General Wireless Permit Package Submission and Review Guidelines

Existing and New Structures within VDOT Right-of-Way

July 29, 2022

This document applies to new wireless installations on new or existing structures maintained by entities other than VDOT.

Purpose

The purpose of this document is to provide applicants and reviewers guidance for the permit application process, design submittal, installation requirements, and associated VDOT review of the wireless equipment facilities to be located within the Department's right-of-way. The basic criteria contained provide a consistent guide for the application process, the review, and the approval or denial of permit applications and are intended to ensure the safety of the general public as well as any individuals who will work on or within the vicinity of the wireless communication equipment.

Definitions

1. *Department or VDOT* means the Virginia Department of Transportation.
2. *DMV* means the Virginia Department of Motor Vehicles.
3. *VSP* means the Virginia State Police.
4. *APELSCIDLA* means the Virginia Department of Professional & Occupational Regulation's Board for Architects, Professional Engineers, Land Surveyors, Certified Interior Designers, and Land Scape Architects.
5. *NEC* means the National Electric Code and *NESC* means the National Electric Safety Code.
6. *FCC* means the Federal Communications Commission.
7. *OSHA* means the Occupational Safety & Health Administration.
8. *NCRP* means the National Council on Radiation Protection and Measurements.
9. *IEEE* means the Institute of Electrical and Electronics Engineers.
10. *ANSI* means the American National Standards Institute.
11. *RF* means radio frequency and *RF Exposure* is as defined in FCC OET Bulletin 65 and in OSHA.

12. *ITS* means Intelligent Transportation System.

13. *Permittee or applicant* means a wireless infrastructure provider or wireless services provider, as defined in §56-484.26, submitting a permit package to the Department, and would also include the wireless infrastructure or wireless services provider's successors and assigns. All guidelines included within this document apply to all entities working for the wireless infrastructure and wireless services providers, including all successors and assigns, which are aligned with the permit application.

14. *Wireless Support Structure* means a freestanding structure that is designed to support or capable of supporting wireless facilities. This does not include existing utility poles.

15. *Utility Pole* means a structure owned and/or operated by a public utility, local government or entity other than VDOT that is designed specifically for and used to carry lines, cables or wires for communications, cable television or electricity.

16. *Districtwide Permit* means a permit granted by VDOT to the applicant that allows the applicant to use VDOT's right-of-way to install or maintain small cell facilities on *existing* structures in one of VDOT's Districts or in no more than nine contiguous counties.

17. Small Cell and Microcell are defined in §56-484.26 of the Code of Virginia.

Document Organization

Flowcharts – this section outlines the application process for each permit type.

General Requirements – requirements in this section apply to all installations of wireless equipment within VDOT right-of-way on non-VDOT structures. This includes equipment installed on an existing structure under a Districtwide Permit or a Single-Use Permit, or equipment installed on a new structure under a Single-Use Permit.

Districtwide Permit - Attachment to Existing Structure not Owned by VDOT – requirements related to wireless equipment installed on an existing non-VDOT structure within the VDOT right-of-way under a Districtwide Permit.

Single-Use Permit – applies to installation on existing non-VDOT structures that have an activity that excludes it from the Districtwide Permit. This also applies to new non-VDOT structures installed within VDOT right-of-way to support wireless communications facilities.

New Structure within VDOT Right-of-Way – applies to new non-VDOT structures that are installed within the VDOT right-of-way to support wireless communications facilities.

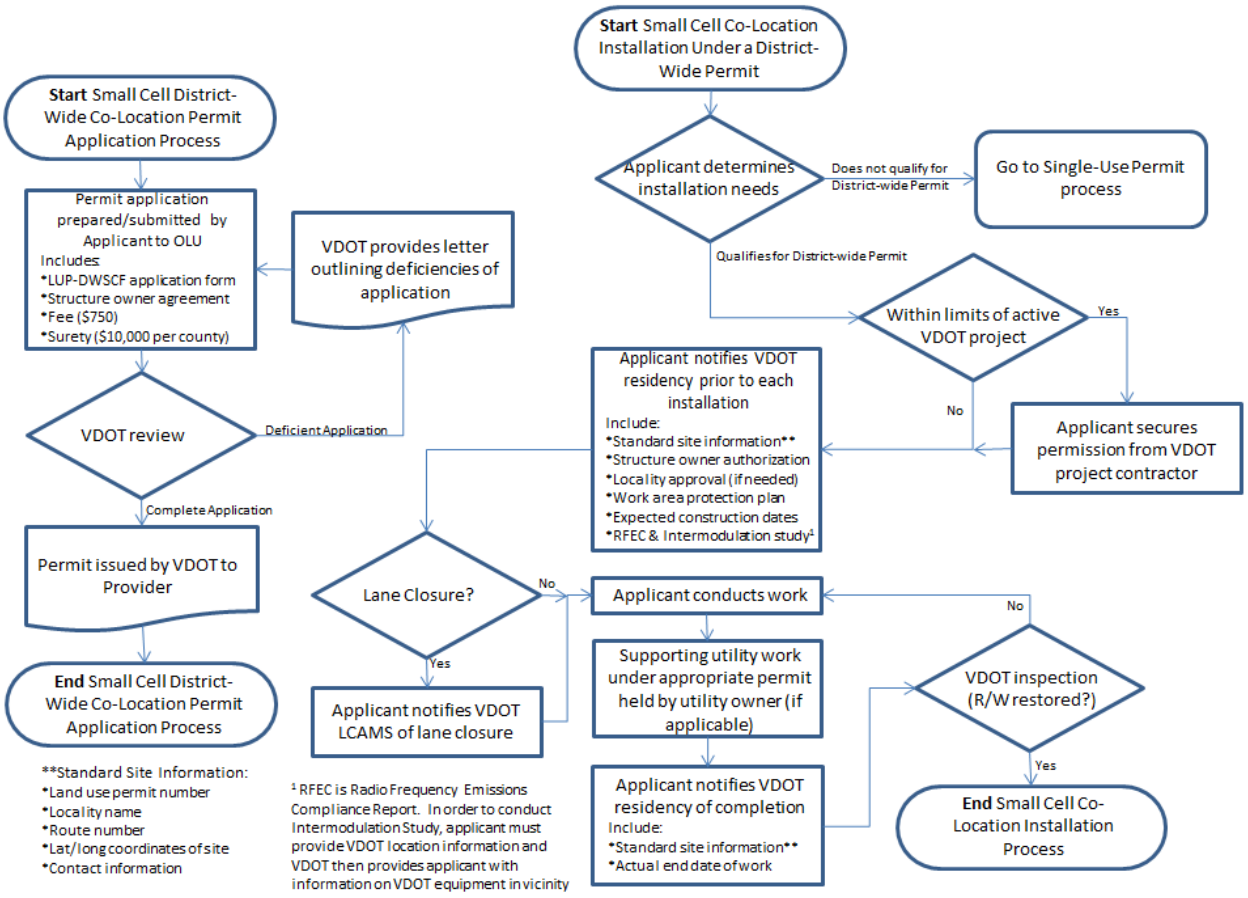
Single-Use Permit for Co-location on VDOT Structure – applies to installation on existing VDOT structures. This also applies to new replacement VDOT structures installed to support wireless communications facilities.

Checklists – For installations of wireless equipment within VDOT right-of-way.

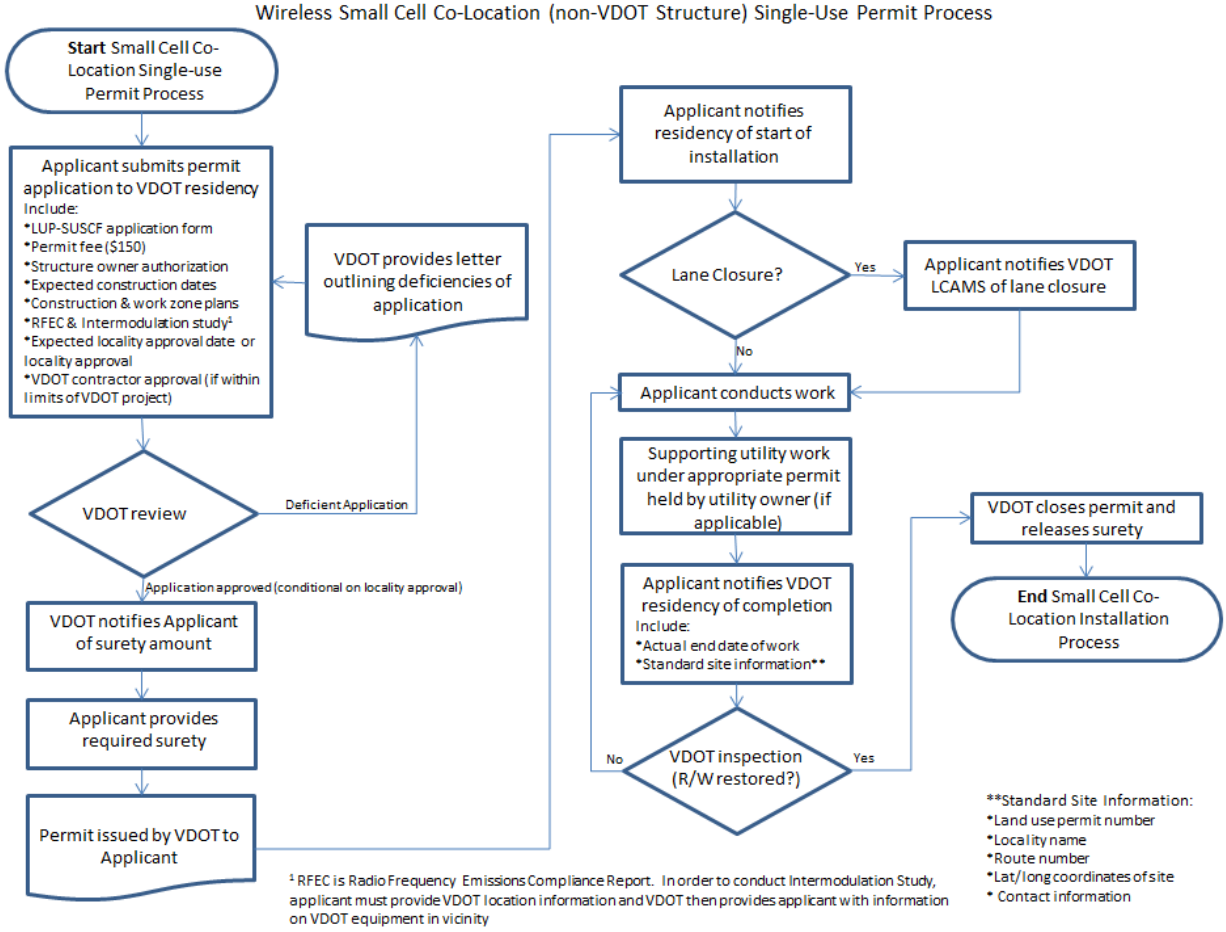
Flowcharts (Outline)

The following flowcharts outline the process for districtwide and single-use co-location permits. Actual submission requirements for each permit type are located in this document and in the permittee agreement forms.

