City of San Diego

Wireless Communication Facility (WCF) Guidelines

Development Services Department,
Project Submittal and Management Division
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This information, or document (or portions thereof), will be made available in alternative formats upon request.
Introduction

In the City of San Diego, Wireless Communication Facilities (WCF) are defined as the antennas and equipment that transmit and receive information for personal wireless services. The Telecom Section of the Project Submittal and Management Division of Development Services processes WCF applications from the entitlement and discretionary review process to building permit issuance and inspection. The Wireless Communication Facilities web page provides links to additional reference material.

WCF Requirements

Council Policy 600-43 and the City’s General Plan (Urban Design Element UD-A.15) provide guidance on the design and placement of WCF within the City. The San Diego Municipal Code Section 141.0420, “Wireless Communication Facility (WCF) Regulations,” regulates WCF and Information Bulletin 536 provides information on the procedures and submittal requirements for WCF permit applications. This document, the WCF Design Guidelines, should be utilized in conjunction with the WCF Regulations. The guidelines do not supersede the regulations found in the LDC, but provide guidance to stakeholders involved in the design and development of WCFs in the City of San Diego. The guidelines are used as a tool for processing applications for WCF for both new facilities and those with expired permits.

The guidelines prescribe clear, reasonable, and predictable criteria to assess and process applications in a consistent and expeditious manner.

The guidelines establish a framework of opportunities for creating desirable WCF in the City.

General Plan – Wireless Facilities

The City of San Diego’s General Plan addresses Wireless Facilities in section UD-A.15.

Minimize the visual impact of wireless facilities.

- Conceal wireless facilities in existing structures when possible, otherwise use camouflage and screening techniques to hide or blend them into the surrounding area.
- Design facilities to be aesthetically pleasing and respectful of the neighborhood context.
- Conceal mechanical equipment and devices associated with wireless facilities in underground vaults or unobtrusive structures.
Federal Regulations

Telecommunications Act of 1996
Section 704 of the Telecommunications Act of 1996 provides a framework for the City's review of WCF.

Application Review
The City's review and approval or denial of WCF applications “shall not unreasonably discriminate among providers of functionally equivalent services,” and “shall not prohibit or have the effect of prohibiting the provision of personal wireless services.”

The Act requires that the City act on a permit application request in a reasonable period of time and that any decision to deny a request to, “place, construct, or modify [a WCF] shall be in writing and supported by substantial evidence contained in the written record.”

In conjunction with other regulations, such as the California Permit Streamlining Act, the FCC's Shotclock Ruling, and the California Environmental Quality Act (CEQA), the City processes WCF applications in an expeditious manner in compliance with all applicable regulations.

Environmental Effects of Radio Frequency (RF) Emissions
The Act prohibits the City from regulating the “placement, construction, and modification of [WCF] on the basis of the environmental effects of RF emissions to the extent that such facilities comply with the [FCC's] regulations concerning such emissions.”

The City requires that WCF applications provide a report, prepared by a qualified RF engineer, demonstrating that the WCF will comply with the FCC requirements.

Spectrum Act
Section 6409(a) of the Middle Class Tax Relief and Job Creation Act of 2012 outlines processing timelines for qualifying eligible facilities requests.

LDC 141.0420 – Wireless Communication Facility Regulations

Required Permits
The zone, site characteristics, and development proposal will determine the permits required for a WCF. For example, project sites with Environmentally Sensitive Lands may require a Site Development Permit (SDP), projects in the Coastal Overlay Zone may require a Coastal Development Permit (CDP), and projects that deviate from the zone development regulations or WCF Design Requirements may require a Planned Development Permit (PDP) to request a deviation. In general, Council Policy 600-43 provides guidelines for four locational categories that correspond to the Process levels contained within the Wireless Communication Facilities regulations, Section 141.0420 of the San Diego Municipal Code. These guidelines establish a hierarchy from most preferred location to least preferred location, encouraging the placement of WCF in commercial and industrial zones.
Design Requirements
Section 141.0420(g) of the San Diego Municipal Code specifies regulations which apply to all WCF. As different design options are explored in the guidelines, specific LDC Design Requirements will be cited. The first two design requirements are applicable to all WCF:

1. WCF shall **utilize** the smallest, least visually intrusive antennas, components, and other necessary equipment.

2. The applicant shall use all **reasonable** means to conceal or minimize the visual impacts of the WCF through integration. Integration with existing structures or among other existing uses shall be accomplished through the use of architecture, landscape, and siting solutions. Each application for a WCF is evaluated based on the proposed design, location, permits required, and other site-specific characteristics. Architecture, landscape, and siting solutions are all used in evaluating WCF applications. Use landscape architecture to improve views of the WCF as seen from the public right-of-way and neighboring properties by screening, buffering, and blending WCF with the surrounding environment.

Landscape

Landscaping will be required to offset the overall visual impact of some projects. New landscaping proposed for such purpose should be provided in the form of screening trees located near the antenna, or as canopy trees for nearby parking areas. Where it is not feasible to provide additional landscaping in proximity to a proposed antenna location, or substantial landscaping already exists on-site, other means of balancing the project’s visual impacts shall be considered, such as the provision of additional street trees in the project vicinity or an in lieu contribution to our City streetscape.

All landscape shall conform to the City’s Landscape Regulations and the Land Development Manual: Landscape Standards. Landscape Plans submitted for review should include the required components identified in Information Bulletin 536. Existing and proposed landscape material can be used to screen and integrate a WCF. Trees can be incorporated into the design to help screen and integrate a WCF with the surrounding area. Landscape screening should be provided around exterior equipment enclosures. The planting quantity and size should be such that 100% screening is achieved within two years of installation (Land Development Manual: Landscape Standards, Section 1.2). When antennas are proposed to be located on faux trees or shrubs, the existing and proposed live trees of a similar size and species are required. Additional trees should be added to create a grove-like pattern.
appearance that effectively integrates the faux tree. Adequate planting areas should be provided to allow the trees to grow to a similar size as the faux tree.

The WCF’s design shall be consistent with the existing landscape plans for the project site. Any trees proposed for removal shall be replaced in-kind or with sufficient replacements.

When underground vaults are proposed, they shall be located to minimize disruption to the placement of street trees. Adequate planting depth shall be provided between the top of the vault and the finished grade to allow plants to grow in a healthy condition.

Removal, replacement, or installation of street trees is subject to review by the City’s Urban Forester in accordance with San Diego Municipal Code Section 62.0600.

Tree “topping” or the improper pruning of trees is prohibited. The improper pruning of trees can result in a variety of problems such as irregular, poorly attached sprouting branches, make the tree more susceptible to insect attacks and disease, and tree death. Topping of trees also reduces their effective screening of WCF’s.

**Equipment Associated with WCF’s**

**Cable Trays**

1. The cables shall be routed internally within the existing building envelope unless the building construction does not allow internal routing of the cables. In that case the cable tray must be concealed or integrated to the extent feasible. The cable tray can also be designed as a decorative building feature.

2. When more than one cable tray is exposed on a building exterior, place and space consistently and appropriately to not disrupt the building design.

3. All coaxial cable must be placed underground. No above-ground cable or cable bridges are permitted.

4. All coaxial cable must be routed directly from underground up through the base station/tower; “doghouse” cable covering structures are not an acceptable option.

5. All exterior cable trays must be located as discreetly as possible. At the very minimal they shall be painted and textured to match the building.
Enclosures & Equipment

1. Architectural integration is required for equipment enclosures and screening walls.
2. Use similar building materials, color, accents, and texture as the primary building. If no buildings exist on site, ensure that the proposed structure is designed to blend into the environment.
3. Minimize exterior appurtenances. Use a screen wall and landscape for screening.
4. Use an open-top with an architectural element, like a trellis, to eliminate the need for air conditioning units.
5. Use passive cooling and incorporate shade trees to reduce the level of electricity used for cooling purposes and reduce the noise output.
6. Existing topography or landscape can assist in minimizing views of equipment.
7. Gates shall be constructed of similar or complimentary materials as the enclosure, but must maintain opaque qualities.
8. Fences shall be constructed of decorative materials that compliment and blend with the surroundings. Chain-link fencing and barbed wire are not permitted.
9. Anti-graffiti finishes shall be applied to all solid fences, walls, and gates. Design techniques should be employed to reduce the opportunities for graffiti.
10. All roof-top equipment must be screened.

