Problem C-1 - Wt. 15.0 points

PROBLEM STATEMENT

Answer the following questions based on the information given in the three sketches: Diagram 1 is Street Profile, Diagram 2 is Street Section and Diagram 3 is Plan View. (See pages 2 and 3.)

You must show all your work.

REQUIRED

1. What are the elevations of the back of sidewalk at the centerline of the driveway and property corners?

2. What is the minimum building pad elevation?

3. What is the slope ratio from Point 'A' to the toe of slope at street?

4. What is the distance from the North property line to the top of slope at Point 'B'?

5. What is the volume of excavation, expressed in cubic yards, for this building site, based on two cross sections? One section at the West property line and the other at the East property line.

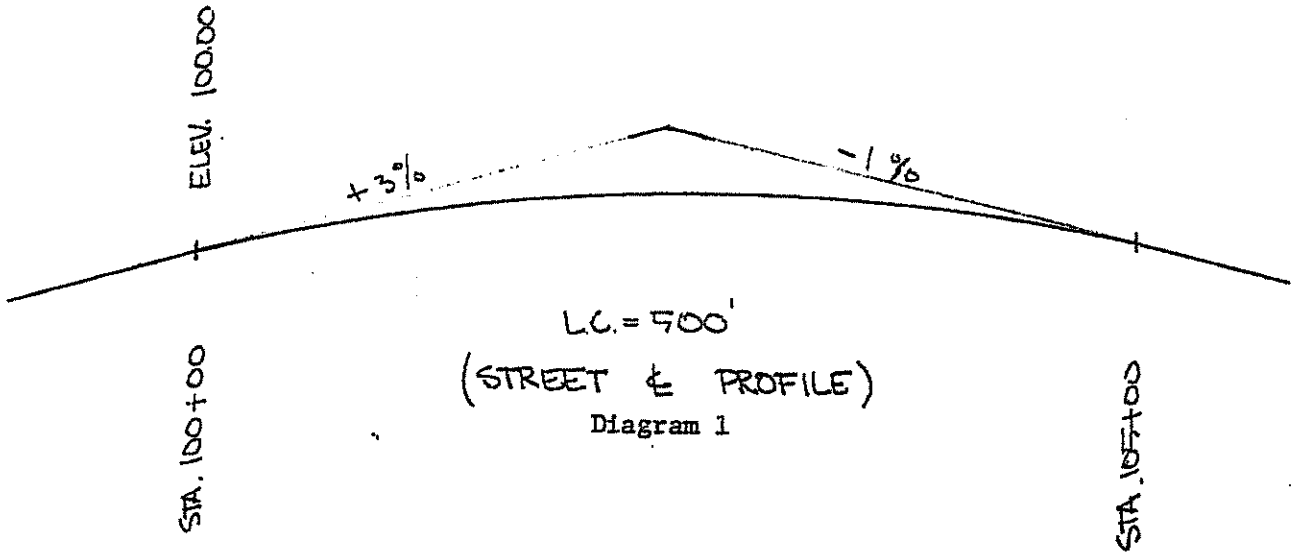
ASSUMPTIONS

A. The original ground elevation is 120 feet and level at all lot corners.

B. For the flat area use elevations at the toe of slope Points ('C' and 'D') and top of berm elevations ('A' and 'E') to figure the yardage within flat area.

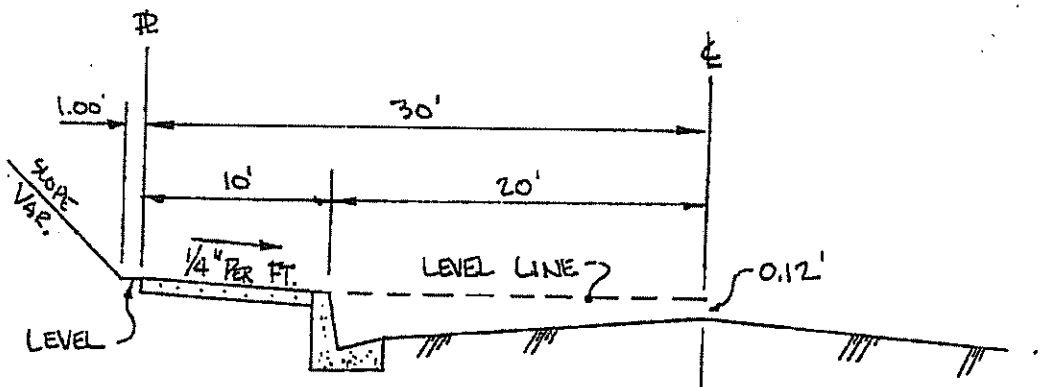
C. Neglect the driveway.

D. The South, East and West property lines are to be considered vertical planes.



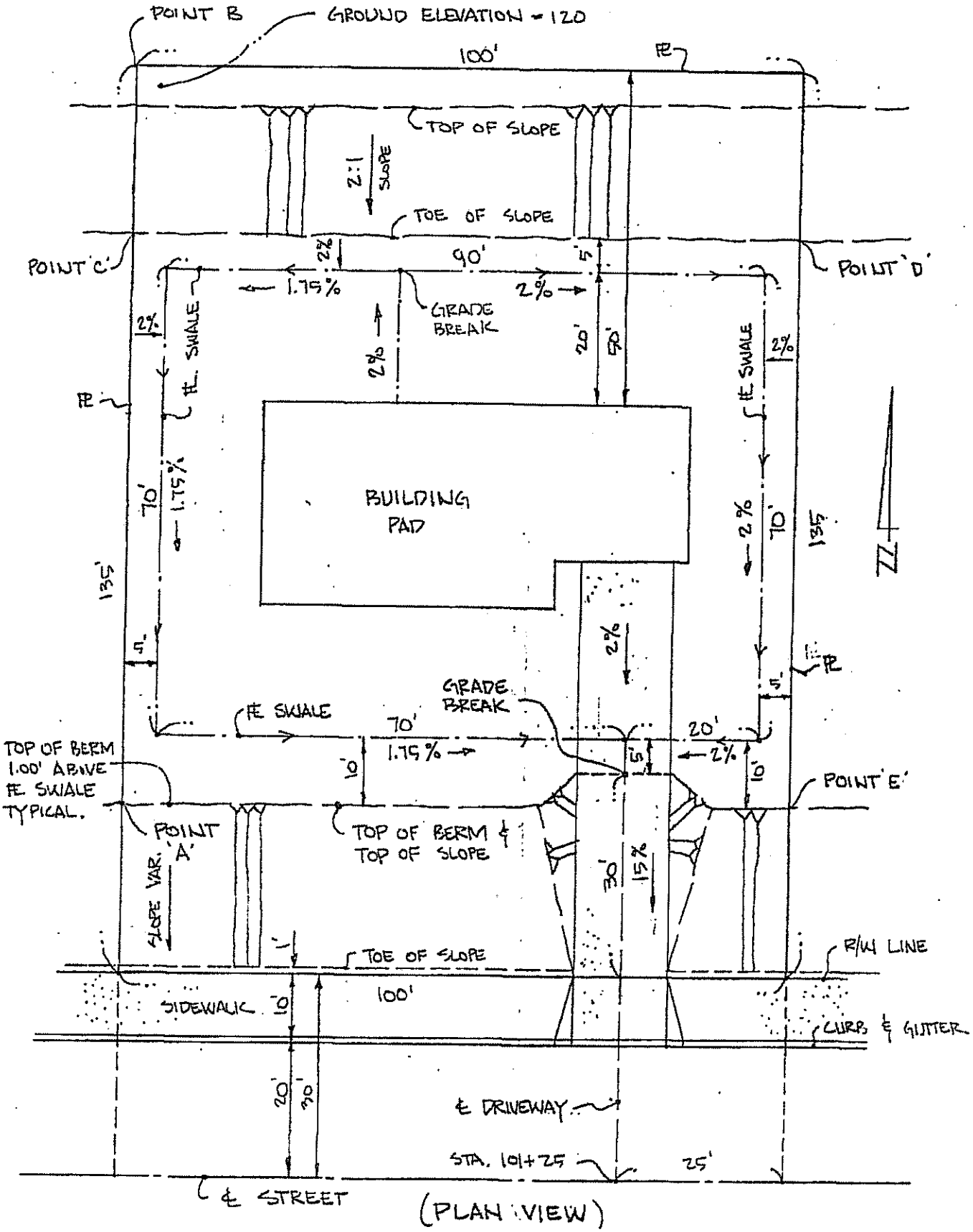
(STREET & PROFILE)

Diagram 1



(STREET SECTION)

Diagram 2



(PLAN VIEW)

Diagram 3

Problem C-2 - Wt. 10.0 points

PROBLEM STATEMENT

Shown in diagram 1 (opposite page) is a portion of a township plat of a survey made by the GLO in 1884.

In 1936 the County Surveyor retraced Section 18 and found it to be as shown on diagram 2. The lost South quarter corner monument was replaced by proportionate method on line between the Southwest section corner and the Southeast section corner a distance of 39.89 chains from the SE section corner.

In 1984 you are employed to retrace section 18 and find it to be as shown on diagram 3. You do not find the original South quarter corner monument, nor the replacement re-established by the County Surveyor in 1936.

REQUIRED

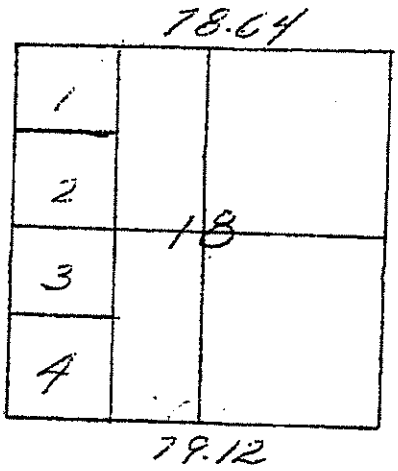
1. Where would you re-establish the South quarter corner of Section 18?

2. Where would you set the Northeast corner of Lot 1?

3. Where would you set the Southwest corner of Lot 1?

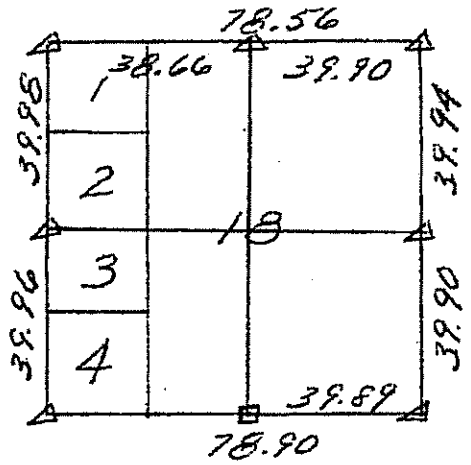
If proportioning is involved, show the elements of the proportion, and explain why they were used.

