CALIFORNIA COORDINATE SYSTEM
PUBLIC RESOURCES CODE
SECTION 8801-8819

8801. Chapter Defined and Abbreviations

(a) The system of plane coordinates that has been established by the United States Coast and Geodetic Survey for defining and stating the positions or locations of points on the surface of the earth within the State of California is based on the North American Datum of 1927 and is identified as the "California Coordinate System." After January 1, 1987, this system shall be known as the "California Coordinate System of 1927."

(b) The system of plane coordinates which has been established by the National Geodetic Survey for defining and stating the positions or locations of points on the surface of the earth within the State of California and which is based on the North American Datum of 1983 shall be known as the "California Coordinate System of 1983."

(c) As used in this chapter:

(1) "NAD27" means the North American Datum of 1927.

(2) "CCS27" means the California Coordinate System of 1927.

(3) "NAD83" means the North American Datum of 1983.

(4) "CCS83" means the California Coordinate System of 1983.

(5) "USC&GS" means the United States Coast and Geodetic Survey.

(6) "NGS" means the National Geodetic Survey or its successor.

(7) "FGCS" means the Federal Geodetic Control Subcommittee or its successor.

(8) "CSRC" means the California Spatial Reference Center or its successor.

(9) "CSRN" means the California Spatial Reference Network, as defined by Chapter 3 (commencing with Section 8850), "Geodetic Datums and the California Spatial Reference Network."

(10) "GPS" means Global Positioning System and includes other similar space-based systems.

(11) "FGDC" means the Federal Geographic Data Committee or its successor.

(d) The use of the term "State Plane Coordinates" refers only to CCS27 and CCS83 coordinates.

8802. Seven Zones in California

For CCS27, the state is divided into seven zones. For CCS83, the state is divided into six zones. Zone 7 of CCS27, which encompasses Los Angeles County, is eliminated and the area is
included in Zone 5 of CCS83.

Each zone of CCS27 is a Lambert conformal conic projection based on Clarke's Spheroid of 1866, which is the basis of NAD27. The points of control of zones one to six, inclusive, bear the coordinates: Northing (y) = 000.00 feet and Easting (x) = 2,000,000 feet. The point of control of Zone 7 bears the coordinates: Northing (y) = 4,160,926.74 feet and Easting (x) = 4,186,692.58 feet.

Each zone of CCS83 is a Lambert conformal conic projection based on the Geodetic Reference System of 1980, which is the basis of NAD83. The point of control of each of the six zones bear the coordinates: Northing (y) = 500,000 meters and Easting (x) = 2,000,000 meters.

The area included in the following counties constitutes Zone 1 of CCS27 and CCS83: Del Norte, Humboldt, Lassen, Modoc, Plumas, Shasta, Siskiyou, Tehama, and Trinity. The area included in the following counties constitutes Zone 2 of CCS27 and CCS83: Alpine, Amador, Butte, Colusa, El Dorado, Glenn, Lake, Mendocino, Napa, Nevada, Placer, Sacramento, Sierra, Solano, Sonoma, Sutter, Yolo, and Yuba.

The area included in the following counties constitutes Zone 3 of CCS27 and CCS83: Alameda, Calaveras, Contra Costa, Madera, Marin, Mariposa, Merced, Mono, San Francisco, San Joaquin, San Mateo, Santa Clara, Santa Cruz, Stanislaus, and Tuolumne.

The area included in the following counties constitutes Zone 4 of CCS27 and CCS83: Fresno, Inyo, Kings, Monterey, San Benito, and Tulare.

The area included in the following counties and Channel Islands constitutes Zone 5 of CCS27: Kern, San Bernardino, San Luis Obispo, Santa Barbara (excepting Santa Barbara Island), and Ventura (excepting San Nicholas Island) and the Channel Islands of Santa Cruz, Santa Rosa, San Miguel, and Anacapa.

The area included in the following counties and Channel Islands constitutes Zone 5 of CCS83: Kern, Los Angeles (excepting San Clemente and Santa Catalina Islands), San Bernardino, San Luis Obispo, Santa Barbara (excepting Santa Barbara Island), and Ventura (excepting San Nicholas Island) and the Channel Islands of Santa Cruz, Santa Rosa, San Miguel, and Anacapa.