Generators

1. Architectural integration is required.
2. To the extent possible, generators shall be enclosed along with the existing equipment. Similar to equipment enclosures, the screening for the generator shall use similar building materials, colors, accents, and textures as the primary building. If no buildings exist on site, design the building to blend in with the environment.
3. Use a screen wall and a combination of landscape material for screening.
4. Fences shall complement and blend in with the surroundings. Chain-link and barbed wire fencing are not permitted.
5. Anti-graffiti finish shall be applied to all solid fences, walls, and gates.
6. Noise analysis may be required to demonstrate that the generator will operate within allowed noise limits.
7. All exhaust pipes, vents and similar components must be illustrated on plans.
Completely Concealed Facilities (CCF)

Additions or modifications to buildings must always consider the existing design, bulk, scale, and symmetry of the building.

“Concealment Conceal Facility” means camouflaging methods applied to Wireless Towers and Base Stations that render Wireless Towers or Base Stations more visually appealing or blend the Wireless tower or Base Station into an Existing Structure or visual backdrop in such a manner as to render the Wireless Tower or Base Station minimally visible to the casual observer.

Concealment may utilize, but does not require, concealment of all components of the Wireless Communication Facility.

A Complete Concealment Facility (CCF) WCF may receive a permit without an expiration date if all of the following criteria are met:

1. The antennas, mounting apparatus, and any associated equipment must be fully recessed/concealed from all sides within a structure that achieves total architectural integration with the existing building.
2. All cable must be routed internally. Exterior mounted coaxial cable trays designed to replicate an existing vertical element may be considered on a case by case basis. Standard cable trays painted and textured to match the existing building do not meet the intent of the CCF and will receive an expiration date.
3. The associated equipment must be completely concealed inside an existing building or inside an underground vault. Screen walls/fences and prefabricated facilities do not meet the intent of a CCF. Equipment enclosures designed to replicate existing buildings and structures may be considered on a case by case basis.
FRP Installations

Fiberglass Reinforced Plastic (FRP) or Radio-Frequency (RF) transparent materials can be used to screen and integrate a WCF with an existing building. These types of installations are subject to the following requirements.

1. No visible transition lines between the old and new materials, colors, and/or surfaces are permitted. Specifically, FRP must be painted to match adjacent surfaces exactly. If necessary, these surfaces must be repainted.
2. No expose construction braces.
3. Rooftop additions must be concealed on all sides.
4. New architectural features such as columns, pilasters, corbels, or other ornamentation that conceal antennas may be used if it complements the architecture of the existing building.
5. Faux chimneys must include architectural details and trim, if such details exist on the building, or if it helps to improve the appearance of the WCF.

Figure 10
This example shows how antennas can be located behind architecturally integrated RF-transparent “fins”. This site is located at 4134 Adams Avenue.

Figure 11
This global solution illustrates how all the carriers can work together to conceal their antennas behind FRP “columns”. This site is located at 2180 Garnet Avenue.
6. Architectural details including but not limited to flashing, horizontal/vertical trims, reveals, and other similar building elements shall match the adjacent building face. On a case by case basis, site-specific alternatives may be considered.

Façade Mounted Antennas

Façade mounted antennas attached to existing structures must consider the scale, symmetry, and design of the structure and minimize the addition of bulk and clutter to a building.

Antennas can be façade mounted to a building as long as the antennas do not interrupt the architectural lines of the building.

1. Use the smallest mounting brackets available in order to provide the smallest offset from the building. The distance between the front of the antenna to the face of the building shall not exceed 12 inches. Field measurements may be required upon final inspection.
2. Use skirts, shrouds and chin covers to conceal mounting hardware, create a cleaner appearance, and minimize the visual impact of the antennas. Chin covers shall be designed to replicate the antenna profile. Gaps between antennas and screens are not permitted.
3. Paint and texture antennas to match the adjacent building surfaces.
4. To the greatest extent possible, employ a symmetrical, balanced design for all façade mounted antennas. No interruption of architectural lines or horizontal or vertical reveals is permitted. Antennas should be no longer or wider than the façade on which they are proposed.

