

A DOCUMENT CONTAINING A DESCRIPTION
OF THE

~~LOS-ANGELES-COUNTY-COORDINATE-SYSTEM~~
CALIFORNIA COORDINATE SYSTEM ZONE 7

LAMBERT GRID

TOGETHER WITH A PHOTOSTATIC COPY OF
THE TABLES FOR COMPUTATION OF PLANE
COORDINATES THEREON AS PUBLISHED BY
THE UNITED STATES COAST AND GEODETIC
SURVEY AT WASHINGTON, D. C.

Note: The California Coordinate System
was approved by the Governor and
filed with the Secretary of State,
July 10, 1947. See Chapter 1307,
Statutes 1947. (Codified) See Act
8351 General Laws.

ASSEMBLED AND PREPARED FOR FILING - JANUARY 1943

ALFRED JONES - COUNTY SURVEYOR

REVISED - JANUARY, 1948

C. E. ARNOLD - COUNTY SURVEYOR

Note: Copies of the tables contained
herein are available through The
Director, United States Coast and
Geodetic Survey, Washington, D. C.

In the following pages reference
to the Los Angeles County Coordi-
nate System shall mean the Califor-
nia Coordinate System Zone 7.

A DOCUMENT CONTAINING A DESCRIPTION
CALIFORNIA COORDINATE SYSTEM,
OF THE ~~LOS ANGELES COUNTY COORDINATE~~
ZONE 7,
~~SYSTEM~~, LAMBERT GRID, TOGETHER WITH
A PHOTOSTATIC COPY OF THE TABLES FOR
COMPUTATION OF PLANE COORDINATES
THEREON AS PUBLISHED BY THE UNITED
STATES COAST AND GEODETIC SURVEY AT
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FACTORS CONTROLLING THE PROJECTION

The system of plane rectangular coordinates described herein is a Lambert Conformal Projection of the Clarke spheroid of 1866, having standard parallels at North Latitudes $33^{\circ} 52'$ and $34^{\circ} 25'$, along which parallels the scale is exact. The point of control is at the intersection of the Meridian $118^{\circ} 20'$ West Longitude and the parallel $34^{\circ} 08'$ North Latitude. This point of control is given the coordinates:

X (East) = 4,186,692.58 feet and

Y (North) = 4,160,926.74 feet

The X axis is parallel with the tangent to the developed parallel of Latitude $34^{\circ} 08'$ North at Longitude $118^{\circ} 20'$ West, and the Y axis is parallel with the developed meridian of Longitude $118^{\circ} 20'$ West.

U. S. COAST AND GEODETIC SURVEY

TABLES

FOR

COMPUTATION OF

PLANE COORDINATES

CALIFORNIA COORDINATE

~~LOS ANGELES COUNTY~~

SYSTEM - ZONE 7

~~COORDINATE SYSTEM~~

LAMBERT GRID

CALIFORNIA-ZONE 7-
 TABLES FOR THE ~~LOS ANGELES COUNTY~~ SYSTEM OF PLANE COORDINATES

Computation of Plane Coordinates
 on the ~~Los Angeles County~~ Grid
 California, Zone 7-

We denote the longitude reckoned from the central meridian by $\Delta \lambda$, plus eastward and minus westward. To simplify the machine computation of coordinates on the grid, a table of the natural sines of the θ angles for every minute of $\Delta \lambda$ has been prepared. The tabular difference between each value and the next succeeding one has been divided by 60 and listed as the tabular difference for one second of $\Delta \lambda$. To obtain the value of $\sin \theta$ for any given value of $\Delta \lambda$, take from the table the value of $\sin \theta$ for the given minutes of $\Delta \lambda$ and add to it numerically the product of the tabular difference for one second and the number of seconds of $\Delta \lambda$ beyond the even minutes. Each tabular difference is set opposite the given minute value, in order that the two required values may be on the same line of the table.

To obtain the value of $2 \sin^2 \frac{\theta}{2}$, express the $\Delta \lambda$ in minutes and decimal fraction of a minute to eight places of decimals. Square this number and multiply the result by the constant $k = 0.13326684$. This gives the value of $2 \sin^2 \frac{\theta}{2}$ multiplied by 10^7 or with the decimal point moved seven places to the right. To offset this factor move the decimal point in R seven places to the left. With this table the decimal point will then fall to the right of the first figure of R which is three. For this operation, therefore, R will be used as 3.-----. When this result is multiplied by the value of $(2 \sin^2 \frac{\theta}{2}) \times 10^7$ found above, we obtain the y'' value to be added to the y' value already obtained from the table. The computations of R and y' are made as usual in the Lambert systems.

A constant of 4,186,692.58 ft. is added to the x' values to keep them all positive.