The area included in the following counties and Channel Islands constitutes Zone 6 of CCS27 and CCS83: Imperial, Orange, Riverside, and San Diego and the Channel Islands of San Clemente, Santa Catalina, Santa Barbara, and San Nicholas.

The area included in Los Angeles County constitutes Zone 7 of CCS27.

8803. Zone 1

Zone 1 coordinates shall be named, and, on any map on which they are used, they shall be designated as "CCS27, Zone 1 or CCS83, Zone 1."

On their respective spheroids of reference: (1) the standard parallels of CCS27, Zone 1 and CCS83, Zone 1 are at north latitudes 40 degrees 00 minutes and 41 degrees 40 minutes, along which parallels the scale shall be exact; and (2) the point of control of coordinates is at the intersection of the zone's central meridian, which is at 122 degrees 00 minutes west longitude, with the parallel 39 degrees 20 minutes north latitude.

8804. Zone 2

Zone 2 coordinates shall be named, and, on any map on which they are used, they shall be designated as "CCS27, Zone 2 or CCS83, Zone 2."

On their respective spheroids of reference: (1) the standard parallels of CCS27, Zone 2 and CCS83, Zone 2 are at north latitudes 38 degrees 20 minutes and 39 degrees 50 minutes, along which parallels the scale shall be exact; and (2) the point of control of coordinates is at the intersection of the zone's central meridian, which is at 122 degrees 00 minutes west longitude, with the parallel 37 degrees 40 minutes north latitude.

8805. Zone 3

Zone 3 coordinates shall be named, and, on any map on which they are used, they shall be designated as "CCS27, Zone 3 or CCS83, Zone 3."

On their respective spheroids of reference: (1) the standard parallels of CCS27, Zone 3 and CCS83, Zone 3 are at north latitudes 37 degrees 04 minutes and 38 degrees 26 minutes, along which parallels the scale shall be exact; and (2) the point of control of coordinates is at the intersection of the zone's central meridian, which is at 120 degrees 30 minutes west longitude, with the parallel 36 degrees 30 minutes north latitude.

8806. Zone 4

Zone 4 coordinates shall be named, and, on any map on which they are used, they shall be designated as "CCS27, Zone 4 or CCS83, Zone 4."

On their respective spheroids of reference: (1) the standard parallels of CCS27, Zone 4 and CCS83, Zone 4 are at north latitudes 36 degrees 00 minutes and 37 degrees 15 minutes, along which parallels the scale shall be exact; and (2) the point of control of coordinates is at the intersection of the zone's central meridian, which is at 119 degrees 00 minutes west longitude, with the parallel 35 degrees 20 minutes north latitude.

8807. Zone 5

Zone 5 coordinates shall be named, and, on any map on which they are used, they shall be designated as "CCS27, Zone 5 or CCS83, Zone 5."

On their respective spheroids of reference: (1) the standard parallels of CCS27, Zone 5 and CCS83, Zone 5 are at north latitudes 34 degrees 02 minutes and 35 degrees 28 minutes, along which parallels the scale shall be exact; and (2) the point of control of coordinates is at the intersection of the zone's central meridian, which is at 118 degrees 00 minutes west longitude, with the parallel 33 degrees 30 minutes north latitude.

8808. Zone 6

Zone 6 coordinates shall be named, and, on any map on which they are used, they shall be designated as "CCS27, Zone 6 or CCS83, Zone 6."

On their respective spheroids of reference: (1) the standard parallels of CCS27, Zone 6 and CCS83, Zone 6 are at north latitudes 32 degrees 47 minutes and 33 degrees 53 minutes, along which parallels the scale shall be exact; and (2) the point of control of coordinates is at the intersection of the zone's central meridian, which is at 116 degrees 15 minutes west longitude, with the parallel 32 degrees 10 minutes north latitude.

8809. Zone 7

Zone 7 coordinates shall be named, and, on any map on which they are used, they shall be designated as "CCS27, Zone 7."

