Historically, there has not been a “go to” resource for developing or retrofitting Park & Ride lots in Virginia, making it challenging for local governments and agencies to design a lot that is safe, accessible, environmentally sensitive, and compliant with federal and state requirements.

The Park & Ride Design Guidelines, developed by the Virginia Department of Transportation (VDOT), seek to add clarity to Park & Ride design and provide a user-friendly framework from which users can make informed decisions regarding lot layout, services, amenities, and green infrastructure. The Guidelines are not prescriptive, but are intended to streamline information from agencies, such as VDOT, the Department of Rail and Public Transportation (DRPT), the Virginia Department of Conservation and Recreation (DCR), and the Virginia Department of Environmental Quality (DEQ). VDOT’s Road Design Manual is particularly important, as it includes requirements for ADA parking and accessibility, drop-off and pick-up areas, bus loading/unloading, and other important requirements. Note: the VDOT Road Design Manual is only viewable in Internet Explorer.

The Guidelines are segmented by lot type (High Density, Medium Density, Low Density) to help distinguish lots based on their services, amenities, and surrounding environments. These lot types were loosely developed based on the VTrans2040 Placetypes, but are not rigidly defined because VDOT understands that each lot varies in terms of its purpose and need. The lot types are briefly described below and illustrated through aerial visualizations.

### HIGH DENSITY LOTS
High Density Lots are typically located in multimodal suburban/urban areas that are accessible by high capacity transit (Metrorail or frequent bus service) and to cyclists and/or pedestrians. They typically require specific traffic patterns and designated entrances/exits for varying vehicle types (transit, bicycles, single-occupancy vehicles, etc). They offer various services amenities and utilize a range of green infrastructure.

### MEDIUM DENSITY LOTS
Medium Density Lots are typically located in suburban areas and/or near interstates/interchanges. They typically have bus service, carpooling or vanpooling (including slugging), and may be accessible to cyclists and/or pedestrians. They typically require specific traffic patterns and may have designated entrances/exits for transit vehicles. They offer various services and amenities (based on lot size and demand) and include a range of green infrastructure.

### LOW DENSITY LOTS
Low Density Lots are typically located in rural areas near interstates or arterial roadways. They typically have limited transit service, if at all, are typically used for car/vanpooling, and may require one-way traffic patterns and/or angled parking. They typically include green infrastructure.

Each lot type is displayed in the context of three themes: 1) Lot Layout; 2) Amenities and Features; and 3) Green Infrastructure and Technology, each of which is presented based on a series of potential characteristics (see Table 1).

In addition, the Guidelines identify the “Required”, “Preferred”, and, in some cases, “Suggested” features for each of the three themes. Required Features are typically consistent with federal and/or state guidelines; Preferred Features are recommended, but may depend on lot needs and characteristics; and Suggested Features are encouraged when feasible, but are not required. Design graphics are provided for illustrative purposes to show required, preferred and suggested accommodations and amenities and do not constitute design standards for referenced facilities. As referenced, the VDOT Road Design Manual provides detailed design guidance and specifications for amenities.

### UNDERSTANDING THE GUIDELINES
The Guidelines are intended for digital viewing and hyperlinks are provided in cases where additional information may be needed. For example, the Guidelines frequently reference the VDOT Road Design Manual for more detailed requirements. Note: the Road Design Manual is only viewable in Internet Explorer.
HIGH DENSITY LOTS

High density lots are typically located in multimodal suburban/urban areas that are accessible by foot, bicycle, and high-capacity transit (Metrorail or frequent bus service). They typically have two-way traffic patterns, 90-degree parking and designated entrances/exits for transit vehicles. They offer various services and amenities and utilize a range of “green” parking lot techniques to minimize stormwater runoff.

LOT LAYOUT

REQUIRED FEATURES

A PARKING
Install perpendicular, 90-degree parking in order to maximize the number of spaces. Provide ADA-accessible parking including van-accessible parking. See VDOT Road Design Manual for precise requirements (Appendix A(1), Section A(1)-2 Parking Design Features).

B DROP-OFF AND PICK UP
Include passenger drop-off and pick-up areas (kiss & ride) that are at least 8’ wide and 20’ long. See VDOT Road Design Manual for detail (Appendix A(1), Section A(1)-2 Parking Design Features). Provide a designated drop-off/pick-up area for mobility-on-demand services, like Uber and Lyft.

