Project Seabrook
Project No. 7286

Boring No. E2-14

Ground Elevation (MSL) = + 29.9

Type of Feature

Feature Depth	Strike	Dip	Joint	Foliation	Slickensided Surface	Contact	Remarks
101.3	N75E	18NW	X				
103.8	N73E	46NW	X				
104.0	N77E	46NW	X				
105.0	N26E	38NW	X				
107.5	N50E	62SE	X				
108.0	N46E	63SE	X				
108.3	N21E	62SE	X				
109.8	N20W	61NE	X				
110.1	N45E	81SE	X				
110.4	N45E	81SE	X				
112.3	N22W	5SW	X				
112.4	N65E	38NW	X				
129.3	N40E	22NW		X			
129.5	N60E	33NW		X			
131.5	N55E	69SE	X				
131.9	N84W	75NE	X				
132.2	N50W	64NE	X				
133.5	N63E	72SE	X				
141.9	N71W	25NE	X				
142.5	N73W	20NE	X				
146.8	N63W	60NE	X				
148.9	N49E	62SE	X				
149.2	N75W	53NE	X				
150.0	N34E	70SE	X				
153.2	N61W	54NE	X				
154.6	N70W	39NE	X				
155.9	N65E	48NW					
158.0	N55E	29NE	X				
164.8	N25W	20SW		X			

Boring No. E2-15

Project Seabrook
Project No. 7286

Ground Elevation (MSL) = + 13.9

Feature Depth	Strike	Dip	Type of Feature: Joint	Foliation	Slickensided Surface	Contact	Remarks
17.0	N85W	80NE			X		
17.6	N85E	89NW		X			
18.6	N73W	70NE		X			
18.7	N45E	36NW	X				
19.4	N74W	35NE	X				
20.9	N69E	65NW			X		
21.7	N58E	49NW			X		
16.5	N82E	88NW			X		
24.9	Horizontal		X				
26.6	N75E	82NW		X			
27.6	N69E	83NW		X			
28.1	N77W	78NE			X		
30.0	N50W	78NE			X		
29.3	N63E	86SE			X		
31.0	N88E	82NW			X		
31.5	N86E	80NW			X		
32.0	N49W	73NE			X		
35.5	N80E	3SE		X			
37.5	N83E	39NW			X		
40.3	N50W	85NE			X		
41.5	N55W	86NE			X		
39.7	N60W	60NE			X		

Boring No. E2-16

Project Seabro
Project No. 7286

Ground Elevation (MSL) = + 16.8

Feature Depth	Strike	Dip	Type of Feature: Joint	Foliation	Slickensided Surface	Contact	Remarks
17.3	N36E	28NW	X				
18.3	N10W	56SW	X				
20.0	N5W	85SW			X		
20.6	N20W	70SW	X				
23.0	N18W	58SW	X				
23.5	N25E	15NW	X				
23.9	N25W	50SW	X				
24.3	N25W	53SW	X				
25.3	N45W	64SW	X				
25.9	N5E	86SE	X				
29.9	N15W	64SW	X				
30.0	N15W	64SW	X				
32.0	N21W	68SW	X				
33.9	N10W	68SW	X				
34.3	N8W	47SW	X				
35.0	N46W	30NE		X			
41.2	N11W	83SW	X				
41.7	N10W	55SW	X				
43.7	N57E	38NW	X				
44.5	N50E	30NW			X		
44.6	N52W	61NE			X		
45.1	N43E	69NW	X				
45.6	N19E	71NW	X				
46.1	N25E	89NW	X				
47.5	N44E	61NW			X		
48.0	N39W	67SW	X				
49.0	N70E	46NW	X				
50.0	N84W	68NE			X		
50.4	N42E	77NW	X				
52.4	N16E	84NW	X				
52.5	N16E	84NW	X				
53.0	Horizontal		X				
54.6	N15E	78SE			X		
56.9	N21E	69NW	X				
57.7	N27E	77NW	X				
58.2	N51E	47NW			X		
58.3	N86W	59NE			X		
58.13	N7E	62NW	X				
75.4	N31E	28NW	X				
77.4	N20E	73NW	X				
78.4	N43E	40NW	X				
79.7	N19E	37NW	X				
81.5	North	26W			X		
81.6	N26E	27NW			X		
82.3	N26E	38NW	X				
82.7	N15E	28NW	X				

Boring No. E2-16

Project Seabrook
Project No. 7286

Ground Elevation (MSL) = + 16.8

Type of Feature

Feature Depth	Strike	Dip	Joint	Foliation	Slickensided Surface	Contact	Remarks
83.8	N15E	25NW	X				
86.8	N22E	34NW	X				
87.5	N5E	76SE	X				
88.0	N55W	82NE	X				
89.0	N12W	74SW			X		
96.5	N20E	33NW			X		Trend=N35W **Plunge=27**
100.8	N53E	68NW	X				
102.5	N12E	28SE		X			
104.9	N5W	60SW			X		Trend=N71W **Plunge=54**
106.2	N41W	85SW			X		Trend=S34W **Plunge=87**
107.0	N50E	5NW			X		Trend=N66W **Plunge=19**
107.5	N30W	11NE		X			
101.9	N25W	81SW			X		Trend=S16E Plunge=18
109.1	N21W	45SW	X				
109.3	N41E	25NW	X				
110.9	N5W	84SW			X		Trend=S20W **Plunge=70**
111.1	Horizontal		X				
112.1	N36E	50NW			X		Trend=N71W **Plunge=45**
112.3	N15E	15NW			X		Trend=S60E Plunge=16
113.0	N5E	85NW			X		Trend=S55W Plunge=70
115.3	N23E	32NW	X				
115.4	N15E	20NW	X				
115.9	N20E	30NW	X				
116.9	N26E	32NW	X				
118.9	N29E	72NW	X				
121.3	N25E	35NW	X				
121.11	N70E	**17SE**			X		
121.8	N70W	**74NE**		X			
122.0	N30E	30NW	X				
123.1	N35E	22NW			X		Trend=N35W **Plunge=22**
124.3	N15W	81SW			X		
125.6	N30E	21NW	X				
126.7	N28W	84SW	X				
127.6	N61E	56SW			X		Trend=N60W **Plunge=33**
128.8	N48W	76 SW		X			
129.3	N35W	77SW			X		
130.1	N40W	24NE			X		
131.0	N15W	14NE		X			
131.2	N64W	51NE			X		
132.4	N23W	76 SW			X		
133.0	N5W	74SW			X		
133.0	N70E	30NW	X				
133.3	N40E	**83SE**	X				
133.5	N10W	11NE			X		
134.0	N35E	35NW			X		
134.3	N45W	45NE	X				

Boring No. E2-16

Project Seabroo
Project No. 7286

Ground Elevation (MSL) = + 16.8

Type of **Feature**

Feature Depth	Strike	Dip	Joint	Foliation	Slickensided Surface	Contact	Remarks
140.5	N21E	30NW			X		
142.2	N53E	45NW			X		Trend=N35E Plunge=10
142.3	N41E	10NW			X		
143.1	N50E	65NW			X		
143.2	N71E	69NW			X		Trend=N40E **Plunge=33**
143.9	N81E	55NW			X		Trend=N35E **Plunge=35**
144.1	N72E	65NW			X		
144.1	N17E	54NW	X				
146.1	N59E	80NW			X		**Trend=** N5W **Plunge=73**
146.5	N37E	63NW			X		Trend=N20E **Plunge=17**
147.2	N40E	68NW			X		
147.5	N8W	48SW			X		
140.1	N59E	80NW			X		
148.2	N68E	62NW			X		
148.3	N82E	77NW			X		
149.5	N53E	65NW			X		
151.2	N27W	90SW			X		
151.8	**Horizontal**		X				
152.0	N81W	56NE			x		
154.0	N35E	29NW			X		
155.7	N59W	53NE			X		
162.0	N10W	72 SW			X		

Project Seabrook
Project No. 7286

Boring No. E2-17

Ground Elevation (MSL) = t 13.3

Feature Depth	Strike	Dip	Type of Feature: Joint	Foliation	Slickensided Surface	Contact	Remarks
28.0	N37E	34NW	X				
29.5	N55E	59sc	X				
33.3	N87W	87SW		X			
34.3	N47W	23NE			X		
35.9	N17W	77NE	X				
42.6	N50W	78NE			X		
43.4	N49E	23NE			X		
44.1	N61E	52NE	X				
45.0	N24W	10NE			X		
45.1	N49E	60NE			X		
45.3	N73E	84NE			X		
45.9	N51E	24NE	X				
54.7	N55W	80NE		X			
55.5	N78W	86NE			X		
56.0	N68E	80NE			X		
56.2	N76W	86NE			X		
56.3	N44E	64NE			X		
56.4	N44E	64NE			X		
60.5	N71W	89NE			X		

Boring No. E2-18 **Project** Seabrook
Project No. 7286

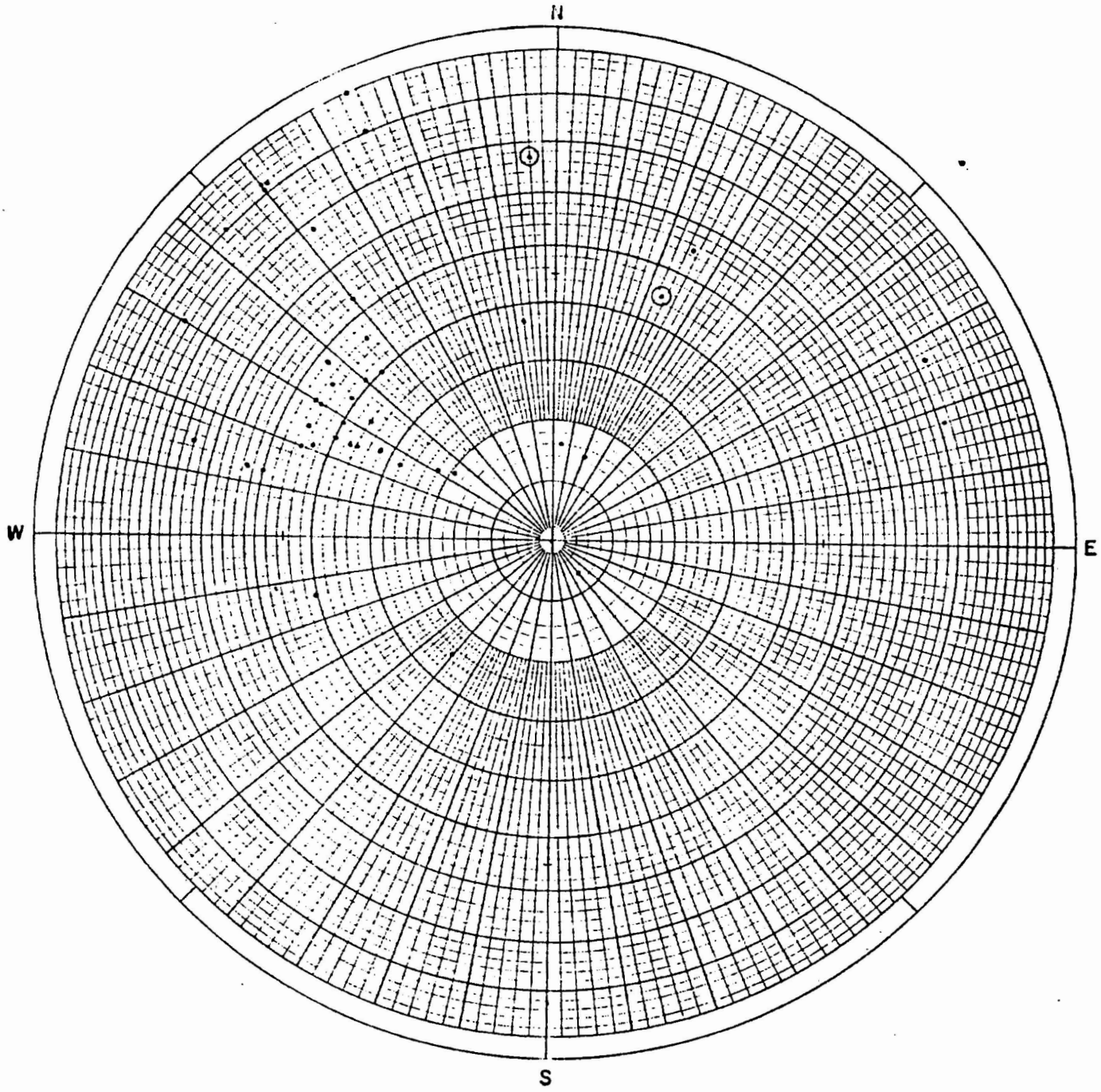
Ground Elevation (MSL) = + 14.9

Feature Depth	Strike	Dip	Type of Feature: Joint	Foliation	Slickensided Surface	Contact	Remarks
22.8	N28W	50SW			X		
36.0	N53E	**25SE**	X				
42.0	N5E	**73SE**	X				
42.G	N42E	**64SE**	X				
43.1	N55E	**25SE**	X				
44.0	N8W	**45SW**	X				
46.G	N30W	72NE	X				
57.0	N45W	**75 SW**			X		
47.5	N40W	81SW			X		
49.1	N87E	86SE			X		
50.2	N87E	**73SE**			X		
50.3	N60W	36SW	X				
51.3	N25E	81SE	X				
53.0	N48W	44SW			X		
54.0	N8W	**34** SW			X		
54.1	N76W	56SW	X				
54.2	N73W	73SW			X		
54.3	N21E	**70SE**			X		
56.0	N8W	69SW			X		
57.11	**North**	**East**	X				
61.7	N50W	87NE			X		
64.G	N63W	**74NE**			X		
66.6	N64E	**80** SW	X				
67.3	N5W	52SW			X		Trend=N79W Plunge=18
67.9	N55E	89SE	X				
68.0	N45E	85NW	X				
68.3	N45E	85NW	X				
68.5	N23E	45NW	X				
72.2	N55W	61NE	X				
73.6	N45E	**62SE**	X				
74.8	N14W	68NE	X				
75.0	N42E	**71SE**	X				
76.0	N20W	**66NE**			X		
123.8	N37W	44SW			X		
125.0	N4E	76SE	X				
126.0	N21W	63NE			X		Trend=S62E **Plunge=52**
176.1	N6E	64SE			X		
126.3	N17W	64NE			X		
128.0	N14W	67NE	X				
129.6	N70E	53NW	X				
131.1	N64E	1NW			X		
132.5	N15W	68NE	X				
135.G	N77W	50NE			X		
137.1	N54E	**68SE**			X		
137.4	N42W	62NE			X		
143.9	N32W	50NE			X		Trend=S25E **Plunge=38**