On its respective spheroid of reference: (1) the standard parallels of CCS27, Zone 7 are at north latitudes 33 degrees 52 minutes and 34 degrees 25 minutes, along which parallels the scale shall be exact; and (2) the point of control of coordinates is at the intersection of the zone's central meridian, which is at 118 degrees 20 minutes west longitude, with the parallel 34 degrees 08 minutes north latitude.

8810. Plane Coordinates

The plane coordinates of a point on the earth's surface, to be used in expressing the position or location of the point in the appropriate zone of CCS27 or CCS83, shall consist of two distances, expressed in feet and decimals of a foot or meters and decimals of a meter. When the values are expressed in feet, the "U.S. Survey foot," (one foot = 1200/3937 meters) shall be used as the standard foot for CCS27 and CCS83. One of these distances, to be known as the "East x-coordinate," shall give the distance east of the Y axis; the other, to be known as the "North y-coordinate," shall give the distance north of the X axis. The Y axis of any zone shall be parallel with the central meridian of that zone. The X axis of any zone shall be at right angles to the central meridian of that zone.

8811. Basis of Plane Coordinates

If the survey of any parcel of land extends from one coordinate zone into another, the positions of all points delineated upon the map thereof may be referred to either of these zones. The zone which is used shall be specifically named in the title upon the map.

8812. Surveys and Maps; Requirements prior to January 1, 2000

Prior to January 1, 2000, state plane coordinates shall be based on, or derived from, the plane coordinates of monumented second order or better horizontal control stations that have been published by the USC&GS or NGS. Any survey or map that uses those coordinates shall be based on, and show, established field-observed direct connections to at least two stations of corresponding or better accuracy whose credentials are based upon published stations of the USC&GS or NGS. The geodetic positions of CCS27 and CCS83 stations that are used to increase the density of control and that purport to be of second order or better accuracy shall have been surveyed in conformity with the applicable survey standards and specifications in effect at the time of the survey as defined by the FGCS.

8813. Surveys and Maps; Requirements after December 31, 1999 to January 1, 2006

After December 31, 1999, and prior to January 1, 2006, any survey or map that uses state plane coordinates shall be based on, and show, field-observed direct connections to at least two horizontal reference stations that are one of the following:

(a) Included in the CSRN.

(b) Located outside the State of California and meet all the requirements for inclusion in the CSRN, except for the requirement that they be inside California.

(c) Shown on a subdivision map, record of survey, or a map filed with the county surveyor by a public officer and whose horizontal positions have been determined by Global Positioning System survey methods in accordance with first order or better FGCS standards and specifications and whose state plane coordinates are based on field-observed direct, nontrivial connections to at least two stations that are included in subdivision (a) or (b).

8813.1. Surveys and Maps; Requirements after December 31, 2006

After December 31, 2005, any survey that uses or establishes a CCS83 value or values shall meet all of the following requirements:

(a) The survey shall be referenced to and shall have field-observed statistically independent connections to one or more horizontal reference stations that is or are one of the following:

(1) CSRN station.

(2) Geodetic control station located outside of the State of California that meets all the requirements for inclusion in the CSRN except that the station is outside California.

(3) Existing CCS83 station that:

(A) Is shown on a map filed with the applicable county surveyor by a public officer, subdivision map, corner record, or record of survey.

(B) Meets all the requirements for inclusion in the CSRN, except that the station and its data are not published by NGS or CSRC.

(C) Has an accuracy, conforming to the applicable CSRN requirements, stated for the station's value.

(4) Existing CCS83 station that:

(A) Is shown on a public map or document that is compiled and maintained by the applicable county surveyor.

(B) Meets all the requirements for inclusion in the CSRN, except that the station and its data are not published by NGS or CSRC.

(C) Has an accuracy, conforming to the applicable CSRN requirements, stated for the station's value.

(b) If an accuracy is to be claimed for the CCS83 value or values established, the claimed accuracy shall be an accuracy standard published by FGDC or FGCS.

8813.2. Required Accuracy Documentation

After December 31, 2005, if an accuracy is claimed for a CCS83 value or values, the survey that established the value or values shall be documented on a map, record of survey, corner record, or other document that includes, in addition to other requirements in this chapter, the following:

(a) For each CCS83 station, the resultant CCS83 value or values.

