

Problem A-1 - Wt. 5.0 points

PROBLEM STATEMENT

You are asked by your client to prepare a topographic map for his proposed project. He tells you that he will use this map to design a subdivision (including grading plans and street plans). He also states that he wants this map at a scale of 1" = 40' with a one foot contour interval and spot elevations to supplement contours when the contour lines are more than two inches apart.

Project site is 217 acres more or less, being a parcel 2700 feet North-South by 3500 feet East-West. Terrain: moderate relief.

The photo control for this mapping project will be established by field surveys.

Camera to be used for obtaining the mapping photography is equipped with a six inch focal length lens and a 9" x 9" format (negative size).

The map accuracy must comply with the U.S. Map Accuracy Standards.

REQUIRED

CIRCLE THE CORRECT ANSWER

1. U.S. Map Accuracy Standards are as follow;
 - (a) 90% of the contours shall be plus or minus one-quarter of the contour interval.
 - (b) 90% of the spot elevations should be within one-half of the contour interval.
 - (c) 80% of the spot elevations should be within one-quarter of the contour interval.
 - (d) 90% of the spot elevations should be within one-quarter of the contour interval.

2. The C-factor for a mapping system is determined by;
 - (a) Camera, aircraft, photo lab equipment and stereo plotting equipment.
 - (b) Ground control, flying height, camera and photo lab equipment.
 - (c) Flying height, weather, relief displacement and camera.
 - (d) Stereo plotter operator, camera, ground control and airplane altitude.

3. It was determined that a mapping system with a C-factor of 1500 will be used in the above project. This system is considered;
 - (a) a first order system.
 - (b) a second order system.
 - (c) a third order system.
 - (d) a fourth order system.

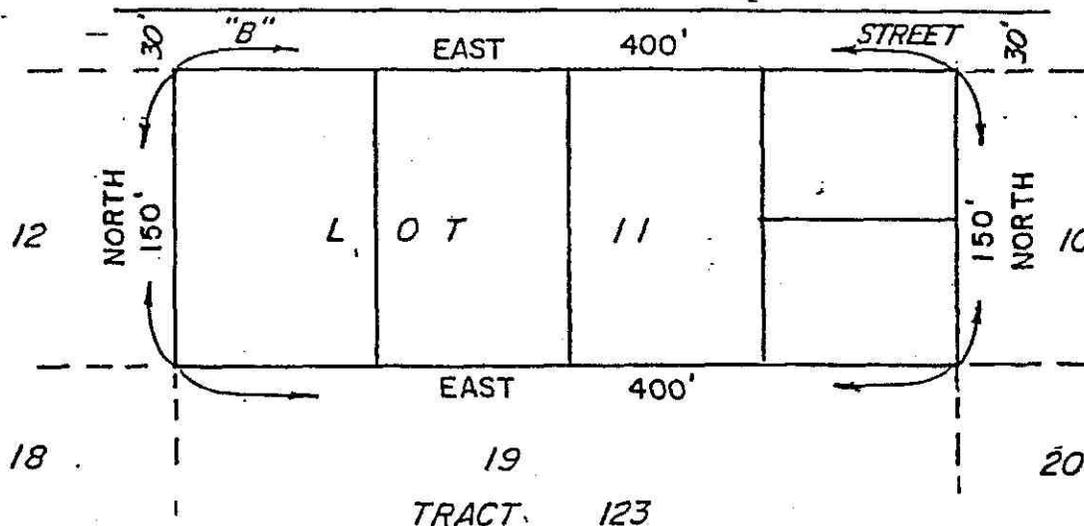
Problem A-1 (continued)

4. What is the altitude from which the photography must be obtained?
- (a) 4200 feet A.S.L. (Above sea level)
 - (b) 3000 feet A.G.L. (Above ground level)
 - (c) 1500 feet A.G.L. (Above ground level)
 - (d) 1500 feet A.S.L. (Above sea level)
5. The scale of the photography is;
- (a) 1" = 200'
 - (b) 1:3000
 - (c) 1" = 100'
 - (d) 1:1500
6. The enlargement ratio from photography to final map is;
- (a) 10
 - (b) 40
 - (c) 7.50
 - (d) 6.25

ASSUME FOR THE FOLLOWING QUESTIONS THAT THE FLIGHT PATH IS EAST-WEST

7. How many photographs will be required to obtain complete stereoscopic coverage of the area?
- (a) 10
 - (b) 8
 - (c) 11
 - (d) 7
8. How many models will be required to map the parcel?
- (a) 10
 - (b) 8
 - (c) 11
 - (d) 7
9. How many control points will be required to fully control the mapping photography?
- (a) 10
 - (b) 4
 - (c) 15
 - (d) 18
10. How many flight lines will be required?
- (a) 1
 - (b) 2
 - (c) 3
 - (d) 4

Problem A-2 - Wt. 6.0 points



PROBLEM STATEMENT

The above sketch shows the record dimensions of Lot 11, Tract 123. The Lot was divided by deeds, numbered in the following order:

- DEED # 1. July 3, 1945 "The West 100.00' of Lot 11".
- DEED # 2. July 5, 1945 "The East 100.00' of the West 200.00' of Lot 11".
- DEED # 3. July 6, 1945 "The East 100.00' of the West 300.00' of Lot 11".
- DEED # 4. July 7, 1945 "The Northerly 75.00' of the East 100.00' of Lot 11".

REQUIRED

ANSWER THE FOLLOWING FOUR MULTIPLE CHOICE QUESTIONS
NUMBERED 1 THRU 4 BASED ON THE INFORMATION ABOVE.

CIRCLE ONE LETTER (a) THRU (d) INDICATING YOUR ANSWER

- 1. The best way to describe the remaining parcel is:
 - a) The Southerly 75.00 feet of the Easterly 100.00 feet of Lot 11, Tract 123.
 - b) The Easterly 100.00 feet of the Southerly 75.00 feet of Lot 11, Tract 123.
 - c) Lot 11, Tract 123, Except the Westerly 300.00 feet, also except the Northerly 75.00 feet.
 - d) A portion of Lot 11, Tract 123, bounded on the West by the Easterly line of the Westerly 300.00 feet and on the North by the Northerly line of the Southerly 75.00 feet.

Problem A-2 continued

2. The description for Deed #4:
 - a) Is adequate; No gaps or overlaps may occur as a result of a field survey.
 - b) Is an "exception description".
 - c) Should be an exception description.
 - d) Is invalid, no access is provided to the remaining parcel.

3. If Lot 11, Tract 123, truly measures 401.50 along the North and South lines, who has title to the excess ?
 - a) It would be proportioned among all the parcels since they were created simultaneously.
 - b) The owner of Deed #1 since he is senior in right.
 - c) The State since no taxes were paid.
 - d) The original owner, his heirs or assignees.

4. If Lot 11, Tract 123 were to be divided under today's regulations, which document would be required if all the lots are designated residential ?
 - a) Parcel Map
 - b) Final Map
 - c) Record of Survey
 - d) Certificate of compliance

Problem A-2 continued

PROBLEM STATEMENT

Assume Lot 11, Tract 123 was further subdivided into the configuration shown in the sketch, by a resubdivision and a map was filed in 1945 creating the five parcels shown.

