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U. S. Department of Commerce
Sinclair Weeks, *Secretary*

Coast and Geodetic Survey
Robert F. A. Studds, *Director*

Special Publication No. 322

PLANE COORDINATE PROJECTION TABLES
GEORGIA

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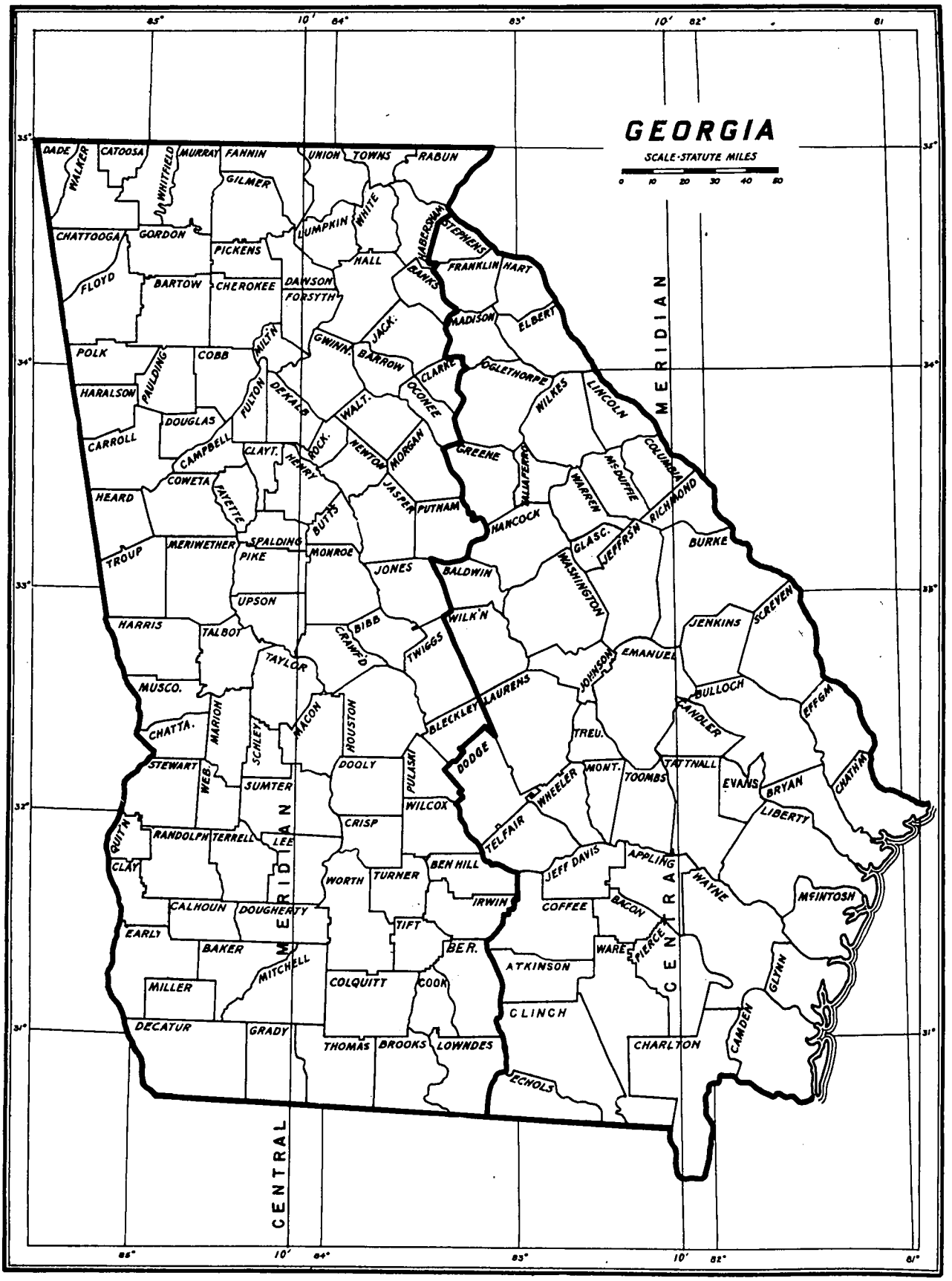
GEORGIA
SCALE-STATUTE MILES
0 10 20 30 40 50
CENTRAL MERIDIAN
DADE
WALKER
CATOOSA
WHITFIELD
MURRAY
FANNIN
UNION
TOWNS
RABUN
GILMER
CHATTOOGA
GORDON
PICKENS
LUMPKIN
WHITE
HABERSHAM
STEPHENS
HALL
FRANKLIN
HART
FLOYD
BARTOW
CHEROKEE
DAWSON
FORSYTH
BANKS
MADISON
ELBERT
POLK
COBB
MILTON
GWINN.
JACK.
BARROW
CLARKE
OGLETHORPE
HARALSON
PAULDING
FULTON
DEKALB
OCONEE
WILKES
LINCOLN
DOUGLAS
WALT.
CARROLL
CAMPBELL
CLAYT.
ROCK.
NEWTON
MORGAN
GREENE
COLUMBIA
HENRY
WARREN
McDUFFIE
COWETA
FAYETTE
JASPER
PUTNAM
ELIJAFERRO
RICHMOND
HEARD
BUTTS
HANCOCK
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CANDLER
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DOOLY
PULASKI
DODGE
MONT.
TOOMBS
TATTNALL
EVANS
BRYAN
CHATHM
WILCOX
WHEELER
LIBERTY
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RANDOLPH
TERRELL
LEE
CRISP
TELFAIR
CLAY
WORTH
TURNER
BEN HILL
JEFF DAVIS
APPLING
WAYNE
IRWIN
COFFEE
BACON
McINTOSH
CALHOUN
DOUGHERTY
TIFT
EARLY
BAKER
BER.
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COLQUITT
COOK
GLYNN
MILLER
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CHARLTON
CAMDEN
ECHOLS
CENTRAL MERIDIAN

JUL 6 1954

Foreword

The plane coordinate system used in this State is based on the transverse Mercator projection using a reduced scale for the central meridian of the zone. The tables in this publication are to be used for the conversion of geographic positions to plane coordinates or plane coordinates to geographic positions. The constants of the projection are listed with the tables.

The methods of computation have been designed for machine calculation. All of the functions that are required are given in this publication.

The formulas and sample computations which follow show the general methods for computing either type of coordinates.

Plane coordinates from geographic positions

$$x = x' + 500{,}000$$

$$x' = H \cdot \Delta\lambda'' \pm a\ b$$

$$y = y_o + V \left(\frac{\Delta\lambda''}{100}\right)^2 \pm c$$

Grid azimuth = geodetic azimuth - $\Delta\alpha$ - second term

$$\Delta\alpha'' = \Delta\lambda'' \sin \phi + g$$

where

y_o, H, V, and <u>a</u> are based on the latitude of the geographic position,

and

b, c, and g are based on $\Delta\lambda''$.

$$\Delta\lambda'' = \text{Central Meridian} - \lambda$$

and

$\Delta\alpha''$ is the convergence of the meridian at the station with respect to the Central Meridian.