Diagram 1



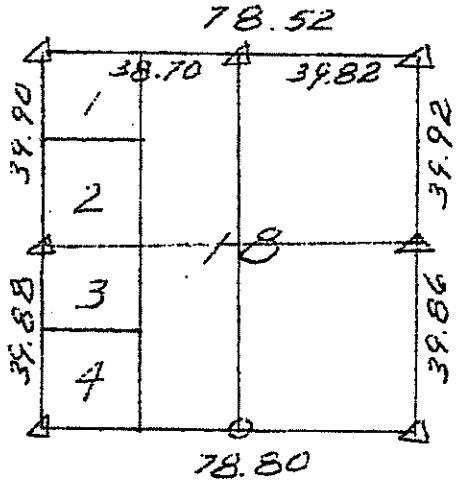
Portion of
1884 GLO Plat

Diagram 2



1936 Survey
of County Surveyor

Diagram 3



1984
Survey

Δ = Found original monument

□ = Re-established 1/4 Corner monument

o = Did not find original monument, nor replacement re-established by County Surveyor in 1936

Problem C-3 - Wt. 10.0 points

See Diagram on the opposite page

PROBLEM STATEMENT

Section 1 is in T5N, R_____W, SBM, and was surveyed by the GLO in 1884. A portion of the approved plat is shown in diagram 1.

Your client owns Lot 1 of Section 1 and requests you to survey the East line of Lot 1 and to monument the Northeast and Southeast corners of Lot 1.

Your retracement survey disclosed data as shown on diagram 2.

REQUIRED

1. Describe how you would establish the Northeast corner of Lot 1.

2. Describe how you would establish the Southeast corner of Lot 1.

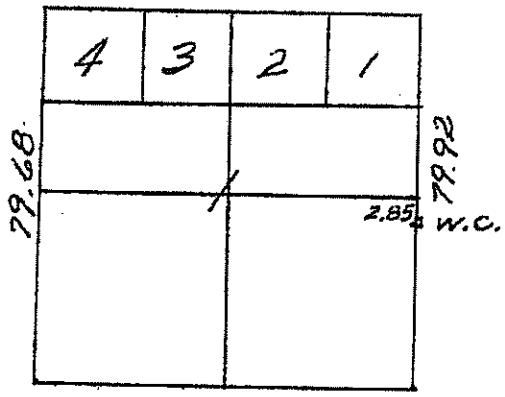
3. What is the length of the East line of Lot 1?

4. If the found witness corner in the vicinity of the East quarter corner did not fall on line between the Northeast section corner and the Southeast section corner, would there be an angle point at the witness corner or at the East quarter corner?

In the above questions, if proportioning is involved, show the elements of the proportion used.

Diagram 1

Portion of accepted plat of T 5 N, R __ W, 5 BM.

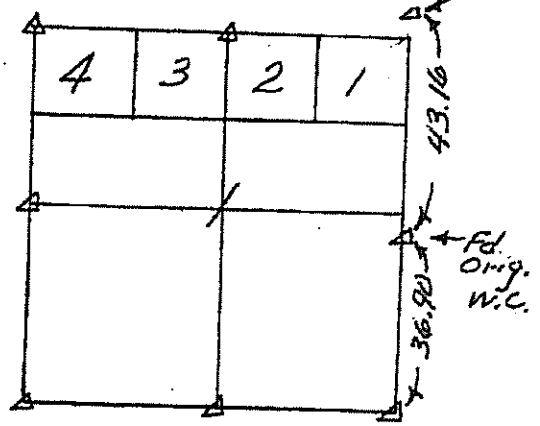


Surveyed 1884 by GLO

Diagram 2

Found original C.C. 3.21 ch. N of Twshp. line

Δ = Found original monument



1984 Survey

Problem C-4 Wt. 8.0 points

PROBLEM STATEMENT

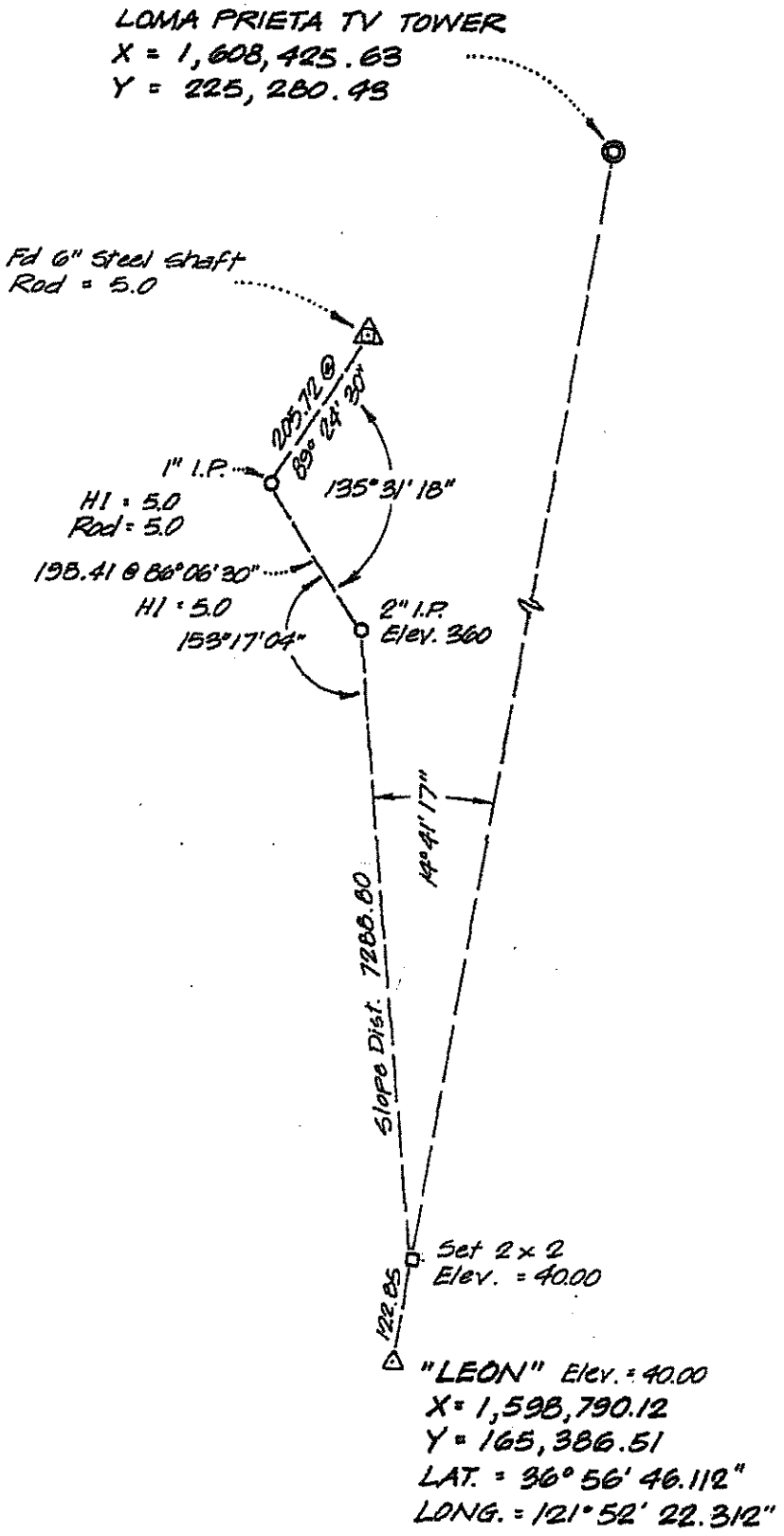
See Diagram opposite page and table on page 10.

All points are in California Zone III. Instrument is 1" second Zenith reading infra red total station temperatures and inches of Hg corrections have been made. Angles shown are average of 6 direct and 6 inverted readings.

REQUIRED

Latitude and longitude to nearest one tenth second and elevation to nearest one tenth of a foot for the found 6" steel shaft.

You must show all calculations.


LOMA PRIETA TV TOWER
X = 1,608,425.63
Y = 225,280.48
Fd 6" Steel Shaft
Rod = 5.0
205.72 @ 89° 24' 30"
1" I.P.
HI = 5.0
Rod = 5.0
135° 31' 18"
198.41 @ 86° 06' 30"
HI = 5.0
153° 17' 04"
2" I.P.
Elev. 360
44° 41' 17"
Slope Dist. 7288.80
Set 2 x 2
Elev. = 40.00
122.85
"LEON" Elev. = 40.00
X = 1,598,790.12
Y = 165,386.51
LAT. = 36° 56' 46.112"
LONG. = 121° 52' 22.312"

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_o	455,516.19	470,526.63
ℓ	0.61223 20427	0.59658 71443
$\frac{1}{2\rho_o^2 \sin 1''}$	2.359×10^{-10}	2.360×10^{-10}
$\log \frac{1}{2\rho_o^2 \sin 1''}$	0.372 7729 - 10	0.372 8843 - 10
$\log \ell$	9.78691 60557 - 10	9.77567 38907 - 10
log k	7.62062 61281	7.62714 43424

Lambert Projection for California III

Table I

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° 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

Lambert Projection for California III

Table II (Cont'd)

1" of Long. = 0"61223204 of θ

Long.	θ	Long.	θ	Long.	θ
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

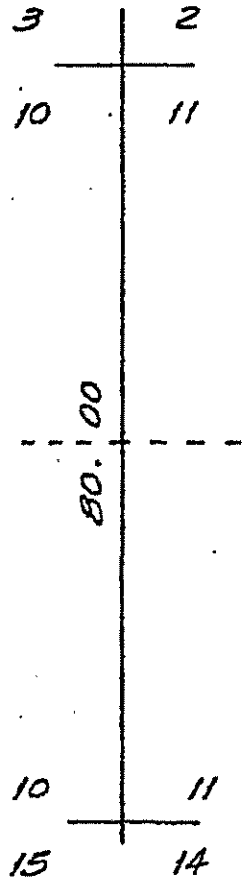
Problem C-5 - Wt. 5.0 points

PROBLEM STATEMENT

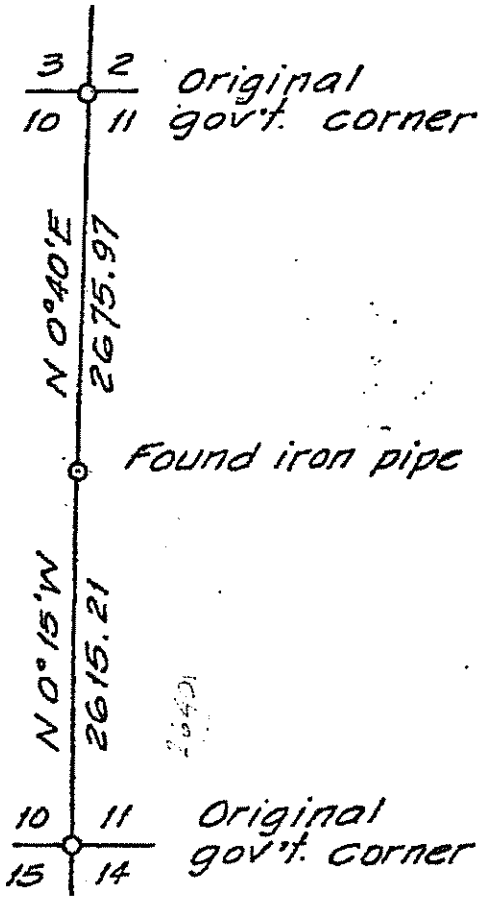
In a forested region of California you are surveying a section line and find an unmarked iron pipe as shown below. You find no reference to the pipe in the record of Survey maps or Parcel Maps at the County Recorder's Office. The original government quarter corner is not shown as found or determined to be lost on any map of record.

