SUBDIVISION TEXT AMENDMENT: STREET DESIGN UPDATES (P23-78-STA)

CITY OF HENDERSONVILLE - COMMUNITY DEVELOPMENT STAFF REPORT

PROJECT SUMMARY

- Project Name & Case #:
  - Street Design Updates
  - P23-78-STA
- Applicant:
  - City of Hendersonville
- Subdivision Ordinance Articles Amended:
  - Section 4.03. Streets
    - Amendment to Section C. Street configuration.
- Planning Board - Legislative Committee Meeting
  - October 2nd, 2023
- Summary Basics:
  - City staff is proposing to align the City's public street standards for subdivisions with standards set forth by the NCDOT for this region. It has been discovered that some of City's current subdivision standards do not take into account the topography of the region and are better suited for piedmont or coastal areas. Staff is recommending that the street design standards for subdivisions be a hybrid of NCDOT's requirements for rolling and mountainous terrain. It is staffs hope that by making these corrections, it will eliminate the need for additional grading/land disturbance and will better align new public street design with the existing conditions found around the City.

Amendment Overview:

City staff is proposing several changes to the current street design standards found in the City Subdivision Ordinance. The City's subdivision ordinance was adopted by City Council on March 5, 2020. The current subdivision ordinance was a complete rewrite and modernization from the City's previous subdivision ordinance. The modernization of the subdivision ordinance brought forth new design standards which were not represented in the previous ordinance. The new design standards aimed to provide the City and its citizens the best design product possible and to limit the impact on existing land uses. It has been 3 years since adoption and staff have worked through a good number of subdivisions in various capacities. Through this work staff have found items that prove problematic or that are meant to serve a certain purpose but unknowingly create unforeseen obstacles. It was understood that with this large of an overhaul to an ordinance, that there would be fine tuning smaller amendments to follow the adoption.

AMMENDMENT ANALYSIS – AMENDMENT OVERVIEW

The current street design standards have proven difficult for staff to apply to subdivisions and for developers to adhere to due to the topography and terrain of the area. Staff has reviewed many subdivisions with various topography, housing type, location, access etc. and the street design standards continue to prove difficult to achieve for many of the developments while retaining many of the City's other goals (tree preservation, less impactful development, pedestrian friendly development, etc.). In most circumstances the City's standards exceed NCDOT requirements and better reflect requirements that would be found in the piedmont or coastal regions. For example, the recent subdivision projects below had obstacles adhering to one or more aspects of the City's street design standards.

- *K-Values*
    - *Half Moon Heights (also maximum street grade)*
    - *Townes at Martha Kate*
- *Curve Radii*
    - *1202 Greenville Highway Townhome Project*
    - *Signal Hill Subdivision Project (Variance requested).*

The design standards that are in the current ordinance were placed in the ordinance with good design intentions but have created unforeseen issues. For example, the road radius requirement for horizontal curves in the subdivision ordinance is 150'. This requirement greatly broadens curves and makes the road easier to navigate due to it not having sharp curves. The intention of this requirement was to make the road safer by making it easier to navigate. Staff have found out through conversations with NCDOT, Public Works, and research that the increased radii can increase speeding through the streets and create an unsafe pedestrian environment. The wider radius of the curve requires more land disturbance to accommodate the flatter curves. This requires more grading to occur which could impact mature tree preservation and other environmental aspects. The proposed 90' centerline curve radius reflects NCDOT mountainous standards as well as Henderson County's Land Development Codes private subdivision street design standards.

The K value has also created unintended consequences. In order for developments to meet the requirements of the K value (vertical curve) standards, the developers are having to grade additional land to come into compliance. K values involve the vertical curve and sight distance of a roadway. The intent of the ordinance is to ensure that roads are as flat as possible so that site visibility is optimal. In most cases, to accomplish the K value requirement, developments must grade a greater land area to accomplish the desired flat condition. The additional land disturbance impacts the number of mature trees that can be preserved. The requirement also does not allow some flexibility to follow the natural slope of the property in the way that many of our older neighborhoods do. These types of development practices lend themselves to developers clearing and flattening once natural sloped terrain, i.e., mass grading.

The proposed changes would allow new subdivisions to develop in a way that reflects how our community has historically developed. New public streets would better reflect the mountain roads that we travel on every day instead of being more representative of our piedmont/coastal counterparts.

SUBDIVISION TEXT AMENDMENT – STREET DESIGN UPDATES

Additions to the Ordinance

~~**Deletions from the Ordinance**~~

Sec. 4.03. Streets.

