
POLICY: COMMUNICATION TOWERS, POLES AND BUILDINGS UTILIZED BY STATE AGENCIES FOR ESSENTIAL SERVICES COMMUNICATIONS

PURPOSE: This policy provides clarification of the requirements for DSA approval of plans and certification of construction for state-owned, state-leased or privately owned towers and poles utilized for essential services communication and for essential antenna and equipment mounted on the towers, poles and buildings in accordance with the Essential Services Buildings Seismic Safety Act of 1986 (Act) and the California Administrative Code (CAC), Part 1, Title 24, California Code of Regulations (CCR).

BACKGROUND: The Act is applicable to towers and poles constructed after June 1, 1986. On March 9, 1994, DSA adopted a policy in which the essential services agency could identify a tower and/or antenna and equipment as redundant and therefore not essential, such that if failure of the tower or antenna occurred, the state's essential communications system would be capable of functioning without interruption. When redundant, DSA approval of plans and certification of construction was not required. On Dec 1, 2009, a DGS legal opinion identified that DSA shall determine when essential structures or equipment require DSA approval, and the 1994 policy was overturned. Since then, towers and antennas that are part of the state's essential communication system require DSA approval of plans and certification of construction. Thus, existing towers and antenna constructed prior to 1986 and between 1994 and 2009 may not have been certified by DSA.

DEFINITIONS:

MOUNTED EQUIPMENT includes communication and other non-communication system devices, such as cameras, meteorological and seismologic recording devices, etc.

REPLACEMENT is the removal and replacement of antenna or mounted equipment with one of any size and weight located anywhere along the same framing element, not including replacement-in-kind antenna and mounted equipment.

REPLACEMENT-IN-KIND is the removal and replacement of an antenna or mounted equipment of similar type, size, configuration and attachment such that the surface area and weight do not exceed the original device by more than 10%. The replacement antenna or mounted equipment must be located on the same framing element a distance no more than 5% of the length of the framing element on either side of the original device location.

REALIGNMENT is the loosening and slight adjustment of an existing antenna within 45 degrees in any direction from its original position and will not require DSA approval, testing and special inspection of installation. The original connection detail or a detail from a DSA approved PC per Section 1.0 must be used or the registered engineer shall verify compliance with current code requirements. High-strength bolts with torque values specified on the original plans shall not be reused per Section 7.2. Adjustments that exceed 45 degrees or do not meet the connection

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requirements shall be considered replacement of the antenna and subject to the provisions of this policy.

Policies: For simplification, henceforth all references to antenna shall mean both antenna and mounted equipment, and all references to towers shall mean both towers and poles. Reference to Part 1 shall mean the current Part 1, Title 24, C.C.R.

1. PRE-CHECKED (PC) DETAILS OF ANTENNA AND MOUNTED EQUIPMENT:

DSA Pre-Check approved drawings to the current Title 24 codes may be available for antenna attachment details. The PC drawings may include types, sizes and attachments of typical antennas to the most typical tower framing elements for the most severe loading conditions that can occur across the state.

2. NEW STATE-OWNED AND STATE-LEASED COMMUNICATION TOWERS AND POLES:

2.1 DSA approval of plans and certification of construction is required for all new communication towers. All antenna attachments will require inclusion of current code DSA approved PC drawings or be designed and detailed for that specific project.

Exception: New towers and poles less than 25 feet in height above grade or top of foundation, whichever is lowest, and their antenna are exempt from DSA review and approval of plans. However, all inspection, special inspection and testing requirements shall be completed in accordance with the approved plans, Part 1, and Section 7.0 requirements. For exempt projects not submitted to DSA, DSA will not supervise nor certify the construction, and the reporting requirements for certification of construction per Part 1, CCR will not be required to be submitted to DSA.

2.2 Towers may be designed to project requirements for initial antenna sizes and locations and may include future build-out of antennas in the original design. DSA plan approval shall be for the initial antenna installations and for the antennas indicated to be future as described in 2.2.1.

2.2.1 For designing to future build-out, the initial antenna to be installed shall be identified and the future antenna indicated to provide the maximum loading configuration for the anticipated life of the tower. Any future configuration that does not meet the approved design or exceeds the loading conditions will require submittal to DSA for approval under the codes in effect at that time.

2.2.2 Upon completion of the original construction of the tower and the identified initial antennas and their attachments, DSA will certify the construction. All inspection, special inspection and testing requirements shall be completed in accordance with the approved plans, Part 1, and Section 7.0 requirements.

