



*City of Annapolis*  
**DEPARTMENT OF PLANNING AND ZONING**

145 Gorman Street, 3<sup>rd</sup> Floor, Annapolis, Maryland 21401  
Annapolis 410-260-2200 • FAX 410-263-1129 • TDD 410-263-7943

Chartered 1708

August 18, 2020

**MEMORANDUM**

**To:** Planning Commission *ANW*  
**From:** Sally Nash, Ph.D., AICP, Director of Planning and Zoning  
**Re:** Ordinance O-29-20 (ZTA2020-005): Small Cell System  
**Encl:**

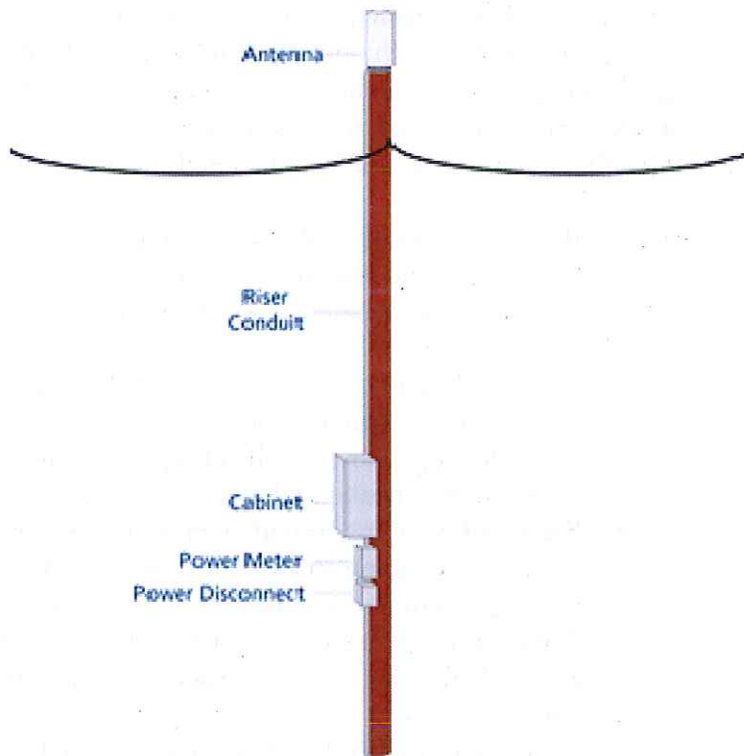
- O-29-20
- Annapolis Small Cell System Guidelines (22 July 2020 draft)

**Purpose**

Wireless technology continues to evolve. The next step in this evolution is the installation of “small cell systems” or “small wireless facilities” and associated equipment to enable 5G connectivity, which is faster than the existing 3G and 4G speeds. The adjective “small” in this term refers to the size of the coverage area of the weak 5G signal.

In an effort to speed up deployment of “next-generation networks,” the Federal Communications Commission (FCC) initially tried to limit the ability of local jurisdictions to regulate small cell systems, including exempting them from historic preservation review. This was overturned in August of 2019; however, a fee cap was upheld. The FCC also requires action from local jurisdictions within a reasonable amount of time on an application and does not allow local jurisdictions to “effectively prohibit the provision of personal wireless services.”

Companies that install small cell systems, such as AT&T, Verizon, T-Mobile, and Sprint, typically look to place these facilities in the public right-of-way where there are often already poles that can be used, or modified for use. Because the small cell facility coverage area is limited, companies look to locate these systems as close as 200 feet from each other



### Analysis

The City Code does not currently include language specific to small cell technology. This legislation would allow the use, but add standards and fees. The legislation requires:

- A lease agreement between the company and the City before attaching to city asset or locating in a public right-of-way
- A permit
- A bond to ensure removal of a small cell system that is no longer needed at the owner's expense

This ordinance additionally establishes the standards for the use, including:

- The application must be in accordance with the *Annapolis Small Cell System Guidelines*
- Prior to issuance of a permit, the owner of a system shall provide a certification from a registered engineer that the system, including any pole, will meet the applicable design standards for wind loads and annually provide certification that the radio frequency radiation from the facility meets the applicable federal communications commission standards and guidelines for those emissions
- Compliance is subject to a municipal infraction and fine.

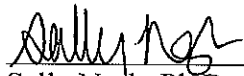
The technical and aesthetic standards for small cell systems are established in the *Annapolis Small Cell System Guidelines* (See 22 July 2020 draft attached). The guidelines list requirements for the placement and design of wireless infrastructure and associated facilities and address safety, streetscape, and potential engineering concerns. Specific requirements are also included for applications in the Historic District.

The guidelines include the following requirements:

- In all cases, the placement of small cell systems shall be consistent with existing structures and aesthetics, in harmony with the surroundings, and as unobtrusive as possible.
- Small cell systems shall not be installed on poles containing controls such as fire alarms, police signals, or traffic signals.
- A single Applicant's small cell system shall be installed with a minimum spacing of 600 feet in residential areas.
- Small cell systems should be attached to a pre-existing support structure or a like structure replacing an existing structure. However, if the Applicant can demonstrate that no co-location opportunities exist in the area where it demonstrates a need for a small cell system, the Applicant may propose that a new pole or other support structure be constructed for purposes of installing the small cell system.
- Up to two small cell systems may be installed at an intersection, each on a different corner.
- Signs or illumination on the antennas or support structure are prohibited unless required by the FCC, the Federal Aviation Administration, or the City.

- A distinct marker (tag) shall be placed on a small cell systems that will allow for ready identification of the type of attachment, its owner, and contact information.
- On non-wooden poles, all cables shall be placed inside and not visible on the outside.
- All small cell systems shall utilize stealth and concealment methods to limit their visual impact where feasible. Stealthing features should include blending with the environment, concealing the equipment and antennas, and limiting the overall size including the height.
- A replacement pole elevation is limited to a one-time, 10-foot increase from the pre-existing original pole (i.e., top of existing structure to top of proposed structure). Height increase can only be used one time per location.
- A system may be located on the rooftop of an existing nonresidential structure or multifamily dwelling structure with more than 10 units, but the system may not extend above the existing roof height by more than 15 feet.
- Excavation or installation of small cell systems may damage an existing tree's critical root zone or canopy.

Report Prepared by



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Sally Nash, Ph.D., AICP  
Director



1 **..Title**

2 **Small Cell Systems** – For the purpose of establishing requirements for small cell systems; adding  
3 small cell systems as a use subject to standards in all zoning districts; creating certain definitions;  
4 and generally relating to small cell systems.

5 **..Body**

6 **CITY COUNCIL OF THE**  
7 **City of Annapolis**

8  
9 **Ordinance 29-20**

10  
11 **Introduced by: Mayor Buckley**  
12 **Co-sponsored by:**

13  
14 **Referred to**  
15 **Planning Commission**  
16 **Environmental Matters Committee**  
17 **Transportation Committee**  
18 **180 day Rule: \_\_\_\_\_**

19  
20 **AN ORDINANCE** concerning

21  
22 **Small Cell Systems**

23  
24 **FOR** the purpose of establishing requirements for small cell systems; adding small cell systems  
25 as a use subject to standards in all zoning districts; creating certain definitions; and  
26 generally relating to small cell systems.

27  
28 **BY** repealing and re-enacting with amendments the following portions of the Code of the City  
29 of Annapolis, 2020 Edition.  
30 21.48.010  
31 21.48.020  
32 21.48.030  
33 21.48.040  
34 21.56.020  
35 21.72.010

36  
37 **BY** adding the following portion to the Code of the City of Annapolis, 2020 Edition.  
38 14.40.010  
39 14.40 020  
40 21.64.565

41  
42  
43 **SECTION I: BE IT ESTABLISHED AND ORDAINED BY THE ANNAPOLIS CITY**  
44 **COUNCIL** that the Code of the City of Annapolis shall be amended to read as follows:

45  
46 **Title 14 - Streets, Sidewalks, and Public Places, AND SMALL CELL SYSTEMS**

1 **CHAPTER 14.40 – SMALL CELL SYSTEMS**  
2

3 AS USED IN THIS CHAPTER, "SMALL CELL SYSTEM" HAS THE MEANING SET  
4 FORTH IN SECTION 21.72.010 OF THIS CODE.  
5

6 **SECTION 14.40.010 – SMALL CELL SYSTEMS IN PUBLIC RIGHT-OF-WAY**  
7

8 A. **AGREEMENT REQUIRED.** IN ADDITION TO THE REQUIREMENTS OF THIS  
9 CHAPTER AND TITLE 21, THE OWNER OF A SMALL CELL SYSTEM, AS DEFINED  
10 IN SECTION 21.72.010 OF THIS CODE, LOCATING IN CITY RIGHTS-OF-WAY OR  
11 ATTACHING TO CITY ASSETS SHALL ENTER INTO A LEASE OR LICENSE  
12 AGREEMENT WITH THE CITY IN A FORM PROVIDED BY THE CITY, THE TERMS  
13 OF WHICH SHALL INCLUDE:

- 14 1. REQUIREMENTS TO REMOVE A SMALL CELL SYSTEM AT THE OWNER'S  
15 EXPENSE IF THE SYSTEM IS NO LONGER NEEDED;
- 16 2. PROVISIONS RELATING TO THE CITY'S RIGHTS AND OWNER'S  
17 OBLIGATIONS;
- 18 3. PROVISIONS CONCERNING ABANDONMENT OF A SMALL CELL SYSTEM;
- 19 4. REQUIREMENTS FOR INSURANCE RELATED TO THE SMALL CELL  
20 SYSTEM;
- 21 5. INDEMNIFICATION OF THE CITY; AND
- 22 6. BONDING REQUIREMENTS, INCLUDING BONDING AGAINST THE FAILURE  
23 TO REMOVE ANY ABANDONED OR IMPROPERLY PLACED SMALL CELL  
24 SYSTEM AND FAILURE OF THE OWNER OF THE SMALL CELL SYSTEM TO  
25 PAY ANY OUTSTANDING AMOUNTS DUE TO THE CITY.

26 B. **PERMIT REQUIRED.** AN APPLICANT SHALL SUBMIT A PERMIT APPLICATION  
27 TO THE DEPARTMENT OF PLANNING AND ZONING AND THERE SHALL BE A  
28 PERMIT APPLICATION FEE AS ESTABLISHED BY RESOLUTION OF THE CITY  
29 COUNCIL.  
30

31 **SECTION 14.40.020 – SMALL CELL SYSTEMS ON PRIVATE PROPERTY**  
32

33 A. SMALL CELL SYSTEMS LOCATED ON PRIVATE PROPERTY SHALL BE SUBJECT  
34 TO THE STANDARDS AND REQUIREMENTS OF THE ZONING CODE AND MUST  
35 BE IN ACCORDANCE WITH THE ANNAPOLIS SMALL CELL SYSTEM GUIDELINES.  
36

37 B. THE DEPARTMENT OF PLANNING AND ZONING IS HEREBY AUTHORIZED TO  
38 PROMULGATE REGULATIONS AND GUIDELINES TO EFFECTUATE THE  
39 REQUIREMENTS OF THIS SECTION. THE PROMULGATED REGULATIONS AND  
40 GUIDELINES SHALL HAVE THE FORCE AND EFFECT OF LAW  
41

42 **Title 21 - Planning and Zoning**

43 **Chapter 21.48 - USE TABLES**

44 **Section 21.48.010 - Table of Uses—Residential Zoning Districts.**

45 P = Permitted Use; S = Special Exception Use; -Std = Use Subject to Standards (Chapter 21.64);

46 A = Accessory Use; Blank = Not Permitted



Storage other than accessory to permitted uses			S	S						
Supermarkets	P-Std	S-Std	P-Std	S-Std	P-Std	S-Std	P-Std	S-Std	P-Std	P-Std <sup>1</sup>
Telecommunications facilities	A-Std	A-Std	A-Std	A-Std	A-Std	A-Std	A-Std	A-Std	A-Std	A-Std
Telephone transmission equipment buildings		P	P		P				P	P