The second term for the reduction of geodetic to grid azimuths may be neglected for most work. However, for lines five miles or more in length if the same degree of accuracy is desired as is obtained by geographic computations, this term should be evaluated and used.

$$\text{Second term} = \frac{(y_2 - y_1)\ (2x_1' + x_2')}{(6\ \rho_o^2\ \sin 1'')_g}$$

<u>Geographic positions from plane coordinates</u>

$$P\ (x'/10{,}000)^2 + d = V\ (\Delta\lambda''/100)^2 + c$$

$$y_o = y - P\ (x'/10{,}000)^2 - d$$

Obtain the latitude from the table of y_o.

Use latitude to obtain H from the table.

$$x' = x - 500{,}000$$

$$\text{approximate } \Delta\lambda'' = x' \div H.$$

Determine <u>a</u> from latitude and <u>b</u> from approximate $\Delta\lambda$

then

$$\Delta\lambda'' = (x' \mp a\ b\ ) \div H$$

$$\Delta\alpha'' = Mx' - e$$

M is based on the y, and e on the x of the plane coordinates.

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form No. 744b

PLANE COORDINATES ON TRANSVERSE MERCATOR PROJECTION

(Condensed form for calculating-machine computation)

State Georgia Zone East Central meridian 82° 10′ 00.″000

Station	Pryor, 1935	Cox, 1935			
ϕ	32° 38′ 03.″003	33° 29′ 58.″626			
λ	81 27 15.592	83 15 39.990			
$\Delta\lambda$ = Central mer. − λ	+ 0° 42′ 44.″408	− 1° 05′ 39.″990			
$\Delta\lambda''$	+ 2,564.408	− 3,939.990			
$\left(\frac{\Delta\lambda''}{100}\right)^2$	657.619	1,552.352			
H	85.514 185	84.681 061			
V	1.118 062	1.133 166			
a | b	−0.834 | +7.13	−0.772 | +5.00			
$x' = H \cdot \Delta\lambda \pm ab$	+ 219,287.31	− 333,638.67			
$V\left(\frac{\Delta\lambda''}{100}\right)^2 \pm c$	735.15	1,758.94			
Tabular y	958,083.13	1,272,947.49			
x	719,287.31	166,361.33			
y	958,818.28	1,274,706.43			
$\Delta\alpha''$	+1,382.97	−2,174.78			
$\Delta\alpha$	+ 0° 23′ 03.″0	− 0° 36′ 14.″8			
Geod. Az. to Az. Mk.	338 01 36.6	29 29 38.9			
Grid Az. to Az. Mk.	337 38 34	30 05 54			

$x = x' + 500{,}000$

$y = \text{Tab. } y + V\left(\frac{\Delta\lambda''}{100}\right)^2 \pm c$

$\Delta\alpha'' = \Delta\lambda'' \sin\phi + g$

Grid Az. = Geod. Az. − $\Delta\alpha$

H and V = Tab. H and Tab. V.

When ab is $\frac{-}{+}$, $\frac{\text{decrease}}{\text{increase}}$ $H \cdot \Delta\lambda$ numerically.

g increases $\Delta\lambda'' \cdot \sin\phi$ numerically.

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form No. 748a

GEODETIC POSITIONS FROM TRANSVERSE MERCATOR COORDINATES

(CALCULATING MACHINE COMPUTATION)

STATE – ZONE Georgia - East

Station Pryor, 1935

X	719,287.31	Y	958,818.28
C	− 500,000.00	$P(\frac{X'}{10,000})^2 + d$	− 735.15
X'	+ 219,287.31	Y_o	958,083.13
P	1.52866	Approx. $\Delta\lambda = X' \div H$	+2,564"
d	+0.06	$\Delta\lambda = (X' \mp ab) \div H$	+2,564".408
H	85.514 185	$\Delta\lambda$	+0° 42' 44".408
a | b	−0.834 | +7.13	Central Meridian	82 10 00.000
ϕ	32° 38' 03".003	λ = C.M. − $\Delta\lambda$	81° 27' 15".592

Station Cox, 1935

X	166,361.33	Y	1,274,706.43
C	− 500,000.00	$P(\frac{X'}{10,000})^2 + d$	− 1,758.94
X'	−333,638.67	Y_o	1,272,947.49
P	1.58010	Approx. $\Delta\lambda = X' \div H$	−3,940"
d	+0.06	$\Delta\lambda = (X' \mp ab) \div H$	−3,939".990
H	84.681 061	$\Delta\lambda$	−1° 05' 39".990
a | b	−0.772 | +5.00	Central Meridian	82 10 00.000
ϕ	33° 29' 58".626	λ = C.M. − $\Delta\lambda$	83° 15' 39".990

Station

X		Y	
C	−	$P(\frac{X'}{10,000})^2 + d$	−
X'		Y_o	
P		Approx. $\Delta\lambda = X' \div H$	"
d		$\Delta\lambda = (X' \mp ab) \div H$	"
H		$\Delta\lambda$	° ' "
a | b	|	Central Meridian	
ϕ	° ' "	λ = C.M. − $\Delta\lambda$	° ' "

Station

X		Y	
C	−	$P(\frac{X'}{10,000})^2 + d$	−
X'		Y_o	
P		Approx. $\Delta\lambda = X' \div H$	"
d		$\Delta\lambda = (X' \mp ab) \div H$	"
H		$\Delta\lambda$	° ' "
a | b	|	Central Meridian	
ϕ	° ' "	λ = C.M. − $\Delta\lambda$	° "

When ab is $\frac{+,\ \text{decrease}}{-,\ \text{increase}}$ X' numerically

Constants for Georgia

Constant	Zone	
	East	West
Central Meridian	82° 10' 00".000	84° 10' 00".000
log R	-434.3	-434.3
Scale reduction (Central Meridian)	1 : 10,000	1 : 10,000
$\log\left(\frac{1}{6\rho_0^2}\right)_g$	4.581 7896 -20	4.581 7896 -20
$\log\left(\frac{1}{6\rho_0^2 \sin 1''}\right)_g$	9.896 2147 -20	9.896 2147 -20
$\left(\frac{1}{6\rho_0^2 \sin 1''}\right)_g$	0.7874×10^{-10}	0.7874×10^{-10}

