CRACK SURVEY for FIBROUS P.C. CONCRETE OVERLAY RESEARCH in GREENE COUNTY, IOWA

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Iowa Highway Research Board
Research Project HR-165

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IOWA DEPARTMENT OF TRANSPORTATION
Highway Division
Office of Operations Research

Research Project HR-165
FIBROUS CONCRETE, GREENE COUNTY, IOWA

The three miles of fibrous concrete resurfacing in Greene County, Iowa were placed in September and early October, 1973. It was recognized in advance that cracking and other performance characteristics of the fibrous concrete sections and of the control sections would be major factors in the evaluation of the project.

A low level aerial survey was made of the old pavement. During construction of the resurfacing, the aerial survey was checked to insure that cracks in the old pavement were referenced to the 100 ft. station marks placed in the resurfacing.

Crack surveys have been conducted on dates indicated below. Additional cracks found at each subsequent survey are shown in a color matching the date notation.

April, 1974

November, 1974

October, 1975

October, 1976

October, 1977

October, 1978

A final report for research project HR-165, based upon overall performance evaluation was published in December 1978.

Section Identification Numbers
Fibrous Concrete Experimental Resurfacing
Greene County Project HR-165--59-37

FIBROUS SECTIONS

AS BUILT

Pavement Thick. (in.)	Cement Content (lbs.)	Bonding Condition	Fiber Size (in.): 1									2 1/2								
			Fiber Content (lbs.): 60			100			160			60			100			160		
			Admixture Type: O	N	R	O	N	R	O	N	R	O	N	R	O	N	R	O	N	R
3	600	U																		
		B					Curb													
		P	7	13		9	24			18 19			16	37						
	750	U															11 25	←	Chem.	
		B					12			23	←	Bridge				21			Comp.	
		P		17		10				20			8							
	500+ 234 FA	U																		
		B									On	Grade								
		P					14	40		22	40 A	←				15				
2	600	U																		
		B																		
		P					27 31			33										
	750	U															35			
		B					29										36			
		P					28 32			30 34									26	
	500+ 234 FA	U																		
		B																		
		P																		

Admixture
O None
N Water Reducer
R Set Retarder

Bonding
P Partial
B Bonded
U Unbonded

NON-FIBROUS SECTIONS

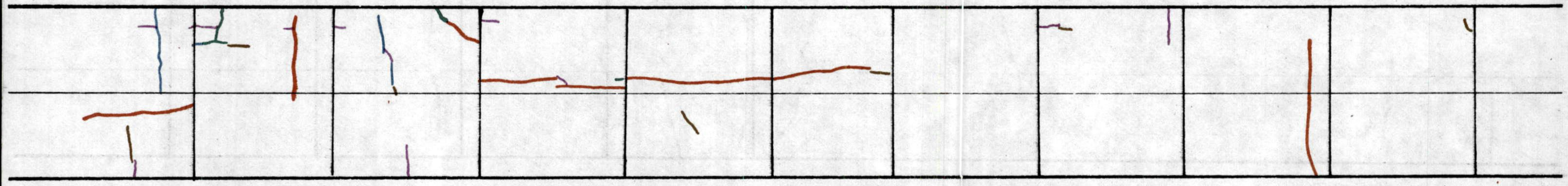
Sections 1 and 39	Sections 2 and 38	Section 3	Section 4	Section 5	Section 6
5 in. Type A Plain Partial Bond No Admix.	4 in. Type A 6x6 Mesh Partial Bond No Admix.	4 in. Type A CRC Mesh Anchor Bonded No Admix.	4 in. Type A CRC Mesh Unbonded No Admix.	3 in. Type A CRC Mesh Unbonded No Admix.	3 in. Type A CRC Mesh Anchor Bonded No Admix.

0 + 00

Section 1

Pavement - A-4
Bond - Partial
Cement - 569 lb.
Thickness - 5"

N



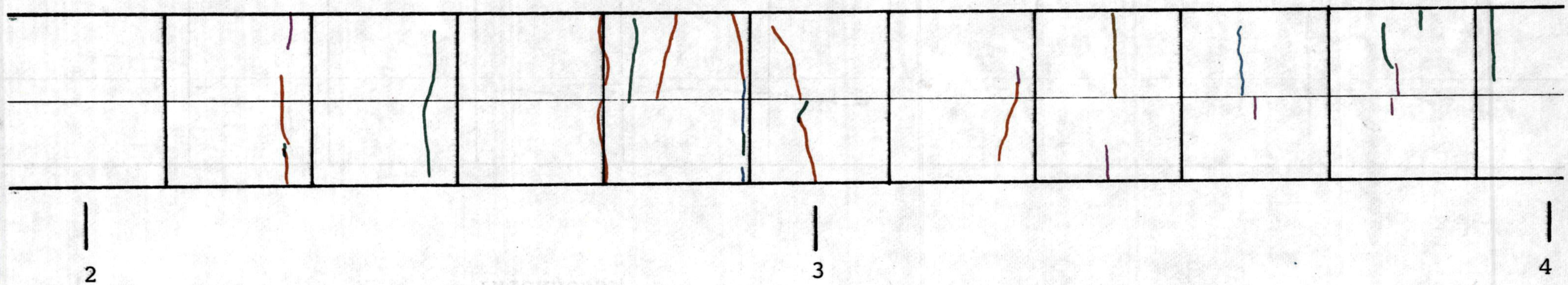
0

Contraction Joint

1

2

Scale 1" = 20'


N
2
3
4

4 + 04

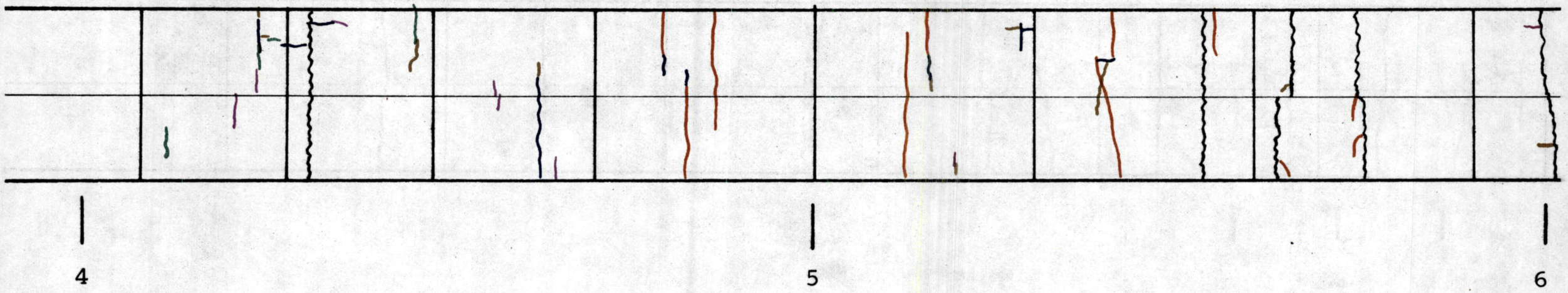
Transition

4 + 67

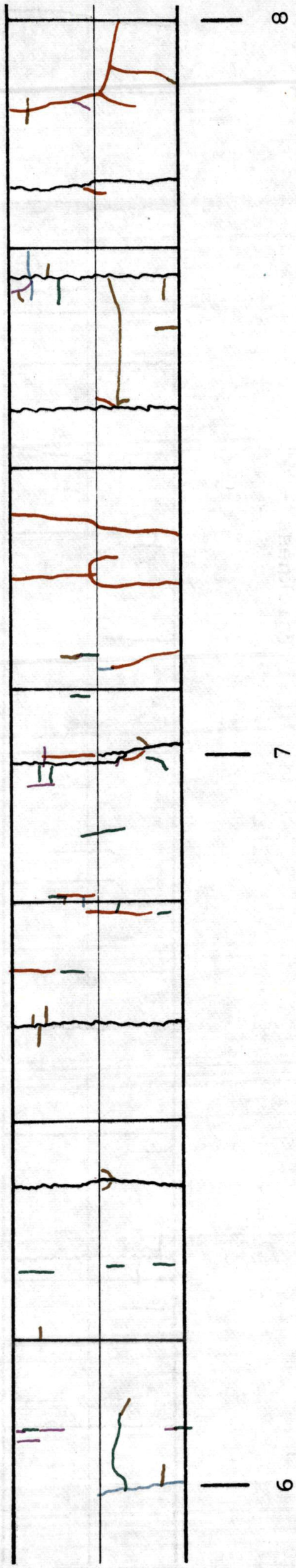
Section 2
(Mesh)

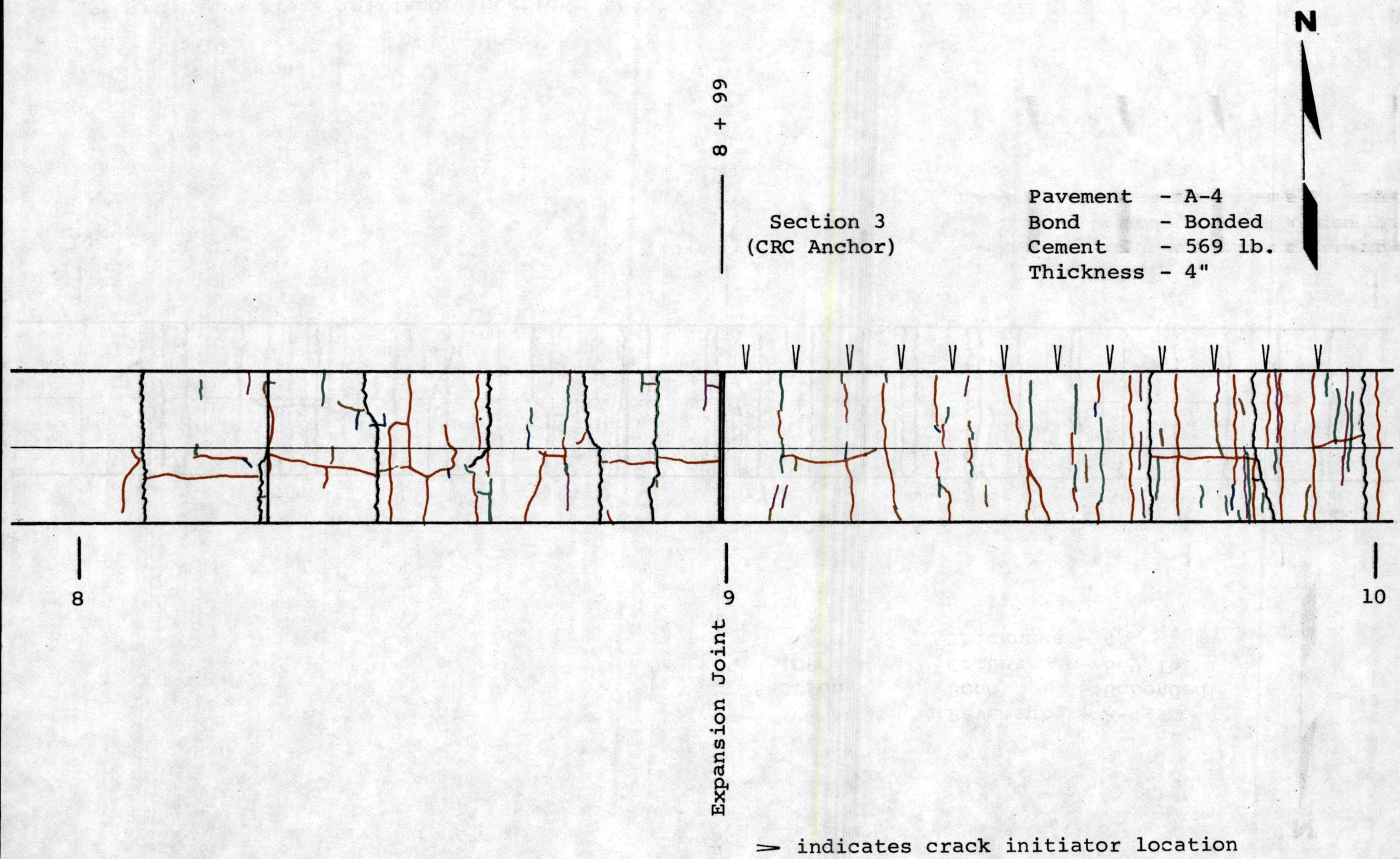
Pavement - A-4
Bond - Partial
Cement - 569 lb.
Thickness - 4"

N



N


8
7
6

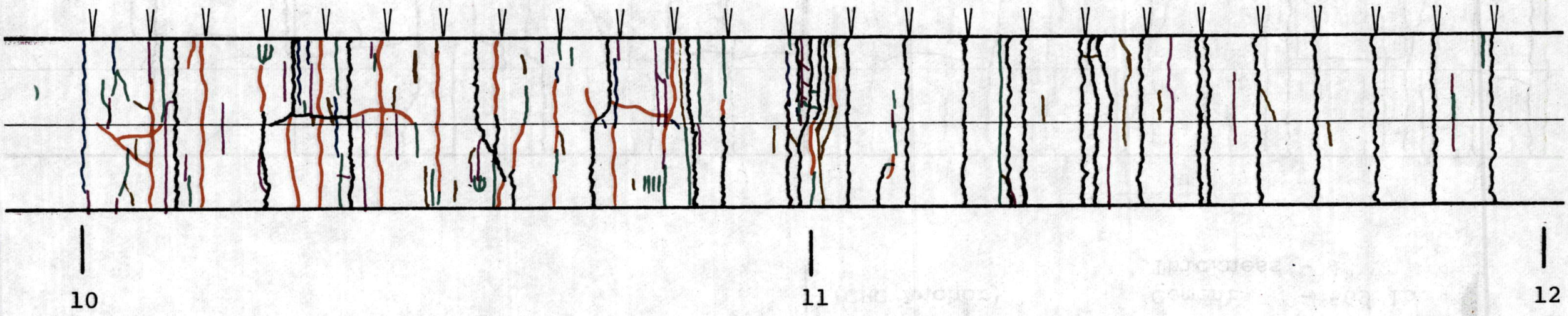

N
8 + 99
Section 3
(CRC Anchor)
Pavement - A-4
Bond - Bonded
Cement - 569 lb.
Thickness - 4"
8
9
10
Expansion Joint
indicates crack initiator location

10 + 98

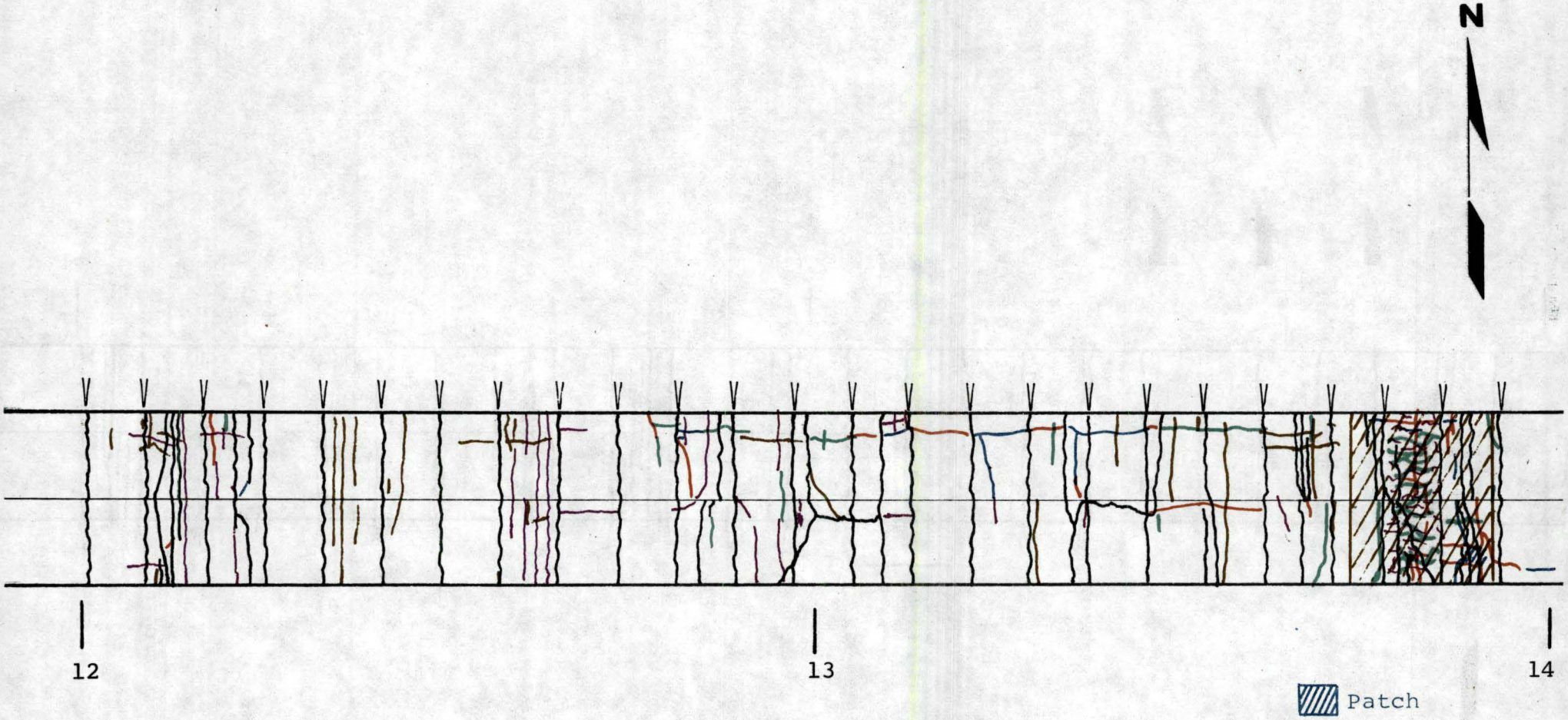
Section 4
(CRC)

Pavement - A-4
Bond - Unbonded
Cement - 569 lb.
Thickness - 4"

