

FIBROUS CONCRETE RESURFACING

GREENE COUNTY, IOWA

October, 1977

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Highway Division
Materials - 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

FIBROUS SECTIONS

AS BUILT

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	
3	600	U															
		B				Curb ↓											
		P	7	13	9	24	18	19	16	37							
	750	U												11	25	←	Chem. Comp.
		B				12			23	←	Bridge			21			
		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			30								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

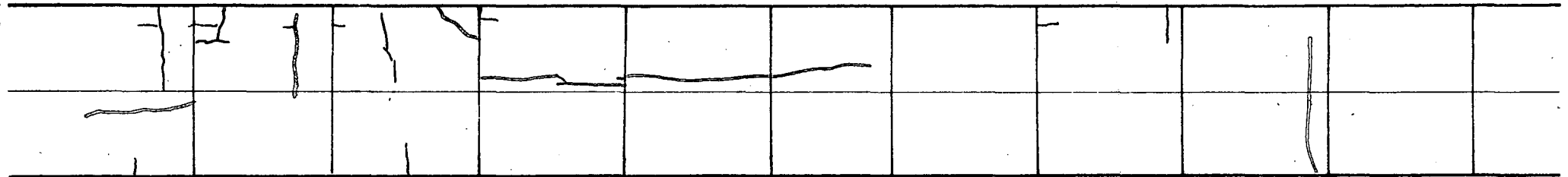
Sections 1 and 39 5 in. Type A Plain Partial Bond No Admix.	Sections 2 and 38 4 in. Type A 6x6 Mesh Partial Bond No Admix.	Section 3 4 in. Type A CRC Mesh Anchor Bonded No Admix.	Section 4 4 in. Type A CRC Mesh Unbonded No Admix.	Section 5 3 in. Type A CRC Mesh Unbonded No Admix.	Section 6 3 in. Type A CRC Mesh Anchor Bonded No Admix.
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+
0
0

Section 1

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



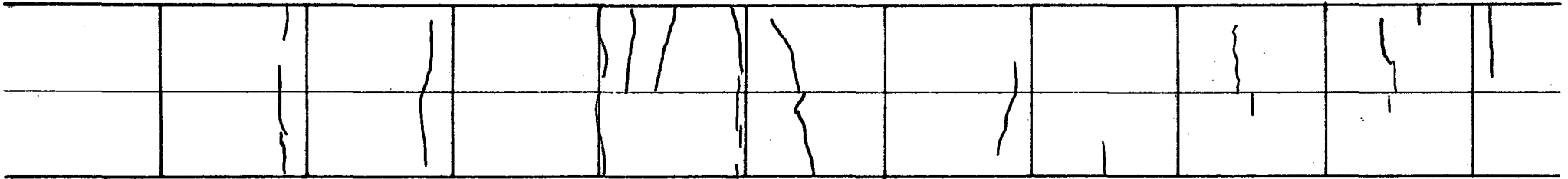
0

Contraction Joint

1

2

Scale 1" = 20'



|
2

|
3

|
4



4 + 04

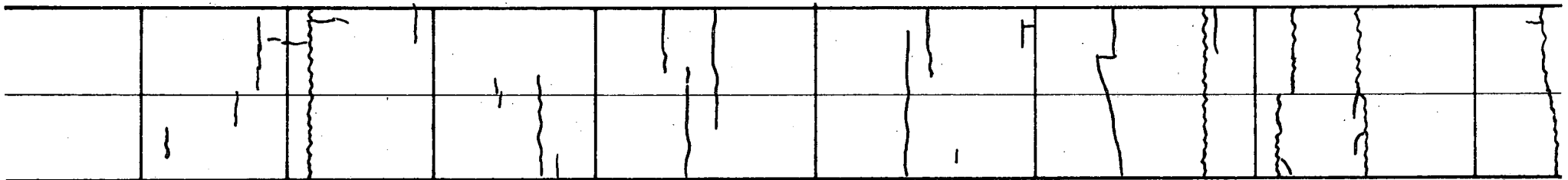
Transition

4 + 67

Section 2
(Mesh)

