.M E M O R A N D U M

Date: **June 20, 2024**

To: **Luke Winchester, Chairman**
and Planning Commission

From: **Shane Shamanur, PE**
Director of Engineering

Re: **Update to the Development Code Subdivision Regulations Article IV**

OVERVIEW: The subject item is the proposed update to the Mt. Juliet Land Use Development Code to bring the specifications up to federal standards, remove inconsistencies, and correct language on out-of-date texts. The updates are recommended in the Subdivision Regulations between sections 4-102.503 and 4-104.403.

BACKGROUND & ANALYSIS: The Mt. Juliet Land Use Development Code provides guidance on the design of streets and driveways within the City of Mt. Juliet. However, some specifications no longer meet the standards set forth by AASHTO and TDOT. The changes recommended below are meant to align the City of Mt. Juliet's standards with current best practices:

Sec 4-102. – Lot requirements

Section 4-102.503 *Minimum clearance* provides guidance on the minimum corner clearance for driveways on arterials and collectors. It is recommended that the language be removed and replaced with the following:

The corner clearance is defined as the distance between the property frontage along the major road and the tangent face of a driveway accessing the minor roadway. The edge clearance is defined as the distance between the frontage boundary and the tangent edge of the driveway. The minimum corner or edge clearance, regardless of roadway classification, shall adhere to the guidance within the Tennessee Department of Transportation's Highway System Access Manual, including all subsequent amendments and/or revisions.

Sec 4-103. – Streets and pedestrian ways

Section 4-103.101 *Sidewalks along new streets* shall be revised to eliminate language on rural streets. The language shall be removed and replaced with the following:

Sidewalks shall be required along all streets constructed in all subdivisions except those proposed for industrial use.

Section 4-103.102 Sidewalks along existing streets shall be revised to mandate sidewalk along any property frontage along a public way. The language shall be replaced with the following:

Sidewalk shall be provided on any existing street within the public right-of-way along the frontage of the subdivision. Additional sidewalk may be required, at the discretion of the Director of Engineering, to eliminate gaps in the pedestrian network.

Section 103.103 *Location of sidewalks* provides guidance on placing sidewalks within the right-of-way. It is recommended that the language differentiating by classification be removed as it is redundant. The language shall be updated to the following:

Sidewalks shall be required along both sides of all streets. Transition of sidewalks from both sides of a street to one side may be permitted when topography makes continuation of the sidewalk impractical. Transitions may only be made at street intersections. Sidewalks shall be included within the dedicated nontrafficway portion of the right-of-way of all public ways. Concrete curbs are required for all public ways where sidewalk is present. A median strip of grassed or landscaped area shall separate sidewalks from the adjacent curb, unless otherwise noted by the Director of Engineering. The width of all sidewalks and grass strips shall meet the requirements included in Table 2 of Section 4-104. Sidewalk construction details are shown in Appendix B of these regulations.

Section 4-103.104 *Sidewalk width* shall be removed, and the guidelines added to Table 2 in Section 4-104.

Section 4-103.201 *Frontage on improved public ways* shall be revised to correct the referenced subsection from 1-112.107 to 1-113.107 (Access to lots by public way or private easement).

Section 4-103.206 *Traffic Impact Study* shall be revised to reference the traffic study policy published by Public Works. The language shall be replaced with the following:

All subdivisions shall be required to be prepare, at the expense of the developer or individual proposing the subdivision, a traffic impact study. At the discretion of the Director of Engineering, a traffic impact study may be waived for subdivisions generating fewer than 50 peak hour trips and not deriving access from an arterial or collector. A Tennessee licensed engineer specializing in transportation shall prepare such a study in accordance with the traffic impact study guidelines published by the Department of Engineering.

Section 4-103.3 *Private streets* shall be revised to allow private streets with the approval of the planning commission. The language shall be replaced with the following:

No property shall be subdivided which does not obtain access from a public way, street, or road. Private streets may be permitted within a subdivision with approval of the Planning Commission and the Board of Commissioners. Private streets shall be built to the standards contained in this article.

All proposed alleys shall be private. The cross section of all alleys shall be provided prior to approval of the Planning Commission.