Wireless District-Wide Small Cell Co-Location (non-VDOT Structures) Permit Processes

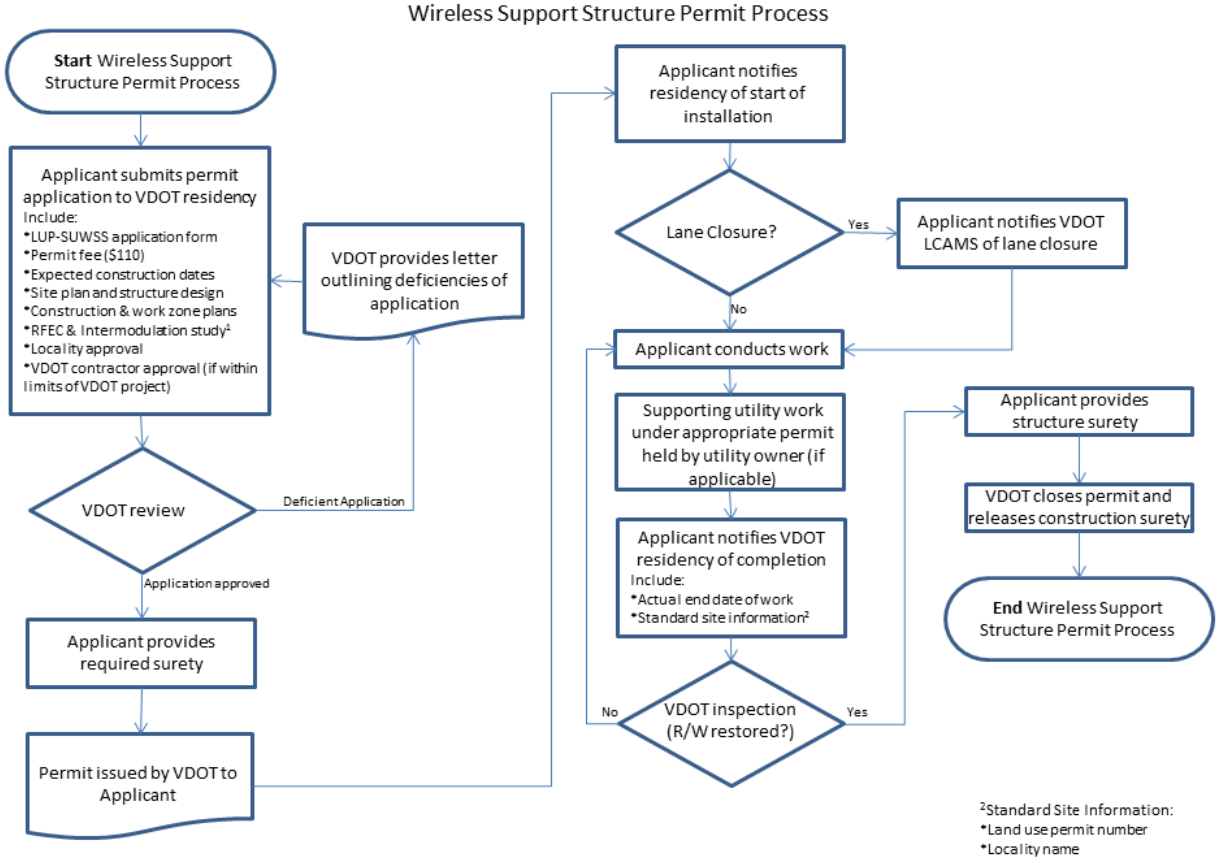


Wireless Small Cell Co-Location (non-VDOT Structure) Single-Use Permit Process



[1] RFEC is Radio Frequency Emissions Compliance Report. In order to conduct Intermodulation Study, applicant must provide VDOT location information and VDOT then provides applicant with information on VDOT equipment in vicinity

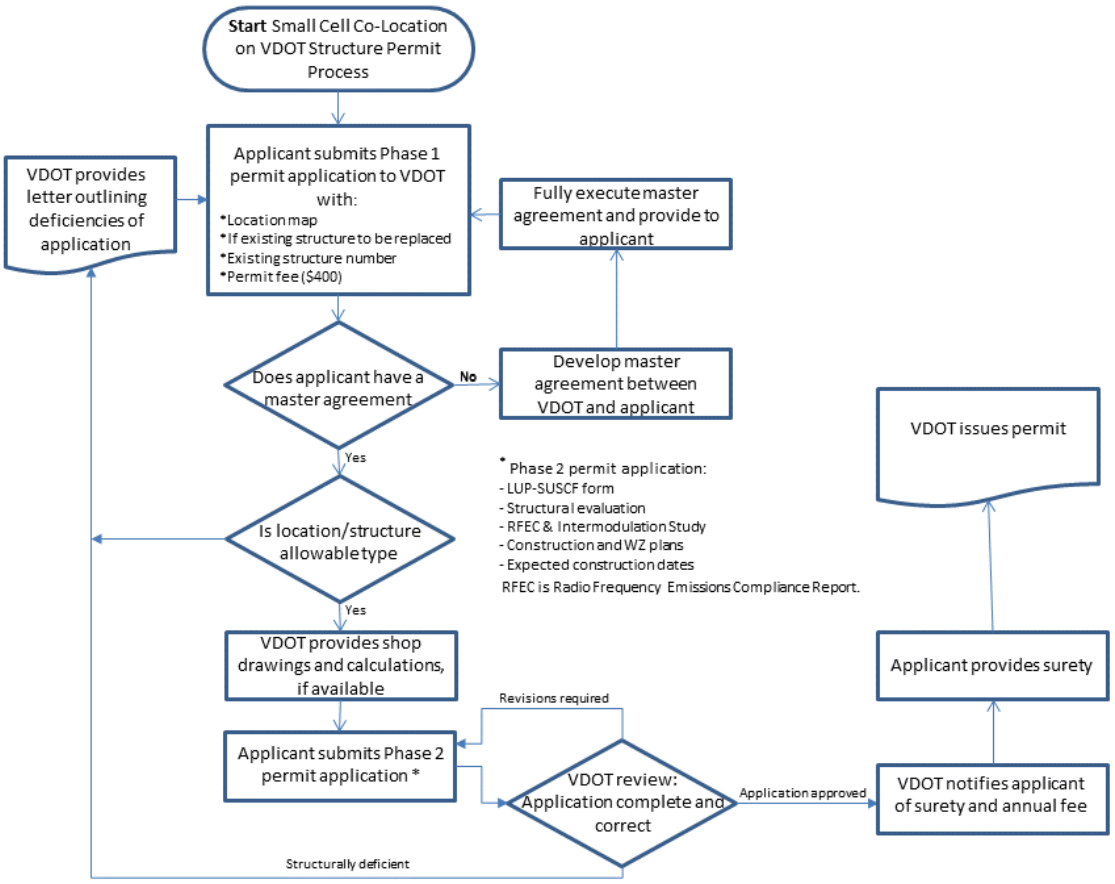
Wireless Support Structure Permit Process

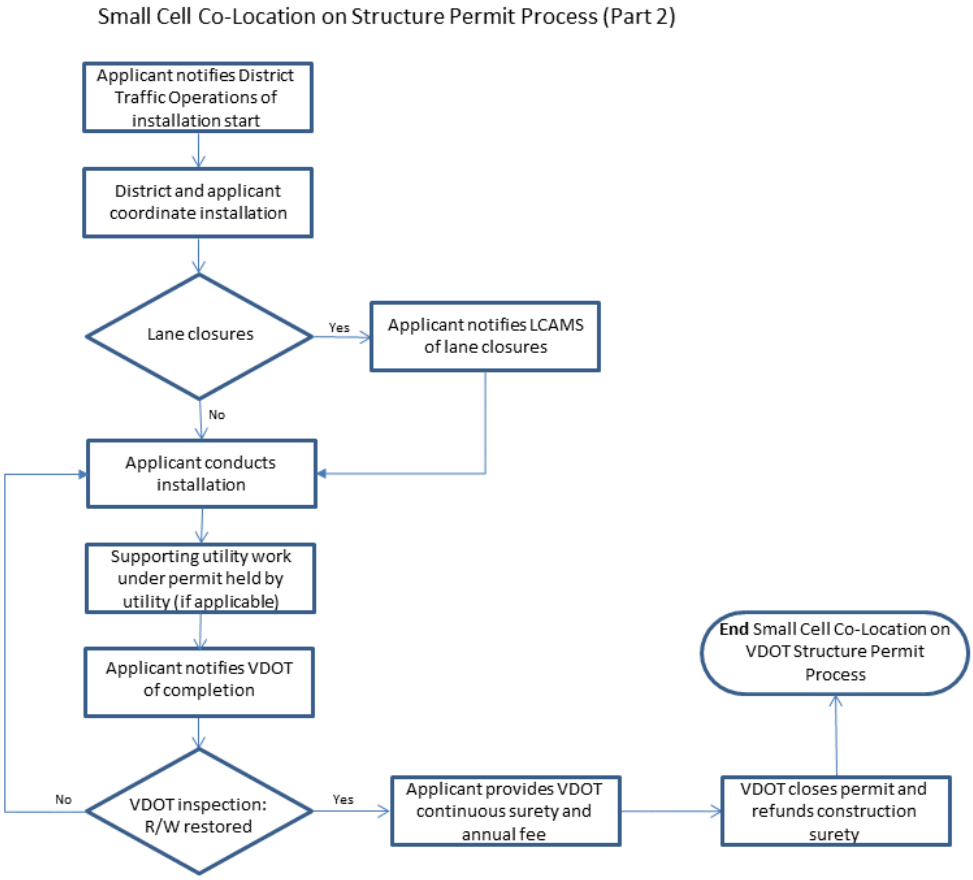


[1] RFEC is Radio Frequency Emissions Compliance Report. In order to conduct Intermodulation Study, applicant must provide VDOT location information and VDOT then provides applicant with information on VDOT equipment in vicinity