(b) The FGDC or FGCS accuracy standard of the CCS83 value or values established. FGDC accuracies shall be identified as either a local or network accuracy.

(c) Additional written data that justifies the FGDC or FGCS accuracy standard shown. Such additional written data shall include observation equipment, control diagram including required field-observed statistically independent connection or connections, adjustment methodology and software used, a summary of the procedures used or a reference to published commonly accepted procedural specifications, final residuals or closures, and other data essential for others to evaluate the survey.

8813.3. Required Reference Documentation

(a) After December 31, 2005, when a survey that uses or establishes a CCS83 value or values is shown on any document, the station or stations to which the CCS83 value or values are referenced and connected and the CCS83 value or values and the published or stated accuracy or accuracies of that reference station or stations shall be shown also on the document.

(b) If a CCS83 survey begins before January 1, 2006, and is not completed by that date, the CCS83 survey may be completed in accordance with Sections 8813 and 8815.4 of this chapter or Sections 8813.1, 8813.2, and 8813.3 of this chapter, at the surveyor's option. All other applicable provisions of this chapter remain applicable.

8814. Use in Real Property

State plane coordinates may be used for property identification on any map, survey, conveyance, or other instrument which delineates or affects the title to real property or which delineates, describes, or refers to the property, or any part thereof. However, to constitute, when recorded, constructive notice thereof under the recording laws, the delineating, describing, or referring to the property, or part thereof, shall also refer to data appearing of record in any office, the records of which constitute constructive notice under the recording laws. That record data shall be sufficient to identify the property without recourse to those coordinates, and in case of conflict between them, the references to that recorded data shall be controlling for the purpose of determining constructive notice under the recording laws.

8815. Use of theTerm “California Coordinate System”

The use of the term “California Coordinate System” on any map or document or in any field notes shall be suffixed either with “27” (shown as “CCS27”) for coordinates based on NAD27 or with “83” (shown as “CCS83”) for coordinates based on NAD83.

8815.1. Epoch for CCS83

When CCS83 coordinates are shown on any map, corner record, or other document, the map, corner record, or document shall state the epoch (date), in a decimal year format to two decimal places, that is the basis of the coordinate values shown. The epoch shall be shown on the map, corner record, or other document by an appropriate note on the map, corner record, or document or by adding a suffix in parentheses after CCS83 that states the epoch; examples, “CCS83 (1991.35),” “CCS83 (2002.00),” and so forth.

8815.2. Use of NGS Published Epoch

The epoch for a survey using CCS83 coordinate shall be the published NGS or CSRC epoch of a published coordinate for a controlling station used for that survey. Such surveys performed after December 31, 1999, shall be based on the “1991.35” epoch or a subsequent published NGS or CSRC epoch.

8815.3. Adjusting Positions of Controlling Stations

When the published epochs of the controlling stations for a survey using CCS83 coordinates are not the same, appropriate adjustments shall be made to the horizontal positions of controlling stations so that the coordinates of all the controlling stations are consistent. These adjustments in the horizontal positions of controlling stations shall be made in accordance with procedures and values published by the NGS or CSRC.

8815.4. FGCS Order of Accuracy

When a purported order of accuracy of second order or better is shown for CCS83 coordinate values on any map, corner record, or other document prior to January 1, 2006, that map, corner record, or other document shall use the order of accuracy as defined by the FGCS. If an FGCS order of accuracy is claimed for a survey or a map, it shall be justified by additional written data that shows equipment, procedures, closures, adjustments, and a control diagram.

8815.5. Mapping Angle and Grid Factor

When CCS83 coordinates are shown on any map, corner record, or record of survey, a mapping angle, combined grid factor, and the elevation used to determine the combined grid factor shall be shown on the map, corner record, or record of survey for at least one representative point.

8816. State Plane Coordinates Optional

The use of the State Plane Coordinates by any person, corporation, or governmental agency engaged in land surveying or mapping is optional.

8817. Changing State Plane Coordinates-1995

Prior to January 1, 1995, use of State Plane Coordinates for new projects may be based either on CCS27 or CCS83. On or after January 1, 1995, when State Plane Coordinates are used on new surveys and new mapping projects, the use shall be limited to CCS83. However, nothing in this section shall preclude a survey from retracement of a CCS27 survey.

