EXHIBIT B

CR-1-2024 Inclusion File 1

Section 1 Roadway Development Guidelines

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Exhibit B
Section 1
Roadway Development Guidelines

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B. General Information

The purpose of the *Specifications and Standards for Roadways and Bridges in Prince George's County, Maryland* (*Specifications and Standards*) is to promote uniform and consistent criteria, standards, and practices for the construction of roadways in Prince George's County, Maryland (the County). Section I serves as a guide to Permittees and their engineers, County Department of Public Works and Transportation (the Department) staff reviewers and designers, and consultants. It is intended for use, in conjunction with the requirements set out in Section II, "Technical Specifications," and Section III, "Standard Roadway Sections and Details," and regulations and policies of the Department, as well as applicable State and Federal standards, for the design and construction of a roadway system that is safe, efficient, durable, aesthetically pleasing, and environmentally acceptable.

The engineering data and recommendations presented herein are intended to represent acceptable standards for routine designs in normal circumstances. For Regional Transit Districts and Local Centers, the Urban Street Design Standards in Table I-1.5 and Exhibit A shall apply. The Table I-1.5 and Exhibit A standards may also be used elsewhere in the county. The user of this document should be alert, however, to the existence of special or nonstandard situations involving roadway design. Any departures from normal circumstances should be considered in consultation with Department reviewing engineers. Lowering of the acceptable standards established herein should be avoided unless there is a reasonable expectation that the situation will be up- graded at a future time to conform to these standards and it is evident that the lowered standards will fully meet the needs of the design requirements and predicted traffic volume for the life of the development without jeopardizing safety.

NOTE: For all roadways in Regional Transit Districts and Local Centers Urban Street Design Standards shall be used, see Table I-1.5 in Section I, and Exhibit A

NOTE: Any lowering of standards from those prescribed in this document shall occur only with the prior written approval of the Department Director.

Departures from these standards that result in consistently higher standards and innovative solutions promoting traffic safety, and roadway durability and capacity, are encouraged.

NOTE: In all cases, roadway designs prepared for use in Prince George's County are subject to final review and approval by the Department Director.

These *Specifications and Standards* govern the design and construction work done in relation to Prince George's County Capital Improvement Program (CIP) projects and construction contracts administered by the Department, except in those instances referenced in such contracts. The scope of services to be performed

under a departmental design contract, the design approval criteria, and the exact work to be performed under a departmental construction contract will be established by the Department Offices of Engineering, High- way Maintenance, Project Management, and/or Transportation, using the guidelines, specifications, and standards provided in these specifications.

1. Definitions

The technical, geometric, structural, and design terms used in these *Specifications and Standards* shall have the meanings stated in the *Standard Specifications for Construction and Materials* of the Maryland State Highway Ad- ministration (MSHA), and the Prince

George's County Code, Subtitle 23. Where not defined therein, those terms shall have the meanings established by the American Association of State Highway and Transportation Officials (AASHTO) and the American Society for Testing and Materials (ASTM).

In addition, certain terms that are used in this document, pertaining to areas outside Regional Transit Districts and Local Centers, shall be defined as follows:

Arterial roadway—A through roadway with four to six traffic lanes divided by a median and designed to carry higher traffic volumes where parking and direct access are generally prohibited, and entrances, intersections, and median crossings are placed at wide intervals

Major Collector roadway—A through roadway with four traffic lanes divided by a median and designed to carry moderate traffic volumes where parking is generally prohibited and direct property access is limited

Collector roadway—A through roadway with four traffic lanes divided by a painted centerline and designed to carry moderate traffic volumes where parking is generally prohibited and direct property access is limited

Commercial roadway—A roadway designed with sufficient strength to serve adjacent properties with commercial zoning designations; low-volume two-way traffic lanes may be accommodated, as well as some on-street parking, unless otherwise prohibited

Department—The Prince George's County Department of Public Works and Transportation

Industrial roadway—A roadway designed with superior strength to accommodate all industrial-related vehicles and serve adjacent properties having industrial zoning designations; high-volume two-way traffic lanes may be accommodated where on-street parking is prohibited

Residential roadway—A local roadway designed to accommodate light vehicle traffic and to serve adjacent property having residential zoning classifications

Road Ordinance—Subtitle 23 of the Prince George's County Code

For roadways and related facilities inside Regional Transit Centers and Local Centers, the additional urban street types defined in Exhibit A Urban Street Design Standards, July 2023, and summarized in Table I-1.5 shall be used. The additional urban street type standard may be used in the rest of the county. Current street type standards are prohibited in Regional Transit Districts and Local Centers.

