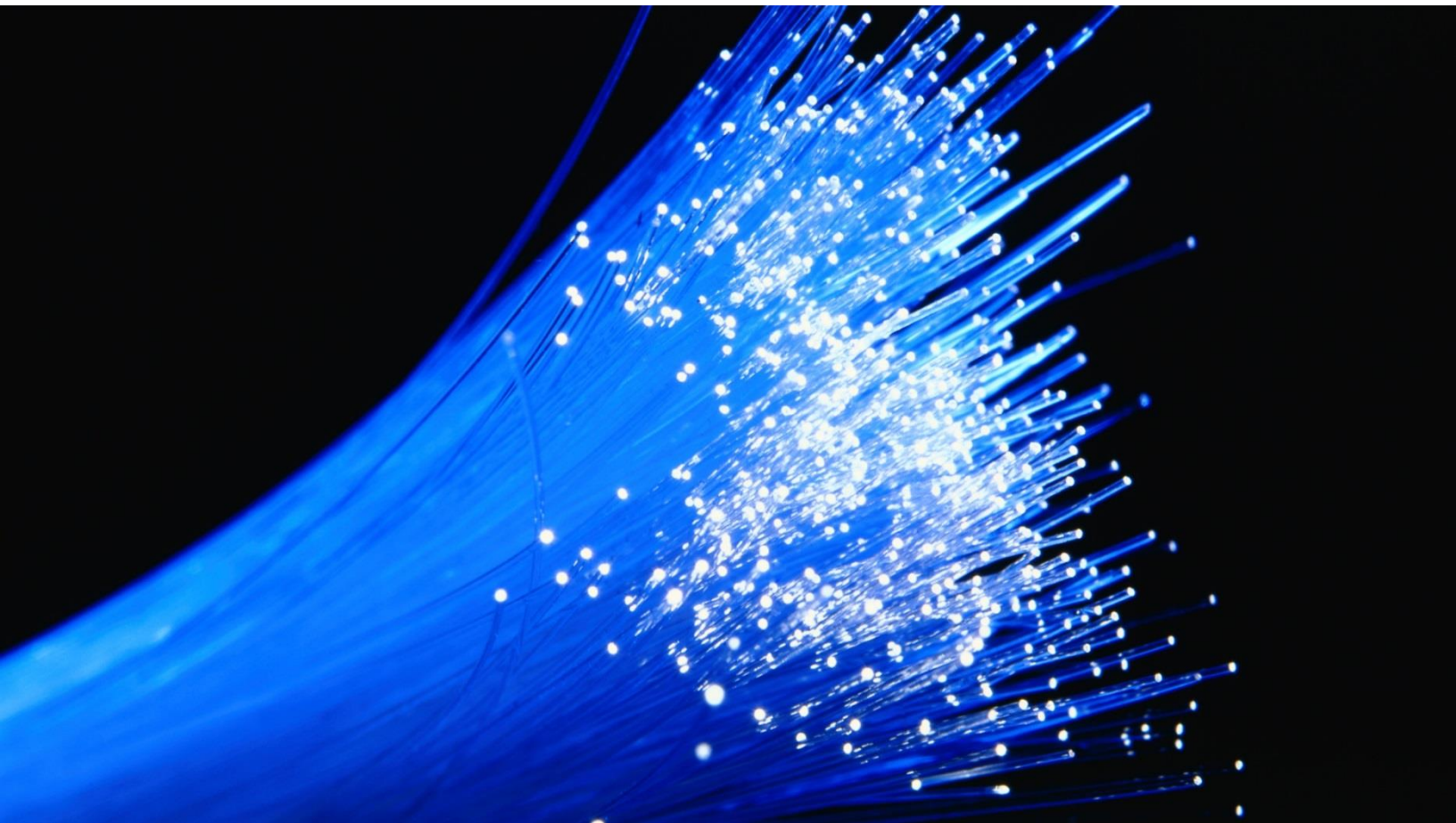




ctc technology & energy

engineering & business consulting



Wireless Siting Processes and Standards

Prepared for the City of Cupertino, California

August 2020

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1 Executive Summary

The City of Cupertino requested that CTC Technology & Energy review the City's wireless siting processes and standards and update the City's Wireless Facilities Master Plan.¹ The City intended the study to include best business practices for deployment of Small Wireless Facilities (often referred to as small cells); a comparison of the City's wireless siting requirements and processes against those of a comparable jurisdiction in the region; and an analysis and recommended changes to the City's design and permitting guidelines for Small Wireless Facility infrastructure.

1.1 The City Has a Strong Wireless Facility Siting Process

To establish a baseline for our analysis, we reviewed the existing guidelines and standards provided to us by the City, including:

- Wireless Facilities Master Plan
- Guidelines for City-owned poles
- FAQs for wireless facilities on wooden utility poles and streetlight poles²
- Small Wireless Facility design standards
- License agreements with service and infrastructure providers

We found the City has accomplished significant gains since the adoption of its previous Wireless Facilities Master Plan. In addition to developing Small Wireless Facility design standards that outline the City's requirements to potential applicants, City staff maintain ongoing, informal communications channels with applicants and share long-term plans to mutual benefit. The City has approved permits for wireless facility siting in locations that are agreeable both to applicants and the City. There are no unresolved issues relating to damage to the City's rights-of-way or private property.

¹ "Wireless Facilities Master Plan," City of Cupertino, <https://www.cupertino.org/home/showdocument?id=385> (accessed May 2020).

² See, for example: "Frequently Asked Questions about Wireless Facilities on Wooden Utility Poles and Streetlight Poles," City of Cupertino, <https://www.cupertino.org/home/showdocument?id=23418> (accessed May 2020).

Importantly, too, the City has established a transparent process for its wireless facility siting application reviews and approvals—ensuring that members of the public are aware of applications that have been submitted and related radio frequency (RF) emissions assessments. And, very importantly in light of requirements established by the Federal Communications Commission (FCC), the City accomplishes its application reviews in a reasonable amount of time.

At the request of the City as a benchmarking exercise, we conducted a detailed comparison of the City’s wireless siting processes and requirements against those of the City of Palo Alto. We found that Palo Alto’s process is more specific and defined than Cupertino’s. For example, rather than broad guidelines about the size and type of equipment it will allow (as is the case in Cupertino), Palo Alto provides numerical maximums and minimums. However, there are some areas where Palo Alto’s process would be unnecessarily complex for Cupertino’s needs—such as in its use of a multi-tiered application approach.

1.2 Changes in Wireless Technology and the Carrier Industry Will Require the City’s Processes and Standards to Evolve

Changes in wireless technology and the carrier industry’s approach to delivering services will require the evolution of wireless facility siting processes and guidelines in the City and nationwide. In this regard, we forecast a number of potential challenges for the City in the coming years, including:

- **Need to accommodate processes and designs of all applicants.** While Verizon Wireless has been the predominant applicant in the City to date (and its applications generally align with the City’s standards), it is likely that other providers will begin applying for wireless facility siting in the City. Those providers may have applications that are technically different from the City’s standards—and the applicants may be less amenable than Verizon Wireless has been to informal pre-application planning. Indeed, those providers may feel the City is making arbitrary choices about which applications to approve if the City’s policies are too restrictive or not detailed enough. That raises the risk of litigation if the City does not establish well-defined requirements.
- **Need to accommodate providers’ interest in placing infrastructure in neighborhoods.** With new wireless technologies requiring the placement of more

antennas closer to users, the City will likely see more applications for siting in or adjacent to residential neighborhoods. Thus, the City will need to define an approach for placing new poles where none currently exist—and will need to prepare for increased concern (e.g., about aesthetics and RF emissions) and engagement by residents.

- **Need to accommodate a greater volume of applications within the 10-day requirement for determining each application’s completeness.** The industry will seek to place millions of wireless facilities nationwide in the coming years—so the City, like many other jurisdictions, will likely need to handle many more applications than it is accustomed to processing. Already, the City has seen a sharp recent increase in applications by Verizon Wireless. And these applications require relatively quick action; the City needs to be able to accommodate the FCC’s “shot clock” timeframes³—especially the 10-day requirement for determining the completeness of an application filed with the City.
- **Need to review and approve requested modifications to already-installed Small Wireless Facilities in the City.** In addition to applying to construct new wireless facilities, the carriers and infrastructure companies will also likely be seeking to replace existing antennas with newer equipment. The City may need a streamlined process for dealing with those requests.

1.3 Recommendations

We recommend the City take a number of concrete steps that will enable it to adeptly handle the challenges outlined above (including compliance with FCC requirements)—while maintaining an open and transparent process for the public, protecting the City’s rights-of-way and physical assets, and collaborating with applicants to enable the deployment of wireless infrastructure.

1. **Develop application forms that request all necessary information.** Developing standard wireless facility siting applications that require applicants to submit upfront all information the City will need to conduct a thorough review—and

³ “Wireless Infrastructure,” Federal Communications Commission, <https://www.fcc.gov/wireless-infrastructure> (accessed June 23, 2020).

ensuring that the application submittal forms are prepared in a way that enables efficient review by City staff—will streamline the application process for both applicants and the City. This is especially important in cases where an applicant chooses not to participate in informal pre-application discussions with the City.

Application forms should comprise comprehensive lists of detailed questions to enable the City's reviewer to quickly ascertain application completeness and compliance. Thorough, well-organized, and comprehensive applications will avoid the need for time-consuming back-and-forth communications with applicants (e.g., the City's issuance of requests for information, or RFIs, when an applicant submits an incomplete application). The City should develop separate applications for new sites, colocations, and minor modifications.

2. **Modify the City's exiting application review process to increase efficiency.** We recommend modifications including:
 - Separate application review processes for new, colocation, and minor modification applications
 - Revisions to the review process to make it more standardized and repeatable
3. **Adopt clear technical and aesthetic standards for wireless facility siting.** By providing the appropriate amount of technical specificity up front (not a specific design or technology, but a set of standards), the City will ensure that applicants have sufficient guidance to understand what types of facilities will likely be approved prior to preparing and submitting an application.
4. **Conduct a cost analysis to justify the City's application fees and yearly fees.** A methodical analysis of the City's actual costs for reviewing applications and other expenses related to wireless facility siting will provide the City with data to support its fee structure. We understand the City is in the process of performing this analysis.

To support these recommendations, this report includes the following elements for the City's consideration, modification, and potential adoption:

- General definitions related to Small Wireless Facilities, applications, review processes, and standards (Section 2)
- Detailed descriptions of application type and requirements (Section 3)
- Detailed descriptions of separate application review processes, including a process flowchart and modified personnel roles (Section 4)
- Detailed aesthetic and technical standards for wireless facilities (Section 5)
- Draft standard pre-approved designs (Appendix A)
- Draft fields for expanded applications (Appendix B)
- A site completion checklist (Appendix C)
- Lists of tasks by process (Appendix D)
- A comparison of wireless facility siting processes in Cupertino and Palo Alto (Appendix E)

We propose that, once they are finalized, Section 4 and Appendices A through C become an amendment to the City's Wireless Facilities Master Plan.

2 General Definitions

This document assumes the following defined terms:

1. **Activation Report** means a report that documents that a Wireless Facility is being operated in compliance with applicable FCC emissions standards.
2. **Antenna** means an apparatus designed for the purpose of emitting radio frequency (RF) radiation, to be operated or operating from a fixed location pursuant to FCC authorization for the provision of wireless service and any commingled information services. Such apparatus includes, but is not limited to, directional Antennas, such as panels, microwave dishes, and satellite dishes, and omni-directional Antennas, such as whips.
3. **Antenna Equipment** means equipment, switches, wiring, cabling, power sources, shelters, shrouds, enclosures, or cabinets associated with an Antenna, located at the same fixed location as the Antenna and, when colocated, mounted or installed at the same time as such Antenna.
4. **Antenna Facility** means an Antenna and associated Antenna equipment.
5. **Applicant** means a Person who submits an Application. The term includes the Persons who will be the owners of the Facility or on whose behalf the work will be performed, as well as the Person who may submit an Application, which shall in any case be signed by the entity which will own the Facility or on whose behalf the work is performed.
6. **Application** means a request submitted by an Applicant to the Public Works Department to review and evaluate a proposed new or modified Telecommunications Facility within the City. An Application includes all the requirements for submission of an Application and any subsequent information to amend the Application or in reply to requests for information (RFI).
7. **Base Station** means a structure or equipment at a fixed location used for the provision of wireless services and that enables FCC-licensed or authorized wireless carrier communications between user equipment and a communications network. The term includes, but is not limited to, radio transceivers, Antennas, coaxial or fiber-optic cable at the site, regular and backup power supplies, and comparable equipment, regardless of technological configuration. The term does

not include a Tower or other Support Structure, as defined herein, and does not include Facilities (other than wireless devices at the Base Station) that connect a Base Station at a fixed location to other elements of a communications network at other locations. The term does not include metering equipment or disconnects required to provide power to the Base Station.

8. **Capacity** means the maximum data rate a Wireless Facility can support, taking into consideration the network overhead information, the services offered, and the wireless service provider's spectrum availability.
9. **Cell on Wheels (COW)** means a portable self-contained cell site that can be moved to a location and set up to provide wireless Telecommunications services on a temporary or emergency basis, for a period up to 120 days but not more than the period permitted by the Public Works Department. A COW is normally vehicle-mounted and contains a telescoping boom as the Antenna Support Structure.
10. **City** means the City of Cupertino.
11. **Colocation** means
 - a. the mounting or installation of an Antenna Facility on a preexisting structure for the purpose of transmitting and/or receiving radio frequency signals for communication purposes, whether or not there is an existing Facility on the Tower, building, or structure, or
 - b. the modification of a preexisting structure for the purpose of mounting or installing an Antenna on that structure.
12. **Concealment** means any Wireless Facility or structure that is covered, blended, painted, disguised, camouflaged, shrouded, or otherwise concealed such that the Wireless Facility blends into the surrounding environment and is visually unobtrusive.
13. **Construct** means to install, erect, build, affix, or otherwise place any fixed structure or object.
14. **Design Manual** means the Design Manual for Small Wireless Facilities promulgated by the City. The Design Manual comprises design standards including, but not limited to, the appearance, height, and size of Wireless Facilities.

15. **Emergency** means a condition that:

- a. poses a clear and immediate danger to life or health, or of a significant loss of property, or
- b. requires immediate repair or replacement to restore service to a user.

16. **Encroachment Permit** means an official document or certificate issued by the Public Works Department or its duly authorized agent, authorizing performance of specified construction at a specified location and within a specified time, together with all supporting documents, agreements, conditions, plans, and specifications.