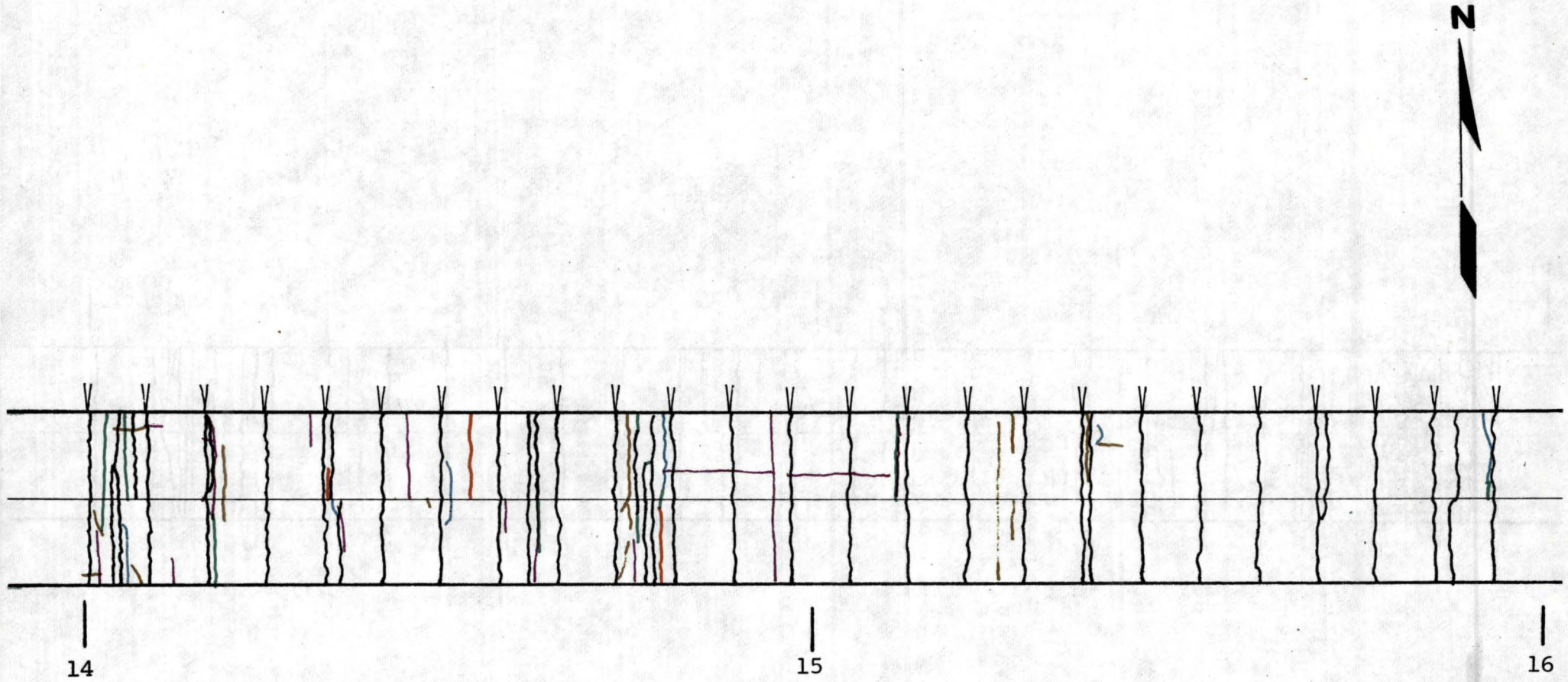
N



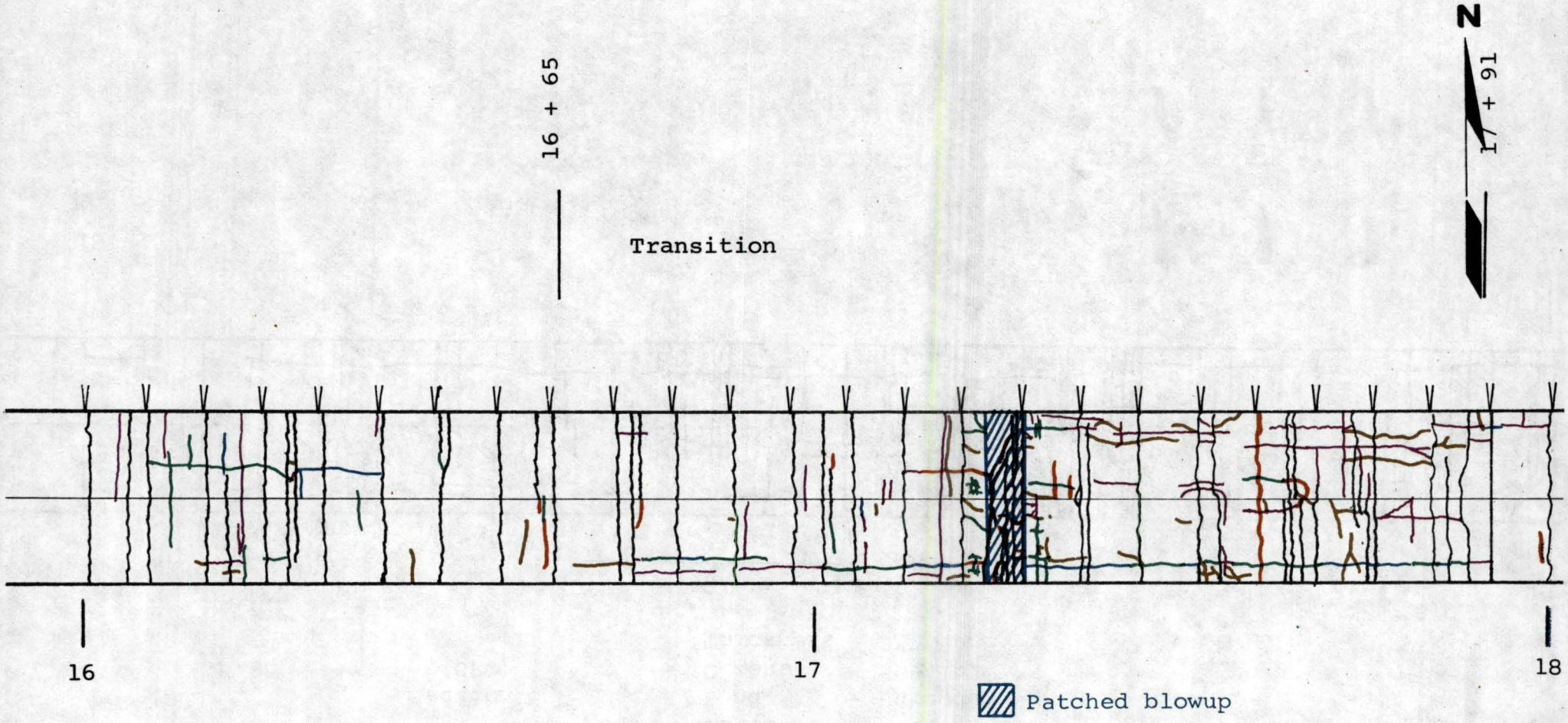
> indicates crack initiator location



> indicates crack initiator location



> indicates crack initiator location

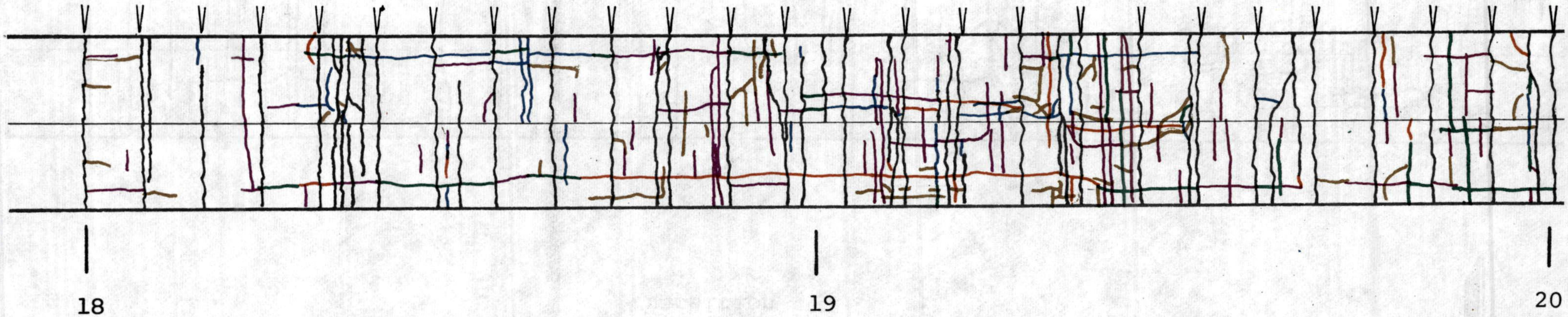


indicates crack initiator location

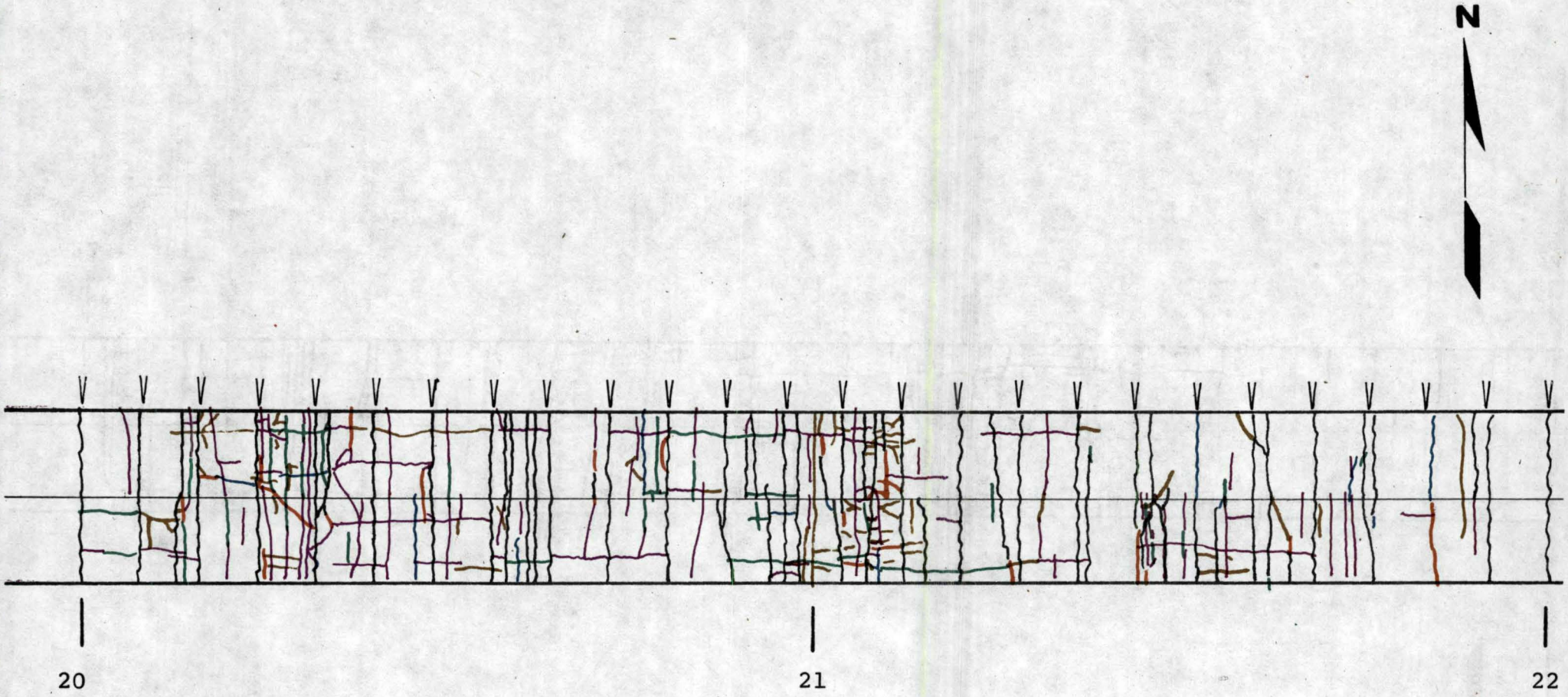
N

Section 5
(CRC)

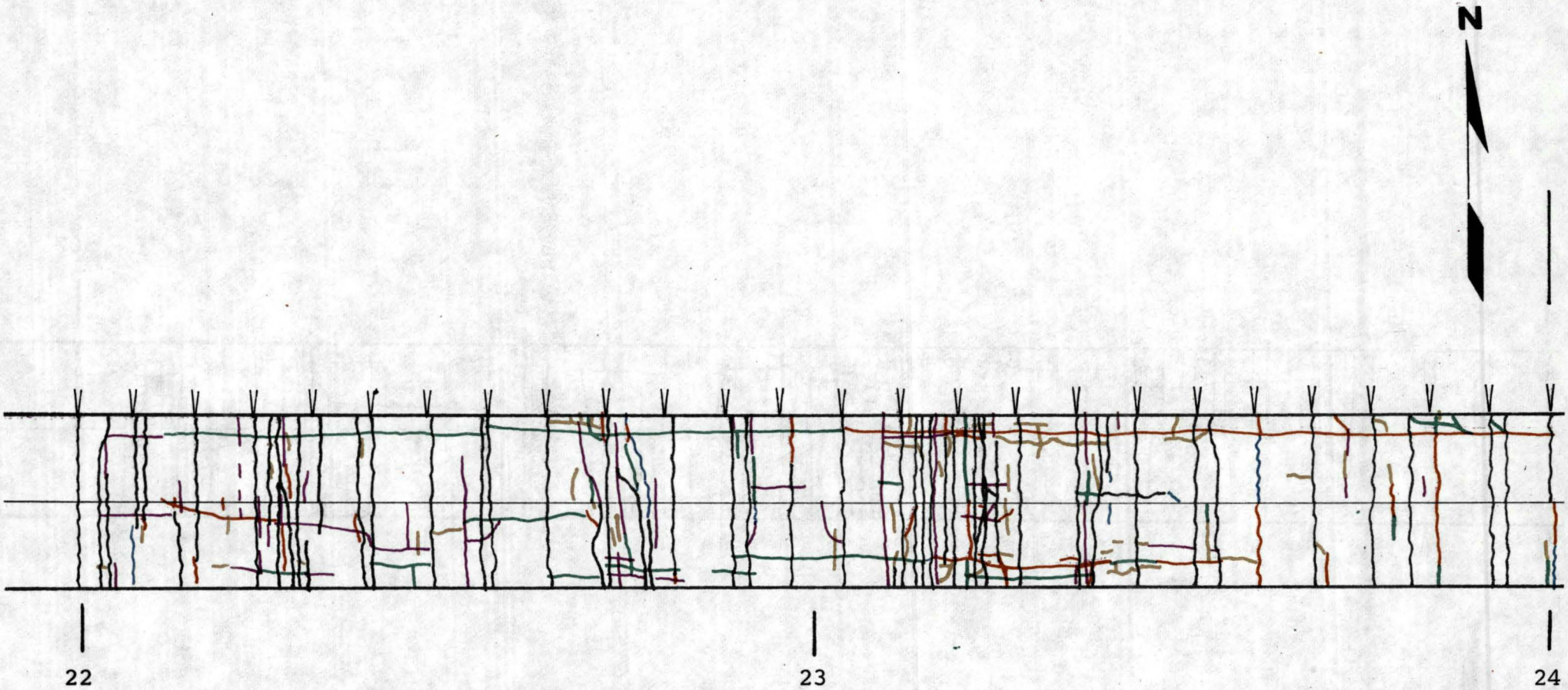
Pavement - A-4
Bond - Unbonded
Cement - 569 lb.
Thickness - 3"



> indicates crack initiator location



> indicates crack initiator location



> indicates crack initiator location

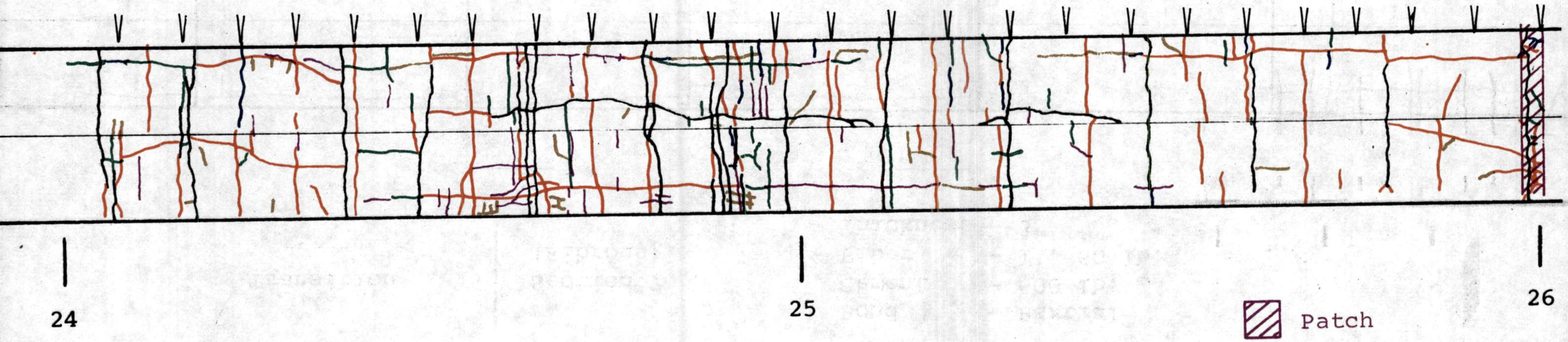
24 + 00

Section 6
(CRC Anchor)

Pavement - A-4
Bond - Bonded
Cement - 569 lb.
Thickness - 3"

25 + 85

N



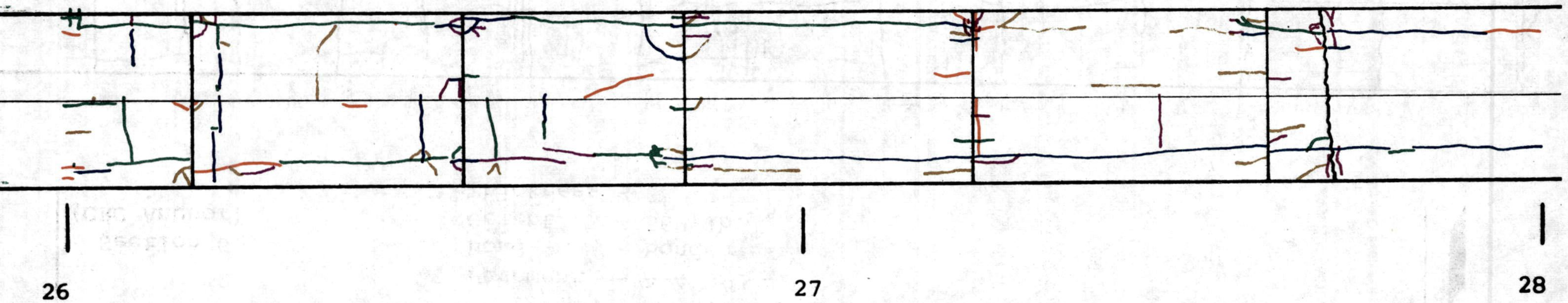
> indicates crack initiator location

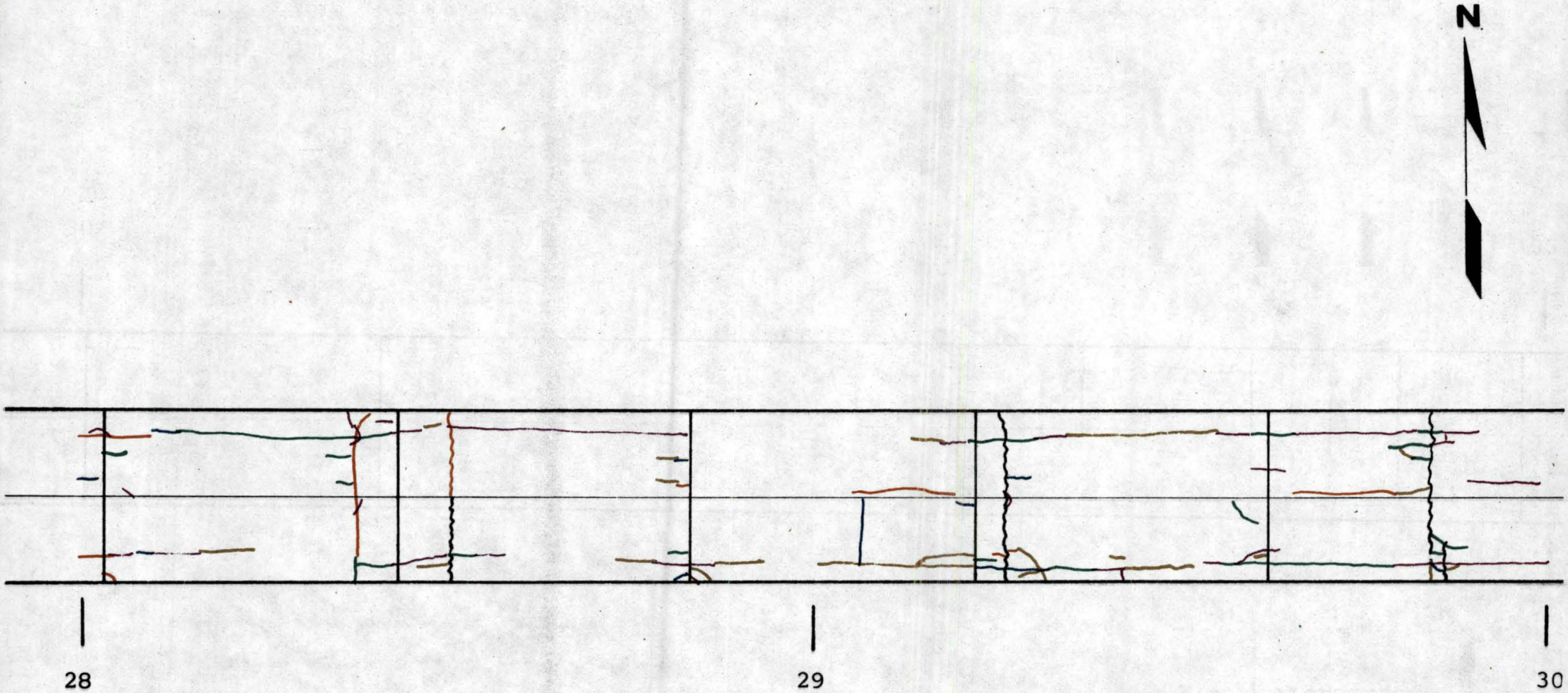
N

26 + 58

Transition | Section 7 (Fibrous)