TRANSVERSE MERCATOR PROJECTION

GEORGIA
BOTH ZONES

Lat.	y_o feet	Δy_o per second	H	ΔH per second	V	ΔV per second	a
30 20	121 216.09	101.016 17	87.633 615	247.48	1.073 025	5.85	-1.000
30 21	127 277.06	101.016 33	87.618 766	247.60	1.073 376	5.83	-.999
30 22	133 338.04	101.016 67	87.603 910	247.72	1.073 726	5.85	-.998
30 23	139 399.04	101.017 00	87.589 047	247.83	1.074 077	5.83	-.996
30 24	145 460.06	101.017 17	87.574 177	247.95	1.074 427	5.85	-.995
30 25	151 521.09	101.017 33	87.559 300	248.08	1.074 778	5.80	-.994
30 26	157 582.13	101.017 67	87.544 415	248.22	1.075 126	5.82	-.993
30 27	163 643.19	101.018 00	87.529 522	248.33	1.075 475	5.80	-.992
30 28	169 704.27	101.018 33	87.514 622	248.45	1.075 823	5.82	-.990
30 29	175 765.37	101.018 50	87.499 715	248.58	1.076 172	5.80	-.989
30 30	181 826.48	101.018 67	87.484 800	248.72	1.076 520	5.80	-.988
30 31	187 887.60	101.019 00	87.469 877	248.83	1.076 868	5.78	-.987
30 32	193 948.74	101.019 33	87.454 947	248.97	1.077 215	5.80	-.986
30 33	200 009.90	101.019 50	87.440 009	249.08	1.077 563	5.78	-.984
30 34	206 071.07	101.019 83	87.425 064	249.20	1.077 910	5.80	-.983
30 35	212 132.26	101.020 00	87.410 112	249.33	1.078 258	5.77	-.982
30 36	218 193.46	101.020 33	87.395 152	249.45	1.078 604	5.75	-.981
30 37	224 254.68	101.020 50	87.380 185	249.57	1.078 949	5.77	-.980
30 38	230 315.91	101.020 83	87.365 211	249.70	1.079 295	5.75	-.978
30 39	236 377.16	101.021 17	87.350 229	249.82	1.079 640	5.77	-.977
30 40	242 438.43	101.021 33	87.335 240	249.95	1.079 986	5.72	-.976
30 41	248 499.71	101.021 67	87.320 243	250.07	1.080 329	5.72	-.975
30 42	254 561.01	101.021 83	87.305 239	250.18	1.080 672	5.73	-.974
30 43	260 622.32	101.022 17	87.290 228	250.32	1.081 016	5.72	-.972
30 44	266 683.65	101.022 50	87.275 209	250.43	1.081 359	5.72	-.971
30 45	272 745.00	101.022 67	87.260 183	250.55	1.081 702	5.68	-.970
30 46	278 806.36	101.022 80	87.245 150	250.68	1.082 043	5.68	-.969
30 47	284 867.73	101.023 33	87.230 109	250.80	1.082 384	5.70	-.968
30 48	290 929.13	101.023 50	87.215 061	250.92	1.082 726	5.68	-.966
30 49	296 990.54	101.023 67	87.200 006	251.03	1.083 067	5.68	-.965
30 50	303 051.96	101.024 00	87.184 944	251.17	1.083 408	5.67	-.964
30 51	309 113.40	101.024 17	87.169 874	251.30	1.083 748	5.67	-.963
30 52	315 174.85	101.024 50	87.154 796	251.42	1.084 088	5.67	-.962
30 53	321 236.32	101.024 83	87.139 711	251.53	1.084 428	5.67	-.960
30 54	327 297.81	101.025 00	87.124 619	251.67	1.084 768	5.67	-.959
30 55	333 359.31	101.025 33	87.109 519	251.78	1.085 108	5.63	-.958
30 56	339 420.83	101.025 67	87.094 412	251.92	1.085 446	5.63	-.957
30 57	345 482.37	101.025 83	87.079 297	252.03	1.085 784	5.65	-.956
30 58	351 543.92	101.026 00	87.064 175	252.15	1.086 123	5.63	-.954
30 59	357 605.48	101.026 33	87.049 046	252.27	1.086 461	5.63	-.953
31 00	363 667.06		87.033 910		1.086 799		-.952

TRANSVERSE MERCATOR PROJECTION

GEORGIA
BOTH ZONES

Lat.	y_o feet	Δy_o per second	H	ΔH per second	V	ΔV per second	a
31 00	363 667.06	101.026 67	87.033 910	252.40	1.086 799	5.60	-.952
31 01	369 728.66	101.027 00	87.018 766	252.52	1.087 135	5.60	-.951
31 02	375 790.28	101.027 17	87.003 615	252.63	1.087 471	5.60	-.950
31 03	381 851.91	101.027 33	86.988 457	252.75	1.087 807	5.60	-.948
31 04	387 913.55	101.027 67	86.973 292	252.88	1.088 143	5.60	-.947
31 05	393 975.21	101.028 00	86.958 119	253.02	1.088 479	5.57	-.946
31 06	400 036.89	101.028 17	86.942 938	253.13	1.088 813	5.57	-.945
31 07	406 098.58	101.028 50	86.927 750	253.25	1.089 147	5.58	-.944
31 08	412 160.29	101.028 83	86.912 555	253.38	1.089 482	5.57	-.942
31 09	418 222.02	101.029 00	86.897 352	253.50	1.089 816	5.57	-.941
31 10	424 283.76	101.029 17	86.882 142	253.63	1.090 150	5.55	-.940
31 11	430 345.51	101.029 50	86.866 924	253.75	1.090 483	5.55	-.939
31 12	436 407.28	101.029 83	86.851 699	253.88	1.090 816	5.53	-.938
31 13	442 469.07	101.030 17	86.836 466	254.00	1.091 148	5.55	-.936
31 14	448 530.88	101.030 33	86.821 226	254.12	1.091 481	5.55	-.935
31 15	454 592.70	101.030 50	86.805 979	254.25	1.091 814	5.52	-.934
31 16	460 654.53	101.030 83	86.790 724	254.37	1.092 145	5.52	-.933
31 17	466 716.38	101.031 17	86.775 462	254.50	1.092 476	5.50	-.932
31 18	472 778.25	101.031 50	86.760 192	254.62	1.092 806	5.52	-.930
31 19	478 840.14	101.031 67	86.744 915	254.73	1.093 137	5.52	-.929
31 20	484 902.04	101.031 83	86.729 631	254.85	1.093 468	5.48	-.928
31 21	490 963.95	101.032 17	86.714 340	254.98	1.093 797	5.48	-.927
31 22	497 025.88	101.032 50	86.699 041	255.10	1.094 126	5.47	-.926
31 23	503 087.83	101.032 67	86.683 735	255.22	1.094 454	5.48	-.924
31 24	509 149.79	101.033 00	86.668 422	255.33	1.094 783	5.48	-.923
31 25	515 211.77	101.033 33	86.653 102	255.45	1.095 112	5.45	-.922
31 26	521 273.77	101.033 50	86.637 775	255.58	1.095 439	5.45	-.921
31 27	527 335.78	101.033 83	86.622 440	255.70	1.095 766	5.43	-.920
31 28	533 397.81	101.034 00	86.607 098	255.82	1.096 092	5.45	-.918
31 29	539 459.85	101.034 33	86.591 749	255.95	1.096 419	5.45	-.917
31 30	545 521.91	101.034 50	86.576 392	256.08	1.096 746	5.42	-.916
31 31	551 583.98	101.034 83	86.561 027	256.20	1.097 071	5.42	-.915
31 32	557 646.07	101.035 17	86.545 655	256.32	1.097 396	5.40	-.914
31 33	563 708.18	101.035 33	86.530 276	256.43	1.097 720	5.42	-.912
31 34	569 770.30	101.035 67	86.514 890	256.57	1.098 045	5.42	-.911
31 35	575 832.44	101.036 00	86.499 496	256.68	1.098 370	5.38	-.910
31 36	581 894.60	101.036 17	86.484 095	256.80	1.098 693	5.38	-.909
31 37	587 956.77	101.036 33	86.468 687	256.92	1.099 016	5.38	-.908
31 38	594 018.95	101.036 83	86.453 272	257.05	1.099 339	5.38	-.906
31 39	600 081.16	101.037 00	86.437 849	257.17	1.099 662	5.38	-.905
31 40	606 143.38	101.037 17	86.422 419	257.30	1.099 985	5.37	-.904
31 41	612 205.61	101.037 50	86.406 981	257.42	1.100 307	5.37	-.903
31 42	618 267.86	101.037 83	86.391 536	257.55	1.100 629	5.37	-.902
31 43	624 330.13	101.038 00	86.376 083	257.67	1.100 951	5.37	-.900
31 44	630 392.41	101.038 33	86.360 623	257.78	1.101 273	5.37	-.899
31 45	636 454.71	101.038 67	86.345 156	257.92	1.101 595	5.33	-.898
31 46	642 517.03	101.038 83	86.329 681	258.03	1.101 915	5.33	-.897
31 47	648 579.36	101.039 17	86.314 199	258.15	1.102 235	5.33	-.896
31 48	654 641.71	101.039 33	86.298 710	258.27	1.102 555	5.33	-.894
31 49	660 704.07	101.039 67	86.283 214	258.40	1.102 875	5.33	-.893
31 50	666 766.45	101.040 00	86.267 710	258.52	1.103 195	5.28	-.892
31 51	672 828.85	101.040 17	86.252 199	258.63	1.103 512	5.30	-.891
31 52	678 891.26	101.040 50	86.236 681	258.75	1.103 830	5.28	-.890
31 53	684 953.69	101.040 67	86.221 156	258.88	1.104 147	5.30	-.888
31 54	691 016.13	101.041 00	86.205 623	259.00	1.104 465	5.28	-.887
31 55	697 078.59	101.041 33	86.190 083	259.13	1.104 782	5.27	-.886
31 56	703 141.07	101.041 50	86.174 535	259.25	1.105 098	5.25	-.885
31 57	709 203.56	101.041 83	86.158 980	259.37	1.105 413	5.27	-.884
31 58	715 266.07	101.042 00	86.143 418	259.48	1.105 729	5.25	-.882
31 59	721 328.59	101.042 33	86.127 849	259.60	1.106 044	5.27	-.881
32 00	727 391.13		86.112 273		1.106 360		-.880