8818. Chapter Limitations

This chapter does not impair or invalidate land titles, legal descriptions, or jurisdictional or land boundaries and, further, this chapter does not impair or invalidate references to, or the use of, CCS 27 coordinates, except as provided in Section 8817.

8819. New Technology

This chapter does not prohibit the use of new surveying technologies or techniques for which FGCS specifications or other accepted specifications have not yet been published.

TOPOGRAPHIC MAPPING
PUBLIC RESOURCES CODE
SECTION 8831-8834

8831. Policy of State Declared
It is the policy of the State of California to provide for basic topographic map coverage in aid of development and conservation of the natural and economic resources of the State.

8832. Department Defined
As used in this chapter, "department" means the Department of Water Resources.

8833. Duties of Department; Adoption of General Plan and Program; Further Investigations and Reports
The department shall investigate and prepare a complete report on mapping, including plans and recommendations for an adequate mapping program for California, and shall adopt a general plan and program for the accomplishment of the policy declared in this chapter. The general plan and program so adopted, or as amended or modified, shall be the authorized general plan and program to be carried out by the department. The department may from time to time make such further investigations and reports upon mapping as deemed proper by it in pursuance of the policy declared in this chapter.

8834. Cooperation With Federal Government; Agreements or Contracts with Federal Government
All map production work to be undertaken pursuant to this chapter shall be in cooperation with the federal government. With the approval of the Department of General Services, the department may enter into agreements or contracts with the federal government or any of its agencies for performance of map production work in accordance with the general plan and program.

OFFICIAL GEODETIC DATUMS SPATIAL REFERENCE NETWORK
PUBLIC RESOURCES CODE
SECTION 8850-8861

8850. Chapter Defined
The official geodetic datums and spatial reference network for use within the State of California shall be as defined by this chapter.

8851. Abbreviations
As used in this chapter:

(a) "NGS" means National Geodetic Survey or its successor.
(b) "CSRC" means California Spatial Reference Center or its successor.
(c) "NAD83" means North American Datum of 1983.
(d) "NAVD88" means North American Vertical Datum of 1988.
(e) "ITRF" means International Terrestrial Reference Frame as defined by the International Earth Rotation Service.
(f) "GPS" means Global Positioning System and includes other, similar space-based systems.
(g) "FGDC" means Federal Geographic Data Committee or it successor.
(h) "FGCS" means the Federal Geodetic Control Subcommittee or its successor.
(i) "CSRN" means California Spatial Reference Network.

8852. Official Horizontal Datum Defined
The official geodetic datum to which horizontal positions and ellipsoid heights are referenced within the State of California shall be NAD83.

8853. Official Vertical Datum Defined
The official geodetic datum to which orthometric heights are referenced within the State of California shall be NAVD88.

8854. Required Datum Documentation
When horizontal positions, ellipsoid heights, or orthometric heights are shown on a document, the document shall show the geodetic datum to which the values are referenced, whether NAD83, NAVD88, ITRF, or another datum.

8855. Official Reference Network Defined
The official geodetic reference network for use within the State of California shall be the CSRN as defined by this chapter.

8856. Station Requirements; Horizontal Position
The geodetic control stations within the State of California having horizontal positions conforming to all of the following requirements shall be part of the CSRN. The horizontal positions shall:

(a) Be referenced to NAD83.

(b) Have been determined by GPS survey methods.

(c) Be published by NGS or CSRC.

(d) Have a NGS or CSRC published network accuracy of two centimeters or better as defined by FGDC or a NGS or CSRC published accuracy of first order or better as defined by FGCS.

(e) Have a NGS or CSRC published horizontal velocity or a horizontal velocity that can be determined using procedures and values published by NGS or CSRC.

8857. Station Requirements; Ellipsoid Heights
The geodetic control stations within the State of California having ellipsoid heights conforming to all of the following requirements shall be part of the CSRN. The ellipsoid heights shall:

(a) Be referenced to NAD83.

(b) Have been determined by GPS survey methods.

(c) Be published by NGS or CSRC.