REQUIRED

ANSWER THE FOLLOWING TWO MULTIPLE CHOICE QUESTIONS
NUMBERED 5 AND 6 GIVEN THE ADDITIONAL FOLLOWING INFORMATION

CIRCLE ONE LETTER (a) THRU (e) INDICATING YOUR ANSWER

5. Which statement is most correct ?
- a) The first lot sold will have senior rights.
 - b) The map created a simultaneous conveyance situation.
 - c) In the event of an excess or deficiency in the length of the North and/or South lines of Lot 11, each of the Westerly three lots will get their full width based on their order of conveyance.
 - d) All of the above.
 - e) None of the above.
6. All the lots in the new resubdivision were purchased by Mr. Bostwick in 1946. They were never developed. In 1987 his heirs sold the entire parcel to Mr. Nostorn who wants to merge all the lots and construct a 20 unit condominium project. The Local Agency has no merger ordinance. Pursuant to State law he must file which, if any, of the following documents ?
- a) Final Map
 - b) Parcel Map
 - c) Record of Survey
 - d) Certificate of compliance
 - e) None of the above

Problem A-3 - Wt. 10.0 points

PROBLEM STATEMENT

Determine the State Plane Coordinates, ZONE 3, for Station "BROTHERS" based on the sketch below and the attached information of Zone 3 and Zone 4.

REQUIRED

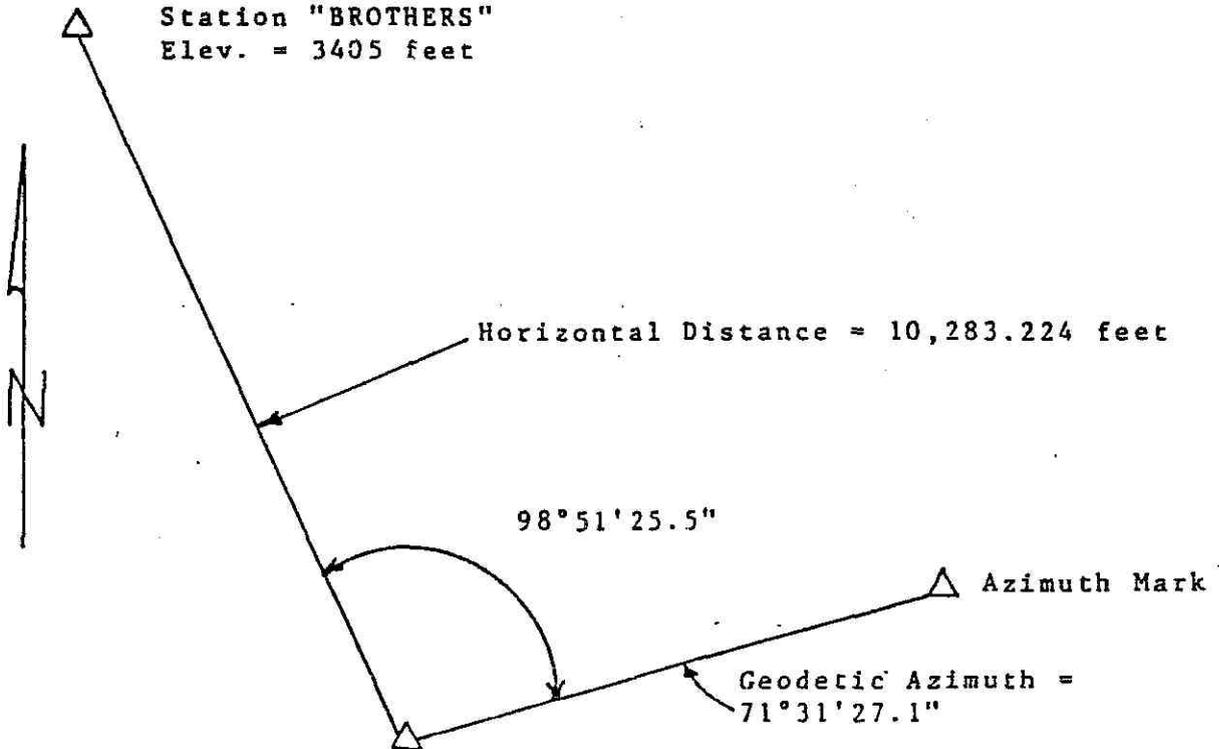
SHOW ALL FORMULAE AND INTERMEDIATE VALUES USED FOR THE SOLUTION.

Assumptions:

Azimuths are North Azimuths.
Observed distance has been reduced for slope only.

Earth's radius of 20,906,000 feet for sea level computations.
Average latitude of $36^{\circ}30'00''$ for scale factor computations.

Station "BROTHERS"
Elev. = 3405 feet



Station "BLUE"
Elev. = 4310 feet

(NAD 27)
Latitude = $36^{\circ}29'12.0000''$
Longitude = $121^{\circ}31'52.4000''$

Zone 4
x = 1,255,971.68
y = 429,660.24

Constants for California zones

| Constants | I | II |
|-------------------------------------|-------------------------|-------------------------|
| C | 2,000,000 | 2,000,000 |
| Central Meridian | 122° 00' | 122° 00' |
| R_b | 24,792,436.23 | 26,312,257.65 |
| y_0 | 547,078.17 | 516,407.35 |
| l | 0.65388 43192 | 0.63046 79732 |
| $\frac{1}{2\rho_0^2 \sin 1''}$ | 2.358×10^{-10} | 2.359×10^{-10} |
| $\log \frac{1}{2\rho_0^2 \sin 1''}$ | 0.372 4621 - 10 | 0.372 6393 - 10 |
| $\log l$ | 9.81550 09227 - 10 | 9.79966 30299 - 10 |
| $\log k$ | 7.60545 70526 | 7.61359 91422 |
| Constants | III | IV |
| C | 2,000,000 | 2,000,000 |
| Central Meridian | 120° 30' | 119° 00' |
| R_b | 27,512,992.04 | 28,652,931.96 |
| y_0 | 455,516.19 | 470,526.63 |
| l | 0.61223 20427 | 0.59658 71443 |
| $\frac{1}{2\rho_0^2 \sin 1''}$ | 2.359×10^{-10} | 2.360×10^{-10} |
| $\log \frac{1}{2\rho_0^2 \sin 1''}$ | 0.372 7729 - 10 | 0.372 8843 - 10 |
| $\log l$ | 9.78691 60557 - 10 | 9.77567 38907 - 10 |
| $\log k$ | 7.62062 61281 | 7.62714 43424 |