For the computation of coordinates by this method it is not necessary to compute the value of θ . If, however, it is needed for any purpose, it may be computed on the lower part of the computation form.

CALIFORNIA, ZONE 7-
TABLES FOR THE LOS ANGELES COUNTY SYSTEM OF PLANE COORDINATES

TABLE I

Lat.	R feet	y' (y value on central meridian) feet	Tabular difference for 1 sec. of lat., feet	Scale in units of 8th place of logs	Scale expressed as a ratio
33° 40'	31,064,290.22	3,991,106.09	101.08217	+986	1.00002270
33 41	31,058,225.29	3,997,171.02	101.08217	+884	1.00002035
42	31,052,160.36	4,003,235.95	101.08233	+785	1.00001808
43	31,046,095.42	4,009,300.89	101.08233	+690	1.00001589
44	31,040,030.48	4,015,365.83	101.08233	+599	1.00001379
45	31,033,965.54	4,021,430.77	101.08233	+511	1.00001177
33 46	31,027,900.60	4,027,495.71	101.08250	+427	1.00000984
47	31,021,835.65	4,033,560.66	101.08267	+347	1.00000799
48	31,015,770.69	4,039,625.62	101.08283	+270	1.00000622
49	31,009,705.72	4,045,690.59	101.08283	+197	1.00000454
50	31,003,640.75	4,051,755.56	101.08283	+128	1.00000294
33 51	30,997,575.78	4,057,820.53	101.08300	+62	1.00000143
52	30,991,510.80	4,063,885.51	101.08333	0	1.00000000
53	30,985,445.80	4,069,950.51	101.08333	-58	0.99999865
54	30,979,380.80	4,076,015.51	101.08367	-113	0.99999739
55	30,973,315.78	4,082,080.53	101.08367	-164	0.99999621
33 56	30,967,250.76	4,088,145.55	101.08383	-212	0.99999512
57	30,961,185.73	4,094,210.58	101.08400	-256	0.99999411
58	30,955,120.69	4,100,275.62	101.08417	-296	0.99999318
59	30,949,055.64	4,106,340.67	101.08450	-333	0.99999234
34 00	30,942,990.57	4,112,405.74	101.08450	-366	0.99999158
34 01	30,936,925.50	4,118,470.81	101.08483	-395	0.99999091
02	30,930,860.41	4,124,535.90	101.08517	-420	0.99999032
03	30,924,795.30	4,130,601.01	101.08517	-442	0.99998981
04	30,918,730.19	4,136,666.12	101.08550	-461	0.99998939
05	30,912,665.06	4,142,731.25	101.08583	-475	0.99998905
34 06	30,906,599.91	4,148,796.40	101.08600	-486	0.99998880
07	30,900,534.75	4,154,861.56	101.08633	-494	0.99998863
08	30,894,469.57	4,160,926.74	101.08650	-497	0.99998855
09	30,888,404.38	4,166,991.93	101.08683	-498	0.99998854
10	30,882,339.17	4,173,057.14	101.08717	-494	0.99998863

CALIFORNIA-ZONE 7-
TABLES FOR THE ~~LOS ANGELES COUNTY~~ SYSTEM OF PLANE COORDINATES

TABLE I
(Continued)

Lat.	R feet	y' (y value on central meridian) feet	Tabular difference for 1 sec. of lat. feet	Scale in units of 8th place of logs	Scale expressed as a ratio
34° 11'	30,876,273.94	4,179,122.37	101.08750	-487	0.99998880
12	30,870,208.69	4,185,187.62	101.08783	-476	0.99998905
13	30,864,143.42	4,191,252.89	101.08800	-461	0.99998938
14	30,858,078.14	4,197,318.17	101.08833	-443	0.99998981
15	30,852,012.84	4,203,383.47	101.08867	-421	0.99999031
34 16	30,845,947.52	4,209,448.79	101.08900	-395	0.99999090
17	30,839,882.18	4,215,514.13	101.08950	-366	0.99999157
18	30,833,816.81	4,221,579.50	101.08983	-333	0.99999233
19	30,827,751.42	4,227,644.89	101.09017	-296	0.99999317
20	30,821,686.01	4,233,710.30	101.09050	-256	0.99999410
34 21	30,815,620.58	4,239,775.73	101.09083	-212	0.99999511
22	30,809,555.13	4,245,841.18	101.09133	-165	0.99999621
23	30,803,489.65	4,251,906.66	101.09167	-114	0.99999739
24	30,797,424.15	4,257,972.16	101.09217	-59	0.99999863
25	30,791,358.62	4,264,037.69	101.09250	0	1.00000000
34 26	30,785,293.07	4,270,103.24	101.09300	+62	1.00000143
27	30,779,227.49	4,276,168.82	101.09333	+128	1.00000295
28	30,773,161.89	4,282,234.42	101.09383	+198	1.00000455
29	30,767,096.26	4,288,300.05	101.09433	+271	1.00000624
30	30,761,030.60	4,294,365.71	101.09483	+348	1.00000801
34 31	30,754,964.91	4,300,431.40	101.09517	+429	1.00000987
32	30,748,899.20	4,306,497.11	101.09567	+513	1.00001181
33	30,742,833.46	4,312,562.85	101.09617	+601	1.00001384
34	30,736,767.69	4,318,628.62	101.09667	+693	1.00001595
35	30,730,701.89	4,324,694.42	101.09717	+788	1.00001814
34 36	30,724,636.06	4,330,760.25	101.09783	+887	1.00002042
37	30,718,570.19	4,336,826.12	101.09817	+990	1.00002279
38	30,712,504.30	4,342,892.01	101.09883	+1096	1.00002523
39	30,706,438.37	4,348,957.94	101.09933	+1206	1.00002777
40	30,700,372.41	4,355,023.90	101.09983	+1320	1.00003039