C. **Street configuration.**

1. **Street rights-of-way.**

a. All new streets established in the city's jurisdiction after March 5, 2020 shall include a minimum street right-of-way configured in accordance with Table 4.03.C.1: Minimum Street Right-of-Way Requirements.

TABLE 4.03.C.1: MINIMUM STREET RIGHT-OF-WAY REQUIREMENTS		
TYPE OF STREET	**CONFIGURATION**	**MINIMUM RIGHT-OF-WAY (FEET) [1] [2]**
Expressway	8 lanes, raised median	160
	4 lanes, grass median	150
	6 lanes, raised median	150
	4 lanes, grass median	120
	4 lanes, raised median	110
Boulevard	8 lanes, raised median	160
	6 lanes, raised median	150
	4 lanes, grass median	120
	4 lanes, raised median	110
Major Thoroughfare	7 lanes	120
	5 lanes	100
	4 lanes	90
	3 lanes	80
Minor Thoroughfare	2 lanes, parking on each side	80
	2 lanes, parking on one side	70
	2 lanes, paved shoulder	70
Local	45	
Cul-de-Sac	45 [3]	
Alley	20	
NOTES:		
[1] The street right-of-way shall include curb and gutter, sidewalks, multi-use paths, bicycle lanes (where indicated), and associated utility strips.		
[2] Minimum rights-of-way may need to be wider to accommodate all forms of planned infrastructure in accordance with the city's adopted policy guidance.		
[3] Radius will be wider.		

b. In cases where an existing street is depicted on the city's adopted policy guidance, but is not configured to the required width or cross section, the roadway shall be improved in accordance with the city's adopted policy guidance as part of the development.

2. **Street intersections.** Street intersections shall be configured in accordance with the following standards:

a. Not more than two streets shall intersect at any one point unless the city or NCDOT certifies that such an intersection can be constructed with no extraordinary danger to public safety.

b. Streets shall intersect at right angles to the maximum extent practicable, and no two streets shall intersect at less than 60 degrees.

c. Whenever possible, proposed intersections along one side of a street shall coincide with existing or proposed intersections on the opposite side of the street.

d. Where a street center line offset (jog) occurs at an intersection, the distance between centerlines of the intersecting streets shall be not less than 125 feet.

e. Except when no other alternative is practicable or legally possible, no two streets may intersect with any other street on the same side at a distance of less than 200 feet measured from centerline to centerline of the intersecting street. When the intersected street is an expressway or boulevard, the distance between intersecting streets shall be at least 1,000 feet, unless no other alternative is practicable.

f. Property lines at street intersections shall be shown as a chord connecting points not less than 15 feet back from the street intersection along each street right-of-way line. Longer setbacks for chord connections for property lines may be required by the DRC as needed for public safety.

g. In commercial developments the city may assign traffic control to thru traffic within 500 feet of the point of access to the public right-of-way.

h. All internal intersections shall have minimum 30' radii. Radii less than 30' must be approved by the Public Works Director.

3. **Development entry points**

a. Unless exempted in accordance with subsection (d) below, all subdivisions shall provide streets from the development to the street system outside the development in accordance with Table 4.03.C.3, Required Points of Access:

TABLE 4.03.C.3: REQUIRED POINTS OF ACCESS [1]

TYPE OF DEVELOPMENT	DEVELOPMENT SIZE	MINIMUM NUMBER OF VEHICULAR ACCESS POINTS [2]
Residential and Mixed-Use Development [3]	30 or fewer lots	1
	31 or more	2
Non-residential Development, other than Industrial [4]	Less than 5 acres or fewer than 10 lots	1
	More than 5 acres	2
NOTES:		
[1] Points of access shall refer to streets, not driveways.		
[2] Additional vehicular access points may be required where determined necessary by the city.		
[3] Multi-family or mixed-use developments of 100 dwelling units or more shall provide at least two points of access regardless of the number of lots.		
[4] The Fire Code may require a minimum of two points of access.		

b. Nothing in this section shall limit the total number of streets providing access to the street system outside a development, or exempt a development from meeting all applicable street connectivity standards.

c. Street stubs shall be credited as an access point when all ingress or egress to a development is only available from a single expressway, boulevard, or thoroughfare street.

d. Development shall be exempted from these standards if it is demonstrated the following conditions apply:

i. A transportation impact analysis allows a deviation;

ii. No other street access points can be located due to existing lot configurations, absence of connecting streets, environmental, or topographic constraints;

iii. NCDOT will not authorize the required number of entrances; or

iv. Alternative access can be provided in a manner acceptable to the city that is supported by a transportation impact analysis.