- 1  
2 Notes:  
3 Uses in the PM2 district are subject to the following provisions as indicated in the table:  
4 1. This use is permitted as a principal use only in districts that do not adjoin (along non-street frontage) property  
5 zoned R1, R1A, R1B or R2.  
6 2. This use is permitted as an incidental use in a structure that contains business, professional or governmental  
7 offices provided that gross floor area of all incidental uses does not exceed the amount of space devoted to the first  
8 floor of a multistory structure; except, that in no case shall it exceed thirty-three percent of the total gross floor area.  
9 This use is considered a neighborhood convenience use and is subject to standards given in Section 21.64.420.  
10 3. If the principal use with which the drive-thru facility is associated is a special exception use, then the drive-thru  
11 facility requires special exception approval.  
12 4. ATMs are permitted as walkups subject to all other applicable regulations. In the C2 and C2A districts, drive-  
13 through facilities are not permitted.  
14

15 **Section 21.48.030 - Table of Uses—Office and Mixed Use Zoning Districts.**

16  
17 P = Permitted Use; S = Special Exception Use; -Std = Use Subject to Standards (Chapter 21.64);  
18 A = Accessory Use; Blank = Not Permitted  
19 A use, including a special exception use, that is not normally permissible as a permitted use or  
20 use subject to standards in a zoning district may be permitted in that district as a planned  
21 development use pursuant to Section 21.24.020

22 **Important.** The notes at the end of the table are as much a part of the law as the table itself.  
23  
24

25 **REVISOR’S NOTE:** In this Section Small Cell System P-Std is  
26 added. No other changes are made.  
27

Uses	District P	District MX	District PM	District C2P
SMALL CELL SYSTEM	P-STD	P-STD	P-STD	P-STD
Specialty convenience retail store		P	P-Std	
Supermarkets		P-Std		
Telecommunications facilities	A-Std	A-Std	A-Std	A-Std
Telephone transmission equipment buildings		P		

28  
29 Footnotes:



<sup>1</sup> If the principal use with which the drive-thru facility is associated is a special exception use, then the drive-thru facility requires special exception approval.

<sup>2</sup> The following apply only to the uses specified: in the MX-1 area only, in planned developments with a minimum lot size of five acres, "accessory structures" such as clock towers attached to office and/or retail structures and "theaters, indoor" shall not exceed one hundred feet in height. See the bulk regulations table in Section 21.50.260.

Table Notes:

The following regulations apply to all uses in the MX District:

1. Buildings in excess of forty-six feet, but less than fifty-five feet in height are subject to the following:

a. Either twenty-five percent of the gross floor area shall be designed for retail uses, or residential uses, or a combination of retail and residential uses, alternatively, the entire ground level front façade shall be designed for retail uses, exclusive of: (i) not more than one driveway, which shall not be greater than thirty-three feet wide, required for access to parking; (ii) space required for a lobby and space required for access to upper floor uses. Retail use along the front façade shall have a minimum height of twelve feet and a minimum depth of twenty-five feet;

b. If surface parking is located on the zoning lot, it shall be located at the rear of the zoning lot and new structures shall be located at the front of the zoning lot. If surface parking is located adjacent to single-family residential use, dense plantings shall be installed and maintained on the zoning lot to provide an effective screen; and

c. Any adverse impacts on critical lane levels of service at adjoining intersections shall be mitigated by the applicant.

2. Buildings in excess of forty-six feet, but less than sixty-five feet in height require special exception approval except as provided in note No. 1 above.

3. Uses and combinations of uses located on zoning lots of forty thousand square feet or more require special exception approval, unless such uses are approved as part of a planned development.

**Section 21.48.040 - Table of Uses—Waterfront Maritime Zoning Districts.**

P = Permitted Use; S = Special Exception Use; -Std = Use Subject to Standards (Chapter 21.64);  
A = Accessory Use; Blank = Not Permitted

**Important.** The notes at the end of the table are as much a part of the law as the table itself.

**REVISOR’S NOTE:** In this Section Small Cell System P-Std is added. No other changes are made.

	District WMC	District WMM <sup>3</sup>	District WMI <sup>3</sup>	District WME
B. Other uses:				
Accessory uses	A	A		
Antenna towers			P-Std, S-Std	
Antennas and amateur radio stations	A-Std	A-Std	A-Std	A-Std
Delicatessen			A-Std	A-Std
Food service marts			A-Std	A-Std
Governmental uses:				
Parks and recreation facilities	P		P	P

Parking structures as accessory to permitted maritime uses on a separate zoning lot		S-Std		
Professional offices		S-Std		
Restaurant, standard	S-Std	S-Std		S-Std
Retail sales of non maritime-related goods	S-Std	S-Std		
SMALL CELL SYSTEM	P-STD	P-STD	P-STD	P-STD
Telecommunications facilities	A-Std	A-Std	A-Std	A-Std
Temporary uses	P-Std	P-Std	P-Std	P-Std
Transient boater services, such as laundry, pool, recreation facilities and sales of convenience items			A-Std	

- 1
- 2 1 This use is permitted only on lots without waterfront frontage as of August 24, 1987.
- 3 2 This use is permitted in buildings located within one hundred feet of the shoreline, provided that the use does not
- 4 exceed twenty-five percent of the gross floor area of the lot.
- 5 3 In the WMM and WMI districts non water-dependent buildings, structures, or parking are permitted within the
- 6 one hundred-foot maritime use setback only if they meet certain bulk requirements. See Division III Chapter 21.46.
- 7

**Chapter 21.56 - Historic District**  
**Section 21.56.020 - Definitions.**

**REVISOR’S NOTE:** In this Section Small Cell System is added to the definition of “Structure”. No other changes are made.

"Structure" shall mean a combination of material to form a construction that is stable including, but not limited to, buildings, stadiums, reviewing stands, platforms, stagings, observation towers, radio towers, water tanks and towers, trestles, bridges, piers, paving, bulkheads, wharves, sheds, coal bins, shelters, fences, SMALL CELL SYSTEMS, and display signs visible or intended to be visible from a public way. The term "structure" shall be construed as if followed by the words, "or part thereof."

**Chapter 21.64 - Standards for Uses Subject to Standards**  
**SECTION 21.64.565 – SMALL CELL SYSTEMS**

SMALL CELL SYSTEMS ARE SUBJECT TO THE FOLLOWING STANDARDS AND MUST BE IN ACCORDANCE WITH THE ANNAPOLIS SMALL CELL SYSTEM GUIDELINES.

- 26 A. THE OWNER OF A SYSTEM SHALL GIVE NOTICE OF INSTALLATION TO
- 27 ABUTTING PROPERTY OWNERS IN ACCORDANCE WITH SECTION 21.10.020.B.
- 28 B. THE OWNER OF A SYSTEM SHALL OBTAIN REQUIRED APPROVALS, INCLUDING
- 29 FRANCHISES AND PERMITS, BEFORE:
  - 30 1. THE INITIAL INSTALLATION OR CO-LOCATION OF A SYSTEM;
  - 31 2. THE INSTALLATION OF A POLE; OR
  - 32 3. THE MODIFICATION OF A SYSTEM OR A POLE.

- 1 C. AS PART OF THE APPLICATION PROCESS, THE OWNER OF A SYSTEM SHALL  
2 PROVIDE:
- 3 1. DETAILED PLANS DESCRIBING THE INSTALLATION, CO-LOCATION,  
4 MODIFICATION, OR ATTACHMENT, INCLUDING ANY CERTIFICATIONS  
5 THAT MAY BE REQUIRED;
  - 6 2. A PRECONSTRUCTION SURVEY;
  - 7 3. A PROPOSED SCHEDULE FOR COMPLETION, CERTIFIED BY A LICENSED  
8 PROFESSIONAL ENGINEER; AND
  - 9 4. ANY OTHER INFORMATION REQUIRED BY THE CITY THAT WILL ALLOW  
10 THE CITY TO EVALUATE THE SYSTEM, INCLUDING THE SAFETY OF THE  
11 INSTALLATION, CO-LOCATION, MODIFICATION, OR ATTACHMENT.
- 12 D. THE OWNER OF A SYSTEM MAY FILE A CONSOLIDATED APPLICATION FOR  
13 WIRELESS PROVIDER FACILITIES TO BE CO-LOCATED WITHIN THE CITY  
14 PURSUANT TO GUIDELINES ESTABLISHED BY THE CITY.
- 15 E. A SYSTEM SHALL BE FULLY OPERATIONAL WITHIN 180 DAYS AFTER THE DATE  
16 OF ISSUANCE OF THE FINAL PERMIT, EXCEPT WHEN CIRCUMSTANCES OUTSIDE  
17 THE CONTROL OF THE OWNER PREVENT THE OWNER FROM MEETING THE  
18 DEADLINE, IN WHICH INSTANCE THE CITY MAY GRANT AN EXTENSION OF  
19 TIME. IF A SYSTEM IS NOT FULLY OPERATIONAL WITHIN 180 DAYS AFTER THE  
20 DATE OF ISSUANCE OF THE FINAL PERMIT AND THE CITY DETERMINES THAT  
21 THE CIRCUMSTANCES DO NOT WARRANT AN EXTENSION OF TIME, THE CITY  
22 MAY CANCEL APPROVAL OF THE SYSTEM AND REQUIRE ITS REMOVAL AT THE  
23 OWNER'S SOLE EXPENSE.
- 24 F. PRIOR TO ISSUANCE OF A PERMIT, THE OWNER OF A SYSTEM SHALL PROVIDE  
25 A CERTIFICATION FROM A REGISTERED ENGINEER THAT THE SYSTEM,  
26 INCLUDING ANY POLE, WILL MEET THE APPLICABLE DESIGN STANDARDS OF  
27 THIS CODE FOR WIND LOADS.
- 28 G. WITHIN 30 DAYS AFTER THE DATE OF ISSUANCE OF THE FINAL PERMIT, AND  
29 BY SEPTEMBER 1 OF EACH YEAR THEREAFTER, THE PERMIT HOLDER SHALL  
30 SUBMIT A CERTIFICATION FROM AN ENGINEER THAT THE RADIO FREQUENCY  
31 RADIATION FROM THE FACILITY MEETS THE APPLICABLE FEDERAL  
32 COMMUNICATIONS COMMISSION STANDARDS AND GUIDELINES FOR THOSE  
33 EMISSIONS AND SHALL INCLUDE ALL DATA IN SUPPORT OF THE  
34 CERTIFICATION. IF THE OWNER OF THE SYSTEM FAILS TO PROVIDE ANY  
35 CERTIFICATION REQUIRED IN THIS SUBSECTION, THE CITY MAY REVOKE THE  
36 CERTIFICATE OF USE AND ORDER THE SYSTEM TO BE DISABLED BY THE  
37 OWNER UNTIL THE OWNER PROVIDES THE REQUIRED CERTIFICATION. THE  
38 SYSTEM MAY NOT BE RE-ENABLED OR THE CERTIFICATE OF USE REISSUED,  
39 UNTIL THE OWNER SUBMITS A CERTIFICATION FROM AN ENGINEER  
40 VERIFYING THAT THE ENGINEER HAS INSPECTED THE SYSTEM AND THE RADIO  
41 FREQUENCY RADIATION FROM THE FACILITY MEETS THE APPLICABLE  
42 FEDERAL COMMUNICATIONS COMMISSION STANDARDS AND GUIDELINES FOR  
43 THOSE EMISSIONS.
- 44 H. THE OWNER OF A SYSTEM SHALL SUBMIT COPIES OF ALL NOTIFICATIONS  
45 FROM OR TO THE FEDERAL COMMUNICATIONS COMMISSION AND REPORTING  
46 TO THE FEDERAL COMMUNICATIONS COMMISSION FOR ANY SYSTEM

- I. A SYSTEM THAT CEASES OPERATION FOR A PERIOD OF 12 CONSECUTIVE MONTHS IS CONSIDERED ABANDONED AND MUST BE REMOVED WITHIN 90 DAYS OF ABANDONMENT AT THE OWNER'S EXPENSE.
- J. VIOLATIONS OF THIS SECTION OR FAILURE TO COMPLY WITH THE REQUIREMENTS OF THIS SECTION OR ANY CONDITIONS ATTACHED TO A PERMIT OR CERTIFICATE OF USE SHALL CONSTITUTE A MUNICIPAL INFRACTION AND IS SUBJECT TO A FINE AS ESTABLISHED BY RESOLUTION OF THE CITY COUNCIL. NOTHING HEREIN CONTAINED SHALL PREVENT THE CITY OF ANNAPOLIS FROM TAKING SUCH OTHER LAWFUL ACTION AS IS NECESSARY TO PREVENT OR REMEDY ANY VIOLATION.