TRANSVERSE MERCATOR PROJECTION

GEORGIA
BOTH ZONES

Lat.	y_o feet	Δy_o per second	H	ΔH per second	V	ΔV per second	a
32 00	727 391.13	101.042 67	86.112 273	259.73	1.106 360	5.23	-.880
32 01	733 453.69	101.042 83	86.096 689	259.85	1.106 674	5.23	-.879
32 02	739 516.26	101.043 17	86.081 098	259.97	1.106 988	5.23	-.878
32 03	745 578.85	101.043 50	86.065 500	260.10	1.107 302	5.23	-.876
32 04	751 641.46	101.043 67	86.049 894	260.22	1.107 616	5.23	-.875
32 05	757 704.08	101.043 83	86.034 281	260.33	1.107 930	5.20	-.874
32 06	763 766.71	101.044 33	86.018 661	260.45	1.108 242	5.20	-.873
32 07	769 829.37	101.044 50	86.003 034	260.58	1.108 554	5.20	-.872
32 08	775 892.04	101.044 67	85.987 399	260.70	1.108 866	5.20	-.870
32 09	781 954.72	101.045 00	85.971 757	260.82	1.109 178	5.20	-.869
32 10	788 017.42	101.045 33	85.956 108	260.95	1.109 490	5.17	-.868
32 11	794 080.14	101.045 67	85.940 451	261.07	1.109 800	5.17	-.867
32 12	800 142.88	101.045 83	85.924 787	261.18	1.110 110	5.17	-.866
32 13	806 205.63	101.046 17	85.909 116	261.30	1.110 420	5.17	-.864
32 14	812 268.40	101.046 33	85.893 438	261.43	1.110 730	5.17	-.863
32 15	818 331.18	101.046 67	85.877 752	261.55	1.111 040	5.13	-.862
32 16	824 393.98	101.046 83	85.862 059	261.67	1.111 348	5.13	-.861
32 17	830 456.79	101.047 17	85.846 359	261.78	1.111 656	5.15	-.860
32 18	836 519.62	101.047 50	85.830 652	261.92	1.111 965	5.13	-.858
32 19	842 582.47	101.047 83	85.814 937	262.03	1.112 273	5.13	-.857
32 20	848 645.34	101.048 00	85.799 215	262.15	1.112 581	5.10	-.856
32 21	854 708.22	101.048 17	85.783 486	262.28	1.112 887	5.10	-.855
32 22	860 771.11	101.048 50	85.767 749	262.40	1.113 193	5.10	-.854
32 23	866 834.02	101.048 83	85.752 005	262.52	1.113 499	5.10	-.852
32 24	872 896.95	101.049 17	85.736 254	262.63	1.113 805	5.10	-.851
32 25	878 959.90	101.049 33	85.720 496	262.77	1.114 111	5.07	-.850
32 26	885 022.86	101.049 67	85.704 730	262.88	1.114 415	5.07	-.849
32 27	891 085.84	101.049 83	85.688 957	263.00	1.114 719	5.08	-.848
32 28	897 148.83	101.050 17	85.673 177	263.12	1.115 024	5.07	-.846
32 29	903 211.84	101.050 50	85.657 390	263.23	1.115 328	5.07	-.845
32 30	909 274.87	101.050 67	85.641 596	263.37	1.115 632	5.05	-.844
32 31	915 337.91	101.051 00	85.625 794	263.48	1.115 935	5.03	-.843
32 32	921 400.97	101.051 33	85.609 985	263.60	1.116 237	5.05	-.842
32 33	927 464.05	101.051 50	85.594 169	263.72	1.116 540	5.03	-.840
32 34	933 527.14	101.051 67	85.578 346	263.85	1.116 842	5.05	-.839
32 35	939 590.24	101.052 17	85.562 515	263.97	1.117 145	5.02	-.838
32 36	945 653.37	101.052 33	85.546 677	264.08	1.117 446	5.00	-.837
32 37	951 716.51	101.052 67	85.530 832	264.22	1.117 746	5.02	-.836
32 38	957 779.67	101.052 83	85.514 979	264.33	1.118 047	5.00	-.834
32 39	963 842.84	101.053 17	85.499 119	264.45	1.118 347	5.02	-.833
32 40	969 906.03	101.053 33	85.483 252	264.58	1.118 648	5.00	-.832
32 41	975 969.23	101.053 67	85.467 377	264.70	1.118 948	5.00	-.831
32 42	982 032.45	101.054 00	85.451 495	264.82	1.119 248	4.98	-.830
32 43	988 095.69	101.054 33	85.435 606	264.93	1.119 547	5.00	-.828
32 44	994 158.95	101.054 50	85.419 710	265.07	1.119 847	5.00	-.827
32 45	1 000 222.22	101.054 67	85.403 806	265.18	1.120 147	4.97	-.826
32 46	1 006 285.50	101.055 17	85.387 895	265.30	1.120 445	4.97	-.825
32 47	1 012 348.81	101.055 33	85.371 977	265.42	1.120 743	4.95	-.824
32 48	1 018 412.13	101.055 50	85.356 052	265.53	1.121 040	4.97	-.822
32 49	1 024 475.46	101.055 83	85.340 120	265.65	1.121 338	4.97	-.821
32 50	1 030 538.81	101.056 17	85.324 181	265.78	1.121 636	4.92	-.820
32 51	1 036 602.18	101.056 33	85.308 234	265.90	1.121 931	4.90	-.819
32 52	1 042 665.56	101.056 67	85.292 280	266.02	1.122 225	4.92	-.818
32 53	1 048 728.96	101.057 00	85.276 319	266.13	1.122 520	4.90	-.817
32 54	1 054 792.38	101.057 33	85.260 351	266.27	1.122 814	4.92	-.815
32 55	1 060 855.82	101.057 50	85.244 375	266.38	1.123 109	4.88	-.814
32 56	1 066 919.27	101.057 83	85.228 392	266.50	1.123 402	4.88	-.813
32 57	1 072 982.74	101.058 00	85.212 402	266.62	1.123 695	4.87	-.812
32 58	1 079 046.22	101.058 33	85.196 405	266.73	1.123 987	4.88	-.811
32 59	1 085 109.72	101.058 67	85.180 401	266.85	1.124 280	4.88	-.809
33 00	1 091 173.24		85.164 390		1.124 573		-.808