2. Abbreviations

The abbreviations listed in GP-Section 1, Item 1.04, of the MSHA *General Provisions for Construction Contracts*, latest edition, are adopted.

Chapter 2

Objectives and Road Classifications

A. Objectives

The general intention of these roadway classifications is to meet [~~three~~] objectives. First, new roadway construction or reconstruction shall result in roadways that are safe and that promote mobility for auto, pedestrian, bicycle, public transit, and all other elements of the traveling public. [~~Second, to the extent possible, sufficient roadway capacity should be developed to accommodate existing local and regional traffic as well as that anticipated by recognized future traffic projections. Third, t~~]These objectives should be attained in a manner that is aesthetically pleasing, with minimal adverse impact on the environment, including all lands adjoining the roadway. Because the primary objective is safety, all aspects of roadway design and construction (including hiker/biker trails, sidewalks, and street lighting) are expected to adhere to minimum nationally recognized standards. Where it is practical and consistently attainable, the highest level of safety should be sought by exceeding these minimum standards.

Subject to the foregoing, all roadway design and construction must meet the additional objectives of providing a safe, durable, low maintenance, right-of-way area that is free of clutter, drainage problems, and other nuisances in a high-quality and visually pleasing environment. In all cases, the Department Director or a duly authorized representative shall have final approval authority for all proposed roadway improvement projects within County rights-of way.

B. Road Classifications

The following are the functional classifications of roadways in Prince George's County. [~~Urban c~~]Classifications are closed section (e.g., with curb and gutter) and rural classifications are open-section (e.g., no curb and gutter) roadways. For appropriate widths and rights-of-way, see Table I-1. and Table I-1.5 in Section I. The Urban Street Design Standards defined in Exhibit A and Table I-1.5 shall control in the event of any conflicts between these standards and the road classifications cited here.

1. Arterial Road [~~(Urban and Rural)~~]

A through roadway which links principal State highways, or County arterial or collector roads. An arterial road:

- Is intended to serve major centers of activity in urban and rural areas and to carry the highest traffic volumes of County roadways;
- Separates opposing traffic with a median of sufficient width to contain exclusive left-turn lanes and to allow crossing vehicles to clear one-half of the roadway and wait safely in the median

before entering the other half;

- Provides four or six through lanes; • Generally prohibits on-street parking and direct private property access; where allowed, such parking and access are supported by additional lanes and specially approved entrances;
- Provides controlled access, limited to widely spaced entrances, intersections, and median crossings; with left turn, acceleration, and deceleration lanes; and signals provided as necessary;
- May use curbed or open drainage construction in both the median and roadside areas, depending on the setting and conditions of connecting roads; and • In urban areas only, may provide either sidewalks or hiker/biker trails for pedestrian use.

Generally, the median width may vary, depending on the intersection and median crossing requirements and the availability of sufficient right-of-way width to accommodate the median. Additional median and/or right-of-way widths may be provided to accommodate sidewalks, hiker/biker trails, bike lanes, and future high-occupancy vehicle lanes, busways, or other public transit facilities (e.g., light rail). Arterial roads shall be constructed to conform with the requirements stipulated in Section III, Standards 100.01 and 100.08.

