CALIFORNIA STATE BOARD OF REGISTRATION
FOR PROFESSIONAL ENGINEERS

LS

1981

LAND SURVEYOR

C

PRINCIPLES AND PRACTICE

1. This examination is given in two four-hour periods on the same day. The subject matter relates to the principles and practice of land surveying. Part "C" is the first of two parts.

2. In the workbook, you are to work ALL Problems C-1 through C-5. There are no optional questions.

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 in (6) below.

5. Read the instructions on the workbook cover page.

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

Problem C-1	10 Points
Problem C-2	10 Points
Problem C-3	5 Points
Problem C-4	15 Points
Problem C-5	10 Points
TOTAL	50 Points

YOU ARE TO WORK ALL 5 PROBLEMS

7. After you have completed this portion of the examination, check the problem order, include all pages, and turn it in to the Examination Proctor.

8. You may keep this set of examination questions.

PROBLEM C-1 (10 POINTS)

REQUIRED

Alfred Terry acquired the following described parcel by Grant Deed recorded December 5, 1966, in Book 1000 of Official Records, Page 21:

That certain real property situated in the County of Mendocino, State of California, described as follows:

That portion of Lot 2 of Section 13, Township 11 North, Range 16 West, Mount Diablo Base and Meridian, according to the official plat thereof, described as follows:

BEGINNING at a point in the centerline of the Mendocino Coast Wagon Road, as traveled, said point being distant East, 85.0 feet; South 17° 54' East 597.5 feet, and South 38° 37' East 141.7 feet from the Northwest corner of Lot 2, Section 13, Township 11 North, Range 16 West, Mount Diablo Base and Meridian, running thence along the centerline of said Wagon Road South 60° 30' East 119.97 feet; South 82° 49' East 106.83 feet; North 68° 57' East 93.41 feet, North 62° 08' East 98.80 feet; South 80° 06' East 76.05 feet; South 49° 43' East 122.52 feet; thence leaving said Wagon Road centerline South 57° 07' West 489.05 feet along a wire fence and Northwesterly of creek known as Seeley Creek flowing in general direction of said fence to the shoreline of the Pacific Ocean; thence along said shoreline North 49° 30' West 170.90 feet; thence leaving said shoreline North 2° 50' West 239.85 feet to the point of beginning.

A. You have been requested to survey the exterior boundaries, split out the westerly parcel as shown on the attached sketch, and write a metes and bounds description of the westerly parcel.

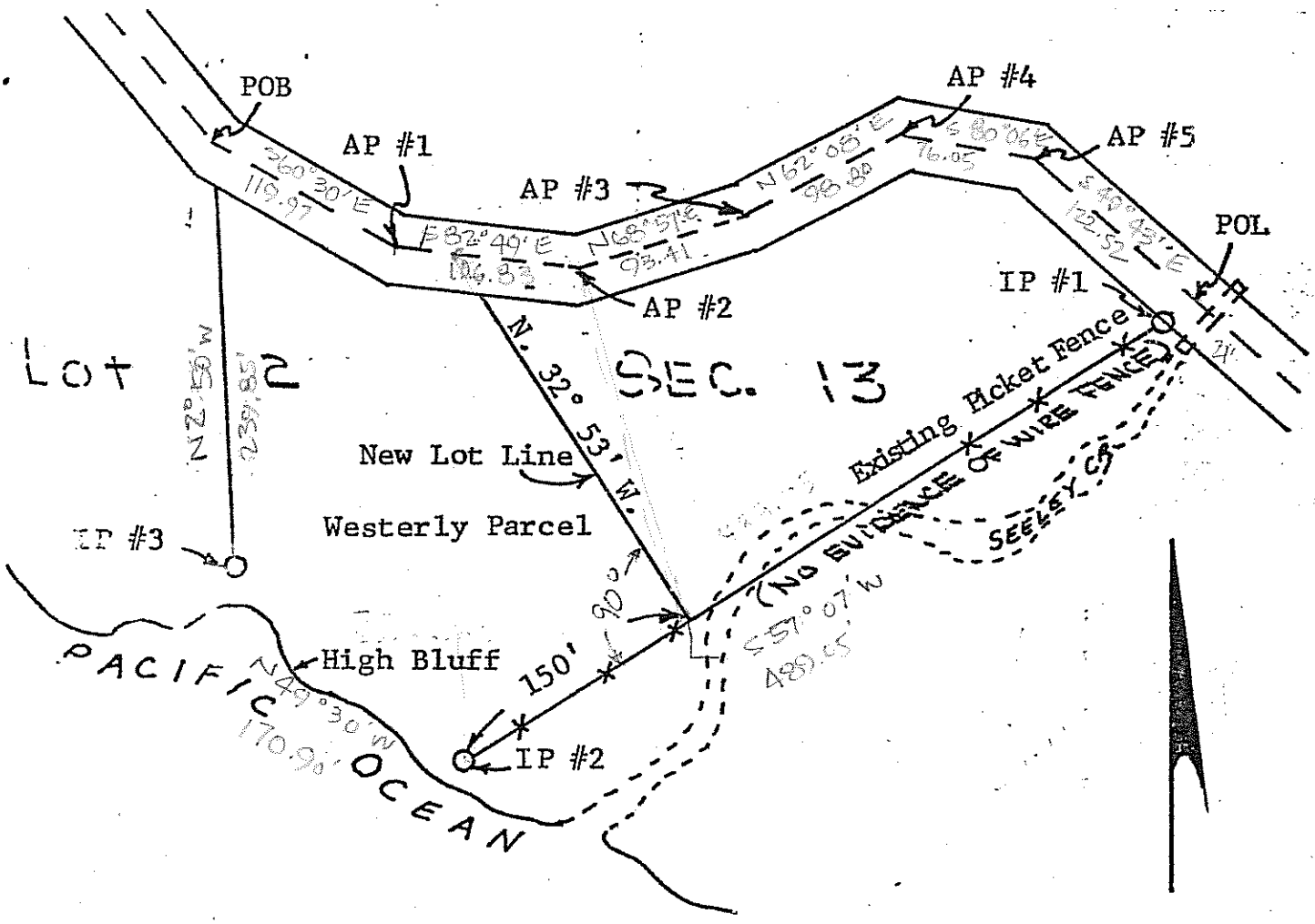
B. Is a Record of Survey required? State reasons for your answer.
NO, BUT PARCEL MAP IS —

Field Tied values of monuments located are as follows:

DESCRIPTION	NORTHING	EASTING
Br. Cap on I.P. correctly stamped for NW Corner Lot 2	15,000.00	5,000.00
I.P. #1 - No tag - No reference	14,224.73	5,892.48
	468.04	57°03' 17"
I.P. #2 - No tag - No reference	13,970.19	5,499.70
	170.90	40°30' ok
I.P. #3 - No tag - No reference	14,081.18	5,369.74

PROBLEM C-1 (10 POINTS)

REQUIRED



Centerline coordinate values are as follows:

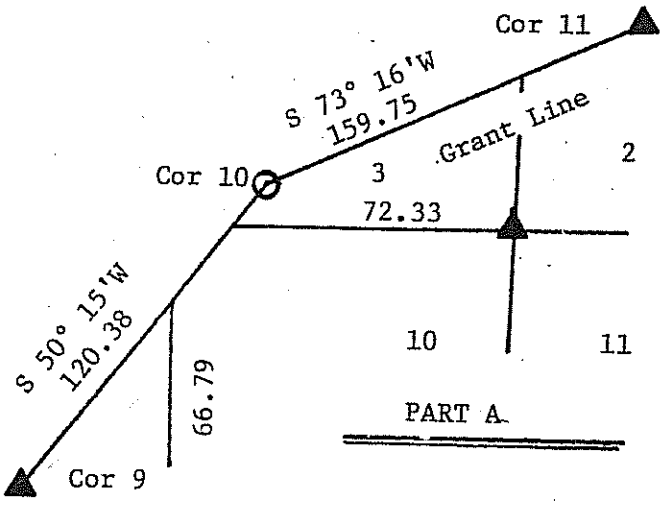
DESCRIPTION	Northing	Easting
P.O.B.	14,320.71	5,357.08
Angle Pt. #1	14,261.63	5,461.50
Angle Pt. #2	14,248.27	5,567.49
Angle Pt. #3	14,281.82	5,654.67
Angle Pt. #4	14,328.00	5,742.01
Angle Pt. #5	14,314.93	5,816.93
P.O.L. (Point on Centerline)	14,235.71	5,910.39

PROBLEM C-2 (10 POINTS)

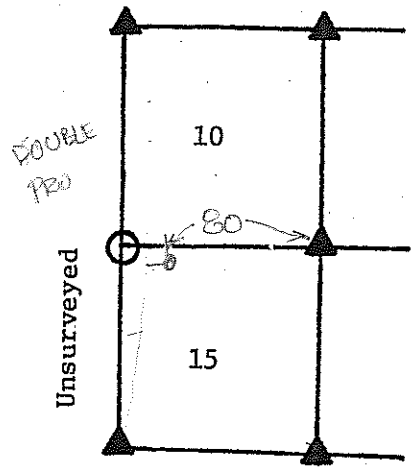
REQUIRED

Single and double proportionate methods of restoring original lost corners are two commonly used principles. Explain in detail what principles you would follow to re-establish lost public land corners in each part of an official plat below.