TRANSVERSE MERCATOR PROJECTION

GEORGIA
BOTH ZONES

Lat.	y_o feet	Δy_o per second	H	ΔH per second	V	ΔV per second	a
33 00	1 091 173.24	101.058 83	85.164 390	266.98	1.124 573	4.85	-.808
33 01	1 097 236.77	101.059 17	85.148 371	267.10	1.124 864	4.87	-.807
33 02	1 103 300.32	101.059 33	85.132 345	267.22	1.125 156	4.85	-.806
33 03	1 109 363.88	101.059 67	85.116 312	267.35	1.125 447	4.87	-.805
33 04	1 115 427.46	101.060 00	85.100 271	267.47	1.125 739	4.85	-.803
33 05	1 121 491.06	101.060 33	85.084 223	267.58	1.126 030	4.83	-.802
33 06	1 127 554.68	101.060 50	85.068 168	267.70	1.126 320	4.82	-.801
33 07	1 133 618.31	101.060 83	85.052 106	267.83	1.126 609	4.83	-.800
33 08	1 139 681.96	101.061 00	85.036 036	267.95	1.126 899	4.82	-.799
33 09	1 145 745.62	101.061 33	85.019 959	268.07	1.127 188	4.83	-.797
33 10	1 151 809.30	101.061 67	85.003 875	268.18	1.127 478	4.80	-.796
33 11	1 157 873.00	101.061 83	84.987 784	268.30	1.127 766	4.80	-.795
33 12	1 163 936.71	101.062 17	84.971 686	268.42	1.128 054	4.78	-.794
33 13	1 170 000.44	101.062 50	84.955 581	268.55	1.128 341	4.80	-.793
33 14	1 176 064.19	101.062 67	84.939 468	268.67	1.128 629	4.80	-.791
33 15	1 182 127.95	101.063 00	84.923 348	268.78	1.128 917	4.77	-.790
33 16	1 188 191.73	101.063 17	84.907 221	268.90	1.129 203	4.77	-.789
33 17	1 194 255.52	101.063 50	84.891 087	269.02	1.129 489	4.75	-.788
33 18	1 200 319.33	101.063 83	84.874 946	269.13	1.129 774	4.77	-.787
33 19	1 206 383.16	101.064 17	84.858 798	269.27	1.130 060	4.77	-.785
33 20	1 212 447.01	101.064 33	84.842 642	269.38	1.130 346	4.73	-.784
33 21	1 218 510.87	101.064 67	84.826 479	269.50	1.130 630	4.72	-.783
33 22	1 224 574.75	101.064 83	84.810 309	269.62	1.130 913	4.73	-.782
33 23	1 230 638.64	101.065 17	84.794 132	269.73	1.131 197	4.72	-.781
33 24	1 236 702.55	101.065 50	84.777 948	269.87	1.131 480	4.73	-.779
33 25	1 242 766.48	101.065 67	84.761 756	269.98	1.131 764	4.70	-.778
33 26	1 248 830.42	101.066 00	84.745 557	270.10	1.132 046	4.68	-.777
33 27	1 254 894.38	101.066 33	84.729 351	270.22	1.132 327	4.70	-.776
33 28	1 260 958.36	101.066 50	84.713 138	270.33	1.132 609	4.68	-.775
33 29	1 267 022.35	101.066 83	84.696 918	270.47	1.132 890	4.70	-.773
33 30	1 273 086.36	101.067 17	84.680 690	270.58	1.133 172	4.65	-.772
33 31	1 279 150.39	101.067 33	84.664 455	270.70	1.133 451	4.67	-.771
33 32	1 285 214.43	101.067 67	84.648 213	270.82	1.133 731	4.65	-.770
33 33	1 291 278.49	101.067 83	84.631 964	270.93	1.134 010	4.67	-.769
33 34	1 297 342.56	101.068 33	84.615 708	271.07	1.134 290	4.65	-.767
33 35	1 303 406.66	101.068 50	84.599 444	271.18	1.134 569	4.63	-.766
33 36	1 309 470.77	101.068 67	84.583 173	271.30	1.134 847	4.62	-.765
33 37	1 315 534.89	101.069 00	84.566 895	271.42	1.135 124	4.63	-.764
33 38	1 321 599.03	101.069 33	84.550 610	271.53	1.135 402	4.62	-.763
33 39	1 327 663.19	101.069 67	84.534 318	271.65	1.135 679	4.63	-.761
33 40	1 333 727.37	101.069 83	84.518 019	271.77	1.135 957	4.60	-.760
33 41	1 339 791.56	101.070 17	84.501 713	271.88	1.136 233	4.60	-.759
33 42	1 235 855.77	101.070 33	84.485 400	272.00	1.136 509	4.60	-.758
33 43	1 351 919.99	101.070 67	84.469 080	272.13	1.136 785	4.60	-.757
33 44	1 357 984.23	101.071 00	84.452 752	272.25	1.137 061	4.60	-.755
33 45	1 364 348.49	101.071 33	84.436 417	272.37	1.137 337	4.57	-.754
33 46	1 370 112.77	101.071 50	84.420 075	272.48	1.137 611	4.57	-.753
33 47	1 376 177.06	101.071 67	84.403 726	272.60	1.137 885	4.58	-.752
33 48	1 382 241.36	101.072 17	84.387 370	272.73	1.138 160	4.57	-.751
33 49	1 388 305.69	101.072 33	84.371 006	272.85	1.138 434	4.57	-.749
33 50	1 394 370.03	101.072 67	84.354 635	272.97	1.138 708	4.53	-.748
33 51	1 400 434.39	101.072 83	84.338 257	273.08	1.138 980	4.53	-.747
33 52	1 406 498.76	101.073 17	84.321 872	273.20	1.139 252	4.55	-.746
33 53	1 412 563.15	101.073 50	84.305 480	273.33	1.139 525	4.53	-.745
33 54	1 418 627.56	101.073 67	84.289 080	273.45	1.139 797	4.53	-.743
33 55	1 424 691.98	101.074 00	84.272 673	273.57	1.140 069	4.50	-.742
33 56	1 430 756.42	101.074 33	84.256 259	273.68	1.140 339	4.52	-.741
33 57	1 436 820.88	101.074 50	84.239 838	273.80	1.140 610	4.50	-.740
33 58	1 442 885.35	101.074 83	84.223 410	273.93	1.140 880	4.52	-.739
33 59	1 448 949.84	101.075 17	84.206 974	274.05	1.141 151	4.50	-.737
34 00	1 455 014.35		84.190 531		1.141 421		-.736

