved two-lane roadways, crowned at the center, the accepted rate of cross slope ranges from 1.5 to 2 percent. Use of cross slopes steeper than 2 percent on paved, high-speed highways with a central crown line is not desirable. In passing maneuvers, drivers cross and recross the crown line and negotiate a total rollover or cross slope change of over 4 percent. The reverse curve path of travel of the passing vehicle causes a reversal in the direction of lateral acceleration, which is further exaggerated by the effect of the reversing cross slopes. Trucks with high centers of gravity crossing over the crown line may sway from side to side when traveling at high speed, making it more difficult to maintain control. Figures 4-3A through 4-3C are examples of roadway conditions where this situation would be encountered.”

In response to this we note that the design speed of 30mph is on the lower end of design speeds and is consistent with built up urban developments. With this noted by virtue of the reverse curve would have marginal discomfort issues for vehicular operators. This is also helped with the proximity to the lighted intersection for which motorists will actively be

slowing down for coming to a comfortable stop. The other item to note is that the crown of the road is within the median and at no time will motorists have to cross over the crown which will help promote safe operation of the highway.

e. *Anticipated impact on future county maintenance operations.*

No impact on future county maintenance operations is anticipated with the modification beyond what would be necessary for normal maintenance operations for the road with a 100-foot tangent.

f. *Plan demonstrating the impact of a standard design on the project. Demonstration should be made through plan views, cross sections, engineer's cost estimate, etc... as appropriate.*

As discussed, the impact of a standard design would impact the overall schedule for deliverables for the subject application. Developable areas would be impacted, additionally Belward Campus Drive would then require smaller radii to facilitate the 100' tangent between curves which would give a more restrictive less open view while travelling along the travelway. As currently shown on the associated site plan the roadway will have a better view to the upcoming lighted intersection on Muddy Branch Road which will reduce the likelihood of rear end collisions.

g. *Anticipated structure life span (structure replacement time frame).*

Lifespan of the road with the proposed modification will be the same as the road with the 100-foot tangent.

h. *Impact on the project if MNCPPC does not approve the request.*

As noted previously if this modification is not approved it would influence the project deliverables which in turn could impact lease agreements.

i. *Perceived benefit to the public and private sectors if modification is permitted.*

If the modification is permitted the public will benefit from the development of Muddy Branch Park, additionally, the county would benefit from the added tax revenue and employment opportunities that this development would bring to the area.

It is in our opinion that the proposed site with the requested design waiver is safe based on the design speed and its proximity to the intersecting road and should be considered for approval.

Sincerely,

Soltesz

A handwritten signature in blue ink, appearing to read 'F. Dodds', is written over the printed name 'Frederick James Dodds'.

Frederick James Dodds, P.E., DPE
Asst. Project Manager

cc: Rebecca Torma - MCDOT
Deepak Somarajan - MCDOT
Matt Folden – MNCPPC
Mike Friis – Trammell Crow Company
Phil Isaja – Soltesz
Jyotika Sharma – Soltesz