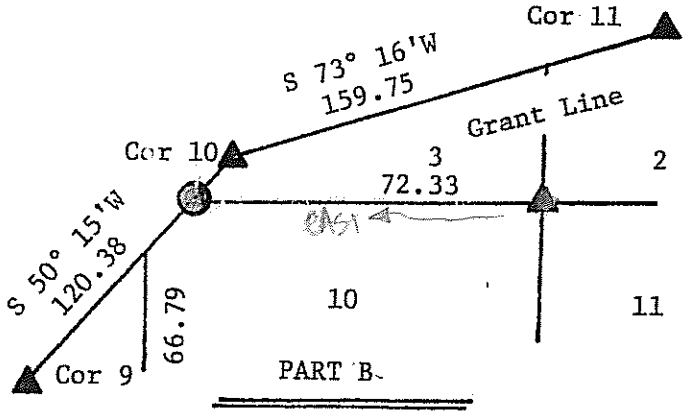
NOTE: Found corners are indicated by a filled in triangle. ▲
The lost corner is indicated by a ○ .
Assume any undimensioned section line is of standard length and cardinal in direction.



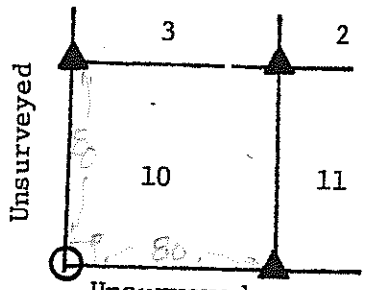
PART A



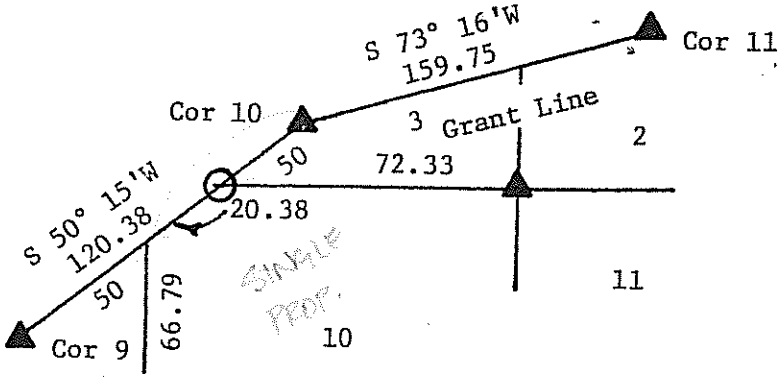
PART D



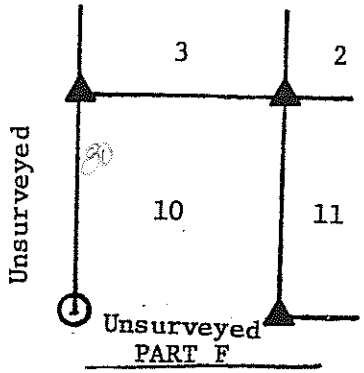
PART B



PART E



PART C



PART F

PROBLEM C-3 (5 POINTS) REQUIRED

Each statement "A" through "O" below is a definition or description of a photogrammetric device, product or procedure. Match the best answer from the list of numbered items with each statement and enter the correct number of your answer on the worksheet in the answer booklet.

7 A. A method of expressing the expected vertical map accuracy of a stereoplotter.

B. Performed using a mono or stereocomparator or stereoplotter.

C. Usually performed using a stereoplotter equipped with an electronic measurement system.

D. Part of a camera system referencing the optical center of the lens.

27 E. The outward or inward image shift from the photo center due to terrain.

26 F. The outward or inward image shift from the photo center due to lens design.

9 G. An assemblage of aerial photographs brought to an approximate scale.

19 H. A simple Kelsh type mapping instrument.

1 I. The distance between photo centers of a stereo pair.

J. Corrects most images on a photograph to an exact scale.

15 K. Clarity of a photographic image.

29 L. A representation of cultural and terrain features by line drawing.

28 M. Portable device for viewing aerial photos.

N. Relative displacement of an image in a stereo pair creating stereoscopic height.

O. Mapping device capable of correcting for earth's curvature and refraction.

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1. Airbase
2. Analytical Photogrammetry
3. Aerotriangulation
4. Analytical Stereoplotter
5. Base/Height Ratio
6. Calibrated Focal Length
7. C Factor
8. Comparator
9. Controlled Mosaic
10. Double Projection Plotter
11. Fiducial
12. Focal Plane
13. Hydrographic Map
14. Hypsographic Map
15. Image Resolution
16. J Factor
17. Orthophoto Mosaic
18. Orthophotography
19. Optical Mechanical Stereoplotter
20. Photo Index
21. Parallax Bar
22. Planimetric Mapping
23. Principal Point
24. PUG
25. Digital Profiling
26. Radial Distortion
27. Relief Displacement
28. Stereoscope
29. Topographic Map
30. Uncontrolled Mosaic
31. X Parallax
32. Y Parallax
33. None of the above.

PROBLEM C-4 (15 POINTS) REQUIRED

T. 9 S., R. 3 E., Willamette Meridian. Monuments accepted and sketch as shown in Figure 1. Case's of statement and questions as given.