TRANSVERSE MERCATOR PROJECTION

GEORGIA
BOTH ZONES

Lat.	y_o feet	Δy_o per second	H	ΔH per second	V	ΔV per second	a
34 00	1 455 014.35	101.075 50	84.190 531	274.15	1.141 421	4.47	-.736
34 01	1 461 078.88	101.075 67	84.174 082	274.28	1.141 689	4.47	-.735
34 02	1 467 143.42	101.075 83	84.157 625	274.40	1.141 957	4.48	-.734
34 03	1 473 207.97	101.076 33	84.141 161	274.52	1.142 226	4.47	-.733
34 04	1 479 272.55	101.076 50	84.124 690	274.63	1.142 494	4.47	-.731
34 05	1 485 337.14	101.076 67	84.108 212	274.75	1.142 762	4.45	-.730
34 06	1 491 401.74	101.077 17	84.091 727	274.87	1.143 029	4.45	-.729
34 07	1 497 466.37	101.077 33	84.075 235	274.98	1.143 296	4.43	-.728
34 08	1 503 531.01	101.077 67	84.058 736	275.10	1.143 562	4.45	-.727
34 09	1 509 595.67	101.077 83	84.042 230	275.22	1.143 829	4.45	-.725
34 10	1 515 660.34	101.078 17	84.025 717	275.33	1.144 096	4.40	-.724
34 11	1 521 725.03	101.078 50	84.009 197	275.45	1.144 360	4.42	-.723
34 12	1 527 789.74	101.078 67	83.992 670	275.58	1.144 625	4.40	-.722
34 13	1 533 854.46	101.079 00	83.976 135	275.70	1.144 889	4.42	-.721
34 14	1 539 919.20	101.079 33	83.959 593	275.82	1.145 154	4.40	-.719
34 15	1 545 983.96	101.079 50	83.943 044	275.93	1.145 418	4.37	-.718
34 16	1 552 048.73	101.079 83	83.926 488	276.05	1.145 680	4.38	-.717
34 17	1 558 113.52	101.080 17	83.909 925	276.17	1.145 943	4.37	-.716
34 18	1 564 178.33	101.080 33	83.893 355	276.28	1.146 205	4.38	-.715
34 19	1 570 243.15	101.080 67	83.876 778	276.40	1.146 468	4.37	-.713
34 20	1 576 307.99	101.081 00	83.860 194	276.53	1.146 730	4.33	-.712
34 21	1 582 372.85	101.081 17	83.843 602	276.65	1.146 990	4.33	-.711
34 22	1 588 437.72	101.081 50	83.827 003	276.77	1.147 250	4.35	-.710
34 23	1 594 502.61	101.081 83	83.810 397	276.90	1.147 511	4.33	-.709
34 24	1 600 567.52	101.082 00	83.793 783	277.02	1.147 771	4.33	-.707
34 25	1 606 632.44	101.082 33	83.777 162	277.12	1.148 031	4.30	-.706
34 26	1 612 697.38	101.082 67	83.760 535	277.23	1.148 289	4.30	-.705
34 27	1 618 762.34	101.083 00	83.743 901	277.37	1.148 547	4.32	-.704
34 28	1 624 827.32	101.083 17	83.727 259	277.48	1.148 806	4.30	-.703
34 29	1 630 892.31	101.083 50	83.710 610	277.60	1.149 064	4.30	-.701
34 30	1 636 957.32	101.083 67	83.693 954	277.70	1.149 322	4.28	-.700
34 31	1 643 022.34	101.084 00	83.677 292	277.82	1.149 579	4.30	-.699
34 32	1 649 087.38	101.084 33	83.660 623	277.95	1.149 837	4.28	-.698
34 33	1 655 152.44	101.084 67	83.643 946	278.07	1.150 094	4.30	-.697
34 34	1 661 217.52	101.084 83	83.627 262	278.18	1.150 352	4.28	-.696
34 35	1 667 282.61	101.085 17	83.610 571	278.30	1.150 609	4.25	-.694
34 36	1 673 347.72	101.085 33	83.593 873	278.42	1.150 864	4.27	-.693
34 37	1 679 412.84	101.085 83	83.577 168	278.55	1.151 120	4.25	-.692
34 38	1 685 477.99	101.086 00	83.560 455	278.67	1.151 375	4.27	-.691
34 39	1 691 543.15	101.086 17	83.543 735	278.78	1.151 631	4.25	-.690
34 40	1 697 608.32	101.086 50	83.527 008	278.88	1.151 886	4.22	-.688
34 41	1 703 673.51	101.086 83	83.510 275	279.02	1.152 139	4.22	-.687
34 42	1 709 738.72	101.087 17	83.493 534	279.13	1.152 392	4.22	-.686
34 43	1 715 803.95	101.087 33	83.476 786	279.25	1.152 645	4.22	-.685
34 44	1 721 869.19	101.087 67	83.460 031	279.37	1.152 898	4.22	-.684
34 45	1 727 934.45	101.088 00	83.443 269	279.48	1.153 151	4.18	-.682
34 46	1 733 999.73	101.088 17	83.426 500	279.60	1.153 402	4.18	-.681
34 47	1 740 065.02	101.088 50	83.409 724	279.72	1.153 653	4.18	-.680
34 48	1 746 130.33	101.088 83	83.392 941	279.85	1.153 904	4.18	-.679
34 49	1 752 195.66	101.089 00	83.376 150	279.97	1.154 155	4.18	-.678
34 50	1 758 261.00	101.089 33	83.359 352	280.07	1.154 406	4.15	-.676
34 51	1 764 326.36	101.089 67	83.342 548	280.20	1.154 655	4.13	-.675
34 52	1 770 391.74	101.090 00	83.325 736	280.32	1.154 903	4.15	-.674
34 53	1 776 457.14	101.090 17	83.308 917	280.43	1.155 152	4.13	-.673
34 54	1 782 522.55	101.090 50	83.292 091	280.55	1.155 400	4.15	-.672
34 55	1 788 587.98	101.090 67	83.275 258	280.65	1.155 649	4.12	-.670
34 56	1 794 653.42	101.091 00	83.258 419	280.77	1.155 896	4.10	-.669
34 57	1 800 718.88	101.091 33	83.241 573	280.90	1.156 142	4.12	-.668
34 58	1 806 784.36	101.091 67	83.224 719	281.02	1.156 389	4.10	-.667
34 59	1 812 849.86	101.091 83	83.207 858	281.13	1.156 635	4.12	-.666
35 00	1 818 915.37		83.190 990		1.156 882		-.664