[2]Standard Site Information:
*Land use permit number
*Locality name
*Route number
*Lat/long coordinates of site
* Contact information

Small Cell Co-Location on Structure Permit Process (Part 1)





Preliminary Activities/Surveying

Prior to starting construction on a site, surveying or similar information gathering activities are frequently required (for example, to determine the precise elevation of the ground or of the location and height of existing structures). When conducted on highway right-of-way prior to site plan submission (in those instances where a plan is necessary), these surveying activities are required to be accomplished under a surveying permit (either single-use or districtwide) when:

1. Surveyors are going to be moving in areas that pedestrians are not normally encountered or are not normally permitted;
2. The surveying activities require the cutting or pruning of vegetation, including brush and trees; or
3. The surveying activity will require the closing of a sidewalk, bicycle facility, shoulder or lane, shifting traffic, or any other activities that involve work zone traffic control.

Prior to submitting a request for a land use permit, an applicant may submit preliminary information regarding a (or several) proposed sites so that VDOT may provide information on VDOT installations in the vicinity that could be impacted by the proposed facility.

For any surveying activities that impact existing pedestrian access routes, the surveyor shall be prepared at all times to move equipment and personnel out of the way to allow for unimpeded mobility by pedestrians, including those with visual or physical disabilities.

General Requirements

All wireless facility equipment installed within the VDOT right-of-way, whether permitted by Districtwide or Single-Use Permit, shall meet the General Requirements outlined herein.

Engineering and Standards

1. **ADA/Accessibility** – All facilities must comply with the current Americans with Disabilities Act (ADA) requirements and the Public Right of Way Accessibility Guidelines. No equipment shall impede the path of pedestrians, bicyclists, vehicles or other users of the right-of-way. No components shall impede visibility of pedestrian signals. Walking paths, trails, and sidewalks shall remain clear of any obstructions as per the VDOT Road Design Manual. Vertical clearance to any wireless equipment that protrudes more than 4 inches shall be at least 7 feet above a sidewalk, trail or other pedestrian pathway.

2. **Roadway Clearance** – If permitted to be installed over the road or shoulder, at least 18 feet vertical clearance (21 feet in limited access right-of-way), measured vertically from the bottom of the small cell facility or equipment to the crown (or a line extended horizontally from the crown) of the paved surface.

3. **Adjacent to Limited Access Roadway** – Wireless equipment shall not be attached to any existing structures or new wireless structures constructed adjacent to limited access roadways in such a fashion that the Permittee would need lane closures on the limited access roadways in order to install, maintain, and/or remove the Permittee's equipment.

4. **Sight Distance/Visibility** – All components shall be positioned to ensure that all sight distances and visibility requirements are met in accordance with the Manual on Uniform Traffic Control Devices (including the Virginia Supplement) and the VDOT Road Design Manual. The components must not obstruct any traffic signs or signals from motorists', bicyclists', or pedestrians' view.

5. **Transportation Management Plan** – The applicant shall use the applicable requirements in the latest version of the Virginia Work Area Protection Manual to determine the work zone traffic control plan during construction and for maintenance of the structure and wireless facility. A Transportation Management Plan shall be submitted by the applicant with the permit application for Single-Use Permits.

Electrical Service

1. **Code and Standards** – When installing or maintaining wireless service equipment within VDOT right-of-way, the wireless service provider is responsible for determining conduit/wiring requirements per the NEC, NESC, VDOT Specifications and Standards, Traffic Engineering Design Manual, and other applicable Federal and Virginia design guidelines.

2. **Conduit** – The Permittee's cables shall not share the Department's conduits, junction boxes or raceways. All conduits for electrical power and communication devices for components of the wireless facility shall be color coded, as applicable.

3. **Electrical Meter and Service Disconnect** (cut-off switches/safety switches/breakers) – The electrical service meter and electrical service breakers for any wireless device shall be mounted on the structure that supports the small cell wireless facility or within 20-ft of the structure but shall not be mounted on any ancillary VDOT cabinets or structures. All safety switch disconnecting means shall be located so they are visible or easily accessible and the means of identification shall be documented in a manner that is readily available or shall be permanently posted where the conductors of different systems originate.

   All safety switch disconnecting means shall be located so as to be visible or easily accessible {NEC Sections 230.70(A)(1) and 230.205(A) require service disconnecting means to be readily accessible}.

4. **Junction Boxes** – Permittee shall install separate junction boxes, if necessary, for communications infrastructure and electrical service cable. Use of VDOT-owned junction boxes is not permitted.

<u>Communications Compatibility</u>

1. Devices and operation of the wireless facility shall comply with FCC Rules regarding radio frequency devices. The applicant's engineer shall determine the radius of impact (i.e., proximity) for evaluation of operational interference and for the required intermodulation studies.

2. Proposed wireless equipment shall not interfere with existing or planned State communications systems within the proximity of the proposed wireless site. Wireless facility equipment, devices and structures to be located within the proximity of a Traffic Count Station, any VDOT, toll agency, and public safety wireless or line of sight equipment, or a traffic signal controller or ITS cabinet shall be tested for potential RF interference before installation of the wireless facility. Documentation of such testing shall be provided with the application or, in the case of a Districtwide Permit, with the notification of the work planned for that site. There shall be no impact on data transmission or system operations to Commonwealth of Virginia, toll facility operators, Departments of Energy and Homeland Security and locality equipment, the operation of equipment or operating frequencies for all existing and future devices and equipment installed by these entities in highway right of way. Existing and planned devices include, but are not limited to:

   a. State and public safety mesh and point-to-point/multipoint broadband communications (4.940 to 4.944 GHz)
   b. Traffic Count Station Equipment {24 GHz (K-Band) range} and the equipment in the Traffic Count Station cabinet
   c. Video Detection Cameras
   d. Microwave Detectors
   e. Emergency Vehicle Preemption (Optical and GPS)
   f. Transit Priority System (Optical and GPS),

g. Traffic Cameras and Security Cameras
h. License Plate Readers
i. Dynamic Message Signs
j. Bluetooth and other wireless receivers
k. Inductive Loops in the pavement (10 kHz to 200 kHz)
l. Equipment in the traffic signal controller cabinet
m. Wireless Ethernet {5.1 - 5.9 GHz range (Maximum 8 Watt)}
n. Dedicated short range communications (DSRC) equipment including those operating in the 5.850-5.925 GHz band (5.9 GHz ranges)
o. Homeland Security and Department of Energy detection devices
p. Line of sight and wireless Lighting Controls Systems (LCS) Gateway and Nodes including those operating within 915 MHz ISM Band range (IEEE 802.15.4, 6LoWPAN) at 3 Watt Maximum (480VAC) and 2 Watt Maximum (277VAC) or in the 2.4 GHz Band range (IEEE 802.15.4) Gateway at 12 Watt Maximum and Node at 1.9 Watt average (277VAC)
q. All Dedicated Short Range Communications (DSRC) including in the 5.9 GHz Range, VDOT roadside electronic equipment, Roadside to Vehicle communications, Vehicle to Roadside and Vehicle to Vehicle communications devices.

3. No placement may be made within 50 feet of the line of sight and the beam or wave detection zone of any VDOT, DMV or VSP equipment whose operation is line of sight, video, or radar detection dependent.

4. To reduce potential interference with VDOT devices and the advanced Roadside to Vehicle communications that VDOT will be installing and to reduce occupational RF exposures, extreme care must be taken with wireless devices within 200 meters (660 feet) of both the traffic signal controller location at signalized intersections and the nearest traffic signal pole structure. After installation of VDOT equipment and deployment of vehicle to roadside and roadside to vehicle communications, an independent intermodulation study may be performed by the wireless provider during full operation communicating with vehicles to establish a spacing distance for non-interference and to establish the safe occupational working distance to eliminate RF exposure hazards and address exposure time limits.