2.2.3 Subsequent antennas that were identified on the approved plans as future antennas may be installed without resubmittal to DSA for approval of that phase of work provided no other unapproved antennas have been or are also being installed. DSA will not observe this work nor certify this installation. However, inspection, special inspection and testing will be required and DSA shall be included in distribution of all applicable reports required in Part 1.

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Subsequent antennas referenced in the paragraph above may be installed at any time in the future, exceeding the four-year application renewal period per Section 4-235, Part 1, CAC, provided substitutions of antenna comply with section 2.2.3.1 and changes in the design criteria in subsequent codes do not increase the original antenna seismic or wind design force by more than 10 percent. The owner shall consult with their structural engineer to verify the design loads. If code changes have occurred that result in a design force greater than 10%, revised plans shall be submitted to DSA for approval.

2.2.3.1 Since manufacturer's antenna may change prior to subsequent installation, substitutions of similar type, size, configuration and attachment in the same location may be utilized without submitting to DSA for approval provided the surface area and weight do not exceed that which was originally approved by more than 10% for that antenna or piece of equipment. DSA approved PC details for attachment of the antenna shall be utilized or the registered engineer shall verify compliance with current code requirements.

2.3 The requirements of Section 2.2 apply to new towers utilized for temporary purposes regardless of duration of use.

3. EXISTING STATE-OWNED COMMUNICATION TOWERS AND POLES: If existing tower documents are needed for analysis but are not available from the tower owner, DSA or Real Estate Services Division (RESO) may be able to provide a copy of the record set upon request. DSA may be contacted for certification status of projects submitted through DSA. For privately owned towers, the local building official may be able to provide project documents.

3.1 Constructed Pre-June 1, 1986

3.1.1 New, replacement or replacement-in-kind of existing antenna does not require DSA approval of plans or certification of construction. DSA recommends the owner of the tower hire a registered professional engineer to evaluate the tower and foundations for added forces resulting from new antenna for conformance with CBC, and to use current DSA approved PC details for anchorage of the antenna. If PC details are not utilized, then the registered engineer should evaluate the antenna connections to current code requirements. The owner should provide inspection and testing in accordance with current Part 1 and Section 7.0, however testing and inspection reports are not required to be submitted to DSA. (See Section 3.4 for exception.)

3.2 Constructed between June 1, 1986 and December 1, 2009

3.2.1 For existing DSA towers certified during this period, plans for new or replacement antenna must be approved and the installation inspected, tested and certified by DSA in accordance with Part 1 and Section 7.0. The registered professional engineer shall provide an analysis of the existing tower structure and foundations for compliance with current code requirements. (See Section 3.4 for exception.)

Plans for replacement-in-kind of antenna need not be approved and installation need not be certified by DSA, however installation must be inspected and tested in accordance with Part 1 and Section 7.0. (See Section 3.4 for exception.)

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DSA approved PC details for attachment of the antenna shall be utilized or the registered engineer shall verify compliance with current code requirements.

- 3.2.2** For existing towers that were not DSA approved and certified because the owner determined the tower to be redundant at the time of construction, new, replacement or replacement-in-kind antenna projects do not require DSA approval of plans and certification of installation. The owner must provide inspection and testing in accordance with current Part 1 and Section 7.0 requirements. (See Section 3.4 for exception.)

However, when new or replacement antenna are being installed, DSA requires the owner of the tower hire a registered professional engineer to evaluate the tower and foundations for added forces resulting from new antenna. (This evaluation is not required for replacement-in-kind antenna.) DSA recommends use of current DSA approved PC details for anchorage of the antenna. If PC details are not utilized, then the engineer shall evaluate the antenna connections to current code requirements. (See Section 3.4 for exception.)

3.3 Constructed after December 1, 2009

- 3.3.1** For new or replacement antenna projects on DSA certified towers, plans must be approved and installation inspected, tested and certified by DSA in accordance with section 3.2.1, or antennas may be installed to build-out per the original approved plans in accordance with section 2.2. (See Section 3.4 for exception.)

Plans for replacement-in-kind antenna need not be approved and installation need not be certified by DSA, however installation must be inspected and tested in accordance with Part 1 and Section 7.0. (See Section 3.4 for exception.)

- 3.3.2** For non-DSA certified towers, the tower will require DSA approved plans and certification of construction prior to installation of new, replacement or replacement-in-kind antenna. An architect or registered engineer shall prepare plans, including antenna attachment details, verifying the actual construction and submit to DSA for approval. Inspection and testing shall be performed to verify compliance with the approved plans in accordance with Part 1 and Section 7.0 requirements. New, replacement or replacement-in-kind antenna shall be per current DSA approved PC details or the registered engineer shall verify compliance with current code requirements. (See Section 3.4 for exception.)