4. **Turn lanes.** Turn lanes for either or both left and right turns into a commercial or residential subdivision driveway may be necessary for safety when there are high roadway and/or turning volumes or traffic, when the roadway speeds are moderate or high, or where needed due to limited sight distance. When provided, turn lanes shall be configured in accordance with the following:

a. The final determination for the need, location, and design of a turn lane is the responsibility of the NCDOT, or the city, as appropriate.

b. Left and right turn lanes shall be constructed in accordance with NCDOT standards and specifications.

c. Right-turn lanes shall be constructed entirely within the frontage of the property being served, since an adjacent development might subsequently require an entrance that would otherwise encroach into the turn lane.

d. The NCDOT may require a undivided street to be widened when the median has an inadequate width for a left turn lane.

5. **Deceleration lanes.**

a. Any use capable of generating more than 60 trips per peak hour, as estimated by using NCDOT guidelines or the Institute of Traffic Engineers Trip Generation Manual, shall provide at least one deceleration lane per street front in accordance with NCDOT standards when the use is located along an expressway or boulevard street.

b. Deviations from these requirements may only be authorized when the NCDOT indicates that a particular development design or technique can still achieve a satisfactory level of access control consistent with the objectives of this section.

6. **Cul-de-sac and dead-end streets.**

a. No permanently designed cul-de-sac or other dead-end street shall be longer than 800 linear feet, except where land cannot otherwise be subdivided practicably in the opinion of the city manager.

b. In cases where one cul-de-sac is accessed from another cul-de-sac, the maximum length for all cul-de-sacs accessed from one another shall be 500 linear feet.

c. All permanent cul-de-sacs or other dead-end streets shall be provided at the closed end with a turn-around configured in accordance with the city's minimum requirements.

d. Dead-end streets intended to be continued at a later time shall be provided with a turn-around as required for a dead-end street when required by the city manager.

e. Only that portion to be required as right-of-way when the street is continued shall be dedicated and made a public street.

7. **Street grade.** Street grades shall comply with the following standards:

a. Streets and their associated gutters shall maintain grade levels in accordance with Table 4.03.C.7, Maximum and Minimum Street Grade.

TABLE 4.03.C.7: MAXIMUM AND MINIMUM STREET GRADE

STREET TYPE	MAXIMUM GRADE	MINIMUM GRADE
Expressways and Boulevards	6%	Not less than 1%
Major and Minor Thoroughfares	~~8%~~ 9%	Not less than 1%
Local Streets	~~10%~~ 12%	

b. Street and intersection approaches shall not have grades in excess of ~~three~~ five percent for a distance of 100 feet from the intersection of center lines in all directions for all streets.

c. All changes in grades for local streets and thoroughfares shall be connected by a vertical curve of a minimum length of ~~40~~ 20 times the algebraic difference in the percents of grade ("K" value). Stop conditions shall have a minimum "K" value of ~~14~~ 9 times the algebraic difference of the percents of grade. "K" values for arterials shall be per the AASHTO Geometric Design of Highways and Streets based on design speed.

d. The city manager may consider deviations from these standards based on topographic conditions or public safety concerns~~.~~ for Local Streets when natural site slope exceeds 15%. Vertical curves with 10 times the algebraic difference in the percents of grade ("K" value) and stop conditions with 5 times the algebraic difference in the percents of grade ("K" value) may be permitted under this condition.

8. **Street curves.** Street curves shall maintain the minimum radii established in Table 4.03.C.8: Minimum Curve Radii and Tangents:

TABLE 4.03.C.8: MINIMUM CURVE RADII AND TANGENTS		
STREET TYPE	**MINIMUM RADII (FEET)**	**MINIMUM TANGENT DISTANCE BETWEEN REVERSE CURVES ON THE SAME STREET (FEET)**
Expressways and Boulevards	600	150
Major and Minor Thoroughfares	~~400~~ 230	100
Local Streets	~~150~~ 90	0

9. **Street drainage.**

   a. All required drainage facilities associated with a street right-of-way shall be constructed prior to consideration of a final plat.

   b. Storm sewers, drains, and structures installed by the subdivider shall be installed of a size, type, and in locations as approved by the city manager, or NCDOT, as appropriate.

   c. Street drainage facilities located outside the street right-of-way shall be maintained by the developer, the landowner, or an owners' association, and maintenance responsibility shall be noted on the final plat.

   d. The city shall not be responsible for any private or commonly-held subdivision drainage infrastructure connected to publically-maintained drainage facilities, streams, or other outlets having constant flow.