![Figure 15](image)
Here’s an example of a poor installation with the antennas extending onto the trellis feature. The approved Exhibits for this site required 90-degree connectors to avoid any interruptions with the trellis feature.

5. No exposed cabling is permitted.
6. No exposed mounting apparatus may remain on a building façade without the associated antennas.

**Associated Antenna Component**

This section includes but is not be limited to Remote Radio Units, Remote Radio Heads, Raycaps, Surge Suppressors, Tower Mounted Amplifiers and other related components.

We recognize the importance of these components to the overall site, but that attention to placement of these components to achieve the overarching goal of architectural integration is required.

1. All roof mounted components shall be concealed behind and below the parapet.
2. Façade mounted designs shall be reviewed on a case by case basis.
3. For faux trees (with the exception of palm trees), these components shall be located behind the antennas and painted to match. Displacement of branches to accommodate any components is prohibited. For faux palms, these components must be concealed within the growth pod, faux hula skirt, or in the associated equipment enclosure.
4. For Athletic Field Lights (AFL), these components shall be concealed inside the radome with a bottom cap. Please refer to the AFL – Page 13 for more information.
Ground Mounted Facilities
This section addresses flag poles, towers, ball field lights, light poles, signs, and public right-of-way elements.

1. Comply with all development regulations for the zone.
2. Design structures to the minimum height necessary
3. Structures should be architecturally integrated into environment and harmonize with the property on which it is proposed.

Faux Trees
1. Use in an existing landscape setting with plants at a similar height and species.
2. If the site is void of tall trees or landscape, create a landscape setting that integrates the faux tree with additional live planting of a similar species and varying heights.
3. Faux trees in non-urban settings should be species regionally appropriate to San Diego that blends with established plant communities.
4. Utilize faux trees that replicate the shape, structure, and color of live trees.
5. Provide detailed specifications during plan review.
6. Ensure that the top of the faux tree does not exceed allowed height on approved plans.
7. All coaxial cables must be routed directly from the ground up through the pole. No “doghouse” cable coverings are permitted.
8. All faux trees must incorporate a sufficient number of branches (no less than 3-branches per foot) and design materials so that the structure is as natural in appearance as possible.
9. Socks are mandatory for all antennas and associated component located on a faux tree.

Figure 16
This faux eucalyptus tree is located at 4330 Morena Boulevard. This site is surrounded by other eucalyptus and appropriately screened from all views.
10. These design standards shall apply to any installation designed to mimic natural vegetation.
11. Faux trees must be designed with a minimum 3½ branches per foot for full density coverage with limited spacing between the branches. Seventy percent of the branches shall be 8-foot or longer.
12. Branches shall extend beyond the length of the antenna by a minimum of 24-inches. Trees shall be designed to mimic the natural appearance of their species. There shall be no gaps in branch coverage. No exposed mounting apparatus may remain without the associated antennas.

Flag Poles
1. Poles 30-feet or less in height should not exceed 9-inches in diameter.
2. Consideration will be given to poles higher than 30-feet that exceed the 9-inch diameter limitation if it can be demonstrated that the flag pole is located in a suitable environment and appropriately tapered in order to maintain the appearance of an authentic flag pole.
3. Antennas must be enclosed within the pole or a radome.
4. Comply with the U.S. Flag Code.
5. Utilize in conjunction with existing or added landscape planting.
6. Decorative elements must be included in the overall height measurement.
7. All cables must be routed directly from the ground up through the pole. No “doghouse” cable coverings are permitted.
8. The overall height and diameter of the flag pole must be compatible with the surrounding area.
9. Flag poles are not to be used as a design option to gain height in areas where multiple flag poles already exist.
Light Standards

Light Standards

1. Use only in parking lots or along pedestrian paths. Not to be used as a means to gain height in areas where a light standard is unnecessary.

2. New light standard design must be consistent and compatible with the surrounding area.

3. Match design, material and color of any existing light poles.

4. If possible, replicate height of existing poles. Significant height increase of 5 feet or more can only be supported if the design integrates with the surrounding neighborhood.