Lambert Projection for California IV

Table I (Cont'd)

| Lat. | R feet | Y' y value on central meridian feet | Tabular difference for 1 sec. of lat. | Scale in units of 7th place of logs | Scale expressed as a ratio |
|---------|---------------|---|--|--|-------------------------------------|
| 35° 56' | 28,434,507.66 | 218,424.30 | 101.11917 | +57.6 | 1.0000133 |
| 57 | 28,428,440.51 | 224,491.45 | 101.11917 | +42.7 | 1.0000098 |
| 58 | 28,422,373.36 | 230,558.60 | 101.11917 | +28.1 | 1.0000065 |
| 59 | 28,416,306.21 | 236,625.75 | 101.11917 | +13.9 | 1.0000032 |
| 36° 00' | 28,410,239.06 | 242,692.90 | 101.11917 | 0.0 | 0.0000000 |
| 36° 01' | 28,404,171.91 | 248,760.05 | 101.11900 | -13.5 | 0.9999969 |
| 02 | 28,398,104.77 | 254,827.19 | 101.11900 | -26.6 | 0.9999939 |
| 03 | 28,392,037.63 | 260,894.33 | 101.11917 | -39.4 | 0.9999909 |
| 04 | 28,385,970.48 | 266,961.48 | 101.11900 | -51.8 | 0.9999881 |
| 05 | 28,379,903.34 | 273,028.62 | 101.11900 | -63.9 | 0.9999853 |
| 36° 06' | 28,373,836.20 | 279,095.76 | 101.11900 | -75.6 | 0.9999826 |
| 07 | 28,367,769.06 | 285,162.90 | 101.11917 | -86.9 | 0.9999800 |
| 08 | 28,361,701.91 | 291,230.05 | 101.11917 | -97.9 | 0.9999775 |
| 09 | 28,355,634.76 | 297,297.20 | 101.11917 | -108.5 | 0.9999750 |
| 10 | 28,349,567.61 | 303,364.35 | 101.11917 | -118.7 | 0.9999727 |
| 36° 11' | 28,343,500.46 | 309,431.50 | 101.11917 | -128.6 | 0.9999704 |
| 12 | 28,337,433.31 | 315,498.65 | 101.11950 | -138.1 | 0.9999682 |
| 13 | 28,331,366.14 | 321,565.82 | 101.11933 | -147.2 | 0.9999661 |
| 14 | 28,325,298.98 | 327,632.98 | 101.11950 | -156.0 | 0.9999641 |
| 15 | 28,319,231.81 | 333,700.15 | 101.11967 | -164.4 | 0.9999621 |
| 36° 16' | 28,313,164.63 | 339,767.33 | 101.11967 | -172.5 | 0.9999603 |
| 17 | 28,307,097.45 | 345,834.51 | 101.11983 | -180.1 | 0.9999585 |
| 18 | 28,301,030.26 | 351,901.70 | 101.11983 | -187.5 | 0.9999568 |
| 19 | 28,294,963.07 | 357,968.89 | 101.12017 | -194.4 | 0.9999552 |
| 20 | 28,288,895.86 | 364,036.10 | 101.12017 | -201.0 | 0.9999537 |
| 36° 21' | 28,282,828.65 | 370,103.31 | 101.12033 | -207.2 | 0.9999523 |
| 22 | 28,276,761.43 | 376,170.53 | 101.12050 | -213.1 | 0.9999509 |
| 23 | 28,270,694.20 | 382,237.76 | 101.12067 | -218.6 | 0.9999497 |
| 24 | 28,264,626.96 | 388,305.00 | 101.12083 | -223.7 | 0.9999485 |
| 25 | 28,258,559.71 | 394,372.25 | 101.12100 | -228.4 | 0.9999474 |
| 36° 26' | 28,252,492.45 | 400,439.51 | 101.12117 | -232.8 | 0.9999464 |
| 27 | 28,246,425.18 | 406,506.78 | 101.12133 | -236.9 | 0.9999455 |
| 28 | 28,240,357.90 | 412,574.06 | 101.12167 | -240.6 | 0.9999446 |
| 29 | 28,234,290.60 | 418,641.36 | 101.12183 | -243.9 | 0.9999438 |
| 30 | 28,228,223.29 | 424,708.67 | 101.12200 | -246.8 | 0.9999432 |

Lambert Projection for California IV

Table I (Cont'd)

| Lat. | R feet | Y' y value on central meridian feet | Tabular difference for 1 sec. of lat. | Scale in units of 7th place of logs | Scale expressed as a ratio |
|---------|---------------|---|--|--|-------------------------------------|
| 36° 31' | 28,222,155.97 | 430,775.99 | 101.12233 | -249.4 | 0.9999426 |
| 32 | 28,216,088.63 | 436,843.33 | 101.12250 | -251.6 | 0.9999421 |
| 33 | 28,210,021.28 | 442,910.68 | 101.12267 | -253.5 | 0.9999416 |
| 34 | 28,203,953.92 | 448,978.04 | 101.12300 | -255.0 | 0.9999413 |
| 35 | 28,197,886.54 | 455,045.42 | 101.12333 | -256.1 | 0.9999410 |
| 36° 36' | 28,191,819.14 | 461,112.82 | 101.12350 | -256.9 | 0.9999408 |
| 37 | 28,185,751.73 | 467,180.23 | 101.12383 | -257.2 | 0.9999408 |
| 38 | 28,179,684.30 | 473,247.66 | 101.12417 | -257.3 | 0.9999408 |
| 39 | 28,173,616.85 | 479,315.11 | 101.12433 | -256.9 | 0.9999408 |
| 40 | 28,167,549.39 | 485,382.57 | 101.12483 | -256.2 | 0.9999410 |
| 36° 41' | 28,161,481.90 | 491,450.06 | 101.12500 | -255.1 | 0.9999413 |
| 42 | 28,155,414.40 | 497,517.56 | 101.12533 | -253.7 | 0.9999416 |
| 43 | 28,149,346.88 | 503,585.08 | 101.12567 | -251.9 | 0.9999420 |
| 44 | 28,143,279.34 | 509,652.62 | 101.12617 | -249.7 | 0.9999425 |
| 45 | 28,137,211.77 | 515,720.19 | 101.12633 | -247.1 | 0.9999431 |
| 36° 46' | 28,131,144.19 | 521,787.77 | 101.12667 | -244.2 | 0.9999438 |
| 47 | 28,125,076.59 | 527,855.37 | 101.12717 | -240.9 | 0.9999445 |
| 48 | 28,119,008.96 | 533,923.00 | 101.12750 | -237.3 | 0.9999454 |
| 49 | 28,112,941.31 | 539,990.65 | 101.12783 | -233.3 | 0.9999463 |
| 50 | 28,106,873.64 | 546,058.32 | 101.12833 | -228.9 | 0.9999473 |
| 36° 51' | 28,100,805.94 | 552,126.02 | 101.12867 | -224.2 | 0.9999484 |
| 52 | 28,094,738.22 | 558,193.74 | 101.12917 | -219.0 | 0.9999496 |
| 53 | 28,088,670.47 | 564,261.49 | 101.12950 | -213.6 | 0.9999508 |
| 54 | 28,082,602.70 | 570,329.26 | 101.12983 | -207.7 | 0.9999522 |
| 55 | 28,076,534.91 | 576,397.05 | 101.13033 | -201.5 | 0.9999536 |
| 36° 56' | 28,070,467.09 | 582,464.87 | 101.13083 | -194.9 | 0.9999551 |
| 57 | 28,064,399.24 | 588,532.72 | 101.13133 | -188.0 | 0.9999567 |
| 58 | 28,058,331.36 | 594,600.60 | 101.13167 | -180.6 | 0.9999584 |
| 59 | 28,052,263.46 | 600,668.50 | 101.13217 | -173.0 | 0.9999602 |
| 37° 00' | 28,046,195.53 | 606,736.43 | 101.13283 | -164.9 | 0.9999620 |
| 37° 01' | 28,040,127.56 | 612,804.40 | 101.13317 | -156.5 | 0.9999640 |
| 02 | 28,034,059.57 | 618,872.39 | 101.13367 | -147.7 | 0.9999660 |
| 03 | 28,027,991.55 | 624,940.41 | 101.13417 | -138.6 | 0.9999681 |
| 04 | 28,021,923.50 | 631,008.46 | 101.13467 | -129.0 | 0.9999703 |
| 05 | 28,015,855.42 | 637,076.54 | 101.13517 | -119.2 | 0.9999726 |