Sec 4-104. – Functional design criteria

Section 4-104.201 *New streets* shall be revised to remove urban and rural designations and add minor collector to the list of classifications. The text should be replaced with the following:

Each proposed street shall be classified and designed to meet or exceed the minimum standards for the following street types:

a. *Residential Access Lane*
b. *Residential Access Street*
c. *Residential Collector Street*
d. *Minor Collector Street*
e. *Community Collector Street*
f. *Arterial Street*

Section 4-104.203 *Traffic volume calculations* shall be updated to reflect the approximate rates provided in ITE's Trip Generation Manual, 12th Edition. The text shall be replaced with the following:

New streets shall be classified based on the number of vehicular trips expected to utilize the roadway using the following methodology:

a. *Trip generation rates. Table 1 shall be used to determine the anticipated average daily traffic on the proposed street.*

Table 1. Approximate Trip Generation Rates

Land Use	*ADT per Unit*
Single Family Detached	*9.5 Trips*
Townhomes	*7 Trips*
Apartments	*5 Trips*
Senior Housing	*3.5 Trips*
Commercial	*Consult ITE Trip Generation Manual*

b. *Volume calculations. Calculation of traffic volumes on residential streets shall be accomplished using the following formula:*

Design ADT = (ADT per unit) x (Number of units receiving access from street)

Section 4-104.301 *Residential access lane* shall be revised to update the ADT requirements. Subsection b and c shall be replaced with the following:

b. Design capacity and service restrictions. Each residential access lane shall be designed so no section of the street conveys an ADT greater than 250 or serves more

than 25 single-family dwellings. Each half of a loop street may be regarded as a single local access street and the total ADT shall not exceed 500.

c. Street access. Residential access lanes may intersect or take access from any street type. Residential access lanes shall be laid out to discourage through traffic. As such, residential access lanes shall not intersect with multiple collectors nor shall residential access lanes be stubbed with the intention of extending to adjacent parcels.

Section 4-103.302 *Residential access street* shall be revised to remove language differentiating urban and rural streets. Subsection a shall now read:

a. *Street function. Residential access streets are designed to provide access to individual properties as well as access to higher classification street networks. The residential access streets provide neighborhood circulation and may carry neighborhood traffic and through movements.*

Section 4-104.303 *Residential collector street* shall be revised so that the first range of ADT in the table reads 1,000-1,199.

Section 4-104.304 shall be inserted to include Minor collectors. The existing language shall be redesignated 4-104.305. The section on Minor Collectors shall read:

a. Street function. Minor collector streets collect and distribute traffic from residential neighborhoods and commercial uses. The street may connect to community collector or arterial streets.

b. Design capacity and service restrictions. The minor collector street is intended to serve mixed residential and commercial traffic volumes ranging from 2,500 to 6,000 trips per day. Whenever possible, commercial driveways shall limit the number of access points. Access to adjacent parcels shall be planned to limit the number of driveways along the corridor. Access to individual residential lots shall be prohibited.

Section 4-104.305 shall be added to include community collectors. The existing language shall be revised and shall read:

a. Street function. Community collector streets collect and distribute traffic from other collectors to arterial transportation systems.
b. Design capacity and service restriction. The community collector street is designed for anticipated traffic volumes between 6,000 and 15,000 trips per day. Access to individual residential lots shall be prohibited.

Section 4-104.306 shall be added to include arterials. The section shall read:

a. Street function. Arterials are intended to serve local and regional traffic. Arterials extend through the city limits or connect to other arterials or interstates.
b. Design capacity and service restrictions. Arterials are intended to serve traffic volumes exceeding 15,000 trips per day. Access to individual residential lots is prohibited. Access to residential communities or commercial areas shall provided by lower classification streets whenever possible.

Section 4-104.401. Remove Table 1 and differ to Table 2 and Appendix B. Table 2 shall be revised to show standards by roadway classification and renumbered Table 1. The section shall now read:

Minimum rights-of-way and pavement widths shall be provided as required to meet the design standards for various roadway classifications of streets set in Table 1.

a. *Reduction in right-of-way width. The City may reduce the required right-of-way width for residential streets under the following conditions:*
    i. *The site is located within a planned unit development or variable lot size residential development under applicable provisions of the zoning ordinance.*
    ii. *The potential for future development will alter neither the street classification nor the design standards proposed. As a condition for varying the right-of-way requirements, the City may require a binding agreements to insure no additional access to or use of the street.*
    iii. *In no instance shall a right-of-way be less than 30 feet. In granting the reduced right-of-way width, it shall be determined that sufficient width will be available to provide all the following (unless separate right-of-way for them is being provided elsewhere to the satisfaction of the City, or they are clearly not required by the proposed development):*
        1. *Pavement*
        2. *Curbs*
        3. *Shoulders*
        4. *Utility easements*
        5. *Drainage swales*
        6. *Pedestrian and/or bicycle paths*
        7. *Street trees or other planting strips*
        8. *Turning lanes*
        9. *Cut or fill slopes (the right-of-way shall extend five feet beyond the crest or toe of these slopes.)*