**Chapter 21.72 - Terms and Definitions**

**Section 21.72.010 - Terms.**

**REVISOR’S NOTE:** In this Section “Small Cell System” is added.  
No other changes are made.

"SMALL CELL SYSTEM." SMALL CELL SYSTEM MEANS ANY SHORT RANGE EQUIPMENT INSTALLED FOR THE PURPOSE OF SUPPLEMENTING OR EXTENDING WIRELESS COMMUNICATIONS COVERAGE IN A LOCALIZED AREA. "SMALL CELL SYSTEM" INCLUDES:

- 1. ANY POLE, STRAND, OR OTHER STRUCTURE USED TO SUPPORT A SYSTEM OR TO WHICH A SYSTEM IS ATTACHED; AND
- 2. ANY RADIO TRANSCEIVER, ANTENNA, COAXIAL OR FIBER-OPTIC CABLE, REGULAR OR BACK-UP POWER SUPPLY, AND COMPARABLE EQUIPMENT, REGARDLESS OF TECHNOLOGICAL CONFIGURATION; AND ANY ANCILLARY OR ACCESSORY STRUCTURE OR EQUIPMENT TO HOUSE ANY PART OF THE SYSTEM.

**SECTION II: AND BE IT FURTHER ESTABLISHED AND ORDAINED BY THE ANNAPOLIS CITY COUNCIL** that this ordinance shall take effect from the date of its passage.

**Explanation:**

UPPERCASE indicates matter added to existing law.  
~~Strikethrough~~ indicates matter stricken from existing law.  
Underlining indicates amendments.

# **DRAFT**

July 22, 2020

## **Annapolis Small Cell System Guidelines**

The City of Annapolis has established technical and aesthetic standards (Standards) to govern access to and use of the public right-of-way and City structures in the right-of-way by wireless carriers, infrastructure companies, or others (collectively referred to as "Attaching Entities" or "Applicants") for installation of small cell systems or "small wireless facilities" and associated equipment, as defined by the U.S. Federal Communications Commission.

These Standards are intended to ensure public safety and City employee safety, and to protect the community's aesthetic standards.

All Attaching Entities must follow the most current version of the National Electrical Safety Code (NESC) and all other applicable engineering standards, FCC standards, and other federal, state, and local standards and codes. Attaching Entities must also meet the City's operational requirements, as well as local aesthetic requirements.

### **PURPOSE**

Annapolis Small Cell System Guidelines establish requirements for the placement and general design of wireless infrastructure and associated facilities within the City of Annapolis to address safety, streetscape, and potential engineering concerns.

Goals include:

- Mitigating visual and physical impacts within the streetscape across the City;
- Minimizing the impact on the character of public spaces, specifically historic districts;
- Avoiding impacts to important view sheds, vistas, and landmarks.
- Protecting access and circulation to public open spaces.

### **DEFINITIONS**

**Streetlight pole.** A streetlight pole is a structure owned, operated, or owned and operated by a public utility, the City, or the State of Maryland designed specifically to support a streetlight, that lights the public right of way. Historically such fixtures were called lamp posts.

**Utility pole.** A Utility pole is a structure owned, operated, or owned and operated by a public utility, the City, or the State of Maryland designed specifically for and used to carry lines, cables, or wires for communications, cable television, or electricity.

**Cobra head fixture.** A Cobra head fixture is a standard lighting fixture, typically attached to a pendant pole, wood pole or 5A pole.

**Standalone poles.** Standalone poles are independent poles that antennas are attached to for the purpose of transmitting wireless signals.

Streetscape elements. Streetscape elements are components that make up the city street, such as trees, light poles, bicycle racks, traffic cabinets, parking meters, signs, sculptures, and street furniture.

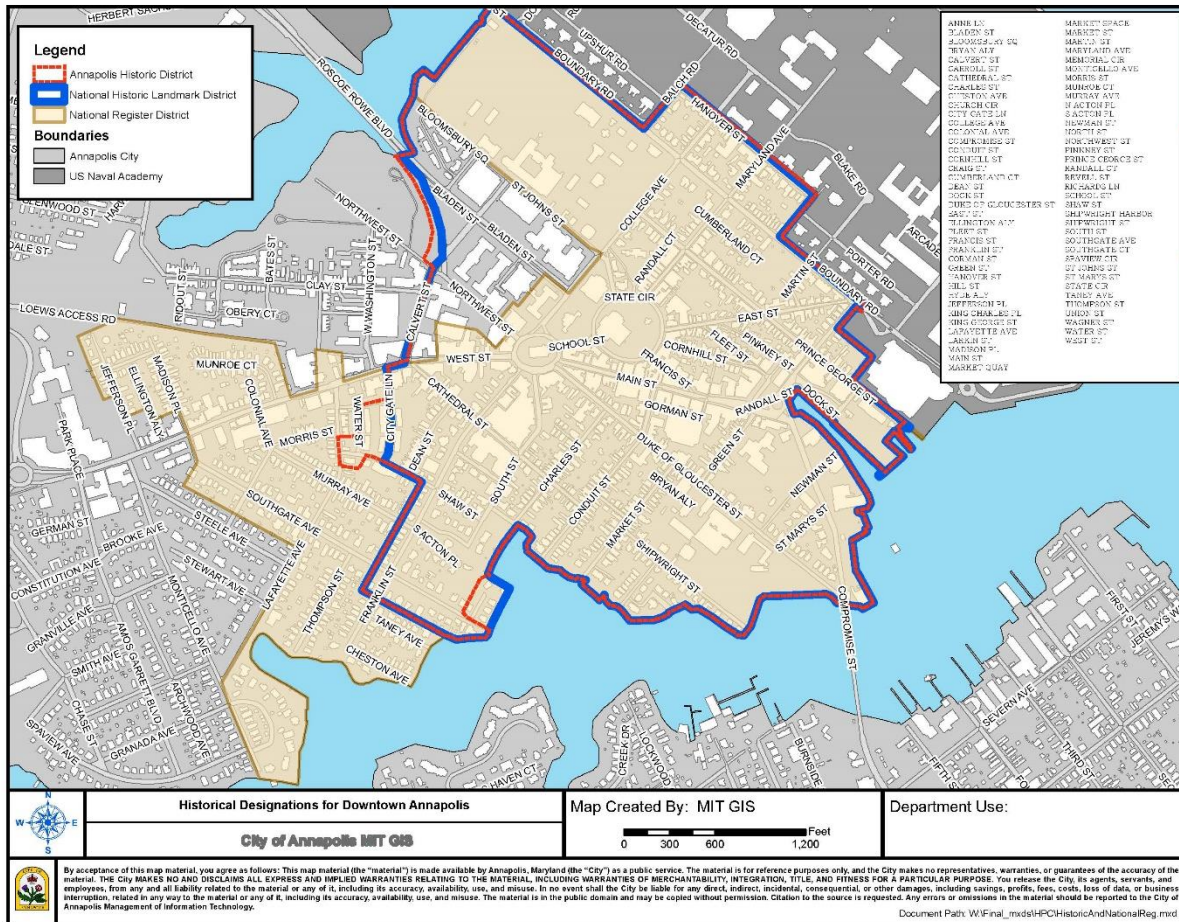
Third-party pole. A third-party pole is an existing pole in public space owned by a party other than the City or the cellular provider installed to provide public utilities and that can accommodate Small Cell infrastructure equipment.

Traffic signal pole. A traffic signal pole is any type of pole to which a traffic or pedestrian signal or other traffic right of way regulating equipment is attached. This includes Stop, Yield, and similar signage. It does not include street name, parking regulation, or similar signage.

### HISTORIC PRESERVATION CODES AND GUIDELINES

In the Historic District, additional design guidelines apply for the installation of small cell systems.

### Map of the Historic District Boundaries



The architectural and historic significance of Annapolis has been recognized both locally and nationally. Based upon its “exceptional value or quality in illustrating or interpreting the heritage of the United States,” the Colonial Annapolis Historic District was designated one of forty-three

National Historic Landmark Districts in 1965 by the U.S. Department of the Interior's National Park Service. In recognition of the superior preservation of its significant eighteenth, nineteenth and early twentieth century structures, an enlarged historic district was placed on the National Register of Historic Places in 1984.

Proposed projects in the Historic District require review and approval by the Historic Preservation Commission (HPC) prior to other permits. City Ordinance 21.56 supersedes the general guidelines below. A preliminary meeting is required with the Chief of Historic Preservation prior to the formal application process.

Should the project be determined to be feasible, a hearing before the Historic Preservation Commission may be required. Once an HPC Certificate of Approval is provided, then application can be submitted for other permits.

See the following link to all Historic Preservation requirements and forms:

<https://www.annapolis.gov/876/Historic-Preservation-Division>

### **DESCRIPTION OF POLE-MOUNTED SMALL CELL EQUIPMENT**

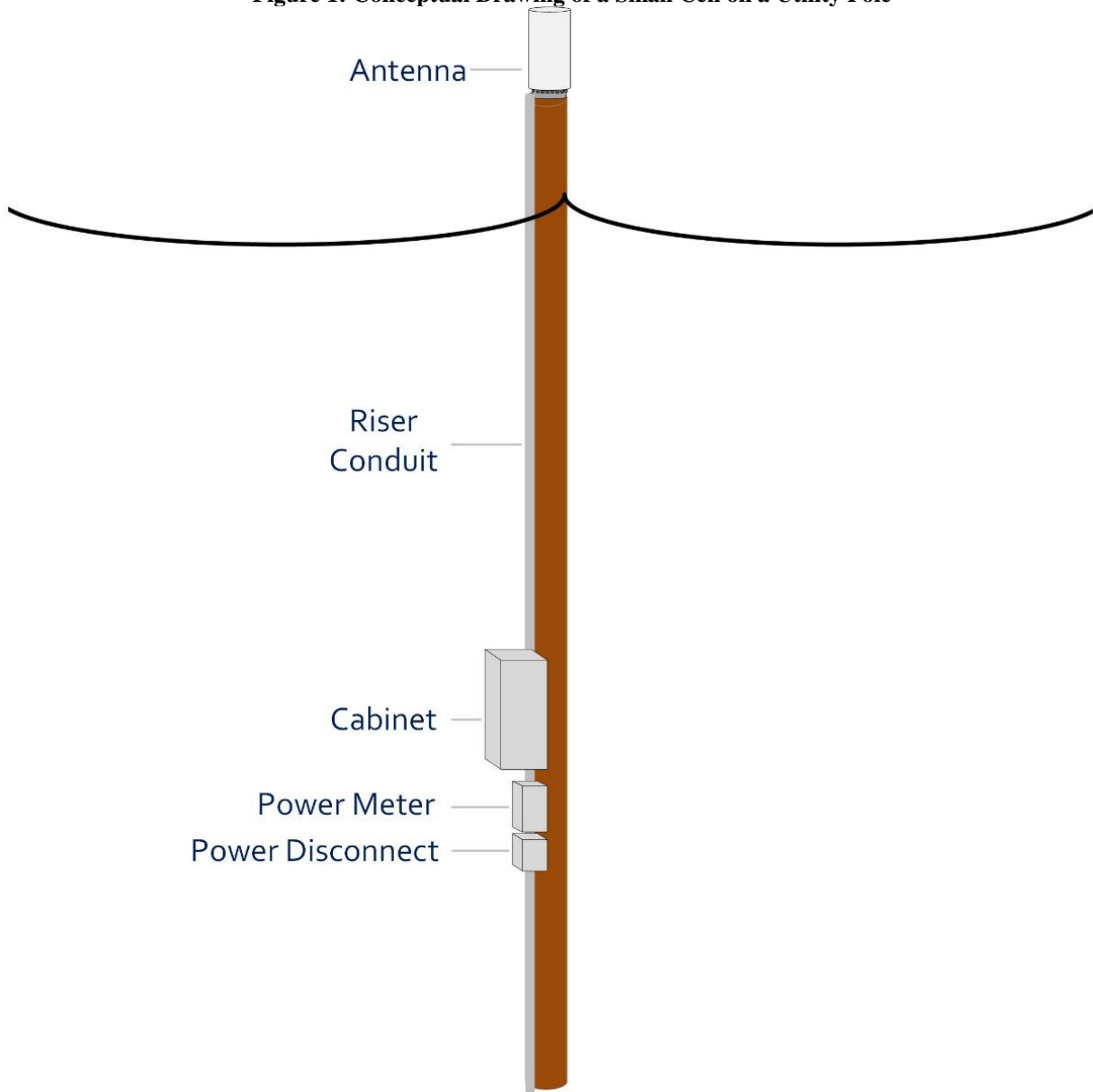
As of the date of this version of the Standards, typical pole-mounted small cell equipment comprises:

1. Antennas on the upper part of pole
2. Radios, fiber terminations, and other equipment located in enclosures or cabinets or within the pole
3. A power meter and power disconnect switch, located in two separate, smaller enclosures or within the pole (and outside areas that exceed RF exposure limits, per the FCC)

Figure 1 through Figure 3 are conceptual drawings intended to demonstrate the basic elements of a small cell system attachment and how they typically fit together; the drawings are not to scale or representative of actual structures.

Figure 1 is an example of a small cell on a utility pole. Figure 2 illustrates a small cell on a light pole. Figure 3 shows a small cell on a customized light pole designed to conceal the cabinet.

**Figure 1: Conceptual Drawing of a Small Cell on a Utility Pole**





**Figure 2: Conceptual Drawing of a Small Cell on a Light Pole**

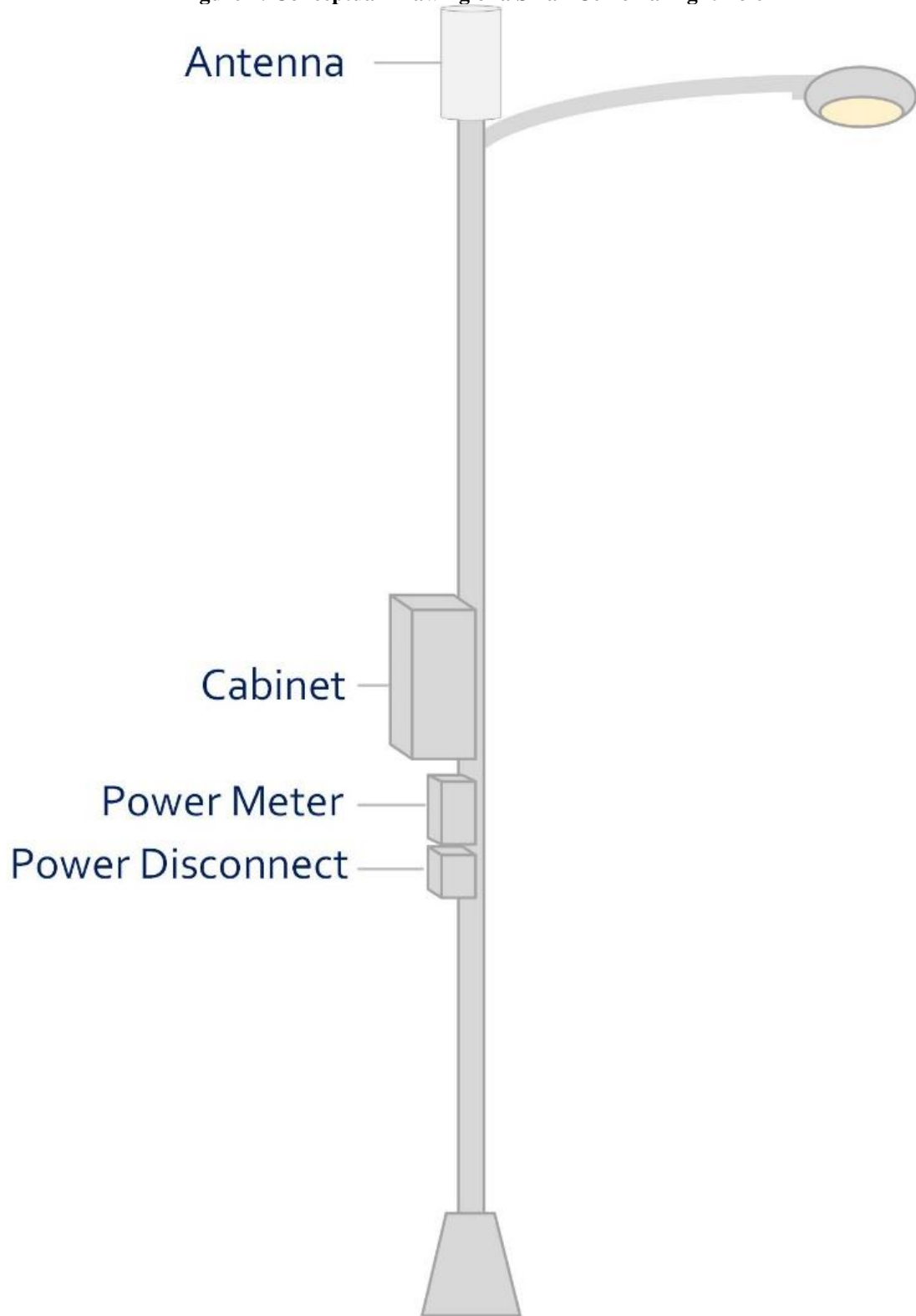


Figure 3: Conceptual Drawing of a Small Cell on a Light Pole with Concealed Cabinet



## **GENERAL TECHNICAL AND AESTHETIC REQUIREMENTS**

This section describes the City's technical and aesthetic requirements for small cell systems. These include the following:

- In all cases, the placement of small cell systems shall be consistent with existing structures and aesthetics, in harmony with the surroundings, and as unobtrusive as possible.
- Any contractor used by the Applicant must be approved by the Department of Public Works and obtain the required orientation and training from the Department prior to performing construction and maintenance of poles.
- Small cell systems shall not be installed on poles containing controls such as fire alarms, police signals, or traffic signals.
- The City prefers that small cell systems not be located on streetlight poles with traffic signs mounted on them. If an Applicant submits an application for attaching to a streetlight pole with a traffic sign, it must prove that it is not technically possible to use another pole.
- A single Applicant's small cell system shall be installed with a minimum spacing of 600 feet in residential areas.
- Up to two small cell systems may be installed at an intersection, each on a different corner.
- Two small cell systems at an intersection may not be operated by the same Applicant.
- Small cell systems shall use banners and coloring to match surrounding light poles and fixtures.
- Poles and light fixtures are to match or complement an existing precedent.
- Advertising on support structures or equipment is prohibited.
- Signs or illumination on the antennas or support structure are prohibited unless required by the FCC, the Federal Aviation Administration, or the City.
- A distinct marker (tag) shall be placed on a small cell systems that will allow for ready identification of the type of attachment, its owner, and contact information. The marker shall be limited to a 3-inch by 2-inch plate.
- No small cell systems shall extend over the roadway.
- On non-wooden poles, all cables shall be placed inside and not visible on the outside.
- All antennas must be placed in-line or be flush-mounted with the pole.
- When antennas are placed in-line with the pole, antennas must have a smooth cylindrical shape (ideally, a single canister, or multiple separate antennas placed inside sheeting that is flush with the pole, or a form factor in which multiple antennas merge into a single smooth shape). No separately mounted antennas will be allowed on a single installation (for example, physically separate panel antennas for each sector).
- All small cell systems shall utilize stealth and concealment methods to limit their visual impact where feasible. Stealthing features should include blending with the environment, concealing the equipment and antennas, and limiting the overall size including the height.
- Panel antennas must be flush-mounted with the pole.

- Antennas on light poles must be the same color as the pole. Antennas on wooden utility poles must be a neutral, unobtrusive color (e.g., black, brown, dark green).
- On a non-wooden pole, the power meter and power disconnect switch must be located inside the pole.
- The City prefers the use of tapered shapes that smoothly integrate into structures (avoiding, for example, new rectangular boxes).
- A replacement pole elevation is limited to a one-time, 10-foot increase from the pre-existing original pole (i.e., top of existing structure to top of proposed structure). Height increase can only be used one time per location.
- Antenna attachments are limited to the following types and dimensions:
  - Small antennas enclosed in a canister with a combined maximum height of 4 feet and a maximum total volume of 9 cubic feet.
  - Small antennas enclosed in a panel with a combined maximum height of 2.5 feet and a maximum total volume of 2.5 cubic feet.
- The owner of system that is located within the Historic District shall mitigate any adverse visual impact of the system in the manner determined by the department of planning and zoning and the historic preservation commission pursuant to Chapter 21.56.
- A system may be located on the rooftop of an existing nonresidential structure or multifamily dwelling structure with more than 10 units, but the system may not extend above the existing roof height by more than 15 feet.
- A system attached to a transmission line pole or tower may not laterally project more than 15 feet beyond the cross arms or other support extensions affixed to the pole or tower and may not project above the top of the pole or tower by more than 15 feet if the pole or tower is to support one provider or 25 feet if the pole or tower is to support more than one provider. The pole or tower, including all projections, may not exceed 10% of the existing height. All accessory structures shall be underneath the transmission line within the drip line of the outermost lines or located from the edge of the transmission line right-of-way by a distance no less than the minimum setback required for accessory structures in the zoning district in which the facility is located.

### **Equipment Cabinets**

Any equipment cabinet:

- Shall use a tapered design, instead of a rectangular box shape.
- Must not exceed a maximum volume of 12 cubic feet and a maximum width of 2 feet; cabinets that are non-rectangular in shape must be comparable or less in volume and visual impact.
- Must be painted or screened to be the same color or design of the pre-existing structure.
- Must be flush-mounted to the pole.
- Must not protrude from the surface of the pole by more than 6 inches in any direction.
- Must be on the side of the pole facing away from the roadway.
- May be placed inside the pole, such as in the base of the pole in a way that integrates with the design of the pole.

- Cabinets may either be mounted on a pole or on a concrete slab within 50 feet of the pole where the small cell systems is mounted.
- Surface-mounted cabinets must be on a concrete slab, and where possible must be placed next to existing pedestals and cabinets (for example, near a traffic signal).
- Surface-mounted cabinets must be the same color as other nearby pedestals or cabinets. Where there are no other nearby pedestals or cabinets, the cabinets should be the same color as the pole housing the antenna.

## **Signs**

Advertising on support structures or equipment is prohibited.

- Signs or illumination on the antennas or support structure are prohibited unless required by the FCC, the Federal Aviation Administration, or the City.
- A distinct marker (tag) shall be placed on small cell systems that will allow for ready identification of the type of attachment, its owner, and contact information. The marker shall be limited to a 3-inch by 2-inch plate.

Approved signage compliant with FCC OET Bulletin 65 shall be posted at each pole or streetlight pole hosting a small cell systems, and/or at multiple locations on such pole structure as required by FCC OET 65. The RF signage shall comply with the appropriate and predetermined exposure level applicable to the "General Public," "Occupational Worker[s]," and "Specialized Worker[s]" as shown in Figure 4 below. All signage shall be 8 inches x 12 inches and made of weather-, corrosion-, and ultraviolet- (UV) resistant materials.