CALIFORNIA-ZONE 7-
TABLES FOR THE ~~LOS ANGELES COUNTY~~ SYSTEM OF PLANE COORDINATES

TABLE I
(Concluded)

Lat.	R feet	y' (y value on central meridian) feet	Tabular difference for 1 sec. of lat. feet	Scale in units of 8th place of logs	Scale expressed as a ratio
34° 41'	30,694,306.42	4,361,089.89	101.10033	+1437	1.00003309
42	30,688,240.40	4,367,155.91	101.10100	+1558	1.00003588
43	30,682,174.34	4,373,221.97	101.10150	+1683	1.00003875
44	30,676,108.25	4,379,288.06	101.10217	+1811	1.00004171
45	30,670,042.12	4,385,354.19	101.10267	+1943	1.00004475
34 46	30,663,975.96	4,391,420.35	101.10333	+2079	1.00004788
47	30,657,909.76	4,397,486.55	101.10400	+2219	1.00005109
48	30,651,843.52	4,403,552.79	101.10450	+2362	1.00005439
49	30,645,777.25	4,409,619.06	101.10517	+2509	1.00005777
50	30,639,710.94	4,415,685.37		+2659	1.00006124

$$l = 0.5612432071$$

$$\log l = 9.7491510977 - 10$$

$$\log K = 7.6436024625$$

$$\text{Geod. Az.} - \text{Grid. Az.} = +\theta - \frac{x_2 - x_1}{2 \rho_0^2 \sin 1''} (y_1 - y_0 + \frac{y_2 - y_1}{3})$$

$$y_0 = +4,164,014.21 \text{ ft.}$$

$$\log \left(\frac{1}{2 \rho_0^2 \sin 1''} \right) = 0.3731254 - 10$$

$$\frac{1}{2 \rho_0^2 \sin 1''} = 2.36116 \times 10^{-10}$$

$$\text{Central meridian} = 118^\circ 20'$$

$$\text{Constant } k = 0.13326684$$

CALIFORNIA-ZONE 7-
TABLES FOR THE LOS ANGELES COUNTY SYSTEM OF PLANE COORDINATES

TABLE II

$\Delta \lambda$ (Long. out from central meridian)	Sin θ	Tabular difference for 1" of $\Delta \lambda$
0° 00'	0.0000000000	272,098.38
0 01	0.00016325903	272,098.38
02	0.00032651806	272,098.35
03	0.00048977707	272,098.35
04	0.00065303608	272,098.30
05	0.00081629506	272,098.28
0 06	0.00097955403	272,098.23
07	0.00114281297	272,098.18
08	0.00130607188	272,098.12
09	0.00146933075	272,098.05
10	0.00163258958	272,098.00
0 11	0.00179584838	272,097.90
12	0.00195910712	272,097.82
13	0.00212236581	272,097.73
14	0.00228562445	272,097.62
15	0.00244888302	272,097.52
0 16	0.00261214153	272,097.40
17	0.00277539997	272,097.27
18	0.00293865833	272,097.15
19	0.00310191662	272,097.00
20	0.00326517482	272,096.87
0 21	0.00342843294	272,096.70
22	0.00359169096	272,096.55
23	0.00375494889	272,096.38
24	0.00391820672	272,096.20
25	0.00408146444	272,096.03

CALIFORNIA-ZONE 7-
TABLES FOR THE LOS ANGELES COUNTY SYSTEM OF PLANE COORDINATES

TABLE II
(Concluded)