17. **FAA** means the Federal Aviation Administration

18. **Facility** or **Facilities** means Facilities, equipment, and installations of any kind, including but not limited to any lines, pipes, irrigation systems, wires, cables, conduit Facilities, ducts, Poles, Towers, vaults, pedestals, boxes, appliances, Antennas, transmitters, gates, meters, appurtenances, or other supporting infrastructure or equipment. A reference to a Facility refers both to the Facility considered as a whole and the individual elements of a Facility.

19. **FCC** means the Federal Communications Commission

20. **Install** means the placing, constructing, or modifying of a Facility, whether initially or as part of the repair, modification, replacement, removal, or expansion of an existing Facility, and includes any process by which a Facility is placed, including but not limited to attachment, construction, digging, excavation, placement, pulling, and the like.

21. **License** means a nonexclusive specific authorization granted to Construct, operate, and maintain a Small Wireless Facility in the Public Right-of-Way to provide wireless communication services within all, or a specified area of, the City. Any such authorization, in whatever form granted, shall not mean or include any general License or permit required for the privilege of transacting and carrying on a business as required by the ordinances and laws of the City, or for attaching devices to Poles or other structures, whether owned by the City or a private entity, or for excavating or performing other work in the Public Right-of-Way.

22. **Licensee** means a natural person, partnership, domestic or foreign corporation, association, joint venture, or organization of any kind that has been granted a Master License Agreement by the City, subject to this Subtitle.
23. **Material Change** means a change that does not qualify as an Eligible Facilities Request as defined by the FCC in section 6409 of the Middle Class Tax Relief and Job Creation Act of 2012.⁴
24. **Master License Agreement** means a written agreement entered into between the City and the Wireless Facility Owner that sets forth the terms and conditions under which a License will be granted and exercised.
25. **Minor Modification** means changes to an existing Telecommunications Facility that does not result in a Material Change to the existing Facility or Support Structure.
26. **Monopole** means a Tower that is a single, self-supporting pole-type structure, tapering from base to top and supporting a fixture designed to support Telecommunications Facilities.
27. **Person** means any natural or corporate person, business association or business entity including, but not limited to, an individual, a partnership, a sole proprietorship, a political subdivision, a public or private agency of any kind, a utility, a successor or assign of any of the foregoing, or any other legal entity.
28. **Pole** means a type of structure in the Public Right-of-Way or other structure that is used in whole or in part for wireline communications, electric distribution, lighting, traffic control, signage, or similar function, or for Colocation.
29. **Private Property** means any real property owned or controlled by a single individual or by a group of individuals collectively. Private Property is any property that is not Public Property.
30. **Protected Area** means a site that, as of the date of an Application, is located within a group of buildings properties, or on a site, that is listed in:

⁴ See 47 U.S.C. § 1455(a), <https://www.congress.gov/112/plaws/publ96/PLAW-112publ96.pdf>.

- a. the Cupertino Inventory of Historic Resources, or
 - b. the National Register of Historic Places (or is formally determined eligible for listing by the Keeper of the National Register), or
 - c. the California Inventory of Historic Properties.
31. **Public Property** means any real property owned or controlled by the City or another public entity including buildings, lands, and surplus property.
32. **Public Right-of-Way** means the surface and space above, on, beside, and below any public highway, avenue, street, lane, alley, boulevard, concourse, driveway, bridge, tunnel, park, parkway, waterway, dock, bulkhead, wharf, pier, building, public easement, Right-of-Way, or any other public ground or water belonging to the City or another public agency.
33. **Radio Frequency Propagation Maps** (also referred to as coverage maps) means maps that indicate coverage provided by a Wireless Facility at a specific geographical location. These maps illustrate target signal levels (set by the wireless service provider) with different colors. They are calculated using the most suitable propagation model for the operating frequency bands.
34. **Replacement Pole** means a new streetlight Pole or utility Pole that is installed following the removal of an existing Pole.
35. **Shot Clock** means the timeframes imposed by the FCC on local governments for the review of Wireless Facility siting applications.
36. **Small Wireless Facility (SWF)**—referred to colloquially as a “small cell”—means, consistent with 47 CFR 1.1312(e)(2), a Facility that meets each of the following conditions:
- a. The Facility is mounted on a structure 50 feet or less in height including the Antenna;
 - b. Each Antenna associated with the deployment, excluding associated Antenna equipment, is no more than 3 cubic feet in volume;
 - c. All other wireless equipment associated with the structure, including the wireless equipment associated with the Antenna and any pre-existing

associated equipment on the structure, is no more than 28 cubic feet in volume; and

- d. The Facility does not result in human exposure to RF radiation in excess of the applicable FCC safety standards.

- 37. **Support Structure** means a structure, including, but not limited to, buildings, monopoles, Towers, Poles, Base Stations, and other free-standing self-supporting or guyed structures that may support Telecommunications Facilities, whether or not the structure has an existing Telecommunications Facility.
- 38. **Telecommunications** means the transmission, between or among points specified by the user, of information of the user's choosing without change in the form or content of the information as sent and received.
- 39. **Telecommunications Services** means the offering of Telecommunications for a fee, by a person or entity, which the person or entity is authorized to provide under applicable federal, State, and local law, regardless of the Facilities used. It includes, without limitation, transmission by optical fiber, coaxial cable, wireless methods, or any other means, and includes, without limitation, voice, video, data, telephone service, cellular service, and personal communications services.
- 40. **Telecommunications System** means all or any part of a Facility that occupies property and/or public Rights-of-Way owned or controlled by the City and is used to provide Telecommunications Services.
- 41. **Wireless Facility Location Plan** means a Plan that identifies the location of each existing Small Wireless Facility and the proposed location of each Facility to be constructed by or for a Person in the succeeding two-year period in the City.
- 42. **Tower** means any supporting structure built for the sole or primary purpose of supporting any FCC-licensed or authorized Antennas (and related Facilities), including supporting structures that are constructed for FCC-licensed or authorized wireless communications including, but not limited to, private, broadcast, and public safety services, as well as unlicensed wireless services and fixed wireless services such as microwave backhaul, and the associated site. This definition does not include a Pole.

43. **Underground District** means an area where Poles, utility Poles, overhead wires, and associated overhead or above-ground structures have been removed and buried or have been approved for burial underground pursuant to municipal ordinances, zoning regulations, state law, private deed restrictions, and other public or private restrictions, that prohibit installing above-ground structures in a Public Right-of-Way.
44. **Underground Facility Area** means any area where there currently are no above-ground utilities or an area that has been designated by the City as an area where only underground utilities can be placed, including a City-designated Underground District.
45. **Wireless Communication System** means all or any part of a Facility that is licensed by the FCC under Title 47, Code of Federal Regulations, Parts 20, 22, 24, 90, or 101, and is located in whole or in part on public property and/or Public Rights-of-Way and is used to provide one or more Telecommunications services.
46. **Wireless Facility** means any infrastructure, including any transmitting device, tower or Support Structure, and any equipment, Antennas, switches, wiring, cabling, power sources, shelters, or cabinets, associated with the licensed or permitted unlicensed wireless transmission or signals, voice data, or images information. A Small Wireless Facility is a Wireless Facility.
47. **Wireless Facility Owner** means a Person who owns or operates a Small Wireless Facility.

3 Application Types and Requirements

3.1 Prerequisites

The Applicant must have a Master License Agreement (MLA) with the City to operate on City Poles and/or in the Public Right-of-Way. The MLA may be applied for through the City Attorney's office. The MLA also needs to be approved by the City Council. The MLA will certify that the Applicant is a bona fide company licensed to do business, that it has the proper insurance and licenses, that the owners are identified and can be found, and that the Applicant has a process if ownership is to be transferred.

The Applicant must have obtained permission from the structure owner before submitting an Application. If the structure on which the wireless attachment will be mounted is owned by any entity other than the City or the Applicant, a copy of any license, lease, agreement, or other documentation evidencing that the owner of that structure authorizes the Facilities to be attached must be included with the Application.

The Applicant must have filed an Annual Plan with the City, and paid the annual report fee.

The Applicant must submit a complete Application with all required submittals (an Application Checklist is attached as Appendix B), and must submit payment in full for the Application fee. For applications in the ROW, a notification report must also be submitted (see Section 5.2.1).

3.2 Application Types

All Encroachment Permit Applications for Small Wireless Facilities shall be submitted to the Public Works Department for review. An Applicant may apply for a Minor Modification, Colocation, Replacement, or new structure. The City prefers Colocations over Replacements, and Replacements over new structures. The City has additional application requirements and reviews for Replacement and new structures, as described below.

3.2.1 Replacement Requirements

The City's existing streetlight Poles typically are not designed to support Small Wireless Facilities. If the Pole cannot support the equipment, a Replacement Pole will be necessary.

- An Applicant seeking to replace an existing streetlight Pole to support a Small Wireless Facility must provide the functionality of the existing Pole. For instance, if the existing Pole provides lighting, the Replacement must also provide lighting.
- Aerial wires to Replacement Poles are prohibited unless the existing Pole has aerial wires.
- A Replacement for a City-owned Pole should use one of the City's standard designs shown in Appendix A.
- In the case of the Applicant replacing a non-decorative Pole, the preference is to use Design 1 if it can provide the technical capability required by the Applicant. If the Applicant can demonstrate that Design 1 cannot provide the required technical capability, it should use Design 2.
- Replacement wooden utility Poles shall not be more than 10 feet taller than the original. Replacement streetlight Poles shall not be more than 10 percent taller than the original and should maintain the same distance to the curbs and sidewalks as other Poles in the area.
- The Applicant shall minimize the size and aesthetic difference between a Replacement structure and the original Pole or structure.
- A Replacement streetlight Pole shall be installed in the same location as the original Pole location, or as close as reasonably possible to the original pole and to the property line between the residential or business lots. It shall serve the same primary purpose as the original Pole, which is the provision of lighting in the designated area.
- A pre-existing utility Pole shall be removed within 90 days after a Replacement utility Pole is installed.
- Existing streetlight Pole foundations not utilized for new or Replacement Poles shall be fully removed from the Public Right-of-Way.

3.2.2 New Structure Requirements

- The new Pole shall use one of the standard designs in Appendix A. The City requires there be no aerial wires to new Poles, unless existing aerial wires are present and the Applicant receives explicit written approval from the City to do

so. Where no overhead wires exist, all power and backhaul connections must be fed from underground.

- Poles and light fixtures shall match or complement the surrounding Poles and light fixtures and shall meet the City's standards.
- Aerial wires to new Poles are prohibited. Any connection to a new Pole shall be underground.
- New Poles shall be located at the same distance from the curbs and sidewalks as other Poles in the area.

The Applicant shall also provide the following additional information:

- *Justification for why the site was selected.* Describe the purpose of the site and, if applicable, why it is not being colocated. List all existing Colocation 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.* If the new structure is visible from adjoining parcels, consideration should be given to including views from the adjoining parcels.
- Data for any drive tests that were performed by the applicant in the course of design. The Applicant should note that the results are attached.
- RF propagation contour maps (needed only if the justification is coverage-oriented) showing the site with and without the Small Wireless Facility. 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 maps 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 (needed only 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.

3.2.3 Additional Reviews for New or Replacement Poles

To demonstrate that a replacement or new structure is justified, the Applicant must submit additional documentation with the Application.

The City will conduct an additional review of the Application for a replacement structure to determine:

- The demonstrated need for replacing the structure at the requested location to deliver or enhance service
- Whether the Applicant has demonstrated there are no other effective technological means for colocating on an existing structure
- 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 Wireless Facility

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

- The demonstrated need for placing the Support Structure at the requested location to deliver or enhance service, and that the Applicant has demonstrated there are no other effective technological means for delivering the service
- The impact of placing a new Support Structure or Facility in the subject area
- The character of the area in which the Support Structure is requested, including surrounding buildings, properties, and uses
- Whether the appearance and placement of the requested Support 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 Wireless Facility
- Whether streetlight spacing guidelines are in compliance

3.3 Application Submittals

A complete listing of the required submittals can be found in Appendix B. All required submittals for a given Application type must accompany an Application.

3.3.1 Radio Frequency Analysis

As a condition of approval for installations on all Poles, Applicants shall provide an evaluation of proposed wireless equipment to prove compliance with FCC guidelines for human exposure to radio frequency (RF) fields. Evaluations shall include uncontrolled exposure in the near field and far field regions. Additional evaluations shall be provided whenever the transmitting power of existing equipment is increased. The analysis shall document existing and proposed radio frequencies, and summarize possible RF interference.

At a minimum the analysis must contain the following items:

- A statement of compliance
- Date of the report
- Date of statement of compliance
- Pole number proposed for the Small Wireless Facility installation
- Applicant's site or identification number for the Small Wireless Facility installation
- GPS coordinates of the proposed Pole
- Calculation of RF power at the radios or other electronics
- Calculation of RF power at the Antenna
- 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 Wireless Facility
- Calculation of RF power of the closest area that can be occupied by the general public in the main lobe of the Antenna if within 50 feet.
- Location of the applicable signage with above-ground-level height listed

3.3.2 Structural Analysis

Pole loading analysis with all equipment relating to the deployment of the Small Wireless Facility based on the latest version of the American Association of State Highway and Transportation Officials (AASHTO) “LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals”⁵ will need to be conducted. Pole loading analysis sealed by the Pole manufacturer’s licensed professional structural engineer shall be provided. Also, foundation analysis and a document sealed by a Professional Engineer licensed in the state of California certifying that the existing foundations in the field can safely support the additional load from the attachment shall be provided. A 30 percent load bearing factor of safety must be allowed for each structure.

3.3.3 Construction Drawings

3.3.3.1 General

All design documentation shall be submitted electronically with an Application and shall fully depict the scope of work to be performed by the Applicant (e.g., a wireless provider applying for a lease to place a Small Wireless Facility in the Public Right-of-Way).

The Applicant shall indicate the design of the support Pole, the Small Wireless Facility, 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 Wireless Facility and illustrate how the backhaul and power will interconnect with the Small Wireless Facility.

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. Design documentation of poor visual quality (as determined by the City reviewer) may not be accepted.

⁵ First edition and interim revisions are available on AASHTO’s website (<https://store.transportation.org/>).

Location information must be provided and shall include the 911 address of the Pole proposed to be utilized, GPS coordinates of the Pole, and the location of the attachment. A location/vicinity map identifying the Pole and adjacent Pole infrastructure within a 300-foot radial distance shall be provided.

The attachment installation details shall include detailed information about methods proposed to be utilized to Install all equipment relating to the deployment of the Small Wireless Facility. The details shall also identify the existing Pole infrastructure that is proposed to be utilized and the innerduct that needs to be utilized for installing service cable. Underground conduit entry into the Pole infrastructure shall be the only permitted access for installing service cable.