## **RF Exposure**

Applicants shall comply with all provisions and guidelines of the FCC's OET Bulletin 65, as may be amended from time to time. In all cases, Applicants shall submit a report certifying FCC OET 65 compliance for each small cell system installation. Applicants are responsible for addressing all potential questions/complaints about RF that may be brought forth by residents. In all cases, the Applicant shall provide a routine environmental evaluation for RF exposure for each small cell system application. The following elements, at a minimum, must be contained within the report:

- A statement of compliance
- Date of the report
- Date of statement of compliance
- Pole number proposed for the small cell systems installation
- Applicant's site or identification number for the small cell systems installation
- GPS coordinates of the proposed pole
- Calculation of RF power at the radios or other electronics
- Calculation of RF power at the antennas
- Calculation of RF power within 6 feet of ground level and at ground level
- Calculation of RF power at windows of residences and businesses in closest proximity to the small cell system
- Location of the applicable signage with above-ground-level height listed.

Upon request by the City, the Applicant shall perform RF field tests while the small cell system is in operation, supervised by the City, to demonstrate compliance with FCC OET 65.

Approved signage compliant with FCC OET Bulletin 65 shall be posted at each pole or streetlight pole hosting a small cell system, and/or at multiple locations on such pole structure as required by FCC OET 65.

The RF signage shall comply with the appropriate and predetermined exposure level applicable to the “General Public,” “Occupational Worker[s],” and “Specialized Worker[s]” as shown in Figure 4 below. All signage shall be 8 inches x 12 inches and made of weather-, corrosion-, and ultraviolet- (UV) resistant materials.

Figure 4: RF Signage



Each approved small cell system shall have a clearly marked disconnect switch adjacent to the electronics cabinet and located outside areas that exceed RF exposure limits. Once the shut-off switch is placed in the open position, the electronics equipment related to the installation shall not be energized. Additionally, no RF transmissions shall be emitted by any antenna related to the installation.

If the City determines that the small cell system is interfering with public safety communications, the City at its sole discretion may shut it off using the power shut-off and notify the owner.

#### Spacing among Streetscape Elements

- Excavation or installation of small cell systems may damage an existing tree’s critical root zone or canopy. Trees shall not be removed or have their critical root zones or canopy damaged for the installation of Small Cell infrastructure, regardless of whether the application is for a standalone pole or to replace an existing City streetlight or 3rd party pole. The protected zone shall be equal to one foot for each inch of the tree’s diameter, as measured at 4.5 feet above ground, or a minimum of 15

feet, whichever is greater. The protected zone shall be measured from the outside of the tree to protect root growth and should be marked with a fence or barrier.

- Poles shall not be placed where they limit the ability of City staff to plant a street tree in the future, regardless of whether the City plans to plant a tree in that location at the time the application is submitted.

The following table shows permissible installation interval lengths.

**Table 1: Permissible Installation Interval Lengths**

Blockface Length Intervals <sup>1</sup>	Number of Small Cell Facilities Permitted per Blockface <sup>2</sup> outside of the Historic District	Number of Small Cell Facilities Permitted per Blockface within the Historic District	Minimum Distance between Facilities on same Blockface <sup>3</sup>	Minimum Distance between Facilities on Same Blockface within the Historic District	Limit per Carrier per Block <sup>4</sup>
0'-150'	1	1	N/A	N/A	1
151'-300'	2	1	60'	60'	1
301'-450'	3	3	60'	75'	1
451'-600'	4	4	60'	90'	1
601'-750'	5	5	60'	150'	2
Over 750'	6	6	60'	120'	2

<sup>1</sup>Block lengths should be measured along the edge of curb between the edge line extended of adjacent intersection streets.  
<sup>2</sup>This is inclusive of all types of installations and regardless of carrier.  
<sup>3</sup>The minimum distance between two facilities sharing the same side of the block. Distance should be measured in a linear fashion along the edge of curb between the two facilities' center points.  
<sup>4</sup>A block is identified as two opposing blockfaces.

**Licensed Frequencies**

Antennas shall only transmit or receive frequencies that are licensed by the FCC to the Applicant or to the carrier the Applicant represents. In the event the Applicant wishes to add another carrier or change the carrier network using the small cell system, the Applicant shall notify the City in writing of the change in carrier and frequencies.

Frequency bands listed by the FCC as unlicensed and available for open use may be transmitted or received, as long as they do not cause interference with another Attaching Entity, FCC-licensed entity, or the City.

If the City experiences interference, the Applicant or its successor shall pay for an expert third-party review and to remediate the interference. The City reserves the right to remove the small cell system if the interference is not corrected.

### **Wireless Backhaul**

The small cell system may be connected via wireless backhaul services. The volume and height of any antenna used for wireless backhaul services is counted toward the total antenna size.

### **Backup Power**

Battery backup power devices shall be installed with a transfer switch to prevent back-feeding into the electrical system. No other types of backup power shall be permitted.

### **APPLICATION DESIGN DOCUMENTATION STANDARDS**

The Applicant must have a current, executed Right-of-Way Agreement on file with the City. The City will not consider an application submitted until the Right-of-Way Agreement is executed, the Applicant's annual plan is filed, and the annual plan fee is paid. If the application is for an attachment to a City pole, an executed Master License Agreement for attachments to City poles must also be on file with the City.

Small cell systems should be attached to a pre-existing support structure or a like structure replacing an existing structure. However, if the Applicant can demonstrate that no co-location opportunities exist in the area where it demonstrates a need for a small cell system, the Applicant may propose that a new pole or other support structure be constructed for purposes of installing the small cell system.

The City has established an order of preference for small cell system installation types (Table 2). The most preferred types are those that have the lowest incremental impact and use existing resources. Therefore, a mid-span microcell is the most preferred installation type.

**Table 2: Installation Type Preference**

From Most to Least Preferred
1. Mid-span microcell
2. Replacement pole
3. Wooden utility pole
4. New pole

The next most preferred installation type is a replacement pole, followed by a wooden utility pole (which are less easily concealed), followed by a new pole.

The following sections describe applications for a) a new pole, b) replacing a pole with a like structure; c) user of a third-party pole, and d) multiple attaching entities for the same pole.

#### **a. Application for a New Pole**

The new pole should use one of standard designs in Appendix A. The applicant should follow the preference order shown in Table 1 and only proceed to the next option if it can be demonstrated that the preferred design cannot provide the required technical capability.

In an area outside of the Historic District with decorative poles, the Applicant shall use the pole type designated for that area, if there is a designated type.



Under circumstances discussed below, the Applicant may propose an alternative design.

To apply to place a new pole, the Applicant shall provide:

- Justification for why the site was selected. Describe the purpose of the site and, if applicable, why it is not being co-located. List all existing co-location choices within 1,000 feet and describe why they cannot be utilized.
- A photographic simulation of the structure and equipment from at least two different directions and approximately one-fourth mile away. If the new structure is visible from adjoining parcels, include views from the adjoining parcels.
- Data for any drive tests that were performed (and a note that the results are attached).
- RF propagation contour maps (if the justification is coverage-oriented) showing the site with and without the small cell system. The maps should show calculated signal levels in color at the target signal level and plus and minus 5 dB. Include a legend indicating the signal levels represented by each color. Include map showing coverage at the proposed antenna elevation and at 10 feet below the proposed elevation. The maps must be legible and in sufficient detail to show neighborhood streets around the proposed site and adjacent sites.
- Evidence of capacity exhaustion of the current serving site (if the justification is capacity-oriented). The evidence must demonstrate that the capacity at the serving site will be diminished within 18 months of the application such that it will have a negative impact on the users within the area if new capacity is not added. Examples of this may be time-of-day download speeds, utilization over time, or cumulative key performance indicator (KPI) reports from the serving site.
- Engineering design and specification drawings in compliance with the most recent version of the City's Department of Public Works engineering design manual.

In all cases, small cell systems and associated support structures shall be located to avoid any physical or visual obstruction to pedestrian or vehicular traffic or any other safety hazards to pedestrians, cyclists, or motorists. If the City determines that a proposed location would present any such hazards, the City shall require the Applicant to choose an alternate site.

The City will conduct an additional review of the application for a new structure to determine:

- The demonstrated need for placing the structure at the requested location in order to deliver or enhance service, and that the Applicant has demonstrated that there are no other effective technical means for delivering the service
- The impact of placing a new structure or facility in the subject area
- The character of the area in which the structure is requested, including surrounding buildings, properties, and uses
- Whether the appearance and placement of the requested structure is aesthetically consistent with the immediate area
- The Applicant's technical objectives and whether the Applicant should use available or previously unconsidered alternate locations to place the support structure or small cell system
- The City may seek public comments or require a public hearing as part of the review.

b. Application for a Replacement Pole

City streetlight poles are not designed to support small cell systems. The Applicant is required to replace an existing City streetlight pole with a pole that provides the functionality of the existing pole and that is designed to support a small cell system.

The replacement pole should use one of standard designs in Appendix A. The applicant should follow the preference order shown in Table 1 and only proceed to the next option if it can be demonstrated that the preferred design cannot provide the required technical capability.

In the case of the Applicant replacing a decorative pole, the Applicant shall use a design consistent with the existing decorative light poles.

c. Application for a Third-Party Structure

If the Applicant is attaching a small cell system to a third-party structure in the right-of-way, such as installing a mid-span microcell or attaching to a wooden utility pole or streetlight owned by the power utility, the Applicant shall comply with the standards, processes, and permitting requirements of the City and the owner of the structure and apply to the City to place the small cell system in the right-of-way.

As part of the application to the City, the Applicant shall provide a letter confirming it has applied to the third-party owner to use its structure.

d. Applications from Multiple Attaching Entities for the Same Pole

The City will consider complete applications received from multiple Attaching Entities to attach to the same pole on a "first-come, first-served," non-discriminatory basis.

In the event the Attaching Entity fails to pay its application fee and perform construction within the timeline in the agreement, the City may reject the application and accept other applications for that pole. If the City receives a subsequent application from a second prospective Attaching Entity following acceptance of a complete application and prior to completing electrical construction or issuing a Notice to Proceed on the first application for a pole, the City shall reject the second application and any subsequent applications for the same pole if there was no coordination with the Applicant that submitted the first application.

The City will reconsider the rejected application if it is revised and resubmitted to eliminate the conflict with the first-in-time application previously approved.

**Use of Alternative Pole Design**

Small cell system on replacement poles shall follow one of the standard designs in Appendix A, which establish minimum standards, expedite the review process, establish consistency in the types of poles, and provide the Applicant with the flexibility of a wide range of configurations and potential equipment suppliers.

However, if the Applicants can prove that that it is not technically feasible to use one of the standard designs, they may propose an alternative pole design. If the Applicants opt to deviate from a standard design (see Appendix A), they must submit evidence that the standard designs

will not accommodate the proposed facility. A proposed design and a structural analysis shall accompany the application.

The City will conduct an additional review of the application for an alternative structure to determine:

- The demonstrated need for an alternative design at the requested location and geographic area in order to deliver or enhance service, and that the Applicants have demonstrated that there are no other effective technological means for delivering the service with a standard design
- The impact of placing the proposed structure or facility in the subject area
- The character of the area in which the structure is requested, including surrounding buildings, properties, and uses
- Whether the appearance and placement of the requested structure is aesthetically consistent with the immediate area
- The Applicants' technical objectives and whether the Applicants should use available or previously unconsidered alternative locations to place the small cell system.

The City may seek public comments or require a public hearing as part of the review.

#### **Attaching to Existing Utility and Cobra Streetlight Poles**

The following are applicable when locating small cell system on existing utility and streetlight poles within the public right of way:

- Any installation on existing poles must comply with City Code.
- All small cell systems and associated equipment located within the public right of way shall be located such that they meet ADA requirements and do not hinder, obstruct, impede usual pedestrian and vehicular travel.
- Small cell systems must be shrouded, enclosing wires and equipment. No separate ground mounted equipment, including backup power supply, shall be allowed within the public right of way.
- Small cell system attachments and hardware shall be colored to match the existing pole or colored to match similar infrastructure along the block face. If located on a wooden pole, attachments shall be colored to match the color of the pole or a similar earth tone color.
- The attachment of small cell systems to the reproduction historic lamp posts is not allowed.