(d) Have a NGS or CSRC published network accuracy of five centimeters or better as defined by FGDC or a NGS or CSRC published accuracy of fourth order, class II, or better as defined by FGCS.

8858. Station Requirements; Orthometric Heights GPS
The geodetic control stations within the State of California having orthometric heights determined by GPS survey methods and conforming to all of the following requirements shall be part of the CSRN. The orthometric heights shall:

(a) Be based on NAD83 and referenced to NAVD88.

(b) Be published by NGS or CSRC.

(c) Have a NGS or CSRC published network accuracy of five centimeters or better as defined by FGDC.

8859. Station Requirements; Orthometric Heights Leveling
The geodetic control stations within the State of California having orthometric heights determined by differential leveling survey methods and conforming to all of the following requirements shall be part of the CSRN. The orthometric heights shall:

(a) Be referenced to NAVD88.

(b) Be published by NGS or CSRC.

(c) Have a NGS or CSRC published accuracy of third order, class II or better as defined by FGCS.

8860. Use Optional
The use of the NAD83, NAVD88, and CSRN by any person, firm, or governmental agency is optional.

8861. Chapter Limitations
The provisions of this chapter shall not be construed to prohibit the appropriate use of other datums, including ITRF, and other geodetic reference networks.

CALIFORNIA GEODETIC COORDINATES OF 1983
PUBLIC RESOURCES CODE
SECTION 8870-8880

8870. Chapter Defined

Geodetic coordinates within the State of California that are based on the North American Datum of 1983 and conforming to the provisions of this chapter shall be known as "California Geodetic Coordinates of 1983."

8871. Abbreviations

As used in this chapter:

(a) "NGS" means National Geodetic Survey or its successor.

(b) "CSRC" means California Spatial Reference Center or its successor.

(c) "NAD83" means North American Datum of 1983.

(d) "GPS" means Global Positioning System and includes other, similar spaced-based systems.

(e) "FGDC" means the Federal Geographic Data Committee or its successor.

(f) "FGCS" means the Federal Geodetic Control Subcommittee or its successor.

(g) "CSRN" means California Spatial Reference Network as defined by Chapter 3 (commencing with Section **8850**), "Geodetic Datums and the California Spatial Reference Network."

(h) "CGC83" means California Geodetic Coordinates of 1983.

8872. Limitations on Use of Phrases and Abbreviations

The phrase "California Geodetic Coordinates of 1983" or any abbreviation thereof, such as "CGC83," shall be used only in reference to geodetic coordinates based on NAD83 and conforming to the provisions of this chapter.

8873. Coordinate Values

CGC83 values shall be expressed as latitude, longitude, or ellipsoid height values or as Cartesian coordinates (x, y, z). When Cartesian coordinates are used, the symbols and conventions utilized shall be the same as that used by NGS.

8874. Units of Expression

CGC83 latitude and longitude values shall be expressed in degrees, minutes, seconds, and decimals of a second, or degrees and decimals of a degree. CGC83 ellipsoid height values shall be expressed in meters and decimals of a meter or feet and decimals of a foot. When ellipsoid height values are expressed in feet, the "U.S. Survey Foot" (one foot equals 1200/3937 meters) shall be used as the standard foot. CGC83 Cartesian coordinate values shall be expressed in meters and decimals of a meter.

When CGC83 values are stated on any document, the unit of measure shall be clearly stated.

8875. Survey Requirements

The survey that establishes a CGC83 value or values shall meet all of the following requirements:

(a) The survey shall be referenced to and shall have field-observed statistically independent connections to one or more appropriate reference stations that is one of the following:

(1) CSRN station.

(2) Geodetic control station located outside of the State of California that meets all the requirements for inclusion in the CSRN except that the station is outside California.

(3) Existing CGC83 station that:

(A) Is shown on a map filed with the applicable county surveyor by a public officer, subdivision map, corner record, or record of survey.

(B) Meets all the requirements for inclusion in the CSRN except that the station and its data are not published by NGS or CSRC.

(C) Has an accuracy, conforming to the applicable CSRN requirements, stated for the station's value.