Lambert Projection for California III

Table I

| Lat. | R feet | Y ¹ y value on central meridian feet | Tabular difference for 1 sec. of lat. | Scale in units of 7th place of logs | Scale expressed as a ratio |
|---------|---------------|---|--|--|-------------------------------------|
| 36° 30' | 27,512,992.04 | 0 | 101.14417 | +717.4 | 1.0001652 |
| 31 | 27,506,923.39 | 6,068.65 | 101.14383 | +690.4 | 1.0001590 |
| 32 | 27,500,854.76 | 12,137.28 | 101.14367 | +663.7 | 1.0001528 |
| 33 | 27,494,786.14 | 18,205.90 | 101.14317 | +637.3 | 1.0001467 |
| 34 | 27,488,717.55 | 24,274.49 | 101.14283 | +611.4 | 1.0001406 |
| 35 | 27,482,648.98 | 30,343.06 | 101.14267 | +585.8 | 1.0001349 |
| 36° 36' | 27,476,580.42 | 36,411.62 | 101.14217 | +560.5 | 1.0001291 |
| 37 | 27,470,511.89 | 42,480.15 | 101.14200 | +535.6 | 1.0001233 |
| 38 | 27,464,443.37 | 48,548.67 | 101.14183 | +511.1 | 1.0001177 |
| 39 | 27,458,374.86 | 54,617.18 | 101.14133 | +486.9 | 1.0001121 |
| 40 | 27,452,306.38 | 60,685.66 | 101.14117 | +463.1 | 1.0001066 |
| 36° 41' | 27,446,237.91 | 66,754.13 | 101.14100 | +439.6 | 1.0001012 |
| 42 | 27,440,169.45 | 72,822.59 | 101.14067 | +416.5 | 1.0000959 |
| 43 | 27,434,101.01 | 78,891.03 | 101.14050 | +393.8 | 1.0000907 |
| 44 | 27,428,032.58 | 84,959.46 | 101.14017 | +371.4 | 1.0000855 |
| 45 | 27,421,964.17 | 91,027.87 | 101.14000 | +349.4 | 1.0000805 |
| 36° 46' | 27,415,895.77 | 97,096.27 | 101.13983 | +327.8 | 1.0000755 |
| 47 | 27,409,827.38 | 103,164.66 | 101.13950 | +306.5 | 1.0000706 |
| 48 | 27,403,759.01 | 109,233.03 | 101.13933 | +285.6 | 1.0000658 |
| 49 | 27,397,690.65 | 115,301.39 | 101.13933 | +265.0 | 1.0000610 |
| 50 | 27,391,622.29 | 121,369.75 | 101.13900 | +244.8 | 1.0000564 |
| 36° 51' | 27,385,553.95 | 127,438.09 | 101.13883 | +225.0 | 1.0000518 |
| 52 | 27,379,485.62 | 133,506.42 | 101.13867 | +195.5 | 1.0000450 |
| 53 | 27,373,417.30 | 139,574.74 | 101.13850 | +186.4 | 1.0000429 |
| 54 | 27,367,348.99 | 145,643.05 | 101.13833 | +167.6 | 1.0000386 |
| 55 | 27,361,280.69 | 151,711.35 | 101.13833 | +149.2 | 1.0000344 |
| 36° 56' | 27,355,212.39 | 157,779.65 | 101.13817 | +131.2 | 1.0000302 |
| 57 | 27,349,144.10 | 163,847.94 | 101.13800 | +113.5 | 1.0000261 |
| 58 | 27,343,075.82 | 169,916.22 | 101.13783 | +96.2 | 1.0000222 |
| 59 | 27,337,007.55 | 175,984.49 | 101.13783 | +79.3 | 1.0000183 |
| 37° 00' | 27,330,939.28 | 182,052.76 | 101.13767 | +62.7 | 1.0000144 |
| 37° 01' | 27,324,871.02 | 188,121.02 | 101.13767 | +46.5 | 1.0000107 |
| 02 | 27,318,802.76 | 194,189.28 | 101.13750 | +30.6 | 1.0000070 |
| 03 | 27,312,734.51 | 200,257.53 | 101.13750 | +15.1 | 1.0000035 |
| 04 | 27,306,666.26 | 206,325.78 | 101.13733 | 0.0 | 1.0000000 |
| 05 | 27,300,598.02 | 212,394.02 | 101.13733 | -14.8 | 0.9999966 |

Lambert Projection for California III

Table II (Cont'd)