#### **Replacement of Existing Utility and Streetlight Poles**

A replacement streetlight pole shall be installed in the same location as the original pole location, as close as possible to the line between the residential or business lots. It shall serve the purpose of the original pole (i.e., lighting) while also serving as a supporting structure for the small cell system.

The following are applicable when locating small cell systems on replacement utility and streetlight poles within the public right of way:

- Any installations on replacement poles must comply with City Code.

- Increases in pole height needed to meet utility safety requirements are not to exceed 10 feet greater than the existing pole to be replaced. Increases in pole height should be minimized to the greatest extent possible. No pole shall exceed by more than 10% the height of existing poles without a special use permit.
- Replacement poles must be in the same general location of the existing pole or a comparable location in the public right of way.
- Replacement poles shall be located such that they meet ADA requirements and do not obstruct, impede, or hinder usual pedestrian or vehicular travel.
- Small cell systems must be shrouded, enclosing wires and equipment. No separate ground mounted equipment, including backup power supply, shall be allowed within the public right of way.
- Small cell systems shall be colored to match similar infrastructure along the block face. If located on a wooden pole, small cell systems shall be colored to match the color of the pole or a similar earth tone color.

### **New Standalone Structures**

The guidelines provided are for single or multi-carrier installations of new standalone structures. The following are applicable when locating, small cell systems on new standalone structures:

- Any installations on new standalone poles must comply City Code.
- New standalone structures shall be located such that they meet ADA requirements and do not hinder, obstruct, impede usual pedestrian and vehicular travel.
- New standalone structures, to the greatest extent possible, shall be in alignment with existing trees, utility poles, and streetlights.
- All small cell systems shall be internally contained to the pole and or concealed by an exterior shroud. No separate ground mounted equipment, including backup power supply, shall be allowed within the public right of way.
- New standalone structures shall be cylindrical, straight, and colored to match similar infrastructure along the block face.
- No new standalone pole shall exceed more than 10% the height of existing poles without a special use permit.

### **Small Cell Systems Outside of the Public Right of Way**

The following are applicable when locating small cell systems outside of the public right of way:

- New standalone structures outside of the public right of way must comply with City Code.
- Small cell systems should avoid the creation of clutter and be placed to blend with existing structures.
- Building rooftop small cell systems should be either flush mounted to surface walls, camouflaged, screened or placed to not be visible from the surrounding area.
- New standalone structures shall be located such that they meet ADA requirements and do not hinder, obstruct, impede usual pedestrian and vehicular travel.
- New standalone structures, to the greatest extent possible, shall be in alignment with existing trees, utility poles, and streetlights.
- All standalone structures shall be internally contained within the structure and/or concealed by an exterior shroud. No separate ground mounted equipment, including backup power supply, shall be allowed.

- New standalone structures shall be cylindrical, straight, and colored to match its surroundings.
- No standalone structure shall exceed more than 10% the height of existing poles without a special use permit.

### **Documentation**

The Applicant shall indicate the design of the support pole, the small cell system, and any other attachments (such as fiber demarcations, battery backup, and power meters) in the design documentation. Design documentation shall include any handholes, manholes, pedestals, demarcation enclosures, splice cases, and duct surrounding the small cell system and illustrate how the backhaul and power will interconnect with the small cell system.

Design documentation shall be specific to the design with no handwritten or superimposed annotations other than the Professional Engineer's signature and stamp where required. Design documentation containing strictly generic typicals will not be accepted. Design documentation shall be original plotted digital renderings created with computer-aided design software and presented in PDF file format. No individual document may be larger than 5 MB in size. Design documentation of poor visual quality (as determined by the City reviewer) may not be accepted.

### **Paper Size**

All design documentation shall be legible when printed according to the ANSI B standard for 11 inches x 17 inches. Drawings may be submitted in a larger, ANSI D format (i.e., 22 inches x 34 inches) but must contain an accurate alternate scale when printed at 11 inches x 17 inches. Architectural sizes (i.e., ANSI A and ANSI C) are not acceptable size formats.

### **Abbreviations**

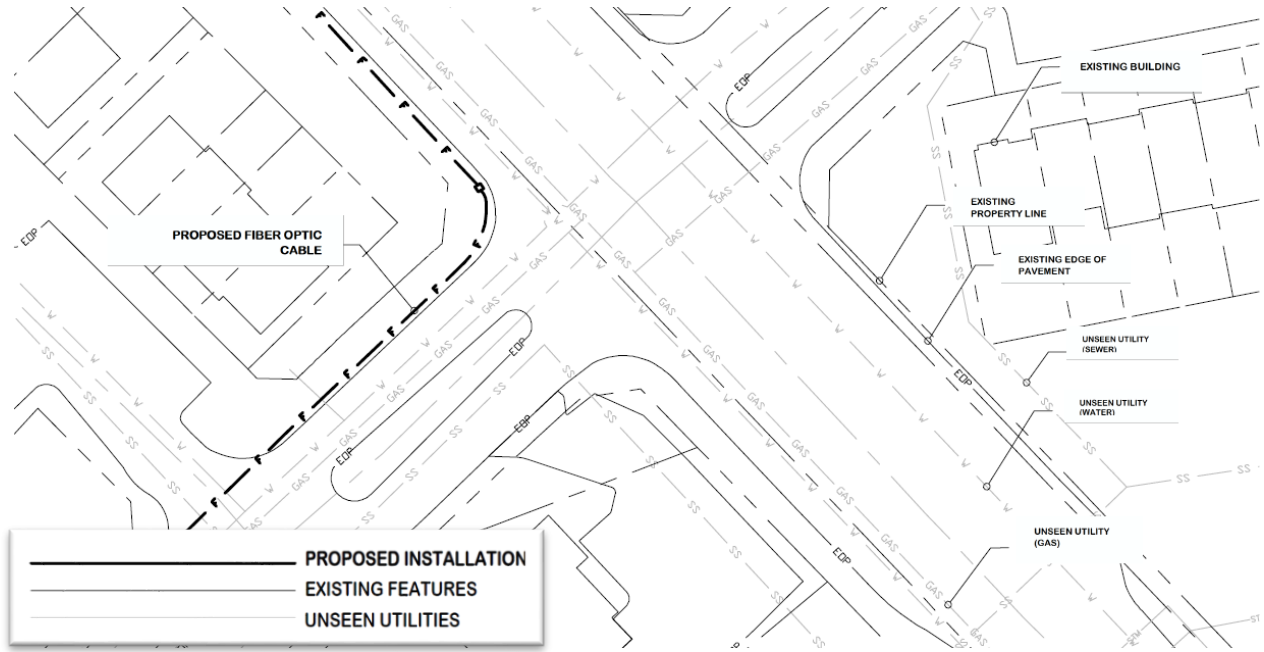
All annotations, call-outs, notes, and descriptive text shall be in plain language. If abbreviations are used to promote clarity in the design documentation, the Applicant shall follow the City's Department of Public Works engineering design manual.

### **Line Weights and Annotations**

Descriptions of existing aboveground features on plan view and profile view sheets shall have a consistent line weight. Descriptions of existing belowground utilities and features shall have a consistent line weight that is lighter than existing aboveground features. All features and components of the proposed small cell system—as opposed to existing conditions—shall have a consistent, heavier line weight than existing aboveground features. All annotations for the proposed small cell system shall be bolded and noticeably heavier than other annotations on the plan and profile sheets.

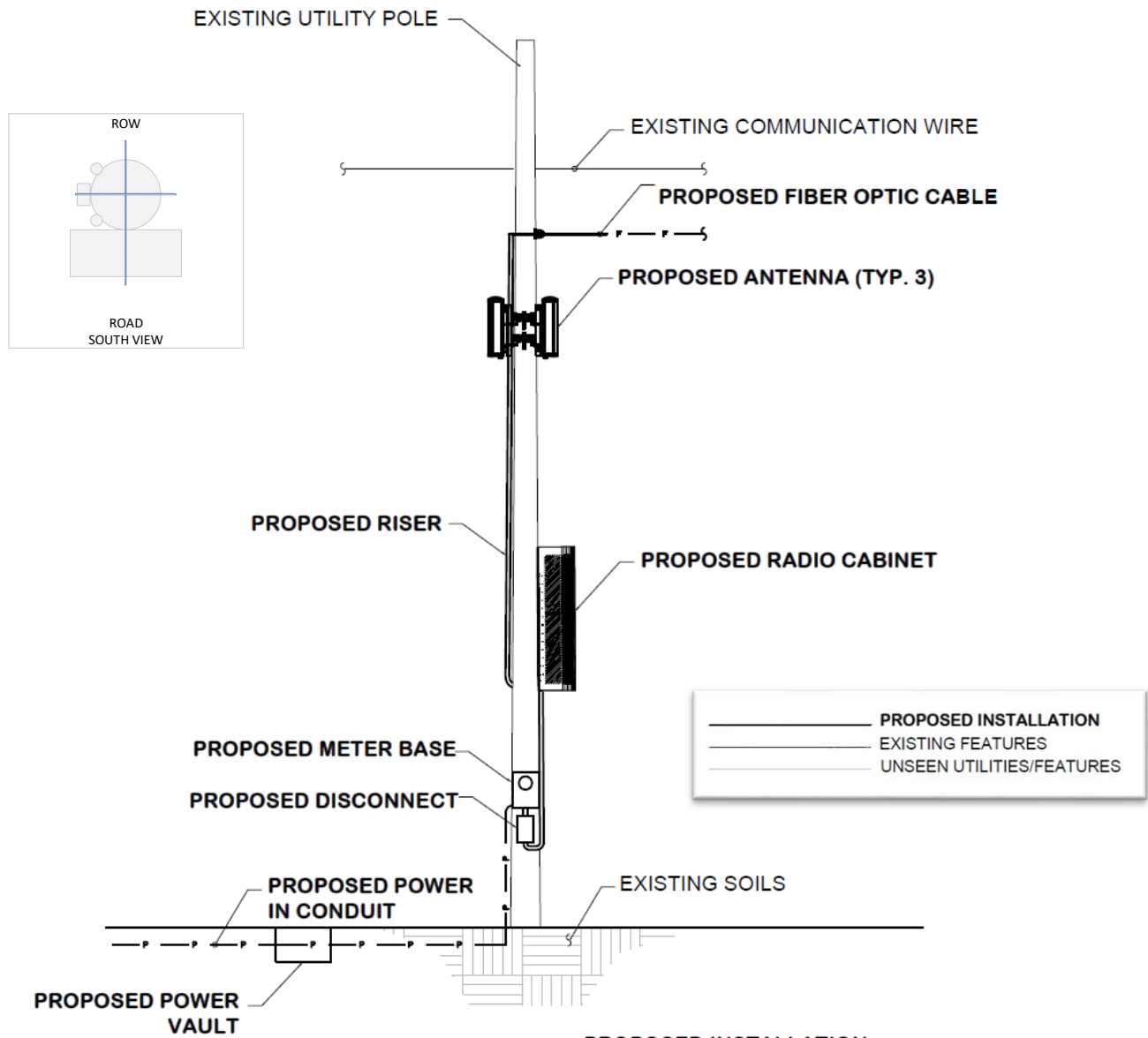
A plan sheet example with suitable line weights and annotations is shown in Figure 5. A sample profile sheet with suitable line weights and annotations is shown in Figure 6 (below).

**Figure 5: Sample Plan Sheet with Suitable Line Weights and Annotation<sup>1</sup>**



<sup>1</sup> Annotations for travel lanes, road names numbers, clear zone, and right-of-way were omitted for clarity.