REQUIRED

Discuss how you would decide whether or not to accept this iron pipe as the quarter corner, and sources of information used to arrive at this decision. State any assumptions.



US Plat
Approved 1885



Your Measurements

LS-D

LAND SURVEYOR - 1984

Part D - Wt. 52.0

1. Part D is the second section of the Land Surveyor Examination and is to be completed in four hours. ALL PROBLEMS IN PART D ARE REQUIRED.

2. Your answers are to be completed in your workbook - use separate answer sheets for each problem.

3. You may withdraw from scoring any part of your work by isolating that part and writing "VOID" across it. Delineate the voided part clearly.

4. Enter your identification number in the upper right-hand corner on EACH PAGE of the workbook where space is provided and IDENTIFY THE PROBLEM NUMBER according to the schedule given below.

5. Read the instructions on the workbook cover page.

6. This portion of the Land Surveyor Examination consists of the following:

Problem D-1	10.0 points
Problem D-2	5.0 points
Problem D-3	20.0 points
Problem D-4	5.0 points
Problem D-5	2.0 points
Problem D-6	10.0 points
TOTAL	52.0 points

ALL PROBLEMS IN PART D ARE REQUIRED

7. After you have completed this portion of the examination, check your work, assemble your answer sheets in sequential order, be sure to include all pages (including diagrams if required), and turn it in to the Examination Proctor.

8. You may keep this set of examination questions.

Department of Consumer Affairs
State Board of Registration for Professional Engineers
And Land Surveyors

1984

Problem D-1 - Wt. 10.0 points

PROBLEM STATEMENT

In order to retrace an old deed it is necessary to establish the true (astronomic) bearing of line ABLE to BAKER. The field observations have been completed.

REQUIRED

1. Complete the field recording sheet which is on page 2, Two copies are provided--fill in the first, detach and include it with your answer sheets.
2. Compute the two bearings of Polaris.
3. Compute the mean bearing of the line ABLE to BAKER.

OBSERVATION SHEET

STATION ABLE OBSERVER J. SMITH INSTRUMENT T-2 #12345 LEVEL VALUE —

DATE JULY 4 1984 RECORDER P. JONES CHRONOMETER HAM. #475 WEATHER COOL, CLEAR

POS	OBJECT OBSERVED	CHRON TIME H	M	S	Tel D/R	CIRCLE °	'	MICRO/VERN 1st/A"	2d/B"	‖ MEAN	MEAN D/R	DIR ANG.	REMARKS	LEVELS L	R
												Lat.	φ 45°01'-06"		
												Long.	λ 118°-29'-24"		
													RADIO: 9:30:00 PM	PDST	
													CHRONO: 9:29:25 PM	PDST	
													RADIO: 9:31:00 PM	PDST	
													CHRONO: 9:30:25 PM	PDST	
1	BAKER				D	00	00	25	26						
					R	180	00	30	29						
	POLARIS	09	35	20	D	315	26	30	32						
		09	37	10	R	135	27	15	17						
2	BAKER				R	270	00	26	24						
					D	90	00	20	18						
	POLARIS	09	40	40	R	225	27	55	57						
		09	42	00	D	45	28	20	22						
—													RADIO: 9:45:00 PM	PDST	
													CHRONO: 9:44:25 PM	PDST	
													RADIO: 9:46:00 PM	PDST	
													CHRONO: 9:45:25 PM	PDST	

Problem D-1

LS-D 1984 Page 2

ID# ____

OBSERVATION SHEET

STATION ABLE OBSERVER J. SMITH INSTRUMENT T-2 # 12345 LEVEL VALUE —

DATE JULY 4 1984 RECORDER P. JONES CHRONOMETER HAM. # 475 WEATHER COOL, CLEAR

POS	OBJECT OBSERVED	CHRON TIME H	M	S	Tel D/R	CIRCLE °	'	MICRO/VERN 1st/A"	2d/B"	‖ MEAN	MEAN D/R	DIR ANG.	REMARKS	LEVELS L	R
													ϕ 45°01'-06"		
													R 118°-24'-24"		
													RADIO: 9:30:00 PM	PDST	
													CHRONO: 9:29:25 PM	PDST	
													RADIO: 9:31:00 PM	PDST	
													CHRONO: 9:30:25 PM	PDST	
1	BAKER				D	00	00	25	26						
					R	180	00	30	29						
	POLARIS	09	35	20	D	315	26	30	32						
		09	37	10	R	135	27	15	17						
2	BAKER				R	270	00	26	24						
					D	90	00	20	18						
	POLARIS	09	40	40	R	225	27	55	57						
		09	42	00	D	45	28	20	22						
—															
													RADIO: 9:45:00 PM	PDST	
													CHRONO: 9:44:25 PM	PDST	
													RADIO: 9:46:00 PM	PDST	
													CHRONO: 9:45:25 PM	PDST	

Problem D-1

IS-D
1984
Page 2

TABLE 1

SOLAR EPHEMERIS JUNE 1984

For 0h Universal Time or Greenwich Civil Time

Day of Month & Week		The Sun's Apparent Declination	Diff. in Declin. for 1 hour	Equation of Time: True Sol. Time = LCT + Eq. of Time	Differ. for 1 hour	GHA of Polaris
		° ′	′	m s	s	° ′
1	FR	N22 03.1	0.33	+02 16.3	0.39	216 08.4
2	SA	N22 11.0	0.32	+02 06.9	0.40	217 07.3
3	SU	N22 18.6	0.30	+01 57.2	0.42	218 06.1
4	M	N22 25.8	0.28	+01 47.1	0.43	219 05.0
5	TU	N22 32.6	0.27	+01 36.7	0.45	220 03.9
6	W	N22 39.0	0.25	+01 26.0	0.46	221 02.8
7	TH	N22 45.0	0.23	+01 15.0	0.47	222 01.7
8	FR	N22 50.6	0.22	+01 03.8	0.48	223 00.6
9	SA	N22 55.9	0.20	+00 52.3	0.49	223 59.4
10	SU	N23 00.7	0.18	+00 40.5	0.50	224 58.2
11	M	N23 05.1	0.17	+00 28.6	0.51	225 57.0
12	TU	N23 09.0	0.15	+00 16.5	0.51	226 55.8
13	W	N23 12.6	0.13	+00 04.2	0.52	227 54.6
14	TH	N23 15.8	0.12	-00 08.3	0.53	228 53.3
15	FR	N23 18.6	0.10	-00 20.9	0.53	229 52.1
16	SA	N23 20.9	0.08	-00 33.6	0.53	230 50.9
17	SU	N23 22.9	0.06	-00 46.5	0.54	231 49.8
18	M	N23 24.4	0.05	-00 59.4	0.54	232 48.6
19	TU	N23 25.5	0.03	-01 12.4	0.54	233 47.4
20	W	N23 26.2	0.01	-01 25.4	0.54	234 46.3
21	TH	N23 26.5	0.01	-01 38.4	0.54	235 45.1
22	FR	N23 26.4	0.02	-01 51.4	0.54	236 43.9
23	SA	N23 25.9	0.04	-02 04.4	0.54	237 42.7
24	SU	N23 24.9	0.06	-02 17.3	0.54	238 41.5
25	M	N23 23.6	0.07	-02 30.2	0.53	239 40.3
26	TU	N23 21.8	0.09	-02 42.9	0.53	240 39.0
27	W	N23 19.6	0.11	-02 55.6	0.52	241 37.7
28	TH	N23 17.0	0.12	-03 08.0	0.51	242 36.5
29	FR	N23 14.0	0.14	-03 20.3	0.50	243 35.2
30	SA	N23 10.6	0.16	-03 32.4	0.49	244 33.9
31	SU	N23 06.8		-03 44.2		245 32.7

Hourly differences in declination and equation of time are for the 24-hours following 0-hours of date in left column.

TABLE 1

SOLAR EPHEMERIS JULY 1984

For 0h Universal Time or Greenwich Civil Time

Day of Month & Week		The Sun's Apparent Declination	Diff. in Declin. for 1 hour	Equation of Time: True Sol. Time = LCT + Eq. of Time	Differ. for 1 hour	GHA of Polaris
		° ′	′	m s	s	° ′
1	SU	N23 06.8	0.18	-03 44.2	0.48	245 32.7
2	M	N23 02.6	0.19	-03 55.8	0.47	246 31.5
3	TU	N22 58.0	0.21	-04 07.1	0.46	247 30.3
4	W	N22 53.0	0.23	-04 18.0	0.44	248 29.1
5	TH	N22 47.5	0.24	-04 28.6	0.43	249 27.9
6	FR	N22 41.7	0.26	-04 38.9	0.41	250 26.7
7	SA	N22 35.5	0.28	-04 48.8	0.40	251 25.5
8	SU	N22 28.9	0.29	-04 58.2	0.38	252 24.2
9	M	N22 21.9	0.31	-05 07.3	0.36	253 22.9
10	TU	N22 14.5	0.32	-05 16.0	0.34	254 21.6
11	W	N22 06.8	0.34	-05 24.2	0.32	255 20.3
12	TH	N21 58.7	0.35	-05 31.9	0.30	256 19.0
13	FR	N21 50.1	0.37	-05 39.2	0.28	257 17.7
14	SA	N21 41.3	0.39	-05 46.0	0.26	258 16.5
15	SU	N21 32.0	0.40	-05 52.3	0.24	259 15.3
16	M	N21 22.4	0.42	-05 58.2	0.22	260 14.0
17	TU	N21 12.4	0.43	-06 03.5	0.20	261 12.8
18	W	N21 02.1	0.45	-06 08.3	0.18	262 11.6
19	TH	N20 51.4	0.46	-06 12.6	0.16	263 10.4
20	FR	N20 40.3	0.47	-06 16.4	0.13	264 09.2
21	SA	N20 28.9	0.49	-06 19.6	0.11	265 07.9
22	SU	N20 17.2	0.50	-06 22.3	0.09	266 06.6
23	M	N20 05.1	0.52	-06 24.4	0.07	267 05.3
24	TU	N19 52.7	0.53	-06 25.9	0.04	268 04.0
25	W	N19 39.9	0.54	-06 26.9	0.02	269 02.7
26	TH	N19 26.8	0.56	-06 27.3	0.01	270 01.4
27	FR	N19 13.4	0.57	-06 27.2	0.03	271 00.1
28	SA	N18 59.7	0.58	-06 26.4	0.06	271 58.9
29	SU	N18 45.7	0.60	-06 25.0	0.08	272 57.6
30	M	N18 31.4	0.61	-06 23.1	0.11	273 56.4
31	TU	N18 16.7	0.62	-06 20.5	0.13	274 55.2
32	W	N18 01.8		-06 17.3		275 54.0

Hourly differences in declination and equation of time are for the 24-hours following 0-hours of date in left column.