APPENDIX I I I

APPENDIX III

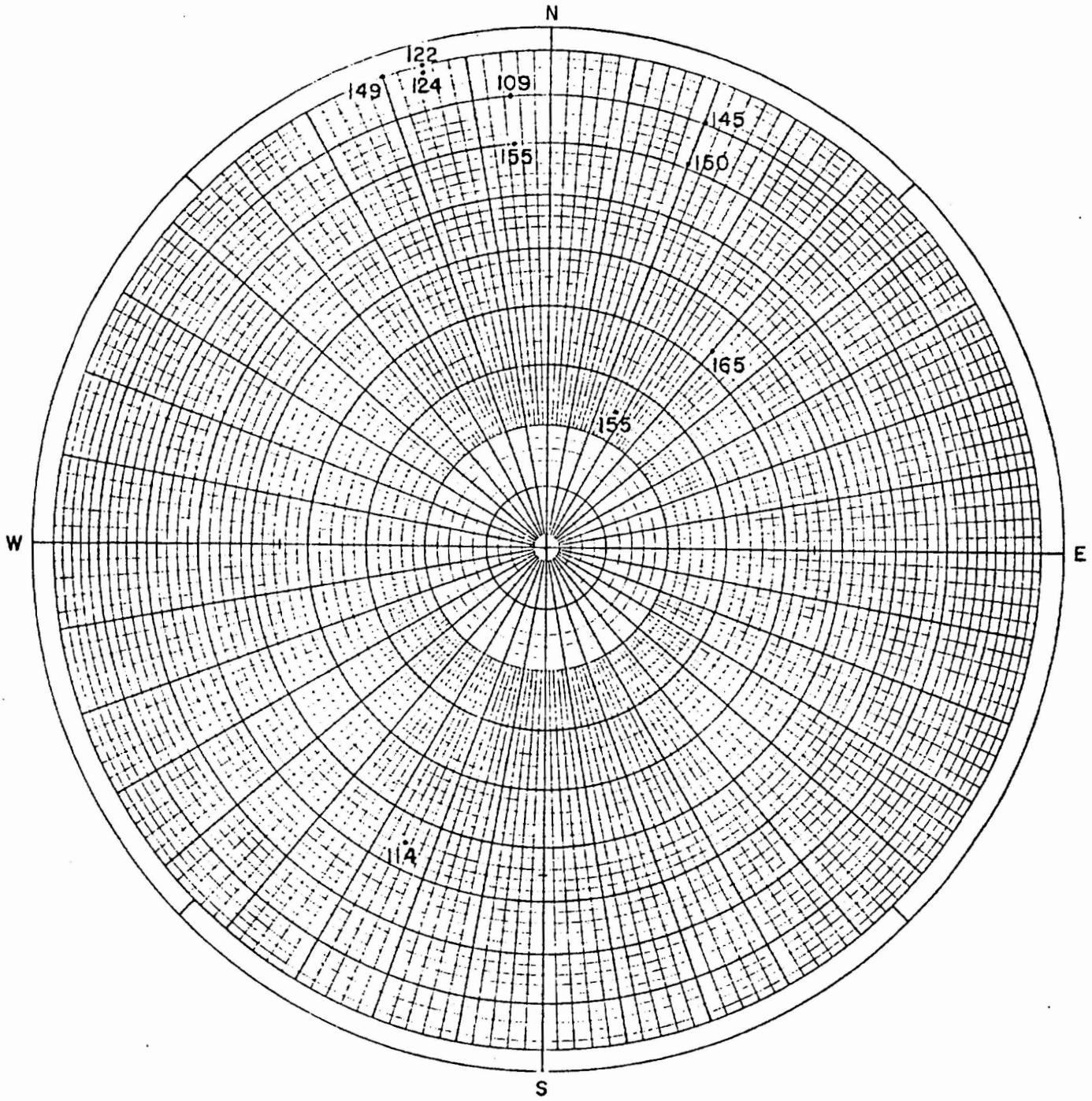
Polar Equal Area Stereo Net Projections



Polar Equal Area Stereo Net
Geotechnical Engineers, Inc.
Seabrook Station
June 1974

Boring E2-11
Ground Elevation (MSL) +25.5 ft
Joints in:

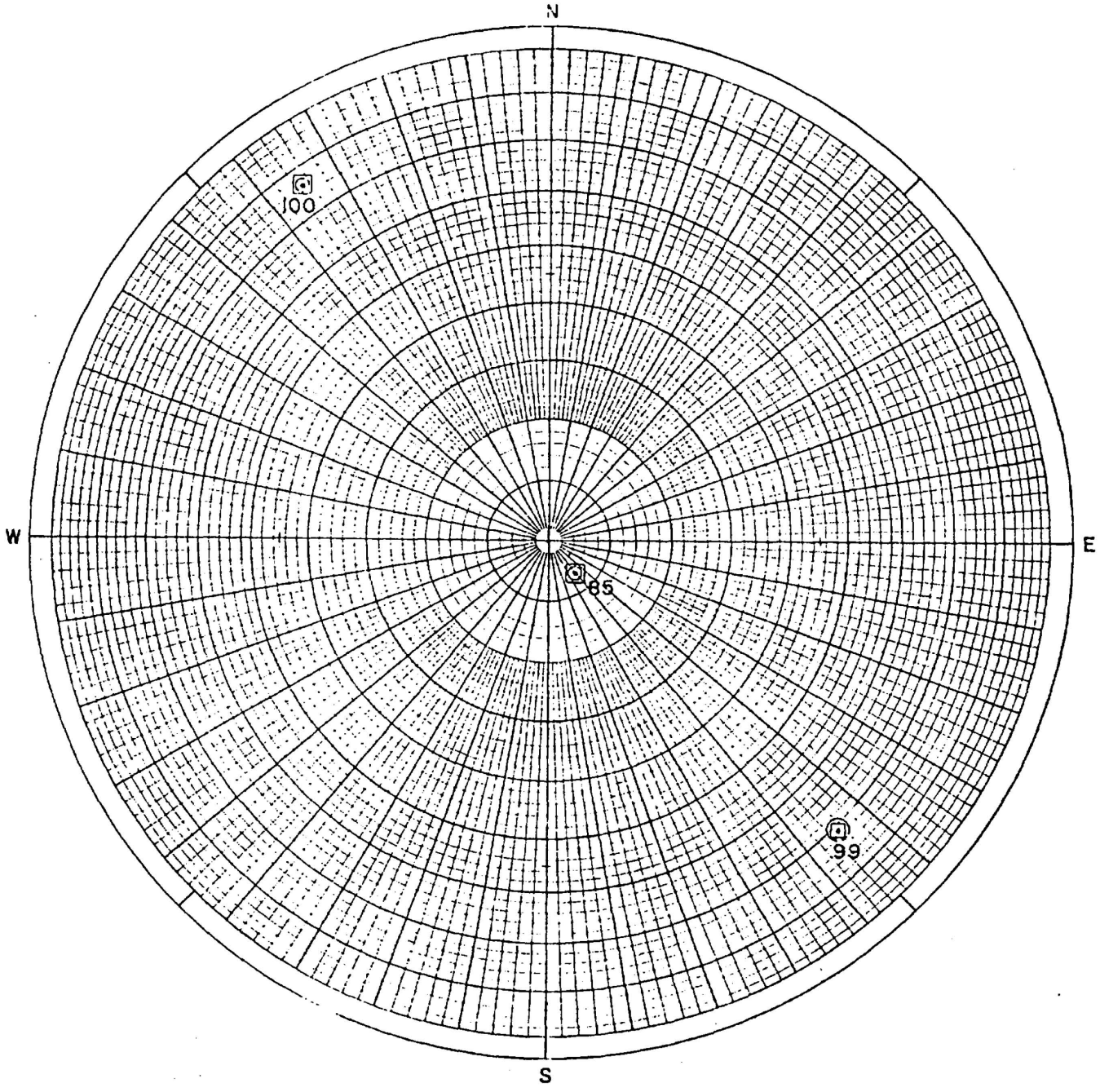
. Diorite
⊙ Diabase



Polar Equal Area Stereo Net
Geotechnical Engineers, Inc.
Seabrook Station
June 1974

Boring E2-11
Ground Elevation (MSL) +25.0 ft
Foliation in:

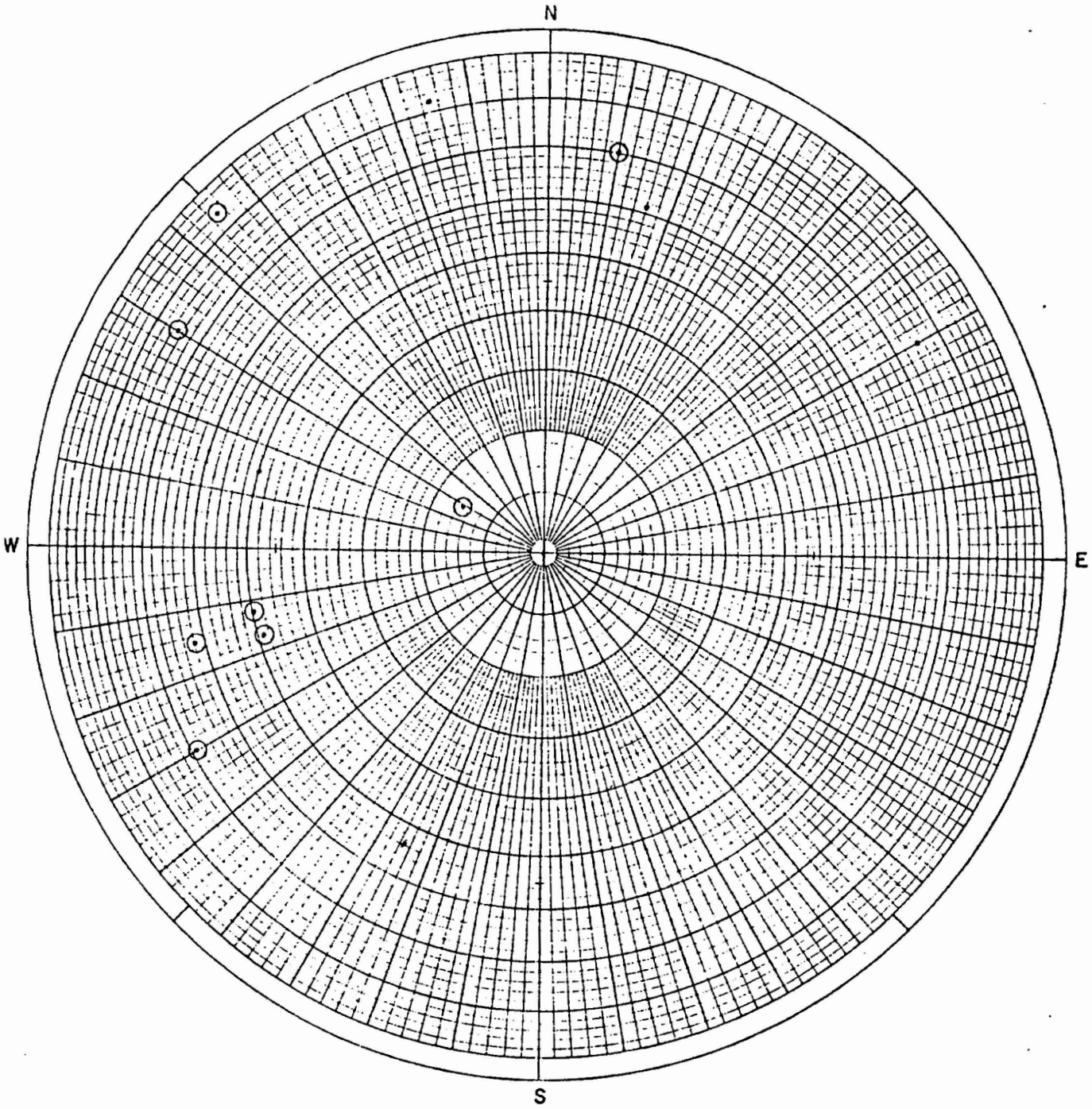
. Diorite



Polar Equal Area Stereo Net
Geotechnical Engineers, Inc.
Seabrook Station
June 1974

Boring E2-11
Ground Elevation (MSL) +25.0 ft
Contacts and Depth :

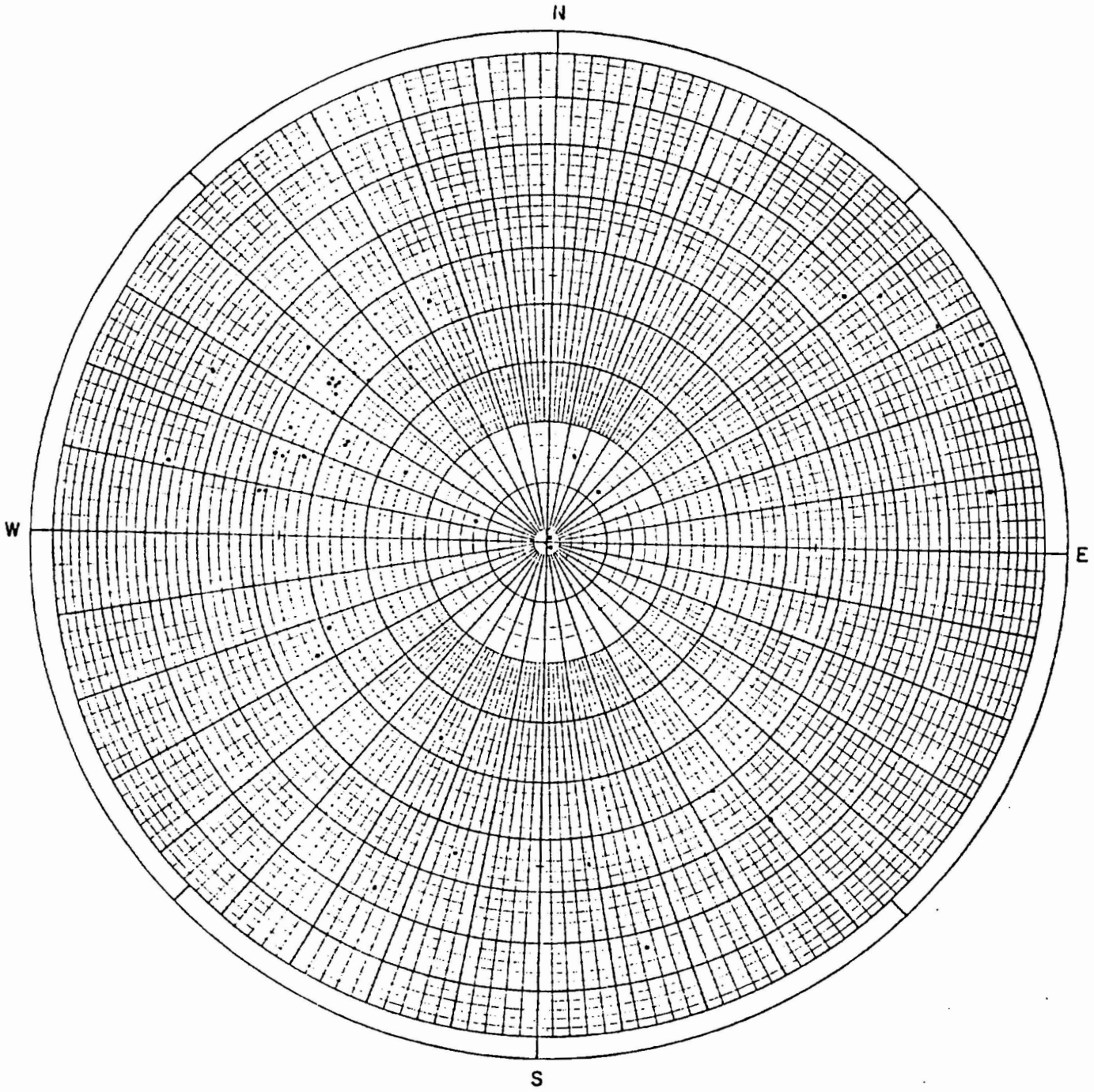
◎ Diorite over Diabase
◎ Diabase over Diorite



Polar Equal Area Stereo Net
Geotechnical Engineers, Inc.
Seabrook Station
June 1974