5. If more than one pole is used, space appropriately throughout property. Consideration must be given to existing vertical elements before proposing new light pole(s).

6. All cables and conduit to and from the light standard is expected to be routed from underneath the caisson. No doghouse cable coverings are allowed.

7. All antennas shall be concealed inside a radome of a reasonable diameter.

Athletic Field Lights (AFL)

1. Mount antennas as close as possible to the pole, below the light source and within a radome no more than 36 inches in diameter.

2. For existing AFL with exposed antennas, all cables shall be routed directly into port holes no more than 12 inches of exposed conduit (may be further evaluated on a case by case basis).

3. Chin cover shall be employed for all existing AFL sites. The chin covers shall be designed to replicate the antenna profile.

Figure 18
The site above is located at 4300 El Cajon Boulevard for two carriers. The light standards used multiple colors and trims to replicate the buildings appearance. The antennas are appropriately concealed inside the radome.
4. Paint antennas and mounting apparatus the same color as the pole.
5. All cables and conduit to and from the light standard are expected to be routed from underneath the caisson up into the pole. “Doghouse” cable coverings may be permitted to remain in limited circumstances where they are minimally visible.

**Towers (Signs & Monuments)**

1. Design towers to architecturally blend with the building/structure/setting in which they are proposed.
2. Towers shall be built at the lowest height possible.
3. A separate sign permit must be obtained for the sign itself.
Right of Way Installations

For residential areas, the Right-of-Way can provide opportunities in the form of Distributed Antennas Systems (DAS) or Small Cells. Use of decorative poles is prohibited.

Distributed Antenna Systems (DAS) or Small Cells

1. Due to the potential visual impacts associated with Right-of-Way installations, consider using Distributed Antenna Systems (DAS) or Small Cells.

2. These installations consist of a 24” or smaller antenna and one equipment cabinet mounted directly to a street light, traffic light or utility pole.

3. Equipment cabinets may not exceed 7 cubic feet in volume.

4. Equipment cabinets must be mounted directly behind any road signs located on a pole.

5. Minimum height clearance regulations shall be observed by all components of the installation.

6. When utility poles are used for these installations and there is a choice of using a pole in the street or in an alley, the alley shall be used.

7. All cables shall be concealed within a sleeve between the bottom of the antenna and the mounting bracket.

8. Utility pole installations must use all design techniques to minimize visual impacts.

Full Size Antennas on Light or Traffic Standard

1. The new or replacement poles shall match height, color and material of the original or adjacent poles.

2. Exterior panel antennas shall not exceed the height of the pole.

3. Utilize brackets that allow antennas to be mounted no more than 4” from the pole.

4. No downtilt.

5. No exposed cables.

6. All replacement or new poles must comply with all applicable City regulations and policies.

7. Equipment should be minimally visible through the use of an underground vault. If this is not feasible, above-ground cabinets must be designed and located in an area with minimal visual impact.

8. All disturbed landscape shall be replaced in-kind and areas of bare or disturbed soil must be revegetated in accordance with the Landscape Regulations.

Figure 22
This R-O-W installation features three antennas flush mounted onto the light standard without the use of a pipe mount. This installation is located at the 1700th block of Quivira Road.
Temporary Use Permits (TUPs)

Two Temporary Use Permits (TUPs), for 180-days each, are permitted by LDC Section 123.0402. An application must be submitted, reviewed, and approved by staff for all temporary wireless communication facilities. A TUP can only be issued for the following reasons: A TUP may be issued for a WCF where the WCF would provide service to a citywide public event or where an emergency arises that is not the result of any act of the WCF provider and is otherwise determined by the City Manager to be an emergency. A TUP is required for Cell-on-Wheels (COWs).

For existing WCF that have to be relocated during construction of a project and it is known at the time of zoning review, include the temporary site in the project details and plans with a schedule for installation and final removal. Staff will consider it during the project review process.

If it is discovered during the building permit process that a temporary site is needed during construction, include the temporary project details in the construction documents for staff review and consideration. Temporary projects are not permitted in order to provide coverage to an area prior to construction of a permanent site.