(4) Existing CGC83 station that is shown on a public map or document that:

(A) Is compiled and maintained by the applicable county surveyor.

(B) Meets all the requirements for inclusion in the CSRN except that the station and its data are not published by NGS or CSRC.

(C) Has an accuracy, conforming to the applicable CSRN requirements, stated for the station's value.

(b) If an accuracy is to be claimed for the CGC83 value or values established, the claimed accuracy shall be an accuracy standard published by FGDC or FGCS.

8876. Required Documentation; Claims of Accuracy

If an accuracy is claimed for a CGC83 value or values, the survey that established the value or values shall be documented on a map, record of survey, corner record, or other document that includes, at a minimum, the following:

(a) For each CGC83 station, the resultant CGC83 value or values.

(b) The epoch (date), in a decimal year format to two decimal places, that is the basis of the CGC83 values shown. The epoch shall be the published NGS or CSRC epoch of a controlling station for the survey.

If the published epochs for the horizontal positions of the controlling stations are not the same, appropriate adjustments shall be made to the horizontal values of the controlling stations so that said values of all the controlling stations are at one consistent epoch published by NGS or CSRC. These adjustments in the coordinates of the controlling stations shall be made in accordance with procedures and values published by NGS or CSRC.

(c) The FGDC and FGCS accuracy standard of the CGC83 value or values established. FGDC accuracies shall be identified as either a local or network accuracy.

(d) Additional written data that justifies the FGDC or FGCS accuracy standard shown. Such additional written data shall include observation equipment, control diagram including required field-observed statistically independent connection or connections, adjustment methodology and software used, a summary of the procedures used or a reference to published commonly accepted procedural specifications, final residuals or closures, and other data essential for others to evaluate the survey.

8877. Required Documentation; Listed Value or Values

When a CGC83 value or values are shown on any document, the document shall include the following:

(a) A statement that the geodetic coordinate value or values shown are a CGC83 value or values; exceptions shall be noted.

(b) The station or stations to which the CGC83 value or values are referenced and connected and the geodetic coordinate value or values and the published or stated accuracy or accuracies of said reference station or stations.

(c) The epoch of the CGC83 value or values shown. The epoch shall conform to provisions of subdivision (b) of Section 8876.

8878. Use Optional

The use of CGC83 by any person, firm, or governmental agency is optional.

8879. Chapter Limitations

This chapter does not impair or invalidate land titles, legal descriptions, or jurisdictional or land boundaries and, further, this chapter does not impair or invalidate references to, or the use of, datums or latitude, longitude, or ellipsoid height values or other geodetic coordinate values that do not conform to this chapter except as specified in Section 8872.

8880. New Technology

This chapter does not prohibit the use of new surveying technologies or techniques for which FGCS specifications or other accepted specifications have not yet been published.

CALIFORNIA ORTHOMETRIC HEIGHTS OF 1988
PUBLIC RESOURCES CODE
SECTION 8890-8902

8890. Chapter Defined

Orthometric heights within the State of California that are based on the North America Vertical Datum of 1988 and conforming to the provisions of this chapter shall be known as "California Orthometric Heights of 1988." Orthometric heights are commonly referred to as "elevations."

8891. Abbreviations

As used in this chapter:

(a) "NGS" means National Geodetic Survey or its successor.

(b) "CSRC" means California Spatial Reference Center or its successor.

(c) "NAVD88" means North American Vertical Datum of 1988.

(d) "GPS" means Global Positioning System and includes other, similar space-based systems.

(e) "FGDC" means the Federal Geographic Data Committee or its successor.

(f) "FGCS" means the Federal Geodetic Control Subcommittee or its successor.

(g) "CSRN" means California Spatial Reference Network as defined by Chapter 3 (commencing with Section **8850**), "Geodetic Datums and the California Spatial Reference Network."

(h) "COH88" means California Orthometric Heights of 1988.

8892. Limitations on use of Phrases and Abbreviations

The phrase "California Orthometric Heights of 1988" or any abbreviation, such as "COH88," thereof shall be used only in reference to orthometric heights based on NAVD88 and conforming to the provisions of this chapter.