Boring E2-11
Ground Elevation (MSL) i-25. 0 ft
Slickensided Surfaces in:

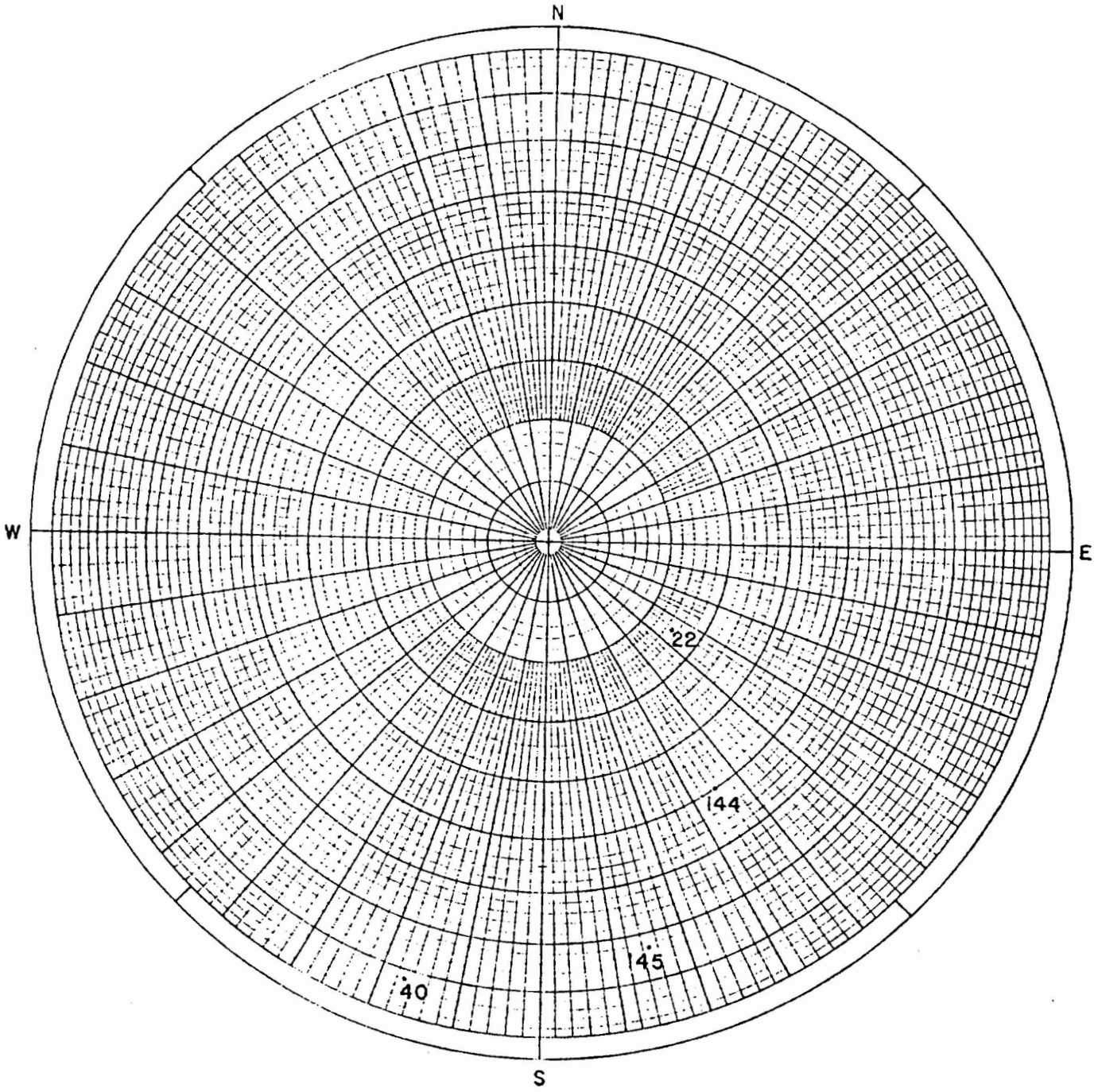
. Dioritc
⊙ Diabase



Polar Equal Area Stereo Net
Geotechnical Engineers, Inc.
Seabrook Station
June 1974

Boring E2-12
Ground Elevation (MSL) +21.5 ft
Joints in

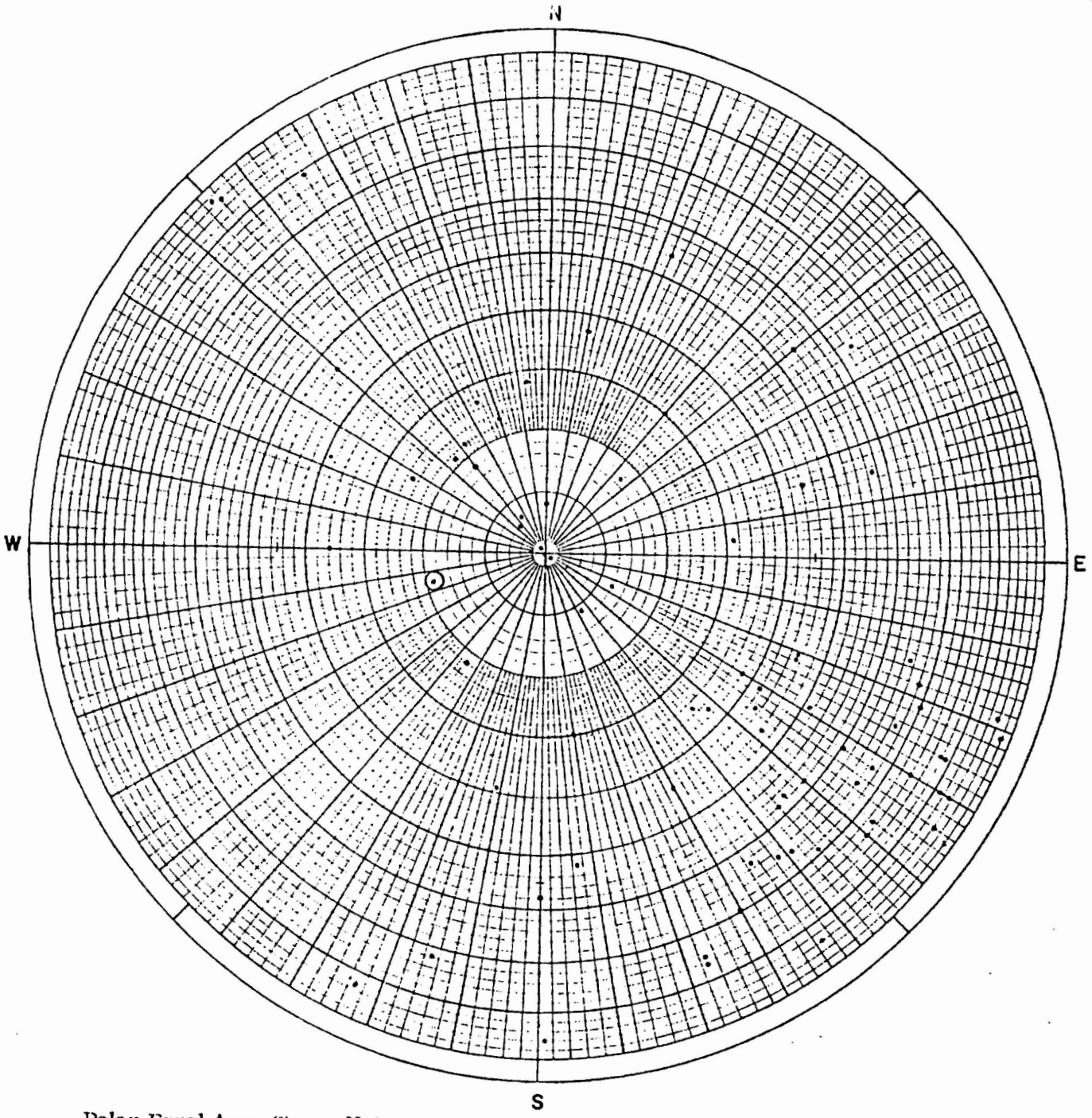
. Diorite



Polar Equal Area Stereo Net
Geotechnical Engineers, Inc.
Seabrook Station
June 1974

Boring E2-12
Ground Elevation (MSL) +21.5
Foliation and Depth in:

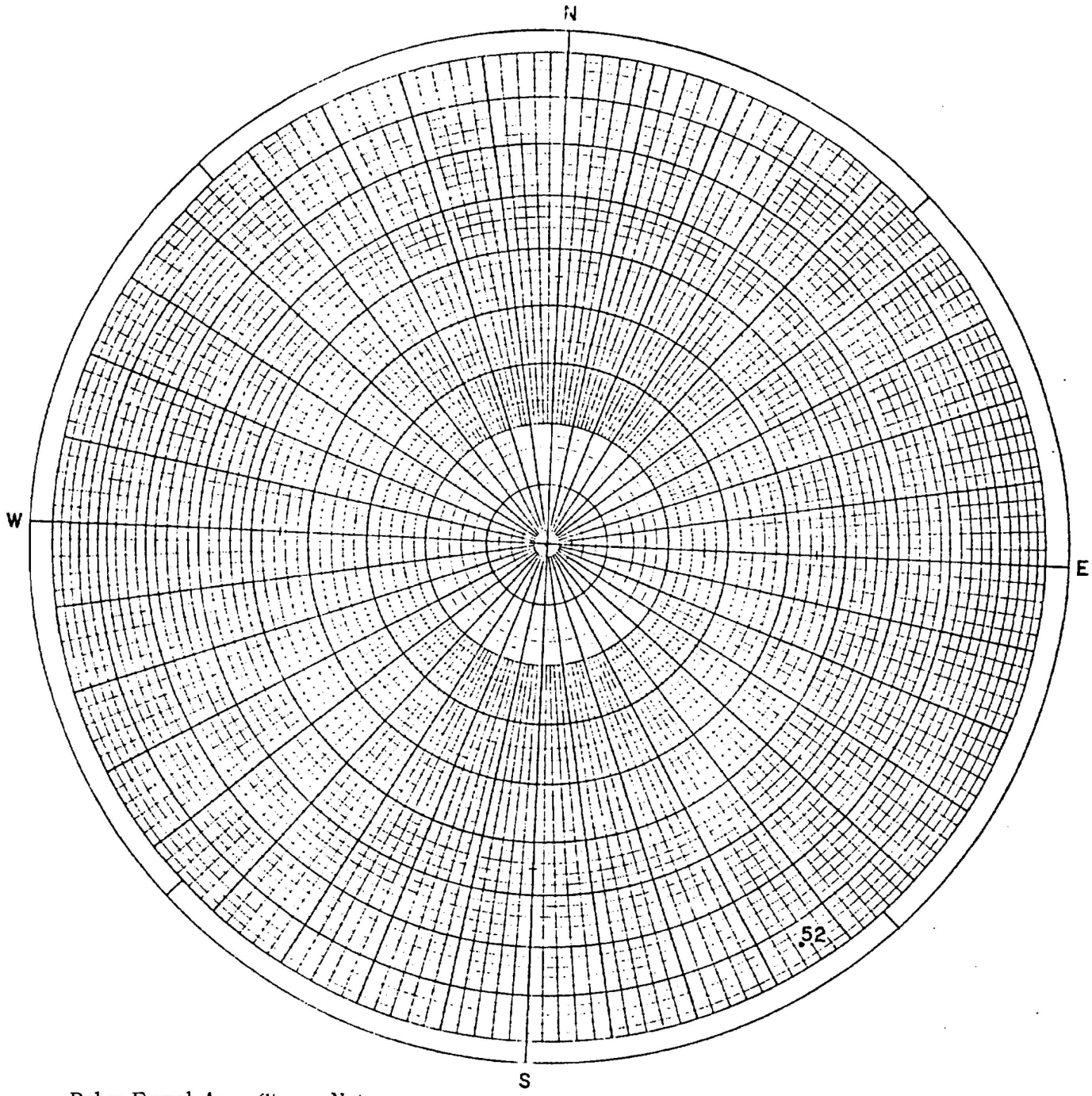
- Diorite



Polar Equal Area Stereo Net
Geotechnical Engineers, Inc.
Seabrook Station
June 1974

Boring E2-13
Ground Elevation (MS L) +30. 5 ft
Joints in:

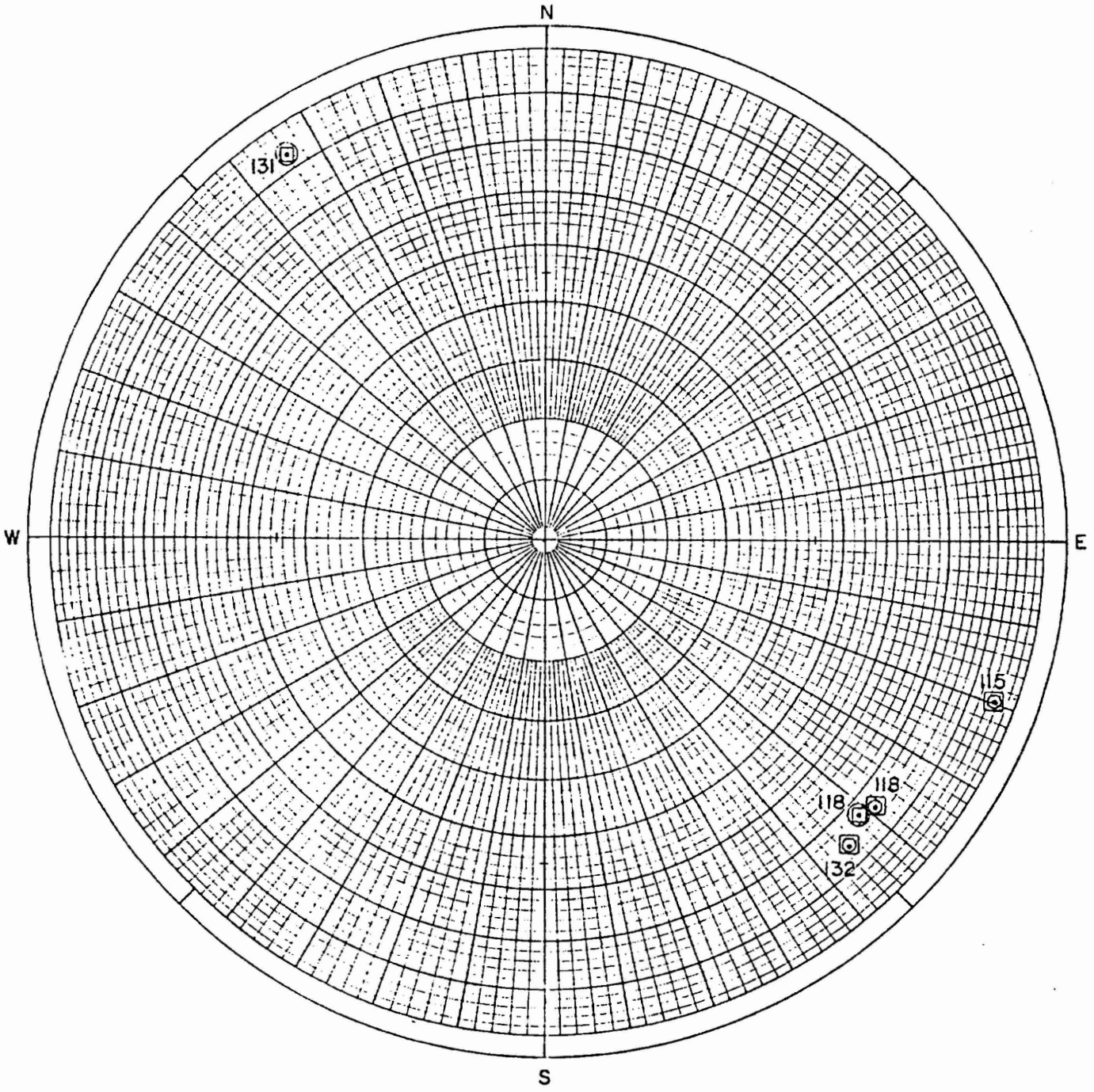
. Diorite
⊙ Diabase



Polar Equal Area Stereo Net
Geotechnical Engineers, Inc.
Seabrook Station
June 1974