10. **Sight distance triangles.**

   a. **Sight distance triangles established.**

      i. Corner lots and lots with driveways, alleys, or other methods of ingress/egress to a street shall include sight distance triangles to ensure visibility for drivers and pedestrians moving through or in an intersection.

      ii. Required sight distance triangles shall be configured in accordance with Table 4.03.C.10: Sight Distance Triangle Requirements.

      iii. Land within a required sight distance triangle shall comply with the standards in Section 4.03.C.10.c, limitations on obstructions within required sight distance triangles.

TABLE 4.03.C.10: SIGHT DISTANCE TRIANGLE REQUIREMENTS		
TYPE OF STREET, INTERSECTION, OR DRIVEWAY		**MINIMUM REQUIRED SIGHT DISTANCE TRIANGLE [1] [2] [3]**
Intersections of Streets [4]		10/70
Driveways Serving Parking Lots		10/70
Driveways Serving Land Uses Without Parking Lots	Residential	None
	All Other Uses of Land	10/70 wherever possible
NOTES:		
[1] See Figure 4.03.C.10, Sight Distance Triangles, for the 10/70 configuration.		
[2] The NCDOT may require an alternate configuration.		
[3] AASHTO requirements shall be applied to streets with curves.		
[4] Includes all streets, including public streets.		

   b. **Measurement of sight distance triangle.** Sight distance triangles shall be an area between a point at the edge of a street right-of-way located 70 linear feet from the intersection and a second point at the edge of the opposing street right-of-way located ten feet from the intersection (see Figure 4.03.C.10, Sight Distance Triangles).

LEGISLATIVE COMMITTEE OF THE PLANNING BOARD

Meeting Date–October 2nd, 2023

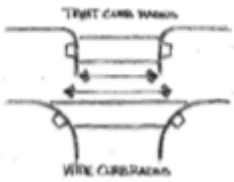
The Legislative Committee reviews all text amendments prior to consideration by the Planning Board. The committee members in attendance were:

- Jim Robertson
- Neil Brown
- Peter Hanley

Committee members discussed the proposed changes with staff and the reasoning behind the changes. The legislative committee had a general consensus supporting the proposed text amendment. The committee did not propose any changes to the text amendment language.

One member of the general public was present during the meeting. No public comments or questions were received for this proposed text amendment during this meeting.

COMPREHENSIVE PLAN CONSISTENCY	
Land Use & Development	*Strategy LU-3.6. Update the Zoning Code (or Subdivision Ordinance) to ensure conformance with the Comprehensive Plan.*
	Strategy LU-3.5. Minimize negative impacts from growth and land use changes on existing land uses.
	Strategy LU-3.4. Promote fiscal responsibility for the City with the expansion of infrastructure and services.
Population & Housing	*Goal PH-3. Promote safe and walkable neighborhoods.* *Strategy PH-3.1. Establish neighborhood design guidelines that promote safe, walkable and bikeable neighborhoods while accommodating the automobile.* *Action PH-3.1.2. Encourage public space design features that calm traffic and provide space for pedestrian gathering and circulation. Examples include sidewalks, bike lanes, village greens, narrow streets, traffic mini-circles, and curb extensions.*
Natural & Environmental Resources	*Steep Slopes-Hendersonville's mountainous terrain is a unique asset that defines the City's scenic character and attracts residents and visitors.* *Strategy NR-1.4. Control development on steep slopes in order to protect life and property from erosion and landslides and preserve the natural appearance of hillsides.* *Goal NR-3. Reduce the ecological footprint of developed and developing areas in order to reduce the impact on natural resources, create a healthy, sustainable community and reduce energy costs.*
Cultural & Historic Resources	***There are no Goals, Strategies, or Actions that are directly applicable to this petition.***
Community Facilities	**There are no Goals, Strategies, or Actions that are directly applicable to this petition.**
Water Resources	**There are no Goals, Strategies, or Actions that are directly applicable to this petition.**
Transportation & Circulation	*Goal TC-1. Develop a multi-modal transportation system that encourages pedestrian and bicycle usage in order to promote pedestrian safety, reduce vehicle miles travelled and encourage community interaction.* *Action TC-1.3.3 Implement traffic calming techniques in existing or planned mixed-use, high-density locations including the Downtown Core, Downtown Support, Urban Institutional, Neighborhood Activity Center, and Regional Activity Center categories on the Future Land Use Map.* *Strategy TC-3.2. Coordinate with the NC Department of Transportation and French Broad River Metropolitan Planning Organization (MPO) on localized transportation planning.* *Strategy TC-3.3. Implement local policies and practices that complement and expand*

	upon the State's access management standards. Figure 7.3a: Complete Streets, continued **Tightened curb radii** slow vehicle turning movements. 