Bond - Partial
Cement - 600 lb.
Fiber - 1', 60 lb.
Thickness - 3"




N
28
29
30

N
31 + 61
Transition
30
31
32

32 + 16

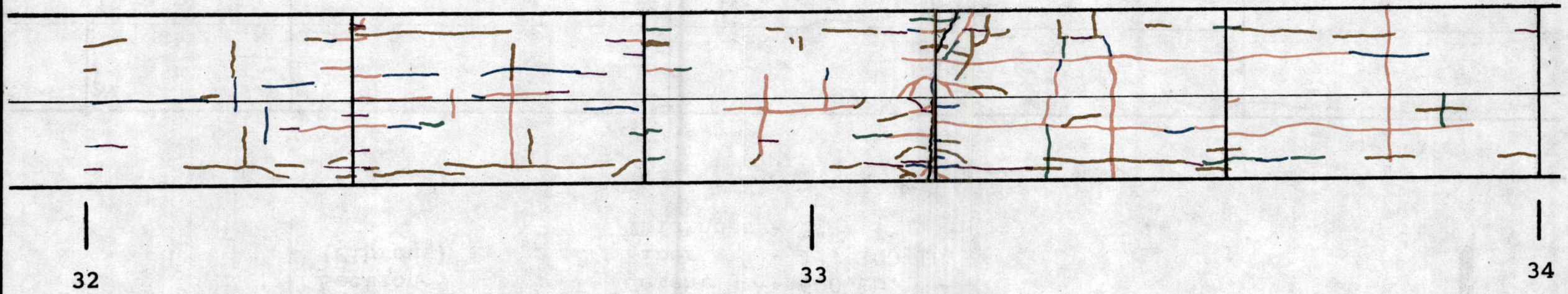
Section 8
(Fibrous)

Bond - Partial
Cement - 750 lb.
Fiber - 2½", 60 lb.
Thickness - 3"

33 + 57

Transition

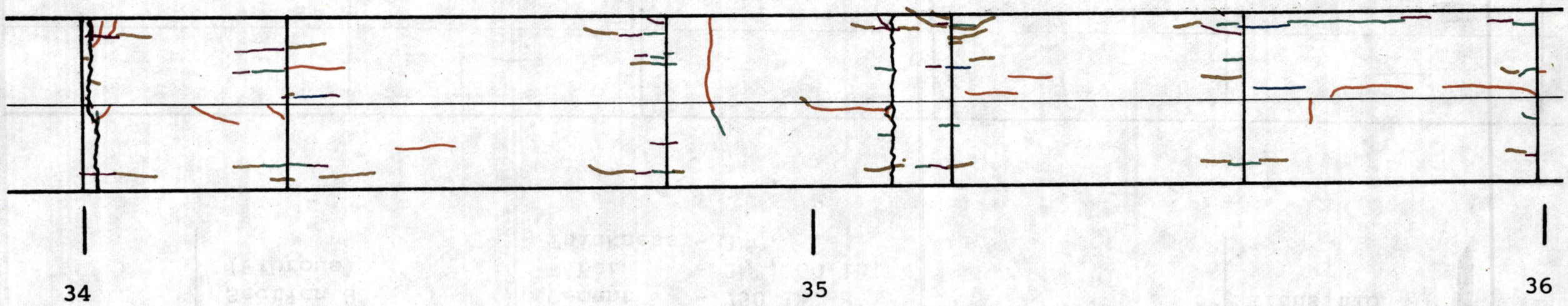
N



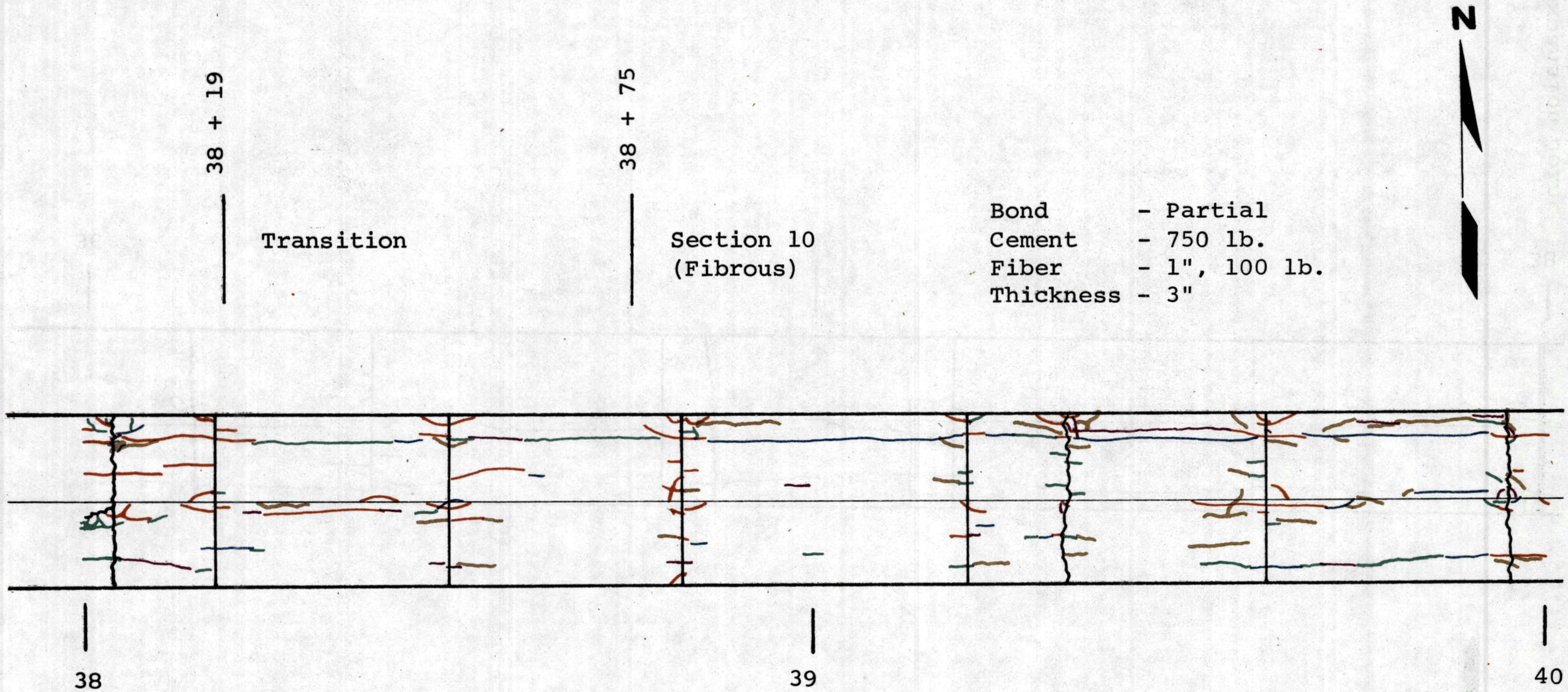
34 + 28

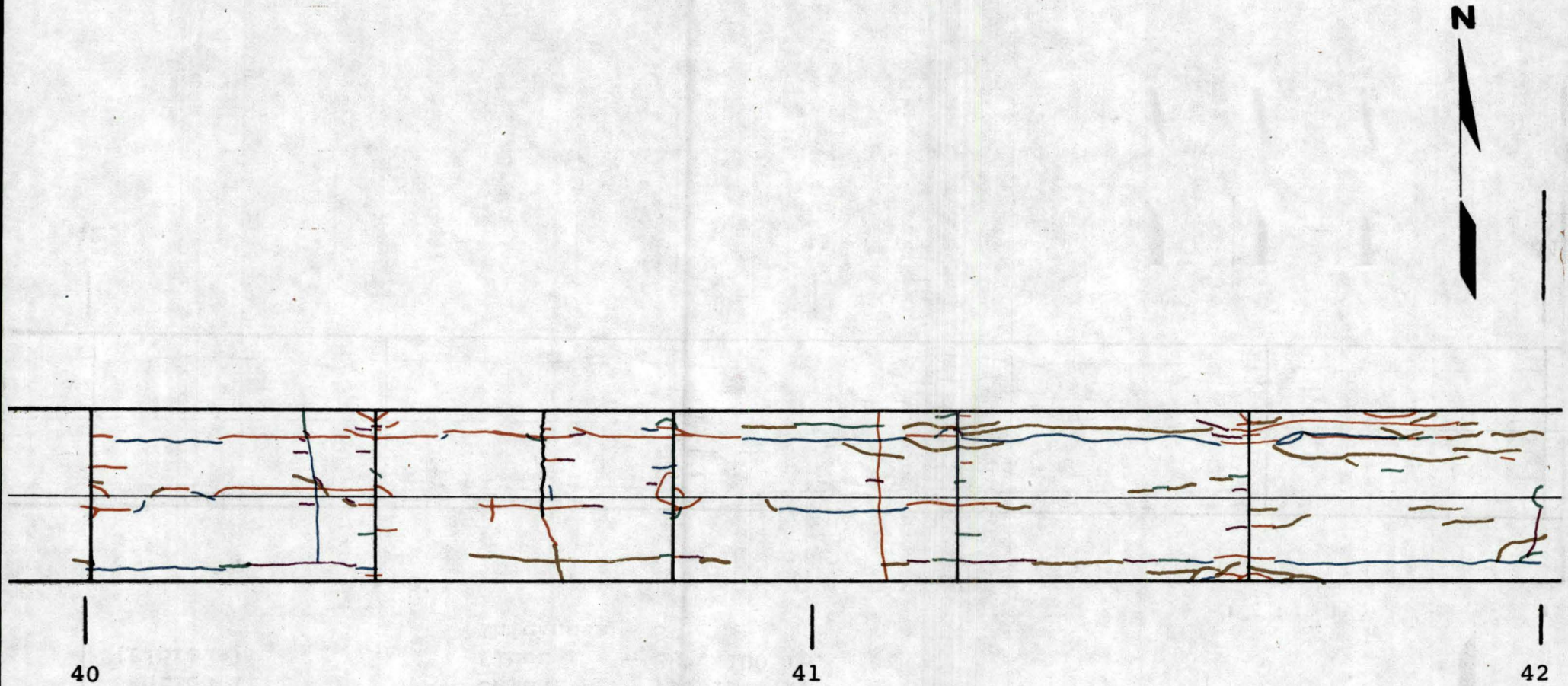
Section 9
(Fibrous)

Bond - Partial
Cement - 600 lb.
Fiber - 1", 100 lb.
Thickness - 3"



N
36
37
38
Expansion Joint

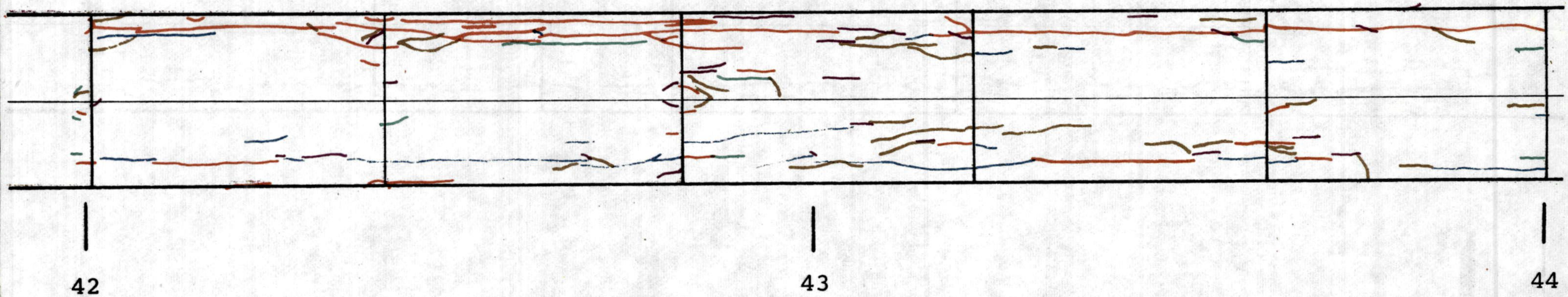

N
38 + 19
Transition
38 + 75
Section 10
(Fibrous)
Bond - Partial
Cement - 750 lb.
Fiber - 1", 100 lb.
Thickness - 3"
38
39
40

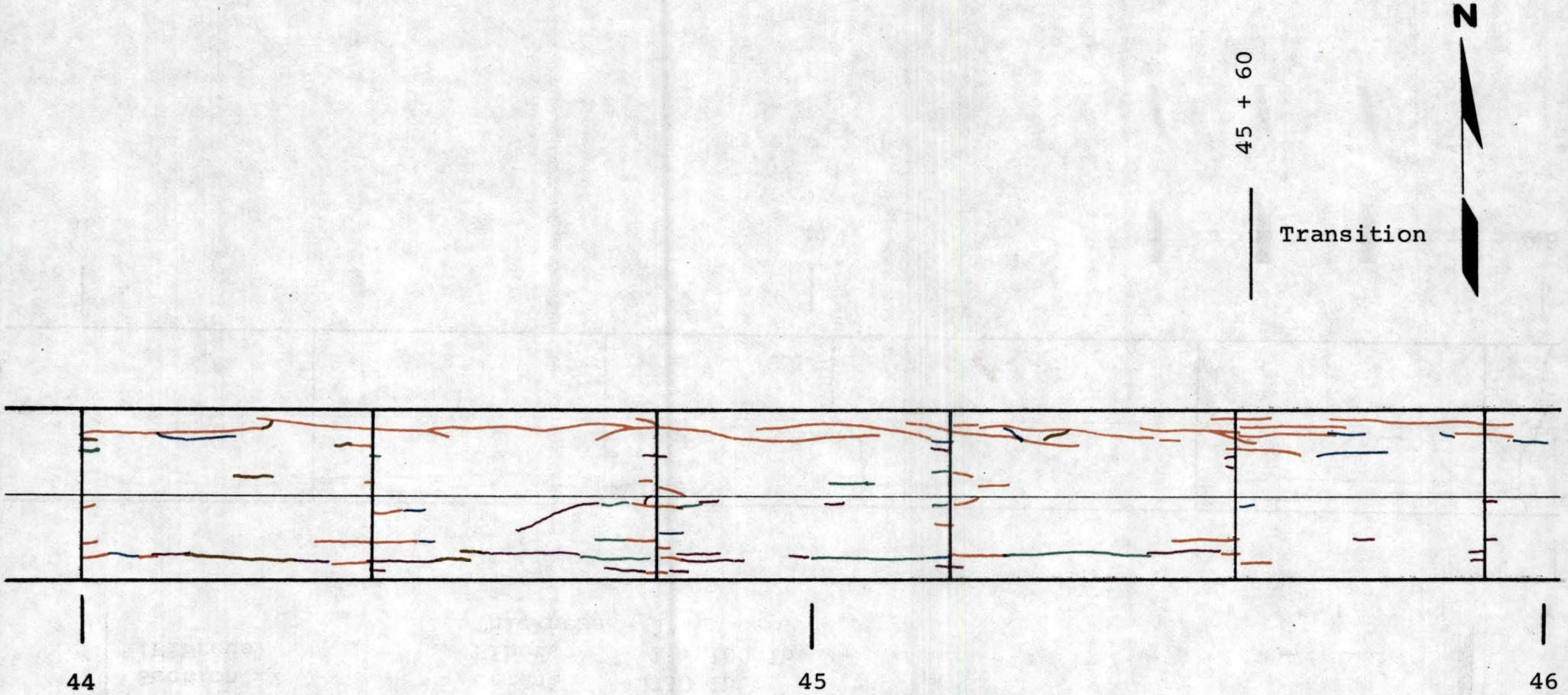

N
40
41
42

42 + 00

Section 11
(Fibrous)

Bond - Unbonded
Cement - 750 lb.
Fiber - 2½", 100 lb.
Thickness - 3"

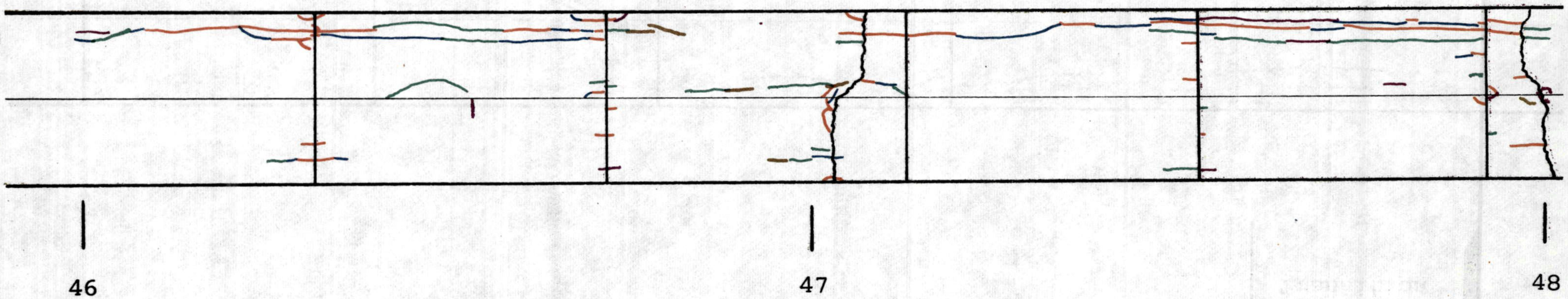



N
45 + 60
Transition
44
45
46

46 + 04

Section 12
(Fibrous)

Bond - Bonded
Cement - 750 lb.
Fiber - 1", 100 lb.
Thickness - 3"



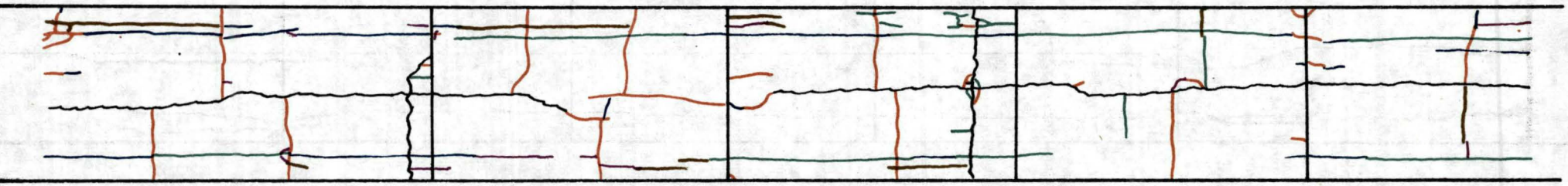
N
49 + 52
Transition
48
49
50
Expansion Joint

50 + 05

Section 13
(Fibrous)

Bond - Partial
Cement - 600 lb.
Fiber - 1", 60 lb.
Thickness - 3"