Boring E2 -13
Ground Elevation (MSL) +30. 5 ft
Foliation and Depth in:

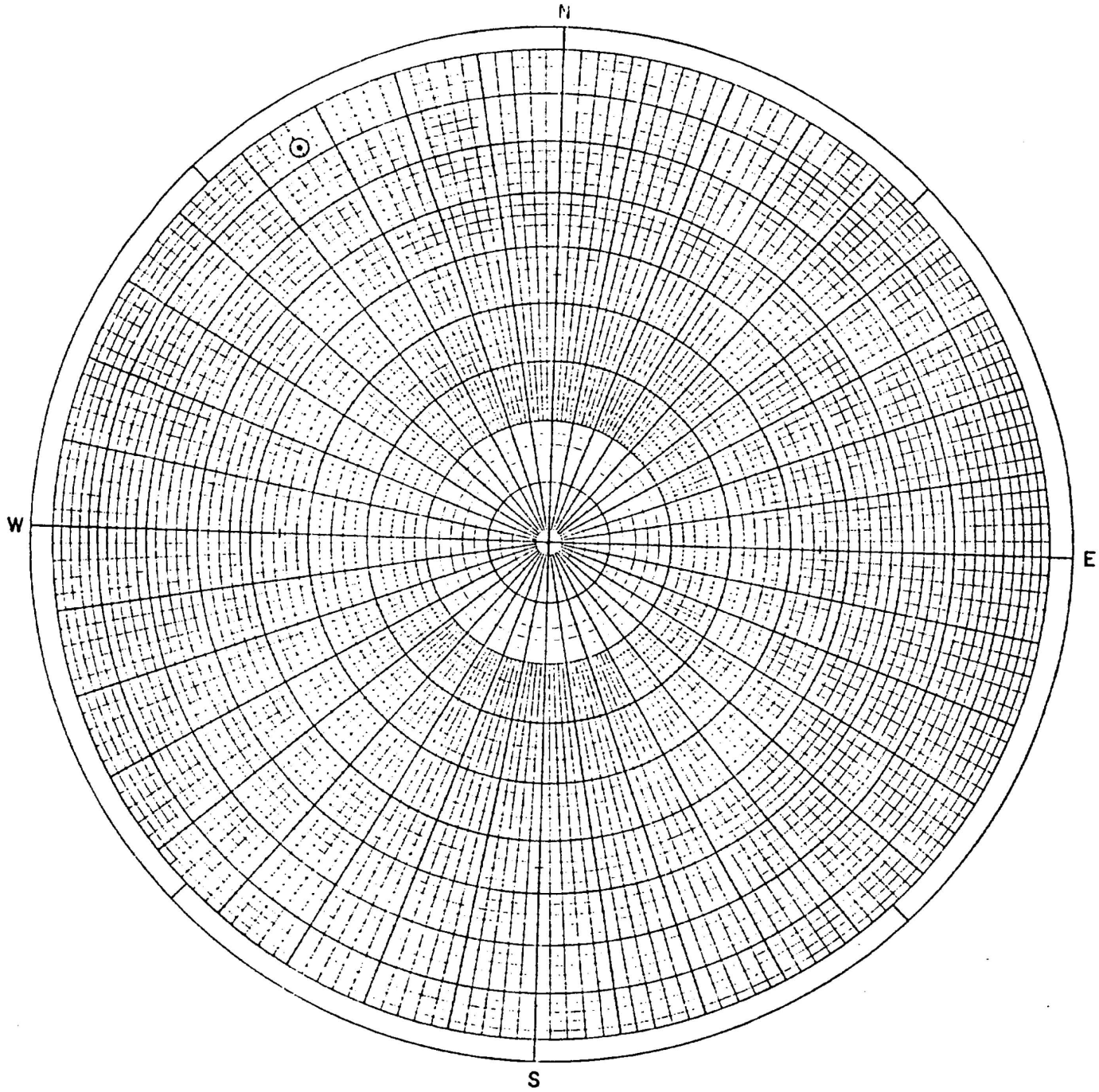
- Diorite



Polar Equal Area Stereo Net
Geotechnical Engineers, Inc.
Seabrook Station
June 1974

Boring E2-13
Ground Elevation (MSL) -130.5 ft
Contacts and Depth:

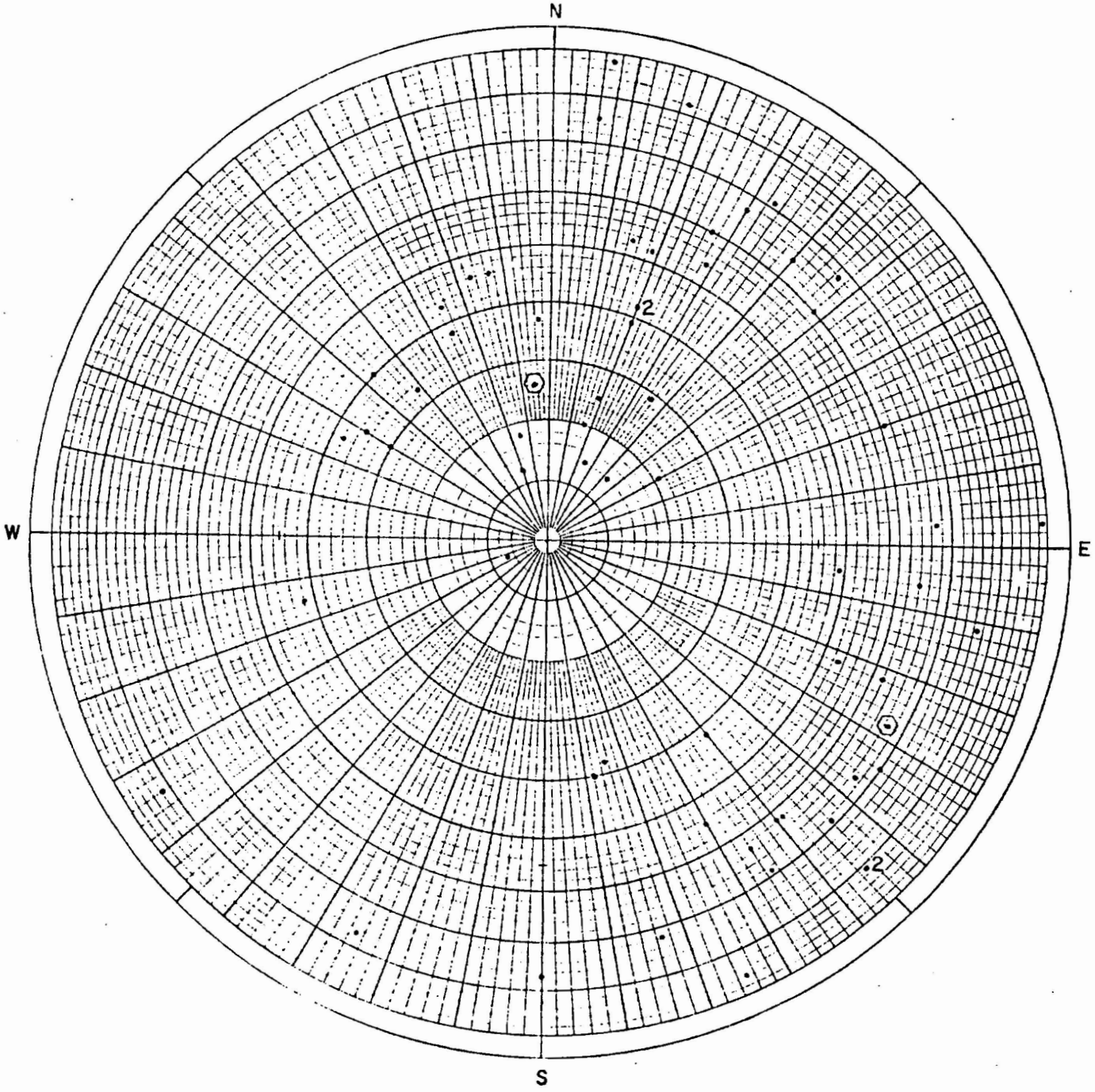
Diorite over Diabase
Diabase over Diorite



Polar Equal Area Stereo Net
Geotechnical Engineers, Inc.
Seabrook Station
June 1974

Boring E2-13
Ground Elevation (MSL) +30.5 ft
Slickensided Surfaces in:

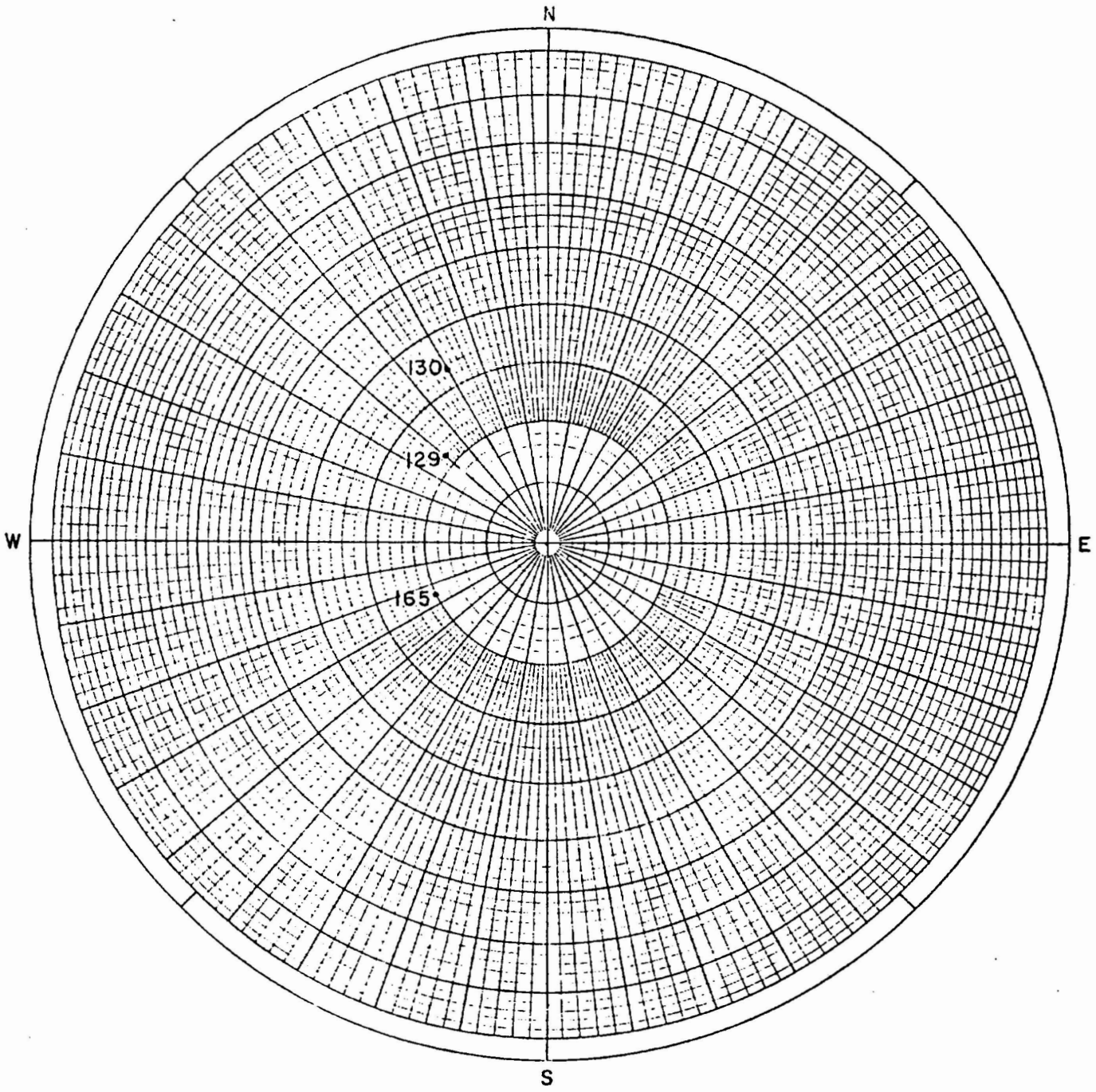
⊙ Diabase



Polar Equal Area Stereo Net
Geotechnical Engineers, Inc.
Seabrook Station
June 1974

Boring E2-14
Ground Elevation (MSL) +29.9 ft
Joints in:

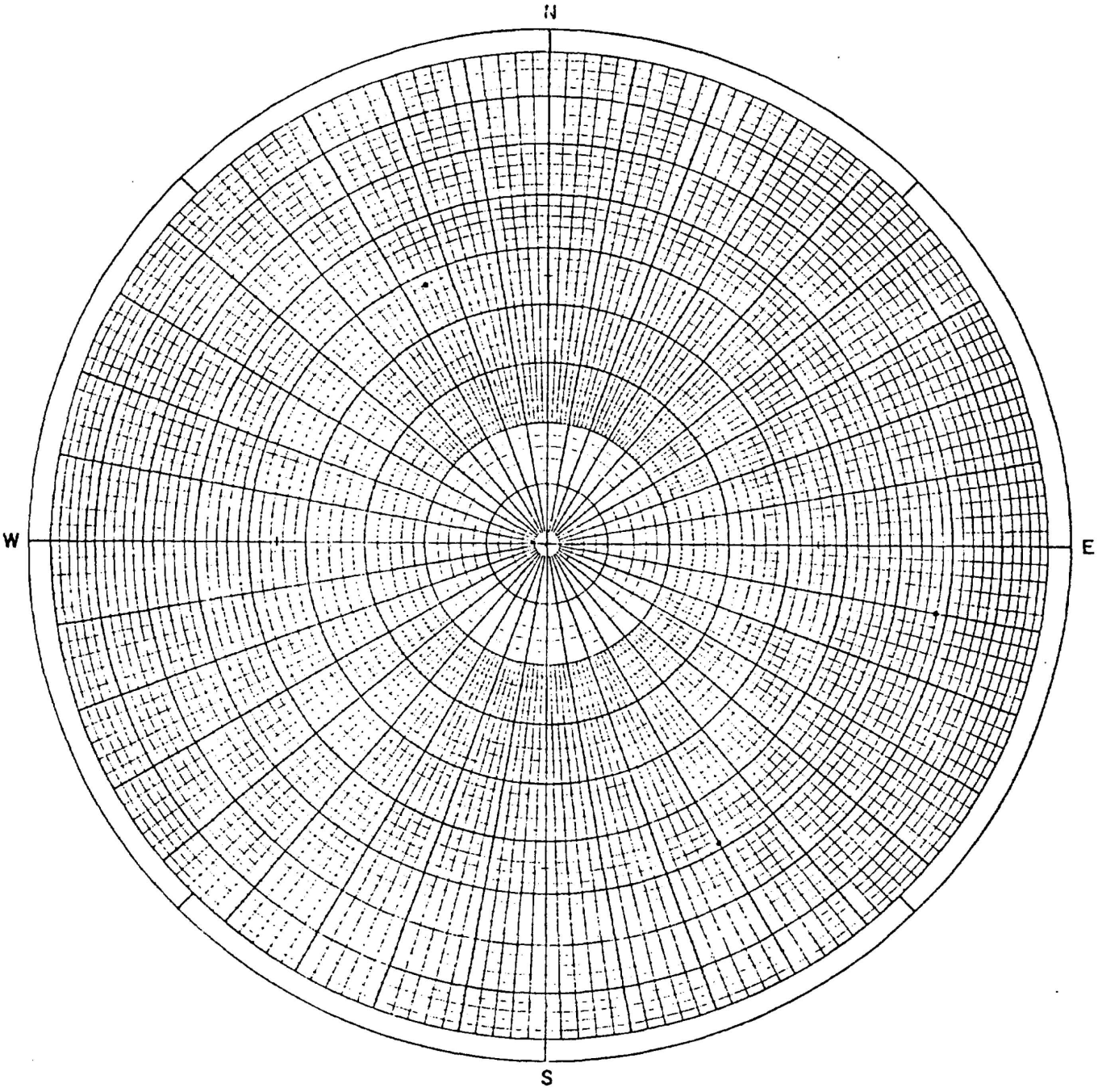
. Diorite
⊙ Pegmatite



Polar Equal Area Stereo Net
Geotechnical Engineers, Inc.
Seabrook Station
June 1974