2. Major Collector Road [~~(Urban and Rural)~~]

A through roadway which links State highways, or County arterial or collector roads. A major collector road:

• Is intended to carry moderate daily and peak traffic volumes typical of generally continuous, occasionally interrupted, traffic flow along a route that is dominant over the local streets, but subordinate to the State highways and County arterial roads;

• Separates opposing traffic by a median or painted centerline median and contains exclusive left-turn lanes while maintaining continuity;

• Provides four through lanes;

• Generally prohibits on-street parking and direct private property access; where allowed, such parking and access are supported by additional lanes or bays;

• Provides entrances, intersections, and median crossings that are spaced to avoid interference with right turn, acceleration, or deceleration lanes, as necessary;

• In urban areas only, may provide sidewalks or hiker/biker trails for pedestrian/bicycle use or bike lanes within the travel lanes; and

• May use curbed or open drainage roadside construction, depending on the setting and conditions of connecting roads.

Major collector roads shall be constructed to conform with the requirements stipulated in Section III, Standard 100.02.

3. Collector Road [~~(Urban and Rural)~~]

A through roadway comparable in function to a major collector road, except a median or other physical traffic barrier to separate opposing traffic is not required other than at critical locations. The collector road:

• Separates opposing traffic by a painted centerline or, where warranted, by a painted continuous two way left-turn lane or exclusive leftturn lane; such exclusive left-turn lanes may be required in:

  • Commercial areas where access spacing is close;

  • Residential areas where homes front the roadway; or

  • Any area where closely spaced intersections require frequent transitions to accommodate left turns;

• Provides four through lanes for ultimate construction, except that, where traffic volumes are expected to remain low for some time, a phased construction of two through lanes with provisions for future widening may be provided; in addition:

• On a four-lane collector where onstreet parking is prohibited and where there is not a continuous left-turn lane, the pavement width is 46 feet; where one-side parking or separate bicycle lanes are required, a width of 54 feet is necessary;

• On a four-lane collector with a continuous left-turn lane, where on-street parking is prohibited, a width of 58 feet is necessary; and • In low-traffic rural areas,

permanent two-lane construction may be allowed;

• Treats on-street parking, direct private property access, entrances, intersections, and crossings in the same manner as a major collector road, except that access may be more liberally allowed in urbanized areas;

• In urban areas only, may provide sidewalks or hiker/biker trails for pedestrian/bicycle use or bike lanes within the travel lanes; and

• May use curbed or open drainage roadside construction, depending on the setting and conditions of connecting roads.

Collector roads shall be constructed to conform with the requirements stipulated in Section III, Standards 100.03, 100.04, and 100.09.

4. [~~Urban~~] Commercial and Industrial Road

A local roadway serving a developed area having commercial or industrial uses on either side, or predominantly institutional or high-density residential uses in the general area. A commercial and industrial road:

• Is geometrically similar to a collector road;

• Is intended to allow for frequent turning movements, and occasional curbside parking or standing of heavy vehicles;

Separates opposing traffic by a painted centerline;

• Restricts on-street parking and direct private property access only where necessary for capacity, turning movements, or safety;

• Requires curbed roadside construction; increased intersection curb radii should be provided to accommodate large vehicles;

• Industrial roads require a more durable pavement design to accommodate increased-weight vehicles, characteristic of industrial areas; and

• May provide sidewalks for pedestrian use.

Commercial and industrial roads shall be constructed to conform with the requirements stipulated in Section III, Standard 100.05.

5. Primary Residential Road [~~(Urban and Rural)~~]

A local roadway intended to distribute light vehicles and occasional service traffic into or through a large residential area from a dominant roadway. A primary residential road:

• Is intended to serve adjacent properties with a clear two-way roadway at low speeds subject to traffic interruptions at intersections and driveways; through and point-to-point traffic may occur;

• Separates opposing traffic by a painted centerline;

• Restricts direct private property access only where necessary for capacity, turning movements, or other safety considerations;

• Restricts on-street parking only in the case of open drainage construction

where the shoulder width is insufficient to park vehicles clear of the two through lanes and where necessary for safe turning movements;

- May require either curbed or open drainage roadside construction, depending on the continuity with adjacent construction, available right-of-way, lot widths, spacing of entrances,availability of sufficient off-street parking, or drainage requirements; curbed construction is required where the abutting development will result in closely spaced entrances or where off-street parking will be in short supply, as is usually determined by the predominant lot widths, sizes, or setbacks, and by where the continuity of the roadway or drainage requires curbing; and
- In urban areas only, provides sidewalks for pedestrian use.