TRANSVERSE MERCATOR PROJECTION

GEORGIA
BOTH ZONES

Lat.	y_o feet	Δy_o per second	H	ΔH per second	V	ΔV per second	a
35 00	1 818 915.37	101.092 17	83.190 990	281.25	1.156 882	4.08	-.664
35 01	1 824 980.90	101.092 50	83.174 115	281.37	1.157 127	4.08	-.663
35 02	1 831 046.45	101.092 67	83.157 233	281.48	1.157 372	4.10	-.662
35 03	1 837 112.01	101.093 00	83.140 344	281.60	1.157 618	4.08	-.661
35 04	1 843 177.59	101.093 17	83.123 448	281.73	1.157 863	4.08	-.660
35 05	1 849 243.18	101.093 67	83.106 544	281.83	1.158 108	4.05	-.658
35 06	1 855 308.80	101.093 83	83.089 634	281.95	1.158 351	4.05	-.657
35 07	1 861 374.43	101.094 17	83.072 717	282.08	1.158 594	4.07	-.656
35 08	1 867 440.08	101.094 33	83.055 792	282.20	1.158 838	4.05	-.655
35 09	1 873 505.74	101.094 67	83.038 860	282.32	1.159 081	4.05	-.654
35 10	1 879 571.42		83.021 921		1.159 324		-.652

TRANSVERSE MERCATOR PROJECTION

GEORGIA

Both zones

$\Delta\lambda$	b	Δb	c
0	0.00	+0.39	0.00
100	+0.39	+0.39	0.00
200	+0.78	+0.38	0.00
300	+1.16	+0.38	0.00
400	+1.54	+0.38	0.00
500	+1.92	+0.38	0.00
600	+2.30	+0.37	-0.01
700	+2.67	+0.36	-0.01
800	+3.03	+0.35	-0.01
900	+3.38	+0.34	-0.02
1000	+3.72	+0.34	-0.02
1100	+4.06	+0.32	-0.03
1200	+4.38	+0.30	-0.04
1300	+4.68	+0.30	-0.04
1400	+4.98	+0.28	-0.04
1500	+5.26	+0.27	-0.05
1600	+5.53	+0.25	-0.06
1700	+5.78	+0.24	-0.06
1800	+6.02	+0.21	-0.07
1900	+6.23	+0.20	-0.07
2000	+6.43	+0.18	-0.08
2100	+6.61	+0.15	-0.09
2200	+6.76	+0.14	-0.09
2300	+6.90	+0.11	-0.10
2400	+7.01	+0.08	-0.10
2500	+7.09	+0.06	-0.11
2600	+7.15	+0.03	-0.11
2700	+7.18	0.00	-0.12
2800	+7.18	-0.02	-0.12
2900	+7.16	-0.05	-0.13
3000	+7.11	-0.08	-0.13
3100	+7.03	-0.11	-0.14
3200	+6.92	-0.15	-0.14
3300	+6.77	-0.18	-0.14
3400	+6.59	-0.21	-0.14
3500	+6.38	-0.25	-0.14
3600	+6.13	-0.28	-0.14
3700	+5.85	-0.34	-0.14
3800	+5.51	-0.35	-0.14
3900	+5.16	-0.40	-0.13
4000	+4.76	-0.45	-0.12
4100	+4.31	-0.48	-0.11
4200	+3.83	-0.53	-0.10
4300	+3.30	-0.57	-0.09
4400	+2.73	-0.60	-0.07
4500	+2.13	-0.67	-0.05
4600	+1.46	-0.71	-0.03
4700	+0.75	-0.75	-0.02
4800	0.00	-0.81	0.00
4900	-0.81	-0.87	+0.02
5000	-1.68	-0.91	+0.05
5100	-2.59	-0.96	+0.09
5200	-3.55	-1.00	+0.12
5300	-4.55	-1.05	+0.15
5400	-5.60		+0.19

$F = 7.45 \times 10^{-13}$

TRANSVERSE MERCATOR PROJECTION

TABLE FOR ε

$$\Delta\alpha'' = \sin\phi\,(\Delta\lambda'') + \varepsilon$$

Latitude	$\Delta\lambda''$						
	0"	1000"	2000"	3000"	4000"	5000"	6000"
24°	0".00	0".00	0".02	0".07	0".17	0".33	0".58
25	0	0	0.02	0.07	0.17	0.34	0.59
26°	0.00	0.00	0.02	0.08	0.18	0.35	0.60
27	0	0	0.02	0.08	0.18	0.35	0.61
28	0	0	0.02	0.08	0.18	0.36	0.62
29	0	0	0.02	0.08	0.19	0.37	0.63
30	0	0	0.02	0.08	0.19	0.37	0.64
31°	0.00	0.00	0.02	0.08	0.19	0.37	0.64
32	0	0	0.02	0.08	0.19	0.38	0.65
33	0	0	0.02	0.08	0.19	0.38	0.65
34	0	0	0.02	0.08	0.19	0.38	0.65
35	0	0	0.02	0.08	0.19	0.38	0.65
36°	0.00	0.00	0.02	0.08	0.19	0.38	0.65
37	0	0	0.02	0.08	0.19	0.38	0.65
38	0	0	0.02	0.08	0.19	0.38	0.65
39	0	0	0.02	0.08	0.19	0.37	0.64
40	0	0	0.02	0.08	0.19	0.37	0.64
41°	0.00	0.00	0.02	0.08	0.19	0.37	0.63
42	0	0	0.02	0.08	0.18	0.36	0.63
43	0	0	0.02	0.08	0.18	0.36	0.62
44	0	0	0.02	0.08	0.18	0.35	0.61
45	0	0	0.02	0.08	0.18	0.35	0.60
46°	0.00	0.00	0.02	0.07	0.17	0.34	0.59
47	0	0	0.02	0.07	0.17	0.33	0.58
48	0	0	0.02	0.07	0.17	0.33	0.56
49	0	0	0.02	0.07	0.16	0.32	0.55
50	0.00	0.00	0.02	0.07	0.16	0.31	0.54

$$\varepsilon = \left[\frac{C\,(\sin 1'')\,\cos^3\phi}{2A^2} + F\right](\Delta\lambda'')^3$$

A, C and F are position factors.

Y CORRECTION FOR COMPUTATION OF GEOGRAPHIC POSITIONS FROM PLANE COORDINATES TRANSVERSE MERCATOR PROJECTION, GEORGIA E & W ZONES

$$P(x'/10{,}000)^2 + d = V(\Delta y/100)^2 + c$$

P taken out for y-coordinate
d taken out for x'

y	P	ΔP	x'	d
100,000	1.39360	1539	0	0.00
200,000	1.40899	1547	50,000	0.00
300,000	1.42446	1556	100,000	+ 0.01
400,000	1.44002	1565	150,000	+ 0.03
500,000	1.45567	1573	200,000	+ 0.06
600,000	1.47140	1583	250,000	+ 0.07
700,000	1.48723	1593	300,000	+ 0.07
800,000	1.50316	1602	350,000	+ 0.05
900,000	1.51918	1612	400,000	0.00
1,000,000	1.53530	1621	450,000	- 0.10
1,100,000	1.55151	1632		
1,200,000	1.56783	1642		
1,300,000	1.58425	1652		
1,400,000	1.60077	1663		
1,500,000	1.61740	1673		
1,600,000	1.63413	1685		
1,700,000	1.65098	1695		
1,800,000	1.66793	1707		
1,900,000	1.68500			