GENERAL REZONING STANDARDS	
Compatibility	**Whether and the extent to which the proposed amendment is compatible with existing and proposed uses surrounding the subject property –**
	The proposed text amendment allows public streets and major subdivisions to be developed in such a way that reflects existing conditions and historical development trends. The proposed street design changes allows for rolling/mountainous terrain to retain its character and not be greatly disturbed or impacted in order to meet street design standards. The proposed changes do reduce the standards for public street design in subdivisions, they do follow the guidelines set forth by the NCDOT for areas with similar terrain as Hendersonville.
Changed Conditions	**Whether and the extent to which there are changed conditions, trends or facts that require an amendment -**
	The City's subdivision ordinance was adopted by City Council on March 5, 2020. The current subdivision ordinance was a complete rewrite and modernization from the City's previous subdivision ordinance. The modernization of the subdivision ordinance brought forth new design standards which were not represented in the previous ordinance. The new design standards aimed to provide the City and its citizens the best design product possible and to limit the impact on existing land uses. It has been 3 years since adoption and staff have worked through a good number of subdivisions in various capacities. Through this work staff have found items that prove problematic or that are meant to serve a certain purpose but unknowingly create unforeseen obstacles.
Public Interest	**Whether and the extent to which the proposed amendment would result in a logical and orderly development pattern that benefits the surrounding neighborhood, is in the public interest and promotes public health, safety and general welfare -**
	Retaining community character and environmental sensitivity continue to be main points of emphasis with Hendersonville citizens discussing Hendersonville's development future. This text amendment could allow developers to reduce the required land disturbing activity and allow them to better work within the natural slope of the land. New subdivision would not be planned through the lens of road design as heavily, and could take in more account the natural lay of the land and working within those parameters.
Public Facilities	**Whether and the extent to which adequate public facilities and services such as water supply, wastewater treatment, fire and police protection and transportation are available to support the proposed amendment**

	The proposed text amendments are a hybrid of NCDOT's street design standards. The standards provided were set by North Carolina's largest road design and maintenance entity. The standards were set forth by NCDOT with practical design and safety at the forefront. By aligning the City's standards with the standards of the NCODT, we can assure that we are representative of the latest applicable trends for roadways in the region.
Effect on Natural Environment	**Whether and the extent to which the proposed amendment would result in significantly adverse impacts on the natural environment including but not limited to water, air, noise, storm water management, streams, vegetation, wetlands and wildlife -**
	The proposed text amendment allows developers more flexibility when designing their street system to better work with the natural slope of the land, instead of requiring that they create a new slope/terrain of the property. The decrease in land disturbance will have a positive impact on grading, soil and erosion control, stream protection, and tree preservation. Street design would not be leading the design factor of subdivisions and could lead to more creative designs that take natural resources into account.

DRAFT COMPREHENSIVE PLAN CONSISTENCY AND TEXT AMENDMENT REASONABLENESS STATEMENT

The petition is found to be [consistent] with the City of Hendersonville 2030 Comprehensive Plan based on the information from the staff analysis and the public hearing, and because:

The petition aligns with the Comprehensive Plan's Strategy to Implement local policies and practices that complement and expand upon the State's access management standards (Strategy TC-3.3) and due to the fact that it incorporates some of the complete street goals outlined in figure 7.3a.

We [find] this proposed subdivision text amendment petition to be reasonable and in the public interest based on the information from the staff analysis and the public hearing, and because:

DRAFT [Rationale for Approval]

- *The proposed text amendment creates flexibility for subdivision developers to work with the existing terrain and slope of the property when designing their development and public street system.*
- *The proposed text amendment has the potential to reduce the amount of land disturbed within a proposed subdivision which could decrease environmental impacts.*
- *The proposed text amendment aligns the ordinance with existing local public street conditions and NCDOT standards.*

DRAFT [Rational for Denial]

- *The proposed text amendment reduces the required horizonal curve radius for public street within a subdivision.*
- *The proposed text amendment lowers the required K value for public streets within a subdivision.*
- *The proposed text amendment increases the maximum road grade for public streets within a subdivision.*