1" of Long. = 0.61223204 of θ

| Long. | θ | | | Long. | θ | | | Long. | θ | | |
|----------|----------|-----|---------|----------|----------|-----|---------|----------|----------|-----|---------|
| 121° 11' | -0° | 25' | 06.0908 | 121° 46' | -0° | 46' | 31.7781 | 122° 21' | -1° | 07' | 57.4654 |
| 12 | -0 | 25 | 42.8247 | 47 | -0 | 47 | 08.5120 | 22 | -1 | 08 | 34.1993 |
| 13 | -0 | 26 | 19.5587 | 48 | -0 | 47 | 45.2460 | 23 | -1 | 09 | 10.9332 |
| 14 | -0 | 26 | 56.2926 | 49 | -0 | 48 | 21.9799 | 24 | -1 | 09 | 47.6672 |
| 15 | -0 | 27 | 33.0265 | 50 | -0 | 48 | 58.7138 | 25 | -1 | 10 | 24.4011 |
| 121° 16' | -0 | 28 | 09.7604 | 121° 51' | -0 | 49 | 35.4477 | 122° 26' | -1 | 11 | 01.1350 |
| 17 | -0 | 28 | 46.4944 | 52 | -0 | 50 | 12.1816 | 27 | -1 | 11 | 37.8689 |
| 18 | -0 | 29 | 23.2283 | 53 | -0 | 50 | 48.9156 | 28 | -1 | 12 | 14.6029 |
| 19 | -0 | 29 | 59.9622 | 54 | -0 | 51 | 25.6495 | 29 | -1 | 12 | 51.3368 |
| 20 | -0 | 30 | 36.6961 | 55 | -0 | 52 | 02.3834 | 30 | -1 | 13 | 28.0707 |
| 121° 21' | -0 | 31 | 13.4301 | 121° 56' | -0 | 52 | 39.1173 | 122° 31' | -1 | 14 | 04.8046 |
| 22 | -0 | 31 | 50.1640 | 57 | -0 | 53 | 15.8513 | 32 | -1 | 14 | 41.5386 |
| 23 | -0 | 32 | 26.8979 | 58 | -0 | 53 | 52.5852 | 33 | -1 | 15 | 18.2725 |
| 24 | -0 | 33 | 03.6318 | 59 | -0 | 54 | 29.3191 | 34 | -1 | 15 | 55.0064 |
| 25 | -0 | 33 | 40.3657 | 122° 00' | -0 | 55 | 06.0530 | 35 | -1 | 16 | 31.7403 |
| 121° 26' | -0 | 34 | 17.0997 | 122° 01' | -0 | 55 | 42.7870 | 122° 36' | -1 | 17 | 08.4742 |
| 27 | -0 | 34 | 53.8336 | 02 | -0 | 56 | 19.5209 | 37 | -1 | 17 | 45.2082 |
| 28 | -0 | 35 | 30.5675 | 03 | -0 | 56 | 56.2548 | 38 | -1 | 18 | 21.9421 |
| 29 | -0 | 36 | 07.3014 | 04 | -0 | 57 | 32.9887 | 39 | -1 | 18 | 58.6760 |
| 30 | -0 | 36 | 44.0354 | 05 | -0 | 58 | 09.7226 | 40 | -1 | 19 | 35.4099 |
| 121° 31' | -0 | 37 | 20.7693 | 122° 06' | -0 | 58 | 46.4566 | 122° 41' | -1 | 20 | 12.1439 |
| 32 | -0 | 37 | 57.5032 | 07 | -0 | 59 | 23.1905 | 42 | -1 | 20 | 48.8778 |
| 33 | -0 | 38 | 34.2371 | 08 | -0 | 59 | 59.9244 | 43 | -1 | 21 | 25.6117 |
| 34 | -0 | 39 | 10.9710 | 09 | -1 | 00 | 36.6583 | 44 | -1 | 22 | 02.3456 |
| 35 | -0 | 39 | 47.7050 | 10 | -1 | 01 | 13.3923 | 45 | -1 | 22 | 39.0795 |
| 121° 36' | -0 | 40 | 24.4389 | 122° 11' | -1 | 01 | 50.1262 | 122° 46' | -1 | 23 | 15.8135 |
| 37 | -0 | 41 | 01.1728 | 12 | -1 | 02 | 26.8601 | 47 | -1 | 23 | 52.5474 |
| 38 | -0 | 41 | 37.9067 | 13 | -1 | 03 | 03.5940 | 48 | -1 | 24 | 29.2813 |
| 39 | -0 | 42 | 14.6407 | 14 | -1 | 03 | 40.3279 | 49 | -1 | 25 | 06.0152 |
| 40 | -0 | 42 | 51.3746 | 15 | -1 | 04 | 17.0619 | 50 | -1 | 25 | 42.7492 |
| 121° 41' | -0 | 43 | 28.1085 | 122° 16' | -1 | 04 | 53.7958 | 122° 51' | -1 | 26 | 19.4831 |
| 42 | -0 | 44 | 04.8424 | 17 | -1 | 05 | 30.5297 | 52 | -1 | 26 | 56.2170 |
| 43 | -0 | 44 | 41.5763 | 18 | -1 | 06 | 07.2636 | 53 | -1 | 27 | 32.9509 |
| 44 | -0 | 45 | 18.3103 | 19 | -1 | 06 | 43.9976 | 54 | -1 | 28 | 09.6848 |
| 45 | -0 | 45 | 55.0442 | 20 | -1 | 07 | 20.7315 | 55 | -1 | 28 | 46.4188 |

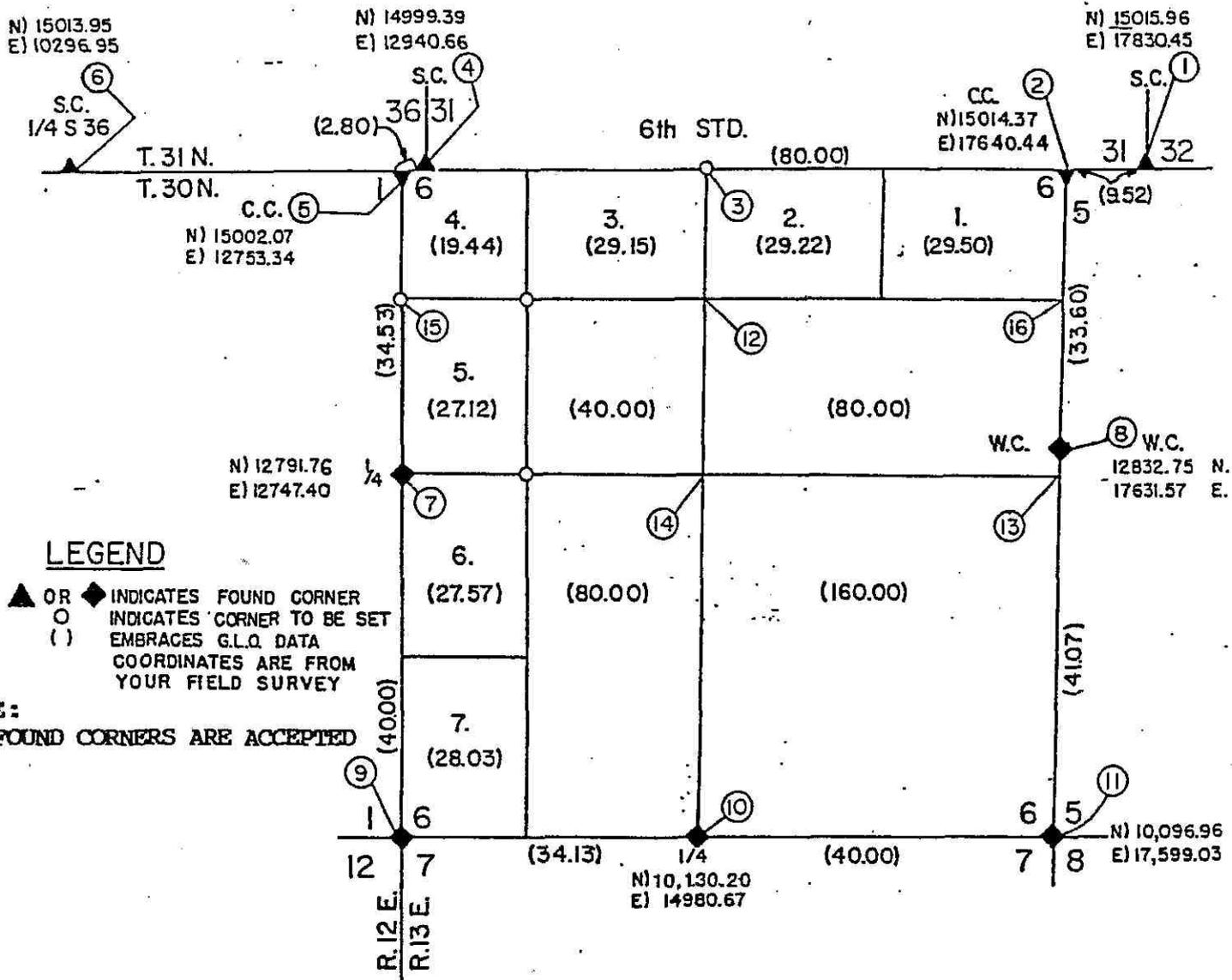
Lambert Projection for California IV

Table II (Cont'd)