TABLE 5
Increase in GHA for Elapsed Time.

Min.	Hours of Greenwich Civil Time								Sec.	Corr.
	0h		1h		2h		3h			
	° ′		° ′		° ′		° ′			′
0	0	0.0	15	2.5	30	4.9	45	7.4	0	0.0
1	0	15.0	15	17.5	30	19.9	45	22.4	1	0.3
2	0	30.1	15	32.5	30	35.0	45	37.5	2	0.5
3	0	45.1	15	47.6	30	50.1	45	52.6	3	0.8
4	1	0.2	16	2.6	31	5.1	46	7.6	4	1.0
5	1	15.2	16	17.7	31	20.1	46	22.6	5	1.3
6	1	30.2	16	32.7	31	35.2	46	37.6	6	1.5
7	1	45.3	16	47.8	31	50.2	46	52.7	7	1.8
8	2	0.3	17	2.8	32	5.3	47	7.7	8	2.0
9	2	15.4	17	17.8	32	20.3	47	22.8	9	2.3
10	2	30.4	17	32.9	32	35.3	47	37.8	10	2.5
11	2	45.5	17	47.9	32	50.4	47	52.9	11	2.8
12	3	0.5	18	3.0	33	5.4	48	7.9	12	3.0
13	3	15.6	18	18.0	33	20.5	48	22.9	13	3.3
14	3	30.6	18	33.0	33	35.5	48	38.0	14	3.5
15	3	45.6	18	48.1	33	50.5	48	53.0	15	3.8
16	4	0.7	19	3.1	34	5.6	49	8.0	16	4.0
17	4	15.7	19	18.2	34	20.6	49	23.1	17	4.3
18	4	30.7	19	33.2	34	35.7	49	38.1	18	4.5
19	4	45.8	19	48.2	34	50.7	49	53.2	19	4.8
20	5	0.8	20	3.3	35	5.7	50	8.2	20	5.0
21	5	15.9	20	18.3	35	20.8	50	23.3	21	5.3
22	5	30.9	20	33.4	35	35.8	50	38.3	22	5.5
23	5	45.9	20	48.4	35	50.9	50	53.3	23	5.8
24	6	1.0	21	3.4	36	5.9	51	8.4	24	6.0
25	6	16.0	21	18.5	36	21.0	51	23.4	25	6.3
26	6	31.1	21	33.5	36	36.0	51	38.5	26	6.5
27	6	46.1	21	48.6	36	51.0	51	53.6	27	6.8
28	7	1.1	22	3.6	37	6.1	52	8.6	28	7.0
29	7	16.2	22	18.7	37	21.1	52	23.6	29	7.3
30	7	31.2	22	33.7	37	36.2	52	38.6	30	7.5
31	7	46.3	22	48.7	37	51.2	52	53.7	31	7.8
32	8	1.3	23	3.8	38	6.2	53	8.7	32	8.0
33	8	16.4	23	18.8	38	21.3	53	23.7	33	8.3
34	8	31.4	23	33.9	38	36.3	53	38.8	34	8.5
35	8	46.4	23	48.9	38	51.4	53	53.8	35	8.8
36	9	1.5	24	3.9	39	6.4	54	8.9	36	9.0
37	9	16.6	24	19.0	39	21.4	54	23.9	37	9.3
38	9	31.6	24	34.0	39	36.5	54	39.0	38	9.5
39	9	46.6	24	49.1	39	51.5	54	54.0	39	9.8
40	10	1.5	25	4.1	40	6.6	55	9.0	40	10.0
41	10	16.7	25	19.1	40	21.6	55	24.1	41	10.3
42	10	31.7	25	34.2	40	36.7	55	39.1	42	10.5
43	10	46.8	25	49.2	40	51.7	55	54.2	43	10.8
44	11	1.8	26	4.3	41	6.7	56	9.2	44	11.0
45	11	16.8	26	19.3	41	21.8	56	24.2	45	11.3
46	11	31.9	26	34.4	41	36.8	56	39.3	46	11.5
47	11	46.9	26	49.4	41	51.8	56	54.3	47	11.8
48	12	2.0	27	4.4	42	6.9	57	9.4	48	12.0
49	12	17.0	27	19.5	42	21.9	57	24.4	49	12.3
50	12	32.1	27	34.5	42	37.0	57	39.4	50	12.5
51	12	47.1	27	49.6	42	52.0	57	54.5	51	12.8
52	13	2.1	28	4.6	43	7.1	58	9.5	52	13.0
53	13	17.2	28	19.6	43	22.1	58	24.6	53	13.3
54	13	32.2	28	34.7	43	37.1	58	39.6	54	13.5
55	13	47.3	28	49.7	43	52.2	58	54.6	55	13.8
56	14	2.3	29	4.8	44	7.2	59	9.7	56	14.0
57	14	17.3	29	19.8	44	22.3	59	24.7	57	14.3
58	14	32.4	29	34.8	44	37.3	59	39.8	58	14.5
59	14	47.4	29	49.9	44	52.4	59	54.8	59	14.8
60	15	2.5	30	4.9	45	7.4	60	9.9	60	15.0

TABLE 5—(Continued)
Increase in GHA for Elapsed Time.

Min.	Hours of Greenwich Civil Time											
	4h		5h		6h		7h		8h		9h	
	° ′		° ′		° ′		° ′		° ′		° ′	
0	60	9.9	75	12.3	90	14.8	105	17.3	120	19.7	135	22.2
1	60	24.9	75	27.4	90	29.9	105	32.3	120	34.8	135	37.3
2	60	39.9	75	42.4	90	44.9	105	47.3	120	49.8	135	52.3
3	60	55.0	75	57.4	90	59.9	106	2.4	121	4.8	136	7.3
4	61	10.0	76	12.5	91	14.9	106	17.4	121	19.9	136	22.3
5	61	25.1	76	27.5	91	30.0	106	32.5	121	34.9	136	37.4
6	61	40.1	76	42.6	91	45.0	106	47.5	121	50.0	136	52.4
7	61	55.1	76	57.6	92	0.1	107	2.5	122	5.0	137	7.5
8	62	10.2	77	12.6	92	15.1	107	17.6	122	20.0	137	22.5
9	62	25.3	77	27.7	92	30.2	107	32.6	122	35.1	137	37.5
10	62	40.3	77	42.7	92	45.2	107	47.7	122	50.1	137	52.6
11	62	55.3	77	57.8	93	0.2	108	2.7	123	5.2	138	7.6
12	63	10.3	78	12.8	93	15.3	108	17.7	123	20.2	138	22.7
13	63	25.4	78	27.9	93	30.3	108	32.8	123	35.2	138	37.7
14	63	40.4	78	42.9	93	45.4	108	47.8	123	50.3	138	52.8
15	63	55.5	78	57.9	94	0.4	109	2.9	124	5.3	139	7.8
16	64	10.5	79	13.0	94	15.4	109	17.9	124	20.4	139	22.9
17	64	25.6	79	28.0	94	30.5	109	32.9	124	35.4	139	37.9
18	64	40.6	79	43.1	94	45.5	109	48.0	124	50.4	139	52.9
19	64	55.6	79	58.1	95	0.6	110	3.0	125	5.5	140	8.0
20	65	10.7	80	13.1	95	15.6	110	18.1	125	20.5	140	23.0
21	65	25.7	80	28.2	95	30.6	110	33.1	125	35.6	140	38.0
22	65	40.8	80	43.2	96	45.7	110	48.2	125	50.6	140	53.1
23	65	55.8	80	58.3	96	0.7	111	3.2	126	5.7	141	8.1
24	66	10.8	81	13.3	96	15.8	111	18.2	126	20.7	141	23.2
25	66	25.9	81	28.3	96	30.8	111	33.3	126	35.7	141	38.2
26	66	40.9	81	43.4	96	45.8	111	48.3	126	50.8	141	53.2
27	66	56.0	81	58.4	97	0.9	112	3.4	127	5.9	142	8.3
28	67	11.0	82	13.5	97	15.9	112	18.4	127	20.9	142	23.3
29	67	26.0	82	28.5	97	31.0	112	33.4	127	35.9	142	38.4
30	67	41.1	82	43.5	97	46.0	112	48.5	127	50.9	142	53.4
31	67	56.1	82	58.6	98	1.1	113	3.6	128	6.0	143	8.4
32	68	11.2	83	13.6	98	16.1	113	18.6	128	21.0	143	23.5
33	68	26.2	83	28.7	98	31.1	113	33.6	128	36.1	143	38.5
34	68	41.2	83	43.7	98	46.2	113	48.6	128	51.1	143	53.6
35	68	56.3	83	58.8	99	1.2	114	3.7	129	6.1	144	8.6
36	69	11.3	84	13.8	99	16.3	114	18.7	129	21.2	144	23.7
37	69	26.4	84	28.8	99	31.3	114	33.8	129	36.2	144	38.7
38	69	41.4	84	43.9	99	46.3	114	48.8	129	51.3	144	53.7
39	69	56.5	84	58.9	100	1.4	115	3.9	130	6.3	145	8.8
40	70	11.5	85	14.0	100	16.4	115	18.9	130	21.4	145	23.8
41	70	26.6	85	29.0	100	31.5	115	33.9	130	36.4	145	38.9
42	70	41.6	85	44.0	100	46.5	115	49.0	130	51.4	145	53.9
43	70	56.6	85	59.1	101	1.6	116	4.0	131	6.5	146	9.0
44	71	11.7	86	14.1	101	16.6	116	19.1	131	21.5	146	24.0
45	71	26.7	86	29.2	101	31.6	116	34.1	131	36.6	146	39.0
46	71	41.7	86	44.2	101	46.7	116	49.1	131	51.6	146	54.1
47	71	56.8	86	59.2	102	1.7	117	4.2	132	6.6	147	9.1
48	72	11.8	87	14.3	102	16.8	117	19.2	132	21.7	147	24.1
49	72	26.9	87	29.3	102	31.8	117	34.3	132	36.7	147	39.2
50	72	41.9	87	44.4	102	46.8	117	49.3	132	51.8	147	54.2
51	72	56.9	87	59.4	103	1.9	118	4.3	133	6.8	148	9.3
52	73	12.0	88	14.5	103	16.9	118	19.4	133	21.8	148	24.3
53	73	27.0	88	29.5	103	32.0	118	34.4	133	36.9	148	39.3
54	73	42.1	88	44.5	103	47.0	118	49.5	133	51.9	148	54.4
55	73	57.1	88	59.6	104	2.0	119	4.5	134	7.0	149	9.4
56	74	12.2	89	14.6	104	17.1	119	19.5	134	22.0	149	24.5
57	74	27.2	89	29.7	104	32.1	119	34.6	134	37.0	149	39.5
58	74	42.2	89	44.7	104	47.2	119	49.6	134	52.1	149	54.6
59	74	57.3	89	59.7	105	2.2	120	4.7	135	7.1	150	9.6
60	75	12.3	90	14.8	105	17.2	120	19.7	135	22.2	150	24.6