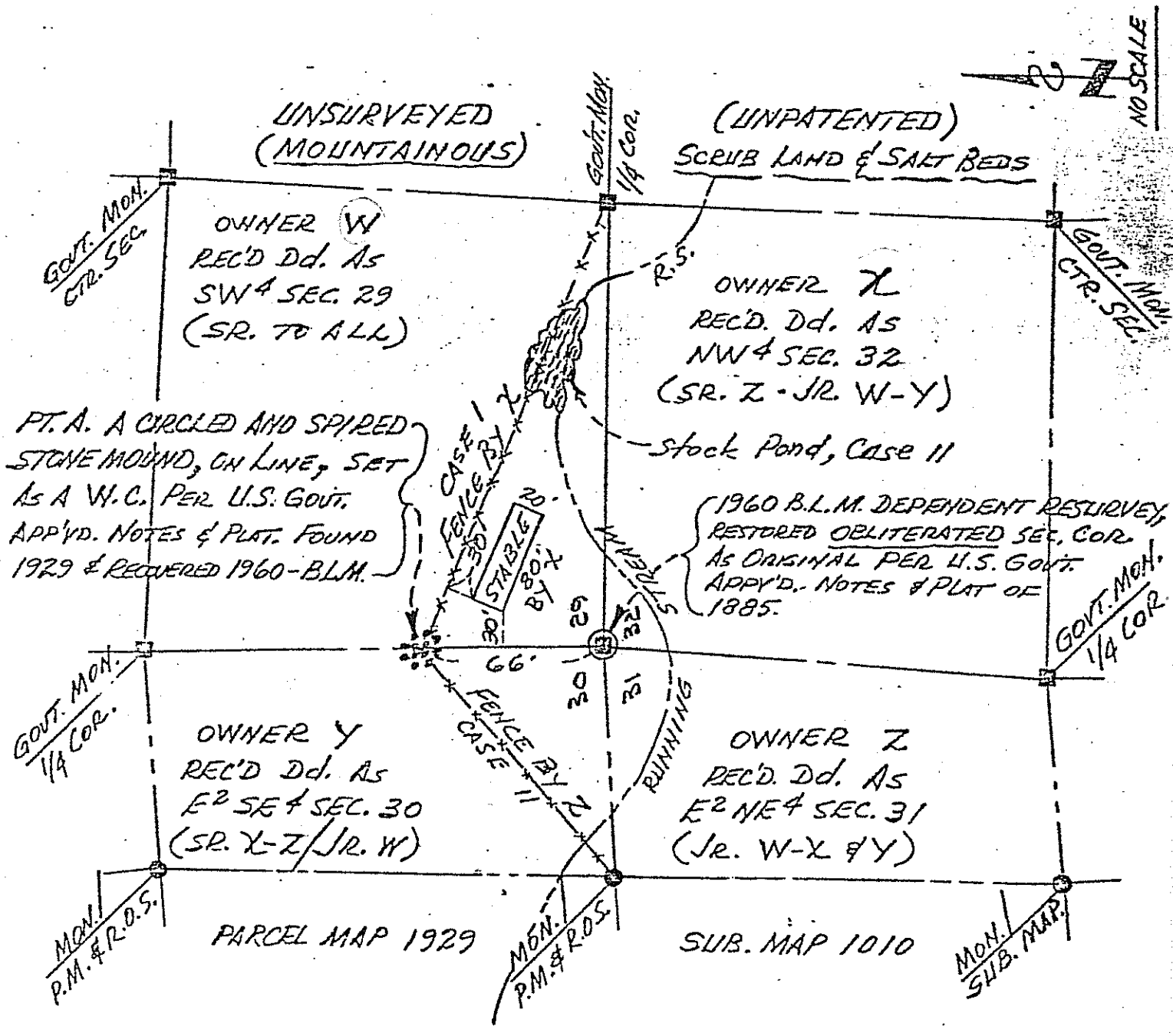


Figure 1

PROBLEM C-4 (15 POINTS)

REQUIRED

CASE 1

STATEMENT

GIVEN CONDITIONS AS SHOWN IN FIGURE 1. "W" and "Y" as past and current owners were both a witness when in 1929, a private survey (1) of property of "Y" was made, finding remains of the original section corner. The corner was further obliterated by 1965. In 1967, "X" received his property by gift (without benefit of survey) from deed. Hence, "X" subsequently asked "W" where the boundary line between them was since he wished to build a boarding stable and fence. Seeing a chance for enlarging his holdings "W" told "X" that Point A was the section corner. In 1968, "X" relying on "W's" information built his improvements as shown. In 1969, "W", being a power in politics and financial circles had the section corner retraced and verified by another private surveyor (2) and thereupon took possession and use of said stable and fence. "X" was naturally upset and filed suit against "W". "Y" was silent and "Z" was unaware!

CASE 11

STATEMENT

AGAIN GIVEN CONDITIONS AS SHOWN IN FIGURE 1. In 1965, while wealthy owner "W" was on vacation in Europe "X" had his property surveyed by contract to licensed surveyor "S", whereupon "S" by physical survey established the section corner at Point A, and filed a Record of Survey of the "W" and "X" properties. "X" and "Z" acting upon said survey constructed their improvements as shown. "W" upon return from vacation and observing his stock pond mostly fenced off filed suit against "X" and "Z". "Y", after conferring with his long time friend "W" removed "Z's" fence and joined in the suit with "W".

CASE 111

STATEMENT

ASSUME THE SECTION CORNER IS LOST. ALSO ASSUME CONDITIONS FROM FIGURE 1 AS REQUIRED PERTINENT TO THIS QUESTION.

No surveys of record have been made by anyone since 1885. In 1930, all the owners of recorded deeds mutually agreed that the circled and spired stone mound is the true section corner - creating their improvement to said corner and resultant lines. In 1965, surveyor "S" after a physical inspection of the property with "Y" and "Y's" realtor, buy "Y's" property. Some nine (9) months

PROBLEM C-4 (15 POINTS) REQUIRED

CASE 111 - STATEMENT (continued)

later after research of the Government records "S" contests Point A, wanting to move it some 66 feet southerly on line from the north 1/4 corner. "Z" understandably objects while "W" and "X" are too tied up with other business to get involved.

CASE 1

QUESTIONS

1. Considering Senior and Junior rights - between what points is the boundary line of "W" and "Y" and state your reasons.

2. Who would the Court most likely uphold - under what principle of law and where would the Court most likely establish the legal boundary line between "W" and "X"? ESTOPPEL

3. Do any of the parties (W, X, Y, Z) have recourse against the private surveyor (2)? State your reasons.

CASE 11

QUESTIONS

1. Did "Y" act prudently in removing the fence by "Z" and joining the lawsuit?

2. Does surveyor "S" have a liability? Explain your answer.

3. Who would the Court most likely hold for and against - under what principle of law? Explain your answer.

CASE 111

QUESTIONS

1. Does "Z" have a valid objection and should "W" and "X" get involved? Explain.

2. What data could surveyor "S" have obtained by researching the Government records and of what use to him could that data be?

3. Would the Court most likely uphold "S" or "Z" and under what principle of law?

4. Assuming negative factors - would Case 111 with conditions, variables and due process, under Court decision establish a general precedent of law - and why or why not?

CALIFORNIA STATE BOARD OF REGISTRATION
FOR PROFESSIONAL ENGINEERS

LS

1981

LAND SURVEYOR

D

PRINCIPLES AND PRACTICE

1. This part of the examination - "Part D" - is the second part of the Land Surveyor examination, and is to be completed in 4 hours.

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

3. This portion of the Land Surveyor examination consists of the following:

Problem D-1 OR Problem D-2	CHOOSE ONE	15.0 Points
Problem D-3	REQUIRED	12.5 Points
Problem D-4	REQUIRED	2.5 Points
Problem D-5	REQUIRED	5.0 Points
Problem D-6 OR Problem D-7	CHOOSE ONE	5.0 Points
Problem D-8 OR Problem D-9	CHOOSE ONE	10.0 Points
	TOTAL	50.0 Points

4. Do not work both problems where a choice is offered. Credit will be allowed for one (1) problem only.

5. Problems D-3 and D-8 require that you remove one sheet that is to be attached to your workbook. Be sure that your work on the diagrams is neat, orderly and legible.

6. After you have completed this portion of the examination, check the problem order, include all pages (including diagrams if required) and turn it in to the examination proctor.

7. You may keep this set of examination questions.

PROBLEM D-1 (15 POINTS)

WORK D-1 OR D-2 NOT BOTH

Your client owns Lot 4 of fractional Section 5, T1N, R8W, MDM, situated in an unincorporated area of (blank) County, California, and wishes to subdivide his property for sale. Lot 4, according to the official plat and field notes, is bounded on the West by the Pacific Ocean.

As a condition of the approval of the tentative map, county ordinance requires the dedication of a 100 foot wide strip as measured from the seaward boundary of Lot 4 as a marine preserve.

You find that the seaward portion of Lot 4 consists of a natural sandy beach approximately 300 feet in width as measured from the toe of the bluff.

In addition, it is apparent from your resurvey of Section 5, that the U.S. Deputy Surveyor ran his meanders of the Pacific Ocean through Section 5 at the top of the bluff, and that no patents or other conveyances to other lands exist in this intervening strip. (Area between U.S. Meander line and the Pacific Ocean).

From the above facts and attached data, discuss the following points:

1. Describe how you would advise your client of the true nature and character of the seaward boundary of his property; the nature and character of the area to be dedicated; and what his property rights are to the lands between the U.S. meander line and the shoreline boundary of the Pacific Ocean.