- 3.4** Exception to Sections 3.1, 3.2, 3.3 and 5.2.1: Installation of new, replacement or replacement-in-kind of small antenna and mounted equipment weighing less than 50 lbs. and exerting a force resulting from gravity plus wind on a single supporting member of 100 lb. or less is exempt from DSA approval, inspection, testing and certification, and/or evaluation of the existing tower. DSA approved PC details for attachment of antenna shall be utilized or the registered engineer shall verify compliance with current code requirements.

4. PORTIONS OF PRIVATELY OWNED TOWERS AND POLES FOR ESSENTIAL COMMUNICATIONS ANTENNAS

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4.1 For privately owned towers that were originally approved by local building departments, new, replacement, replacement-in-kind or realignment of existing essential communication antenna projects shall be permitted and inspected by the local jurisdiction in accordance with Chapter 4, Article 3 – Local Buildings, of Part 1. DSA approved PC details for attachment of the antenna shall be utilized or the registered engineer shall verify compliance with current code requirements. Review by DSA will not be required.

5. STATE-OWNED OR PRIVATELY OWNED BUILDINGS

5.1 Essential communication tower, pole or antennas installed as part of construction of a new building shall be approved and certified by the authority having jurisdiction in accordance with Chapter 4, Part 1 and Section 7.0; Articles 1 and 2 for state-owned buildings, and Articles 1 and 3 for locally owned buildings.

5.2 Essential communication tower, pole or antenna addition or replacement (including replacement-in-kind) projects may only be added or replaced onto existing DSA certified or locally permitted Essential Services Buildings.

5.2.1 For state-owned and state-leased essential services buildings, essential communication antenna projects shall be submitted to and approved by DSA, and construction shall be certified, inspected and tested in accordance with Part 1 and Section 7.0.

5.2.2 For buildings approved and constructed under the local jurisdiction, essential communication antenna projects shall be permitted and inspected by the local jurisdiction in accordance with Chapter 4, Article 3 - Local Buildings, of Part 1.

6. WOOD OR STEEL POLES USED FOR EMERGENCY SERVICE In the case of emergencies, including but not limited to damage to towers from earthquakes, fires and floods, the following procedures may be utilized to provide continuity of emergency services. Permanent repair projects, including installation of new towers or replacement of tower framing elements or antenna, will require approval of plans, certification, inspection and testing in accordance with this policy document.

6.1 Wood or steel poles may be installed prior to DSA approval of plans. Within 14 days following the installation of these emergency poles, the owner will notify DSA of the extent of the damage to the tower. Within 180 days following installation of these emergency poles, the design professional representing the owner shall provide DSA with a complete submittal package of the poles for review and approval for the specific site conditions and design parameters. The pole design and plan submittal shall include all antenna, mounted equipment information; size, location, weight, and attachment details. Wood poles shall be preservative treated and designed and installed in accordance with Chapter 18A of the California Building Code. Steel poles shall be galvanized or painted and designed and installed in accordance with Chapter 22A of the California Building Code.

Installation of the pole, antenna and mounted equipment shall be inspected in accordance with Section 4-333, Part 1, T24, and Section 7.0 in either of the following two methods:

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- 1) Inspection of the entire installation of the pole, antenna and mounted equipment shall be by a DSA approved project inspector.
- 2) During construction, the installation and depth of embedment of the pole shall be verified and photographed by the installer, and the photos provided to the owner's architect or structural engineer for submittal of plans and specifications to DSA for approval and certification of construction. After plan approval, a DSA certified project inspector shall verify installation of all antennas and equipment mounted on the pole, and shall provide a verified report at completion of construction.

6.2 Replacement-in-kind of damaged antenna or mounted equipment may be installed without DSA approval. Within 14 days after installation, the owner shall provide for inspection and testing in accordance with Part 1 and Section 7.0. (See Section 3.4 for exception.)

7. CONNECTIONS USING BOLTS WITH SPECIFIED TORQUE SETTINGS ON THE APPROVED PROJECT PLANS

(This section applies only to bolts that have torque values specified on the plans.)

7.1 For connections using bolts in which torque values are specified on the approved plans, special inspection by a DSA certified laboratory is required for all installations.

Exception: For antenna exempted per Section 3.4 and realignments, special inspection is not required.

7.2 Existing high-strength bolts installed to torque values specified on the original approved plans shall not be reused once loosened.

A DSA Policy is a formally established set of governing statements based on law and code objectives, addressing any aspect of DSA's review and approval of plans and specifications and construction oversight programs that is not clearly addressed by code. A Policy also may specify administrative or technical requirements that are not yet addressed within Title 24, but are deemed important and necessary to fulfill code objectives in advance of adoption into the code.