1" of Long. = 0.59658714 of θ

| Long. | θ | | Long. | θ | | Long. | θ | |
|----------|----------|---------|----------|----------|---------|----------|----------|---------|
| 120° 46' | -1° 03' | 14.2942 | 121° 21' | -1° 24' | 07.1272 | 121° 56' | -1° 44' | 59.9602 |
| 47 | -1 03 | 50.0895 | 22 | -1 24 | 42.9225 | 57 | -1 45 | 35.7555 |
| 48 | -1 04 | 25.8847 | 23 | -1 25 | 18.7177 | 58 | -1 46 | 11.5507 |
| 59 | -1 05 | 01.6799 | 24 | -1 25 | 54.5129 | 59 | -1 46 | 47.3459 |
| 50 | -1 05 | 37.4752 | 25 | -1 26 | 30.3082 | 122° 00' | -1 47 | 23.1412 |
| 120° 51' | -1 06 | 13.2704 | 121° 26' | -1 27 | 06.1034 | 122° 01' | -1 47 | 58.9364 |
| 52 | -1 06 | 49.0656 | 27 | -1 27 | 41.8986 | 02 | -1 48 | 34.7316 |
| 53 | -1 07 | 24.8608 | 28 | -1 28 | 17.6938 | 03 | -1 49 | 10.5268 |
| 54 | -1 08 | 00.6561 | 29 | -1 28 | 53.4891 | 04 | -1 49 | 46.3221 |
| 55 | -1 08 | 36.4513 | 30 | -1 29 | 29.2843 | 05 | -1 50 | 22.1173 |
| 120° 56' | -1 09 | 12.2465 | 121° 31' | -1 30 | 05.0795 | 122° 06' | -1 50 | 57.9125 |
| 57 | -1 09 | 48.0418 | 32 | -1 30 | 40.8748 | 07 | -1 51 | 33.7078 |
| 58 | -1 10 | 23.8370 | 33 | -1 31 | 16.6700 | 08 | -1 52 | 09.5030 |
| 59 | -1 10 | 59.6322 | 34 | -1 31 | 52.4652 | 09 | -1 52 | 45.2982 |
| 121° 00' | -1 11 | 35.4274 | 35 | -1 32 | 28.2604 | 10 | -1 53 | 21.0934 |
| 121° 01' | -1 12 | 11.2227 | 121° 36' | -1 33 | 04.0557 | 122° 11' | -1 53 | 56.8887 |
| 02 | -1 12 | 47.0179 | 37 | -1 33 | 39.8509 | 12 | -1 54 | 32.6839 |
| 03 | -1 13 | 22.8131 | 38 | -1 34 | 15.6461 | 13 | -1 55 | 08.4791 |
| 04 | -1 13 | 58.6084 | 39 | -1 34 | 51.4414 | 14 | -1 55 | 44.2744 |
| 05 | -1 14 | 34.4036 | 40 | -1 35 | 27.2366 | 15 | -1 56 | 20.0696 |
| 121° 06' | -1 15 | 10.1988 | 121° 41' | -1 36 | 03.0318 | 122° 16' | -1 56 | 55.8648 |
| 07 | -1 15 | 45.9940 | 42 | -1 36 | 38.8270 | 17 | -1 57 | 31.6600 |
| 08 | -1 16 | 21.7893 | 43 | -1 37 | 14.6223 | 18 | -1 58 | 07.4553 |
| 09 | -1 16 | 57.5845 | 44 | -1 37 | 50.4175 | 19 | -1 58 | 43.2505 |
| 10 | -1 17 | 33.3797 | 45 | -1 38 | 26.2127 | 20 | -1 59 | 19.0457 |
| 121° 11' | -1 18 | 09.1750 | 121° 46' | -1 39 | 02.0080 | 122° 21' | -1 59 | 54.8410 |
| 12 | -1 18 | 44.9702 | 47 | -1 39 | 37.8032 | 22 | -2 00 | 30.6362 |
| 13 | -1 19 | 20.7654 | 48 | -1 40 | 13.5984 | 23 | -2 01 | 06.4314 |
| 14 | -1 19 | 56.5606 | 49 | -1 40 | 49.3936 | 24 | -2 01 | 42.2266 |
| 15 | -1 20 | 32.3559 | 50 | -1 41 | 25.1889 | 25 | -2 02 | 18.0219 |
| 121° 16' | -1 21 | 08.1511 | 121° 51' | -1 42 | 00.9841 | 122° 26' | -2 02 | 53.8171 |
| 17 | -1 21 | 43.9463 | 52 | -1 42 | 36.7793 | 27 | -2 03 | 29.6123 |
| 18 | -1 22 | 19.7416 | 53 | -1 43 | 12.5746 | 28 | -2 04 | 05.4076 |
| 19 | -1 22 | 55.5368 | 54 | -1 43 | 48.3698 | 29 | -2 04 | 41.2028 |
| 20 | -1 23 | 31.3320 | 55 | -1 44 | 24.1650 | 30 | -2 05 | 16.9980 |

Problem A-4 - Wt. 15.0 points



LEGEND

- ▲ OR ◆ INDICATES FOUND CORNER
- INDICATES CORNER TO BE SET
- () EMBRACES G.L.O. DATA
- COORDINATES ARE FROM YOUR FIELD SURVEY

NOTE: FOUND CORNERS ARE ACCEPTED

REQUIRED

BASED ON THE DIAGRAM ABOVE ANSWER THE FOLLOWING MULTIPLE CHOICE QUESTIONS, NUMBERED 1 THRU 9, BY SELECTING THE ANSWER YOU BELIEVE TO BE CORRECT FROM THE CHOICES GIVEN AS INDICATED BY THE LETTERS a., b., c., and d. CIRCLE THE CORRECT ANSWER.

1. What is the record length of the north line of Section 6, T 30 N, R 13 E ?
 - a. 92.32 chs
 - b. 73.28 chs
 - c. 80.00 chs
 - d. 67.68 chs

2. How would you establish the NE corner of Section 6, T 30 N, R 13 E ?
 - a. Accept the found monument as it is an original corner.
 - b. On line between Pt #1 and Pt #4, holding the distance of 9.52 chs from Pt #1.
 - c. At the intersection of the line between Pt #8 and Pt #2 and the standard parallel.
 - d. On the standard parallel at the proportionate distance from Pt #1.