5. The wireless facilities installed under a permit must accept low power interference received from VDOT devices, other agencies' devices and roadside communications operational now and in the future. Future equipment will include roadside electronic equipment, Roadside to Vehicle communications, Vehicle to Vehicle communications and Vehicle to Roadside communications. Interference that may cause undesired cellular operation, may include but not be limited to:

    a. State and public safety wireless, including mesh and point-to-point/multipoint broadband communications currently in the 4.940 to 4.944 GHz range
    b. Dedicated Short Range Communications (DSRC) including the 5.9 GHz Range and all communications of data sent Roadside to Vehicle, Vehicle to Roadside and Vehicle to Vehicle using current and future frequency allocations
    c. Standard Wireless Ethernet currently operating in the 5.1 - 5.9 GHz range (Maximum 8 Watt)
    d. Standard Wireless Ethernet currently operating in the 900 to 985 MHz range
    e. vehicle inductive loop detection currently operating at 10 kHz to 200 kHz range

f. Standard Vehicle Detection Systems (current brand - Wavetronix) operating in the 24 GHz (K-Band) range
g. Homeland Security, Department of Energy, Emergency Vehicle Preemption (optical and GPS), and Transit Priority System (Optical and GPS based) devices
h. Wireless Lighting Controls Systems (LCS) Gateway and Nodes, including those currently operating within 915 MHz ISM Band range (IEEE 802.15.4, 6LoWPAN) at 3 Watt Maximum (480VAC) and 2 Watt Maximum (277VAC) and in the 2.4 GHz Band range (IEEE 802.15.4) Gateway at 12 Watt Maximum and Node at 1.9 Watt average (277VAC).

Radio Frequency (RF) Safety and Exposure

1. The wireless service provider or wireless infrastructure provider shall be responsible for assuring that each installation, and the operations thereof, for all wireless infrastructure, shall comply with FCC, OSHA, ANSI, NEC, NESC, NCRP and IEEE applicable regulations and standards for Radio Frequency Electromagnetic Fields exposures, measurements, interference, safe distances from RF transmitting antennas, based on the effective date at the time of initial installation of the wireless infrastructure and when the wireless infrastructure is upgraded or replaced.

2. Limits for Maximum Permissible Exposure (MPE) defined in the Code of Federal Regulations Title 47 – Telecommunication and the most updated edition of the FCC OET Bulletin 65 shall be the minimum standard for the maximum exposure allowed. The maximum limits specified in FCC OET Bulletin 65, including the guidance and the policies shall be the maximum limits allowed and standards, except where ANSI or IEEE standards set lower maximum limits, then the lower of the maximum ANSI or IEEE Standards shall govern.

3. All wireless devices within the VDOT ROW shall meet MPE requirements for individuals who may be standing on the ground underneath the device for extended periods of time.

4. The wireless service provider or wireless infrastructure provider shall prepare and submit a Radio Frequency Emissions Compliance Report. The written report shall be prepared by and signed and sealed by a licensed professional engineer in accordance with APELSCIDLA regulations. The report shall assess whether the proposed wireless facility demonstrates compliance with the exposure limits established by the FCC, OSHA, ANSI, NCRP and IEEE (as applicable). The report shall also include a cumulative analysis that accounts for all emissions from all wireless facilities located on or adjacent to the proposed site, identifies the total exposure from all facilities and demonstrates planned compliance with all maximum permissible exposure limits established by the FCC, OSHA, NCRP, ANSI and IEEE (as applicable). The report shall include a detailed description of all mitigation measures required by the FCC, OSHA, ANSI, NCRP and IEEE (as applicable). The qualifications for the employee or person(s) responsible for the report shall be submitted.

5. FCC, OSHA and VDOT Label Requirements - A permanent tag, label or sign in accordance with Federal Communications Commission (FCC), the Occupational Safety and Health Administration (OSHA), and/or IEEE shall be attached to, or adjacent to, the wireless infrastructure. It shall include the Maximum Operating Wattage, RF Information, Notice, Caution, or Warning (as appropriate in accordance with FCC requirements) and provide a 24/7 emergency contact

phone number. Such sign shall be placed in accordance with IEEE C-95.7 standard. If the sign placed in accordance with the standard is above 7 feet from the ground, a supplemental sign shall be provided which provides a contact number for the cellular facility owner, with the height of the bottom of the supplemental tag, label or sign between 5 and 7 feet above the grade of the sidewalk or path adjacent to the structure.

Safety Compliance

1. Placement of wireless facilities on existing non-breakaway structures within the clear zone as defined by the VDOT Road Design Manual and the AASHTO Roadside Design Guide require a review of the structure and location to be provided by the applicant. If no alternative locations are available outside of the clear zone, the applicant shall submit justification and a description of constraints that prevent placement further from the roadway, demonstrating and attesting that: (a) the new structure is proposed as far from the roadway as is practical/feasible, and (b) other locations along the same roadway where a pole could be placed outside of Clear Zone would not be practical or feasible. The applicant shall obtain approval from the Department and may be required to provide a Manual for Assessing Safety Hardware (MASH) compliant structure or an appropriate barrier. See also the Clear Zone and Lateral Offset Decision Support for New Pole Placement guidance provided later in this document. If a wireless facility is placed on an existing structure within the clear zone, the equipment shall be placed on the back side of the structure, facing away from the closest oncoming traffic. If the presence of pedestrian facilities or inability to access the equipment within right-of-way inhibits placement on the back side of the pole, then the wireless facility shall be placed on the downstream side of the structure.

2. All wireless facilities shall at all times comply with all applicable federal, state and local building codes, electrical codes, fire codes and other codes related to public health and safety.

Aesthetics

1. Above-ground cabinets and any attachments shall be designed to meet structural, clear-zone, safety and accessibility requirements and, if required by the locality, aesthetic requirements. Cabinets or other equipment that may be obscured by vegetation shall be marked so that their location is visible to mowing or other roadside operations.

2. All disturbed landscape shall be replaced in-kind and areas of bare or disturbed soil shall be revegetated.

3. No wireless facility equipment may bear any signage or advertisement(s) other than signage required by law or expressly permitted/required by the Department.

4. Attachments to any painted or powder coated structure shall match all components, including banding and conduit, to pre-match the painted structure color and texture to blend in and be as visually unobtrusive as possible.

Specific Structure Based Design Requirements

Breakaway Structures

1. **Attachment** – Breakaway structures are designed to perform in a specific manner upon impact. Attachment of devices to a breakaway structure requires an evaluation of the structure by the applicant's engineer to determine whether or not the additional attachment of specific wireless facility elements is feasible. Unless a design is provided by the applicant's engineer, larger cabinets and protruding equipment which would impact the breakaway performance of the structure shall be placed on a separate structure facing away from traffic to eliminate the likelihood of the equipment striking vehicle occupants if the structure is hit.

2. **Disconnect Power** – The applicant shall design the electrical connections at the base of the structure to instantaneously disconnect (fusible quick disconnect or other method) after the structure is hit and begins breaking-away.

Structure Design, Attachment Design and Installation Responsibility

1. For all new structures, new foundations and the structural attachments to new and existing structures, it shall be the responsibility of the applicant to ensure all of the following.
    a. The design is prepared in accordance with Federal and State standards and is signed and sealed by a professional engineer as required by APELSCIDLA requirements.
    b. Any existing structures shall be visually inspected for corrosion, cracks or other damage to the structure before submittal of the permit application and documentation of this inspection must be provided with the application or, in the case of District-Wide Permits, with the notification to the Residency of installation planned for that location. Any existing structures that are affected by the attachments must be evaluated by a structural engineer. The evaluation calculations and drawings must be signed and sealed by a Professional Engineer holding a valid license to practice engineering in the Commonwealth of Virginia and must be submitted to the District Bridge Office for review.
    c. Construction inspection of all structural elements is provided.
    d. The installation follows all applicable codes, standards, regulations, permit requirements and any attachment agreements. Local building inspector inspection or third party inspection under a Virginia licensed PE will be required.
2. VDOT requires the provision of as-built plans once installation is complete.

Permit Specific Requirements

Districtwide Permit – Small Cell Attachment to Existing Structure not Owned by VDOT

1. § 56-484.28 of the Code of Virginia stipulates that Districtwide Permits may be issued granting wireless service providers and wireless infrastructure providers the authority to install and maintain small cell facilities on existing structures located within non-limited access state maintained right-of-way.

2. The Districtwide permit and the single use permit for small cell attachment to existing structures assume that any work replacing the structure being attached to as well as supporting work for

underground service to the location (electric and fiber service, for example) is accomplished by the utility owning the relevant infrastructure, under the appropriate permit for that work.

3. A Single-Use Permit shall be submitted for any work that involves the following activities not covered by a Districtwide Permit:
    a. Work that requires closure of a highway sidewalk, bicycle facility, shoulder or travel lane;
    b. Disturbing the roadway pavement, shoulder, or ditch line (including for the location of underground utilities);
    c. Working within limited access rights-of-way;
    d. Constructing a permanent entrance;
    e. Stopping or impeding highway travel in excess of 15 minutes;
    f. Any additional activities deemed by the Department to have potential impacts to the safety of the traveling public, the public infrastructure or the operation thereof.

4. While the Permittee shall have approval through the Districtwide Permit for the construction of wireless facilities on existing non-VDOT owned and maintained structures, the Permittee shall still provide the following information for each individual installation:

    a. *Permit Information:* Associated Districtwide Permit number.

    b. *Structure Location/Site Map*: Information on the structure location including locality name, route number, and latitude/longitude coordinates. A map indicating the location of the existing structure in relation to the road and right-of-way.

    c. *Contact Information*: The contact information of the structure owner and the Permittee.

    d. *Construction Information*: Approximate start date and duration of construction. Additionally, informing the local residency permit office immediately after concluding activities.

    e. *Agreement*: The Permittee shall provide the Department a copy of the agreement under which the permittee has permission from the structure's owner for the co-location of the equipment.

    f. *Review Reports*: A Radio Frequency Emissions Compliance Report, Intermodulation Study results (if within the calculated radius of impact upon Traffic Count Station, any VDOT wireless equipment or a traffic signal controller cabinet), and the structure inspection documentation.

    g. *Non-Interference Test*: After installation of the wireless facility within the calculated radius of impact upon any VDOT traffic signal controller or VDOT communications infrastructure, or Traffic Count Station, the Permittee shall request an inspection for VDOT to inspect and confirm non-interference with existing Department communications, DSRC and traffic detection equipment, including vehicle inductive loop and radar detection.