N



50 51 52

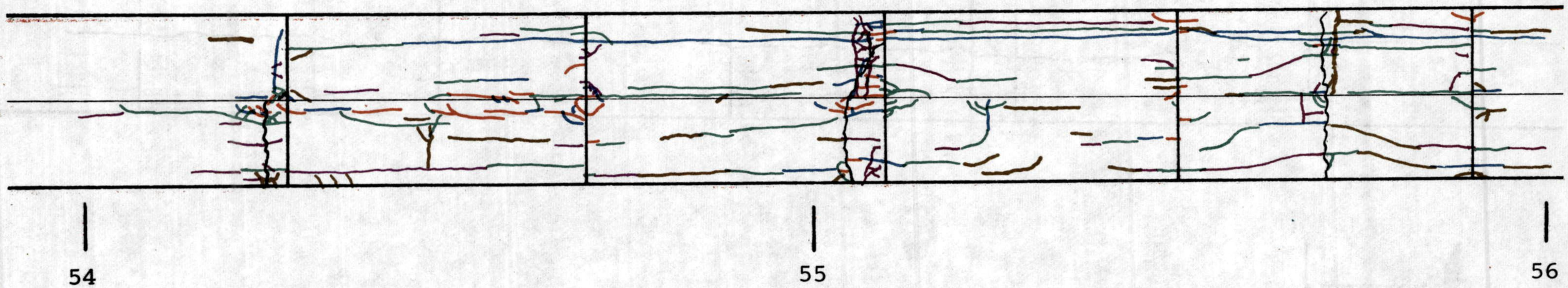
N
53 + 70
Transition
52
53
54

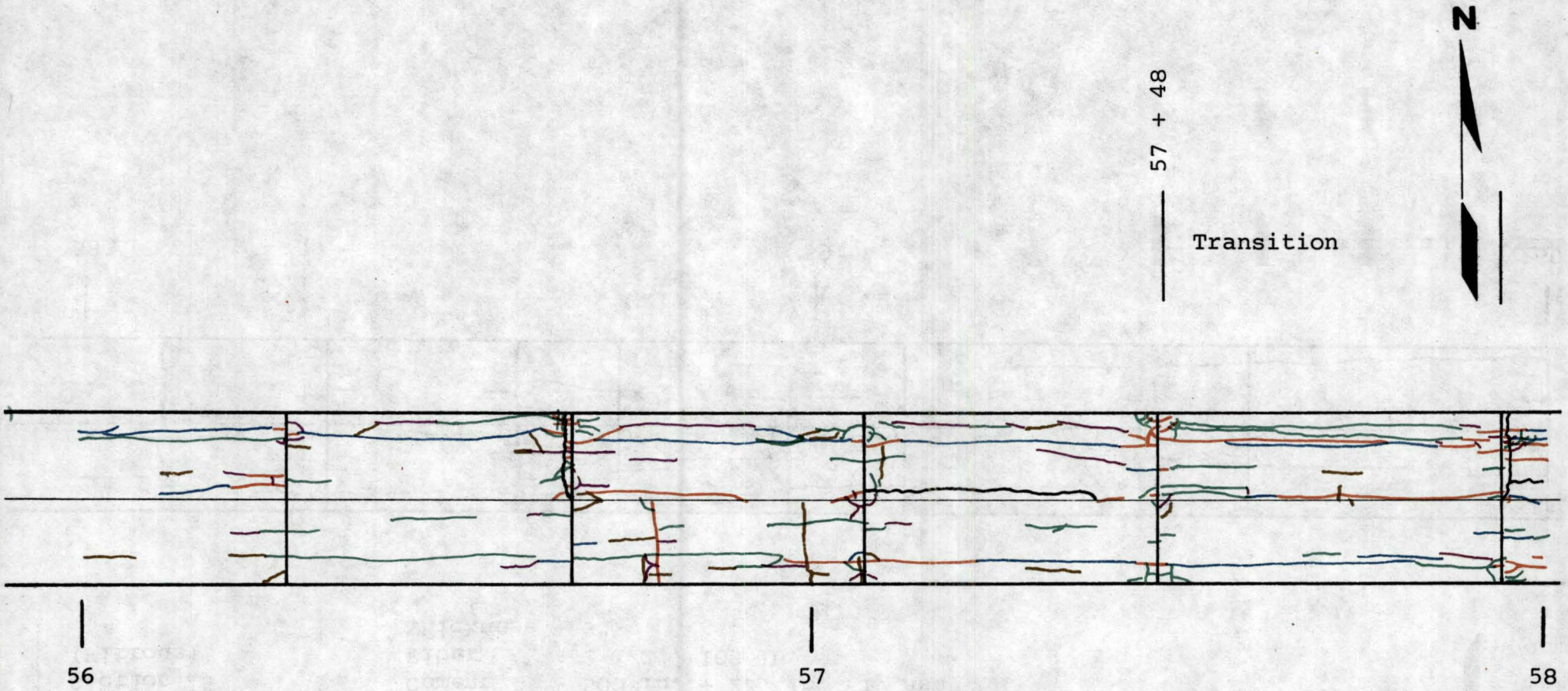
54 + 45

Section 14
(Fibrous)

Bond - Partial
Cement - 500 lb. + 234 lb. Fly Ash
Fiber - 1", 100 lb.
Thickness - 3"

N

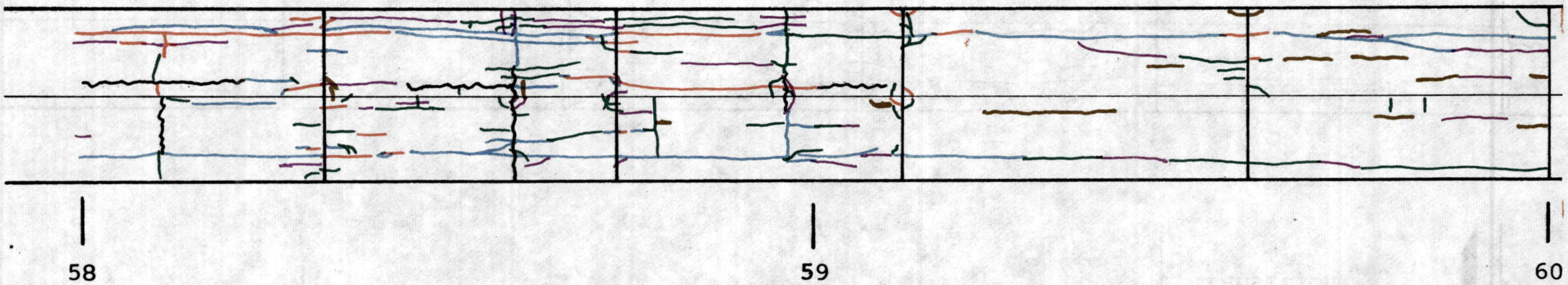



N
57 + 48
Transition
56
57
58

57 + 94

Section 15
(Fibrous)

Bond - Partial
Cement - 500 lb. + 234 lb. Fly Ash
Fiber - 2 1/2", 100 lb.
Thickness - 3"



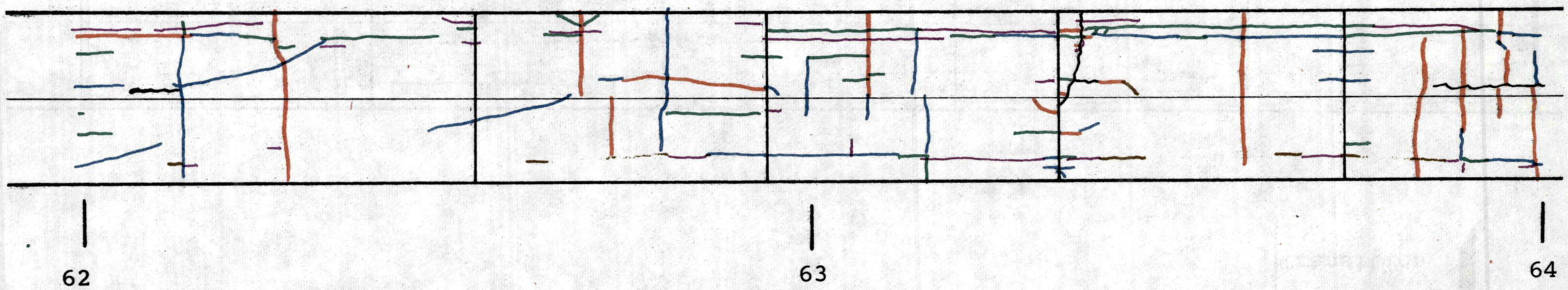
N
61 + 64
Transition
60
61
62
Expansion Joint

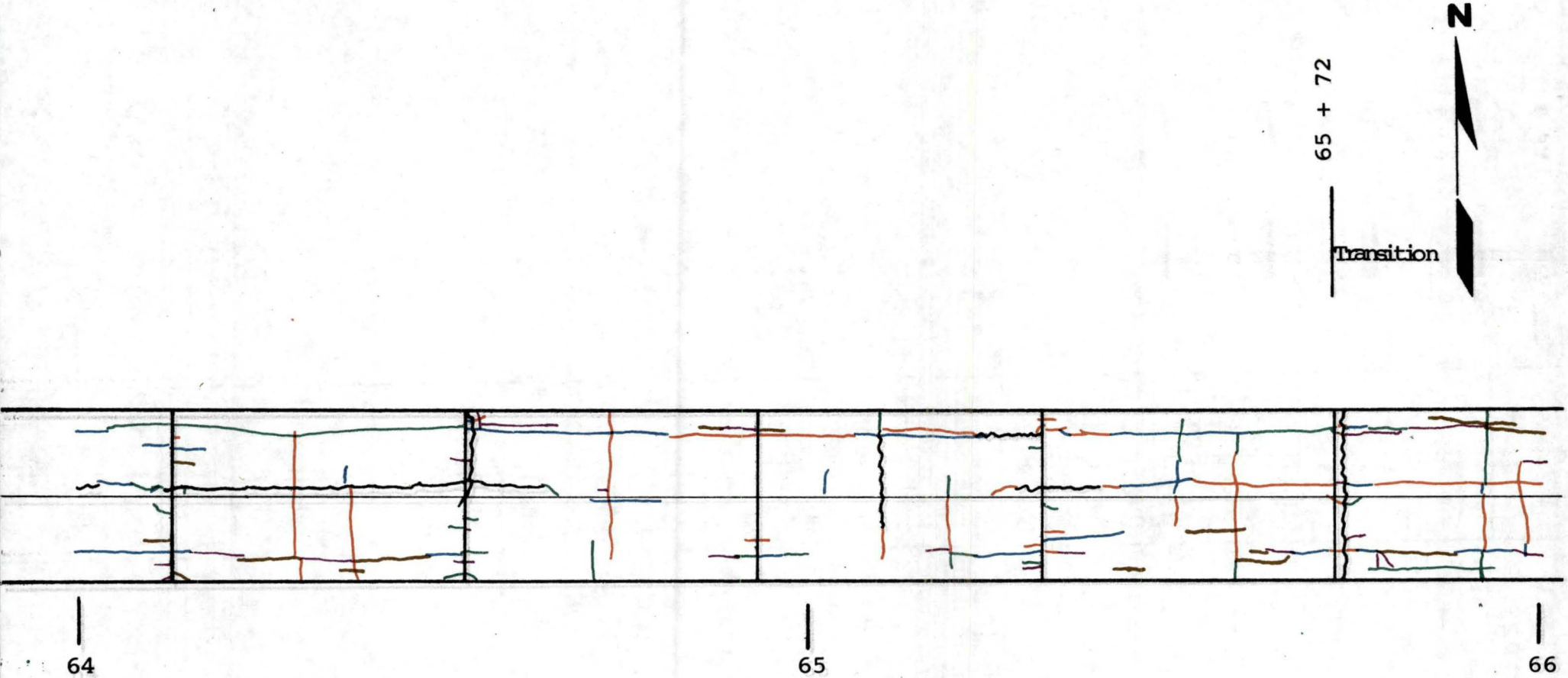
62 + 15

Section 16
(Fibrous)

Bond - Partial
Cement - 600 lb.
Fiber - 2 1/2", 60 lb.
Thickness - 3"

N

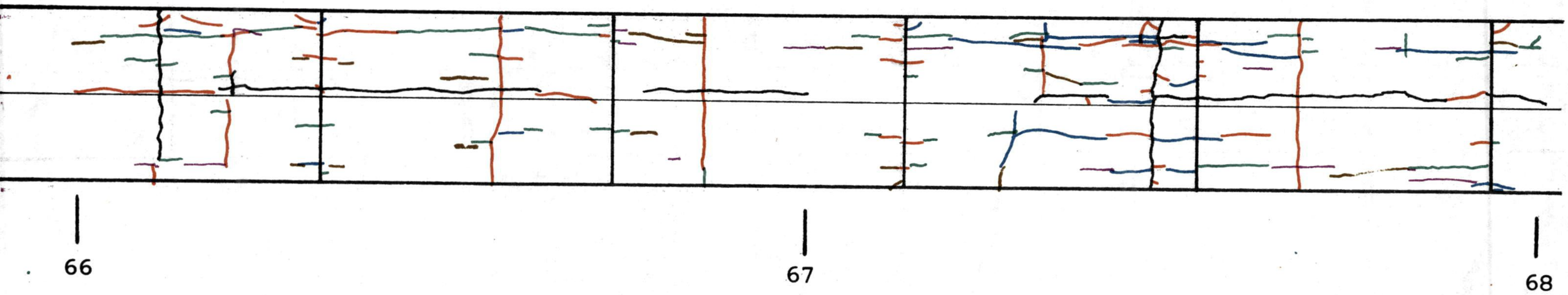



N
65 + 72
Transition
64
65
66

66 + 35

Section 17
(Fibrous)

Bond - Partial
Cement - 750 lb.
Fiber - 1", 60 lb.
Thickness - 3"

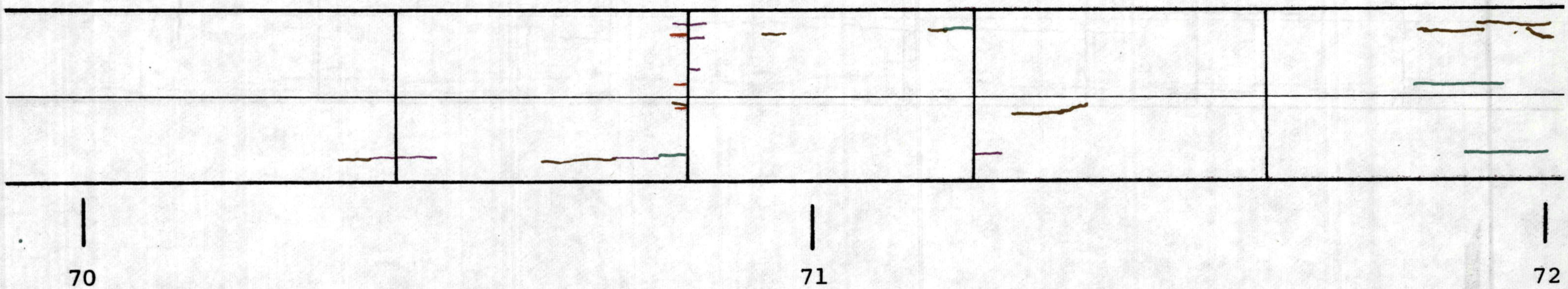


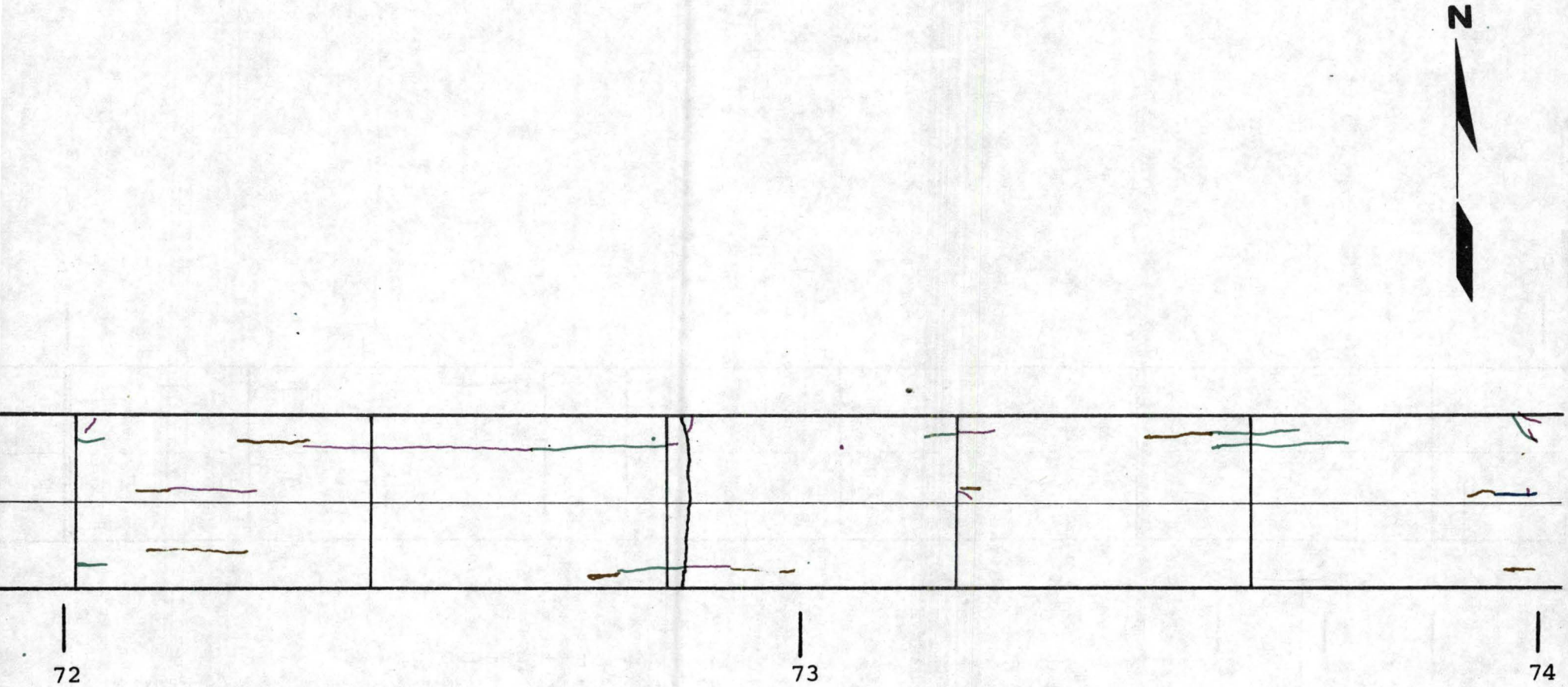
N
69 + 92
68
69
70

N

Section 18
(Fibrous)

Bond - Partial
Cement - 600 lb.
Fiber - 1", 160 lb.
Thickness - 3"



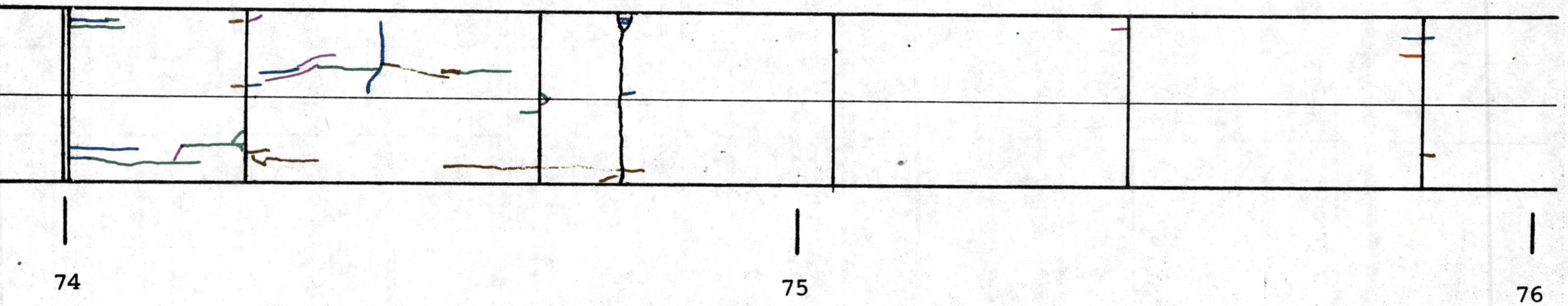

N
72
73
74

74 + 00

Section 19
(Fibrous)

Bond - Partial
Cement - 600 lb.
Fiber - 1", 160 lb.
Thickness - 3"