TABLE 5—(Continued)
Increase in GHA for Elapsed Time

Min.	Hours of Greenwich Civil Time							
	20h		21h		22h		23h	
	° ′		° ′		° ′		° ′	
0	300	49.2	315	51.7	330	54.2	345	56.7
1	301	4.2	316	6.8	331	9.3	346	11.7
2	301	19.4	316	21.8	331	24.3	346	26.8
3	301	34.4	316	36.9	331	39.3	346	41.8
4	301	49.4	316	51.9	331	54.4	346	56.8
5	302	4.5	317	7.0	332	9.4	347	11.9
6	302	19.5	317	22.0	332	24.5	347	26.9
7	302	34.5	317	37.0	332	39.5	347	41.9
8	302	49.6	317	52.1	332	54.6	347	57.0
9	303	4.7	318	7.1	333	9.6	348	12.0
10	303	19.7	318	22.2	333	24.6	348	27.1
11	303	34.7	318	37.2	333	39.7	348	42.1
12	303	49.8	318	52.2	333	54.7	348	57.2
13	304	4.8	319	7.3	334	9.7	349	12.2
14	304	19.9	319	22.3	334	24.8	349	27.2
15	304	34.9	319	37.4	334	39.8	349	42.3
16	304	49.9	319	52.4	334	54.9	349	57.3
17	305	5.0	320	7.4	335	9.9	350	12.4
18	305	20.0	320	22.5	335	24.9	350	27.4
19	305	35.1	320	37.5	335	40.0	350	42.5
20	305	50.1	320	52.6	335	55.0	350	57.5
21	306	5.1	321	7.6	336	10.1	351	12.5
22	306	20.2	321	22.6	336	25.1	351	27.6
23	306	35.2	321	37.7	336	40.2	351	42.6
24	306	50.3	321	52.7	336	55.2	351	57.7
25	307	5.3	322	7.8	337	10.2	352	12.7
26	307	20.3	322	22.8	337	25.3	352	27.7
27	307	35.4	322	37.8	337	40.3	352	42.8
28	307	50.4	322	52.9	337	55.4	352	57.8
29	308	5.5	323	7.9	338	10.4	353	12.9
30	308	20.5	323	23.0	338	25.4	353	27.9
31	308	35.6	323	38.0	338	40.5	353	42.9
32	308	50.6	323	53.1	338	55.5	353	58.0
33	309	5.6	324	8.1	339	10.6	354	13.0
34	309	20.7	324	23.1	339	25.6	354	28.1
35	309	35.7	324	38.2	339	40.6	354	43.1
36	309	50.8	324	53.2	339	55.7	354	58.2
37	310	5.8	325	8.3	340	10.7	355	13.2
38	310	20.9	325	23.3	340	25.8	355	28.3
39	310	35.9	325	38.3	340	40.8	355	43.3
40	310	50.9	325	53.4	340	55.9	355	58.3
41	311	6.0	326	8.4	341	10.9	356	13.4
42	311	21.0	326	23.5	341	25.9	356	28.4
43	311	36.0	326	38.5	341	41.0	356	43.4
44	311	51.1	326	53.6	341	56.0	356	58.5
45	312	6.1	327	8.6	342	11.1	357	13.5
46	312	21.2	327	23.6	342	26.1	357	28.6
47	312	36.2	327	38.7	342	41.1	357	43.6
48	312	51.3	327	53.7	342	56.2	357	58.6
49	313	6.3	328	8.8	343	11.2	358	13.7
50	313	21.3	328	23.8	343	26.2	358	28.7
51	313	36.4	328	38.9	343	41.3	358	43.8
52	313	51.4	328	53.9	343	56.3	358	58.8
53	314	6.5	329	9.0	344	11.4	359	13.8
54	314	21.5	329	24.0	344	26.4	359	28.9
55	314	36.6	329	39.0	344	41.5	359	43.9
56	314	51.6	329	54.0	344	56.5	359	58.9
57	315	6.6	330	9.1	345	11.6	0	14.0
58	315	21.7	330	24.1	345	26.6	0	29.1
59	315	36.7	330	39.2	345	41.6	0	44.1
60	315	51.7	330	54.2	345	56.7	0	59.1

Sec.	Corr.
	′
0	0.0
1	0.3
2	0.5
3	0.8
4	1.0
5	1.3
6	1.5
7	1.8
8	2.0
9	2.3
10	2.5
11	2.8
12	3.0
13	3.3
14	3.5
15	3.8
16	4.0
17	4.3
18	4.5
19	4.8
20	5.0
21	5.3
22	5.5
23	5.8
24	6.0
25	6.3
26	6.5
27	6.8
28	7.0
29	7.3
30	7.5
31	7.8
32	8.0
33	8.3
34	8.5
35	8.8
36	9.0
37	9.3
38	9.5
39	9.8
40	10.0
41	10.3
42	10.5
43	10.8
44	11.0
45	11.3
46	11.5
47	11.8
48	12.0
49	12.3
50	12.5
51	12.8
52	13.0
53	13.3
54	13.5
55	13.8
56	14.0
57	14.3
58	14.5
59	14.8
60	15.0

TABLE 6

CORRECTIONS TO BE APPLIED TO LATITUDE TO OBTAIN THE TRUE ALTITUDE OF POLARIS, 1984

t	Corr.	t	Corr.	t	Corr.	t	Corr.
°	′	°	′	°	′	°	′
000	+48.3	045	+34.0	090	-00.3	135	34.3
001	+48.3	046	+33.4	091	-01.2	136	-34.9
002	+48.3	047	+32.8	092	-02.0	137	-35.5
003	+48.2	048	+32.1	093	-02.9	138	-36.0
004	+48.2	049	+31.5	094	-03.7	139	-36.6
005	+48.1	050	+30.8	095	-04.5	140	-37.1
006	+48.0	051	+30.2	096	-05.4	141	-37.7
007	+47.9	052	+29.5	097	-06.2	142	-38.2
008	+47.8	053	+28.8	098	-07.1	143	-38.7
009	+47.7	054	+28.2	099	-07.9	144	-39.2
010	+47.6	055	+27.5	100	-08.7	145	-39.7
011	+47.4	056	+26.8	101	-09.5	146	-40.1
012	+47.3	057	+26.1	102	-10.4	147	-40.6
013	+47.0	058	+25.3	103	-11.2	148	-41.1
014	+46.8	059	+24.6	104	-12.0	149	-41.5
015	+46.6	060	+23.9	105	-12.8	150	-41.9
016	+46.4	061	+23.2	106	-13.6	151	-42.3
017	+46.2	062	+22.4	107	-14.4	152	-42.7
018	+45.9	063	+21.7	108	-15.2	153	-43.1
019	+45.6	064	+20.9	109	16.0	154	-43.5
020	+45.3	065	+20.1	110	-16.8	155	-43.8
021	+45.0	066	+19.4	111	-17.6	156	-44.2
022	+44.7	067	+18.6	112	-18.4	157	-44.5
023	+44.4	068	+17.8	113	-19.2	158	-44.8
024	+44.1	069	+17.0	114	-19.9	159	-45.1
025	+43.7	070	+16.2	115	-20.7	160	-45.4
026	+43.3	071	+15.4	116	-21.4	161	-45.7
027	+43.0	072	+14.6	117	-22.2	162	-46.0
028	+42.6	073	+13.8	118	-22.9	163	-46.2
029	+42.2	074	+13.0	119	-23.7	164	-46.5
030	+41.7	075	+12.2	120	-24.4	165	-46.7
031	+41.3	076	+11.4	121	-25.1	166	-46.9
032	+40.9	077	+10.5	122	-25.8	167	-47.1
033	+40.4	078	+09.7	123	-26.5	168	-47.3
034	+39.9	079	+08.9	124	-27.2	169	-47.4
035	+39.5	080	+08.1	125	-27.9	170	-47.6
036	+39.0	081	+07.2	126	-28.6	171	-47.7
037	+38.4	082	+06.4	127	-29.3	172	-47.8
038	+37.9	083	+05.6	128	-29.9	173	-47.9
039	+37.4	084	+04.7	129	-30.6	174	-48.0
040	+36.9	085	+03.9	130	-31.2	175	-48.1
041	+36.3	086	+03.0	131	-31.9	176	-48.2
042	+35.7	087	+02.2	132	-32.5	177	-48.3
043	+35.2	088	+01.3	133	-33.1	178	-48.3
044	+34.6	089	+00.5	134	-33.7	179	-48.3
045	+34.0	090	-00.3	135	-34.3	180	-48.3

This Table is Computed for Latitude 45° 00'00"N and Declination of 89° 11'42" N.

TABLE 2

REFRACTION AND SUN'S PARALLAX

(To be applied to observed altitudes. See page 16)

Bar. = 29.6 in. Temp. = 50° F

Measured Altitude	Refraction	Sun's Par.	Measured Altitude	Refraction	Sun's Par.
° ′	′	′	° ′	′	′
7 30	6.89	0.15	17 30	3.02	0.14
7 40	6.75	0.15	18 00	2.93	0.14
7 50	6.62	0.15	18 30	2.85	0.14
8 00	6.50	0.15	19 00	2.77	0.14
8 10	6.37	0.15	19 30	2.70	0.14
8 20	6.25	0.15	20 00	2.62	0.14
8 30	6.13	0.15	21 00	2.49	0.14
8 40	6.02	0.15	22 00	2.38	0.14
8 50	5.92	0.15	23 00	2.25	0.14
9 00	5.82	0.15	24 00	2.15	0.14
9 10	5.72	0.15	25 00	2.05	0.14
9 20	5.63	0.15	26 00	1.96	0.13
9 30	5.53	0.15	27 00	1.88	0.13
9 40	5.43	0.15	28 00	1.80	0.13
9 50	5.34	0.15	29 00	1.73	0.13
10 00	5.26	0.15	30 00	1.66	0.13
10 20	5.10	0.15	32 00	1.53	0.13
10 40	4.95	0.14	34 00	1.42	0.12
11 00	4.81	0.14	36 00	1.32	0.12
11 20	4.67	0.14	38 00	1.23	0.12
11 40	4.54	0.14	40 00	1.15	0.11
12 00	4.42	0.14	42 00	1.07	0.11
12 30	4.26	0.14	44 00	1.00	0.11
13 00	4.09	0.14	46 00	0.93	0.10
13 30	3.93	0.14	48 00	0.86	0.10
14 00	3.78	0.14	50 00	0.80	0.09
14 30	3.65	0.14	55 00	0.67	0.08
15 00	3.53	0.14	60 00	0.55	0.07
15 30	3.42	0.14	65 00	0.45	0.06
16 00	3.32	0.14	70 00	0.35	0.05
16 30	3.22	0.14	80 00	0.17	0.03
17 00	3.12	0.14	90 00	0.00	0.00

The refraction values in Table 2 are corrected by multiplying them by the multipliers in Table 2a when the barometric pressure and the temperature differ from those on which Table 2 is based, i. e. 29.6 inches and 50° F.

If the barometric pressure is not known, it may be estimated from the elevation of the locality in accordance with the values given in Table 2a. Otherwise the elevations are disregarded.

TABLE 2a

To correct Table 2. See Examples below.