3.3.3.2 Paper Size

All design documentation shall be legible when printed on 24 x 36-inch paper.

3.3.3.3 Abbreviations

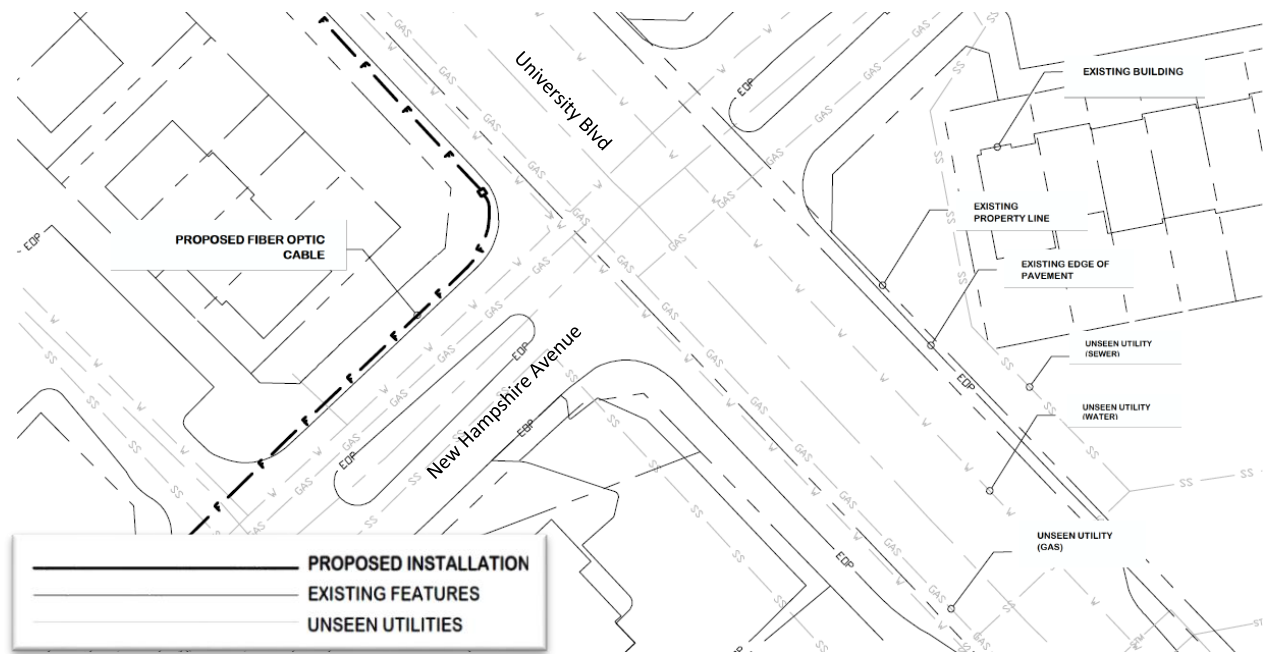
All annotations, call-outs, notes, and descriptive text shall be in plain language. If abbreviations are used to promote clarity in the design documentation, a legend shall be provided that clearly describes the abbreviation.

3.3.3.4 Line Weights and Annotations

Descriptions of existing above-ground features and below-ground utilities in Plan view and profile view sheets shall have a consistent, screened line weight. All features and components of the proposed Small Wireless Facility — as opposed to existing conditions — shall have a consistent, heavier line weight than existing above-ground features. All annotations for the proposed Small Wireless Facility shall be noticeably heavier than other annotations on the Plan and profile sheets.

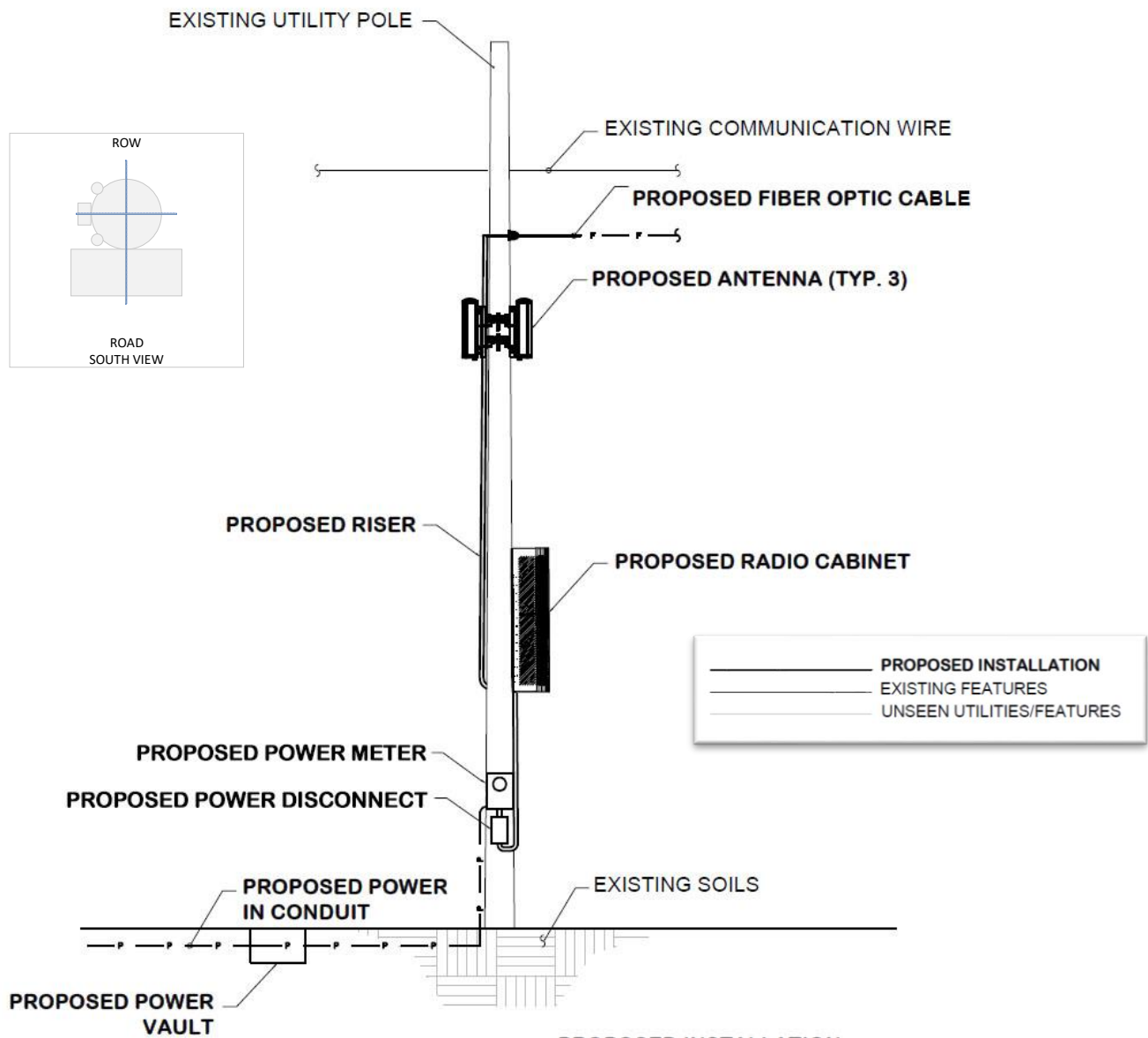
A Plan sheet example with suitable line weights and annotations is shown in Figure 1. A sample profile sheet with suitable line weights and annotations is shown in Figure 2 (below).

Figure 1: Sample Plan Sheet with Suitable Line Weights and Annotation⁶



⁶ Annotations for travel lanes, road names numbers, clear zone, and *Public Right-of-Way* were omitted for clarity.

Figure 2: Sample Profile Sheet with Suitable Line Weights and Annotation



3.3.3.5 Required Sheets and Information

Design documentation shall include, at a minimum, the following sheets for all types of Applications except for Small Wireless Facility removal:

- Title
- Plan View

- Profile
- Equipment
- Traffic Control Plan
- Lighting Plans
- Details
- Photo Simulations
- Circuit Tracing Diagram

Applications to remove a Small Wireless Facility shall include a title sheet, a list of items that will be removed, traffic control Plans, and a description of proposed restoration.

3.3.3.5.1 Title Sheet Requirements

The title sheet shall include the following items:

- Project site location (with a vicinity map). Indicate the street address(s) for the nearest building(s).
- A clear project description describing types and numbers of equipment. Also indicate whether Pole will be replaced (with existing and proposed heights) and whether any existing road signage is proposed to be relocated or removed.
- Applicant name
- Contractor name or names
- Pole owner name and pole number
- Equipment owner
- Applicant's site name and/or identifier number
- Full address of proposed Small Wireless Facility location (if none available, use closest address to assist the reviewer in finding the site)
- Latitude and longitude expressed in degree/decimal format (e.g., XX.XXXXXX) to the NAD83 standard and accurate to ± 1 meter.

- Email and phone number for the Applicant's engineer
- Email and phone number for the Applicant's single point of contact
- 1-square-mile map of the area for orientation purposes
- 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 CA-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 California, 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

3.3.3.5.2 Requirements for Plan Sheets

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

- State roads and interstates (name and number)
- Municipal roads (name)
- Private roads
- Travel lanes
- Right-of-Way and other property lines
- Sidewalks and accessibility ramps
- Bike trails/lanes/paths
- All existing visible features, street furniture, and structures within the City Right-of-Way

- Property addresses for parcels abutting the City Right-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)
- Any new proposed vaults
- FEMA Special Flood Hazard Areas (where applicable)
- Stormwater facilities and culverts
- North arrow indication
- Recorded easements (if appropriate)
- Limits/boundary of construction
- Notes to identify method of construction (if not explained on a details sheet)
- Reference to any applicable details
- Any structure proposed to be installed or replaced
- A color photo of the proposed Small Wireless Facility location (with approximate placement identified) taken during a field survey conducted within 90 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 Wireless Facility. 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
- 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 1:20 (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).

3.3.3.5.3 Elevation 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 Wireless Facility 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 Wireless Facility equipment (e.g., Antenna, ancillary equipment)
- Foundation view or reference to detail sheet for proposed foundations
- Buried Pole depth for new or replaced utility 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 detail sheet
- Proposed ground-based enclosure (where permitted)
- 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
- Location of any warning stickers. RF warning sticker shall be facing out to street and near Antenna, or away from street and near Antenna if no window within 50 feet.

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 remote radio unit (RRU) offsets from Pole
- Overall height of the Pole above grade
- Vertical clearance of any adjacent overhanging roadway
- Ground-based enclosures and height of equipment above grade (where permitted)
- Pole-mounted enclosures and height of enclosure above grade

The profile sheet shall also show, to scale:

- Any street signage that is to be placed on the Pole, and that is used to screen Small Wireless Facility equipment; relocated signage shall be placed at an elevation that is consistent with the original height of the signs
- Equipment stacked together as close as possible while complying with airflow requirements

- Other elements (e.g. NEMA, PBX, or J boxes), ground bus bars, and base plate mounts, if utilized
- Offset (distance) from the Pole of any equipment cabinets, including the maximum offset from the Pole to the outermost edge of the Facilities

3.3.3.5.4 Equipment Sheet Requirements

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

- List of external components separately in detail
- Length, width, and depth of equipment
- Manufacturer and model number
- Total cubic feet

In addition to the individual component typical detail, each equipment sheet shall include a separate note box that identifies the total Small Wireless Facility volume, in cubic feet, as shown in Figure 3.

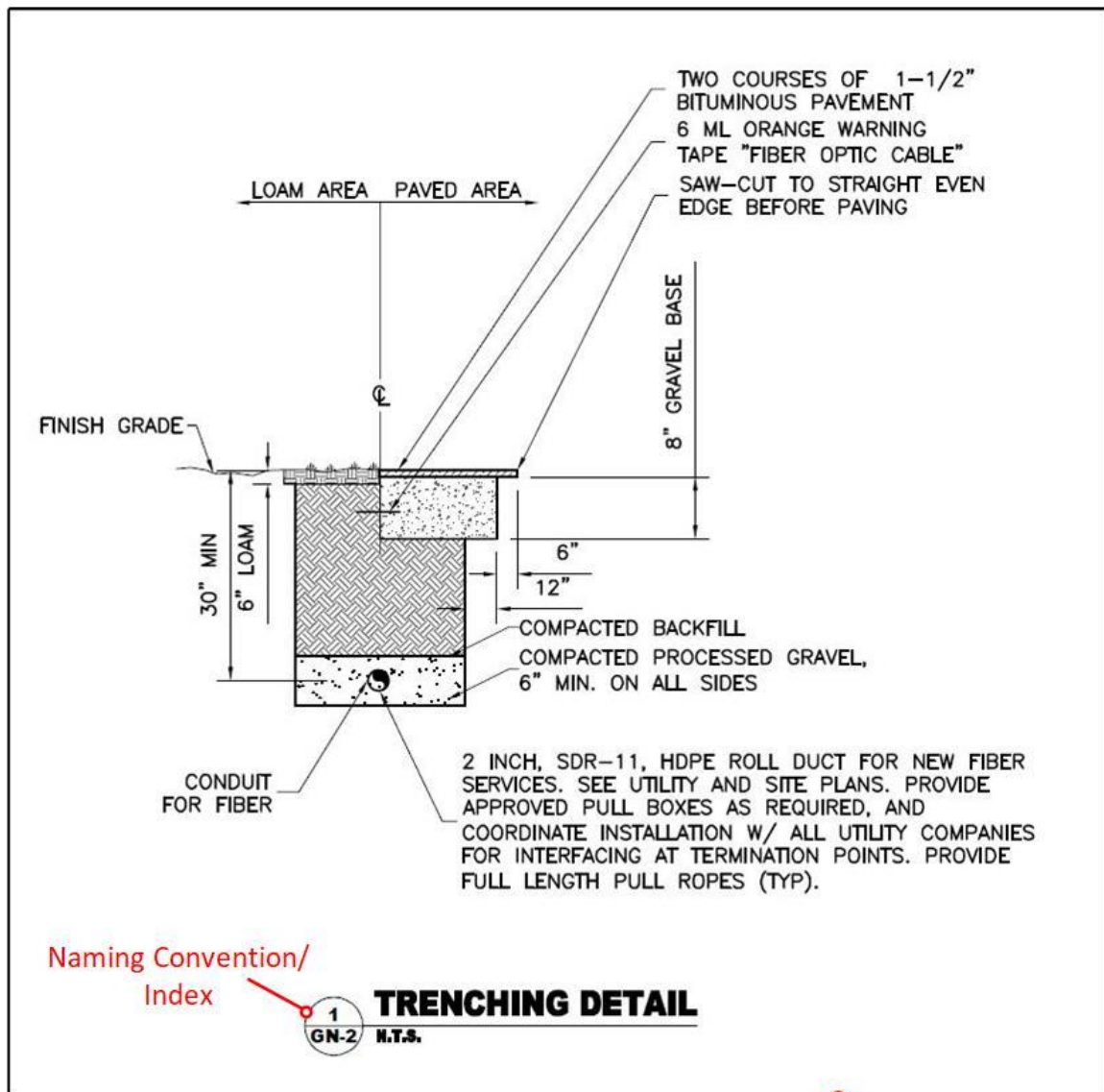
Figure 3: Sample “Total Cubic Feet”

TOTAL WIRELESS FACILITY CUBIC VOLUME (cu. sf.):
TOTAL ANTENNA CUBIC VOLUME (cu. sf.):
TOTAL ANCILLARY EQUIPMENT CUBIC VOLUME (cu. sf.):

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 per the dimensions referenced in the Plan view and profile view 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 4).