N

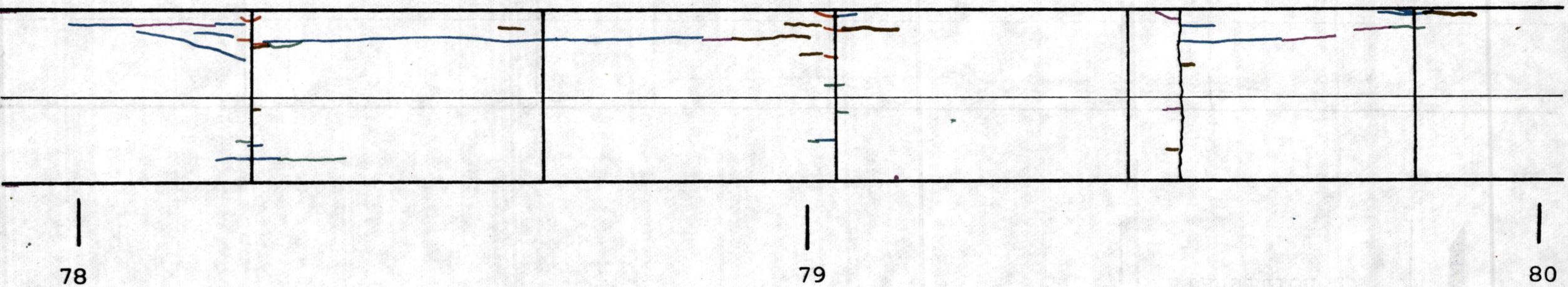


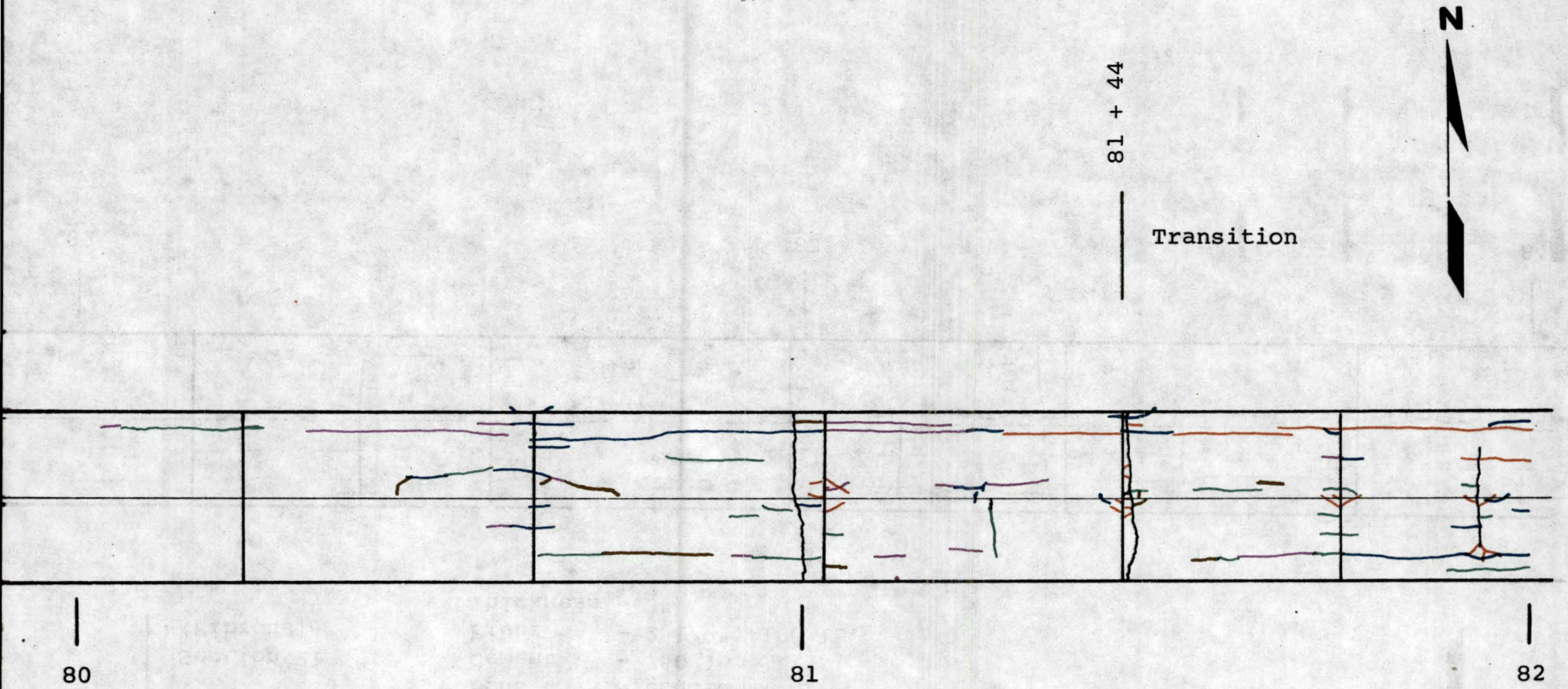
N
77 + 84
Transition
77 + 44
76
77
78

N

Section 20
(Fibrous)

Bond - Unbonded
Cement - 750 lb.
Fiber - 1", 160 lb.
Thickness - 3"

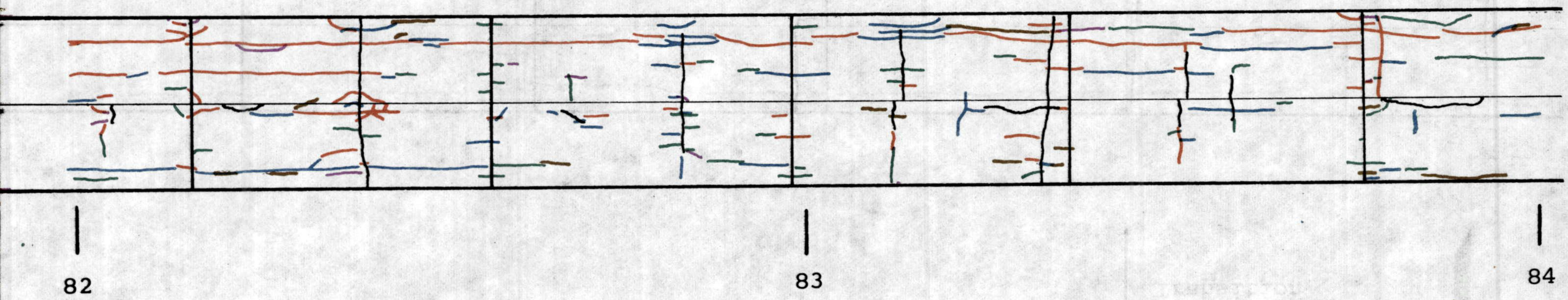



N
81 + 44
Transition
80
81
82

82 + 10

Section 21
(Fibrous)

Bond - Bonded
Cement - 750 lb.
Fiber - 2 1/2", 100 lb.
Thickness - 3"



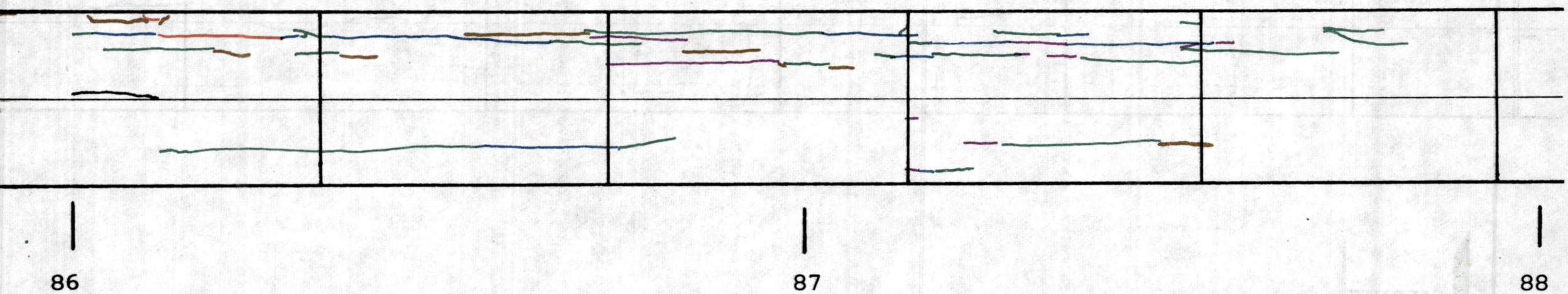
N
85 + 76
Transition
84
85
86

86 + 15

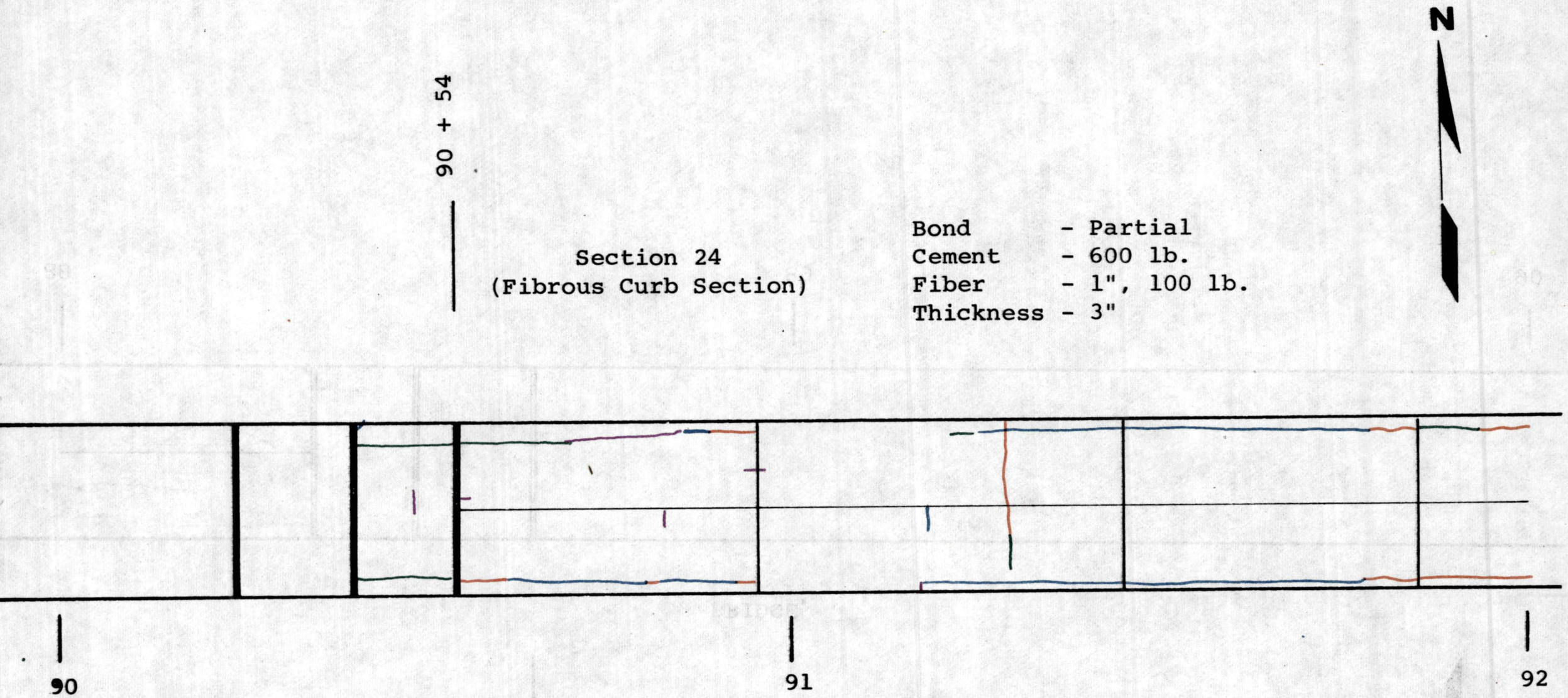
Section 22
(Fibrous)

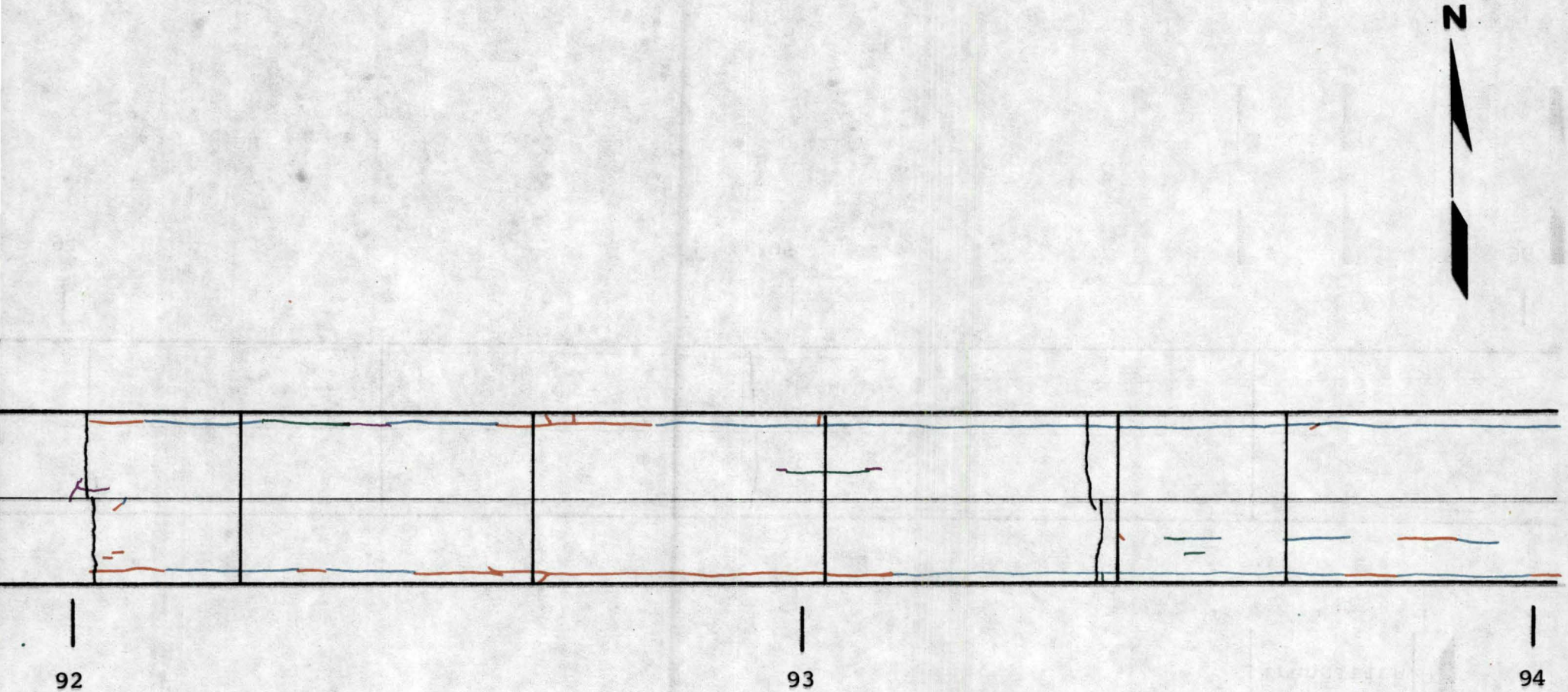
Bond - On grade
Cement - 500 lb. + 234 lb. Fly Ash
Fiber - 1", 160 lb.
Thickness - 3"

N



N
88 + 64
BRIDGE
88
89
90

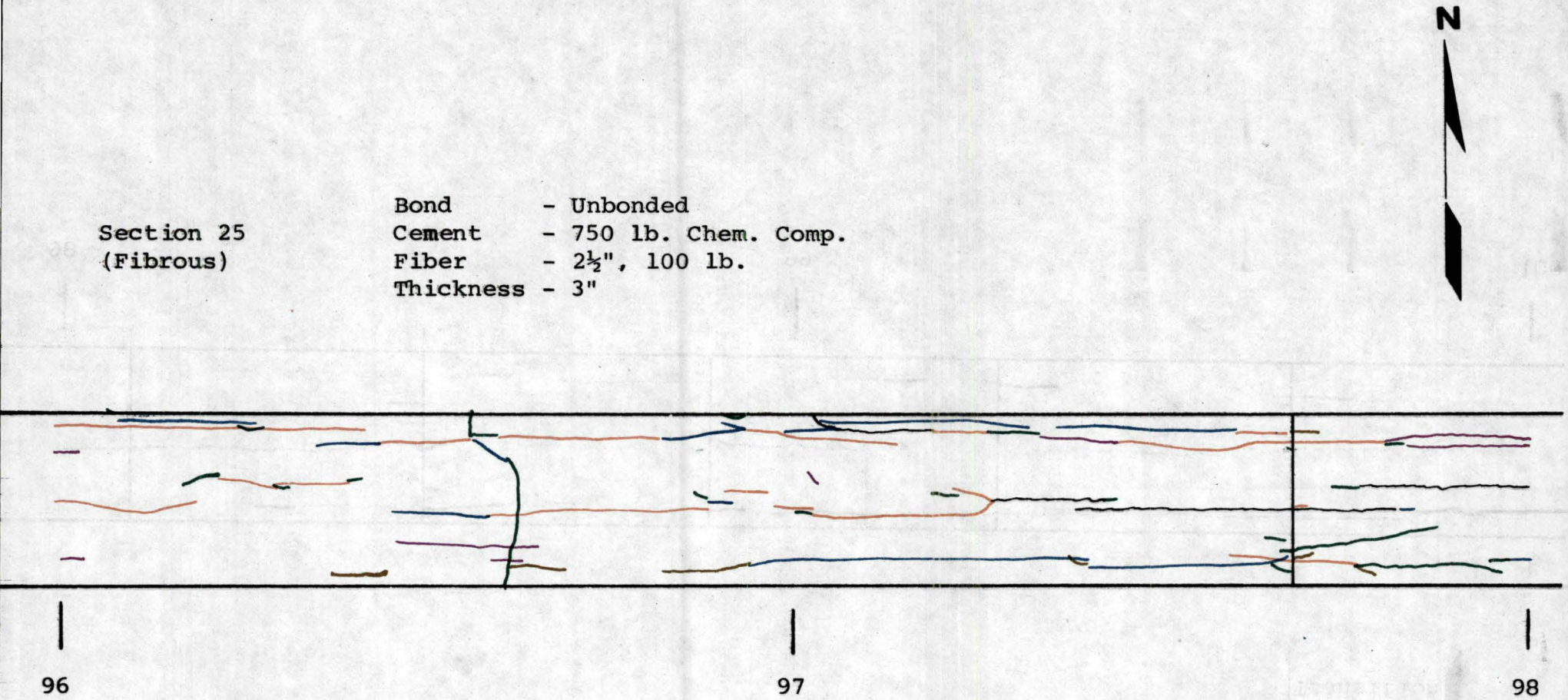

N
90 + 54
Section 24
(Fibrous Curb Section)
Bond - Partial
Cement - 600 lb.
Fiber - 1", 100 lb.
Thickness - 3"
90
91
92


N
92
93
94

N
95 + 85
Transition
95 + 63
94
95
96

Section 25
(Fibrous)

Bond - Unbonded
Cement - 750 lb. Chem. Comp.
Fiber - 2½", 100 lb.
Thickness - 3"