C BUS LOADING/UNLOADING
If served by transit, provide bus boarding lanes (minimum of 12’ wide) and bus boarding areas (minimum of 50’ long) for each standard bus (70’ for articulated buses). Work with the local transit agencies to determine the bus boarding configuration. See VDOT Road Design Manual for design details on different bus boarding configurations (Appendix A(1), Section A(1)-3 Transit (Bus) Facilities Design Criteria).

D VEHICLE CIRCULATION
Include 26’ parking aisles (minimum) for lots with two-way traffic and 90-degree parking. See the VDOT Road Design Manual for details on minimum one-way and two-way aisle widths for 90, 60, and 45-degree parking configurations (Appendix A(1), Section A(1)-2 Parking Design Features – Rest Areas). If served by transit, include Bus Only lanes and bus queuing areas. Include designated areas for drop-off/pick-up.

NON-VEHICLE CIRCULATION

E Install sidewalks to connect parking areas and boarding areas. Sidewalks should be a minimum of 5’ wide. Include ADA-accessible curb ramps for access onto sidewalks and loading areas. See the VDOT Road Design Manual (Appendix A(1), Section A(1)-1 Bicycle and Pedestrian Facilities).

F SLUGGING ACCOMMODATIONS
Provide designated areas/ signage for slugging and include proper pedestrian accommodations to these areas.

PREFERRED FEATURES

G DROP-OFF AND PICK UP
Include passenger drop-off and pick-up areas (kiss & ride) that conform to requirements within the VDOT Road Design Manual (Appendix A(1), Section A(1)-2 Parking Design Features).

H ACCESS/EGRESS
Provide two entrances. Provide access points on collectors or local streets rather than on major arterials or freeway ramps.

I HIGH-DENSITY LOTS
High density lots are typically located in multimodal suburban/urban areas that are accessible by foot, bicycle, and high-capacity transit (Metrorail or frequent bus service). They typically have two-way traffic patterns, 90-degree parking and designated entrances/exits for transit vehicles. They offer various services and amenities and utilize a range of “green” parking lot techniques to minimize stormwater runoff.

Figure 1: Bus Loading Area in High Density Lot
Figure 2: Bus Loading Area in High Density Lot
Figure 3: Bus Loading Area in High Density Lot

Include 26’ parking aisles (minimum) for lots with two-way traffic and 90-degree parking. Include the VDOT Road Design Manual for detail on minimum one-way and two-way aisle widths for 90, 60, and 45-degree parking configurations (Appendix A(1), Section A(1)-2 Parking Design Features – Rest Areas). If served by transit, include Bus Only lanes and bus queuing areas. Include designated areas for drop-off/pick-up.

Include 26’ parking aisles (minimum) for lots with two-way traffic and 90-degree parking. See the VDOT Road Design Manual for details on minimum one-way and two-way aisle widths for 90, 60, and 45-degree parking configurations (Appendix A(1), Section A(1)-2 Parking Design Features – Rest Areas). If served by transit, include Bus Only lanes and bus queuing areas. Include designated areas for drop-off/pick-up.

Include 26’ parking aisles (minimum) for lots with two-way traffic and 90-degree parking. Include the VDOT Road Design Manual for detail on minimum one-way and two-way aisle widths for 90, 60, and 45-degree parking configurations (Appendix A(1), Section A(1)-2 Parking Design Features – Rest Areas). If served by transit, include Bus Only lanes and bus queuing areas. Include designated areas for drop-off/pick-up.
over 50% compared to typical code. LED lighting can reduce parking lot energy use costs. The Department of Energy estimates that energy efficiency, and reduce maintenance LED lights to reduce carbon emissions, maximize to minimize light pollution, reduce glare, facilitate areas.

(Bus) Facilities Design Criteria). See the Association of Pedestrian & Bicycle Professionals for more detail on installations/ placement.

Utilize fixtures that shield the light source to minimize light pollution, reduce glare, improve visibility at night, and conserve energy.

Install trash receptacles in all boarding areas.

Bicycle parking should be provided at a rate of 1 to every 10-20 vehicle spaces.

Install directional signs and traffic control in accordance with the Manual on Uniform Traffic Control Devices (MUTCD). Coordinate with the local transit agencies to install bus route signage.

Install emergency assistance phones and video surveillance cameras (parking garages).

Provide bicycle parking at a rate of 1 to every 10-20 vehicle spaces. Provide shelters at bus transit stops. See BUS STOPS AND SHELTER

Shelters should include a bench (with backrest) and an area for wheelchairs or other mobility-assisted devices. See the VDOT Road Design Manual (Appendix A(1)), Section A(1)-3 Transit (Bus) Facilities Design Criteria.