Figure 4: Typical Detail



3.3.3.5.5 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 Wireless Facility. The traffic control Plans shall conform to the safety and design

standards set out in the current version of the California Manual on Uniform Traffic Control Devices (MUTCD).⁷

A traffic control Plan for all modes of transportation shall be submitted for the work proposed to be performed on any part of Pole infrastructure and/or equipment located in the Public Right-of-Way or easements granted to the City. The traffic control Plan shall need to be utilized during installation, maintenance and removal of any equipment relating to the deployment of a Small Wireless Facility.

3.3.3.5.6 Demarcation Point

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 Wireless Facility and another entity may build and own the backhaul. In others, it may obtain backhaul from the City.

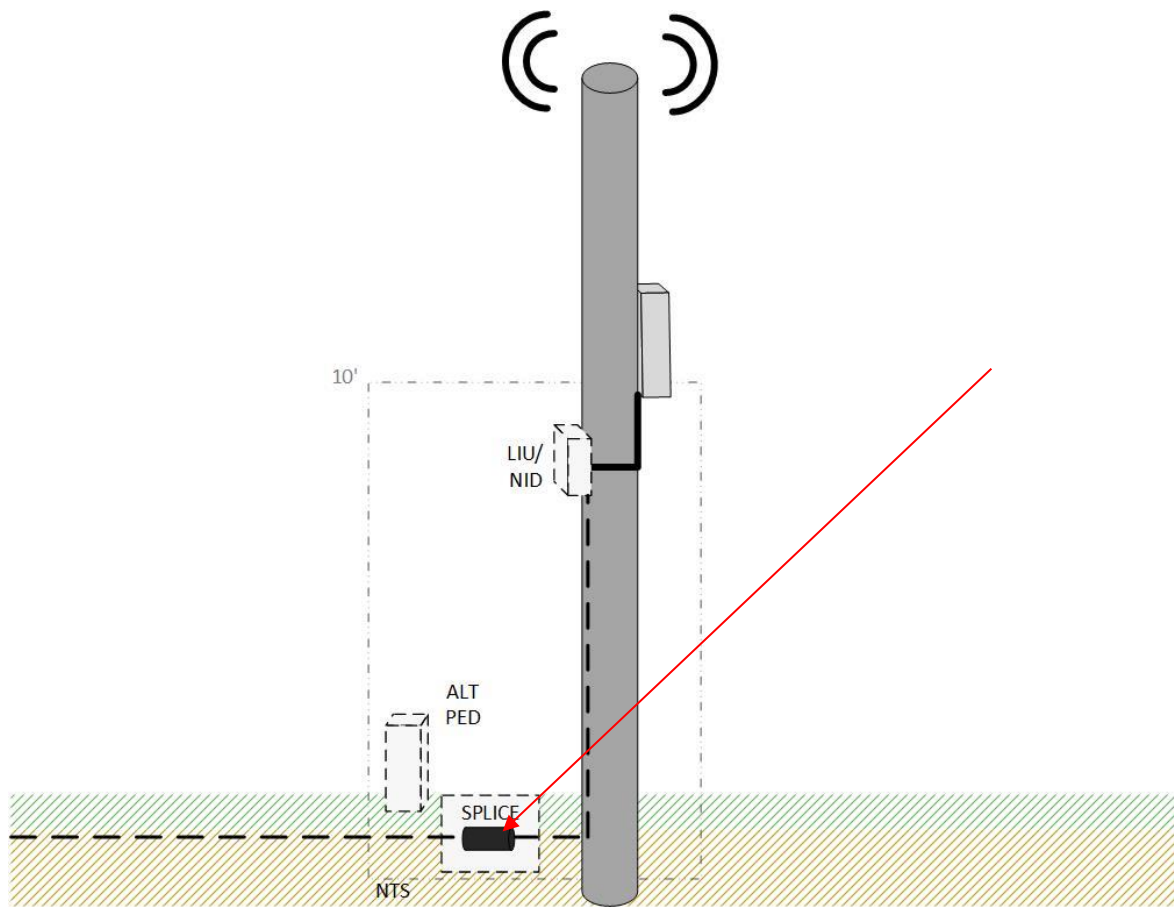
The Application shall clearly indicate the demarcation between the backhaul and the Small Wireless Facility.

If Small Wireless Facility equipment is to be located on the Pole itself or in an underground vault in close proximity to the Pole, the vault containing the Small Wireless Facility equipment is the demarcation point. Figure 5 illustrates the physical demarcation between the backhaul and the Small Wireless Facility at a line interface unit (LIU) also known as the network interface device (NID).

Figure 5 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 Wireless Facility connection. It is recommended that the handhole be located within 10 feet of the Pole. The demarcation point is the splice point.

⁷ <https://dot.ca.gov/programs/traffic-operations/camutcd>

Figure 5: Example Underground Communications Demarcation Point



3.3.3.5.7 Photo Simulations

Photo Simulations must be submitted with all Colocation, New, or replacement Applications.

The simulations must correctly show equipment sizes, enclosures, signs, and offsets—as well as RF warning stickers, if visible from given perspectives.

The photo simulations should use perspectives that provide a true sense of distance to the nearest residential windows or primary facades of buildings, as well as the scale of the Facilities.

3.4 Annual Plan

Applicants must submit an Annual Plan that describes its projected growth of Antenna sites in the City, and must update the Plan at least annually. More frequent updates are

recommended if the information submitted in the previous Plan changes significantly. The Plan must include:

- A description of the geographical areas of the City in which new service will be provided or existing service will be updated
- The location of existing Wireless Facilities, with structure types, on a large-scale map
- The location of future planned Wireless Facilities (preferred and non-preferred), with structure types, on a large-scale map
- A list of existing and future Wireless Facilities in digital format such as Excel, including structure types, proposed City pole numbers, and approximate addresses
- A deployment Plan and schedule

At the request of the City, the Applicant shall also have an engineer visit each individual location/area to conduct a field verification that identifies living units, building addresses, existing Facilities, distance measurements, Public Right-of-Way, and Private Property lines. The Engineer shall also identify other potential sites for Small Wireless Facilities in the event that the Applicant's first choice is not realized. The Applicant shall consider public safety, aesthetics, the overall network design, and consistency with all siting criteria agreed to with the City.

3.5 Inventory

The Applicant shall maintain, within or near the City, an inventory of new streetlight Poles of the same design, size, and color as the new streetlight Poles that have been installed to ensure that new streetlight Poles may be promptly replaced in the event of a failure of a new streetlight Pole, whether caused by the Wireless Facilities or by any other event, including an Act of God.

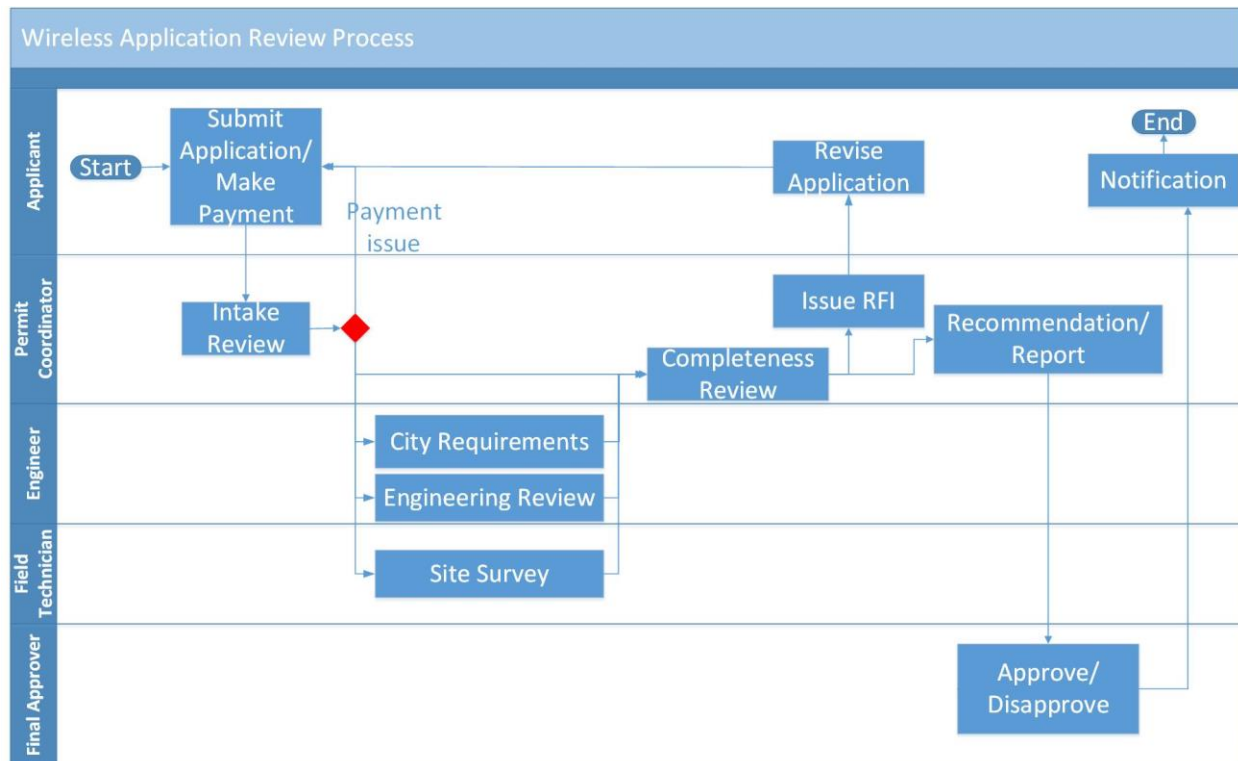
4 Internal Application Review and Decision-Making Process

This section presents a candidate process for the City's review of wireless facility siting applications. Figure 6 shows the workflow step-by-step, identifies a range of review types, the personnel required to execute them (see Section 4.1), and likely timeframes for completing each type of review (see Section 4.2). This process is intended as a starting point for discussion. The review categories and role types may be modified based on the City's preferences.

The flowchart breaks the review process into four large components:

1. An intake review
2. An engineering review
3. A City requirement review and site survey
4. A completeness review

Using this segmentation and sequencing makes it possible to organize the process to meet the FCC's shot clocks. These reviews are described in more detail in Section 4.3 and Appendix D. The final steps, including preparation of a recommendation and report, and the City's decision-making and permit close-out, are described following the reviews.

Figure 6: Candidate Application Review Process Flowchart

4.1 Personnel Required

The City needs to maintain staffing with a range of skill sets to perform the reviews and manage the life cycle of wireless siting applications and inspections, as outlined in Section 4.3. The staffing counts typically are determined by need. The personnel can be a combination of in-house resources and outside contractors.

The City's required staffing levels will depend on the number of applications it needs to process. As of this writing, the City's assigned staff members each perform more than one of the roles described here, in addition to other responsibilities. It is likely the City will continue to task staff to handle a variety of roles.

The needed skill sets include:

- **Program Director/Manager** – Acts as team lead, provides overall program guidance, and typically acts as Final Approver
- **Permit Coordinator** – Performs intake review and support roles

- **Engineer** – Responsible for detailed engineering reviews, especially checking for compliance with FCC requirements, laws, codes, and design standards
- **Field Technician** – Performs site surveys and engineering reviews as needed
- **Legal Support** – Provides legal counsel as needed
- **Final Approver** – Determines final approval or rejection based on recommendations report

4.2 Target Timeframes for Review and Decision-Making Process

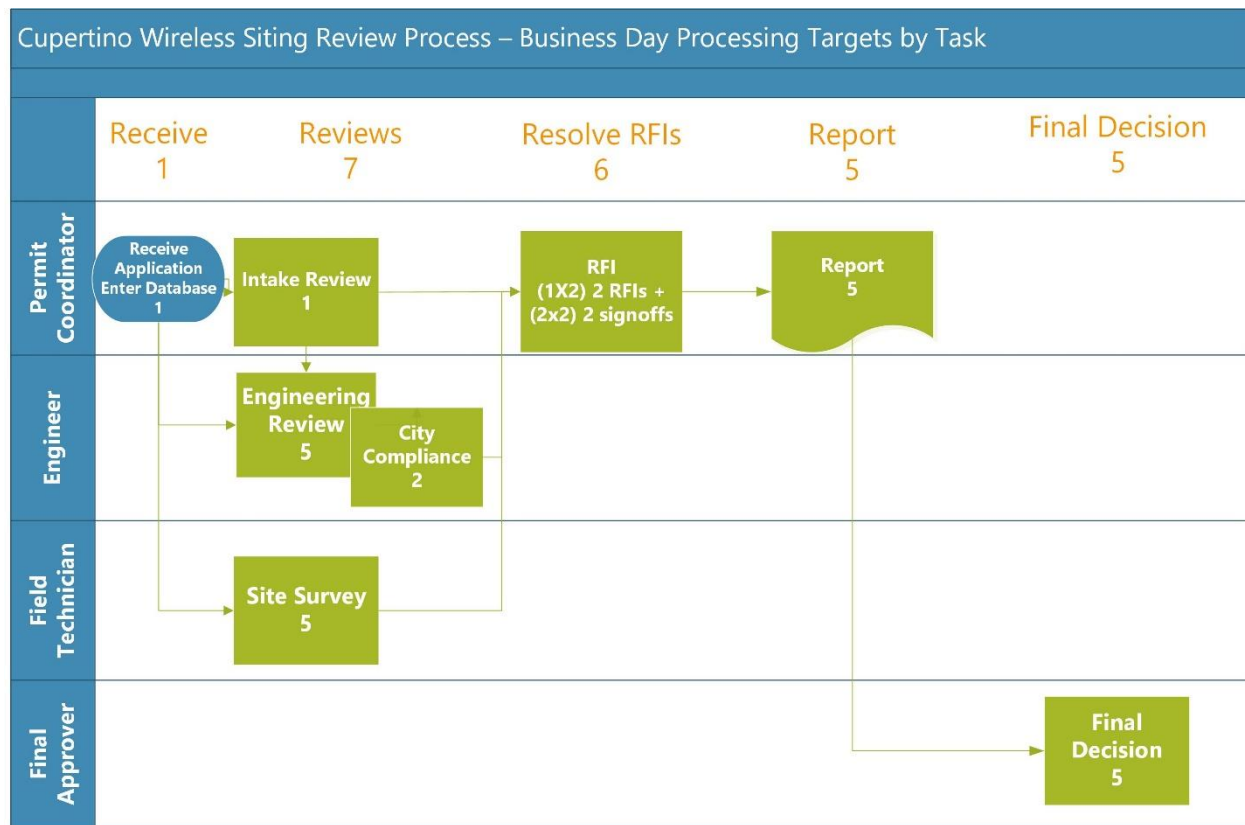
Applications should be processed in a predictable and timely manner. Each of the reviews should have an expected timeframe, both as a guide and metric for the City's staff and to outline a predictable timeframe for applicants. Table 1 and Figure 7 present candidate timeframes for each typical review task. Some of the reviews may not be needed for every Application type.