Problem A-4 continued

3. How would you establish the N 1/4 corner of Section 6, T 30 N, R 13 E ?
 - a. Midway between Pt #2 and Pt #5.
 - b. On the standard parallel 40 chs from Pt #2.
 - c. On the standard parallel and 40.42 chs from the NE corner of Section 6.
 - d. On the standard parallel and 36.64 chs from the NE corner of Section 6.

4. How would you establish the NW corner of Section 6, T 30 N, R 13 E ?
 - a. On line between Pt #5 and Pt #7 at 34.53 chs from Pt #7.
 - b. On line between Pt #4 and Pt #6 at 2.80 chs from Pt #4.
 - c. Accept the found monument, as it is an original corner.
 - d. None of the above.

5. The record length of the north line of Lot 4, Section 6, T 30 N, R 13 E is ?
 - a. 20 chs
 - b. 19.44 chs
 - c. 17.2 chs
 - d. 13.28 chs

6. The record length of the west line of Lot 4, Section 6, T 30 N, R 13 E is ?
 - a. 17.26 chs
 - b. 14.53 chs
 - c. 20.00 chs
 - d. 19.44 chs

7. What are the record dimensions of Lot 7, Section 6, T 30 N, R 13 E ?
 - a. 20 chs on all sides.
 - b. E and W lines 20 chs; N and S lines 17.06 chs.
 - c. E and W lines 20 chs; S line is 14.13 chs; N line is 13.90 chs.
 - d. E and W lines 20 chs; N and S lines 14.13 chs.

8. How would you establish the NW corner of the SW 1/4 of the NE 1/4 of Section 6, T 30 N, R 13 E ?
 - a. Single proportion between Pt #14 and Pt #3.
 - b. At the intersection of lines 15-16 and 14-3.
 - c. On line between Pt #14 and Pt #3 and 20 chs from Pt #3.
 - d. Single proportion between Pt #15 and Pt #16.

9. What are the ground coordinates of the E 1/4 corner of Section 6, T 30 N, R 13 E as you would establish it based on measured values ?
 - a. N 12,762.13; E 17,630.73
 - b. N 12,832.75; E 17,631.57
 - c. N 12,761.47; E 17,630.72
 - d. None of the above.

Problem A-5 - Wt. 12.0 points

PROBLEM STATEMENT

Lots 1 to 6 all lie in one Tract; Middle St. being a dedicated street in the tract, and the east 25 feet of Long St., together with the west 30 feet of Short St., being dedicated by the tract.

The dimensions shown are record (R), except those marked otherwise. Where indicated, the measured (M) dimensions are to physical objects, ascertained to have been constructed near the time of the original subdivision.

The deed you are to locate in ground position is "Lot 4".

REQUIRED

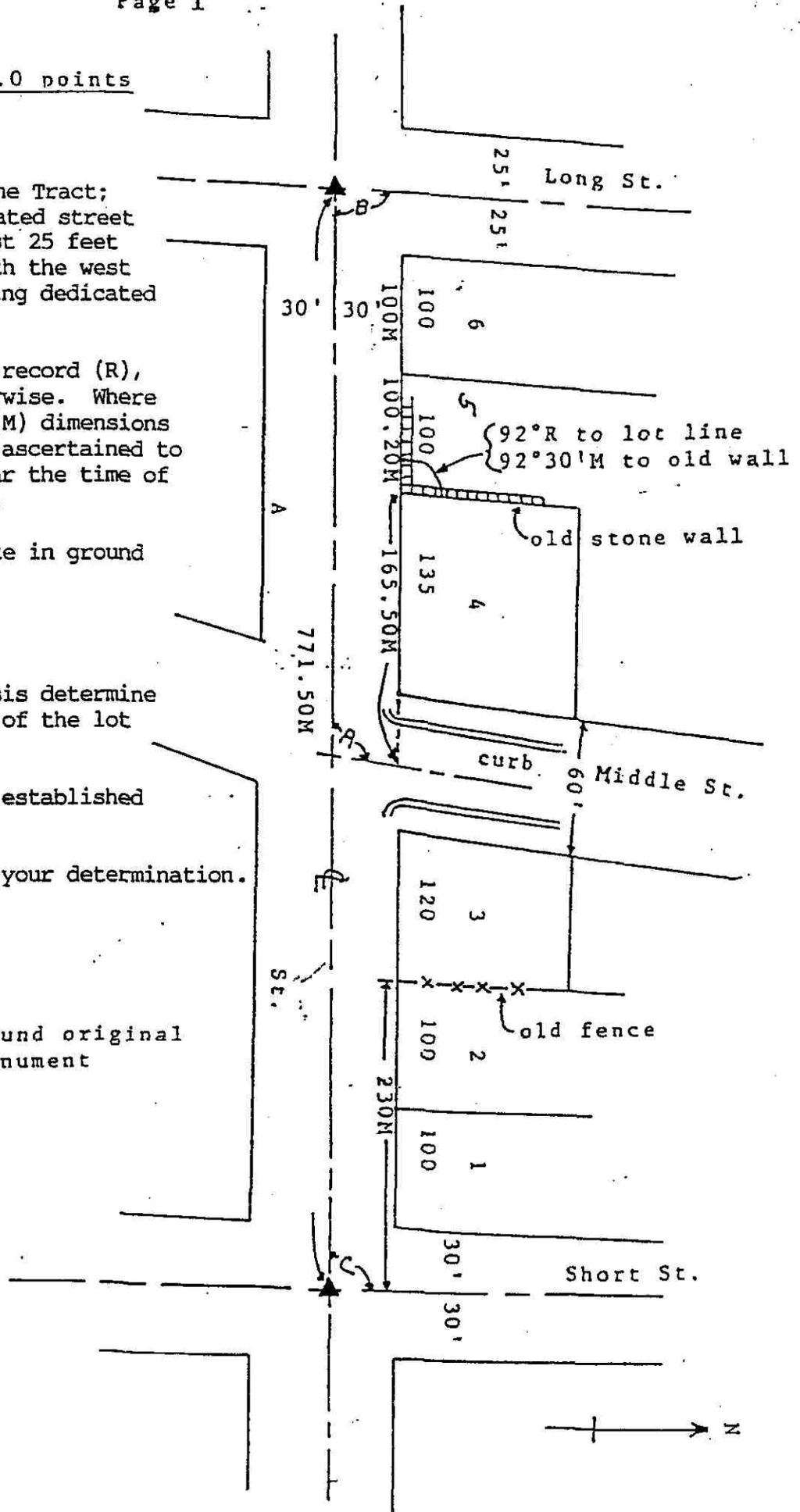
By calculation and analysis determine the most probable length of the lot fronting on "A" Street.

The \angle of Middle St. was established by the split of curbs.

Explain your reasons for your determination.