$\Delta \lambda$ (Long. out from central meridian)	Sin θ	Tabular difference for 1" of $\Delta \lambda$
0° 26'	0.00424472206	272,095.85
27	0.00440797957	272,095.63
28	0.00457123695	272,095.43
29	0.00473449421	272,095.23
30	0.00489775135	272,095.02
0 31	0.00506100836	272,094.78
32	0.00522426523	272,094.55
33	0.00538752196	272,094.33
34	0.00555077856	272,094.07
35	0.00571403500	272,093.80
0 36	0.00587729128	272,093.57
37	0.00604054742	272,093.28
38	0.00620380339	272,093.02
39	0.00636705920	272,092.72
40	0.00653031483	272,092.45
0 41	0.00669357030	272,092.13
42	0.00685682558	272,091.82
43	0.00702008067	272,091.53
44	0.00718333559	272,091.20
45	0.00734659031	272,090.88
0 46	0.00750984484	272,090.55
47	0.00767309917	272,090.20
48	0.00783635329	272,089.85
49	0.00799960720	272,089.50
50	0.00816286090	

The constant to be added to the X' values is 4,186,692.58 ft.
The y value on the central meridian at its intersection with the
parallel of 34° 08' is taken as 4,160,926.74 ft.

$$\text{Constant } k = 0.13326684$$

CALIFORNIA-ZONE 7-
 TABLES FOR THE ~~LOS ANGELES COUNTY~~ SYSTEM OF PLANE COORDINATES

TABLE III

1" of Long. = 0.56124321 of θ

Long.	θ	Long.	θ	Long.	θ			
117° 31'	+0° 27'	30.7055029	118° 01'	+0° 10'	39.817256	118° 31'	-0° 06'	10.420517
32	+0 26	56.380437	02	+0 10	06.142664	32	-0 06	44.095109
33	+0 26	22.705844	03	+0 09	32.468071	33	-0 07	17.769702
34	+0 25	49.031252	04	+0 08	58.793479	34	-0 07	51.444294
35	+0 25	15.356659	05	+0 08	25.118886	35	-0 08	25.118886
117 36	+0 24	41.682067	118 06	+0 07	51.444294	118 36	-0 08	58.793479
37	+0 24	08.007474	07	+0 07	17.769702	37	-0 09	32.468071
38	+0 23	34.332882	08	+0 06	44.095109	38	-0 10	06.142664
39	+0 23	00.658290	09	+0 06	10.420517	39	-0 10	39.817256
40	+0 22	26.983697	10	+0 05	36.745924	40	-0 11	13.491849
117 41	+0 21	53.309105	118 11	+0 05	03.071332	118 41	-0 11	47.166441
42	+0 21	19.634512	12	+0 04	29.396739	42	-0 12	20.841033
43	+0 20	45.959920	13	+0 03	55.722147	43	-0 12	54.515626
44	+0 20	12.285327	14	+0 03	22.047555	44	-0 13	28.190218
45	+0 19	38.610735	15	+0 02	48.372962	45	-0 14	01.864811
117 46	+0 19	04.936143	118 16	+0 02	14.698370	118 46	-0 14	35.539403
47	+0 18	31.261550	17	+0 01	41.023777	47	-0 15	09.213996
48	+0 17	57.586958	18	+0 01	07.349185	48	-0 15	42.888588
49	+0 17	23.912365	19	+0 00	33.674592	49	-0 16	16.563180
50	+0 16	50.237773	20	0 00	00.000000	50	-0 16	50.237773
117 51	+0 16	16.563180	118 21	-0 00	33.674592	118 51	-0 17	23.912365
52	+0 15	42.888588	22	-0 01	07.349185	52	-0 17	57.586958
53	+0 15	09.213996	23	-0 01	41.023777	53	-0 18	31.261550
54	+0 14	35.539403	24	-0 02	14.698370	54	-0 19	04.936143
55	+0 14	01.864811	25	-0 02	48.372962	55	-0 19	38.610735
117 56	+0 13	28.190218	118 26	-0 03	22.047555	118 56	-0 20	12.285327
57	+0 12	54.515626	27	-0 03	55.722147	57	-0 20	45.959920
58	+0 12	20.841033	28	+0 04	29.396739	58	-0 21	19.634512
59	+0 11	47.166441	29	-0 05	03.071332	59	-0 21	53.309105
118 00	+0 11	13.491849	30	-0 05	36.745924	119 00	-0 22	26.983697

CALIFORNIA-ZONE 7-
 TABLES FOR THE LOS ANGELES COUNTY SYSTEM OF PLANE COORDINATES

TABLE III
 (Concluded)

1" of Long. = 0.756124321 of θ

Long.	θ
119° 01'	-0° 23' 00.658290
02	-0 23 34.332882
03	-0 24 08.007474
04	-0 24 41.682067
05	-0 25 15.356659
119 06	-0 25 49.031252
07	-0 26 22.705844
08	-0 26 56.380437
09	-0 27 30.055029
10	-0 28 03.729622