Table 1: Target Workdays per Task

Task	Workdays
Intake Review	1
Engineering Review	5
City Requirement Review	2
Site Survey	5
Completeness Review, RFI Issuance, Resubmission Review	6
Recommendation and Report	5

Because some of the tasks can be performed in parallel, the City could potentially complete the intake, engineering, and City requirement reviews within eight workdays. After the reviews are completed, the City would either issue an RFI or consider the application complete. Using this framework, the entire process can be completed within approximately 30 workdays (assuming the applicant responds to an RFI, if one is issued, within a few days).⁸

⁸ See Section **Error! Reference source not found.** for details on the RFI process and the shot clock.

Figure 7: Target Number of Workdays per Step in the Wireless Siting Review Process

The City will consider an Application as submitted only after all prerequisites are met (see Section 3.1). The City will start the Shot Clock on the first business day after the Application is submitted. The Shot Clock will stop if the City issues an RFI to the Applicant, or if the City and the Applicant mutually agree to toll the Shot Clock. The Shot Clock will restart on the first business day after the Applicant responds to the RFI, or when the mutually-agreed tolling stops.

If the Applicant does not respond to an RFI within 90 days, the Public Works Department has the right to withdraw the Application upon written notice to the Applicant.

The permitting office has the right to withdraw the Application if the Shot Clock is tolled for more than 120 days.

4.3 Reviews

The following sections describe a candidate process for the City's review of wireless facility siting applications.

4.3.1 Intake Review

The Permit Coordinator performs an intake review after the applicant submits the application. The Permit Coordinator also reviews for overall completeness and accuracy. In some circumstances, the Permit Coordinator may halt the process if the application is incorrect or missing substantial information that would prevent subsequent reviews from being conducted; in that case, the Permit Coordinator would immediately request corrections or additional information from the applicant.

Because the comprehensive intake review includes checking the accuracy of items such as the proposed site's address and GPS coordinates, technical personnel participate in the review.

After the intake review is complete, the Permit Coordinator issues subsequent action items, some of which may run in parallel. This includes an engineering review and a City requirement review.

4.3.2 Engineering Review

A qualified engineer reviews the application to verify compliance with FCC requirements, conformance to the City's specifications, and other safety criteria such as structural soundness, and evaluate potential alternative locations. The engineer should have a strong RF background because much of the review will be to analyze RF-related elements such as coverage, capacity, and antenna height.

The engineer should consider not only the current application, but also previous applications submitted for attachment at or near the same site for consistency with any previous recommendations at the site. The engineer should also ensure that the proposed installation will not cause any RF interference with City-owned and operated systems.

4.3.3 City Requirement Review and Site Survey

The City requirement review checks that the application is compliant with City and zoning requirements. An example of a local requirement may be specific aesthetic concerns such as standardizing the shroud heights so there is a similar appearance across all Small Wireless Facility sites.

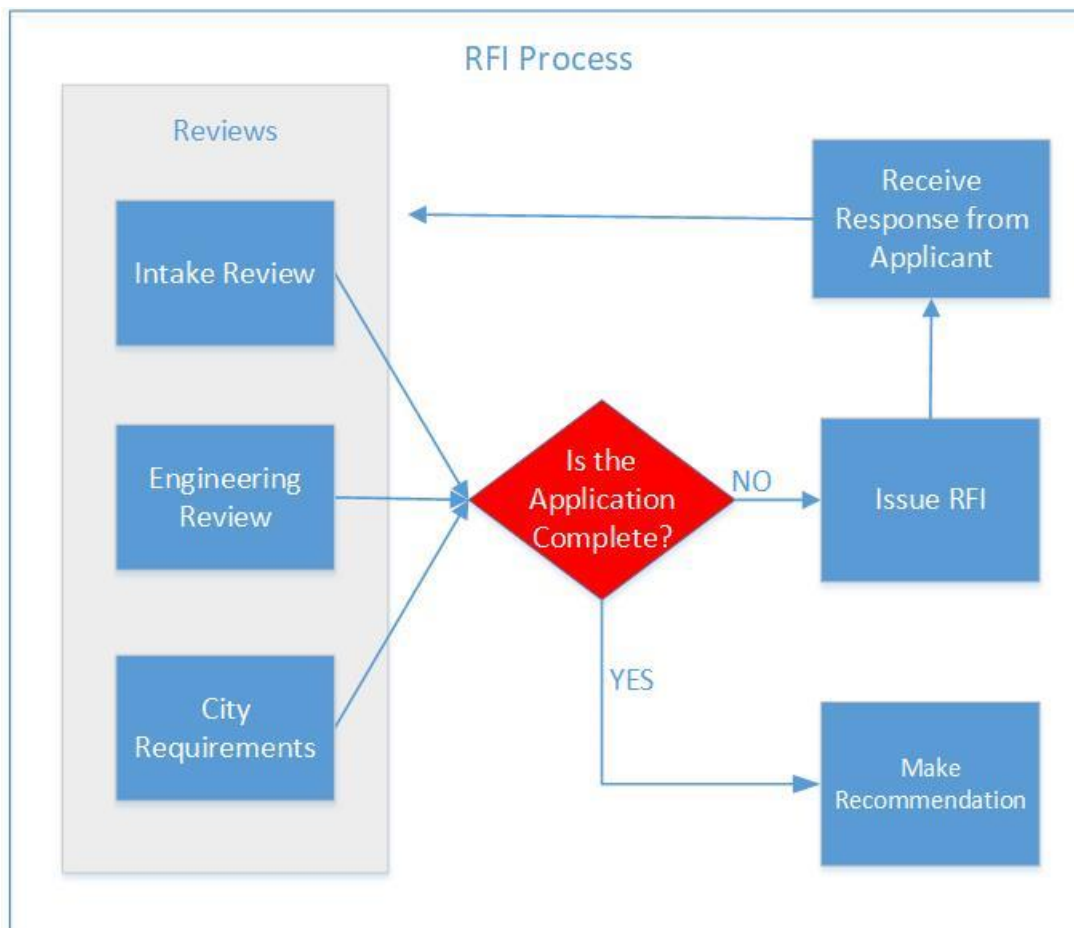
For applications for a new or replacement structure, the City performs a survey of the proposed site to verify there are no nearby structures that could be used instead. The survey also analyzes sight lines to ensure new or replacement facilities would not

obstruct vehicular or pedestrian views or create potential safety concerns. Site survey data are entered into the City's site database.

4.3.4 Completeness Review, RFI Issuance, Resubmission Review

If more information is required to complete or correct the Application, or if modifications are needed to comply with the design standards, the Permit Coordinator issues a request for information (RFI). The City consolidates the information requests related to the intake, engineering, and City Requirement reviews and issues a single RFI to the Applicant. (Because each RFI causes a delay in the review process, and to make the review process more efficient, the City's goal is to issue as few RFIs as possible.) This proposed centralized RFI approach is illustrated in Figure 8.

Figure 8: Recommended Request for Information Process



The FCC Shot Clock associated with the City's review of the Application stops when the City issues an RFI and restarts once the applicant responds. However, because changes that could affect the City's final recommendation may occur at the Applicant's proposed

site location, the City imposes a reasonable time limit, 90 days, for the Applicant to respond to an RFI. If a response is not received within 75 days, the Permit Coordinator may send a letter informing the Applicant that if the information is not received within 15 additional days, the Application will be deemed withdrawn.

Once the Applicant responds to an RFI, the Permit Coordinator records the date in the system and sends the information received to the respective reviewer(s), who continues the review. Additional RFIs may be required until the application is satisfactory.

If no additional information is needed, the Permit Coordinator updates the status of the application to “complete” and requests a recommendation.

4.4 Recommendation and Report

After the required reviews are complete, the Permit Coordinator checks that the process was followed correctly and the application is complete; evaluates the output from each reviewer; and assigns a status of either *Recommended* (for approval), *Not Recommended*, or *Recommended with Conditions*. The Permit Coordinator then prepares an application report⁹ in a standard format.

The report includes any backup information supporting the recommendation. It provides a summary of the application with information such as location, characteristics, and specifications compliance details.

The Permit Coordinator then sends the application and the recommendation report to the Final Approver (or other responsible entity designated by the City) for a final decision.

4.5 Decision

The responsible decision-maker makes a recommendation of *Approved*, *Approved with Conditions*, or *Rejected*. The applicant is notified of the decision and receives comments that explain the decision if the decision is *Approved with Conditions* or *Rejected*.

⁹ We recommend that minor modification and colocation applications not require a formal report unless compliance cannot be definitively determined, in which case the formal report will explain the situation. Recommendations for new structures or initial colocations should require a formal report.

4.6 Notification, Construction, and Permit Close-out

The Applicant will deliver a door hanger to residents within 300 feet of the Wireless Facility after the necessary permits have been issued, and at least one week prior to commencement of construction.

After the site is constructed per the approved plans, and all necessary site inspections are performed, the applicant is required to submit as-built plans (if needed) and an activation report. After the City reviews the as-built plans and the activation report to verify that the installation conforms to the approved application, the City finalizes and closes out the permit. A Site Completion Checklist is in Appendix C.

As-built Plans are required if there are any modifications or deviations from the approved Plan set. In this case, as-built documentation must be submitted to the City within 30 days of completion. Documentation should include construction drawings showing any changes to the proposed Application.

After the Facility has been constructed, the Applicant will be required to cover all reasonable costs associated with the measuring, recording, reporting and monitoring of emissions, including electromagnetic radiation (EMR)/RF and noise associated with the Facility. Such information shall be provided, within 30 days of activation of the equipment, in an Activation Report which shall be made available to any interested party through the City's Public Works Department.

The Activation Report shall be prepared by a licensed professional engineer or other technical expert approved by the City, and shall provide information that demonstrates the Facility will not cause any potential exposure to RF emissions that exceed adopted FCC standards for human exposure. Testing shall be conducted in compliance with FCC regulations governing the measurement of RF emissions; testing shall be conducted during normal business hours on a non-holiday weekday with the subject equipment measured while operating at maximum power. For all measurements made, evidence must be submitted showing that the testing instrument(s) used were calibrated within their manufacturer's suggested periodic calibration interval, and that the calibration is by methods traceable to the National Bureau of Standards. At the sole option of the City Engineer, an agent of the City may monitor the performance of testing required for preparation of the Activation Report.

At least 14 calendar days prior to conducting the testing required for preparation of the Activation Report, the Applicant shall notify the Public Works Department, and shall send a letter, via U.S. Postal Service registered mail, to the resident of any dwelling unit within 100 feet of the Wireless Facility, notifying them of the date on which testing will be conducted.

Residents notified of the testing may request, in advance of the test, that the Applicant conduct testing of total power density of RF emissions within their residence on the date on which the testing is conducted for the Activation Report.

In the event that the Activation Report includes a finding that RF emissions for the site exceed FCC standards (see Section 5.4), the Applicant will be required to immediately cease and desist operation of the Wireless Facility until such time that the violation is corrected to the satisfaction of the City Engineer.

Any Facility owner authorized by the City to operate a specific Wireless Facility installation may assign the operation of the Facility to another carrier licensed by the California Public Utilities Commission (CPUC) and FCC for that radio frequency provided that such transfer is made known to the City Engineer in advance of such operation, and all conditions of approval for the subject installation are carried out by the Facility owner.

5 Technical and Aesthetic Standards for Wireless Facilities

The technical and aesthetic standards presented here (which we refer to as the “Technical and Aesthetics Standards Manual,” because it can be published separately if the City so chooses) are intended to govern the access to and use of private and public land and structures by wireless carriers, infrastructure companies, or others (collectively referred to as “Applicants”) for installation of wireless facilities and associated equipment as defined by the FCC.

This Manual is intended to address public safety and employee safety, and to protect the community’s aesthetic standards.

This Manual is part of an evolving process that considers the ongoing development of communications technologies. The Manual may be amended to accommodate future technological and regulatory changes.

All Applicants must follow the National Electrical Safety Code (NESC), General Order 95 of the California Public Utilities Commission, and all other applicable engineering standards, FCC standards, and federal, state, and local standards and codes that are effective as of the Application filing date.

5.1 General Technical and Aesthetic Requirements and Guidelines

All Wireless Facilities shall utilize stealth and Concealment methods to limit their visual impact when feasible. Stealthing features should include blending with the environment, concealing the equipment and Antennas, matching colors, and limiting the overall size (including height).

5.1.1 Prohibited Structures

Wireless Facilities shall not be placed, installed, or attached on the following structures:

- Poles containing controls such as fire alarms, police signals, or traffic signals
- Structures on which Wireless Facilities would conflict with existing or planned capital projects (as listed on the City’s website) or wireless systems
- New wooden Poles, except as a Replacement for an existing utility Pole
- Existing decorative Poles, which are defined as structures specially designed and placed for aesthetic purposes and on which no appurtenances or attachments, other

than lighting, specially designed informational or directional signage, or temporary holiday or special events attachments, shall be placed

5.1.2 Location

Wireless Facilities shall not be installed in or within 50 feet of a Protected Area (as defined in Section 2) without approval by the Public Works Department. No new structures are allowed in Protected Areas or residential areas outside the Public Right-of-Way.