Native, context-sensitive vegetation

Refer to VDOT Materials Division’s Manual of Instructions - Section 605.02 for PAM applications.

Install solar panels in high-sun areas to reduce energy costs and minimize environmental impacts.

Electric vehicle (EV) charging stations in priority locations while maintaining ADA parking access

Utilize Porous Asphalt Mix (PAM) when constructing or resurfacing lots. Benefits include reducing stormwater runoff, recharge groundwater, and potentially increasing the “developable” area of the site (since permeable paving can reduce the need for large stormwater management structures).

Include landscaping across approximately 10-20% of the lot (AASHTO). Consider installing solar canopies, which can maximize space, provide shelter for cars, and charge electric vehicles.
The Park & Ride Design Guidelines provide various perspectives of the High Density Lot, helping users visualize the range of required, preferred, and suggested features. Design graphics are provided for illustrative purposes and do not constitute design standards for referenced facilities/amenities.
MEDIUM DENSITY LOTS

Medium density lots are typically located in suburban areas and/or near interchanges. They typically have bus service, casual carpooling (slugging), and may be accessible by bicycle. They typically have two-way traffic patterns, 90-degree parking and may have designated entrances/exits for transit vehicles. They offer various services and amenities (based on lot size and demand) and include a range of green infrastructure treatments.

LOT LAYOUT

REQUIRED FEATURES

A. PARKING
Install perpendicular, 90-degree parking in order to maximize the number of spaces. Provide ADA-accessible parking including van-accessible parking. See VDOT Road Design Manual for precise requirements (Appendix A(1), Section A(1)-2 Parking Design Features).

B. BUS LOADING/UNLOADING
If served by transit, provide bus boarding lanes (minimum of 12' wide) and bus boarding areas (minimum of 50' long) for each standard bus (70' for each articulated bus). Work with the local transit agencies to provide sufficient space for bus queuing. See VDOT Road Design Manual for design details on different bus boarding configurations (Appendix A(1), Section A(1)-3 Transit (Bus) Facilities Design Criteria).

C. VEHICLE CIRCULATION
Include 26' parking aisles (minimum) for lots with two-way traffic and 90-degree parking. See the VDOT Road Design Manual for design details on minimum one-way and two-way aisle widths for 90, 60, and 45-degree parking configurations (Appendix A(1), Section A(1)-2 Parking Design Features - Real Areas).

D. NON-VEHICLE CIRCULATION
Install walkways or sidewalks to connect parking areas and boarding areas. Sidewalks should be a minimum of 5' wide. Include ADA-accessible curb ramps for access onto sidewalks and boarding areas. See the VDOT Road Design Manual (Appendix A(1), Section A(1)-1 Bicycle and Pedestrian Facilities).

PREFERRED FEATURES

E. DROP-OFF AND PICK-UP (KISS & RIDE)
Include passenger drop-off and pick-up areas (kiss & ride) that conform to requirements within the VDOT Road Design Manual (Appendix A(1), Section A(1)-2 Parking Design Features). Provide a designated drop-off/pick-up area for mobility-on-demand services, like Uber and Lyft.

F. ACCESS/EGRESS
Provide two entrances. Provide access points on collectors or local streets rather than on major arterials or freeway ramps (Texas Transportation Institute).

G. VEHICLE CIRCULATION
If served by transit, include Bus-Only lanes and bus queuing areas. Include designated areas for drop-off/pick-up.

H. NON-VEHICLE CIRCULATION
Install 3'-7" wide sidewalks (HACCD: PHMK) on the lot’s periphery and between parking areas. Utilize high visibility crosswalks (boulder, cross, continental) where appropriate. Install 10’ shared-use paths that connect to the surrounding area’s active transportation network. If applicable (VDOT Road Design Manual - Appendix A(1) Section A(1)-1 Bicycle and Pedestrian Facilities).

I. SLUGGING ACCOMMODATIONS
Provide designated areas/signage for slugging and include proper pedestrian accommodations to/from these areas.

Figure 5: ADA Parking In Medium Density Lot

Stafford Plaza Lot, Va (Medium Density Lot)
The image contains a page from the "Park & Ride Design Guidelines: Medium-Density Lots" document. The page outlines various features and guidelines for park and ride lots, particularly focusing on medium-density lots. The text is structured into sections and sub-sections, each addressing specific design considerations such as shelters and boarding areas, signage, security, and various sustainability features like green infrastructure, stormwater management, and energy efficiency.