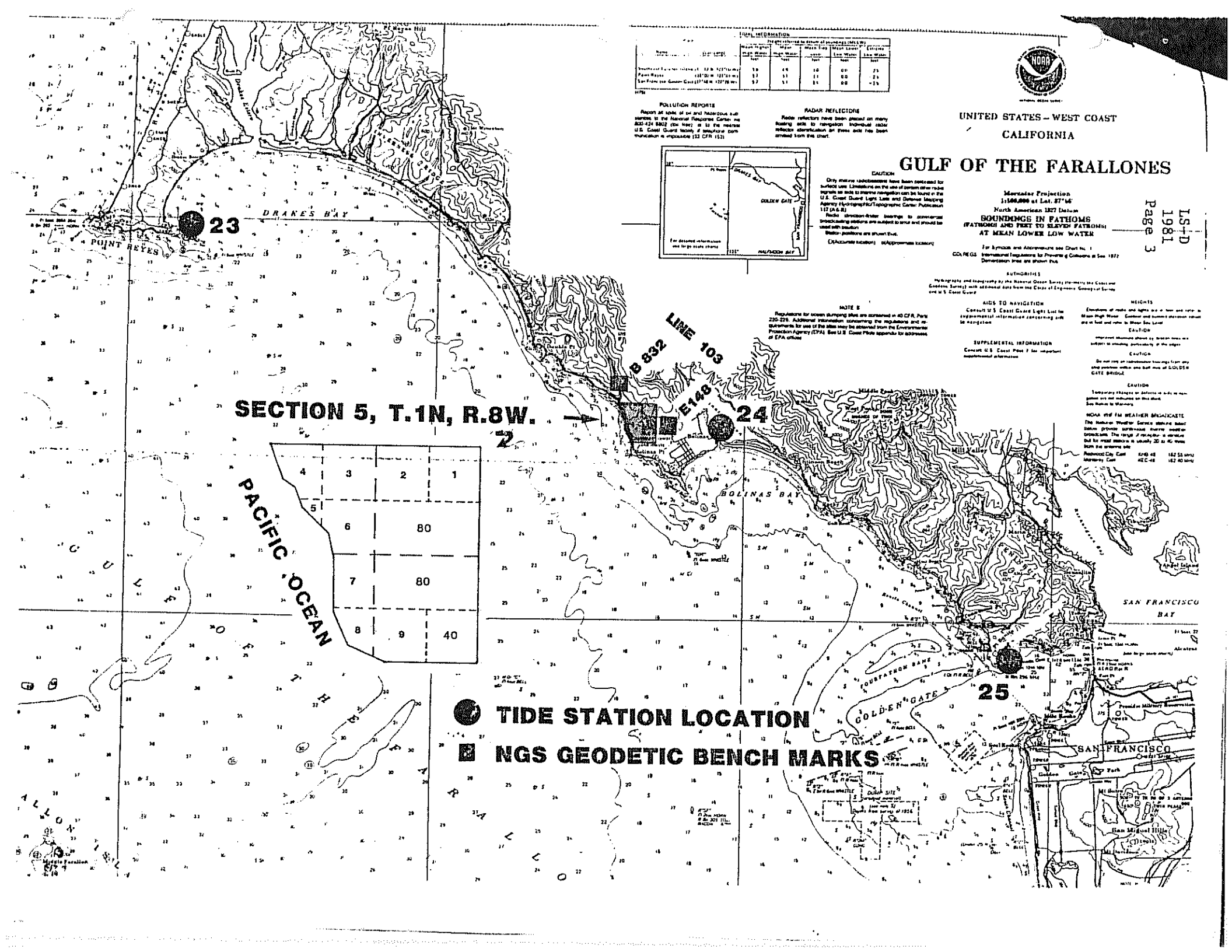
2. From the attached data, what tidal datum would you select to run in the field to locate the true seaward boundary of the property?

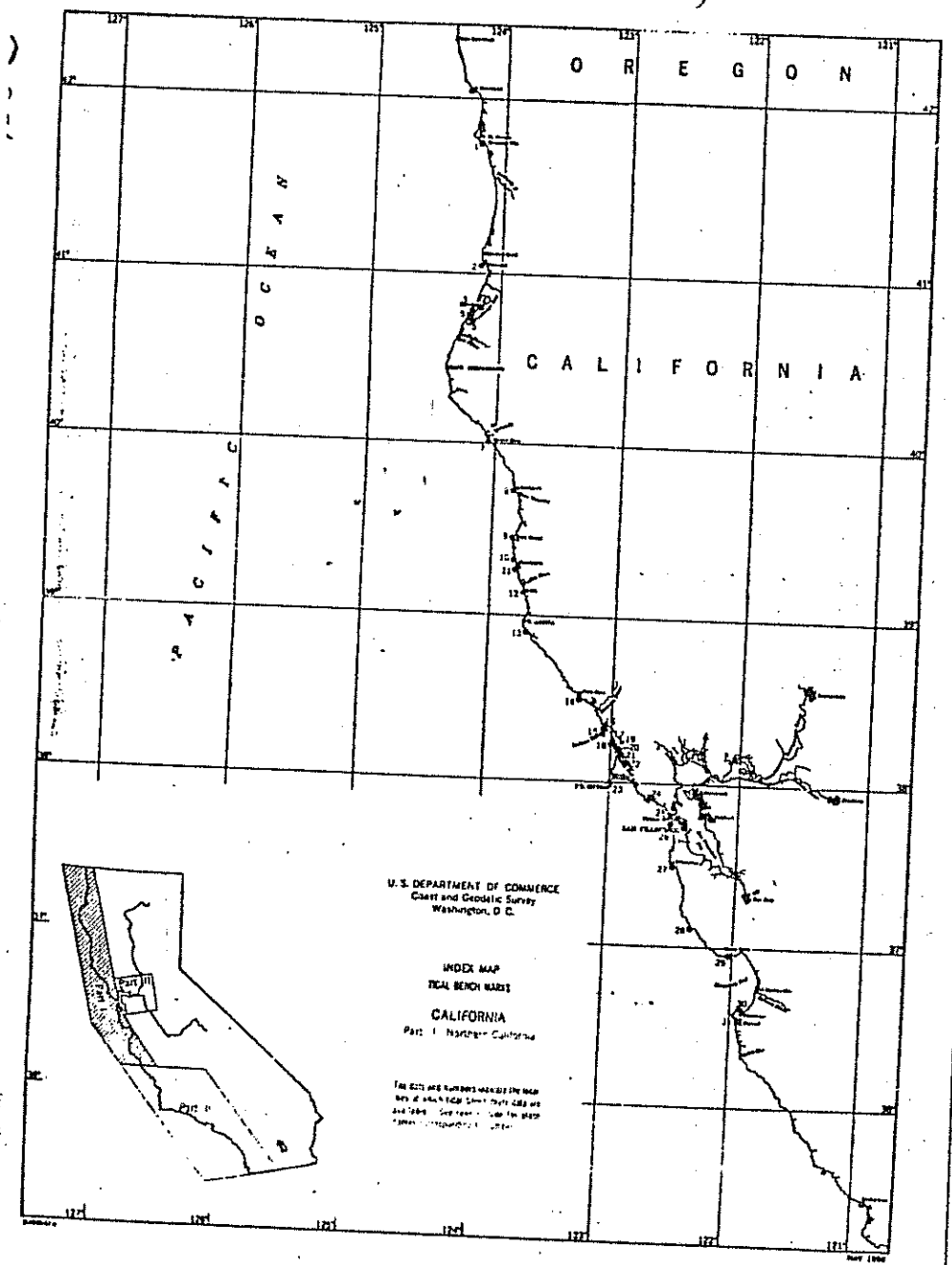
3. From the attached data, what elevation would you compute to run in the field?