5.1.3 Non-Public Right-of-Way Dimensions

The following are recommended criteria for any facilities installed outside the Public Right-of-Way. (Facilities inside the Public Right-of-Way have more restrictive dimensions, as described in Section 5.2.) Maximum allowed dimensions for Antennas installed outside the Public Right-of-Way are:

- Parabolic/Other Antennas – 5 feet 6 inches (maximum length) – 6 cubic feet
- Massive MIMO – 5 feet 6 inches (maximum length) – 46 cubic feet
- Panel Antennas – 9 feet (maximum length) – 13 cubic feet
- Whip Antennas – 20 feet (maximum length) – 4 cubic feet

No new structures over 179 feet above ground level are allowed.

Wireless Facilities shall not extend more than 20 feet above the height of the Tower or Support Structure to which it is attached.

5.1.4 Use of Alternative Pole Designs

Wireless Facilities on a new or replacement Pole 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 Applicant can prove it is not technically feasible to use one of the standard designs, the Applicant may propose an alternative Pole design. If the Applicant opts to deviate from a standard design (see Appendix A), it 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 Applicant has 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 Applicant's technical objectives and whether the Applicant should use available or previously unconsidered alternative locations to place the Wireless Facility

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

The alternative design must comply with the requirements in Section 5.1.

5.2 Requirements and Guidelines in the Public Right-of-Way

This section outlines additional requirements for Small Wireless Facilities installed in the Public Right-of-Way (as compared to the general requirements listed in Section 5.1). Only Small Wireless Facilities may be installed in the Public Right-of-Way (as opposed to larger facilities that are allowed outside the Right-of-Way).

A wireless provider shall Construct and maintain Small Wireless Facilities and wireless Support Structures in a manner that does not:

- Obstruct, impede, or hinder public access or impact public safety within a Public Right-of-Way
- Obstruct the legal use of a Public Right-of-Way by any public or private utility providers
- Obstruct access to any fire escape, fire hydrant, doors, gates, stoops, public transportation vehicles, shelters, street furniture, or other improvements at any public

transportation stop (including, without limitation, bus stops, streetcar stops, and bike share stations)

- Obstruct the sight line of any street, alley, or driveway
- Obstruct public works projects

In addition:

- Antennas and equipment shall be passively cooled, unless fans are explicitly approved in writing by the Public Works Department
- Battery backup power devices, where permitted, shall be installed with a transfer switch to prevent back-feeding into the electrical system; no other types of backup power shall be permitted
- The Applicant shall repair any damage to Public Right-of-Way incurred as a result of work performed by or on behalf of the Applicant and return the site to its original condition prior to installation
- Poles installed in the Public Right-of-Way in a Protected Area shall not exceed 36 feet in height
- Poles installed in the Public Right-of-Way shall not exceed 41 feet in height

5.2.1 Notification

The Applicant shall mail courtesy letters to all residents within the City's established notification radius of the Facility before submitting a final Encroachment Permit Application package. The notice will alert the residents of the proposed Facility and will indicate the date on which the notification period ends and resident feedback is due, per established City guidelines.

The Applicant shall provide a Community Liaison to act as a point of contact for notified property owners. The Community Liaison will prepare and retain a report documenting all inquiries received and the disposition of each. The Applicant will respond to all inquiries within 48 hours. Residents' concerns will be identified and reviewed by the Applicant's Construction and Engineering staff, and the Applicant will work to address concerns and provide information where feasible.

The Applicant will provide a report to the City detailing all resident inquiries about the Application. The information will include resident name, contact information, date of receipt, date of response, and resolution. The Public Works Department will review inquiries it receives from residents and will provide recommended actions for the Applicant to follow. These actions may consist of revising the proposed Wireless Facility's location or scope, re-notifying affected residents of modifications to proposed Facilities, and/or requesting installation of additional screening for Facilities.

5.2.2 Structure Types

The City has established an order of preference for Wireless Facility installation types within the Public Right-of-Way. The most preferred types are those that have the lowest incremental impact and use existing resources. Therefore, an underground solution is the most preferred.

The City's standard designs for replacement streetlights are the next-most-preferred installation types, followed by standard designs for new streetlights. (See Appendix A for the standard designs.) Small Wireless Facilities colocated on wooden utility Poles (which are less easily concealed) are next, and Facilities on replacement wooden Poles are least preferred.

Table 2: Installation Type Preferences

Installation Type Preference (Most to Least Preferred)
1. Underground vault
2. Design 1: Replacement streetlight
3. Design 2: Replacement streetlight
4. Design 1: New streetlight
5. Design 2: New streetlight
6. Colocation on wooden Pole
7. Replacement wooden Pole

5.2.3 Location

Small Wireless Facilities must adhere to the following guidelines:

- The City prefers locating new Wireless Facility installations in non-residential zones.
- The City prefers locating new Wireless Facility installations near property corners or side property lines, and not directly in front of residences and businesses.

- The design should minimize views from habitable living areas (such as bedrooms or living rooms) of residential units that directly face the Antenna.
- Small Wireless Facilities 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.
- Small Wireless Facility Poles should be installed, to the maximum extent possible, with a minimum 20-foot setback from residential buildings as measured from the center point of the Support Structure.
- Small Wireless Facility Poles shall be installed with a minimum 20-foot setback from commercial buildings as measured from the center point of the Support Structure.
- A Small Wireless Facility installation or mounting must be performed in a manner that attempts to preserve the existing tree canopy.
- A single Applicant's Small Wireless Facilities shall, to the maximum extent feasible, be installed with a minimum spacing of 500 feet from the Applicant's nearest existing site or the nearest site for which the Applicant has applied to site a Wireless Facility.
- No Small Wireless Facility shall be installed within 100 feet of a public school building.
- Any Small Wireless Facility installed in the Public Right-of-Way or in an easement shall be in alignment with the existing vertical infrastructure, streetlights, utility Poles, and trees.
- The placement of Small Wireless Facilities shall be consistent with existing structures and aesthetics, in harmony with the surroundings, and as unobtrusive as possible. For example, in areas with decorative streetlight Poles, Small Wireless Facilities on streetlight Poles must be consistent with the existing decorative streetlight Poles, calling for a design that is comparable in scale and incorporates the design characteristics of those Poles.

- A Non-City-owned replacement Pole shall be installed in the same location where possible, or within 2 feet of the original Pole location, and as close as possible to the line between 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 Wireless Facility.
- No Small Wireless Facilities shall extend over the roadway.
- To preserve the look and feel of the City's parks, no Small Wireless Facilities shall be installed in a park unless approved by the Public Works Department.

5.2.4 Facilities

- Advertising on Support Structures or equipment is prohibited.
- In hollow structures, the wiring and cables should be housed within the Support Structure.
- Spools and/or coils of excess fiber optic or coaxial cables or any other wires shall not be stored on the Pole except completely within the approved enclosures or cabinets.
- Signs or illumination on the Antennas or Support Structure are prohibited unless required by the FCC, the FAA, or the City.
- Small Wireless Facilities, wireless supporting Poles, and related ground equipment shall not impede pedestrian or vehicular traffic in the Public Right-of-Way; if any Small Wireless Facilities, wireless supporting Poles, or ground equipment is installed in a location that is not in accordance with the Plans approved by the City and impedes pedestrian or vehicular traffic or does not comply or otherwise renders the Public Right-of-Way non-compliant with applicable laws, including the Americans with Disabilities Act, then the Wireless Facility Owner shall promptly remove the wireless Facility, wireless supporting Poles, and/or ground equipment.
- A distinct marker (tag) may be placed on Small Wireless Facilities, at the discretion of the City, 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.

- All Antennas and Small Wireless Facility equipment must be placed in-line or be flush-mounted with the Pole.
- Removal and relocation by the Wireless Facility Owner of its Small Wireless Facility, wireless supporting Pole, or related ground equipment at its own discretion shall be in strict accordance with the City's Municipal Code and Master License Agreement.
- The Wireless Facility Owner understands and acknowledges that the City may require the Wireless Facility Owner to remove or relocate its Small Wireless Facility, wireless supporting Poles, and related ground equipment, or any portion thereof from the Public Right-of-Way for construction projects as allowed by the Municipal Code and Master License Agreement.
- 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).
- Antennas on streetlight 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) and shall match the existing pole color or surrounding environment as much as is reasonably practicable.
- Small Wireless Facility antennas enclosed in a canister shall substantially comply with a combined maximum height of 5 feet 6 inches, and diameter of 1 foot 3 inches.

5.2.5 Electric Supply

The City shall have access to the power meter and power disconnect switch if emergency services or City staff need to have access to the Pole.

5.2.6 Backhaul Connections

The Small Wireless Facility may be connected via wireless backhaul services. The volume and height of any Antenna used for wireless backhaul services is counted toward the maximum height of the Pole and the volume of the Antennas.

5.2.7 Base-Mounted Equipment

When utilizing the base enclosure design as depicted in Design 2 in Appendix A, the wireless Facility designer shall choose Poles that are located outside of driveway and intersection sight lines. The City prefers designs that do not incorporate the base enclosure, and which utilize existing signs to screen SWF equipment to the maximum extent possible. Base-mounted equipment:

- Must not exceed a maximum volume of 25 cubic feet, a maximum width of 30 inches, and a maximum height of 48 inches
- Must be painted or screened to be the same color or design of the pre-existing structure
- 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

5.2.8 Surface-Mounted Equipment

Where permitted at the sole discretion of the City, a surface-mounted cabinet 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. The length, width, and depth must each not exceed 5 feet.

5.2.9 Pole-Mounted Equipment

The City prefers the use of stealth design elements, such as shapes and colors that match surrounding infrastructure and minimize adverse visual impacts. Pole-mounted equipment:

- Shall use a tapered design, instead of a rectangular box shape
- Must be flush-mounted to the Pole
- Must not exceed a maximum cumulative volume of 9 cubic feet and a maximum width of 1 foot

- Must be a minimum of 10 feet above ground level
- Must be on the side of the Pole facing away from the roadway, or screened with existing street signage, or as directed by the City.

5.2.10 Wooden Utility Poles

Wooden utility poles are a less preferred siting location. Applicants should utilize existing streetlight Poles to the maximum extent possible. The technical standards of the utility Pole owner apply. In addition, the City requires the following:

- Riser cables to connect Antennas and Antenna accessory equipment, backhaul services, and power lines on wooden utility Poles shall be in conduit on the side of the Pole facing away from the roadway.
- Conduit shall be a neutral color or a color matching the Pole. No riser cable slack shall be stored externally. All slack shall be stored in junction boxes or equipment cabinets or on snowshoes on the aerial cable.
- Cabinets are allowed on the side of wooden utility Poles facing away from the roadway.

5.3 Undergrounding

The Wireless Facility owner shall comply with nondiscriminatory undergrounding requirements, including City ordinances, zoning regulations, State law, private deed restrictions, and other public or private restrictions, that prohibit installing above-ground structures in a Public Right-of-Way without first obtaining zoning or land use approval. Areas may be designated from time to time by the City as Underground Districts, as allowed by law. Each Application shall disclose if it is within an area that has undergrounding requirements.

5.4 RF Exposure

Applicants shall comply with all provisions and guidelines of the FCC's OET Bulletin 65¹⁰ or its successors, as may be amended from time to time.

¹⁰ "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields," OET Bulletin 65, edition 97-01. <https://www.fcc.gov/general/oet-bulletins-line#65>

Upon request the Applicant shall perform RF field tests while the Small Wireless Facility is in operation, supervised by the City, to demonstrate compliance with FCC OET Bulletin 65.

5.4.1 RF Signage Requirements

Approved signage compliant with FCC OET Bulletin 65 shall be posted at each Pole or streetlight Pole hosting a Small Wireless Facility, and/or at multiple locations on such Poles as required by FCC OET Bulletin 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 9 below. All signage shall be the minimum size permitted by law and made of weather-, corrosion-, and ultraviolet- (UV) resistant materials.

Figure 9: RF Signage



5.4.2 Emergency RF/ Power Shut-Off

Each approved Small Wireless Facility shall have a clearly marked disconnect switch located outside areas that exceed RF exposure limits. Once the disconnect 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 Wireless Facility is interfering with public safety communications, the City at its sole discretion may shut it off using the disconnect switch and notify the owner.

5.4.3 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 Wireless Facility, 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 if 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 Wireless Facility if the interference is not corrected.

5.5 Lighting and Noise

No lighting is allowed on Wireless Facilities; if there are lights on the supplied equipment, they must be covered, removed, or deactivated, unless required by the FCC, the FAA, or the City.

Wireless Facilities must comply with the City's Noise Ordinance. Applicants are required to incorporate noise-suppression measures or place equipment in locations where noise is less likely to impact adjacent residences or businesses to ensure compliance with all applicable noise regulations. The City reserves the right to require noise-emitting equipment to be removed or replaced should noise levels be determined to be unacceptable.