MULTIPLIERS FOR OBSERVED BAROMETRIC PRESSURE OR ELEVATION

Bar. (Inches)	Elev. (Feet)	Multiplier	Bar. (Inches)	Elev. (Feet)	Multiplier
30.5	− 451	1.03	23.9	+ 6194	0.81
30.2	− 181	1.02	23.6	6538	0.80
30.0	00	1.01	23.3	6887	0.79
			23.0	7239	0.78
29.9	+ 91	1.01			
29.8	365	1.00	22.7	7597	0.77
29.3	643	0.99	22.4	7960	0.76
29.0	924	0.98	22.1	8327	0.75
28.7	1207	0.97	21.8	8700	0.74
28.4	1493	0.96	21.5	9077	0.73
28.1	1783	0.95	21.2	9460	0.72
27.8	2075	0.94	20.9	9848	0.71
27.5	2371	0.93	20.6	10242	0.70
27.2	2670	0.92	20.3	10642	0.69
			20.0	11047	0.68
26.9	2972	0.91			
26.6	3277	0.90	19.7	11458	0.67
26.3	3586	0.89	19.4	11875	0.66
26.0	3899	0.88	19.1	12299	0.65
25.7	4216	0.87	18.8	12729	0.64
25.4	4535	0.86	18.5	13165	0.63
25.1	4859	0.85	18.2	13608	0.62
24.8	5188	0.84	17.9	14058	0.61
24.5	5518	0.83			
24.2	5854	0.82			

MULTIPLIERS FOR TEMPERATURE

Temp. Deg. F	Multiplier	Temp. Deg. F	Multiplier	Temp. Deg. F	Multiplier
− 20	1.16	+ 30	1.04	+ 80	0.94
− 10	1.13	+ 40	1.02	+ 90	0.93
0	1.11	+ 50	1.00	+100	0.91
+ 10	1.08	+ 60	0.98	+110	0.90
+ 20	1.06	+ 70	0.96	+120	0.88

Example. Sun: Meas. Alt. = 30°; Bar. = 26 in. or Elev. 3900 ft.; Temp. 70° F.
Refraction = 1.66′ (0.88) (0.96) = 1.40′. Parallax = 0.13′.
True Alt. = 30° 00.00′ − 1.40′ + 0.13′ = 29° 58.73′.

Example. Star: Meas. Alt. = 25°; Bar. = 24.5 or Elev. 5518 ft.; Temp. 10° F.
Refraction = 2.05′ (0.89) (1.08) = 1.84′.
True Alt. = 25° 00.00′ − 1.84′ = 24° 58.16′.

TABLE 3

POLAR DISTANCE OF POLARIS 1984

For 0^h Universal Time or Greenwich Civil Time

1984	Polar Distance Angle	Cotan	1984	Polar Distance Angle	Cotan
	° ′			° ′	
Jan. 1	0 48.24	71.26	July 9	0 48.21	70.57
11	0 48.21	71.30	19	0 48.20	70.59
21	0 48.19	71.33	29	0 48.19	70.60
31	0 48.19	71.33			
Feb. 10	0 48.19	71.33	Aug. 8	0 48.17	70.63
20	0 48.20	71.32	18	0 48.14	70.67
			28	0 48.11	70.72
Mar. 1	0 48.23	71.27	Sep. 7	0 48.16	70.78
11	0 48.26	71.23	17	0 48.13	70.85
21	0 48.30	71.17	27	0 48.46	70.94
31	0 48.35	71.10			
Apr. 10	0 48.40	71.03	Oct. 7	0 48.40	71.02
20	0 48.45	70.95	17	0 48.34	71.11
30	0 48.50	70.88	27	0 48.28	71.20
May 10	0 48.54	70.82	Nov. 6	0 48.21	71.30
20	0 48.59	70.75	16	0 48.15	71.39
30	0 48.63	70.69	26	0 48.09	71.48
June 9	0 48.66	70.64	Dec. 6	0 48.04	71.56
19	0 48.68	70.61	16	0 47.98	71.64
29	0 48.70	70.59	26	0 47.94	71.70

Declination = 90° − Polar Distance

TABLE 4

THE SUN'S SEMI-DIAMETER 1984

For 0^h Universal Time or Greenwich Civil Time

Date	Semi-Diam.	Date	Semi-Diam.	Date	Semi-Diam.
1984	′	1984	′	1984	′
Jan. 1	16.29	May 10	15.86	Sep. 7	15.90
11	16.19	20	15.83	17	15.93
21	16.28	30	15.80	27	15.98
31	16.26				
Feb. 10	16.24	June 9	15.78	Oct. 7	16.03
20	16.20	19	15.76	17	16.08
		29	15.76	27	16.12
Mar. 1	16.17	July 9	15.76	Nov. 6	16.16
11	16.12	19	15.76	16	16.20
21	16.08	29	15.78	26	16.23
31	16.03				
Apr. 10	15.99	Aug. 8	15.80	Dec. 6	16.26
20	15.94	18	15.83	16	16.28
30	15.90	28	15.86	26	16.29

ID #_____

Problem D-2 - Wt. 5.0 points

PROBLEM STATEMENT

The following questions pertain to Littoral and Riparian Rights and Boundaries. Complete the sentence by providing the missing word or words.

REQUIRED

1. The increase of land by the permanent withdrawal of sea, river or lake is called _____.

2. Land is not lost by _____ but is lost by gradual _____.

3. The _____ of a lake or river is the land which is covered by water sufficiently long to keep it bare of vegetation.

4. Mean Sea Level at any one spot is determined by average hourly tide readings over an _____ period.

5. The four fundamental methods of dividing accretion are _____, _____, _____ and _____.

6. Where, from natural causes, land forms in imperceptible degrees upon the bank of a river, stream, lake or tidewater, either by accumulation of materials or recession of water, the process and end result are called _____ and _____.

7. The ownership of an island formed in a river or lake by accretion belongs to _____.

8. The ownership of land lying between the meander line and low water mark is determined by _____.

9. In the case of double descriptions involving Riparian Boundaries, the construction giving the greatest advantage to the _____ prevails.

10. The middle, deepest or best navigable channel is called the _____.

Two copies of page 7 are provided--fill-in the FIRST copy, detach it, AND INCLUDE IT WITH YOUR ANSWER SHEETS.

Problem D-2 - Wt. 5.0 points

PROBLEM STATEMENT

The following questions pertain to Littoral and Riparian Rights and Boundaries. Complete the sentence by providing the missing word or words.

REQUIRED

1. The increase of land by the permanent withdrawal of sea, river or lake is called _____.

2. Land is not lost by _____ but is lost by gradual _____.

3. The _____ of a lake or river is the land which is covered by water sufficiently long to keep it bare of vegetation.

4. Mean Sea Level at any one spot is determined by average hourly tide readings over an _____ period.

5. The four fundamental methods of dividing accretion are _____, _____, _____ and _____.

6. Where, from natural causes, land forms in imperceptible degrees upon the bank of a river, stream, lake or tidewater, either by accumulation of materials or recession of water, the process and end result are called _____ and _____.

7. The ownership of an island formed in a river or lake by accretion belongs to _____.

8. The ownership of land lying between the meander line and low water mark is determined by _____.

9. In the case of double descriptions involving Riparian Boundaries, the construction giving the greatest advantage to the _____ prevails.

10. The middle, deepest or best navigable channel is called the _____.

Problem D-3 - Wt. 20.0 points

PROBLEM STATEMENT (See diagrams on pages 10 and 11)

Mr. Jones gives you the deed to his property with a request to perform a field survey and monument his property corners. In addition to his deed, your research of available record data provides you with the information shown below. Your field survey finds a double set of monuments at the base of a very old fence along the line of a prominent ridge, on the south side of Mr. Jones' property.

Your field survey agrees with the survey information provided by tract 10000, in that it finds the same measurements in addition to the old original monuments per Record of Survey 1-1, in addition to a very old fence along the top of a prominent ridge.

REQUIRED

How would you interpret the legal description in his deed, together with all other documents given, in order to establish the southerly boundary of Mr. Jones' property: State reasons and give references.

GIVEN:

1. Grantor - Mr. Green, Grantee - Mr. Jones June 1963

   That portion of the Rancho Espana, in the County of Orange, State of California, as shown on the map in Book 1, Page 50, of Patents, and more particularly shown on the map recorded in Book 2, Page 100 of Record of Surveys, all in the office of the County Recorder of said county, described as follows:

   Beginning at Rancho Espana corner number 12 as shown on said above-mentioned maps; thence North 85° West 1000 feet along the Northeasterly line of said Rancho Espana; thence leaving said Northeasterly line South 10° West 1000 feet; thence South 37.5° West 231.22 feet; thence South 80° West 1000 feet to the true point of beginning; thence continuing South 80° West 600 feet; thence North 3° 27' 40" East 800 feet; thence South 86° 32' 20" East 583.52 feet; thence South 3° 27' 40" West 660.33 feet to the true point of beginning.

   Containing 9.78 acres, more or less

2. Grantor - Mr. Valdez, Grantee - Mr. Green December 1932

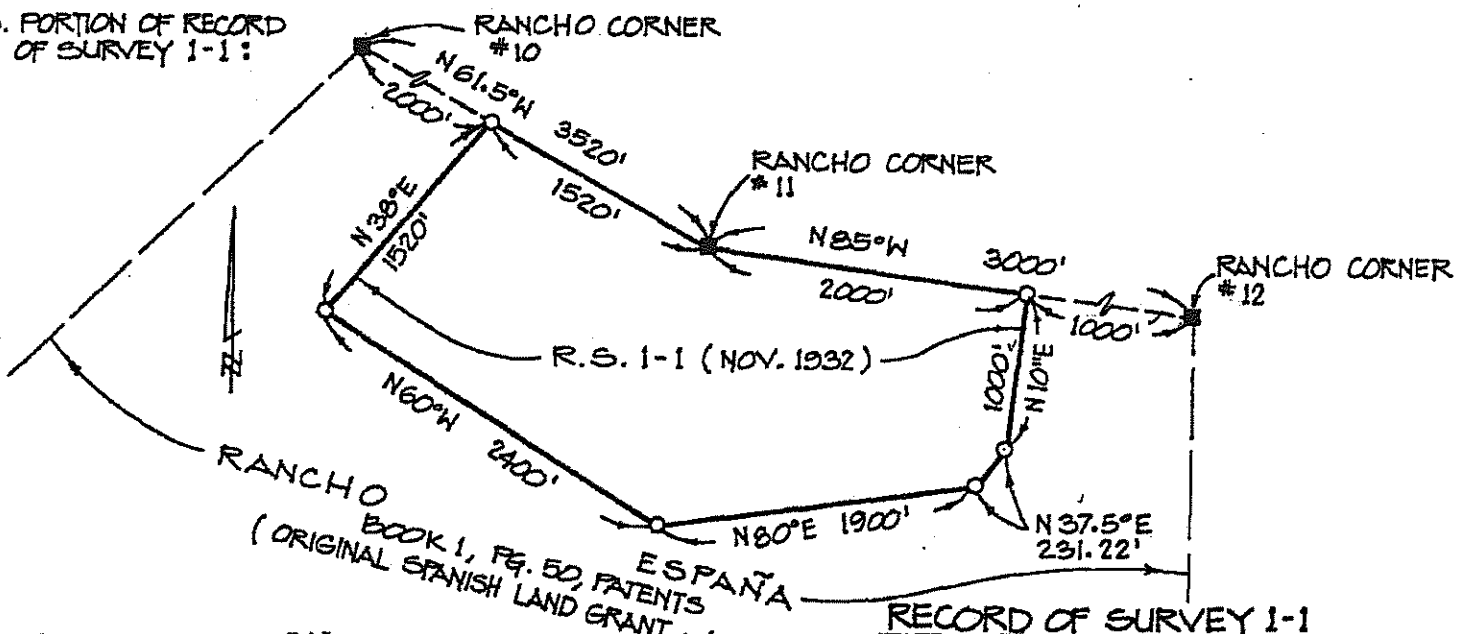
   That portion of the Rancho Espana, in the County of Orange, State of California, as shown on the map in Book 1, Page 50 of Patents, and more particularly shown on the map recorded in Book 1, Page 1 of Record of Surveys, all in the office of the County Recorder of said county, defined as follows:

Problem D-3 (Continued)

Beginning at Rancho corner number 12 as shown on said abovementioned maps; then North 85° West 1000 feet along the Northeasterly line of said Rancho Espana to the most Northerly corner of the land shown on said map recorded in Book 1, Page 1 of Record of Surveys, said point being the true point of beginning; thence leaving said Northeasterly line along the Southerly boundary line of said last-mentioned land, the following courses: South 10° West 1000 feet; thence South 37.5° West 231.22 feet; thence South 80° West 1600 feet; thence leaving said Southerly boundary line North 3° 27' 40 East 1605.89 feet to a point in said Northeasterly line of said Rancho Espana, said point being distance South 85° East 200 feet, as measured along said Northeasterly line, from Rancho corner number 11 as shown on said maps; thence South 85° East 1800 feet along said Northeasterly line to the true point of beginning.

CONTAINING 44.74 ACRES, MORE OR LESS, GROSS.

3. PORTION OF RECORD OF SURVEY 1-1:



-O- INDICATES SET 5/8" STEEL PIN WITH TAG MARKED "L.S. 100".
-■- INDICATES FOUND ORIGINAL 12"X12" STONE MARKED "RANCHO ESPAÑA".

RECORD OF SURVEY 1-1

RECORDED NOVEMBER, 1932 AT THE REQUEST OF MR. CHARLES WHITE, IN BOOK 1, PAGE 1 OF RECORD OF SURVEYS, ORANGE COUNTY, CALIF.

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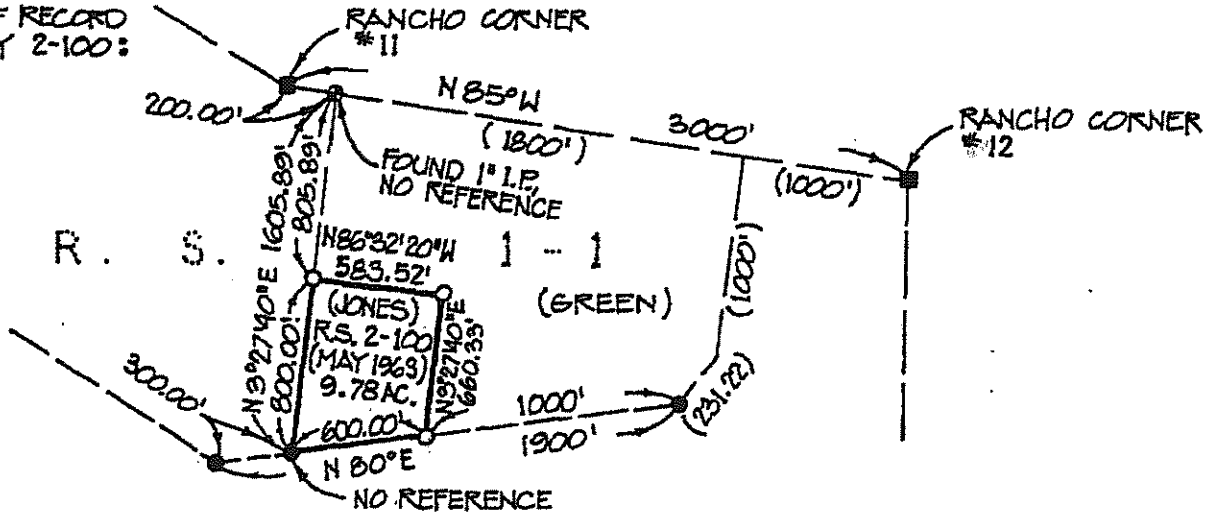
4. PORTION OF RECORD OF SURVEY 2-100:

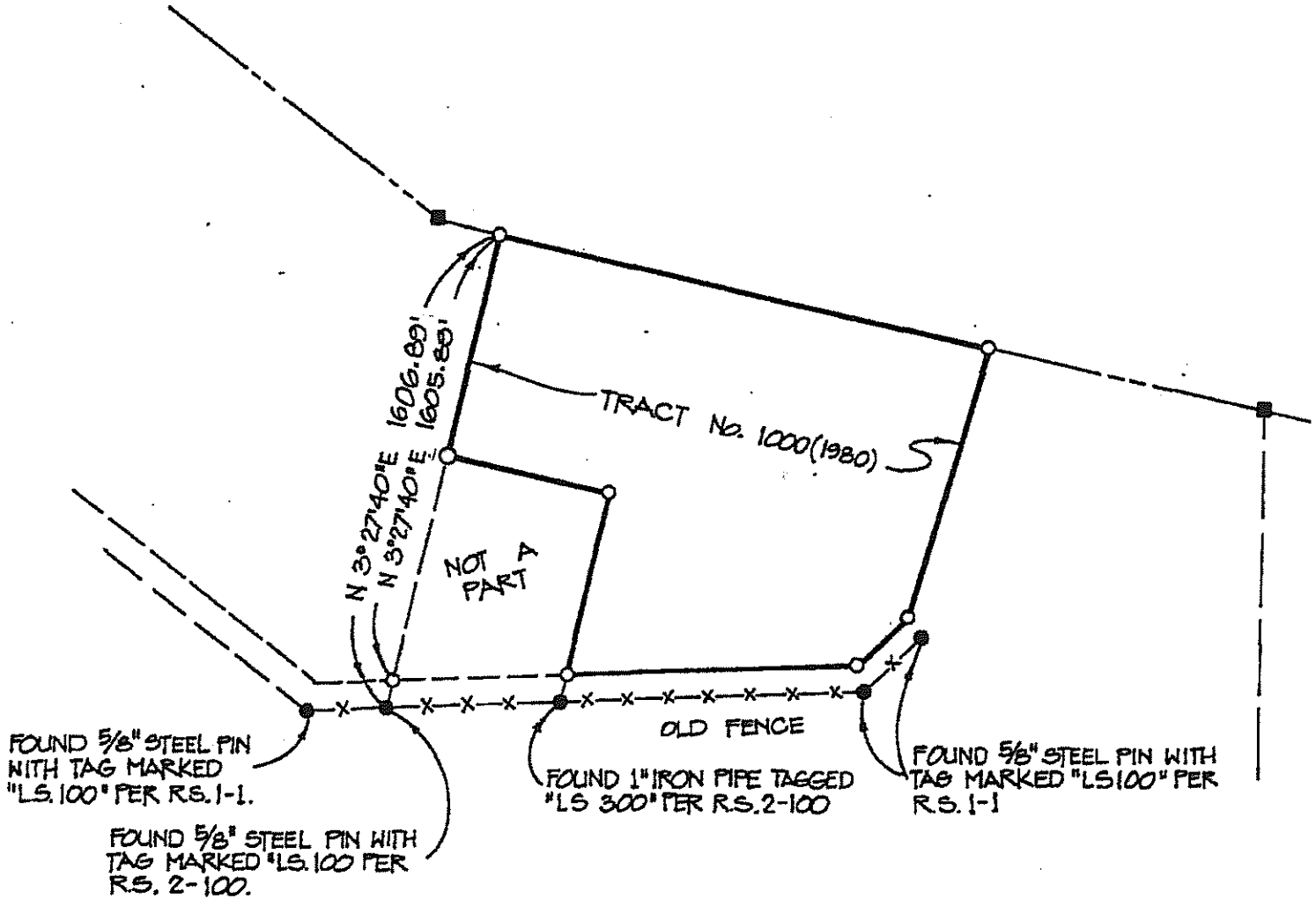


-O- INDICATES SET 1" IRON PIPE MARKED "L.S. 300".
-■- INDICATES FOUND ORIGINAL 12"X12" STONE MARKED "RANCHO ESPAÑA".
-⊕- INDICATES FOUND 5/8" STEEL PIN WITH TAG MARKED "L.S. 100", UNLESS OTHERWISE NOTED.

RECORD OF SURVEY 2-100

RECORDED MAY, 1963 AT THE REQUEST OF MR. JOHN JONES, IN BOOK 2, PAGE 100, OF RECORD OF SURVEYS, ORANGE COUNTY, CALIF.

5. PORTION OF TRACT 1000:



-o- INDICATES SET 2" IRON PIPE TAGGED "RCE 20000".
-■- INDICATES FOUND SPIKE AND WASHER AND TAG MARKED "RCE 20000" AS REPLACEMENT FOR ORIGINAL RANCHO CORNER MONUMENT.
-●- INDICATES FOUND MONUMENTS AS NOTED.

Problem D-4 - Wt. 5.0 points

PROBLEM STATEMENT

Topographic mapping by photogrammetric methods is required for the 120' acre site shown below. The mapping will be used for final design plans.