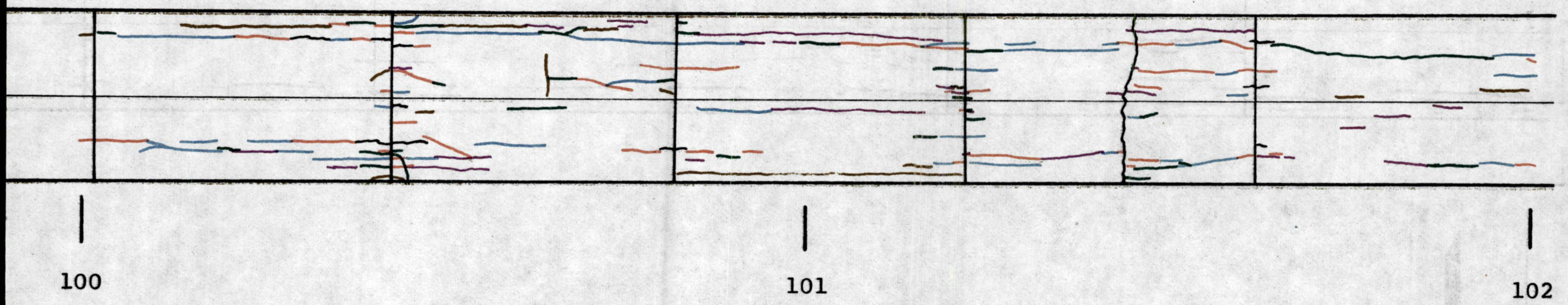
N
99 + 66
Transition
98
99
100

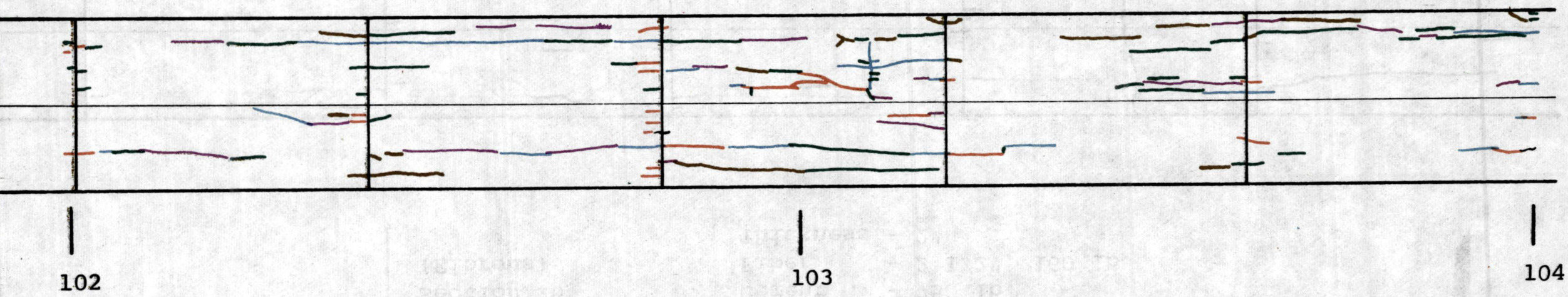
100 + 43

Section 26
(Fibrous)

Bond - Partial
Cement - 750 lb.
Fiber - 2 1/2", 160 lb.
Thickness - 2"

N




N
102
103
104

104 + 00

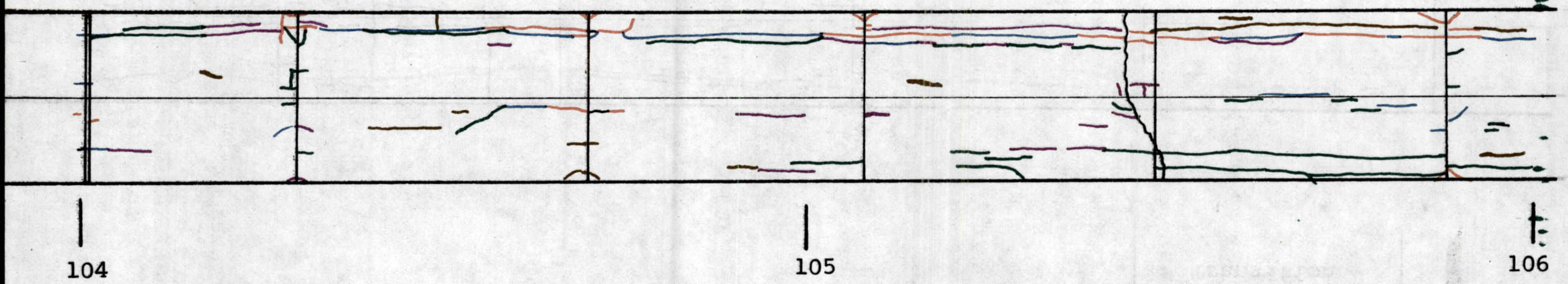
104 + 32

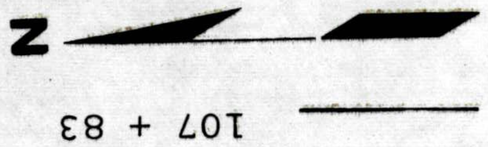
Transition

Section 27
(Fibrous)

Bond - Partial
Cement - 600 lb.
Fiber - 1", 100 lb.
Thickness - 2"

N

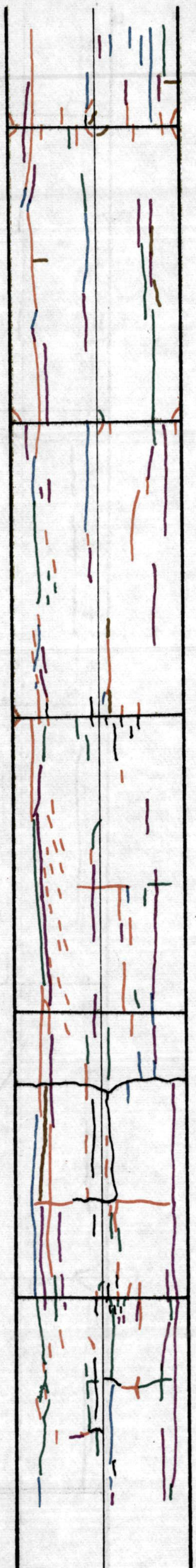




107 + 83

Transition

107 + 46



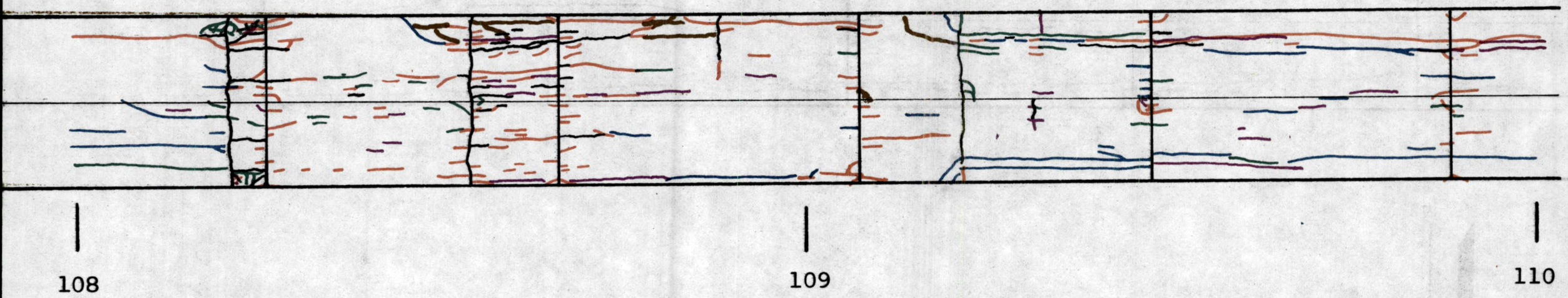
108

107

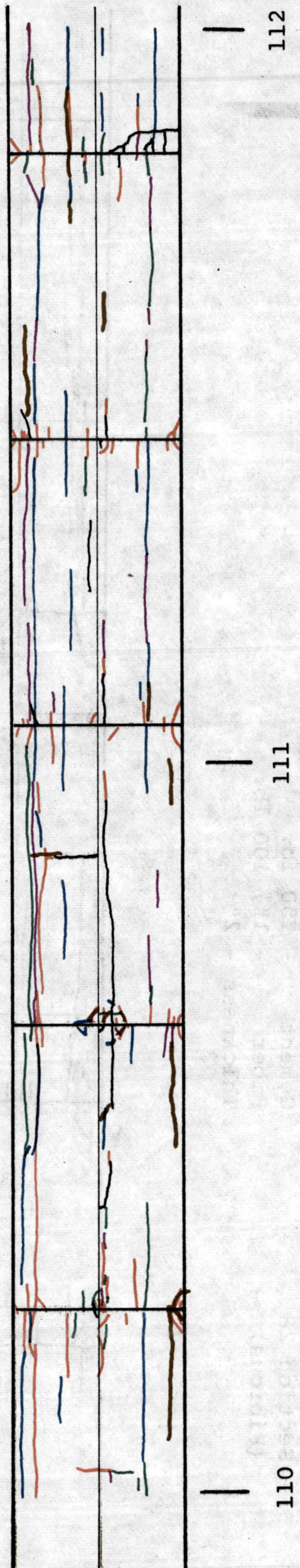
106

Section 28
(Fibrous)

Bond - Partial
Cement - 750 lb.
Fiber - 1", 100 lb.
Thickness - 2"



N
111 + 85

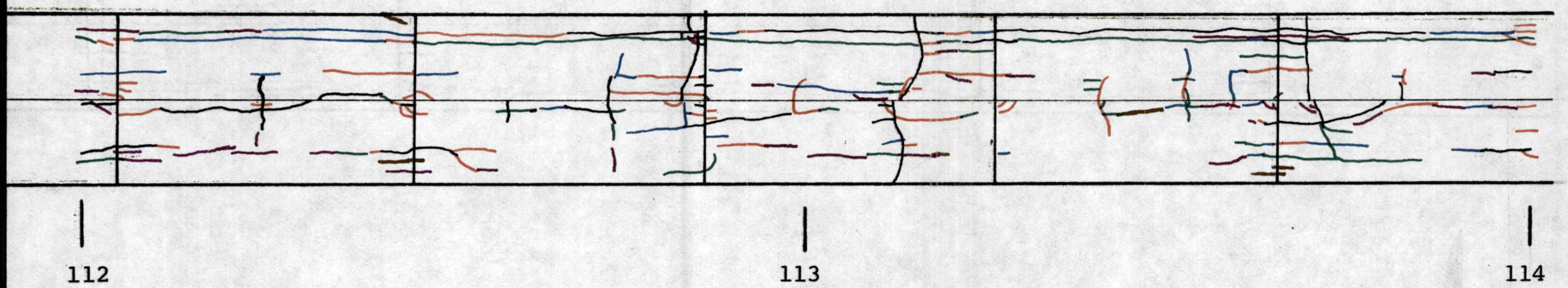

112
111
110

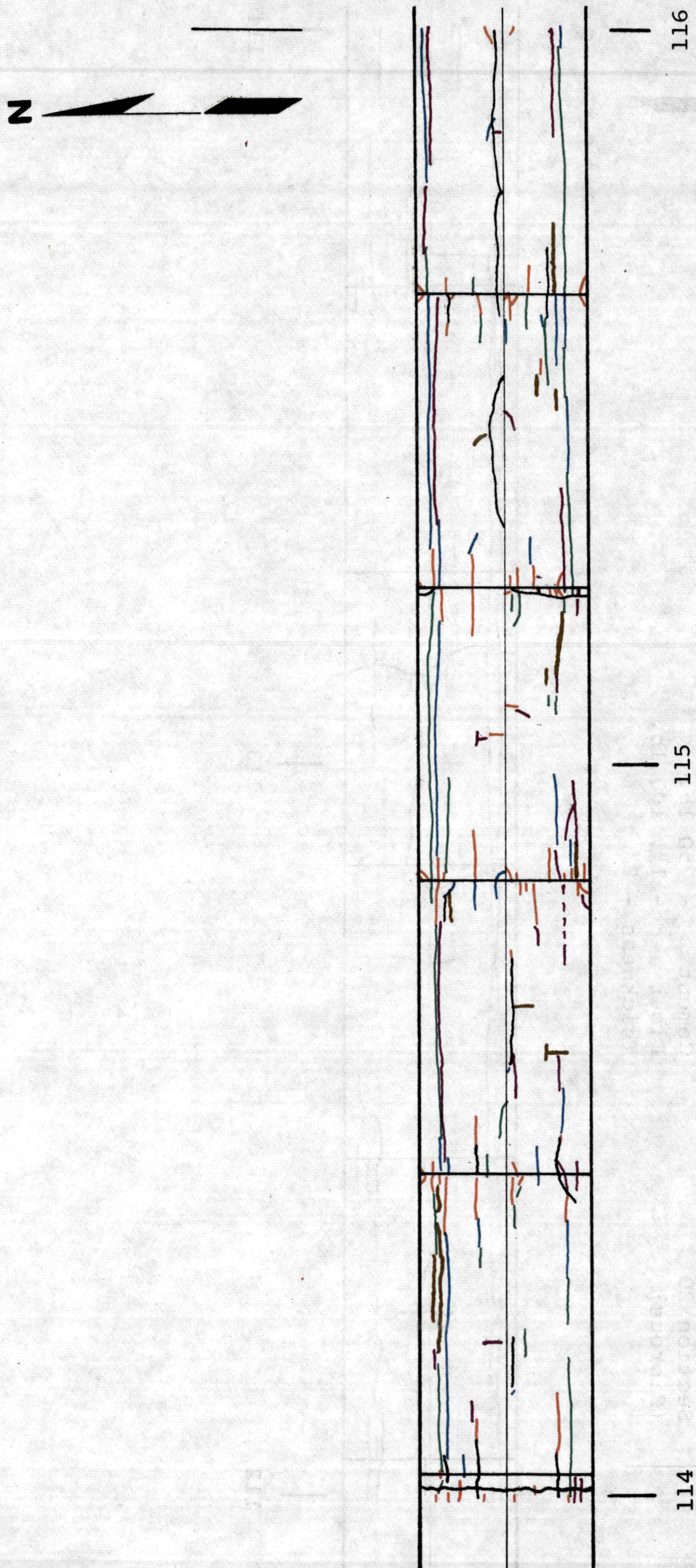
112 + 04

Section 29
(Fibrous)

Bond - Bonded
Cement - 750 lb.
Fiber - 1", 100 lb.
Thickness - 2"

N



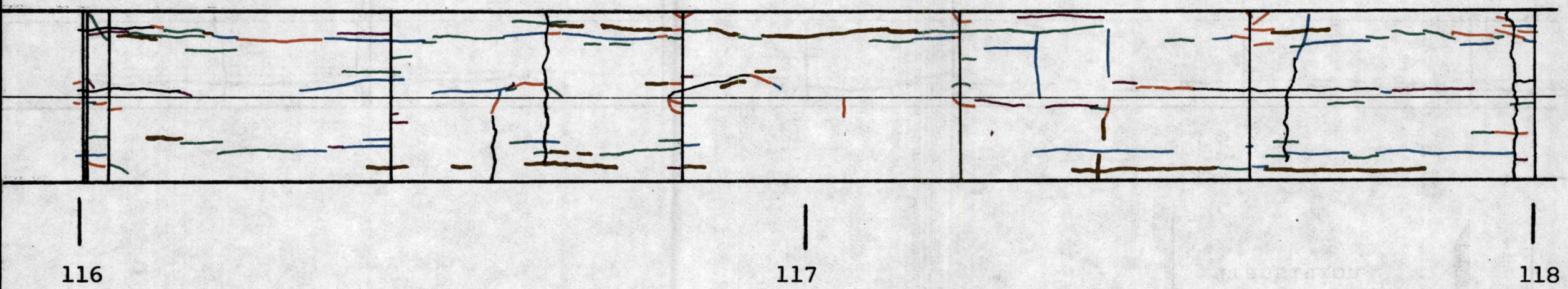

N
116
115
114

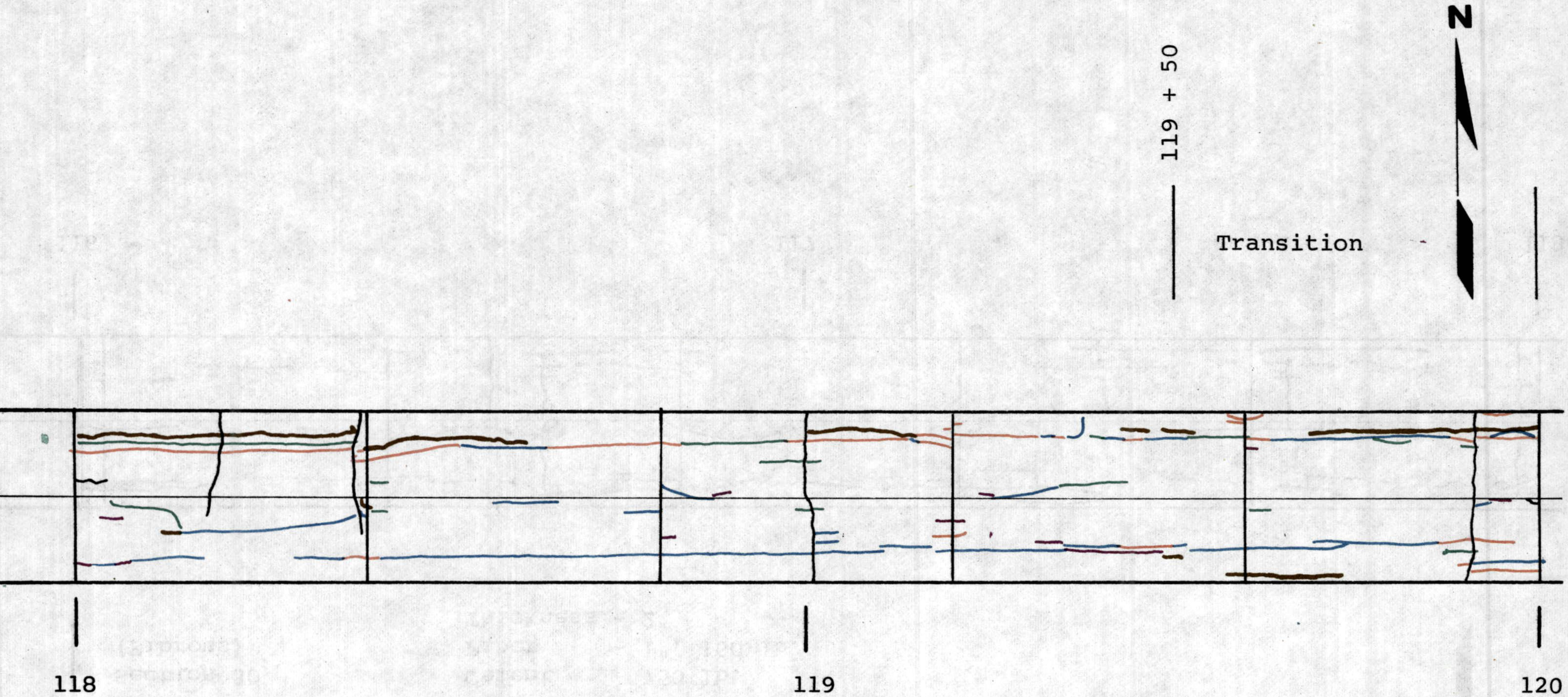
116 + 00

Section 30
(Fibrous)

Bond - Partial
Cement - 750 lb.
Fiber - 1", 160 lb.
Thickness - 2"