Primary residential roads shall be constructed to conform with the requirements stipulated in Section III, Standards 100.06 and 100.10.

6. Secondary Residential Road ~~[(Urban and Rural)~~]

A local roadway intended to provide access to small residential areas with very limited or no through traffic. A secondary residential road:

- Is intended to provide adjacent properties with slow-speed access adequate for light vehicles and occasional service vehicles;
- Provides one clear through lane;
- May require opposing traffic to yield or to use adjacent parking lanes for passing;

Generally does not restrict direct private property access, except in proximity to intersections;

- Restricts on-street parking only in the case of open drainage roadside construction, or where necessary for turning movements or other safety considerations;
- May require either curbed or open drainage roadside construction, depending on the density, setting, location, and style of the residential development and conditions of the connecting roads; curbed construction is required where the abutting development will result in closely spaced entrances or where off-street parking will be in short supply, as is usually determined by predominant lot widths, sizes, or setbacks, and by where the continuity of the roadway or drainage requires curbing; and
- In urban areas only, provides sidewalks for pedestrian use.

Secondary residential roads shall be constructed to conform with the requirements stipulated in Section III, Standards 100.07 and 100.11.

7. Scenic or Historic Rural Road

A through roadway which has been designated as possessing unique scenic or historic characteristics deemed worthy of preservation. Scenic or historic roadways may include among their identifying features: scenic views, distinctive topographical features, curving and/or rolling roadway alignments, leaf tunnels, views of historic buildings or sites, etc.

Chapter 3
Road Design Guidelines and Criteria

A. Design

1. Design Speeds, Radii, Grades, and Sight Distances

For purposes of designing safe roadways, the geometric and sight distance values recommended in Table I-2 should be used. They are derived from the applicable AASHTO criteria. In accordance with AASHTO publications, the designer is expected to make a reasonable effort to provide sight distances equaling or exceeding those stated herein or as appropriate to the approved design speed throughout the length of the roadway under design.

Bearing in mind the goal of consistent driver expectation, the designer should use consistent standards to discourage driving at excessive speeds when transitioning onto roads with more restrictive standards. Specific situations, however, may allow other design speeds and provisions for corresponding sight distances, in consultation with Department reviewing engineers. The designer has latitude to submit designs based on other speeds if supported by recognized, authoritative references for the expected future traffic situation.

In urban situations and when approaching all intersections, necessary stopping sight distances require that pavement geometry, markings, and other traffic controls be visible sufficiently in advance for vehicle operators to stop their vehicles before they reach objects in their paths. Drivers should be able to comply without having to make abrupt maneuvers.

NOTE: For all roadways in Regional Transit Districts and Local Centers Urban Street Design Standards shall be used, see Table I-1.5 in Section I, and Exhibit A

NOTE: See Table I-2 at the end of Section I for recommended radii, grades, and stopping sight distances.

Stopping sight distance is measured from a height of 3.5 feet (equivalent to a driver's eye) to the height of a 2-foot object lying on the surface of the road. Intersection sight distance is measured from a point on the minor roadway at least 15 feet from the edge of the major roadway pavement and measured from a height of 3.5 feet on the minor roadway to a 3.5-feet-high object in the major roadway. Both of these values must be considered at a driveway or intersection located near vertical or horizontal curves.

These eye-height and object-height criteria are established in the AASHTO Policy on Geometric Design of Highways and Streets, latest edition, which shall be used as the principal authority to justify any variance of design elements from these recommendations. The designer shall make a reasonable effort to provide sight distances equal to or exceeding those established by the applicable AASHTO publication.

The minimum centerline grades for all classes of roads are:

- 1 percent for urban (curbed) roads; and
- 2 percent for rural (side ditch or swale-drained) roads in cuts.