4. Describe how you would establish the elevation computed in (3) above on the property in question.

5. Describe your survey procedure to locate this datum/line on the ground with respect to subject property.

6. Write an elevation/datum note documenting the above data for inclusion on your tentative and final map.


UNITED STATES – WEST COAST
CALIFORNIA
GULF OF THE FARALLONES
Mercator Projection
North American 1927 Datum
SOUNDINGS IN FATHOMS
(FATHOMS AND FEET TO ELEVEN FATHOMS)
AT MEAN LOWER LOW WATER
LS+D
1981
Page 3
SECTION 5, T.1N, R.8W.
PACIFIC OCEAN
DRAKES BAY
POINT REYES
BOLINAS BAY
LINE 103
B 832
E148
SAN FRANCISCO BAY
GOLDEN GATE
SAN FRANCISCO
TIDE STATION LOCATION
NGS GEODETIC BENCH MARKS
23
24
25
2
80
40



Received 3/28/67

INDEX MAP NUMBER (See reverse side)	NAME	INDEX MAP NUMBER (See reverse side)	NAME
1	Crescent City	17	Sand Point, Tomales Bay
2	Trinidad Harbor	18	Tomales Point, Tomales Bay
3	North Jetty, Humboldt Bay	19	Hamlet, Tomales Bay
4	Eureka, Humboldt Bay	20	Blake Landing, Tomales Bay
5	Fields Landing, Humboldt Bay	21	Marshall, Tomales Bay
6	South Jetty, Humboldt Bay	22	Inverness, Tomales Bay
7	Shelter Cove	23	Point Reyes, Drakes Bay
8	Rockport	24	Bolinas, Bolinas Bay
9	Fort Bragg	25	Point Bonita, Golden Gate
10	Russian Gulch	26	Ocean Beach, San Francisco
11	Mendocino Bay	27	Princeton, Halfmoon Bay
12	Elk	28	Ano Nuevo Island
13	Arena Cove	29	Santa Cruz, Monterey Bay
14	Fort Ross Cove	30	Monterey Harbor
15	Bodega Head, Bodega Harbor Entrance	31	Carmel Cove, Carmel Bay
16	Bodega Bay, Bodega Harbor		

NOTE: Unnumbered dots on the index map on the reverse side indicate nearest tidal bench mark locations in the states of Oregon and California, Parts II and III.

Tidal bench mark locations in the State of California are shown on three index maps, as follows:

Part I. - Northern California
Part II. - Southern California
Part III. - San Francisco Bay and San Joaquin - Sacramento Delta Region.

Tidal bench mark data are available for the above locations and may be obtained by writing to the Director, U. S. Coast and Geodetic Survey, Washington 25, D. C. In requesting these data, please refer to both the index map numbers and the names of the particular localities in which you are interested.

5/4/65

CALIFORNIA I-23

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

TIDAL BENCH MARKS

Point Reyes, Drakes Bay
Lat. 37° 59'.5; Long. 122° 58'.5

BENCH MARK 2 (1929) is a standard disk, stamped "BM TWO 1929," set in top of west edge of cement walk which extends north towards Coast Guard Station building. It is 33½ feet south of southwest corner of Coast Guard Station building, 10 feet northwest of southwest corner of Coast Guard boiler room building, and ½ foot east of west edge of sidewalk. Elevation: 15.97 feet above mean lower low water.

BENCH MARK 3 (1929) is a standard disk, stamped "3 1929," set in top of southeast side of concrete sidewalk between Coast Guard Station building and boiler room building. It is 4½ feet north of northeast corner of boiler room building, 20½ feet south of southeast corner of Coast Guard Station building, and about ½ foot west of east edge of sidewalk. Elevation: 15.35 feet above mean lower low water.

Mean lower low water at Point Reyes, Drakes Bay is based on 7 months of records, June 1 - December 26, 1929, reduced to mean values. Elevations of other tide planes referred to this datum are as follows:

	Feet
Mean higher high water	5.50
Mean high water	4.90
Mean tide level	3.05
Mean low water	1.20
Mean lower low water	0.00

The estimated highest water level to the nearest half foot is 8½ feet above mean lower low water. The estimated lowest water level to the nearest half foot is 2½ feet below mean lower low water.

5/9/64

CALIFORNIA I-24

U. S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

TIDAL BENCH MARKS

Bolinas, Bolinas Lagoon
Lat. 37° 54'.6; Long. 122° 40'.9

BENCH MARK TIDAL 1 (1947) is a standard disk, stamped "BOLINAS TIDAL 1", set flush in top of concrete wing wall at north end of wooden bulkhead at base of bluff on west side of entrance to Bolinas Lagoon. It is 103 feet south of south end of heavy riprap at end of street leading from village of Bolinas, 0.3 mile east along street from post office 52 yards south of end of street, 5½ feet higher than beach, and ½ foot west of east end of concrete wall. Elevation: 10.38 feet above mean lower low water.

BENCH MARK TIDAL 2 (1947) is a standard disk, stamped "BOLINAS TIDAL 2", set flush in top of east concrete curb at entrance to U. S. Coast Guard Station. It is 11 feet from inner line of walk along village street and 18½ feet east of station flagpole, 4½ feet east of center line of concrete sidewalk, 1½ feet north of east end of bottom concrete step, and 1 foot above sidewalk. Elevation: 10.23 feet above mean lower low water.

BENCH MARK PARADISE VALLEY (1947) is a 2½-inch brass cap, stamped "PARADISE VALLEY 1947", set in top of concrete post flush with ground, on grassy delta at mouth of Paradise Valley on west side of Bolinas Lagoon and 15 feet northeast of ruins of old fence. It is about ¼ mile north of Bolinas Union School, 170 yards northeast of road, 52 yards northwest of northwest bank of Pine Gulch Creek, and 415 feet northeast of telegraph pole No. 396. Elevation: 6.54 feet above mean lower low water.

Mean lower low water at Bolinas, Bolinas Lagoon is based on 71 high waters and 72 low waters, April 16 - May 23, 1947, reduced to mean values. Elevations of other tide planes referred to this datum are as follows:

	Feet
Mean higher high water	4.40
Mean high water	3.80
Mean tide level	2.30
Mean low water	0.80
Mean lower low water	0.00

The estimated highest water level to the nearest half foot is 7½ feet above mean lower low water. The estimated lowest water level to the nearest half foot is 2½ feet below mean lower low water.

5/9/64

CALIFORNIA I-25

U. S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

TIDAL BENCH MARKS

Point Bonita, Bonita Cove, Golden Gate
Lat. 37° 49'.1; Long. 122° 31'.7

BENCH MARK 2 (1917) is a standard disk, stamped "BONITA BM 2 1917", set in top of very large black mass of bedrock on rock shore near high water line and 41 feet south of south edge of wharf directly in front of Coast Guard boathouse. It is 88½ feet south of corner of boathouse, and 2½ feet northwest of southeast edge of rock. Elevation: 11.05 feet above mean lower low water.

BENCH MARK 2A (1925) is a standard disk, unstamped, set in top of large red and green rock on beach 13 feet east of base of high bluff and 171 feet south of south side of wharf. It is 130½ feet south of Bench Mark 2, and about 8 feet higher than beach. Elevation: 15.57 feet above mean lower low water.

BENCH MARK 3 (1917) is a standard disk, stamped "BONITA BM 3 1917", set in top of mass of concrete poured on top of large flat black bedrock on rock shore near high water line, 53 feet northeast of northeast edge of wharf. It is 49½ feet east of east corner of boathouse, and about 3 feet higher than high water line. Elevation: 9.49 feet above mean lower low water.

Mean lower low water at Point Bonita, Bonita Cove, Golden Gate is based on 4 months of records, February - May 1935, reduced to mean values. Elevations of other tide planes referred to this datum are as follows:

	Feet
Mean higher high water	5.80
Mean high water	5.20
Mean tide level	3.15
Mean low water	1.10
Mean lower low water	0.00

The highest estimated water level to the nearest half foot is 8½ feet above mean lower low water. The estimated lowest water level to the nearest half foot is 2½ feet below mean lower low water.

USCOMM-CGS-DC

1/14/77

CALIFORNIA PART I
Northern California

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMSOPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

The difference between National Geodetic Vertical Datum (formerly Sea Level Datum of 1929) (SLD) and mean lower low water (MLLW) for each location where the tidal bench marks and the geodetic bench marks of the National Geodetic Network have been connected by differential levels is given below.

Bench mark elevations above National Geodetic Vertical Datum may be obtained by subtracting the tabular difference from the published elevations above mean lower low water.