N



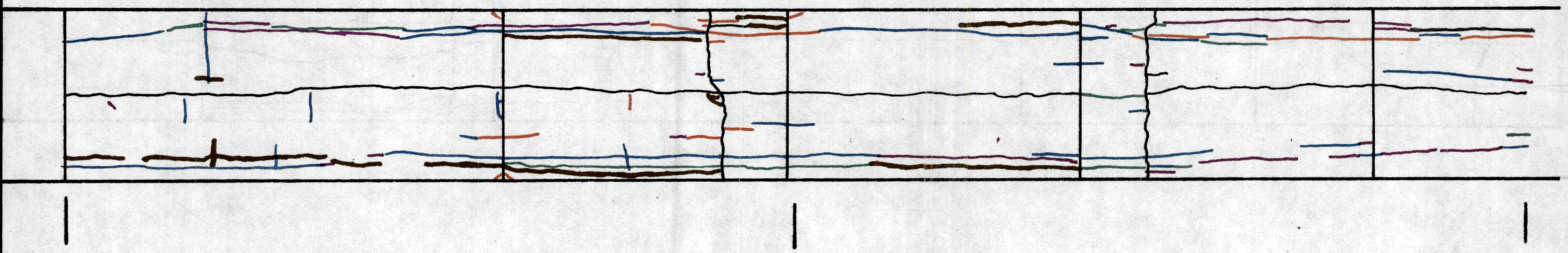

N
119 + 50
Transition
118
119
120

120 + 00

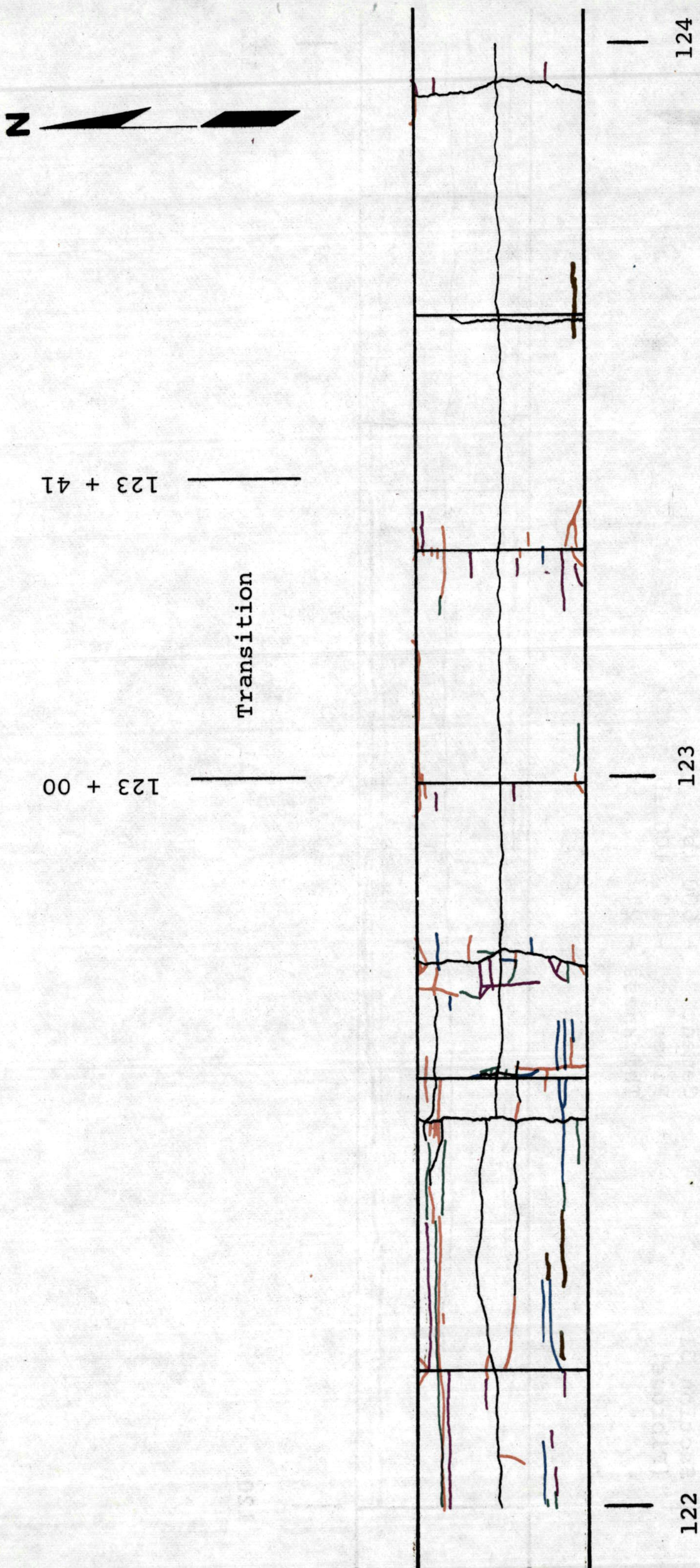
Section 31
(Fibrous)

Bond - Partial
Cement - 600 lb.
Fiber - 1", 100 lb.
Thickness - 2"

N



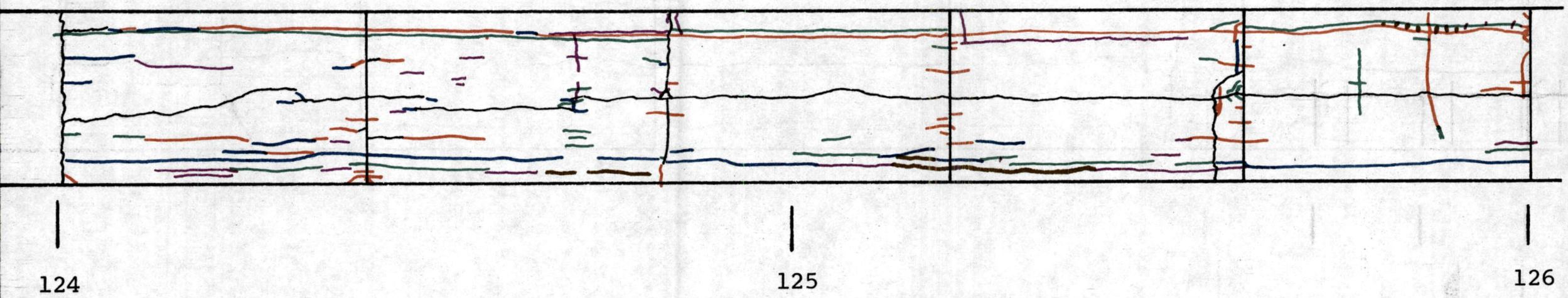
120 121 122

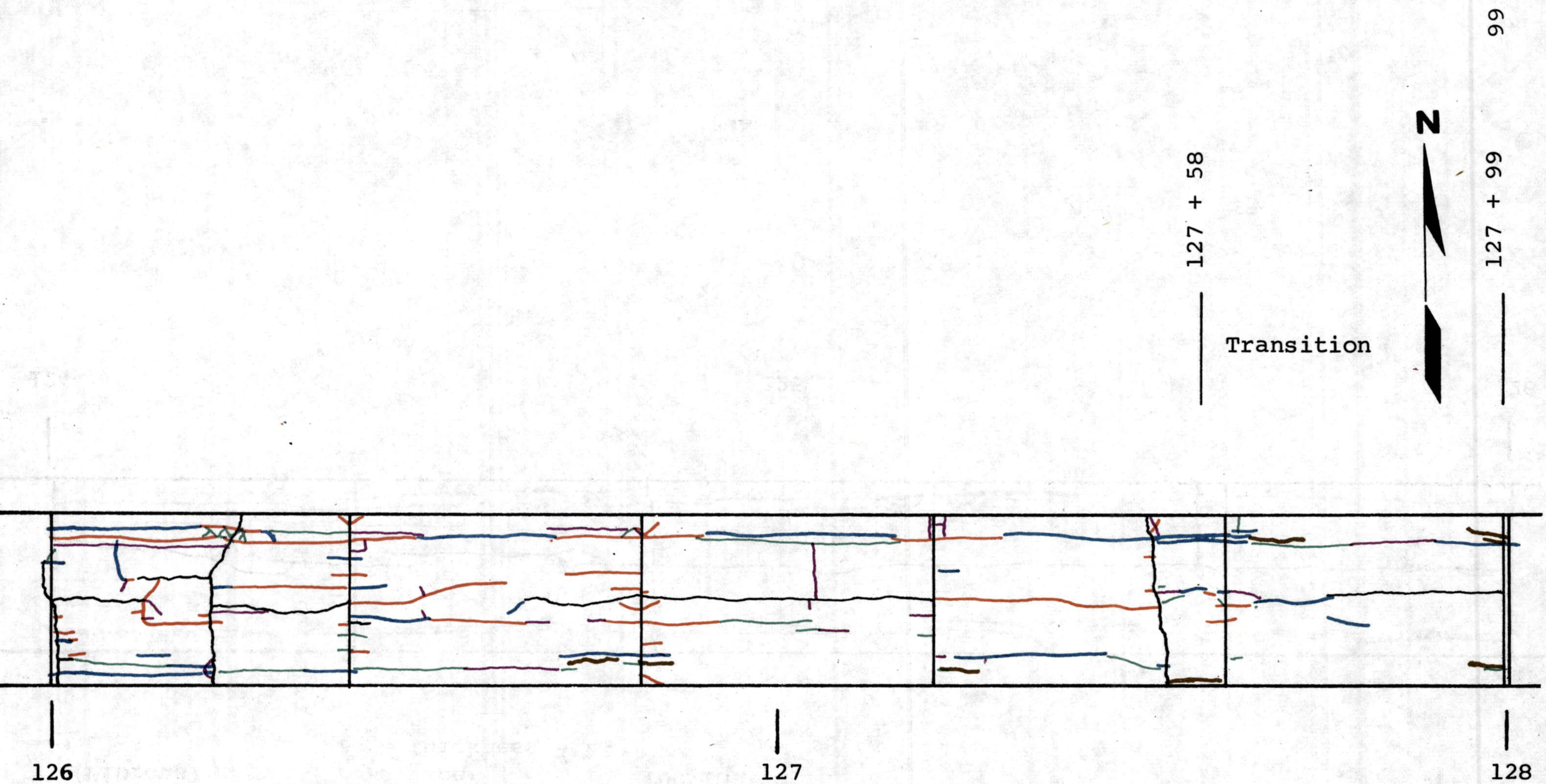

N
123 + 41
Transition
123 + 00
124
123
122

N

Section 32
(Fibrous)

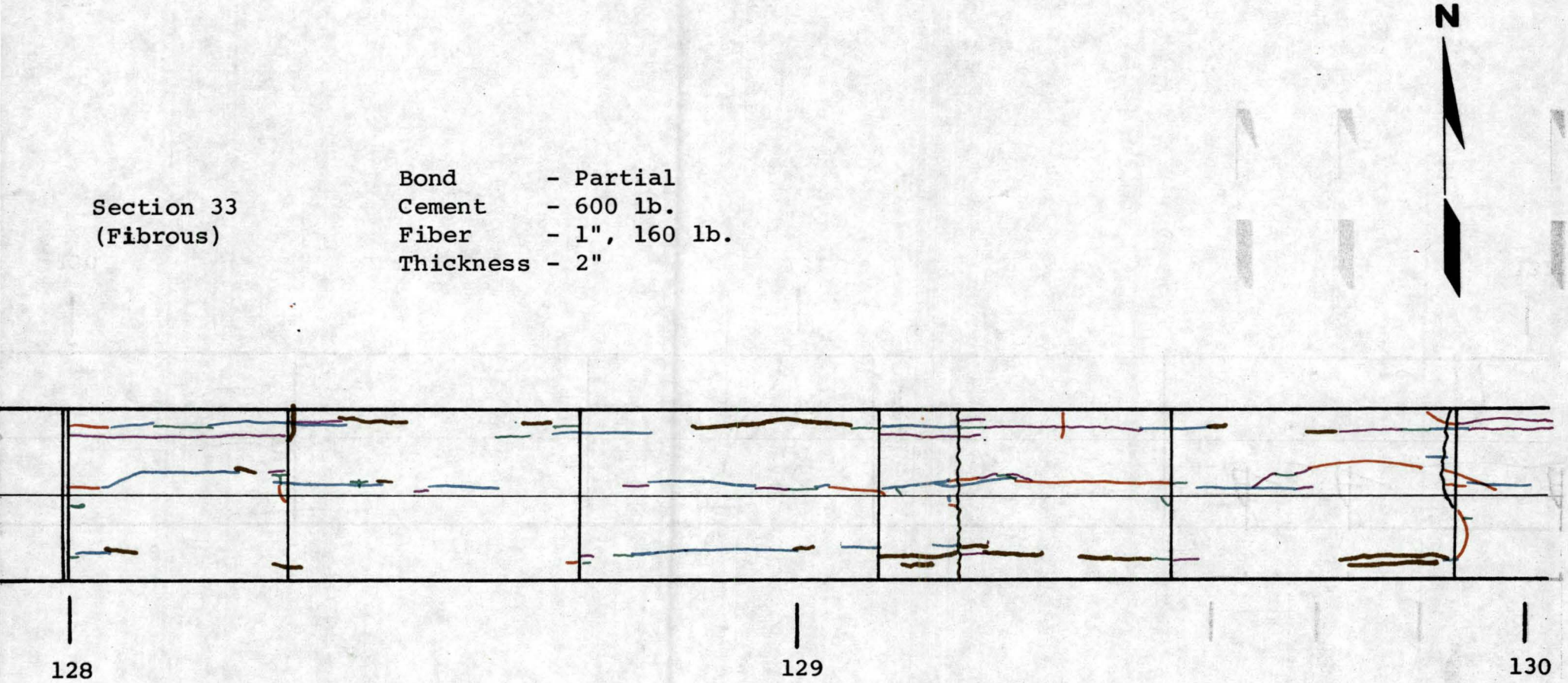
Bond - Partial
Cement - 750 lb.
Fiber - 1", 100 lb.
Thickness - 2"




127 + 58
Transition
N
127 + 99
99
126
127
128

Section 33
(Fibrous)

Bond - Partial
Cement - 600 lb.
Fiber - 1", 160 lb.
Thickness - 2"



N
131 + 89
130
131
132

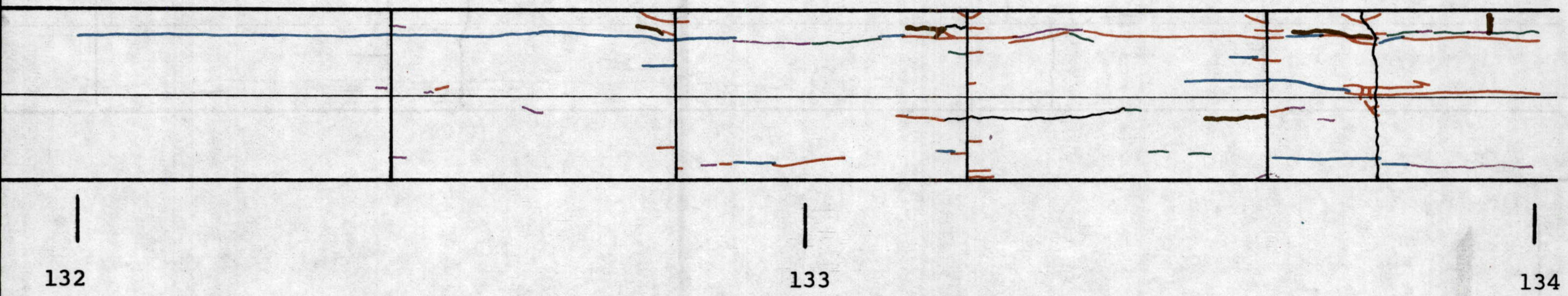
132 + 22

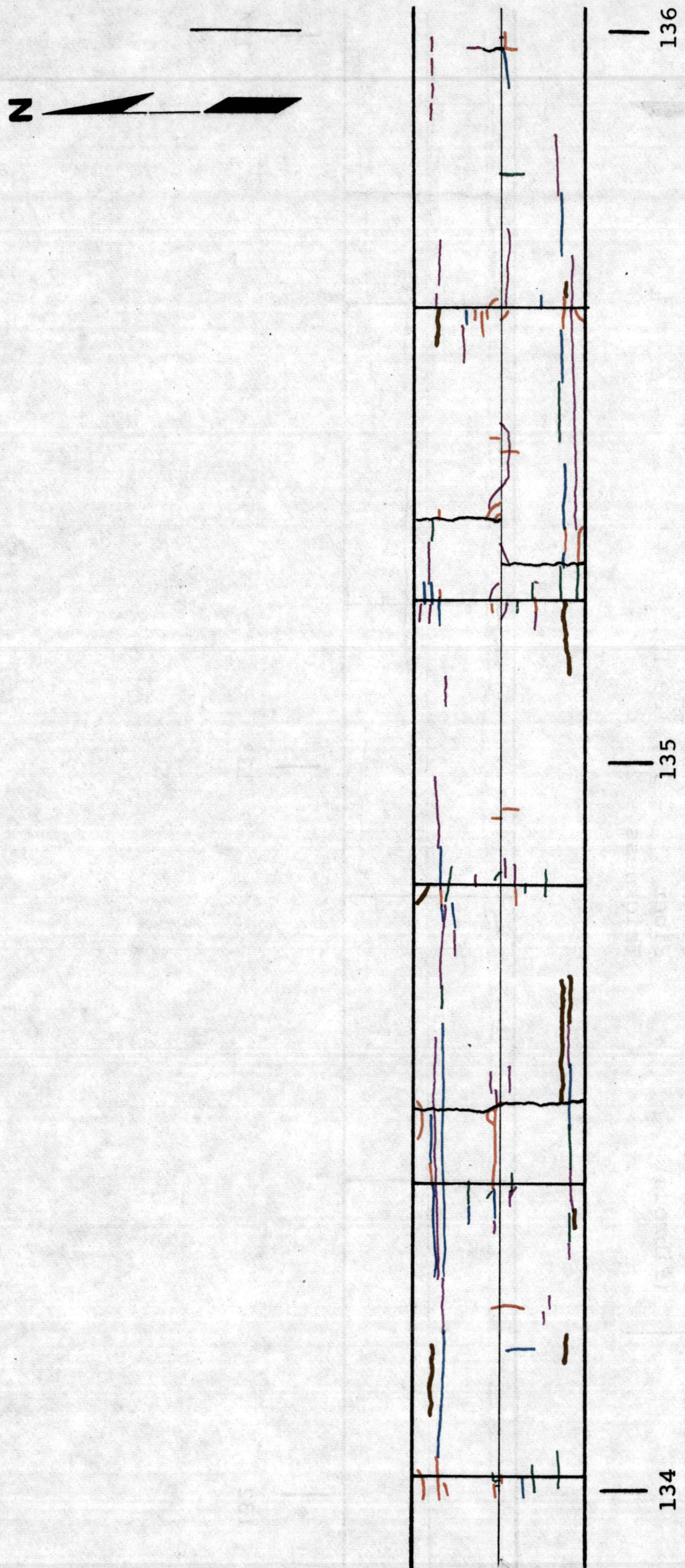
Transition

Section 34
(Fibrous)

Bond - Partial
Cement - 750 lb.
Fiber - 1", 160 lb.
Thickness - 2"

N




N
134
135
136

136 + 00

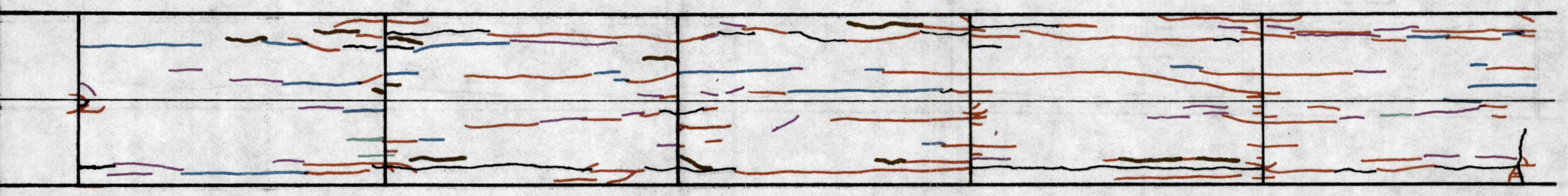
136 + 65

Transition

Section 35
(Fibrous)

Bond - Unbonded
Cement - 750 lb.
Fiber - 2 1/2", 100 lb.
Thickness - 2"