Boring E2-14
Ground Elevation (MSL) + 29.9 ft
Foliation and Depth in:

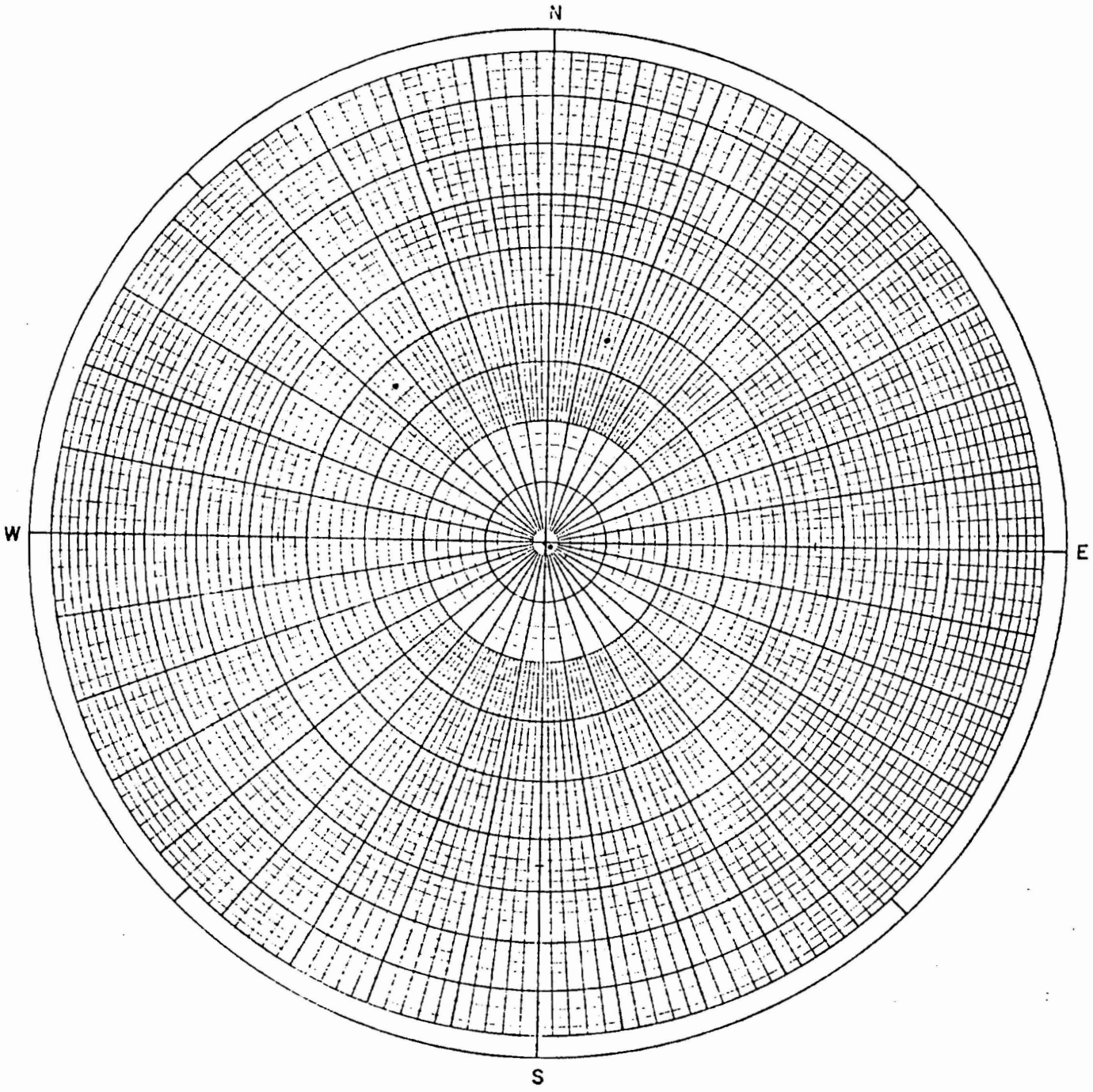
- Diorite



Polar Equal Area Stereo Net
Geotechnical Engineers, Inc.
Seabrook Station
June 1974

Boring E2-14
Ground Elevation (MSL) +29.9 ft
Slickensided Surfaces in:

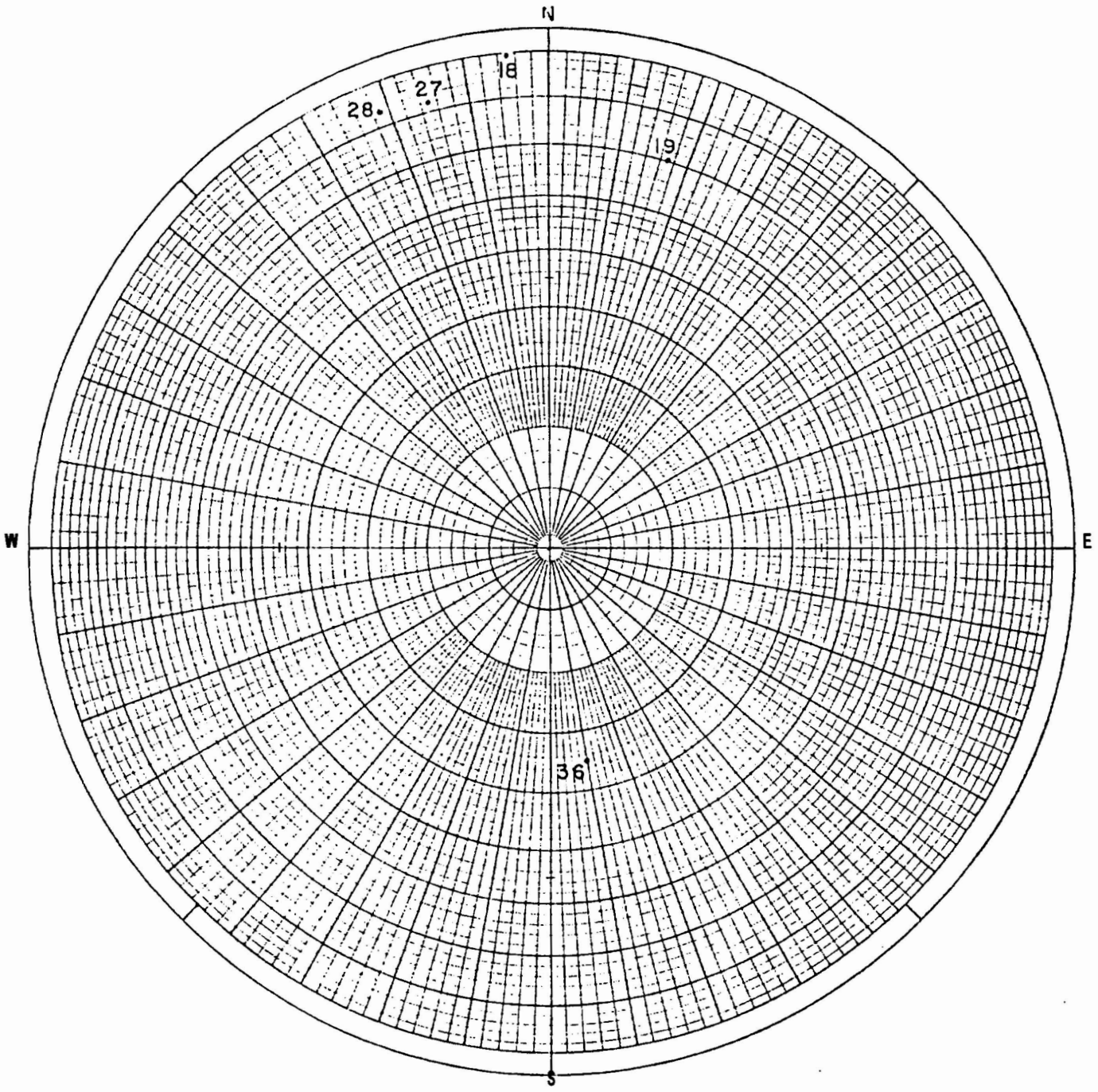
. Diorite



Polar Equal Area Slcrco Net
Geotechnical Engineers, Inc.
Seabrook Station
June 1974

Boring E2-15
Ground Elevation (MSL) + 13.9 ft
Joints in:

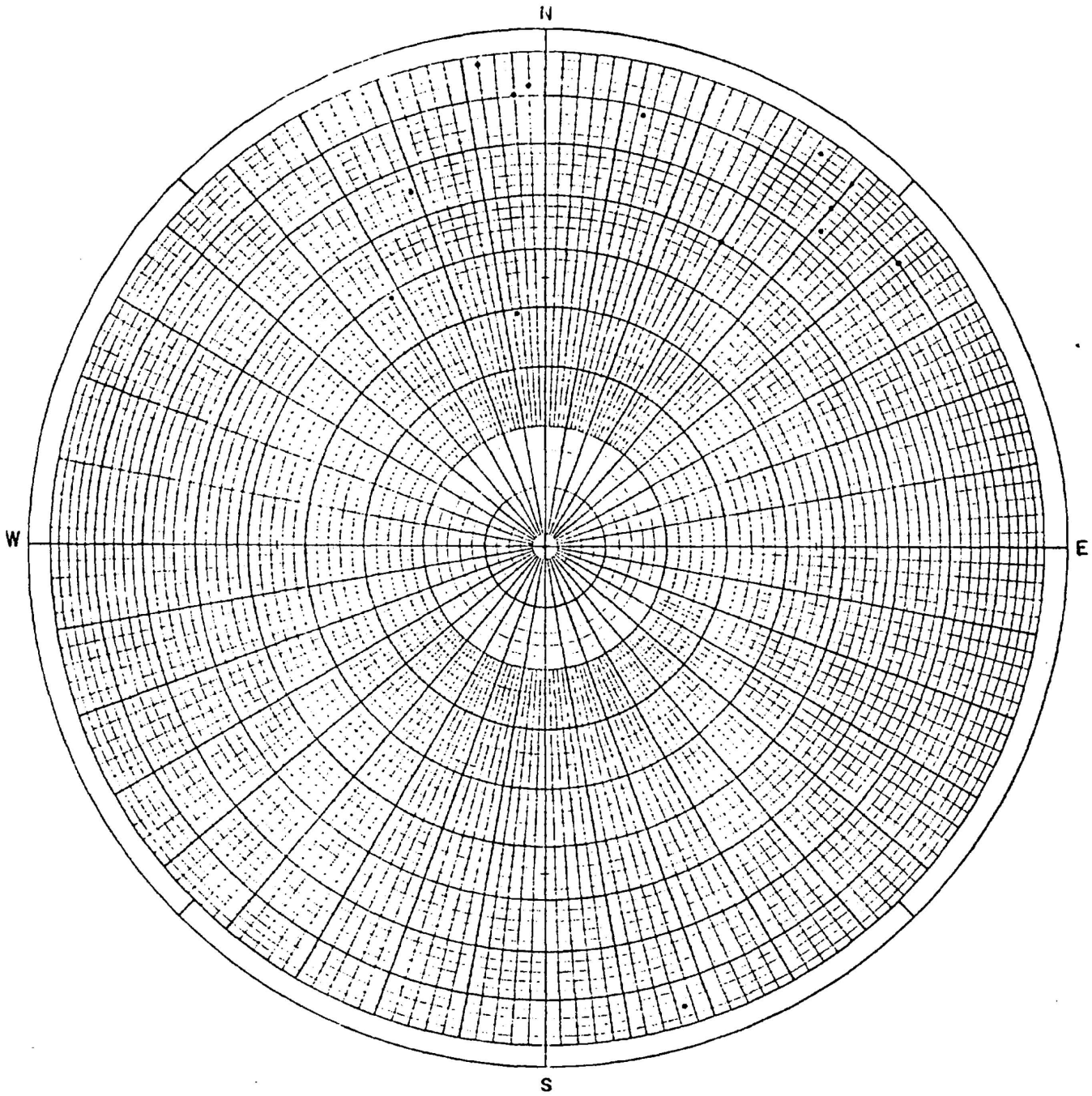
. Dioritc



Polar Equal Area Stereo Net
Geotechnical Engineers, Inc.
Seabrook Station
June 1974

Boring E2-15
Ground Elevation (MSL) +13.9 ft
Foliation in:

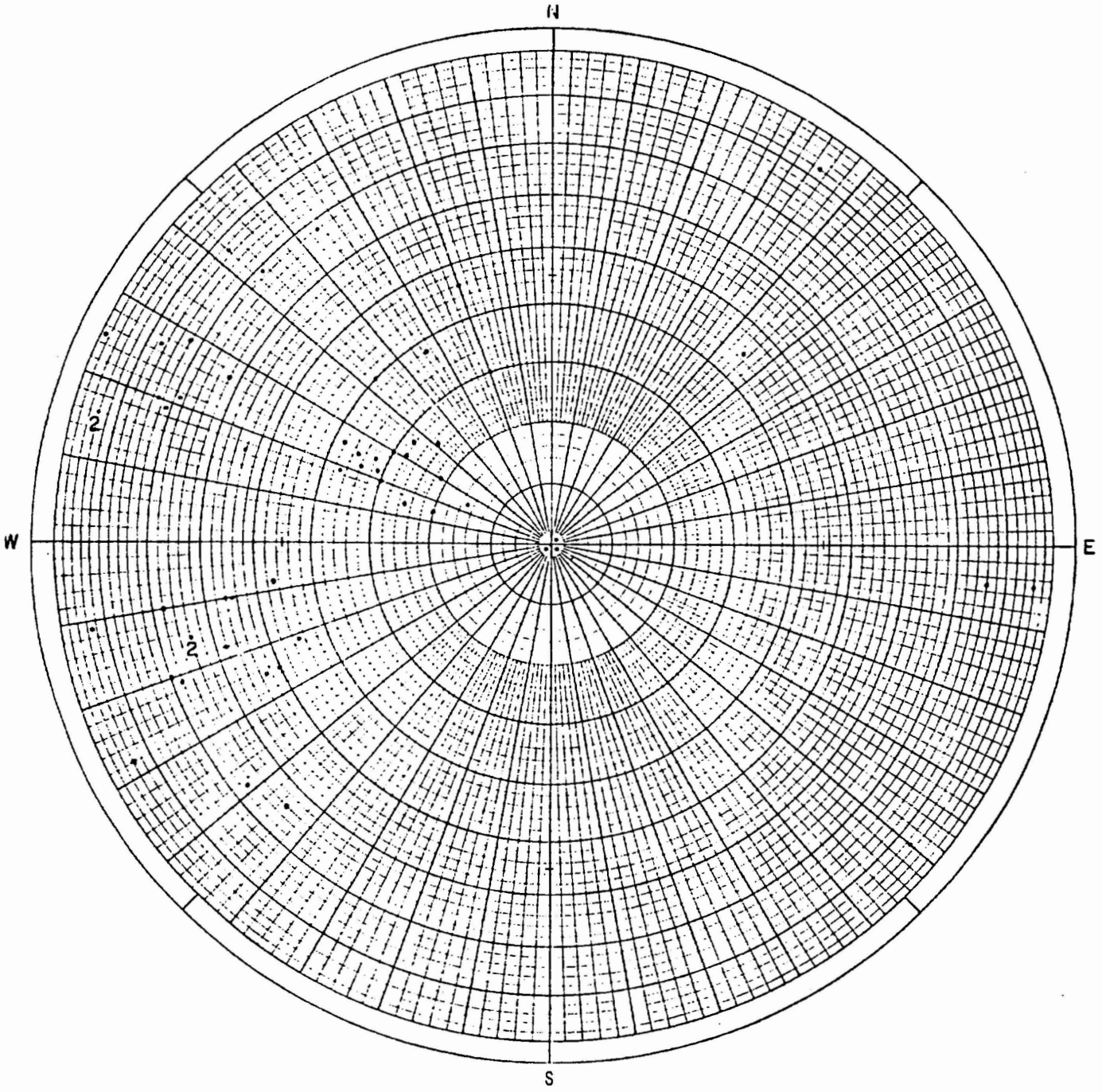
. Diorite



Polar Equal Area Stereo Net
Geotechnical Engineers, Inc.
Seabrook Station
June 1974

Boring E2-15
Ground Elevation (MSL) t-13.9 ft
Slickensided Surfaces in:

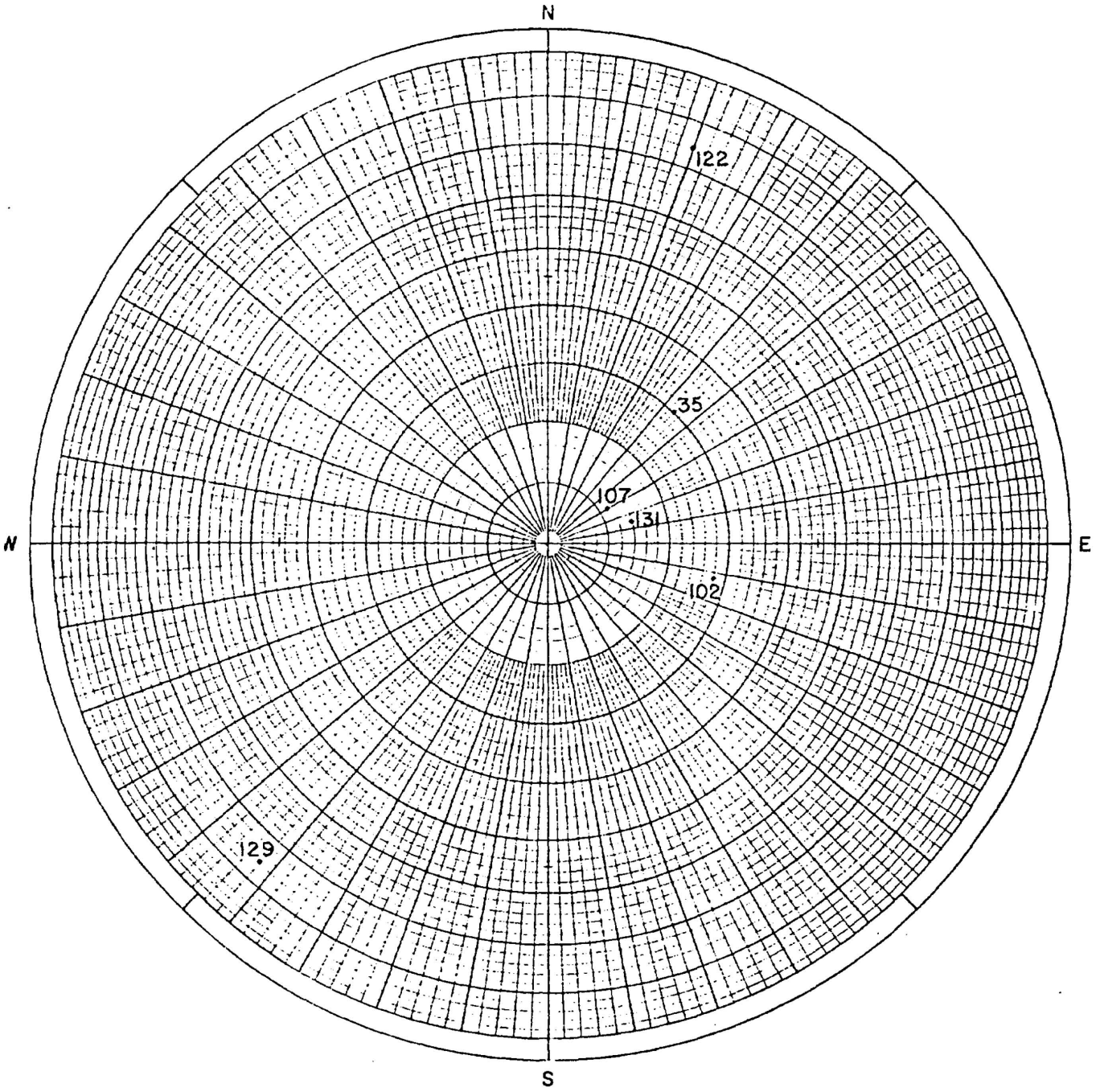
. Diorite



Polar Equal Area Stereo Net
Geotechnical Engineers, Inc.
Seabrook Station
June 1374

Boring E2-16
Ground Elevation (MSL) +16. 8 ft
Joints in:

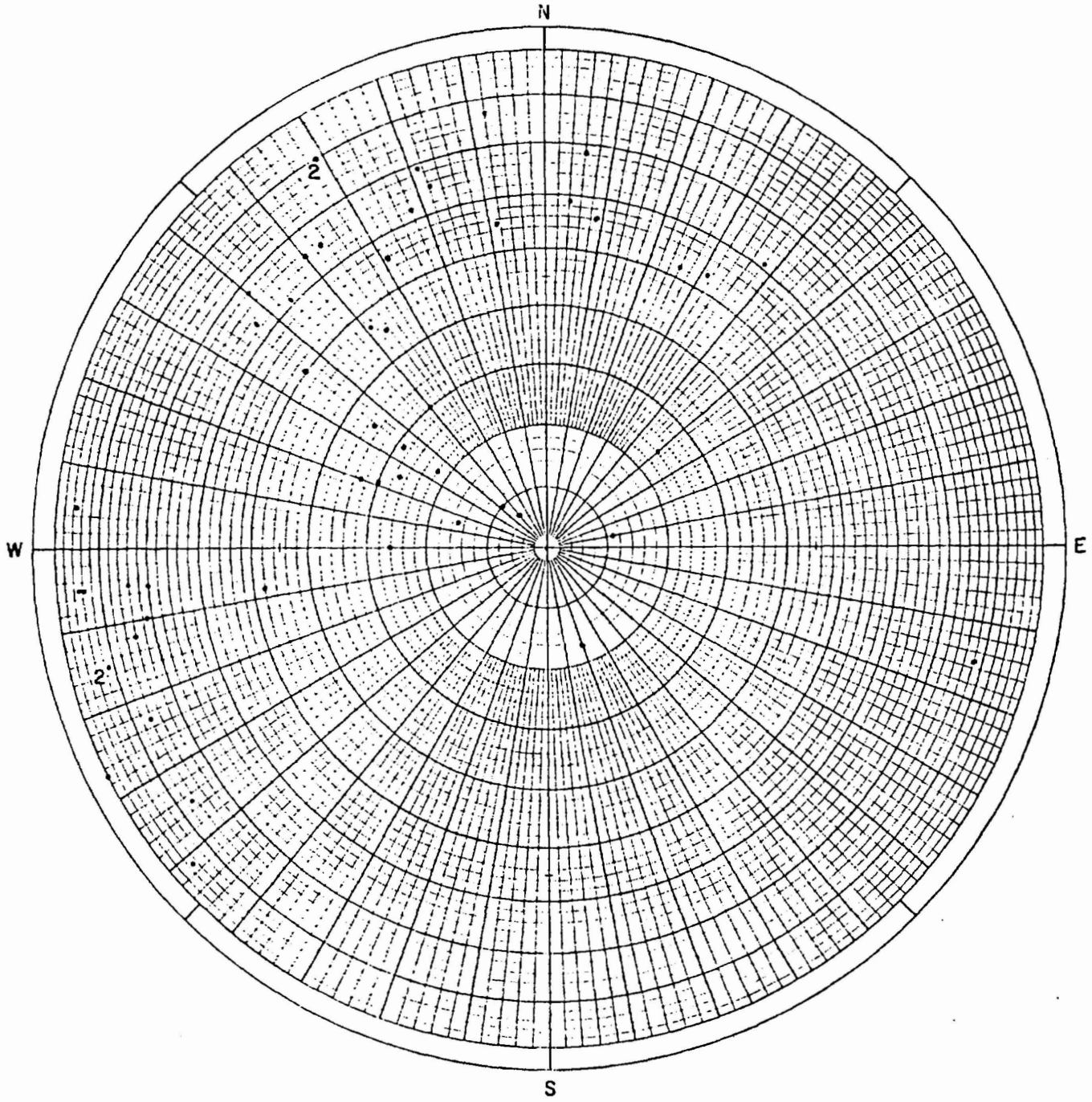
- Diorite



Polar Equal Area Stereo Net
Geotechnical Engineers, Inc.
Seabrook Station
June 1974

Boring E2-16
Ground Elevation (MSL) +16.8 ft
Foliaiton and Depth in:

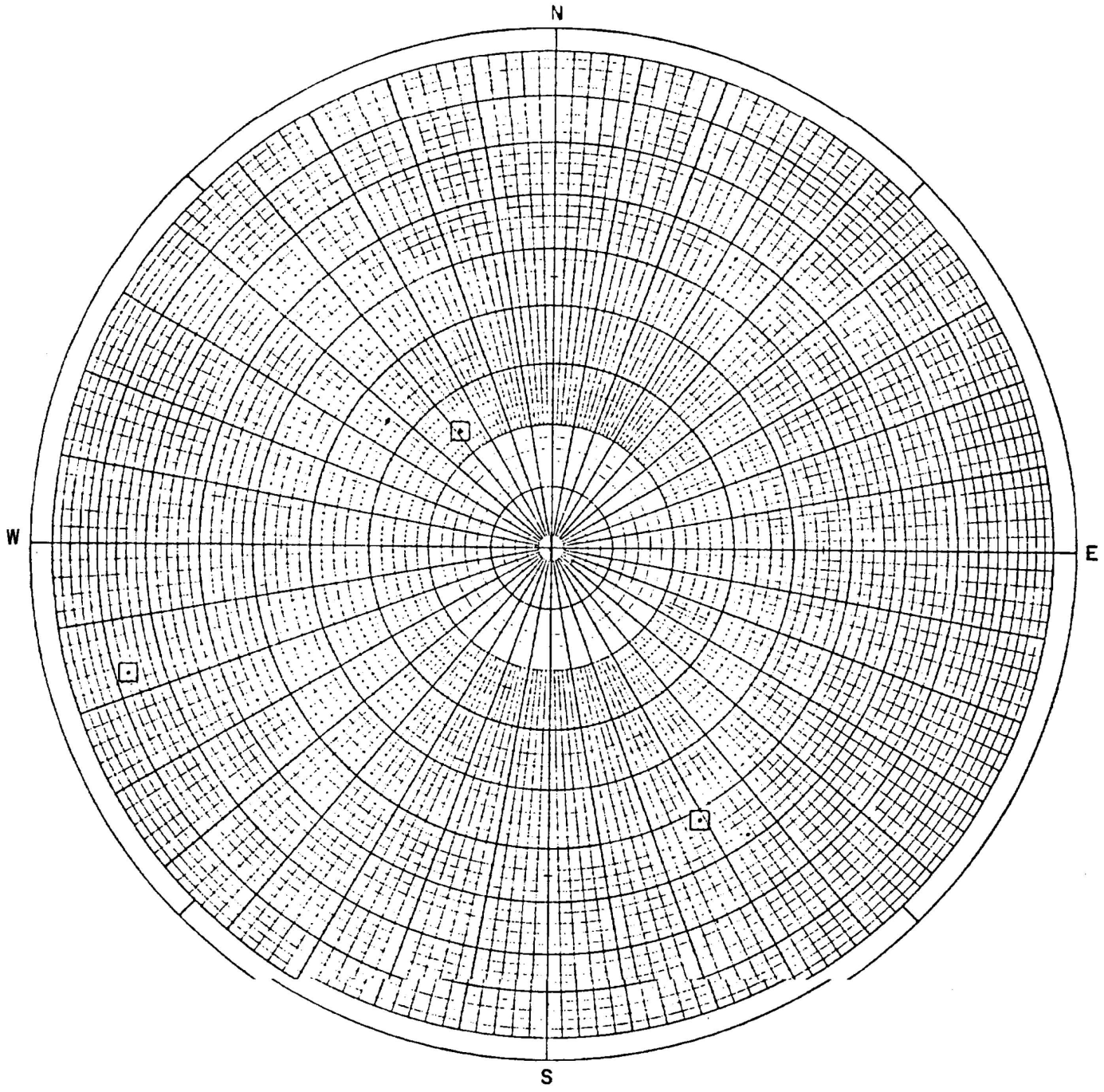
. Diorite



Polar Equal Area Stereo Net
Geotechnical Engineers, Inc.
Seabrook Station
June 1374

Boring E2-16
Ground Elevation (MSL) +16.8 ft
Slickensided Surfaces in:

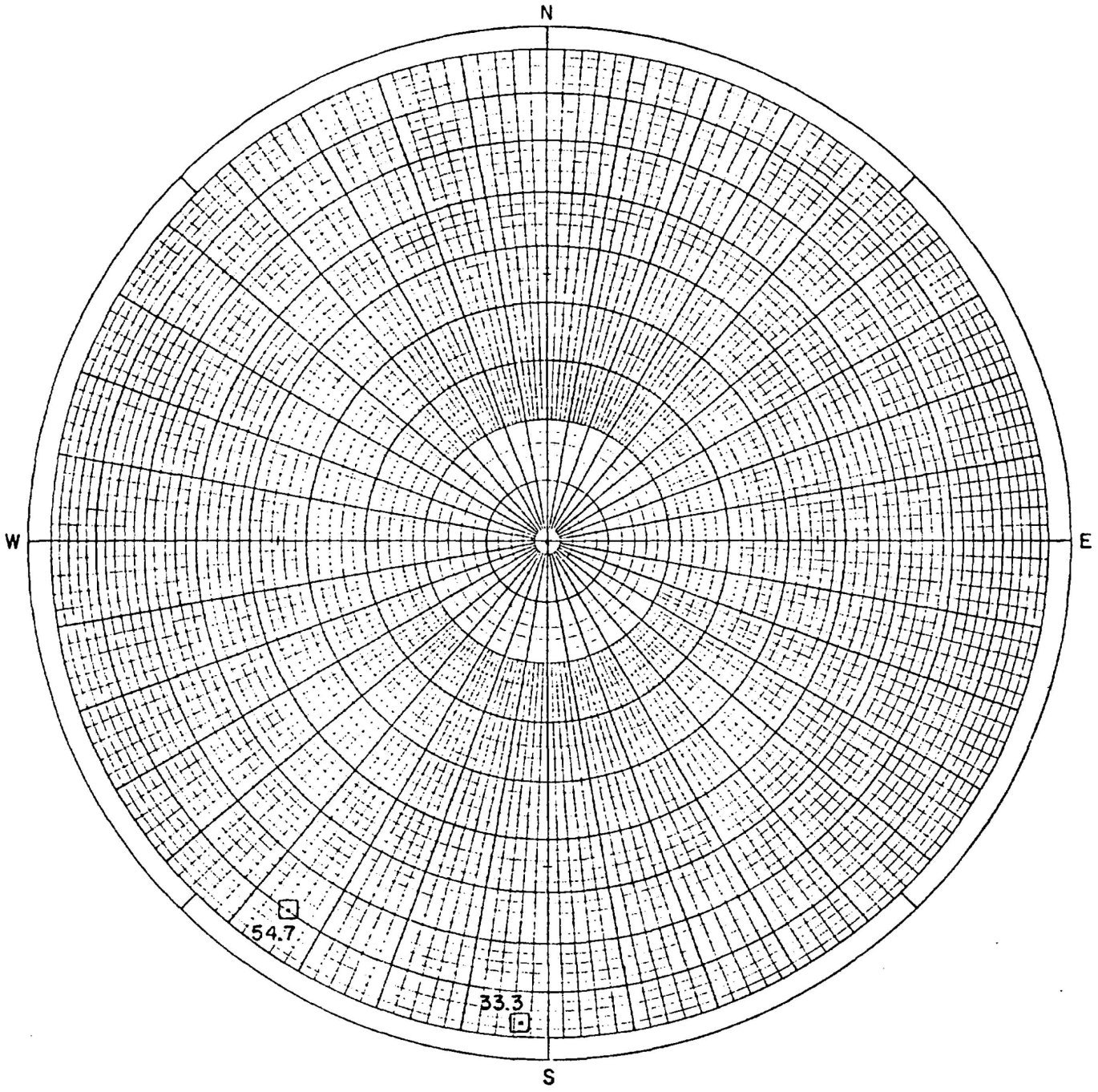
- Diorite



Polar Equal A rea Stereo Net
Geotechnical Engineers, Inc.
Seabrook Station
June 1974

Boring E2-17
Ground Elevation (MS L) +13.3
Joints in:

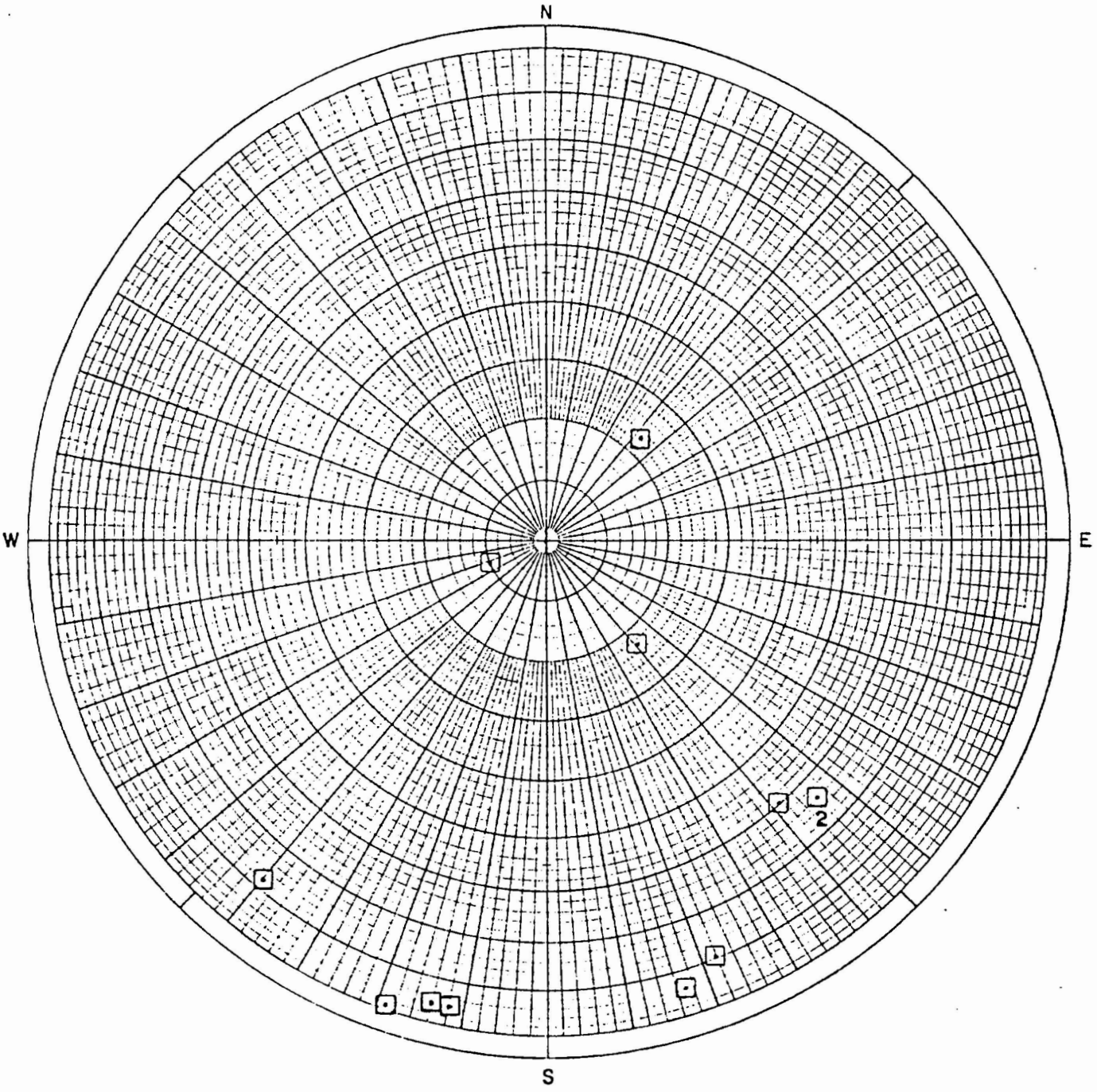
. Diorite
⊡ Schist



Polar Equal Area Stereo Net
Geotechnical Engineers, Inc.
Seabrook Station
June 1974

Boring E2-17
Ground Elevation (MSL) + 13.3 ft
Foliation and Depth in:

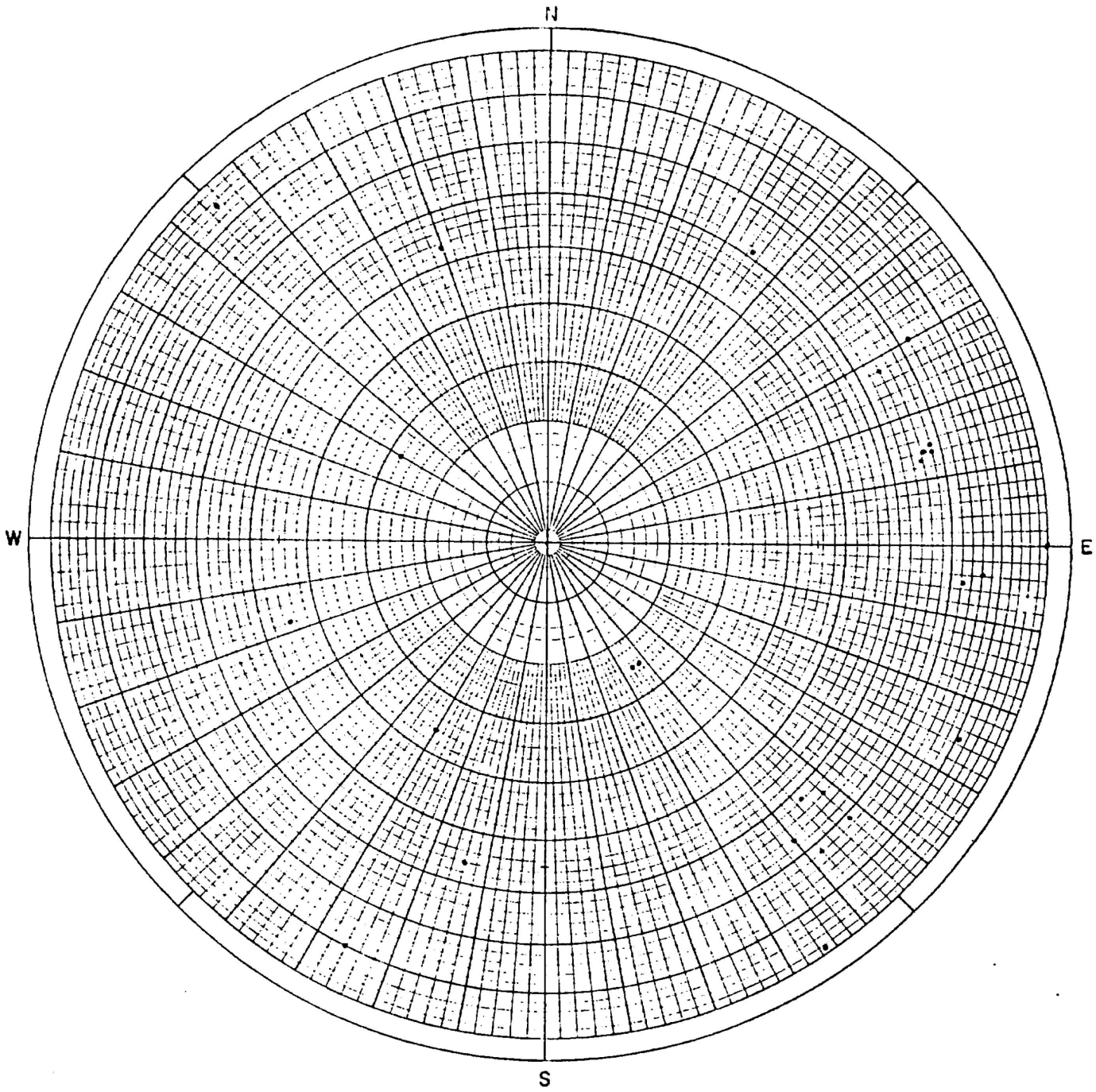
⊡ Schist



Polar Equal Area Stereo Net
Geotechnical Engineers, Inc.
Seabrook Station
June 1974

Boring E2-17
Ground Elevation (MSL) + 13.3 ft
Slicklensided Surfaces in:

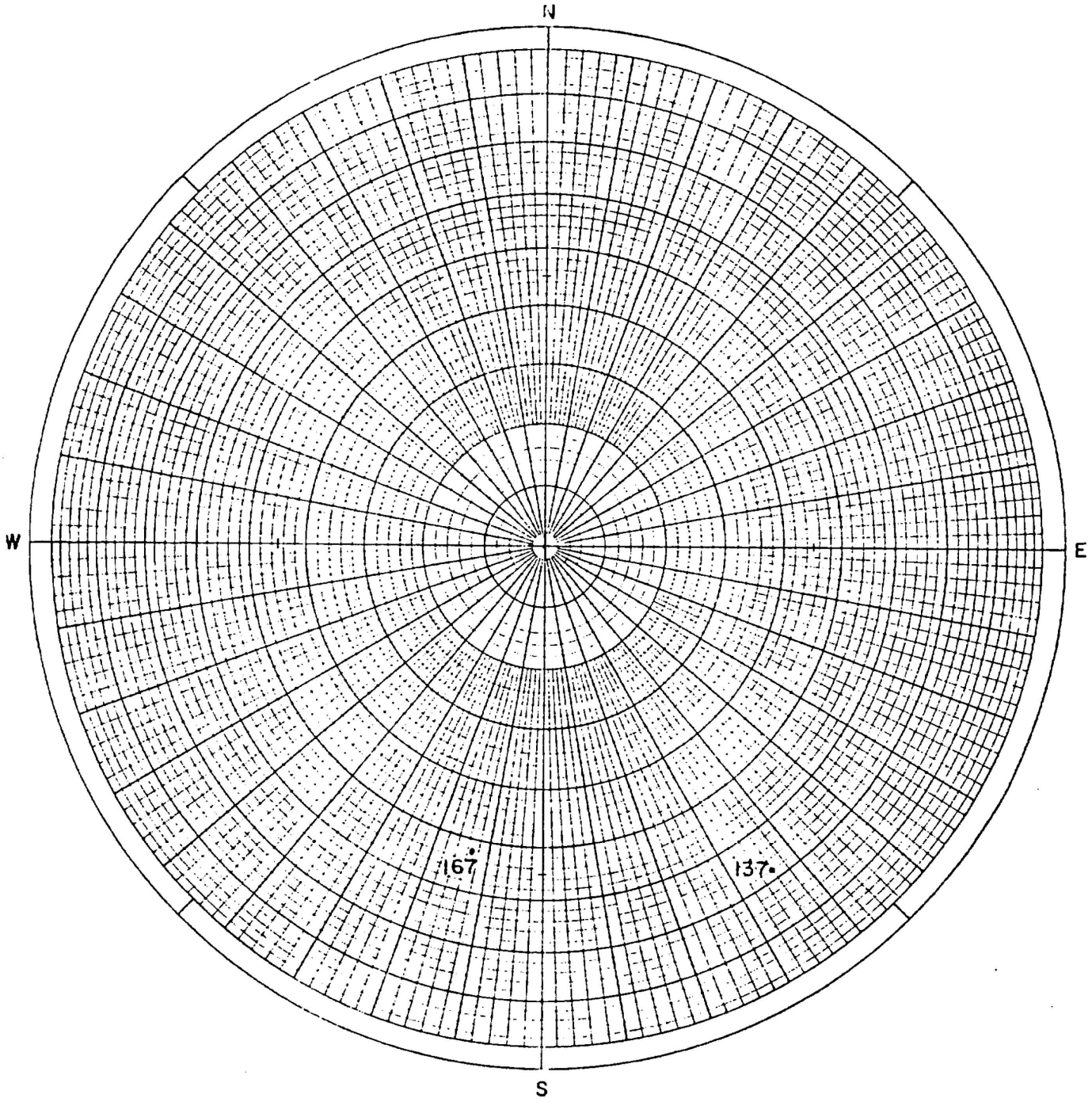
⊡ Schist



Polar Equal Area Stereo Net
Geotechnical Engineers, Inc.
Seabrook Station
June 1974

Boring E2-18
Ground Elevation (MSL) +14.9 ft
Joints in:

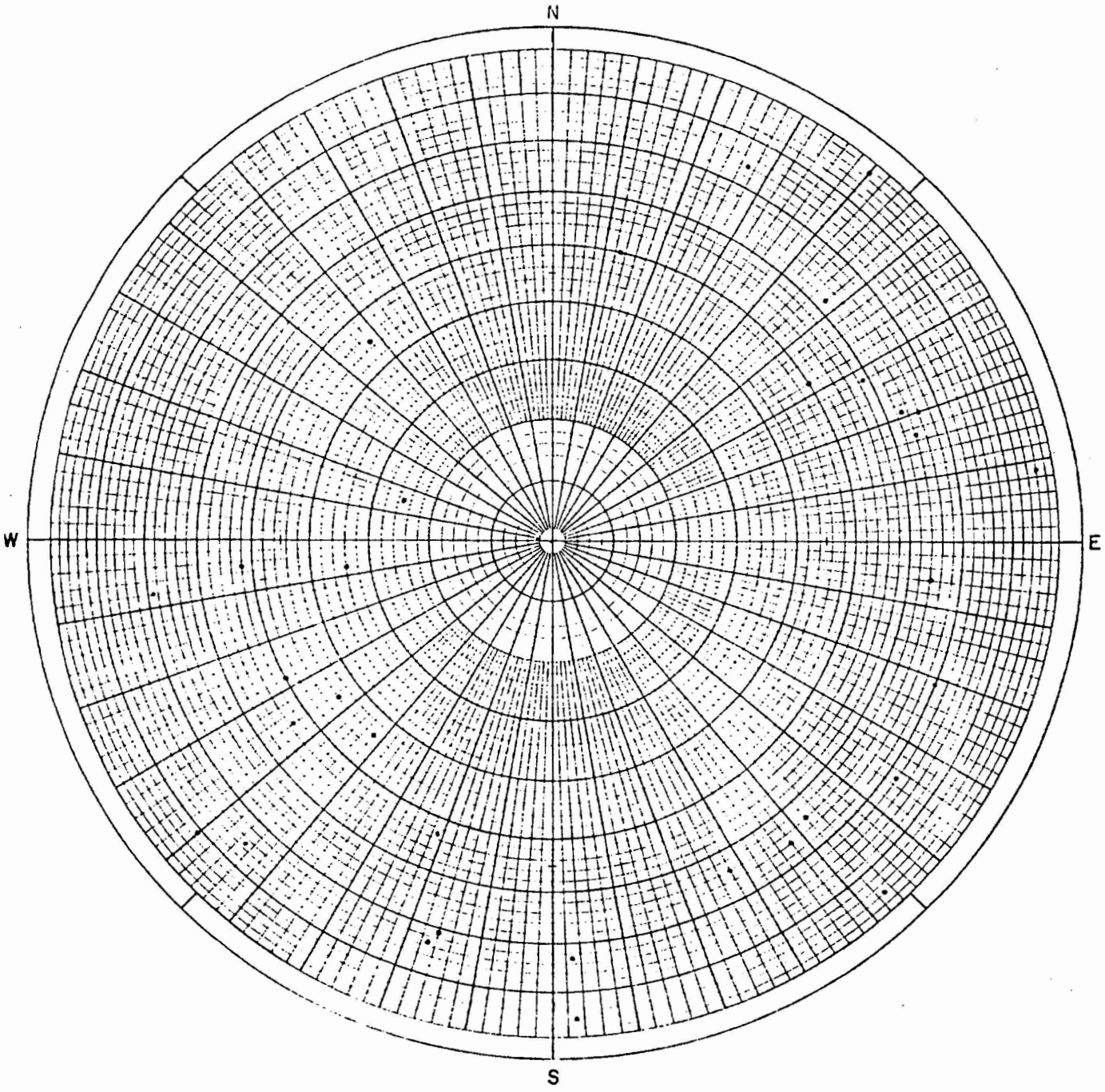
. Diorite



Polar Equal Area Stereo Net
Geolechnicnl Engineers, Inc.
Seabrook Station
June 1974

Boring E2-18
Ground Elevation (MSL) +14. 9 ft
Foliation and Depth in:

. Diorite



Polar Equal Area Stereo Net
Geotechnical Engineers, Inc.
Seabrook Station
June 1974

Boring E2-18
Ground Elevation (MSL) +14.9 ft
Slickensided Surfaces in:

- Diorite

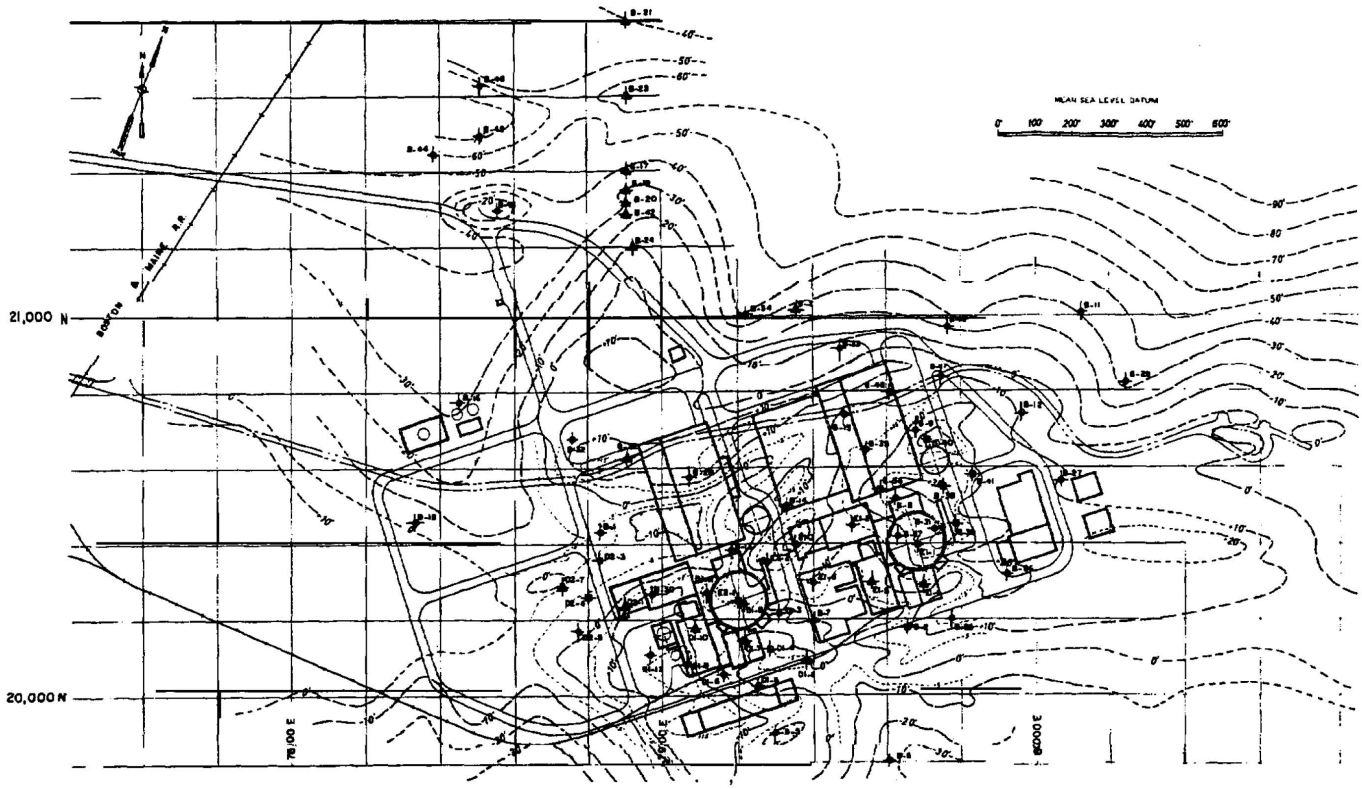
APPENDIX IV

APPENDIX IV

Overburden Descriptions

Note: The boring layout and soil descriptions are taken from the PSAR.

CONTENTS OF APPENDIX IV



PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE SEABROOK STATION *Preliminary Safety Analysis Report*	ESTIMATED TOPOGRAPHY OF THE BEDROCK SURFACE
	FIG. 2.5-8

SOIL DESCRIPTIONS

Ground Elevation: 13.8 ft
Depth to Water Level: 1.2 ft

Project No. 7286

Sample No.	Depth ft	Number of Blows per 6"	Description
1	0-2	1-1-4-7	Top is dark brown peat with many roots up to 1 mm diameter. Bottom is brown sand. Fine grained; uniform; contains few black organic pieces < 1 mm In size; < 5% silt.
2	5- 6.5	7-10-12	Light gray silty sand. Fine grained; uniform; very fast reaction to shaking test; contains ~ 30-40% nonplastic fines; part of sample is silty gravelly sand containing gravel up to 28 mm in size; angular grains
3	10-11.5	27-30-44	Gray silty sand. Widely graded; angular to subrounded grains; contains ~ 25-30% nonplastic fines; few gravel pieces up to 8 mm in size. w.= 7.5.g

BORING NO. D1-8
SOIL DESCRIPTIONS

Ground Elevation: 15.9 ft
Depth to Water Level: 1.9 ft

Project No. 7286

Sample No.	Depth ft	Number of Blows per 6"	Description
1	o- 1.5	1-1-12	Top is dark brown fine-sandy organic silt containing several roots < 1 mm diameter. Bottom is brown and rusty-brown sandy silt *containing many* dark brown organic pieces < 0.5 mm in size.
2	5- 6 . 5	31-40-72	Brown slightly gravelly silty sand. Widely graded; angular to subrounded grains; contains ~ 30-40% nonplastic fines and ~ 10-15% gravel up to 35 mm in size; fast reaction to shaking test.
3	8.5- 9	127	Gray-brown silty gravelly sand. Widely graded; angular grains; contains ~ 30-40% gravel up to 25 mn in size and ~ 20-30% nonplastic fines.

BORING NO. E2-1
SOIL DESCRIPTIONS

Ground Elevation: 15.9 ft
Depth to Water Level: 6.0 ft

Project No. 7286

Sample No.	Depth ft	Number of Blows per 6"	Description
1	0- 2	1-1-7-19	Top is brown sandy organic silt containing roots up to 12 mm diameter. Bottom is light brown to gray-brown gravelly silty sand. Widely graded; generally angular grains; contains ~ 20-30% nonplastic fines and ~ 10-20% gravel up to 18 mm in size; several rusty-brown spots up to 10 mm in size.
2	5- G.6	31-60-74	Similar to bottom portion of Sample No. 1, but slightly less silty and fewer rusty-brown spots.

BORING NO. E1-1
SOIL DESCRIPTIONS

Ground Elevation: 28.9 ft
Depth to Water Level:

Project No. 7286

Sample No.	Depth ft	Number of Blows per 6"	Description
			No soil samples taken. (Bedrock at ground surface.)

BORING LOCATION N20117, E79221, Plant Site | INCLINATION 41° | BEARING N6.5W | DATE START/FINISH May 30, 1974 / June 5, 1974

CASING ID 3 in. | CORE SIZE 1-7/8 in. | TOTAL DEPTH 165.0 ft | DRILLED BY American Drilling & Boring; T. Canning

GROUND EL (MSL) +13.3 ft | DEPTH TO WATER DATE −2.2 ft June 5, 1974 | LOGGED BY Soil - K. Polk, Rock - J. R. Rand

EL. MSL ft	SAMPLE Depth ft	Type and No.	N or Rec.	RATE OF ADV. min/ft	WATER CONTENT or RQD %	Graphic	PRESSURE TEST Rim psi	Computed k 10^{-4} cm/sec	STRIKE, DIP F = Foliation J = Joint C = Contact B = Bedding S = Slickenside	CORE BREAKS	SOIL AND ROCK DESCRIPTIONS (Weathering, defects, etc.)	(Type, texture, mineralogy, color, hardness, etc.)
13.3					0 100							
		1)										
0	10											
−19.0								TOP	OF ROCK			
	20	2)							3)			
		NQ-1	100	*	0						Core is closely broken by rusty and wx joints and partings.	Diorite. Medium grained quartz diorite.
		NQ-2	89	*	0							
		NQ-3	82	1.8	0				N37E, 34NW J			
	30	NQ-4	100	2.0	21				N87W, 87SW J			Grades into well-foliated quartzitic schist. Schist is locally feldspathic.
									N17W, 77NE J		Fresh and hard. Joints or partings show slight wx effects. Does not core well. Close breaks.	
		NQ-5	95	2.0	96							
		NQ-6	80	1.4	0							
	40	NQ-7	100	2.1	73				N50W, 78NE S			
−27.0									N61E, 52NE J			
		NQ-8	100	1.9	28				N51E, 21NE J			
		NQ-9	100	2.0	61						Slight wx effects	
	50	NQ-10	100	2.0	29							
		NQ-11	100	2.1	53				N55W, 80NE J			
									N68E, 80NE S			
		NQ-12	100	2.8	60							
	60	NQ-13	100	3.1	48				N71W, 89NE S		Fresh and hard. Conchoidal jointing shows polished surfaces (of other #2 holes).	
		NQ-14	100	2.8	38							
		NQ-15	97	2.0	33							
	70	NQ-16	100	2.0	21						Fresh and hard. Local chlorite and conchoidal polish on some joint surfaces.	
		NQ-17	100	2.1	60							
		NQ-18	90	2.4	0							
	80	NQ-19	98	2.0	32						Closely--spaced jointing Attitude not known.	
		NQ-20	100	2.0	22						Generally fresh. Locally subject to slight to moderate wx.	
		NQ-21	100	2.1	49							
	90	NQ-22	100	2.1	64						Fresh and hard. Drills well. Some very minor chlorite locally on some joints or partings.	
		NQ-23	100	1.5	100							
		NQ-24	88	2.3	85							
	100	NQ-25	100	2.1	94						Fresh and hard. Generally drills well. Polished conchoidal surfaces locally on joint	
	110											
	120											
	130											
	140											
	150											
	160											
	170											
	180											
	190											
	200											

Diorite

Welded breccia

Welded breccia

Quartzitic schist. Fine to medium-fine grained medium gray. Well foliated.

Quartzite (?) to quartzitic schist. Fine-grained, medium gray. Well foliated.

Metaquartzite (?). Fine-grained, medium dark gray. Massive to vaguely banded rock. Somewhat feldspathic.

Metaquartzite (?). Fine-grained, medium dark gray. Quite massive texture.

Quartzite (?). Fine-grained, medium dark gray, vaguely banded or foliated. Locally feldspathic. "Metaquartzite"

Metaquartzite (?). Fine-grained, medium dark gray. Vaguely banded.

LEGEND

N - Standard penetration resistance, blows/ft
Rec - Length recovered/length cored, %
RQD - Length of sound core 4 in. and longer/length cored, %
S - Split spoon sample ▽ Groundwater
U - Undisturbed samples
S - Shelby tube N - Denison
F - Fixed piston P - Pitcher
O - Osterberg G - GEI
D - Drilling break k - Coefficient of permeability
wx - Weathered, weathering

NOTES

1) - Washed through soil 0-19 ft. No samples taken.
2) - Roller bitted from 19 to 22 ft.
3) - This is only a partial list of dip and strike data. Orientation discontinued @ 65 ft.
* Not available.
x - Oriented core.

SEABROOK STATION

PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE

YANKEE ATOMIC ELECTRIC COMPANY

united engineers

Date: July 3, 1974 | Project 7286

PAGE 1 of 2 | LOG OF BORING E2-17

GEOTECHNICAL ENGINEERING INC