Index Map Number	Locality	NGVD-MLLW Feet
1	Crecent City	
4	Eureka	3.72
7	Shelter Cove	3.34
17	Sand Point, Tomales Bay	3.35
18	Tomales, Tomales Bay	2.35
19	Hamlet, Tomales Bay	2.38
20	Blake Landing, Tomales Bay	2.42
21	Marshall, Tomales Bay	2.37
22	Inverness, Tomales Bay	2.24
23	Point Reyes, Drakes Bay	2.38
24	Bolinas, Bolinas Lagoon	2.92
25	Point Bonita, Golden Gate	1.86
26	Ocean Beach	1.95
27	Princeton, Halfmoon Bay	2.96
29	Santa Cruz, Monterey Bay	3.09
30	Monterey Harbor	2.95
31	Carmel Cove, Carmel Bay	2.93
		2.80

APRIL 1975

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

VERTICAL CONTROL DATA
by the
NATIONAL GEODETIC SURVEY

NGVD 1929

QUAD 371214 PAGE NO. 4
CALIFORNIA
LATITUDE 37°30' TO 38°00'
LONGITUDE 121°30' TO 122°00'
DIAGRAM SAN JOSE NJ 10-9

LINE 103
(Continued)

ADJUSTMENT OF 1965-66
C. Symns 02-09-65 03-26-65

BENCH MARK

LIVERMORE EAST BASE RM 1
LIVERMORE EAST BASE
LIVERMORE EAST BASE RM 2
LIVERMORE EAST BASE RM 3
LIVERMORE EAST BASE AZI

LIVERMORE EAST BASE AZI RESET 1964
K 832
L 832 RESET 1948
J 832
N 929

AZI LIVERMORE WEST BASE
AZI LIVERMORE WEST BASE RESET 1961
D 8
LIVERMORE WEST BASE
LIVERMORE WEST BASE RM 3

LIVERMORE WEST BASE RM 2
P 929

ADJUSTMENT OF 07-29-1965
C. Symns 06-23-65 07-06-65

H 832
C 8

ADJUSTMENT OF 10-27-1965
C. Symns 02-09-65 03-26-65

G 832

ADJUSTMENT OF 07-29-1965
C. Symns 06-23-65 07-06-65

K 995
F 832
B 8
E 832
D 832

ADJUSTMENT OF 1967
C. Symns 03-22-67 04-04-67

C 832
143 (USGS)

HGZ L-20139
FIRST-ORDER

ADJUSTED (Meters)	ELEVATION (Feet)
139.346	457.171
140.138	459.769
139.306	457.040
142.012	465.918
DESTROYED	
	433.764
126.367	414.589
117.753	386.328
DESTROYED	
116.287	381.518
DESTROYED	
111.417	365.541
111.887	367.083
109.507	359.274
110.240	361.679
109.604	359.592
110.270	361.777

HGZ L-20285
FIRST-ORDER

107.344	352.178
102.733	337.050

HGZ L-20139
FIRST-ORDER

102.787	337.227

HGZ L-20285
FIRST-ORDER

102.883	337.542
DESTROYED	
92.244	302.637
84.674	277.801
81.652	267.887

HGZ L-21019
FIRST-ORDER

79.511	260.862
74.021	242.851

LINE 103
(Continued)

ADJUSTMENT OF 10-27-1965
C. Symns 02-09-65 03-26-65

BENCH MARK

A 8
B 832
E 148
A 832
D 148

RM 129.40 (SPCO)
C 148
Y 7
J 878
R 874

LINE 104

ADJUSTMENT OF 10-27-1965
C. Symns 02-09-65 03-26-65

BENCH MARK

N 888
M 877
M 888
N 877
N 877 RESET 1967
W 946

ADJUSTMENT OF 1959
C. Symns 1959

A 56 (C OF F)
Z 946
A 44 (C OF F)

ADJUSTMENT OF 05-10-1967
C. Symns 01-27-67 04-03-67

V 175

ADJUSTMENT OF 1961
C. Symns 1960

37 (A CO)

HGZ L-20139
FIRST-ORDER

ADJUSTED (Meters)	ELEVATION (Feet)
68.760	225.590
66.491	218.146
62.425	204.806
58.580	192.191
48.947	160.587
38.320	125.722
37.276	122.296
37.909	124.373
43.014	141.122
29.309	96.158

HGZ L-20139
FIRST-ORDER

ADJUSTED (Meters)	ELEVATION (Feet)
DESTROYED	
11.370	37.303
11.371	37.306
DESTROYED	
	37.814
DESTROYED	

HGZ L-17307
FIRST-ORDER

19.063	62.543
17.425	57.169
10.588	34.737

HGZ L-21016
FIRST-ORDER

17.892	58.701

HGZ L-18119
FIRST-ORDER

19.541	64.111

LS-D
1981
Page 7

PROBLEM D-2 (15 POINTS) WORK D-1 OR D-2 NOT BOTH

Your client is a civil engineer who asks you to obtain an aerial topographic map for use in the design of an 80 acre subdivision. (See figure)

The vertical accuracy required for the map is ±0.25 foot on 90% of all spot elevations checked.

MAP 1' CONTOUR INTERVAL

A. Describe in detail the economic considerations which you would make in selection of an aerial sub-contractor.

B. Show the locations on a similar sketch as shown below on your answer sheet of the horizontal and vertical premarks which you would set. You must assume a commonly used photogrammetric mapping and control procedure and clearly list your assumptions.

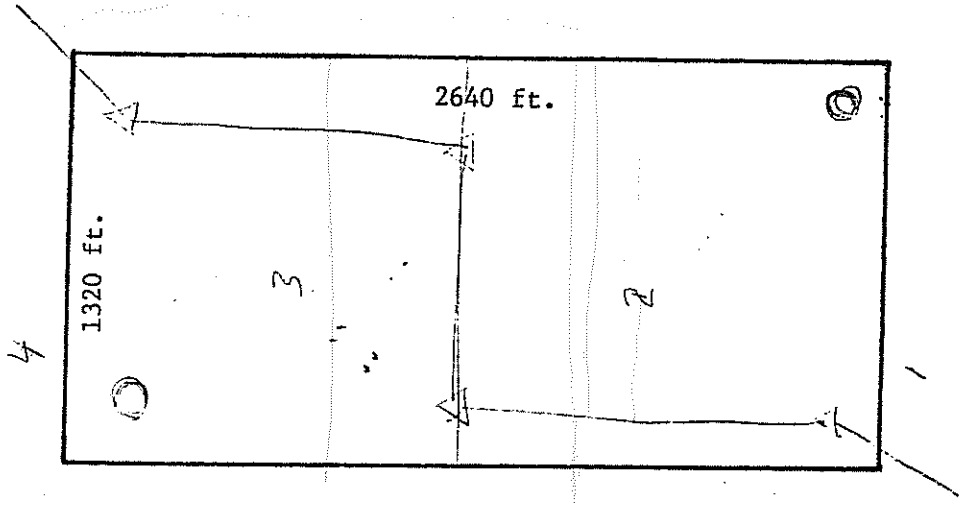
C. What survey methods and accuracies would you utilize for the control work to meet the required accuracy? What size panel would be required?

D. What basic contour interval would be required on the map? Should the mapping contours have the same vertical accuracy as the spot elevations?

E. Explain how you would check the vertical accuracy of the map after delivery to you by the aerial sub-contractor.

NOTE: The below sketch is to be duplicated on your answer sheet showing such horizontal and vertical control required as a result of your analysis of this problem.

NEARBY C-FACTOR LSD SURVEY MAP



Δ Horizontal & Vertical Control

O Vertical Control Only

NOTE: Symbols added by examinee.

PROBLEM D-3 (12.5 POINTS)

REQUIRED

A. Shown hereon is the original map of "Heart Acres". You have been asked to survey and monument Lots 3, 16 and 20. Calculate from coordinates given, the bearings and distances for these lots. ON THE ATTACHED SHEET, (WHICH IS TO BE REMOVED AND SUBMITTED WITH YOUR ANSWER SHEET) show the bearings and distances for all lines required to survey the lots in question.