Appendix A: Standard Pre-Approved Designs

Small Wireless Facilities 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:

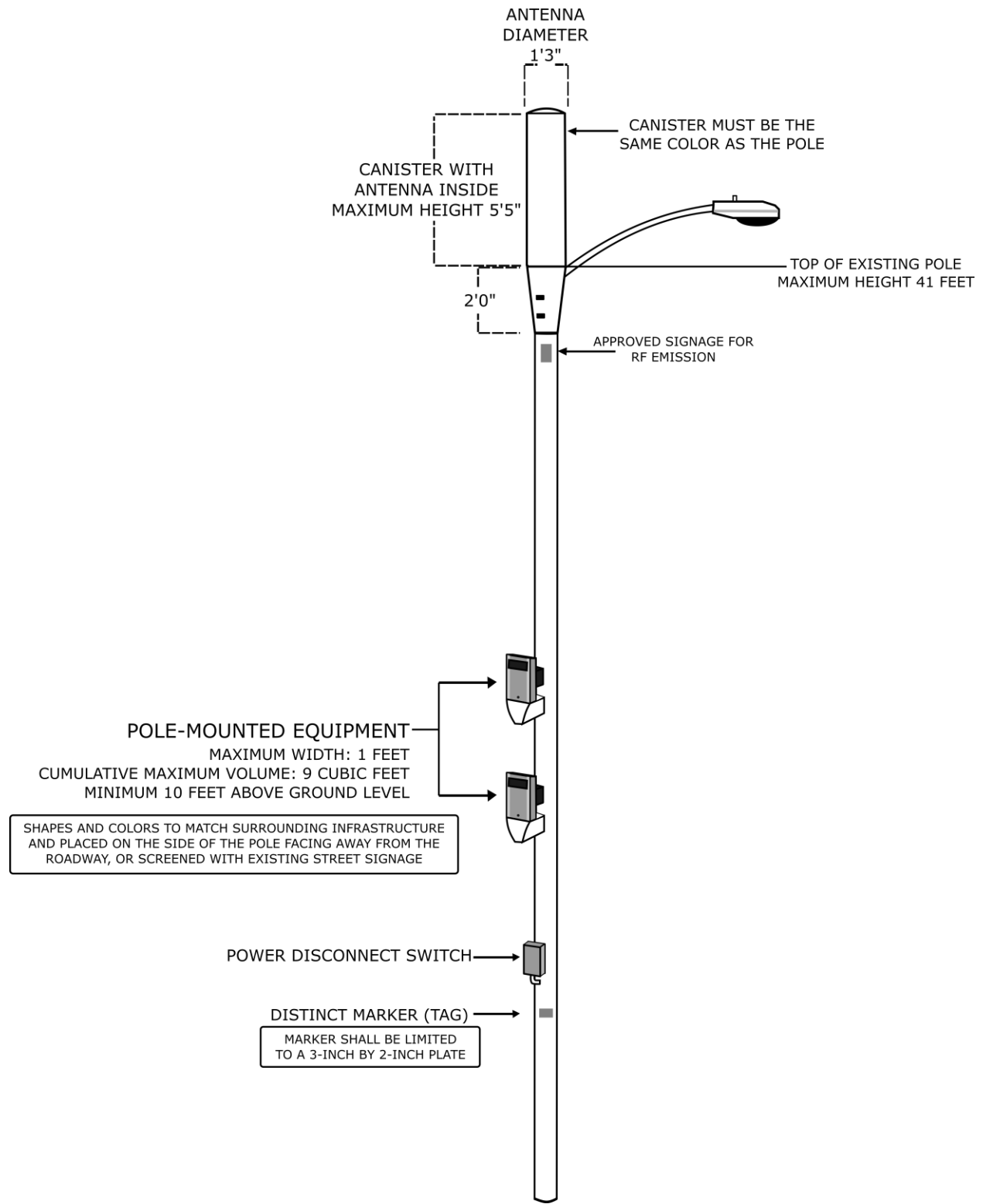
- Design 1 – Streetlight with Pole-mounted equipment
- Design 2 – Streetlight with equipment in base

In addition to following the standard designs, the Small Wireless Facility should adhere to the Conduit standards as shown in the Conduit Typical.

Typical designs and specifications are provided below.

Design 1

Figure 10: Standard Design 1 – Streetlight with Pole-mounted Equipment



Design 2

Figure 11: Standard Design 2 – Streetlight with Equipment in Base

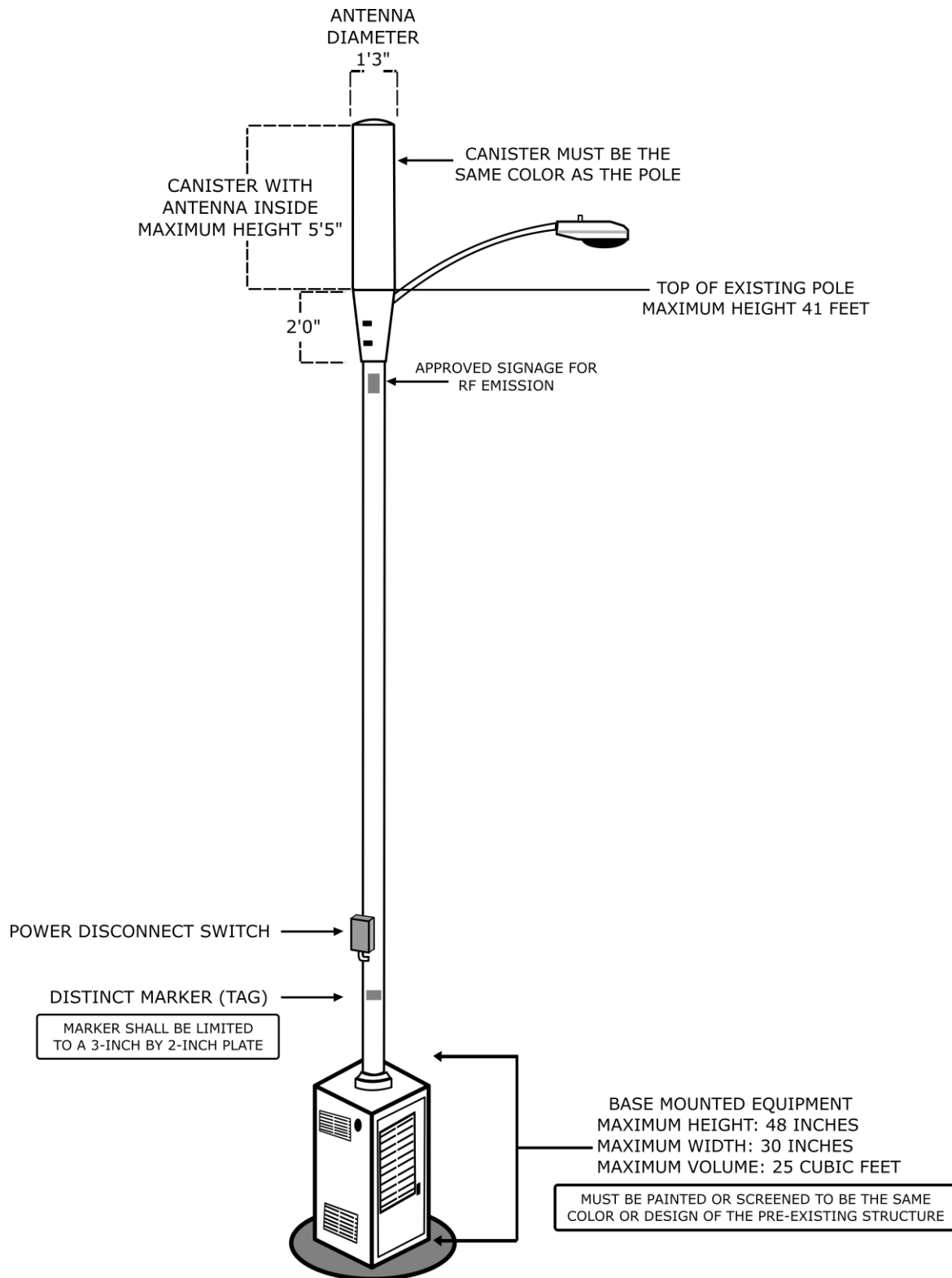
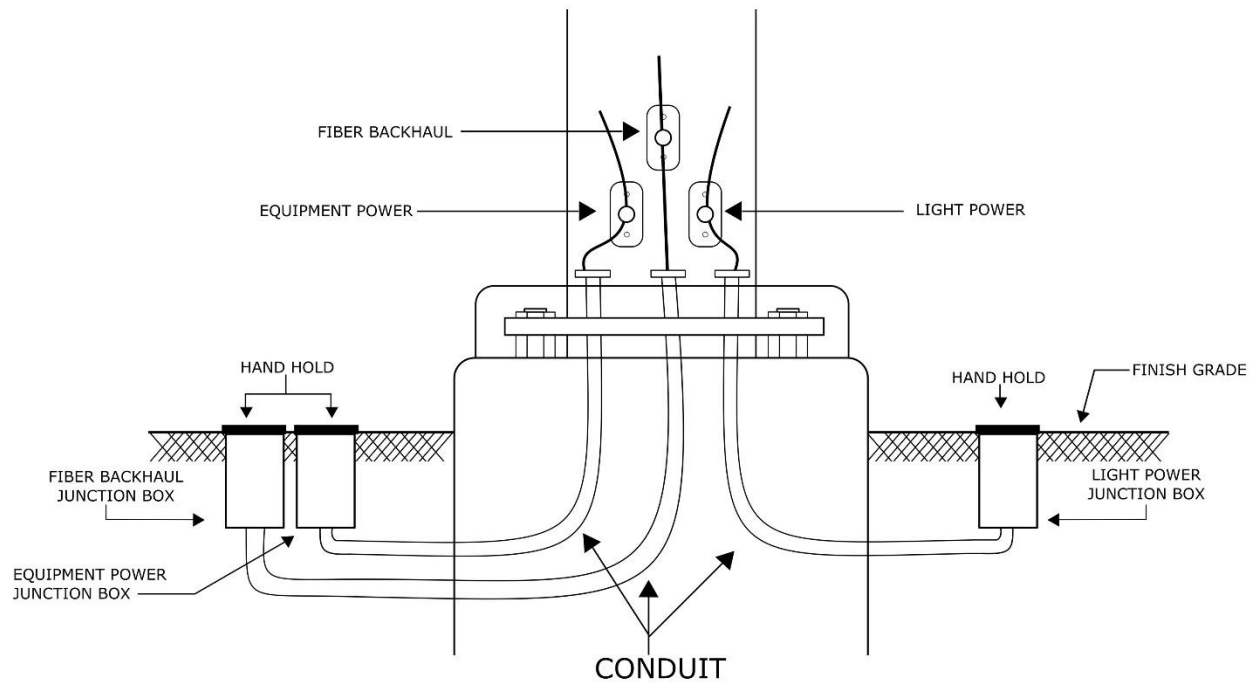


Figure 12: Conduit Typical Example¹¹



¹¹ In some cases the City may permit connection to power in the light power junction box.

Appendix B: Application Checklist

Contact Information

Field Name	Description	New	Replacement	Minor Modifications	Colocations	Data Type
* Applicant Name	The entity representing the carrier; typically, the site acquisition firm	x	x	x	x	Text
* Applicant Address	The address of the entity representing the carrier; typically, the site acquisition firm	x	x	x	x	Text
* Contact Person Name	Applicant's representative responsible for Application	x	x	x	x	Text
* Contact Person Phone	Applicant's contact phone number	x	x	x	x	Text
* Contact Person Email	Applicant's contact email	x	x	x	x	Text
*Carrier Name	Name of the wireless service provider (WSP) related to this Application	x	x	x	x	Text
*Carrier Site Name	Identifier of the site that the WSP uses (common name or ID)	x	x	x	x	Text

Site Information

Field Name	Description	New	Replacement	Minor Modifications	Colocations
*Will the antenna be installed on an existing structure?	Yes or No	x	x	x	x
If yes, identify type and Pole number	Type (streetlight or utility Pole) and Pole number	x	x	x	x
*Site Address	Address of adjacent property	x	x	x	x
* Site Owner/Landlord	Per City records	x	x	x	x
* Structure Owner		x	x	x	x
* Latitude	In degree decimal (xx.xxxxxxx)	x	x	x	x
* Longitude	In degree decimal (xx.xxxxxxx)	x	x	x	x
*Structure Type	Select the applicable structure type	x	x	x	x
* Status of Support Structure	Existing, replacement, or new	x	x	x	x
Does the structure require an antenna structure registration under FCC Title 47 part 17?	Yes or No	x	x	x	x
*Zoning	Per Cupertino General Plan	x	x	x	x
Proposed height of the replacement structure without any antenna	In feet	x	x		
*Justification of why this site was selected	Describe purpose of the site, and why this location is needed	x	x	x	x

Field Name	Description	New	Replacement	Minor Modifications	Colocations
*Nearby Sites	Provide a listing, by name and address, of any more preferred existing structures within a 500-foot radius (for an SWF) or within a 1-mile radius (for other applications) from the proposed site that were considered in lieu of the new Support Structure, along with a detailed explanation as to why these structures could not be used to accommodate the antennas. If the alternative structure(s) were ruled out for RF or other engineering reasons, explain the reason and include supporting RF maps in the same format described above which demonstrate why the alternatives could not be used. If there were non-RF reasons why those alternatives would not work, provide an explanation as to why they could not be used.	x	x		

Field Name	Description	New	Replacement	Minor Modifications	Colocations
*Screening Considerations	State what considerations were given to screening the site and minimizing the visual impact of the proposed structure, including any disguise options such as a flag/tree/streetlight Pole design, low-profile antenna attachment consideration, concealed/painted antennas, or other such designs and, if not used, why they were not used.	x	x		x
*Will site be used to support government Telecommunications Facilities or other equipment for government use?		x	x	x	x
If yes, describe:		x	x	x	x
Provide the distance to the nearest residential structure	Measured from the center of the pole to the nearest residential structure (in feet).	x	x		x
Provide the distance to the nearest commercial premises or school	Measured from the center of the pole to the nearest structure in a commercial zone (in feet).	x	x		x
If a replacement structure, will the new structure be installed at same location as the original structure?	Yes or No		x		

Field Name	Description	New	Replacement	Minor Modifications	Colocations
If a replacement structure, will the new structure be within 2 feet of the original structure?	Yes or No		x		
List adjacent structure heights	In feet	x	x		
*Lease Status	Status of the lease agreement permitting the carrier to operate at the site.	x	x	x	x
*Has a new or updated Plan been filed with the City within the last year?		x	x	x	x
Is this site on the Annual Plan?		x	x	x	x

Installation Type

Field Name	Description	New	Replacement	Minor Modifications	Colocations
Application Type	Please select the Application type	x	x	x	x
*Insert general description of work to be performed to match all supporting documents submitted.		x	x	x	x
*Describe area to be served by the proposed installation. Identify the number of additional carriers the Facility is capable of accommodating.		x	x		

6409 – Eligible Facilities Request

Field Name	Description	New	Replacement	Minor Modifications	Colocations
*Does this qualify as a 6409 Application?	Select whether the Application should be treated as a 6409 under FCC ruling.			x	x
For Towers outside the Public Right-of-Way, will proposed installation cause an increase height (i.) more than 10% or (ii.) the height of one additional antenna array with separation from the nearest existing antenna not to exceed 20 feet, (whichever is greater)?	Yes, No, Not Applicable (N/A)			x	x
For Towers outside the Public Right-of-Way, will the proposed installation increase the width by adding an appurtenance to the body of the Tower that would protrude from the edge of the Tower (i.) more than 20 feet, or (ii.) more than the width of the Tower structure at the level of the appurtenance (whichever is greater)?	Yes, No, Not Applicable (N/A)			x	x
Will the proposed installation increase the height of the structure by: (i.) more than 10% or (ii.) more than 10 feet, whichever is greater?	Yes, No, Not Applicable (N/A)			x	x
Will the proposed installation increase the width by adding appurtenance to the body of the structure that would protrude from the edge of the	Yes, No, Not Applicable (N/A)			x	x