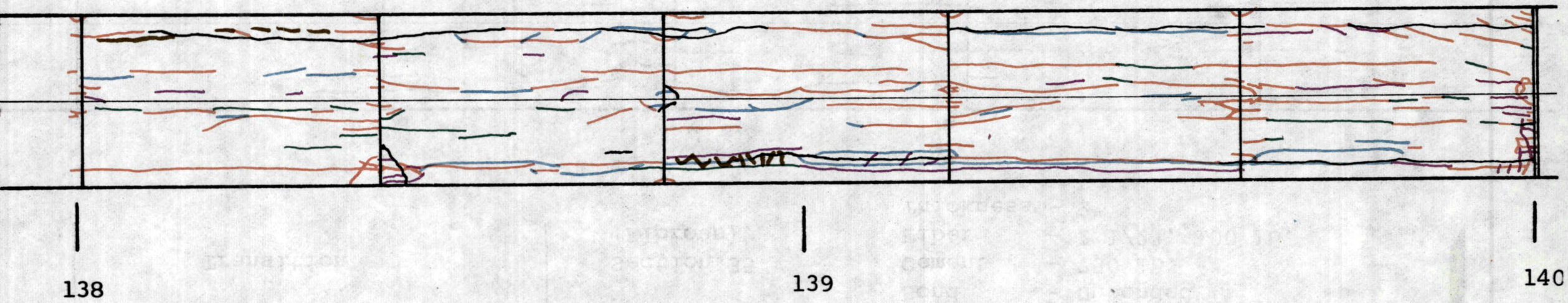
N



136

137

138

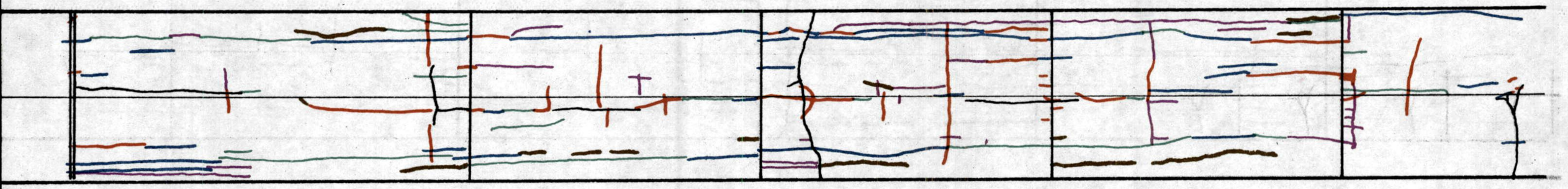

N
138
139
140

140 + 00

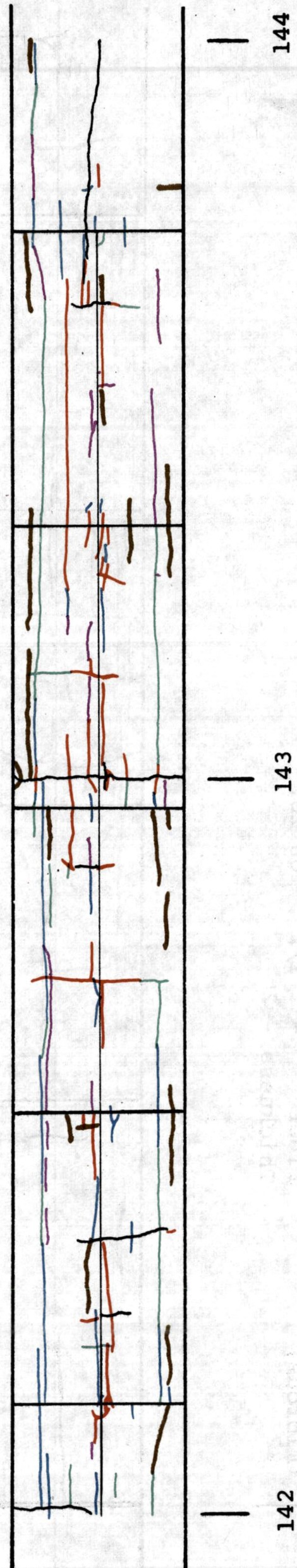
Section 36
(Fibrous)

Bond - Bonded
Cement - 750 lb.
Fiber - 2 1/2", 100 lb.
Thickness - 2"

N



140 141 142



143 + 74

N

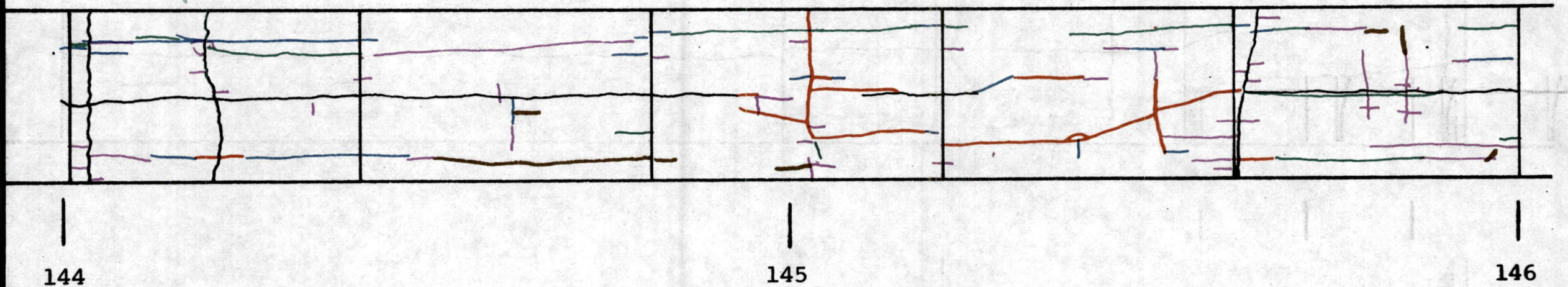
144 + 17

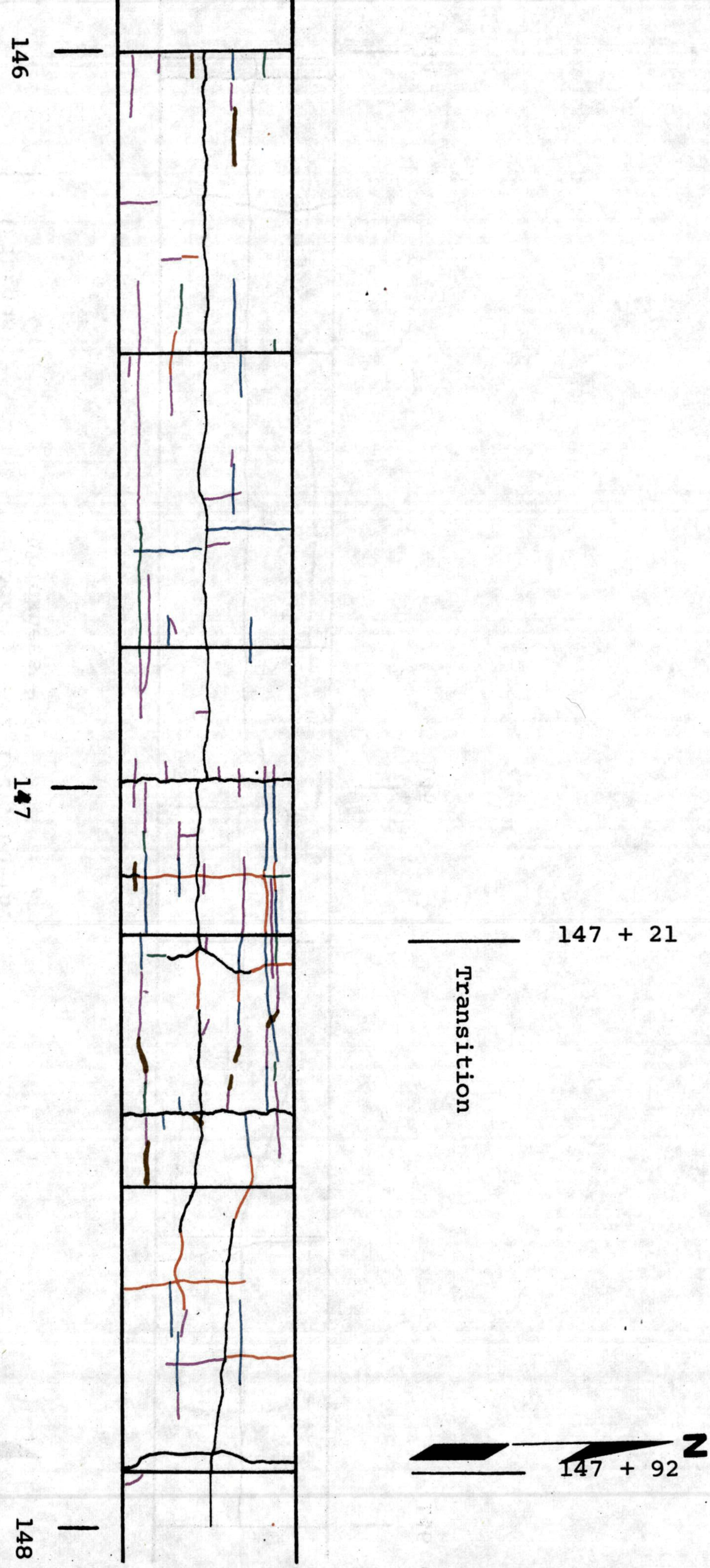
Transition

Section 37
(Fibrous)

Bond - Partial
Cement - 600 lb.
Fiber - 2 1/2", 60 lb.
Thickness - 3"

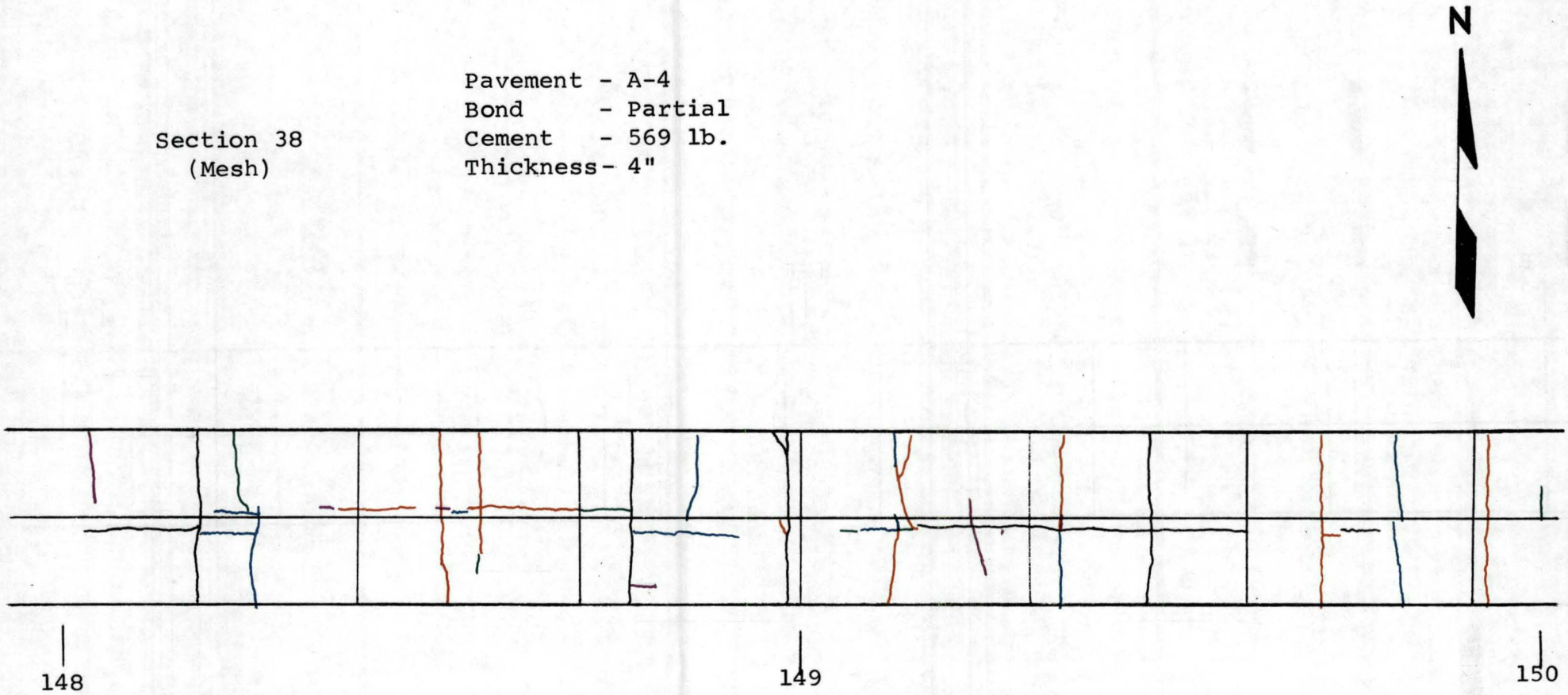
N




146
147
148
147 + 21
Transition
147 + 92
N

Section 38
(Mesh)

Pavement - A-4
Bond - Partial
Cement - 569 lb.
Thickness - 4"



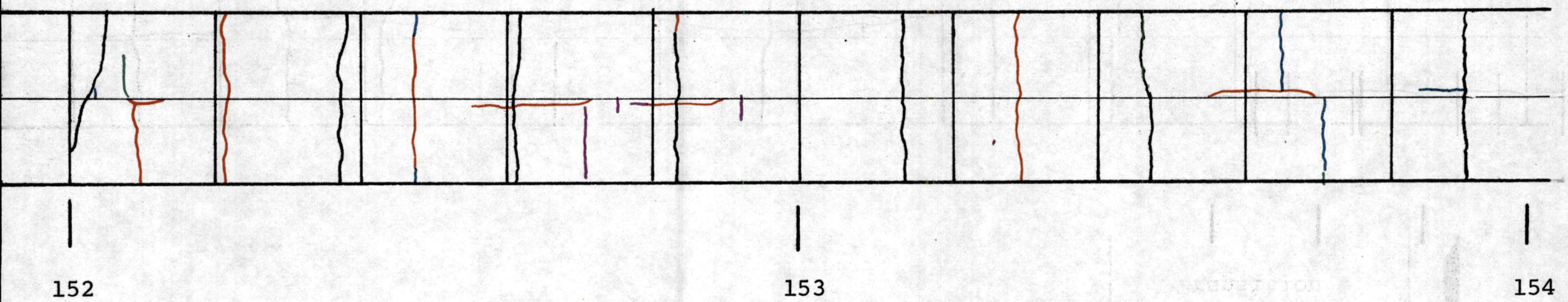
N
151 + 84
150
151
152

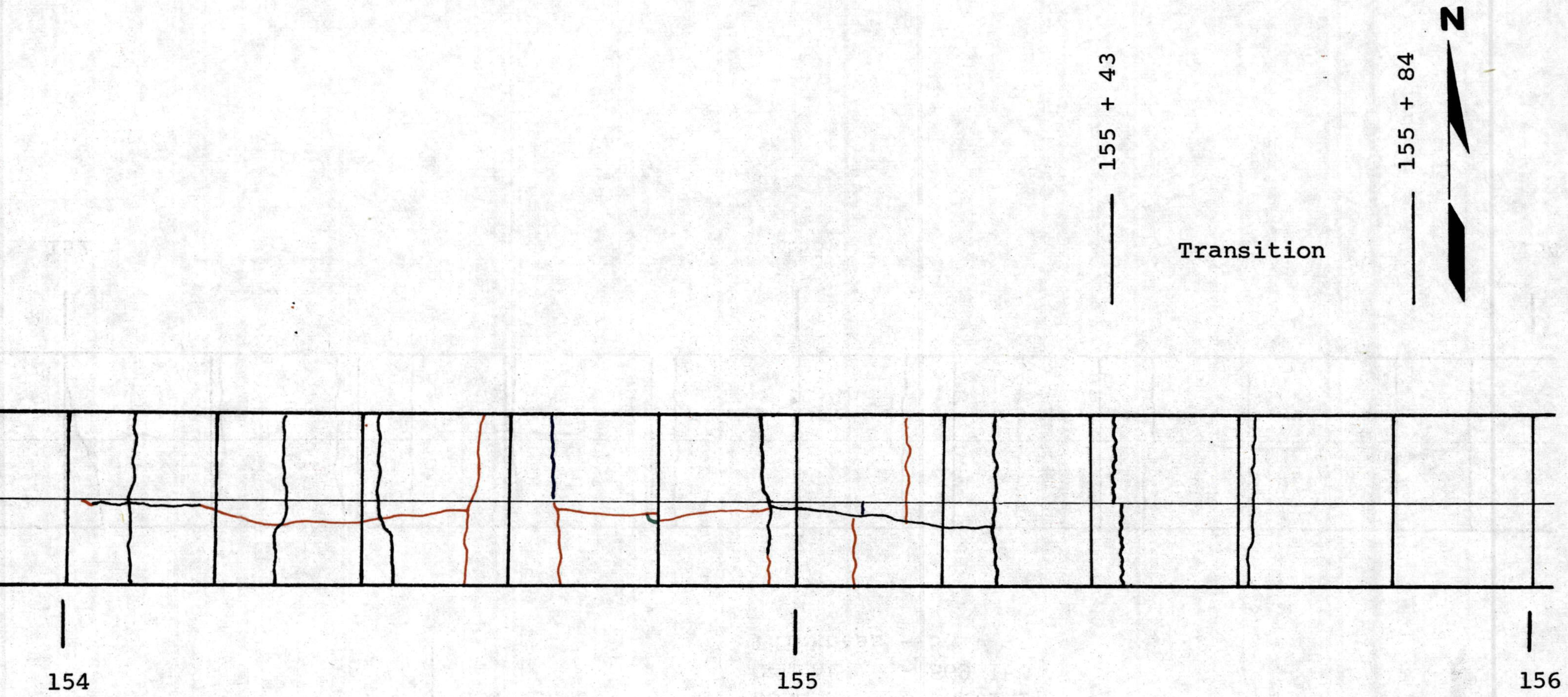
152 + 50

Section 39

Pavement - A-4
Bond - Partial
Cement - 569 lb.
Thickness - 5"

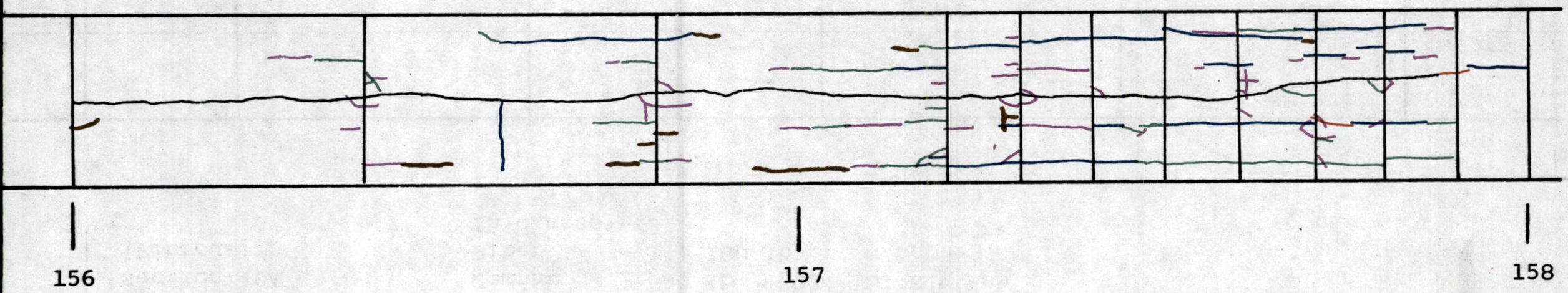
N




155 + 43
Transition
155 + 84
N
154
155
156

Section 40
(Fibrous)

Bond - Partial
Cement - 500 lb. + 234 lb. Fly Ash
Fiber - 1", 100 lb.
Thickness - 3"

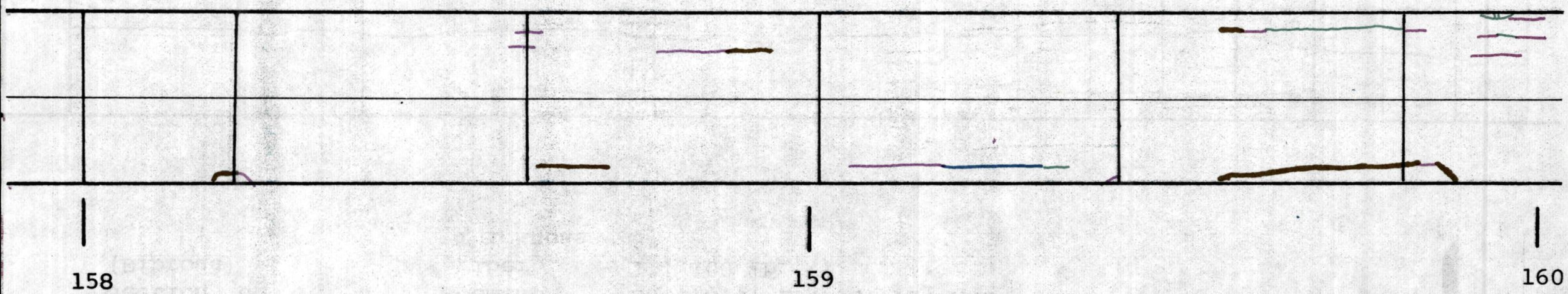


158 + 00

Section 40A
(Fibrous)

Bond - On grade
Cement - 500 lb. + 234 lb. Fly Ash
Fiber - 1", 160 lb.
Thickness - 3"

N



N
160 + 12
Old Pavement
160
End of Project