**Figure 6: Sample Profile Sheet with Suitable Line Weights and Annotation**



**Required Sheets and Information**

Design documentation shall include, at a minimum, the following sheets for all types of applications except for small cell system removal:

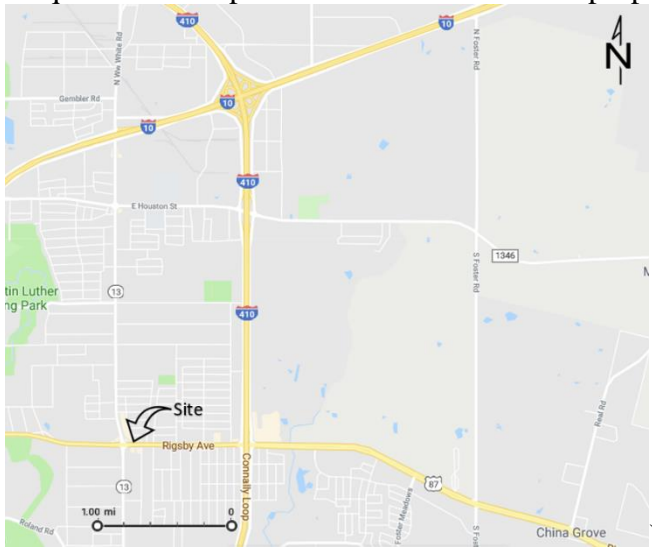
- Title
- Plan
- Profile
- Equipment
- Traffic control plan
- Typicals (optional)

Applications to remove a small cell system shall include a title sheet, a list of items that will be removed, traffic control plans, and a description of proposed restoration.

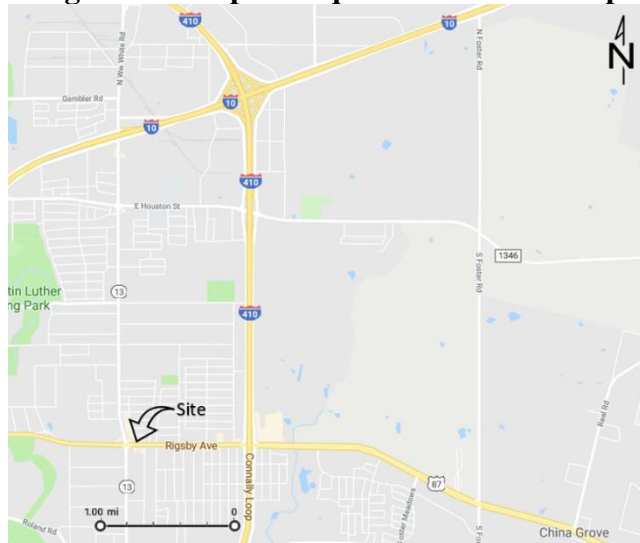
## Title Sheet Requirements

The title sheet shall include the following items:

- Road name and number
- Applicant's site name and/or identifier number
- Full address of proposed small cell system location (if none available, use closest address to assist the reviewer in finding the site)
- Historic district name, if applicable
- Latitude and longitude expressed in degree/decimal format (e.g., XX.XXXXXX) to the NAD83 standard and accurate to  $\pm 1$  meter.
- Email and phone number for the Applicant's engineer
- Email and phone number for the Applicant's single point of contact
- 5-square-mile map of the area for orientation purposes (see



**Figure 7: Sample 5-Square-Mile Area Map**





- A list of applicable codes and applicable engineering standards (most recent version) with which the application complies
- Sheet index (table of contents) listing only submitted sheets
- Seal and signature from a State of Maryland-certified Professional Engineer (P.E.)
- P.E.'s statement with the following signature line placed in the lower right-hand quadrant of the title page:

I, \_\_\_\_\_, a registered Professional Engineer in the State of Maryland, do hereby certify that this drawing was prepared by me, or under my direct supervision, and that all information contained herein regarding safety is in accordance with the listed applicable codes and applicable engineering standards, without exception or exclusion, stated or otherwise.

\_\_\_\_\_  
PE Signature

### **Requirements for Plan Sheets**

The Plan sheets shall accurately depict existing features that apply, such as:

- State roads and interstates (name and number)
- Local roads (name)
- Private roads
- Public rights-of-way and other rights-of-way and property lines
- Sidewalks and accessibility ramps
- Bike trails/lanes/paths
- All existing visible features, street furniture, and structures within the City rights-of-way
- Property addresses for parcels abutting the City rights-of-way
- Area zoning boundaries and indication of the zone type, if any (e.g., residential, mixed-use, commercial, industrial)
- Premises outlines with address numbers, if applicable
- Existing underground utilities
- Visible underground utility appurtenances (e.g., valves, fire hydrants)
- Annotation to identify surface type (e.g., pavement, grass, bituminous)
- Hydrology/flood plains
- Stormwater management and culverts
- North arrow indication
- Recorded easements
- Limits/boundary of construction
- Notes to identify method of construction (if not explained on a typical sheet)
- Reference to any applicable detail illustrations on the plan sheet or a separate typical sheet
- Any structure proposed to be installed or replaced
- A color photo of the proposed small cell system location and adjacent streetscape (with approximate placement identified) taken during a field survey conducted within 60 days of the date of the application submittal; internet street-view photos are not acceptable, and the size of the photo shall be no less than 3 x 4 inches when printed on an 11 x 17-inch sheet

Plan sheets may have aerial imagery as the base layer. The Applicant's P.E. shall confirm that the aerial imagery is suitable to depict current conditions as related to the application. If a plan sheet with aerial imagery is used, an additional plan sheet of the same perspective, orientation, scale, and detail will be required without the imagery.

Plan sheets shall include the dimensions of all setbacks, offsets, and road widths related to the proposed small cell system. Dimensioning should include but not be limited to:

- Road and City right-of-way widths
- Distance from existing and proposed underground facilities to the City right-of-way and edge of pavement
- Distance from hydrology and flood plains to proposed facilities
- Widths of sidewalks, accessibility ramps, bike trails, bike lanes, and bike paths
- Setback to premises

Plan sheet features shall be drawn to scale except for symbols. Symbols are only to be used to preserve clarity (i.e., an existing 8-inch water line does not need to be drawn to scale). The main plan sheet scale must be in the range from 1:30 (inch:foot) to 1:50. Detailed illustrations can be added to show greater clarity using a larger scale (e.g., 1:10 or 1:5).

### **Profile Sheet Requirements**

A profile sheet shall accurately depict the following items:

- View direction (facing)
- The entire dimension of the pole (new/proposed/existing)
- Existing structure view, if the proposed small cell system will replace an existing structure
- Proposed structure view, or two different adjoining views (e.g., north and west) if it is a new structure
- All attached small cell system equipment (e.g., antenna, ancillary equipment)
- Foundation view or reference to typical sheet for proposed foundations
- Buried pole depth for new or replaced pole without foundation
- Proposed hand boxes, vaults, and hand holes
- Proposed underground conduits (within 10 feet of the network support structure)
- Grounding detail or reference to typical page
- Proposed ground-based enclosure
- Roadway features, including driveways, ramps, and sidewalks, to verify pole location will not interfere with proposed Improvements
- Minimum depth of cover for proposed power and communications conduit
- Offset from City right-of-way line to power

All the following items shall be dimensioned:

- Antenna height above pole
- Pole dimension at the base
- Distance from City right-of-way line
- Antenna and cabinet offset from pole
- Overall height of the pole above grade

- Vertical clearance of any adjacent overhanging roadway
- Ground-based enclosures and height above grade
- Pole-mounted enclosures and height above grade

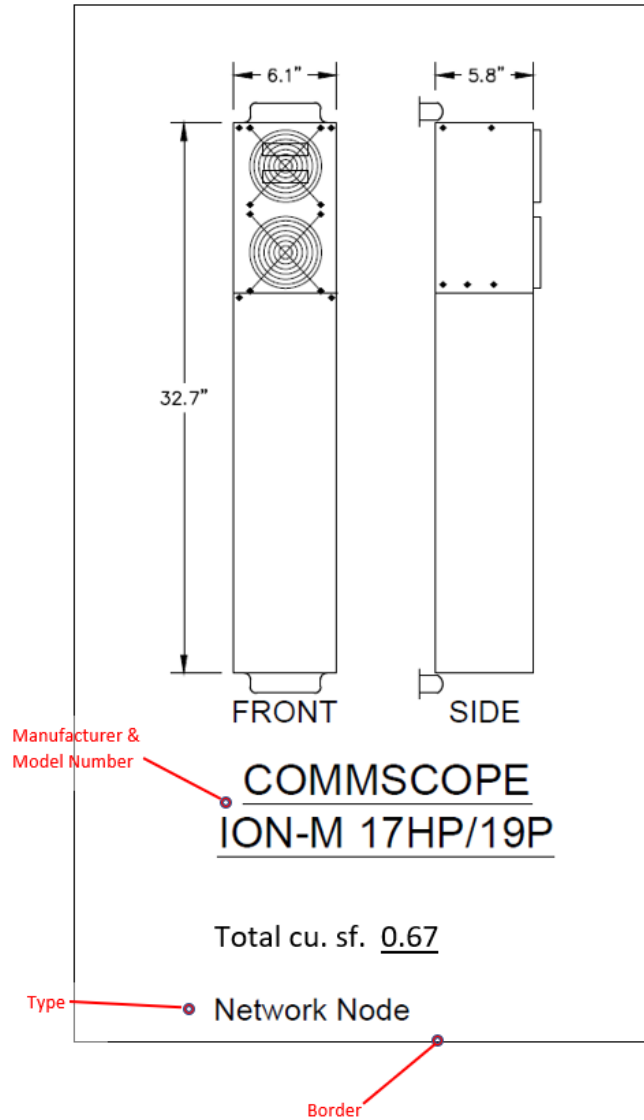
### **Equipment Sheet Requirements**

Equipment sheets are specialized typical detail sheets that tabulate cubic volume for a small cell system. An equipment sheet shall accurately include each of the following that apply:

- Plan view and profile view, or multiple profile views, or combined plan view and profile view (isometric) of any visible component with a measurement greater than 6 inches
- List of external components separately in typical detail
- Length, width, and depth in inches or feet and inches for any length greater than 10 feet
- Manufacturer and model number
- Total cubic feet

Each component shall be identified as an antenna, a small cell system, or ancillary equipment. Each typical detail on the equipment sheet shall be numbered and labelled to reference the typical sheet. The use of borders around details is required. See Figure 8.

**Figure 8: Sample Typical Detail (Small Cell System)**



In addition to the individual component typical detail, each equipment sheet shall include a separate note box that identifies the total small cell system volume, in cubic feet, as shown in Figure 9. The total cubic feet note shall be in bold type, located in the lower right-hand quadrant of the equipment sheet.

**Figure 9: Sample “Total Cubic Feet” Note**

<p><b>TOTAL SMALL CELL SYSTEM CUBIC VOLUME (cu. sf.):</b> <b>TOTAL ANTENNA CUBIC VOLUME (cu. sf.):</b> <b>TOTAL ANCILLARY EQUIPMENT CUBIC VOLUME (cu. sf.):</b></p>
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Line work and annotations shall be drafted using computer-aided design software. Scanned or cropped images are not acceptable. Equipment shall be drawn to the scale in the plan view and profile view sheets.