Field Name	Description	New	Replacement	Minor Modifications	Colocations
structure by more than 6 feet?					
Will the proposed installation require excavation or expansion outside the current boundaries of the site?	Yes or No			x	x
*Does the structure or current installation have Concealment elements/measures?	Yes or No			x	x
*If yes, describe how the proposed installation does not defeat the existing Concealment.		x	x	x	x
*Will this structure or proposed installation have Concealment elements/measures?	Yes or No	x	x		
*If yes, please describe the proposed Concealment element/measures		x	x		
Will the proposed installation require more than the standard number of new equipment cabinets for the technology involved, but not to exceed four cabinets?	Yes or No			x	x
How many radios will be removed?		x	x	x	x
How many radios will be added?		x	x	x	x
How many equipment cabinets will be added?		x	x	x	x
How many other items will be added?		x	x	x	x

Small Wireless Facility (Per FCC)

Field Name	Description	New	Replacement	Minor Modifications	Colocations
*Is this installation a Small Wireless Facility?	Yes or No	x	x	x	x
Provide the cumulative volume of the proposed wireless equipment(s) exclusive of antennas in cubic feet	Volume must be listed in cubic feet (feet/decimal) to the nearest 10th.	x	x	x	x
Provide the overall height of the structure with antenna	If the structure is to be replaced, this is the height with the antenna. Otherwise it's the measured height of existing structure plus any antenna.	x	x		
Provide the cumulative volume of the proposed antenna antenna(s) exclusive of equipment	Volume must be listed in cubic feet (feet/decimal) to the nearest 10th.	x	x	x	x

Public Right-of-Way

Field Name	Description	New	Replacement	Minor Modifications	Colocations
*PROW (Public Right-of-Way)	Is the site located within the public right of way?	x	x	x	x
*Provide the Right-of-Way width	The Right-of-Way width is measured at the centerline of the structure.	x	x	x	x
*List whose Right-of-Way the structure is located on		x	x	x	x
*Attach Right-of-Way Information	Documents or maps verifying on whose Right-of-Way the structure is located (i.e. state, City, etc.)	x	x	x	x
Will the proposed Small Wireless Facility obstruct, impede, or hinder the usual travel or public safety on a Public Right-of-Way?		x	x	x	x
Will the proposed Small Wireless Facility obstruct the legal use of a Public Right-of-Way by any public or private utility providers?		x	x	x	x
Will the proposed Small Wireless Facility impede, obstruct, violate, conflict with, or hinder any mode of travel or access to the Public Right-of-Way, an alley, or driveway?		x	x	x	x
Will the proposed Small Wireless Facility obstruct any access to any fire escape, fire hydrant, doors, gates, stoops, public transportation vehicles, shelters, street furniture or other improvements		x	x	x	X

Field Name	Description	New	Replacement	Minor Modifications	Colocations
at any public transportation stop (including, without limitation, bus stops, streetcar stops, and bike share stations)?					

Antennas

Field Name	Description	New	Replacement	Minor Modifications	Colocations
* Antenna Height AGL in feet:	Enter center point or rad center of the antenna.	x	x	x	x
*Antenna Model:		x	x	x	x
* Frequency bands to be used:	Must be entered in MHz. List the beginning/start to ending/stop of the operating frequencies. (Note: This is less than the capable frequencies listed on the antenna cut sheet.)	x	x	x	x
* Maximum Effective Radiation (ERP)	Must be in Watts ERP not EIRP	x	x	x	x
*Antenna Dimensions	Must match what is on the Specification Sheet provided.	x	x	x	x
*Antenna Volume	Volume must be listed in cubic feet (feet/decimal) to the nearest 10th.	x	x	x	x
* Will the antenna be located on a rooftop?		x		x	x
If antennas will be located on a rooftop, please attach a description of any steps that have been or will be taken to prevent the aggregate RF from exceeding exposure		x		x	x

Field Name	Description	New	Replacement	Minor Modifications	Colocations
limits. Include information regarding signage, training for workers accessing antenna areas, and precautions against hazards.					
*Type of compliance study required under §1.1307 of the FCC Rules and Regulations:	Cannot select “categorically excluded” if it exceeds the FCC limits	x	x	x	x
* Will the cumulative antenna installation be in compliance with the maximum permissible RF exposure limits set forth in §1.1310 of the FCC Rules and Regulations?		x	x	x	x
If the answer is no, please attach an explanation	Note: this could be a certification letter from the responsible RF Engineer for operation at the site.	x	x	x	x

Submittals

Field Name	Description	New	Replacement	Minor Modifications	Colocations
*Attach a map of the general area showing the location of the site	Map should be obtained from System Record. Use the print to pdf feature available from System Record.	x	x	x	x
*Attach manufacturer specification sheets for radios, antennas, etc.	Upload the manufacturer's cut sheet for all proposed antennas and accessories listed.	x	x	x	x
Attach construction drawings/pictures	Needs to be 24" x 36 format. Photos submitted must be	*x	*x	x	*x

Field Name	Description	New	Replacement	Minor Modifications	Colocations
	annotated and clearly show proposed scope of work.				
*Attach RF propagation studies showing service area coverage surrounding the proposed site with and without the site	(Only needed In cases where the proposed work is not at a most preferred location and the justification for the location is RF-based.) Provide a copy of the RF propagation contour maps showing the site with and without the site with calculated signal levels in color at the target signal level and plus and minus 5dB. Include a legend that shows what signal level each color represents. Include maps showing coverage at the proposed antenna elevation and at 20 and 40 feet below the proposed elevation for sites outside the Public Right-of-Way and 5 feet and 10 feet below the proposed height for SWFs.	x	x		
Attach Capacity exhaustion justification (if site is selected to enhance the Capacity)	(Only needed In cases where the proposed work is not at a most preferred location and the justification for the location is capacity-based.) The	x	x		

Field Name	Description	New	Replacement	Minor Modifications	Colocations
	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.				
Attach drive test documents	If any drive tests were performed, provide copies of the data with the Application and make note that they are attached.	x	x		
*Attach property owner consent form		x	x	x	x
*Provide photos and photo simulations	Provide a photographic simulation of the structure and equipment from at least two different directions. For sites outside the Public Right-of-Way, provide photo from approximately 1/4 mile away. If SWF, provide photo that includes the entire structure and its	x	x		

Field Name	Description	New	Replacement	Minor Modifications	Colocations
	surroundings. If the new structure is visible from adjoining parcel, include view from the adjoining parcels. If a new structure, please provide copies of the photographs with balloon and the result with simulation.				
Attach structural analysis	If a structural analysis has been performed, attach here.	x	x		x

Appendix C: Site Completion Checklist

Item	Requirement	YES	NO
1	Spacing of Support Elements: Support equipment (e.g. Disconnect Switch and RRUs) to be clustered (vertically) as close as technically feasible on Pole.		
2	Logo Removal: All equipment logos, other than those required by regulation (e.g. node identification of shutdown signage) shall be painted over or removed. Raised/Depressed logos/text on equipment enclosures (e.g. RRUs), if present to be sanded off, or covered with a sticker, and then painted.		
3	Signage: FCC mandated RF warning signage shall face out to street when wireless Facility is located in front of, or near a window. Signage shall face toward building if there are no windows present.		
4	Notification: No less than 14 days prior to performing emissions testing, Applicant shall inform residents of dwelling units within 100 feet and offer to perform a test in their dwelling.		
5	Testing: Measure and record emissions, including EMR/RF and noise.		
6	Report: Within 30 days of activation, Applicant will submit an Activation Report to the Public Works Department.		

Appendix D: Process Tasks

Intake Review

Task
Import Application into database.
Note whether the Applicant has indicated that the Application submitted is 6409 or Small Wireless Facility.
Determine what FCC shot clock this Application falls under.
Check that the address is correct for location listed in Application.
Check that the assessor's parcel number is correct for location listed.
Check that the address for this location is in the jurisdiction that it was submitted for.
Check that the land and structure owner match what the jurisdiction has on file.
Check that the Lat/ Long are for the location listed in the Application.
Check that the type of structure on the Application matches the structure at the address provided.
Verify the structure height listed matches all other supporting documents.
Determine if a site visit is needed.
Ensure cutsheets have been submitted for all proposed antennas.
Verify there are no missing required documents such as Area Maps, Structural, Plans, Cut Sheets, Balloon Test, Photo Sims, Microwave Pathing Studies, RF Maps, Tow Air Check, etc.
Ensure the Applicant has submitted an Annual Plan to the City (described in Section 3.3).
Review whether this site is on the carrier's Annual Plan.
Annotate any discrepancies or missing/incorrect information to pass along to Engineering Review.
Gather all supporting documents and Application and pass along to Engineering Review with any comments.

Engineering Review

Task
Verify that the quantities of removed/added/relocated antennas match on the Application and all the supporting documents.
Verify that the antennas indicated in the Application are the same antennas (model number and quantity) indicated in the Plans, structural, and any other supporting documents accompanying the Application.
Ensure that the height (RAD Center) of the proposed antennas indicated in the Application are consistent with the antenna height indicated in all supporting documents.
Review scope for consistency and continuity to other supporting documents.
Ensure that the stated value of the height of the structure on the Application matches the Plans and other Supporting Documents submitted.
Review area map to determine suitable scale, clarity, identification of the site. Ensure that the area map submitted correctly calls out the location of the structure on the site.
Review the dimensions of the proposed antenna models. Ensure that the dimensions match the cutsheets submitted.
Review the dimensions of the proposed antenna model.
Review the dimensions of the proposed antenna cabinets/shrouds.
Ensure the Applicant has indicated the particular frequency bands on which the carrier will be operating (not, for example, the frequencies on which the Applicant's proposed antennas are capable of operating).
Review whether the frequency bands listed are relevant to the operational capability of the antenna model and pertain to the bands in which the carrier is allowed to operate.
Ensure that the ERP indicated in the Application does not exceed FCC limits as outlined in FCC OET Bulletin 65.
Ensure that the Applicant has checked the appropriate boxes for the Section 1.1307 & 1.1310 questions (i.e., will the antenna installation be in compliance with the maximum permissible RF exposure limit set forth in Sec 1.1310 of the FCC Rules and Regulation?). Note the steps taken to determine that the correct compliance study was selected.

Review whether the Applicant indicated that the installation is in compliance with the maximum permissible RF exposure limits set forth in FCC Section 1.1310. If not, list what explanation was included to show that this installation will be in compliance and whether it is satisfactory.
Review whether this Application is Section 6409 eligible. If not, list reason for non-eligibility.
Review whether an Application for an FAA review been submitted.
Review that the level of drawing details is suitable and customary as compared with the scope.
Check drawings for setback distances and adjacent parcel owner's details (when required).
Ensure the antennas and equipment cabinets of any other carriers at the site are identified in the Plans.
Examine the Structural Analysis accompanying the Application to ensure that all existing antennas on the Monopole, Tower, or rooftop are properly accounted for in the analysis. Ensure that the Structural Analysis indicates that the structure is structurally sound and can accommodate the proposed installation.
Review whether the Applicant stated what considerations were given to screening the site and minimizing the visual impact of the proposed structure, including any camouflage options such as a flag/tree/streetlight pole design, low-profile antenna attachment consideration, concealed/painted antennas, or other such designs and, if not used, why they were not used. Is the screening method described the best option?
Review RF maps provided by the Applicant to ensure they meet all the following criteria: Contour maps of the service area illustrating, in color, current coverage with existing sites, with and without the proposed antennas and with antennas at elevations of 20 feet and 40 feet lower than proposed. Include maps illustrating the calculated coverage from the site alone and with antennas at those three elevations. Illustrate signal levels in colors representing the target signal level and at least plus and minus 5 dB. Include a legend indicating colors and corresponding signal levels. Specify the target levels for the site. Identify the antenna elevations upon which the model is based. Do they meet all requirements?
If provided, examine RF maps provided by the Applicant to ensure that, based on the coverage areas of the carrier's nearby sites, the proposed structure is justified.
Review whether or not the proposed structure height is needed to provide coverage or Capacity based on RF Maps.

If provided, ensure that RF maps are provided showing what the Applicant's coverage would be at any nearby structures that potentially could be used for the proposed installation. Compare RF maps at the proposed site to RF maps showing what the Applicant's coverage would be at the nearby structures. (If coverages from any of the nearby structures are sufficiently close to the coverage that would be provided at the proposed site, then the Applicant could possibly locate at one of those structures and the proposed structure might not be necessary.)
List why alternative sites are not viable colocation structures. Has the Applicant provided adequate evidence that all alternative sites have been ruled out from use?
For proposed microwave (dish) transmissions, ensure that maps are provided showing path studies from potential structures that could be used as relay stations to send transmissions from the proposed site to receive sites. (If path studies show that transmissions to receive sites could be achieved using one or more relay stations, then the proposed structure might not be necessary.)
Review any included Application photos that depict the installation or proposed site. Determine if photos are recent, clear, and a suitable level of aspect to support scope.
Ensure that the location of the proposed Monopole and equipment compound, based on the Plans, is consistent with photos taken of the site by the carrier (i.e., to ensure that the Applicant will construct the Monopole and equipment compound at the location indicated in the Plans).
Compile and highlight Engineering/Zoning comments (if further information is needed from Applicant).
Pass along comments for City Requirement review.

City Requirement Review

Task
Review zoning/engineering comments for local review.
Review that the proposed installation is mindful of possible Colocation opportunities.
Review that the Application offers justification for Colocation due diligence.
Review installation for verification that Pole number/Pole identifier is accurate on all documents.
Review installation for Small Wireless Facility compliance.
Review installation for 6409 compliance.

Review any documents submitted showing that the property owner has allowed the Applicant to attach to their structure.
Review all information provided for Right-of-Way.
Review installation for City requirements regarding height of structure.
Review installation for City requirements regarding setbacks.
Review installation for City requirements regarding antenna size.
Review installation for City requirements regarding stealthing.
Determine whether the antenna dimensions listed on the Application match the cut sheet provided.
Check database for site ID consistencies or duplication of site ID for the same structure.
Check database of previous history of Application to the structure for conflict or duplication.
Check the description of the proposed installation provided. Review scope for consistency and continuity to other supporting documents. Verify that the quantities of removed/added/relocated antennas match on the Application and all the supporting documents.
Make sure that any requirements (such as Plans being signed and sealed by Engineer) have been fulfilled, and that Application and supporting documents have matching addresses.
Compile all notes from Intake, Engineering, and Local Review and send to Technical Project Manager to compose a Request for Information if one is needed.

Completeness

Task
Review the Application for the site that will be inspected.
Once on site, verify that the site is as shown on the Plans including location, setbacks, etc.
Verify that the equipment used is the same as on the Application and plans. Verify that the installation locations are the same as on the Application and plans.
Prepare inspection documentation.