Single-Use Permit– Small Cell Attachment to Existing Structure not Owned by VDOT

1. A Single-Use Permit shall be submitted when the applicant is attaching to an existing structure not owned or maintained by VDOT and the activities associated with the work include one of those outlined in paragraph two under the Districtwide Permit section of this document. A Single-Use Permit shall also apply to the installation of any new structure that is not owned or maintained by VDOT.

2. All Single-Use Permits shall provide, at a minimum, the information required for a Districtwide Permit outlined in paragraph three under the Districtwide Permit section of this document. Additional applicable information shall be provided as described below.

3. The Districtwide permit and the single use permit for small cell attachment to existing structures assume that any work replacing the structure being attached to as well as supporting work for underground service to the location (electric and fiber service, for example) is accomplished by the utility owning the relevant infrastructure, under the appropriate permit for that work.

4. If the work disturbs the roadway pavement, shoulder or ditch line, a plan shall be submitted depicting the exact work to take place and a plan to restore the area to its original condition. The applicant shall contact VDOT after the work is complete to schedule a field review during which time VDOT will confirm the site has been restored to previous conditions as indicated on the submitted plans.

5. VDOT may require submittal of additional information related to the work activity as required to protect the traveling public and public infrastructure.

6. To minimize the events where a wireless device would have to be removed or relocated, or the power level reduced and shielding installed, an initial intermodulation study shall be conducted at the expense of the wireless provider. The initial intermodulation study will verify that the wireless equipment operating at the maximum RF level for that location should not interfere with VDOT or other communications equipment located in the right of way. Within 30 days of receipt of the written notice of intent from the wireless provider, the Department will provide a list of known VDOT equipment within the radius of impact calculated by the applicant for each of the locations where facilities are proposed. The applicant shall also conduct an inventory of existing wireless telecommunications facilities within the radius of impact for the proposed wireless site. The components and results of the study shall be submitted to VDOT with the professional engineer's seal prior to proceeding with the next step in the site permitting review process.

7. Subsequent intermodulation studies shall be conducted when the wireless equipment changes, when power levels are increased, when operational impacts are suspected by VDOT or the Permittee, and when expanding to locations in a new area or different municipality.

8. After installation of the wireless facility that has a radius of impact which falls within, or the boundary's margin of error includes, any VDOT traffic signal controller or VDOT communications infrastructure, or Traffic Count Station, or other equipment location, the Permittee shall request an inspection for VDOT to inspect and confirm no apparent interference with existing Department equipment, including communications devices, traffic count stations, DSRC,

wireless devices, cameras, license plate readers and traffic detection equipment, including vehicle inductive loop and radar detection.

Single-Use Permit--Macro-Cell Co-Location to Existing non-VDOT Structure

1. A Single-Use Permit shall be submitted when the applicant is attaching to an existing structure not owned or maintained by VDOT.

2. The applicant shall provide, at a minimum, the information required for a Districtwide Permit outlined in paragraph three under the Districtwide Permit section of this document. Additional applicable information shall be provided as described below.

3. If the work disturbs the roadway pavement, shoulder or ditch line, a plan shall be submitted depicting the exact work to take place and a plan to restore the area to its original condition. The Permittee shall contact VDOT after the work is complete to schedule a field review during which time VDOT will confirm the site has been restored to previous conditions as indicated on the submitted plans.

4. If the work involves installing a permanent structure within 1,000 feet of an Interstate or Expressway interchange or 50 feet of an intersection or major driveway entrance/exit, a design plan shall be submitted indicating the distance to the adjacent driveways, intersections, and interchanges and ramps (as applicable). The applicant shall ensure the proposed structure does not impinge upon the sight distance required by the standards outlined in the VDOT Road Design Manual and not be located in a manner so as to conflict with installation of planned signalization or intersection improvements.

5. VDOT may require submittal of additional information related to the work activity as required to protect the traveling public and public infrastructure.

6. To minimize the events where a wireless device would have to be removed or relocated, or the power level reduced and shielding installed, an initial intermodulation study shall be conducted at the expense of the wireless provider. The initial intermodulation study will verify that the wireless equipment operating at the maximum RF level for that location should not interfere with VDOT or other communications equipment located in the right of way. Within 30 days of receipt of the written notice of intent from the wireless provider, the Department will provide a list of known VDOT equipment within the radius of impact calculated by the applicant for each of the locations where facilities are proposed. The applicant shall also conduct an inventory of existing wireless telecommunications facilities within the radius of impact for the proposed wireless site. The components and results of the study shall be submitted to VDOT with the professional engineer's seal prior to proceeding with the next step in the site permitting review process.

7. Subsequent intermodulation studies shall be conducted when the wireless equipment changes, when power levels are increased, when operational impacts are suspected by VDOT or the Permittee, and when expanding to locations in a new area or different municipality.

8. After installation of the wireless facility that has a radius of impact which falls within, or the boundary's margin of error includes, any VDOT traffic signal controller or VDOT communications infrastructure, or Traffic Count Station, or other equipment location, the Permittee shall request an inspection for VDOT to inspect and confirm no apparent interference with existing Department equipment, including communications devices, traffic count stations, DSRC, wireless devices, cameras, license plate readers and traffic detection equipment, including vehicle inductive loop and radar detection.

New, Non-VDOT Structure within VDOT Right-of-Way

1. A Single Use Permit shall be submitted for each new structure installed within the VDOT right-of-way, with the structure's and related facility's size properly shown on the permit.

2. A full plan set shall be provided which includes:
    a. A map indicating the latitude/longitude coordinates of the proposed structure;
    b. The structure's location with respect to the road and any nearby highway infrastructure;
    c. The structure's size, material, and design;
    d. The proposed wireless equipment to be attached to the proposed structure including size, weight, the attachment types, means and methods for the attachments and proposed mounting location on the structure;
    e. Location (lateral and elevation) of overhead utilities shall be indicated;
    f. Associated utility installation, including the source point, that accompanies the installation of the proposed structure and wireless equipment; and
    g. Auxiliary equipment installation including a cabinet that is not mounted on the structure.

3. The design package shall include specifications for the proposed structure and wireless equipment. All new poles shall comply with all applicable VDOT standards, specifications, regulations and policies.

4. The applicant shall submit structural calculations, signed and sealed by a professional engineer in accordance with APELSCIDLA requirements, for the new structure and any foundation/depth in ground design showing the structure and foundation is capable of supporting the proposed load.

5. The structure shall match color and material of adjacent poles or shall be designed to blend in with surroundings. Cabinets or other equipment that may be obscured by vegetation shall be marked so that their location is visible to mowing or other roadside operations.

6. The applicant shall provide separate electrical service and shall not splice into the Department's electrical service. The applicant shall indicate on the permit application plans the source of the power and the path from the source to the electrical meter/disconnect. All electrical service installed by the applicant shall meet the latest VDOT Road and Bridge Specifications and Standards for an electrical grounding system and shall be bonded to the structure in accordance with National Fire Protection Association (NFPA) 70/National Electrical Code (NEC).

7. The structures shall meet all requirements for roadside clear zone as outlined in the AASHTO Roadside Design Guide and VDOT's Road Design Manual. If the location for a small cell support structure does not meet clear zone requirements, please see the Clear Zone and Lateral Offset Decision Support for New Pole Placement guidance provided later in this document. If no alternative locations are available outside of the clear zone, the applicant shall submit justification and a description of constraints that prevent placement further from the roadway, demonstrating and attesting that: (a) the new structure is proposed as far from the roadway as is practical/feasible, and (b) other locations along the same roadway where a pole could be placed outside of Clear Zone would not be practical or feasible.

8. Structures shall be inspected by the Permittee at least once every four years after installation and the inspection report, signed and sealed by a licensed professional engineer in accordance with APELSCIDLA regulations, shall be submitted to VDOT.

Single-Use Permit– Small Cell Attachment to Structure Owned by VDOT

Allowable VDOT Structures for Small Cell Co-Location

1. The following section outlines the VDOT structures and co-location.
   a. Allowable locations
      i. Overhead full span sign structure (truss)
   b. Allowable locations with modifications and/or other accommodations or limitations
      i. Streetlight poles (50' or shorter)
      ii. Cantilever sign structure (truss)
      iii. Butterfly sign structure (truss)
      iv. Camera poles that do not include raising and lowering devices
   c. Non-allowable locations - At this time, there are structural limitations and/or space constraints that inhibit the attachment of small cell wireless equipment to the following structures.
      i. Bridge parapet mounted sign structures
      ii. Signal poles and signal structures
      iii. Bridge mounted poles
      iv. High mast lighting (55' or taller)
      v. Traffic monitoring sites
      vi. Camera poles with a raising and lowering device and camera poles with TMS co-location.

Requirements for Attachment to Existing and Proposed VDOT Structures

1. A company that wishes to utilize current VDOT infrastructure for the co-location of small cell facilities must first enter into an agreement with VDOT setting out the general terms of such work.

2. A Single Use Permit shall be submitted for each structure e within the VDOT right-of-way that is being attached to or replaced, with the structure's identification properly shown on the permit.

3. A full plan set shall be provided which includes:

a. A map indicating the latitude/longitude coordinates of the existing and/or proposed structure;
b. The structure's location with respect to the road and any nearby highway infrastructure;
c. If a replacement structure, the structure's size, material, and design;
d. If an existing structure, the VDOT structure number.
e. The proposed wireless equipment to be attached to the existing or proposed structure including size, weight, the attachment types, means and methods for the attachments and proposed mounting location on the structure;
f. Location (lateral and elevation) of overhead utilities shall be indicated;
g. Proposed electrical service connection information, and location of proposed electrical service meter and service disconnect; and
h. Auxiliary equipment installation including a cabinet that is not mounted on the structure.