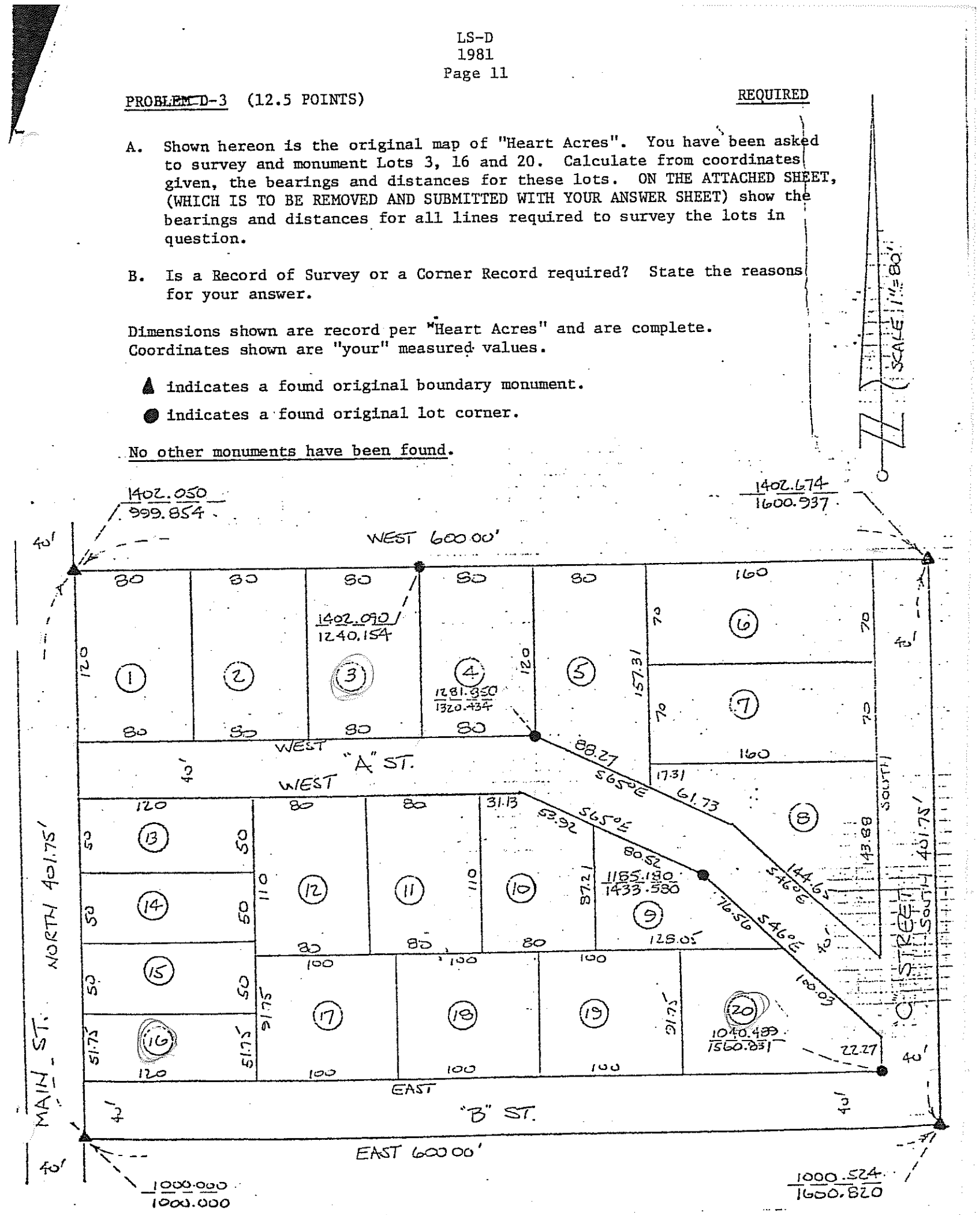
B. Is a Record of Survey or a Corner Record required? State the reasons for your answer.

Dimensions shown are record per "Heart Acres" and are complete.
Coordinates shown are "your" measured values.

▲ indicates a found original boundary monument.

● indicates a found original lot corner.

No other monuments have been found.



PROBLEM D-6 (5 POINTS)

WORK D-6 OR D-7 NOT BOTH

Calls to topographic features returned by the original U.S. Government Surveyor in his field notes are often persuasive evidence which can be used in the re-establishment of obliterated public land corners.

Discuss in detail what weight you would give to topographic calls from the original notes in considering a missing corner as lost. Use an example of your own choosing to illustrate your reasoning.

PROBLEM-D-7 (5 POINTS) WORK D-6 OR D-7 NOT BOTH

The professionally licensed Land Surveyor is involved in diversified work throughout the surveying, mapping, and engineering field. However, the license allows the Professional to become involved with the division of land in the State of California that means working within the provisions of the Subdivision Map Act and local agency ordinances. Answer the ten questions with short precise sentences. List Chapter, Article, and Section numbers from either the 1980 or 1981 Subdivision Map Act to substantiate your answers.

Be sure to write your answer on the separate answer sheet provided.

1. In April, 1975, the Act was recodified from the Business and Profession Code to the GOVT Code, Division 2.

2. "Local Agency" means 66420.

3. "Subdivision" includes a condominium project as described in Section 1350 of the Civil Code. 66424

4. The Conditions under which contiguous parcels or units of land merge is covered by what Chapter, Article and Section of the Act? 6 1 66499

5. In the event that an owner's development lien has been created pursuant to Chapter 3 of Part 23 of the Education Code what must be done?

6. A Parcel Map shall show the location of each parcel created and its relation to _____.

7. An approved or conditionally approved tentative map shall expire 24 months after approval, or after such additional time as may be prescribed by local ordinance, not to exceed an additional 12 months. 66452.6

8. There may be imposed by local ordinance, a requirement of dedication or irrevocable offer of dedication of land within a subdivision for different purposes. Irrevocable offers may be terminated as provided in subdivisions _____.

9. The surveyor shall set sufficient monuments to conform with Section 8771 of the Business and Professions Code and any requirements of local ordinance. If the original surveyor is replaced by another, how may the former release his obligation to set the final monuments? BY LETT 66498

10. Subdivided lands may be merged and resubdivided without reverting to acreage under what conditions? 66499.20 3/4

PROBLEM-D-8 (10 POINTS)

WORK D-8 OR D-9 NOT BOTH

The monuments reflected in sketch are described as follows:

1. Found old rock mound accepted as south 1/4 corner of Section 13 and southeast corner Lot 6 per plat of "Slippery Acres".
2. Found 1/2" rebar tagged LS 3000.
3. Found 1/2" rebar tagged LS 3000.
4. Found old rock mound. Accepted as southwest corner Section 13.
5. Found USGLO Brass Cap in 2" IP and stamped for West 1/4 corner Section 13.
6. Found USGLO Brass Cap in 2" IP and stamped for North 1/4 corner Section 13.
7. Found 1-1/2" IP tagged LS 4000 at northwest corner of "Rustic Hills Subdivision" which is a subdivision of the North 250' of West 1/2 of Southeast 1/4, Section 13, Township 10 North, Range 10 East, M.D.M.
8. Found USGLO Brass Cap in 2" IP and stamped for East 1/4 corner Section 13.
9. Found 1-1/2" IP tagged LS 4000 at southwest corner of "Rustic Hills Subd."
10. Found 1" pipe tagged LS 100.
11. Found 1/2" rebar tagged LS 3000.
12. Found 1/2" rebar tagged LS 3000.
13. Found 1" pipe tagged LS 100.
14. Found 1/2" rebar tagged LS 3000.

The following information is also known:

1. Cache Creek is a non-navigable creek.
2. Lazy River is a navigable, non-tidal river.
3. "Rustic Hills Subdivision" was originally surveyed by LS 4000.
4. "Slippery Acres" was originally surveyed by LS 100 and resurveyed by LS 3000.
5. Hill Road of "Slippery Acres" was vacated by the County of Extra 5 years prior to your survey.
6. The Grant Deed granting your client his property reads as follows:

   Parcel 1: All that portion of the southwest one-quarter of Section 13, T.10N., R.10E., M.D.M. lying south of Lazy River and east of Cache Creek. Excepting therefrom any portion of "Slippery Acres" subdivision recorded in the office of the Recorder of Extra County in Book 2 of Maps at Page 8 lying within the southwest one-quarter of Section 13, T.10N., R.10E., M.D.M.

   Parcel 2: Lot 4 of "Slippery Acres" Subdivision, recorded in the office of the Recorder of Extra County in Book 2 of Maps, at Page 8.

continued on reverse.....