REQUIRED

1. Complete the following:

   Map scale _____

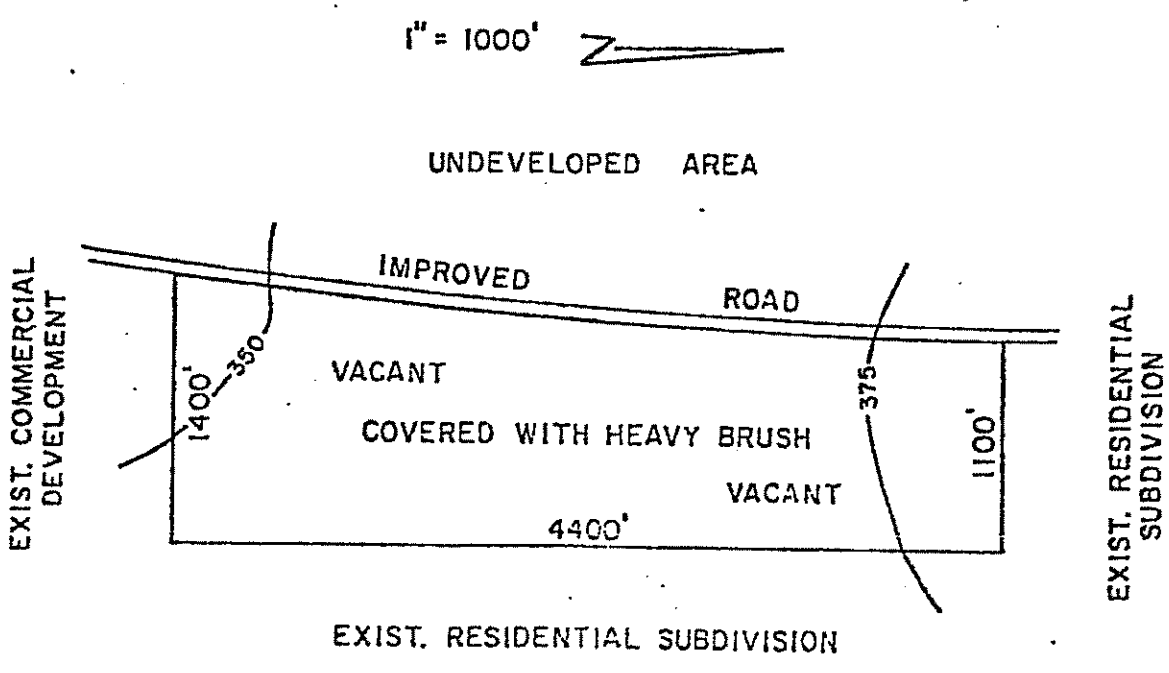
   Contour interval _____

   Photo scale _____

   Target size _____

   Minimum accuracy of field control _____

2. Draw your flight plan layout on the map shown below. Show the desired location of your field control points on the flight plan.



Problem D-4 - Wt. 5.0 points

PROBLEM STATEMENT

Topographic mapping by photogrammetric methods is required for the 120 acre site shown below. The mapping will be used for final design plans.

REQUIRED

1. Complete the following:

   Map scale _____

   Contour interval _____

   Photo scale _____

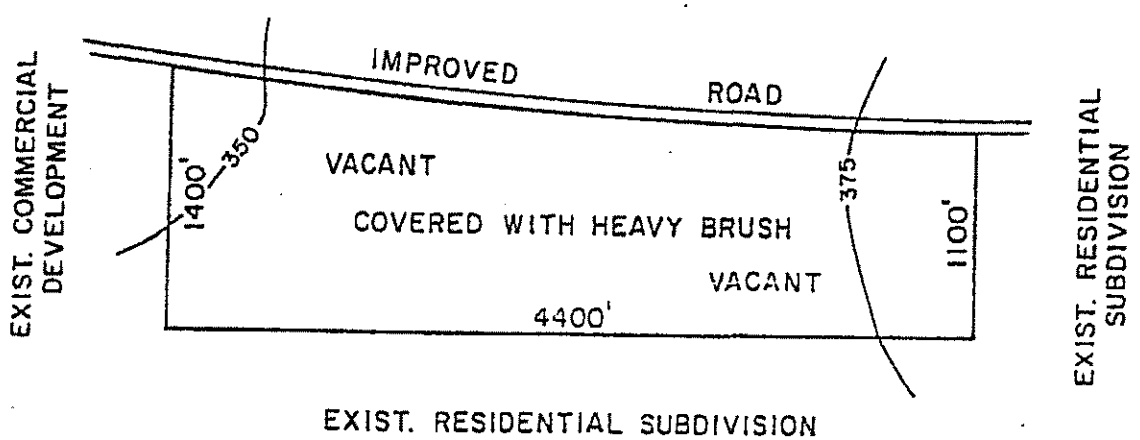
   Target size _____

   Minimum accuracy of field control _____

2. Draw your flight plan layout on the map shown below. Show the desired location of your field control points on the flight plan.

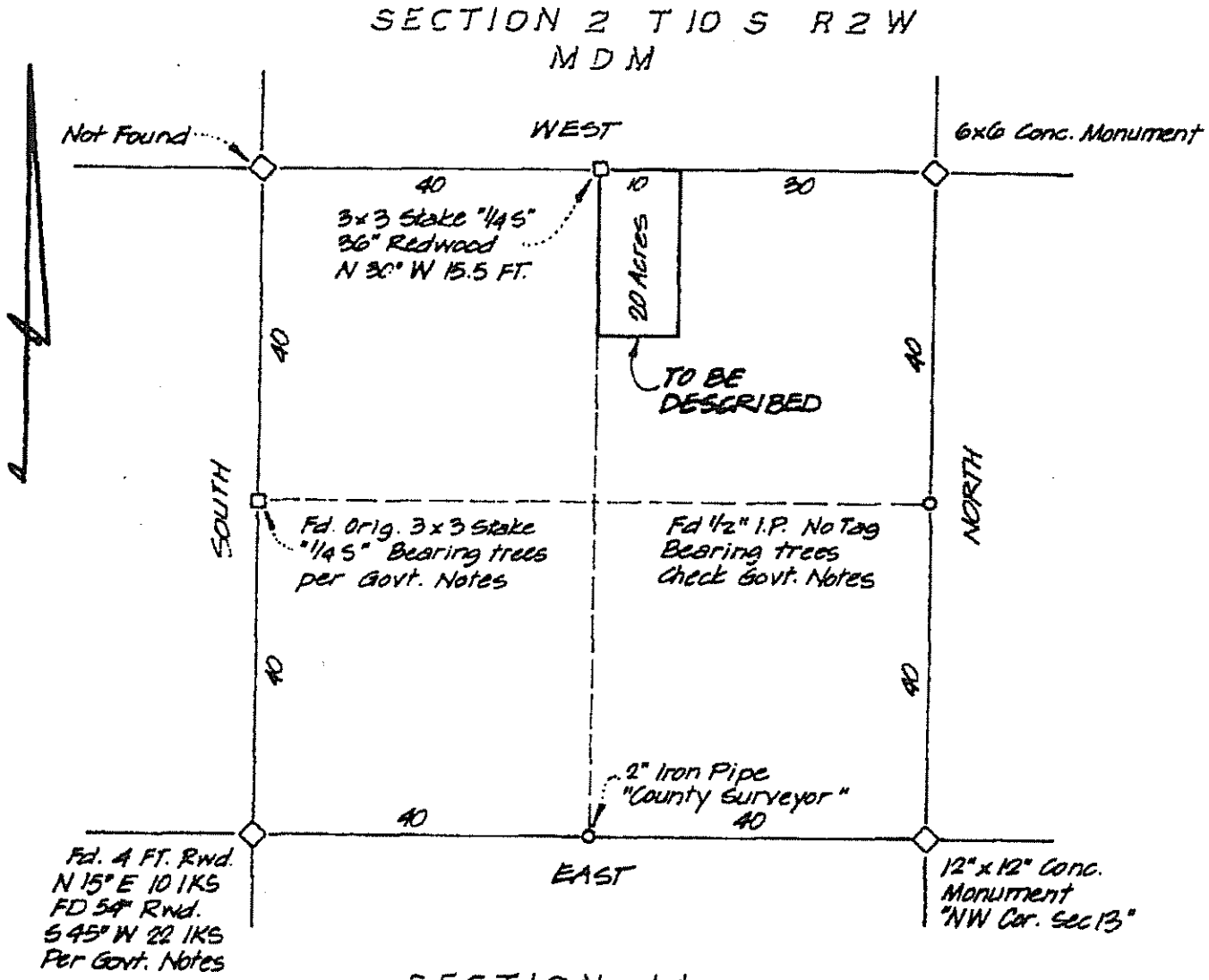
Two copies of page 12 are provided--fill in the THIS copy, detach it, AND INCLUDE IT WITH YOUR ANSER SHEETS.

1" = 1000'



Problem D-5 - Wt. 2.0 points

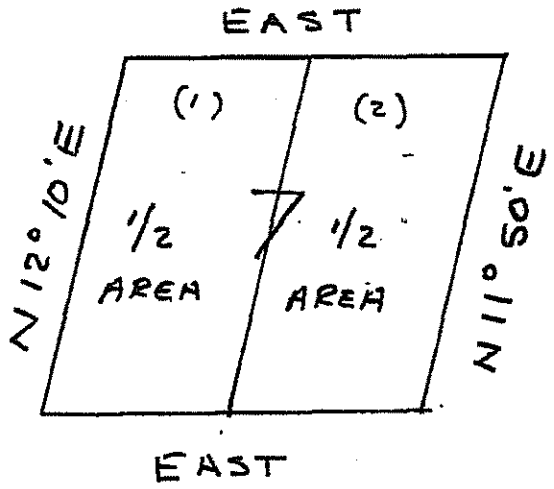
Write a legal description for the 20 acre parcel shown in County of Santa Cruz, State of California - all dimensions shown are record and measured. Bearings are based on polaris observation.



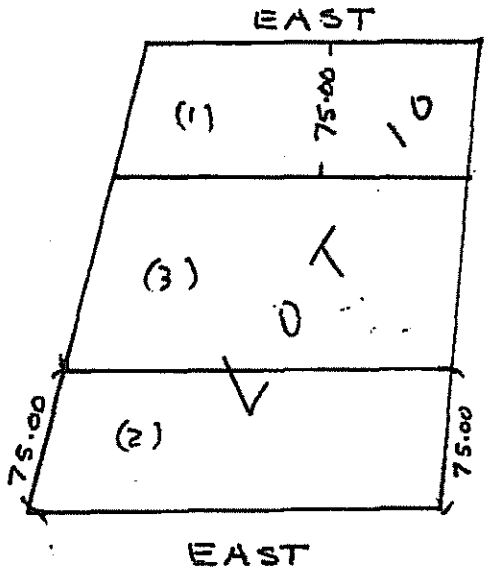
Problem D-6 Wt. 10.0 points

Prepare Legal Descriptions for all portions of each lot in the order shown, i.e., (1) First, (2) Second, etc. The Legal Descriptions must be sufficient to properly convey each parcel and there must be no ambiguities created. The parcels will be conveyed in the order shown.

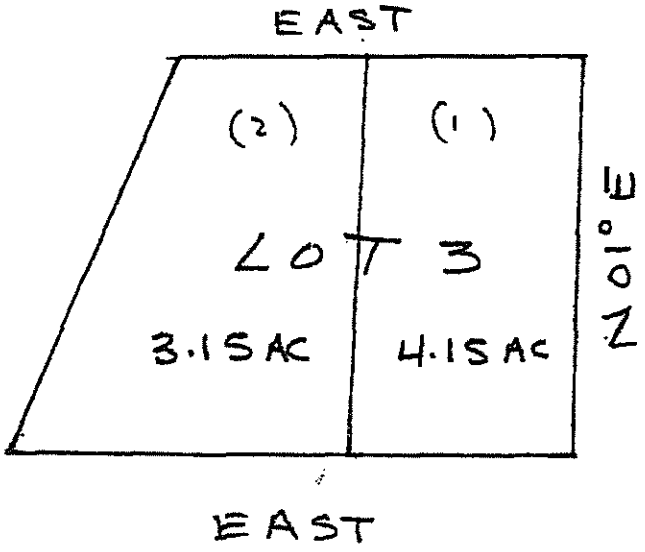
1. 2 Points



2. 4 Points



3. 2 Points



4. 2 Points