Table 1. General Design Standards for Streets

Standard	*Access Lane*	*Access Street*	*Residential Collector*	*Minor Collector*	*Community Collector*	*Arterial*
Design Speed	*25 mph*	*30 mph*	*35 mph*	*35 mph*	*40 mph*	*45 mph*
ROW Width	*50'*	*55'*	*65'*	*75'*	*110'*	*125'*
Pavement Width	*22'*	*24'*	*24'*	*36'*	*52'*	*52'*
Landscaped Median	*0'*	*0'*	*0'*	*0'*	*16'*	*27'*
Bicycle Lane Width	*0'*	*0'*	*4'*	*4'*	*4'*	*4'*
Grass Strip	*6'*	*6'*	*6'*	*6'*	*6'*	*6'*
Sidewalk Width	*5'*	*5'*	*6'*	*6'*	*6'*	*6'*
Outer Buffer	*0.5'*	*2'*	*2'*	*1'*	*2'*	*2'*
Maximum Grade	*10%*	*10%*	*7%*	*7%*	*7%*	*5%*

Minimum Grade	*1%*	*1%*	*1%*	*1%*	*1%*	*1%*
Max. Grade at Intersections	*5% (within 50')*	*5% (within 50')*	*3% (within 75')*	*3% (within 75')*	*3% (within 100')*	*3% (within 100')*
Maximum Superelevation	*0.08*					
Horizontal Curvature	*Curvature shall be designed per AASHTO standards based on speed and slopes.*					

Insert the following as Section 4-104.402 *Stopping sight distance*: All streets shall maintain adequate stopping sight distance at all points along the road. No combination of vertical or horizontal curves may reduce stopping sight distance below the values provided in AASHTO's *A Policy of Streets and Highways.* Should the grade on the major road exceed 3%, adjustments to the required sight distance may be required at the discretion of the Director of Engineering. Renumber the existing 4-104.402 to 4-104.403 *Intersections*

Section 4-104.403 *Intersections* remove the figure and table on intersection sight distance. The following shall be inserted as 4-104.403 (g):

All new streets and driveways shall provide adequate intersection sight distance, as defined by AASHTO's *A Policy on Streets and Highways*. Should the grade on the major road exceed 3%, adjustments to the required sight distance may be required at the discretion of the Director of Engineering. The required sight distance values are provided in Table 2.

Table 2. Minimum Intersection Sight Distance

Design Speed (mph)	Required Sight Distance (feet)					
	2-Lane		3-Lane		5-Lane/Divided	
	Left-Turn	Right-Turn	Left-Turn	Right-Turn	Left-Turn	Right-Turn
25	280	240	315	240	335	280
30	335	290	375	290	400	335
35	390	335	440	335	465	390
40	445	385	500	385	530	445
45	500	430	565	430	600	500
50	555	480	625	480	665	555
Left-Turn sight distance is measured looking right. Right-turn sight distance is measured looking left.						

Sight triangles are to be kept clear of landscaping, signs, parking, or other obstructions that may otherwise restrict the available sight distance

Section 4-104.403 shall be revised to include warrants for deceleration lanes. The section shall be replaced with the following:

a. Deceleration or turning lanes may be required by the city along existing and proposed streets as determined by the traffic study using the warrants provided in TDOT's Highway Systems Access Manual, or where the City can justify the need.
b. Deceleration lanes shall be designed to the following standards:
    i. The lane width shall be the same as the required width of the through lanes, based on roadway classification.
    ii. The minimum total deceleration lengths shall match the table below.

Minimum Deceleration Lengths

Design Speed (mph)	Minimum Deceleration Length (ft)
30	160
40	275
50	425
60	605
Note: If grades exceed 3%, use the adjustment factors included in Table 3-2 in a *Policy on Geometric Design of Highways and Streets*.	

    iii. Acceleration lanes are only required when indicated as needed by a traffic impact study. The design shall be as per the recommendation of the Director of Engineering.

Section 4-104.405 (b.) shall be revised to include restrictions on allowable length, number of units, and design of permanent dead end public ways. The section shall be replaced with the following:

i. *General design standards.* Where a public way does not extend beyond the boundary of the subdivision and its continuation is not required by the planning commission for access to adjoining properties, its terminus shall be no closer than 150 feet from the boundary. However, the Planning Commission may require the reservation of an appropriate easement to accommodate drainage facilities, pedestrian traffic, or utilities.
ii. *Cul*-de-sac requirements. For more effective police and fire protection, permanent dead-end public ways shall be limited to 700 feet measured from the nearest intersection to the center of the cul-de-sac. No dead-end street shall provide access to more than 25 units.
iii. *Design of turnarounds.* Permanent dead-end streets shall terminate in a cul-de-sac matching the design standards included in these regulations. Alternative turnarounds may be considered with approval of the Planning Commission and Fire Marshal.

RECOMMENDATION: Staff recommends forwarding this item to the Board of Commissioners with a positive recommendation.