PROBLEM D-8 (10 POINTS)

WORK D-8 OR D-9 NOT BOTH

QUESTIONS:

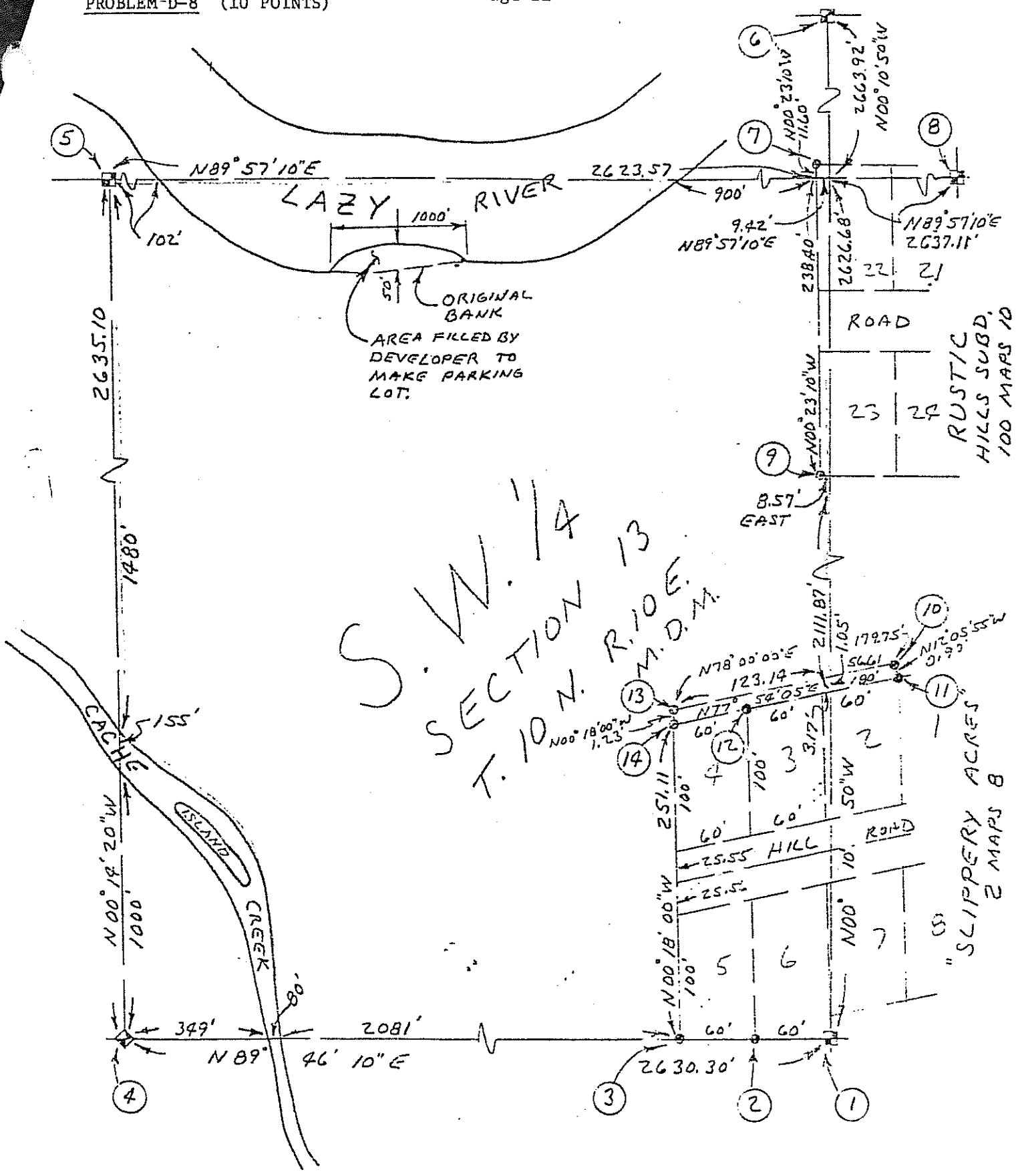
A. Outline the boundary of your clients property ON THE ATTACHED SKETCH (WHICH IS TO BE REMOVED AND SUBMITTED WITH YOUR ANSWER SHEET) and state the reasons for your determination for each boundary segment. Begin your explanation on the south boundary and continue your discussion around the boundary in a clockwise direction.

B. Based on the facts stated on the preceding page, what is the status and possible claim of title to the island in Cache Creek? State your reasons.

C. Based on the facts stated on the preceding page, what is the status of and possible claim of title to the filled land in Lazy River? State your reasons.

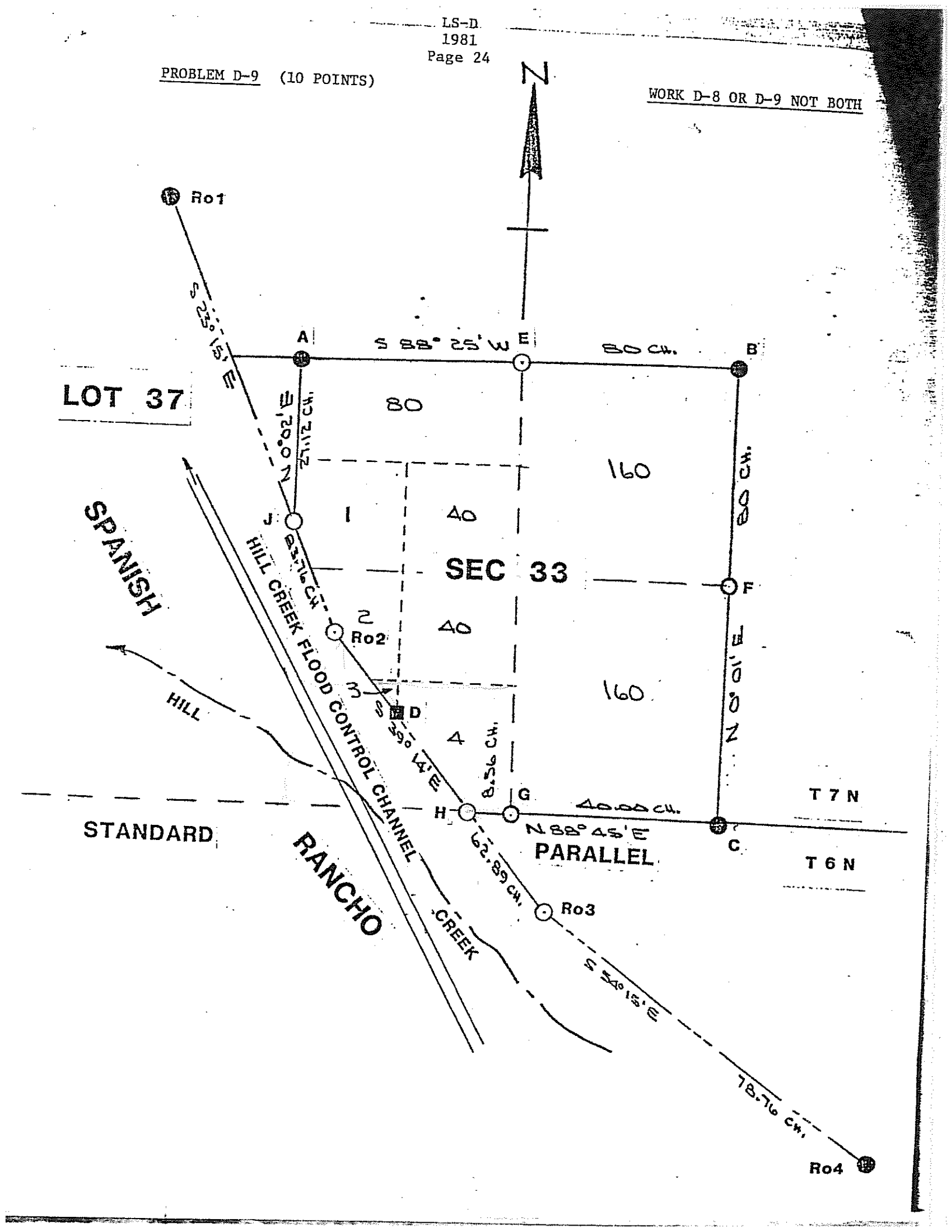
PROBLEM-D-8 (10 POINTS)

WORK D-8 OR D-9, NOT BOTH



PROBLEM D-9 (10 POINTS)

WORK D-8 OR D-9 NOT BOTH



PROBLEM D-9 (10 POINTS)

WORK D-8 OR D-9 NOT BOTH

QUESTIONS

1. Explain how you would survey and identify the land as described.

2. What corners require monumentation?

3. Is a Record of Survey required? Explain your answer.

4. Would a Corner Record be sufficient? Explain your answer.