8893. Elevation Values

COH88 values shall be expressed in meters and decimals of a meter or in feet and decimals of a foot. When COH88 values are expressed in feet, the "U.S. Survey Foot," (one foot equals 1200/3937 meters) shall be used as the standard foot.

8894. Required Terminology; Leveling/GPS

COH88 values that are determined from differential leveling surveys shall be known as "leveled COH88" values. COH88 values that are determined from GPS surveys and the appropriate application of a geoid model shall be known as "derived COH88" values.

8895. Geoid Models

When a geoid model is used to determine derived COH88 values, it shall be the latest geoid model published by NGS.

8896. Height Corrections Allowed

The accuracy of derived COH88 values may be improved by applying a "local orthometric height correction" to the geoid height determined from the latest, applicable geoid model published by NGS.

8897. Survey Requirements

The survey that establishes a COH88 value or values shall meet all of the following requirements:

(a) The survey shall be referenced to and shall have field-observed statistically independent connections to one or more orthometric height reference stations that is or are one of the following:

(1) CSRN station.

(2) Geodetic control station located outside of the State of California that meets all the requirements for inclusion in the CSRN except that the station is outside California.

(3) Existing COH88 station that (A) is shown on a map filed with the applicable county surveyor by a public officer, subdivision map, corner record, or record of survey, (B) meets all the requirements for inclusion in the CSRN, except that the station and its data are not published by NGS or CSRC, and (C) has an accuracy, conforming to the applicable CSRN requirements, stated for the station's value.

(4) Existing COH88 station that is shown on a public map or document that (A) is compiled and maintained by the applicable county surveyor, (B) meets all the requirements for inclusion in the CSRN except that the station and its data are not published by NGS or CSRC, and (C) has an accuracy, conforming to the applicable CSRN requirements, stated for the station's value.

(b) If an accuracy is to be claimed for the COH88 value or values established, the claimed accuracy shall be an accuracy standard published by FGDC or FGCS.

8898. Required Documentation; Claims of Accuracy

If an accuracy is claimed for a COH88 value or values, the survey that established the value or values shall be documented on a map, record of survey, corner record, or other document that includes, at a minimum, the following:

(a) For each COH88 station, the resultant COH88 value.

(b) For each individual COH88 value, whether it is a leveled COH88 or a derived COH88 value.

(c) For leveled COH88 values, the beginning and ending dates of the observations used to determine the values.

(d) For derived COH88 values, the date of the NGS geoid model used to determine the values.

(e) When derived COH88 values are shown and reflect the application of a "local orthometric height correction model," written data that justifies the model's validity. Such written data shall include a summary of the procedures, computations, analysis, and validation process used to develop the model.

(f) For derived COH88 values, the epoch (date), in a decimal year format to two decimal places, that is the basis of the COH88 values shown. Said epoch shall be the published NGS or CSRC epoch of a controlling station for the survey.

(g) The FGDC or FGCS accuracy standard of the COH88 value or values established. FGDC accuracies shall be identified as either a local or network accuracy.

(h) Additional written data that justifies the FGDC or FGCS accuracy standard shown. Such additional written data shall include observation equipment, control diagram including required field-observed statistically independent connection or connections, adjustment methodology and software used, a summary of the procedures used or a reference to a published commonly accepted procedural specifications, final residuals or closures, and other data essential for others to evaluate the survey.

8899. Required Documentation; Listed Value or Values

When a COH88 value or values are shown on any document, the document shall include the following:

(a) A statement that the orthometric height or heights shown are a COH88 value or values; exceptions shall be noted.

(b) The station or stations to which the COH88 value or values are referenced and connected and the orthometric height value or values and the published or stated accuracy or accuracies of said referenced station or stations.

8900. Use Optional

The use of COH88 by any person, firm, or governmental agency is optional.

8901. Chapter Limitations

This chapter does not impair or invalidate land titles, legal descriptions, or jurisdictional or land boundaries and, further, this chapter does not impair or invalidate references to, or the use of, datums, elevations, orthometric heights, or other height values that do not conform to this chapter except as specified in Section 8892 in this chapter.

8902. New Technology

This chapter does not prohibit the use of new surveying technologies or techniques for which FGCS specifications or other accepted specifications have not yet been published.