SKETCH NOT TO SCALE

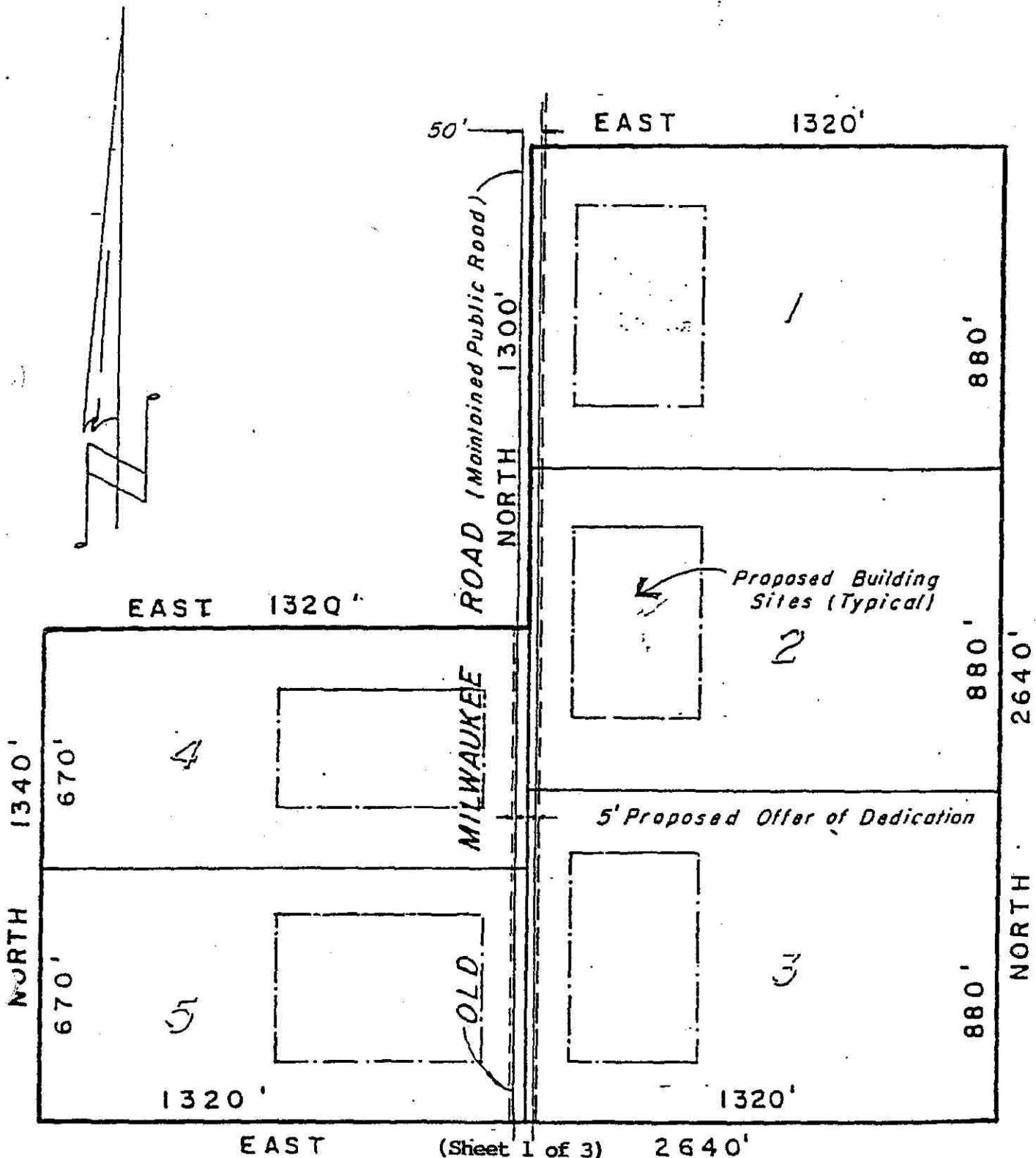
- A = 92° R
 93° M
 B = 88° R & M
 C = 90° R & M
 ▲ = Found original monument



Problem A-6 - Wt. 6.0 Points

PROBLEM STATEMENT

Mr. Frank Giraf has asked you to subdivide his property as shown on the sketch as timely and cost efficiently as possible. In your discussion with the local agency you have been told that an additional 5 foot offer of dedication will be required along Old Milwaukee Road. Also you have to define specific building sites as shown.



Problem A-6 - cont.

REQUIRED

CIRCLE THE CORRECT ANSWER

1. Under the Subdivision Map Act what is required to create the six lots.
 - a. Final Map
 - b. Parcel Map
 - c. Certificate of Compliance
 - d. Vesting Tentative Map
 - e. A Deed or Record of Survey

2. The requirement of the Offer of Dedication
 - a. Must be made on the map
 - b. Must be made by separate document and signed by the local agency
 - c. Must be made by separate document and signed by those parties having record title interest in the real property
 - d. may be made either on the map or by separate document.

3. If a tentative map has been approved, pursuant to the Subdivision Map Act it will expire in
 - a. 2 years
 - b. 5 years
 - c. 10 years
 - d. 2 years and up to 3 additional years if extended by the legislative body
 - e. 2 years and an additional 12 months if extended by the legislative body
 - f. 2 years and up to 8 additional years if extended by the legislative body

4. The Local Agency requires you to show the new building site locations on the map. You refuse, citing:
 - a. Sec. 66499.35(e) of the Subdivision Map Act
 - b. Sec. 66475.4(b) of the Subdivision Map Act
 - c. Sec. 66434(f) of the Subdivision Map Act
 - d. Sec. 8768 of the Land Surveyors Act
 - e. Sec. 8762(c) of the Land Surveyors Act

Problem A-6 - cont.

While reviewing the following statements which relate to various State laws, you may assume that you are a Licensed Land Surveyor.

REQUIRED

You have resurveyed a city subdivision lot and have reset one corner monument from ties to three adjacent monuments, you subsequently determine that you may file a corner record.

CIRCLE THE CORRECT ANSWER

5. The corner record :

- a. shall be filed with the City Engineer within 90 days.
- b. shall be filed with the County Surveyor within 90 days.
- c. shall be indexed by the County Recorder.
- d. Shall be filed in a book by the County Surveyor.
- e. none of the above statements are correct.

6. If for the above described survey you determine that a record of survey should be filed then :

- a. regardless of the cost of examining the map, the County
- b. Surveyor may charge \$50.00 for the service.
- c. the County Surveyor may charge a fee which is authorized by the Board of Supervisors.
- d. the County Surveyor may charge no more than \$50.00
- e. the County Surveyor may charge no more than \$100.00.
- f. you must file the record of survey with the County Surveyor within 120 days.
- g. None of the above statements are correct.

7. For the same record of survey map ✓

- a. it may show the size of any monuments you set
- b. it must be drawn with a 1/2 inch wide blank border all the way around the sheet.
- c. it must conform to Section 8748.5 of the Land Surveyors Act.
- d. it must be sealed by you.
- e. none of the above statements are correct.

8. Which sections of the Land Surveyor's act cover the following?

(answer in this format 8753(c))

- (a) _____ offering to perform land surveying work for others.
- (b) _____ retracing the alignment of a railroad
- (c) _____ Practicing land surveying by a Civil Engineer.
- (d) _____ revocation of license for fraudulent practice.
- (e) _____ "material discrepancy"