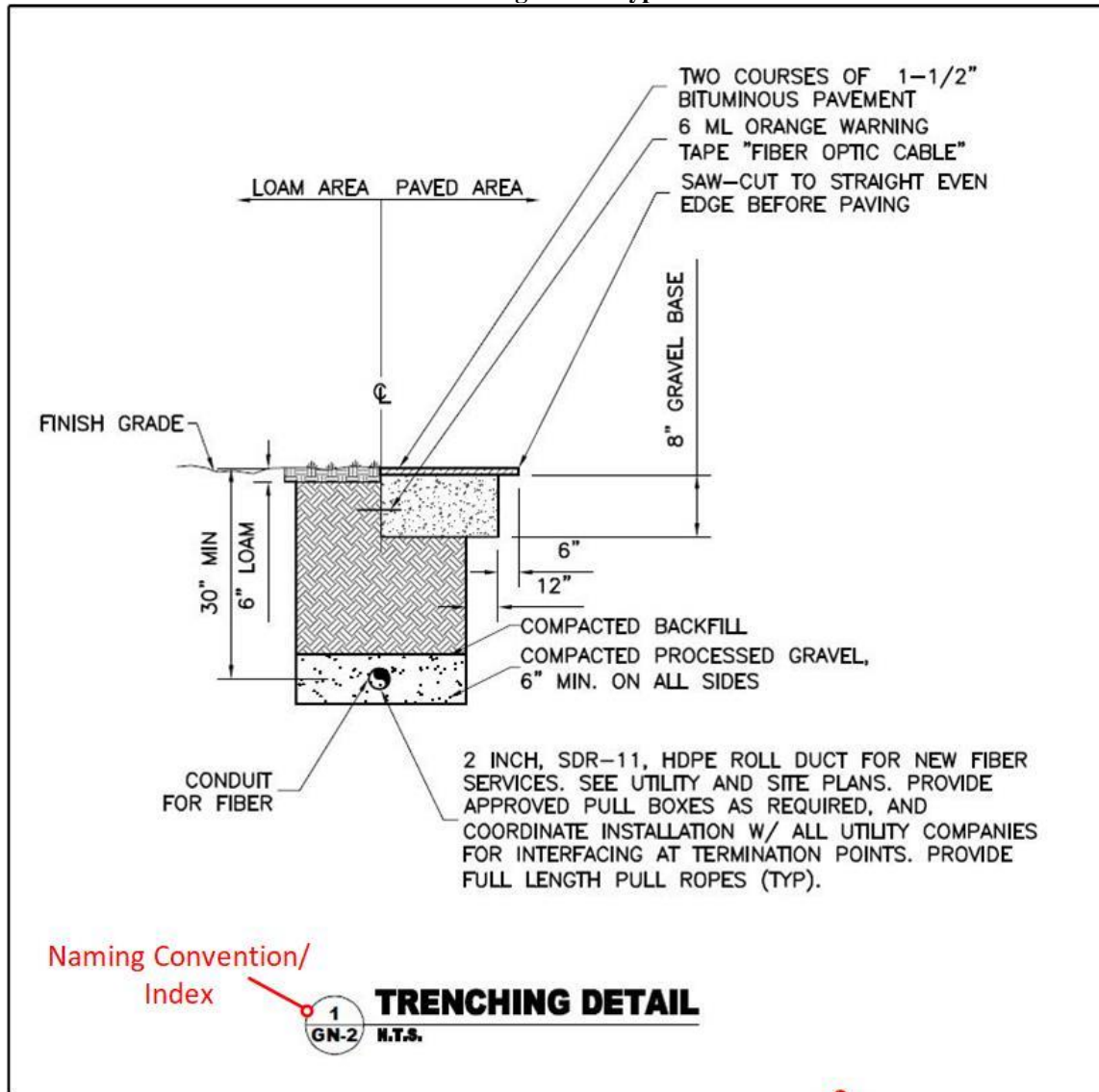
### **Traffic Control Plans**

The Applicant shall provide the City with a set of traffic control plans that fully detail the regulation of traffic on the adjacent roadway. The plans shall specify how traffic will be regulated before, during, and after any planned construction or maintenance related to the small cell system. The traffic control plans shall conform to the safety and design standards set out in the current version of the Maryland Manual on Uniform Traffic Control Devices (issued by the State Highway Administration) and may not be amended without the City's written consent.

### **Typical Sheet Requirements**

A sheet of typical details can be part of the design documentation. Only one typical sheet shall be included per design documentation, and each typical sheet shall contain no more than eight individual details or illustrations to depict the scope of work related to the plan and profile sheets. Each typical detail shall be numbered and labeled to reference the typical sheet and specific individual details. The use of borders around typical details is required (see Figure 10).

Figure 10: Typical Detail



### Documentation of Demarcation

The City understands that different Applicants, and different applications by an Applicant, may take different approaches to backhaul. In some cases, the Applicant may propose to build and own the backhaul. In others, it may build and own the small cell system and another entity may build and own the backhaul.

The application shall clearly indicate the demarcation between the backhaul and the small cell system.

If small cell system equipment is to be located on the pole itself or on the ground in close proximity to the pole, the vault or pedestal containing the small cell system equipment is the demarcation point. The following figures illustrate physical demarcations between the backhaul

and the small cell system at a line interface unit (LIU) also known as the network interface device (NID).

Figure 11 illustrates a scenario in which the backhaul (dotted line) is delivered aurally. The LIU/NID shown is located on the pole (it could also be in a nearby handhole if the cabinet is on the ground, or within the cabinet). The backhaul provider provides transport from a splice point and drops the line to the NID.

**Figure 11: Example Aerial Equipment Communications Demarcation Point**

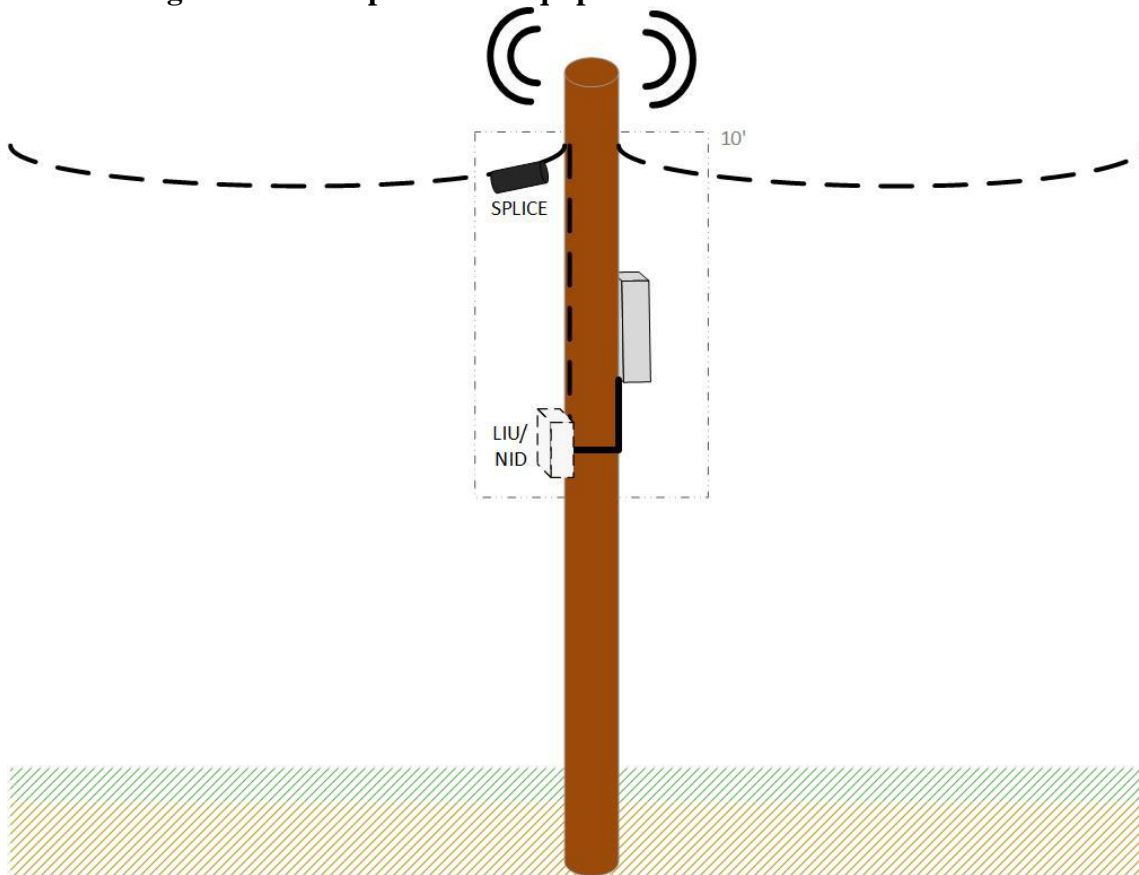
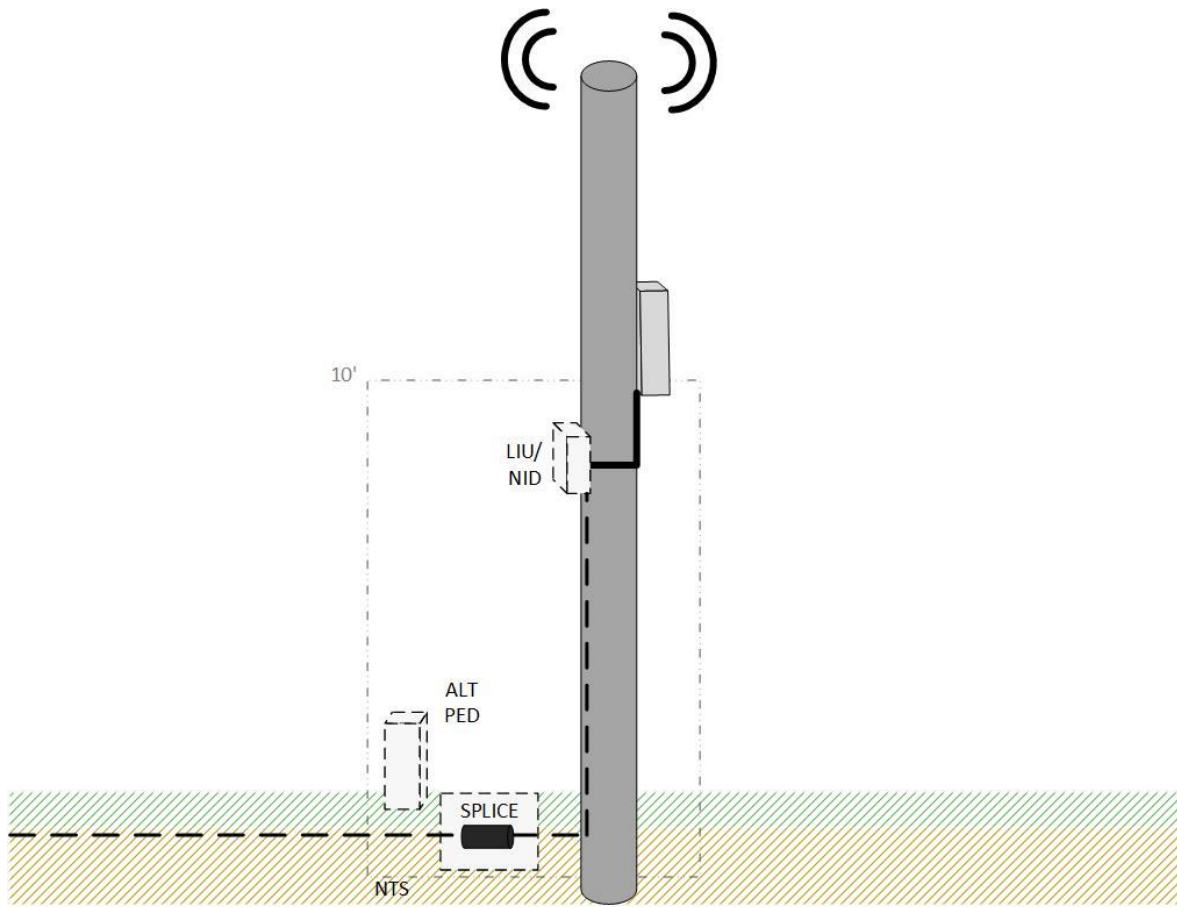


Figure 12 illustrates a scenario in which the backhaul (dotted line) is delivered underground. The backhaul provider typically builds a handhole containing the transport cable for the small cell system connection. It is recommended that the handhole be located within 10 feet of the pole. The demarcation point is where the backhaul connects to the LIU/NID.

**Figure 12: Example Underground Communications Demarcation Point**





## Appendix A: Standard Designs (Under Development)

Small cell system shall follow one of the following standard designs, which establish minimum standards, expedite the review process, establish consistency in the types of poles, and provide the Applicant with the flexibility of a wide range of configurations and potential equipment suppliers.

Typical designs and specifications are provided below.



Not Acceptable



Acceptable