4. The design package shall include specifications for the proposed wireless equipment. All new poles and electrical service shall comply with all applicable VDOT standards, specifications, regulations and policies and specifications shall be included in the design package for proposed structures.

5. The applicant shall submit a Structural Evaluation showing that the support structure can structurally support the proposed small cell facility. The Structural Evaluation shall be signed and sealed by a professional engineer licensed to practice in Virginia.
    a. If attaching to an existing structure, VDOT will research availability of shop drawings and calculations for structure and foundation and provide the information to the Company if available.
    b. Future VDOT communications infrastructure and/or traffic operations expansion for VDOT uses shall be considered as part of structural adequacy. If applicable, VDOT will provide information on future use equipment to be included in the structural calculations.

6. The applicant shall provide separate electrical service for the small cell equipment and shall not splice into the Department's electrical service. The applicant shall indicate on the permit application plans the source of the power and the path from the source to the electrical meter/disconnect. All electrical service installed by the Permittee shall meet the latest VDOT Road and Bridge Specifications and Standards for an electrical grounding system and shall be bonded to the structure in accordance with the NEC.

7. The structures shall meet all requirements for roadside clear zone as outlined in the AASHTO Roadside Design Guide and VDOT's Road Design Manual.

8. The COMPANY shall provide a cutoff switch within 5 feet of ground that is accessible to VDOT staff without need for ladder or bucket truck. See also requirements in the Single Use Permit for details regarding the cutoff switch.

9. No drilling or tapping shall be allowed for VDOT structures that act as a raceway for VDOT conduits or cables or if the structure is painted, galvanized or powder coated.

10. Cables or stainless steel banding shall be utilized for the attachment of all wireless equipment. Specifications and means and methods for each of the proposed mountings shall be submitted.

11. To minimize the events where a wireless device would have to be removed or relocated, or the power level reduced and shielding installed, an initial intermodulation study shall be conducted at the expense of the wireless provider. The initial intermodulation study will verify that the wireless equipment operating at the maximum RF level for that location should not interfere with VDOT or other communications equipment located in the right of way. Within 30 days of receipt of the written notice of intent from the wireless provider, the Department will provide a list of known VDOT equipment within the radius of impact calculated by the applicant for each of the locations where facilities are proposed. The applicant shall also conduct an inventory of existing wireless telecommunications facilities within the radius of impact for the proposed wireless site. The components and results of the study shall be submitted to VDOT with the professional engineer's seal prior to proceeding with the next step in the site permitting review process.

12. Subsequent intermodulation studies shall be conducted when the wireless equipment changes, when power levels are increased, when operational impacts are suspected by VDOT or the Permittee, and when expanding to locations in a new area or different municipality.

13. After installation of the wireless facility that has a radius of impact which falls within, or the boundary's margin of error includes, any VDOT traffic signal controller or VDOT communications infrastructure, or Traffic Count Station, or other equipment location, the Permittee shall request an inspection for VDOT to inspect and confirm no apparent interference with existing Department equipment, including communications devices, traffic count stations, DSRC, wireless devices, cameras, license plate readers and traffic detection equipment, including vehicle inductive loop and radar detection.

VDOT Owned Structure-Specific Requirements

Wireless attachments to all structures described below shall comply with the general guidelines and requirements listed in the previous sections as well as the Master Agreement and LUP-SUSCFVS. This section outlines guidance that is specific to each individual structure type.

General Design Requirements for all Structures:

1. Structural evaluation calculations and structural designs (including design of the support structure, all connections and splices, and foundation design) shall conform with the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, 6th Edition (LTS-6), 2013 with 2015 interims, and VDOT's Modifications and shall demonstrate that support structure can structurally support both the existing VDOT equipment and proposed small cell facility.

2. Structural evaluation calculations and designs shall be signed and sealed by a Licensed Virginia Professional Engineer and demonstrate that the proposed additional loading is acceptable.

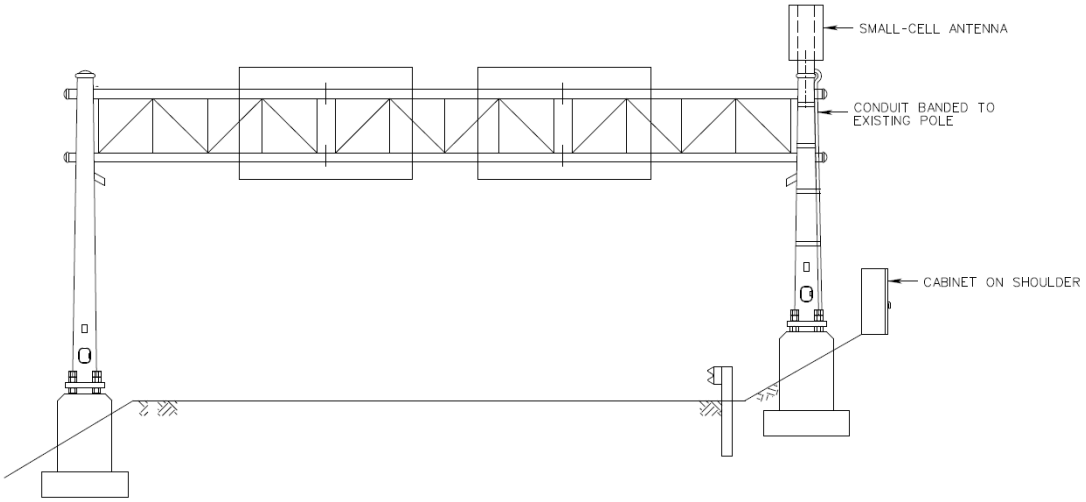
Conventional Light Pole Replacement and Small Cell Co-Location

1. If a new light pole is proposed as a replacement, the replacement light pole shall be designed to support a Light-Emitting Diode (LED) luminaire weighing 35 lbs and with 1.0 square feet of Effective Projected Area (EPA). The COMPANY shall furnish, if required by VDOT, and shall install a LED luminaire in conjunction with the replacement light pole that meets VDOT's LED lighting specifications. The replacement LED luminaire shall be at the same mounting height and arm length as the existing luminaire, shall emit approximately the same illumination (lumens) as the existing luminaire, with photometric calculations approved by VDOT. The applicant shall also furnish and install all conduits and cables necessary to integrate the replacement light pole into VDOT's existing lighting system. The replacement light pole shall be grounded as per VDOT Road & Bridge Standards and VDOT Road & Bridge Specifications.
2. If the light fixture is not LED, VDOT concurrence is needed to attach to the structure.
3. Existing Aluminum Poles
    a. When proposing to attach to any aluminum light pole, the applicant shall determine if the lighting has been upgraded to LED.
    b. The pole manufacturer shall provide certification that the pole will be warrantied with the antenna and external conduit attached to the pole.
    If not already installed, external dampeners shall be installed to the structures to mitigate first and second mode vibration.
4. If proposing to replace an existing light pole with one designed for co-location, the applicant shall install the new pole as close as possible to the existing light pole, and remove the existing light pole, and remove existing foundation to 2 feet below grade, once the luminaire on the new pole is operational.

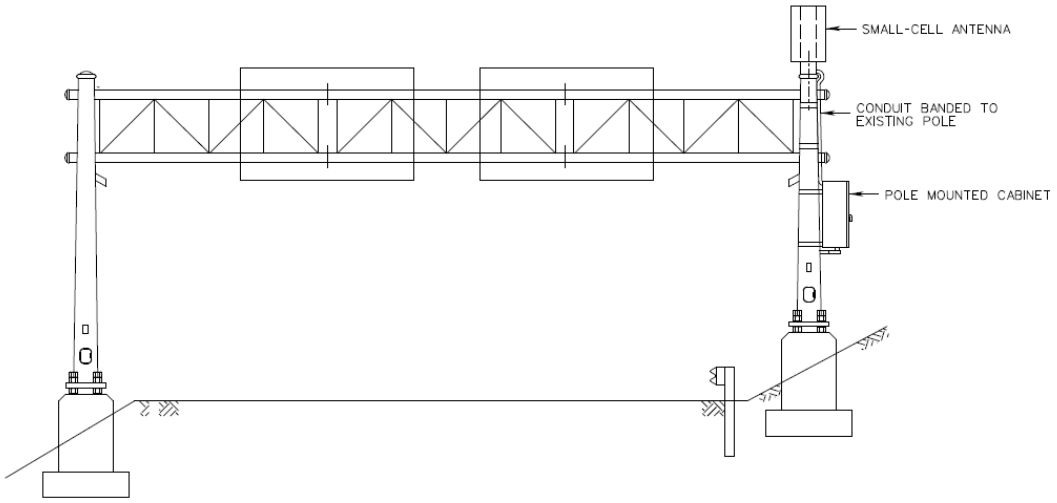
<u>Overhead Sign Structure with Small Cell Co-Location</u>

1. Equipment Location:
    a. All wireless equipment proposed on the structure shall be located on the back side of the vertical support structure (the side opposite the horizontal support for the sign), on the shoulder side of the road.
    b. The equipment shall not be located on structural supports in the median.
    c. The preferred location of the cabinet is behind and off the structure, outside of the clear zone. If due to existing field conditions that is not feasible, the cabinet shall be attached to the vertical support structure, it shall be mounted near the ground.
    d. Cabinets shall not be attached to the pole of a cantilever sign structure that only has 4 anchor bolts.

Cabinet on Shoulder (Preferred)



Pole Mounted Cabinet (Acceptable)



Camera Poles without Raising and Lowering Device with Small Cell Co-Location

1. Attachment of an antenna and conduit to a camera pole shall be made such that wireless equipment and external conduit, banded to the pole, does not interfere with maintenance of the VDOT equipment, or other Commonwealth Agency's existing co-location of equipment on the pole.