TRANSVERSE MERCATOR PROJECTION

Georgia

East and west zones

$$\Delta\alpha = Mx' - e$$

y	M	ΔM	y	M	ΔM
			1,000,000	0.006 3342	669
100,000	0.005 7495	635	1,100,000	0.006 4011	673
200,000	0.005 8130	638	1,200,000	0.006 4684	677
300,000	0.005 8768	642	1,300,000	0.006 5361	682
400,000	0.005 9410	646	1,400,000	0.006 6043	686
500,000	0.006 0056	650	1,500,000	0.006 6729	691
600,000	0.006 0706	653	1,600,000	0.006 7420	695
700,000	0.006 1359	657	1,700,000	0.006 8115	699
800,000	0.006 2016	661	1,800,000	0.006 8814	704
900,000	0.006 2677	665	1,900,000	0.006 9518	

x'	e
250,000	0.0
300,000	0.1
350,000	0.2
400,000	0.3
450,000	0.5

TRANSVERSE MERCATOR PROJECTION FOR GEORGIA (EAST & WEST)

x' (feet)	Scale in units of 7th place of logs	Scale expressed as a ratio	x' (feet)	Scale in units of 7th place of logs	Scale expressed as a ratio
0	-434.3	0.9999000	175,000	-282.0	0.9999351
5,000	-434.2	0.9999000	180,000	-273.2	0.9999371
10,000	-433.8	0.9999001	185,000	-264.1	0.9999392
15,000	-433.2	0.9999003	190,000	-254.8	0.9999413
20,000	-432.3	0.9999005	195,000	-245.2	0.9999435
25,000	-431.2	0.9999007	200,000	-235.4	0.9999458
30,000	-429.8	0.9999010	205,000	-225.3	0.9999481
35,000	-428.2	0.9999014	210,000	-215.0	0.9999505
40,000	-426.3	0.9999018	215,000	-204.4	0.9999529
45,000	-424.2	0.9999023	220,000	-193.6	0.9999554
50,000	-421.9	0.9999029	225,000	-182.5	0.9999580
55,000	-419.3	0.9999035	230,000	-171.2	0.9999606
60,000	-416.4	0.9999041	235,000	-159.7	0.9999632
65,000	-413.3	0.9999048	240,000	-147.9	0.9999659
70,000	-409.9	0.9999056	245,000	-135.8	0.9999687
75,000	-406.3	0.9999064	250,000	-123.5	0.9999716
80,000	-402.5	0.9999073	255,000	-110.9	0.9999745
85,000	-398.4	0.9999083	260,000	- 98.1	0.9999774
90,000	-394.0	0.9999093	265,000	- 85.1	0.9999804
95,000	-389.4	0.9999103	270,000	- 71.8	0.9999835
100,000	-384.6	0.9999114	275,000	- 58.2	0.9999866
105,000	-379.5	0.9999126	280,000	- 44.4	0.9999898
110,000	-374.1	0.9999139	285,000	- 30.4	0.9999930
115,000	-368.5	0.9999151	290,000	- 16.1	0.9999963
120,000	-362.7	0.9999165	295,000	- 1.5	0.9999997
125,000	-356.6	0.9999179	300,000	+ 13.3	1.0000031
130,000	-350.3	0.9999193	305,000	+ 28.3	1.0000065
135,000	-343.7	0.9999209	310,000	+ 43.6	1.0000100
140,000	-336.8	0.9999224	315,000	+ 59.1	1.0000136
145,000	-329.7	0.9999241	320,000	+ 74.9	1.0000172
150,000	-322.4	0.9999258	325,000	+ 91.0	1.0000210
155,000	-314.8	0.9999275	330,000	+107.3	1.0000247
160,000	-307.0	0.9999293	335,000	+123.8	1.0000285
165,000	-298.9	0.9999312	340,000	+140.6	1.0000324
170,000	-290.6	0.9999331	345,000	+157.6	1.0000363

TRANSVERSE MERCATOR PROJECTION FOR GEORGIA (EAST & WEST)

x' (feet)	Scale in units of 7th place of logs	Scale expressed as a ratio
350,000	+174.9	1.0000403
355,000	+192.4	1.0000443
360,000	+210.2	1.0000484
365,000	+228.2	1.0000525
370,000	+246.5	1.0000568
375,000	+265.0	1.0000610
380,000	+283.8	1.0000653
385,000	+302.8	1.0000697
390,000	+322.1	1.0000742
395,000	+341.6	1.0000787
400,000	+361.4	1.0000832
405,000	+381.4	1.0000878
410,000	+401.6	1.0000925
415,000	+422.1	1.0000972
420,000	+442.9	1.0001020
425,000	+463.9	1.0001068
430,000	+485.2	1.0001117
435,000	+506.7	1.0001167
440,000	+528.5	1.0001217
445,000	+550.5	1.0001268
450,000	+572.7	1.0001319
455,000	+595.2	1.0001370
460,000	+618.0	1.0001423
465,000	+641.0	1.0001476
470,000	+664.2	1.0001529
475,000	+687.7	1.0001583
480,000	+711.4	1.0001638
485,000	+735.4	1.0001693
490,000	+759.7	1.0001749
495,000	+784.2	1.0001806
500,000	+808.9	1.0001863
505,000	+833.9	1.0001920
510,000	+859.1	1.0001978
515,000	+884.6	1.0002037
520,000	+910.4	1.0002096

CORRECTIONS TO NATURAL SCALE RATIOS*
(in units of the 7th decimal place)

For Lambert Projection — Δφ' as argument				For Lambert or transverse Mercator Projection	
Δφ'	Corr'n (Plus)	Δφ'	Corr'n (Plus)	Δy or Δx	Corr'n (Plus)
1	0	31	34	10,000	0
2	0	32	36	20,000	0
3	0	33	38	30,000	1
4	1	34	40	40,000	2
5	1	35	43	50,000	2
6	1	36	45	60,000	3
7	2	37	48	70,000	5
8	2	38	51	80,000	6
9	3	39	53	90,000	8
10	4	40	56	100,000	10
11	4	41	59	110,000	11
12	5	42	62	120,000	14
13	6	43	65	130,000	16
14	7	44	68	140,000	19
15	8	45	71	150,000	21
16	9	46	74	160,000	24
17	10	47	77	170,000	27
18	11	48	81	180,000	31
19	13	49	84	190,000	34
20	14	50	88	200,000	38
21	15	51	91	210,000	42
22	17	52	95	220,000	46
23	19	53	98	230,000	50
24	20	54	102	240,000	55
25	22	55	106	250,000	59
26	24	56	110	260,000	64
27	26	57	114	270,000	69
28	27	58	118	280,000	74
29	29	59	122	290,000	80
30	32	60	126	300,000	86
				310,000	91
				320,000	97
				330,000	103
				340,000	110
				350,000	116

Δφ' is the difference in latitude in minutes of the ends of the line.

*Scale ratio interpolated for mean latitude or mean x' of the ends of a line and corrected by the above table is a true mean value accurate to within one in the seventh decimal place.

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