Key points from the page include:
- **Shelters and Boarding Areas**: Shelters should include a bench (with backrest) and a 2.5' x 4' area for wheelchairs or other mobility-assisted devices. Visit the VDOT Road Design Manual for detail (Appendix A(1), Section A(1)-3 Transit (Bus) Facilities Design Criteria).
- **Signage**: Utilize Integrated Corridor Management (ICM) technologies, such as digital, real-time information on parking space availability for travelers approaching the lot or station. Note: utility ROW may be required.
- **Stormwater Management**: Utilize Porous Asphalt Mix (PAM) when constructing or resurfacing lots. Benefits include reducing stormwater runoff, recharging groundwater, and potentially increasing the "developable" area of the site (since permeable paving can reduce the need for large stormwater management structures). Refer to VDOT Materials Division's Manual of Instructions - Section 605.02 for PAM applications.
- **Solar**: Install solar panels in high-sun areas to reduce energy costs and minimize environmental impacts.
- **Green Infrastructure and Technology**: Consider installing solar canopies, which can maximize space, provide shelter for cars, and charge electric vehicles.

Other sections in the document cover preferred features such as native, context-sensitive plants; stormwater management; and medium-density lots overview.
The Park & Ride Design Guidelines provide various perspectives of the Medium Density Lot, helping users visualize the range of required, preferred, and suggested features. Design graphics are provided for illustrative purposes and do not constitute design standards for referenced facilities/amenities.
REQUIRED FEATURES
Parking Design Features (Appendix A(1), Section A(1)-2 Parking Design Features).

VEHICLE CIRCULATION

Non-vehicle Circulation
Install sidewalks and curbs to connect parking areas and boarding areas. Walkways should be a minimum of 5’ wide. Include ADA-accessible curb ramps for access onto sidewalks and loading areas. See the VDOT Road Design Manual (Appendix A(1), Section A(1)-1 Bicycle and Pedestrian Facilities).

SUGGESTED FEATURES
Drop-off and Pick-up
If warranted based on demand, include passenger drop-off and pick-up areas (bus & taxi) that are at least 8’ wide and 20’ long. See VDOT Road Design Manual (Appendix A(1), Section A(1)-2 Parking Design Features).

SHELTERS AND BOARDING AREAS
If applicable, install shelters at bus transit stops. See the VDOT Road Design Manual for detail (Appendix A(1), Section A(1)-2 Parking Design Features).

AMENITIES & FEATURES

PREferred FEATURES

Dirt Roadway

TRASH
Install trash receptacles.

SECURITY
Install emergency assistance phones.

LIGHTING
Utilize fixtures that shield the light source to minimize light pollution, reduce glare, facilitate better vision at night, and conserve energy. Install LED lights to reduce carbon emissions, maximize energy efficiency, and reduce maintenance costs. The Department of Energy estimates that LED lighting can reduce parking lot energy use over 50% compared to typical code.

SHADES AND SHADING AREAS
If applicable, install awnings and blinds over sidewalks and loading areas. See the Virginia Department of Transportation (VDOT) Stormwater Manual for information on stormwater management practices.

PREFERRED FEATURES

STORMWATER MANAGEMENT
Utilize green infrastructure and low-impact development, such as bioswales and bioretention ponds. The Virginia Stormwater Management Manual provides design standards and specifications for all stormwater best management practices (BMPs) approved for use in Virginia to control the quality and/or quantity of stormwater runoff. The Virginia Stormwater Management Manual provides practitioners, leaders, and other advocates with the tools to design streetspaces for successful stormwater management.

SUGGESTED FEATURES

GREEN TECHNOLOGY
Install solar panels in high-use areas to reduce energy costs and minimize environmental impacts.

GREEN INFRASTRUCTURE AND TECHNOLOGY

REQUIRED FEATURES

VEGETATION
Install native, context-sensitive plants.

SOLAR
Install electric vehicle (EV) charging stations in approximately 10-20% of the lot (AASHTO).

SUGGESTED FEATURES

SHELTERS AND BOARDING AREAS
Install solar panels in high-use areas to reduce energy costs and minimize environmental impacts.
The Park & Ride Design Guidelines provide various perspectives of the Low Density Lot, helping users visualize the range of required, preferred, and suggested features. Design graphics are provided for illustrative purposes and do not constitute design standards for referenced facilities/amenities.