Checklists – Applicant Checklist

Permit Submittal Checklist

Wireless Small Cell Communication Facilities on Non-VDOT Structures (Existing and New) within VDOT Right-of-Way

Permittee Contact:	
Project Name:	
VDOT District:	
County/Town:	

Item to Submit	X
Signed LUP-SUSCF form	
Permit fee ($150)	
Structure owner authorization *(if permittee does not own structure)*	
Expected construction dates	
Intermodulation study (if needed) must be submitted before construction—if not submitted prior to permit issuance, permit will be conditional	
Radio Frequency Emissions Compliance Report	
Structural Evaluation (including calculations and present condition inspection)	
Construction plans and specifications	
Transportation Management Plan	
Contact information	
Expected locality approval date or locality approval	
If the project within the limits of a VDOT project, VDOT contractor approval	

I verify that the above information is included in the permit application.

_____ _____

Signature Date

Checklists – Review Schedule and Milestones

Permit Review Schedule and Milestones

Wireless Small Cell Communication Facilities on Non-VDOT Structures (Existing and New) within VDOT Right-of-Way

Completed by:	Task	Due Date	Date Completed
	Application received by VDOT residency.		
	VDOT residency checks application for completeness and notifies applicant within 10 days of incomplete application (*Checklist 1*)		
	10-day requirement per law		
	VDOT residency sends list of known VDOT equipment within 1,000 foot radius of the site to the applicant.		
	14-day requirement per policy		
	VDOT residency distributes application to District Traffic Engineering (*Checklist 2A*) (if appropriate)		
	VDOT residency reviews permit application (*Checklist 2B*).		
	VDOT residency receives comments back from District divisions.		
	VDOT residency responds to applicant with approval or need to resubmit.		
	60-day requirement (extension possible to 90 days) per law		
	If approved, applicant or residency enters construction dates into LCAMS (if lane closures scheduled).		

When Application Received date is entered, Completeness Check and VDOT Equipment due dates are automatically calculated

Permit Review Schedule and Milestones

Wireless Small Cell Co-location on VDOT Structure within VDOT Right-of-Way

Completed by:	Task	Due Date	Date Completed
	Application received by VDOT residency.		
	VDOT residency checks application for completeness and notifies applicant within 10 days of incomplete application (*Checklist 1*)		
	10-day requirement per law		
	VDOT residency sends list of known VDOT equipment within 1,000 foot radius of the site to the applicant.		
	14-day requirement per policy		
	VDOT residency distributes application to District Traffic Engineering (*Checklist 2A*) (if appropriate)		
	VDOT residency reviews permit application (*Checklist 2B*).		
	VDOT residency receives comments back from District divisions.		
	VDOT residency responds to applicant with approval or need to resubmit.		
	60-day requirement (extension possible to 90 days) per law		
	If approved, applicant or residency enters construction dates into LCAMS (if lane closures scheduled).		

When Application Received date is entered, Completeness Check and VDOT Equipment due dates are automatically calculated

Checklists – Application Completeness (Checklist #1)

CHECKLIST #1 - APPLICATION COMPLETENESS

Permit Review Process and Checklists
Wireless Small Cell Communication Facilities on
Non-VDOT Structures (Existing and New) within VDOT Right-of-Way

Initial Check for Complete Application *(completed and notification sent within 10 days of application receipt)*

Task	Included? (Y/N)
Signed LUP-SUSCF form	
Permit fee ($150)	
Structure owner authorization	
Expected construction dates	
Intermodulation Study (if needed, to be submitted prior to construction start)	
Radio Frequency Emissions Compliance Report	
Structural Evaluation (including calculations and inspection)	
Construction plans and specifications	
Transportation Management Plan	
Contact information	
Expected locality approval date or locality approval	
If within the limits of a VDOT project, VDOT PM or contractor approval	

Is application complete?
If NO, respond to the applicant within 10 days of the receipt of application with the needed information.

If YES, distribute application packet as described in Permit Schedules and Milestones tab and commence detailed residency review.

Sign and Date indicating the applicant has been notified of an incomplete application or the application has been distributed to the appropriate departments for review.

Signature: Date:

Checklists – Application for Co-Location on VDOT Structure Completeness (Checklist #1A)

	
CHECKLIST #1A - APPLICATION COMPLETENESS	
Permit Review Process and Checklists	
Wireless Small Cell Communication Facilities	
Co-Location on VDOT Structures within Right-of-Way	
Initial Check for Complete Application *(completed and notification sent within 10 days of application receipt)*	
Task	**Included? (Y/N)**
Executed Co-Location Agreement	
Signed LUP-SUSCF form	
Permit fee ($150)	
Structure of allowable type (see list in LUP-GWG)	
Expected construction dates	
Intermodulation Study (if needed, to be submitted prior to construction start)	
Radio Frequency Emissions Compliance Report	
Structural Evaluation (including calculations and inspection)	
Structure shop drawings (if make-ready work replaces current structure)	
Construction plans and specifications	
Transportation Management Plan	
Contact information	
Expected locality approval date or locality approval (if required)	
If within the limits of a VDOT project, VDOT PM or contractor approval	
Is application complete?	
If NO, respond to the applicant within 10 days of the receipt of application with the needed information.	
If YES, distribute application packet as described in Permit Schedules and Milestones tab and commence detailed residency review.	
Sign and Date indicating the applicant has been notified of an incomplete application or the application has been distributed to the appropriate departments for review.	
Signature:	Date:

Checklists – Traffic Engineering Review (Checklist #2A)

CHECKLIST #2A -OPERATIONS/TE RELATED ITEMS
(Only if applicable and necessary)
Permit Review Process and Checklists
Wireless Small Cell Communication Facilities on
Non-VDOT Structures (Existing and New) within VDOT Right-of-Way

Codes - Approved (A), Approved as Noted (AN), Revise and Resubmit (RR), Not Applicable (N/A)

Review Item	Code	Comments
Traffic Management Plan		
Submitted and meets VDOT requirements.		
No lane closure on limited access roadway needed to install, maintain, and/or remove equipment.		
Electrical		
Communications and electrical cables installed in conduit separate from VDOT's infrastructure.		
Location of electrical service meter and electrical service breaker shown on plans within 10 feet of supporting structure and not located on VDOT infrastructure.		
Junction boxes are indicated on plans and VDOT-owned junction boxes are not used.		
Source of electrical service is indicated on plans and does not splice into VDOT's electrical service.		
Overall Recommendations for Permit:		
Signature and Date:		

Checklists – Detailed Residency Review (Checklist 2B)

VDOT Virginia Department of Transportation

CHECKLIST #2B - DETAILED RESIDENCY REVIEW

Permit Review Process and Checklists

Wireless Small Cell Communication Facilities on

Non-VDOT Structures (Existing and New) within VDOT Right-of-Way

Codes - Approved (A), Approved as Noted (AN), Revise and Resubmit (RR), Not Applicable (N/A)

Review Item	Code	Comments
Intermodulation Study (if required)		
Signed intermodulation study submitted.		
Study shows no interference within impact radius of proposed site for VDOT or municipal equipment.		
Radio Frequency Emissions Compliance Report		
Report signed and sealed by Virginia licensed professional engineer.		
If submitted by applicant's employee, it must include the qualifications for the employee responsible for the report.		
Structural Evaluation		
Structural calculations submitted for all new structures, new foundations and the structural attachments to new and existing structures.		
Calculations signed and sealed by Virginia licensed structural professional engineer.		
Documentation of inspection of all structural elements is provided.		
Plans		
Work to Take Place		
If disturbing the pavement, shoulder or ditch, plan for restoration of area.		
Location		
Equipment placed more than 50 feet from line of sight and beam or wave detection of VDOT, DMV and VSP equipment.		
Equipment placed more than 100 feet from traffic signal controller.		
Mounting Height and Visibility		
Mounting height over or near pedestrian or bicycle facility (7 feet).		
Visibility of pedestrian signal equipment maintained.		
Mounting height over roadway or shoulder (18 feet, 21 feet in limited access).		
Sight distances maintained.		
No obstruction of traffic signage or signal visibility.		

Checklist #2B (page 2)

Safety		
Plans indicate location and information contained on the permanent tag, label or sign indicating Maximum Operating Voltage and Maximum Radio Frequency, RF Exposure Warning and 24/7 emergency contact.		
Proposed within Clear Zone (Non-Breakaway)		
If proposed on existing non-breakaway structure within clear zone:		
Documentation provided that the permittee reviewed the structure and location		
Documentation that no alternative locations are feasible outside of the clear zone.		
Signed approval from the Department.		
Plans		
Equipment shown on the backside of the pole, facing away from the closest oncoming traffic.		
Proposed within Clear Zone (Breakaway)		
Evaluations		
Documentation of evaluation of the structure by a licensed professional engineer to determine whether or not the additional attachment of specific wireless facility elements is feasible.		
Documentation of visual inspection of existing structures for corrosion, cracks or other damage.		
Plans		
Larger cabinets and protruding equipment are placed on a separate structure facing away from traffic.		
The electrical connections at the base of the structure are designed to instantaneously disconnect (fusible quick disconnect or other method) after the structure is hit and begins to break away.		
Additional Requirements for New Pole		
Specifications		
Specifications for the proposed structure and wireless equipment.		
Plans		
A map indicating the latitude/longitude coordinates of the proposed structure.		
The structure's size, material, and design.		
The proposed wireless equipment to be attached to the proposed structure including size, weight, the attachment types, means and methods for the attachments and proposed mounting location on the structure.		
Location (lateral and elevation) of overhead utilities shall be indicated.		
Associated utility installation, including the source point, that accompanies the installation of the proposed structure and wireless equipment.		