Where it will be necessary to allow surface flow across an intersection to drain to a curb return, the minimum grade of the roadway parallel to the swale shall not be

Table I-1.5

Summary of Urban Street Design Standards

The following table summarizes the key design elements and street dimensions for the county's urban street design standards. County streets within designated Regional Transit Districts, Local Centers, and Planned Development zones may only be constructed to these standards; no other standards shall be used in the design or construction of such streets. These design elements and standards may be applied elsewhere in the County.

Urban Street Type	Minimum Right of Way	Median Width	Design Speed (mph)	Maximum Travel Lanes	On-Street Parking	Bicycle Facility	Functional Classifications (MPOT)
Mixed Use Boulevard (A) - 2 Travel Lanes	99' (89')(83')	16' (6') (0')	25	2	8'	6.5' separated bike lane	Urban Center Arterial Major Collector
Mixed Use Boulevard (B) - 2 Travel Lanes	92' (82')(76')	16' (6') (0')	25	2	8'	5' bike lane	
Mixed Use Boulevard (A) - 4 Travel Lanes	119' (109')	16' (6')	25	4	8'	6.5' separated bike lane	
Mixed Use Boulevard (B) - 4 Travel Lanes	116' (106')	16' (6')	25	4	8'	5' bike lane with 2' paint barrier	
Mixed Use Boulevard (A) - Center Turn Lane	93'	None	25	2	8'	6.5' separated bike lane	
Mixed Use Boulevard (B) - Center Turn Lane	86'	None	25	2	8'	5' bike lane	Urban Center Arterial Major Collector Collector
Neighborhood Connector(A)	83' (75')	None	20-25	2	8'	6.5' separated bike lane	Urban Center Primary Secondary
Neighborhood Connector (B)	66' (58')	None	20-25	2	8'	5' bike lane	
Neighborhood Residential (New)	60' (53')	None	20	2	7'	5' bike lane	Urban Center N/A
Neighborhood Residential (Existing)	Existing	None	20	2	7'	Add 5' bike lane where ROW permits, otherwise use shared lane marking/signs	Urban Center N/A
Urban Industrial Street	48' (57')	None	20	2	(9')	None	Industrial
Shared Street	50'	None	10	2	None	None	Urban Center Primary Secondary
Alley	20'	None	10	1	None	None	N/A

1) Street tree planting areas will be provided to the specifications of Sections 27-4204(b)(1)(C) or 27-4303 of the Zoning Ordinance. Where multiple zones exist along a block, the most expansive street tree planting areas required shall be provided.
2) Sidewalks will be provided to the specifications of Sections 27-4204(b)(1)(C) or 27-4303 of the Zoning Ordinance. Where multiple zones exist along a block, the widest sidewalk required shall be provided.
3) All intersections shall have a 15' turning radius. 15' turning radii for urban streets (maximum), 25' turning radii for bus and truck routes (maximum). Use effective turning radii & mitigate to accommodate large vehicles.
4) All vehicle travel lanes should be 10' wide except along designated bus routes, where 11' lanes are acceptable. Outside lanes may be expanded to 12' on those blocks containing driveways to loading dock ramps. Lane width restrictions do not apply to Industrial Streets.
5) Slip lanes are prohibited except as outlined in the procedures contained in Section 23-146(d) of the Prince George's County Code.
6) Multiple left turn lanes are strongly discouraged.
7) 11' transit-priority lanes are strongly encouraged on streets with multiple bus routes; along these streets, a four-lane Mixed Use Boulevard design with outside transit priority lanes may be used, where the outside lane is 11' wide, contains red transit priority paint markings, appropriate signage, and may include transit priority signals.
8) Mixed-Use Boulevards designed to ultimately support four travel lanes should be limited to two travel lanes in initial operation to limit vehicular speeds to achieve a 25-mph design speed. The additional horizontal area where the third and fourth lanes would ultimately be reserved for on-street parking, transit priority measures, green space, or other non-automobile use.