Checklist #2B (page 3)

Auxiliary equipment installation including a cabinet that is not mounted on the structure.		
Agreement		
Wireless structure agreement has been fully executed.		
Overall Recommendations for Permit:		
Signature and Date:		

Clear Zone and Lateral Offset Decision Support for New Small Cell Support Structure Placement

Clear zone is used to describe the unobstructed, traversable area provided beyond the edge of the through traveled way for the recovery of an errant vehicle. The clear zone includes shoulders, bike lanes, parking lanes and auxiliary lanes (except those auxiliary lanes that function like through lanes).

Lateral offset is used to describe the area provided beyond the face of curb to vertical obstructions (e.g. signs, utility poles, luminaire supports, fire hydrants), including breakaway devices, that is needed to accommodate motorists operating on the highway.

This provides guidance on how to evaluate placement of new small cell support structures that are proposed inside VDOT R/W. This guidance applies only for this purpose and shall not be used by designers or contractors for decisions that are not related to permit applications for small cell support structures. Summarized below are the general principles that form the basis of the guidance.

1) Adjacent to roadways with a posted speed limit greater than 45 mph, all new small cell wireless support structures shall be outside of the clear zone.
2) In urban areas with curb or curb and gutter and a posted speed limit of <= 45 mph, alternative placement inside the clear zone may be considered as follows:
    a. Applicant shall first demonstrate that they have proposed the structure as far from the edge of the roadway as is practical and document the need for placement within the clear zone, specifically citing the existing constraints and the location of those constraints, including why alternate placement longitudinally along the corridor that would allow installation outside of clear zone is not practical.
    b. No new breakaway structures (poles) or new guardrail shall be proposed within clear zone.
    c. The proposed structure shall be located at least 6-ft from the face of curb. This distance would be measured to the nearest adjacent face of the structure (e.g., foundation or pole) to the face of curb. If this is not feasible, then consideration to the options in #3 are permissible.
3) Alternative minimums are acceptable only in downtown areas where roadside development is dense and constrained, such as in a central business district, as follows:
    a. Applicant shall first demonstrate that they have proposed the structure as far from the edge of the roadway as is practical and document the need for placement within the clear zone, specifically citing the existing constraints and the location of those constraints, including why alternate placement longitudinally along the corridor that would allow installation outside of clear zone is not practical.
    b. Adjacent to a tangent section away from an intersection or turning area, 1.5-ft minimum from face of curb.
    c. Adjacent to the corner radius of an intersection or driveway where turning vehicles may pass, 3-ft minimum from face of curb.

    This exception does not apply to all roadways classified as urban and is reserved only for the constrained downtown areas. Where there is on-street parking, the permit reviewer should consider proposed structure placement relative to parking spaces and the opening of parked vehicle doors.
4) In the presence of a sidewalk or shared use path, the preference is to place the structure behind the sidewalk. The proposed structure shall be located with the face of the above-ground structure no closer than 1-ft from the edge of sidewalk or 3-ft (2-ft with an approved Design

Waiver) from the edge of the shared use path. This distance would be measured to the nearest adjacent face of the structure (e.g., foundation or pole) to the edge of the sidewalk or paved portion of the shared use path [in accordance with RDM Appendix A-2]. There are many existing facilities where the sidewalk or path meanders from the common placement directly adjacent to the roadway or buffer strip. This is one area where the Permits team reviewing the application will need to apply judgment in navigating the above principals and placement in the presence of a pedestrian facility.

5) Regardless of the above requirements, if the structure is greater than 50-ft tall, the applicant shall place the structure outside the clear zone.

Decision-Making Process Steps (Shown Graphically in the Flow Chart)

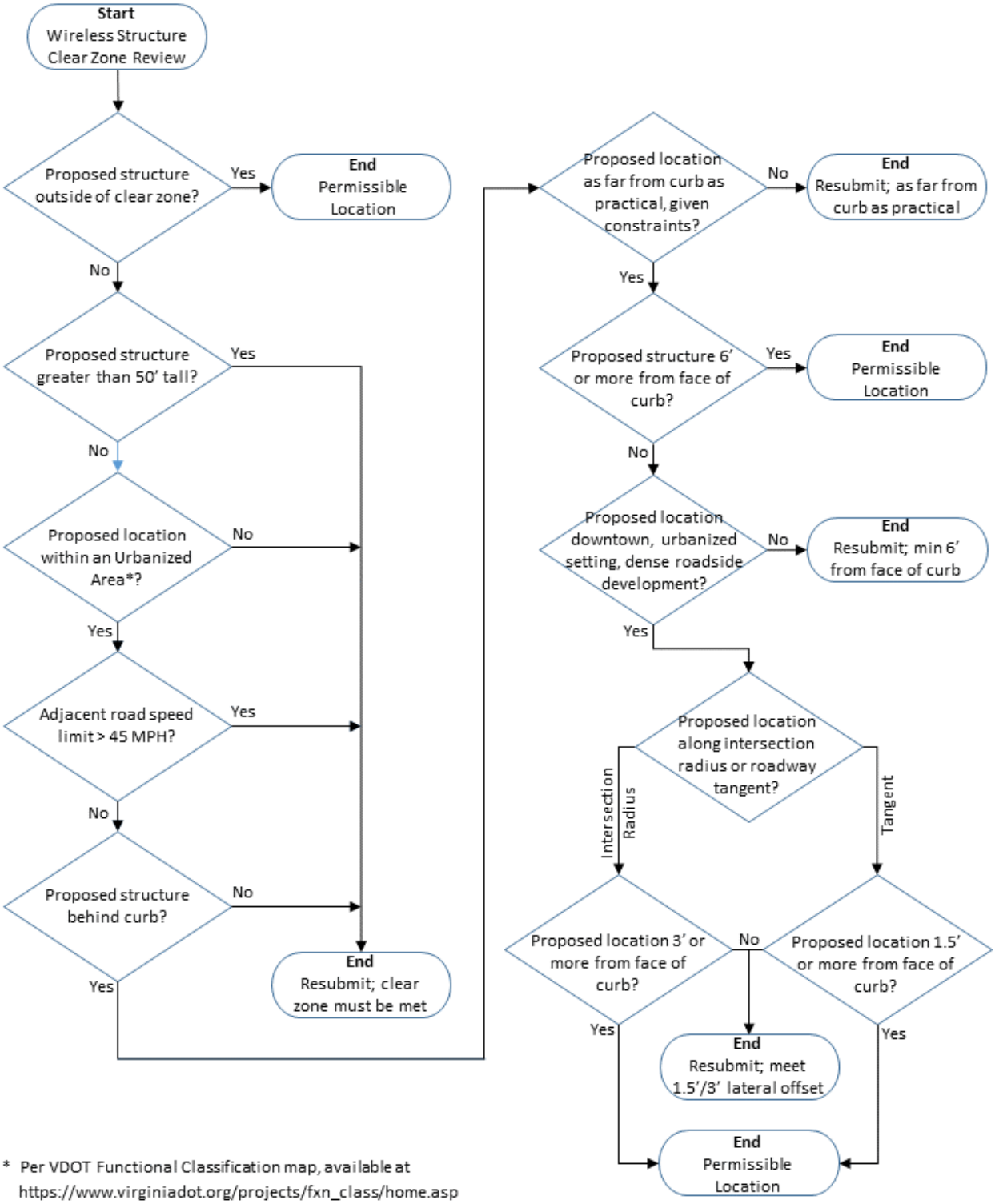
1) Is the new small cell wireless structure proposed outside of the clear zone?
    a) If yes, then no need to read further and the clear zone requirements are met.
    b) If no, then move onto subsequent step.
2) Is the proposed structure greater than 50-feet tall?
    a) If yes, then only placement outside of clear zone shall be approved.
    b) If no, then move onto subsequent step.
3) Is the proposed location adjacent to a roadway that is within an "urbanized area" according to the VDOT functional classification map?
    a) If no, then only placement outside of clear zone shall be approved.
    b) If yes, then move onto subsequent step.
4) Is the adjacent roadway posted speed limit > 45mph?
    a) If yes, only placement outside of clear zone shall be approved.
    b) If no, then move onto subsequent step.
5) Is curb present?
    a) If no, only placement outside of the clear zone shall be approved
    b) If yes, move onto subsequent step.
6) Is the structure proposed as far from the face of curb as practical within constraints of the roadside environment?
    a) If no, then request the applicant to resubmit with proposed placement further from the roadway.
    b) If yes, then move to subsequent step.
7) Is the nearest above-ground face of the structure 6-ft or more from the face of curb?
    a) If yes, then consider approval of the proposed placement.
    b) If no, then move to subsequent step.
8) Is the location in a downtown, highly urban setting with dense roadside environment?
    a) If no, then deny the placement that is proposed less than 6-ft from face of curb.
    b) If yes, then move to subsequent step.
9) Is the location along the radius and turning area of an intersection or along a tangent section of roadway?
    a) If tangent
        - Is the nearest above-ground face of the structure 1.5-ft or more from the face of curb?
            - If yes, consider approval of the proposed placement.
            - If no, deny proposed placement that is within 1.5-ft of the face of curb.
    b) If radius

- Is the nearest above-ground face of the structure 3-ft or more from the face of curb?
    - If yes, consider approval of the proposed placement.
    - If no, deny proposed placement that is within 3-ft of the face of curb.

10) Other considerations:
    a) If sidewalk is present, the structure should be behind the sidewalk.
    b) No breakaway wireless support structures or new guardrail shall be approved within clear zone.
    c) The applicant should provide documentation demonstrating:
        - The proposed structure is placed as far from the roadway as is practical, including a description and location of constraints that prevent placement further from the roadway.
        - There are no other locations along the same roadway, within reasonable distance to still provide adequate cellular service, where placement would be feasible within R/W, further from the roadway.

Clear Zone Decision Support Flowchart for Placement of

New Non-VDOT Wireless Support Structures



* Per VDOT Functional Classification map, available at https://www.virginiadot.org/projects/fxn_class/home.asp