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

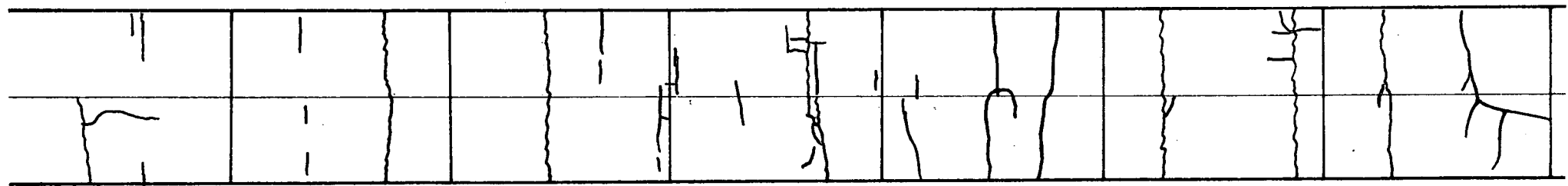
N



4

5

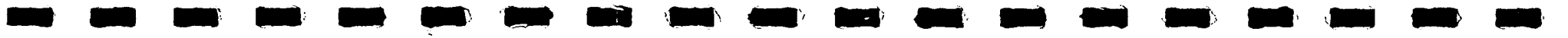
6



6

7

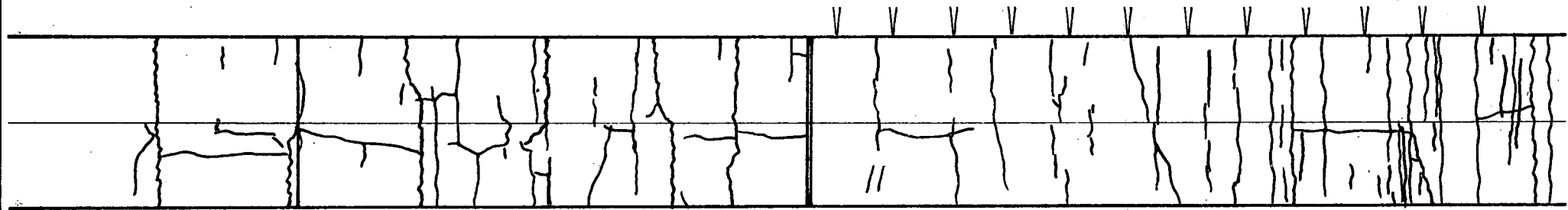
8



8 + 99

Section 3
(CRC Anchor)

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



8

9

10

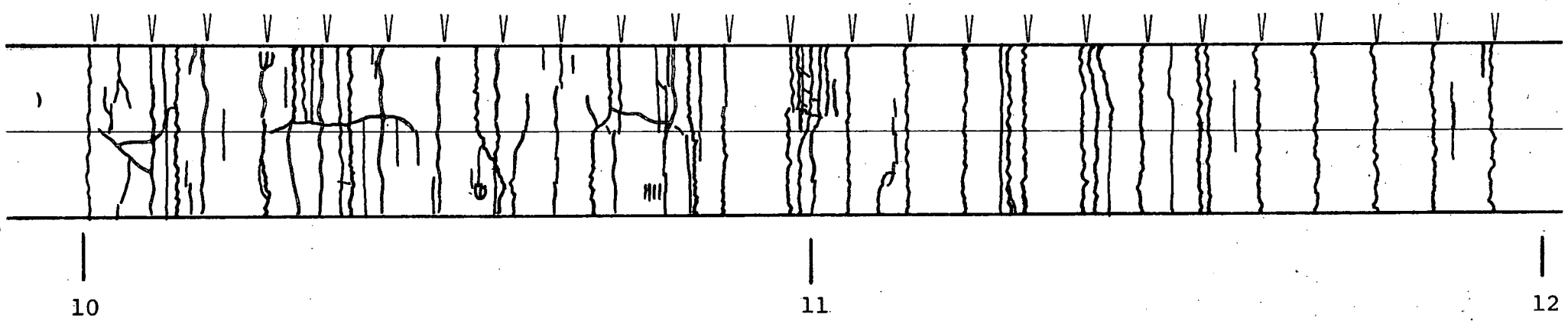
Expansion Joint

∨ indicates crack initiator location

10 + 98

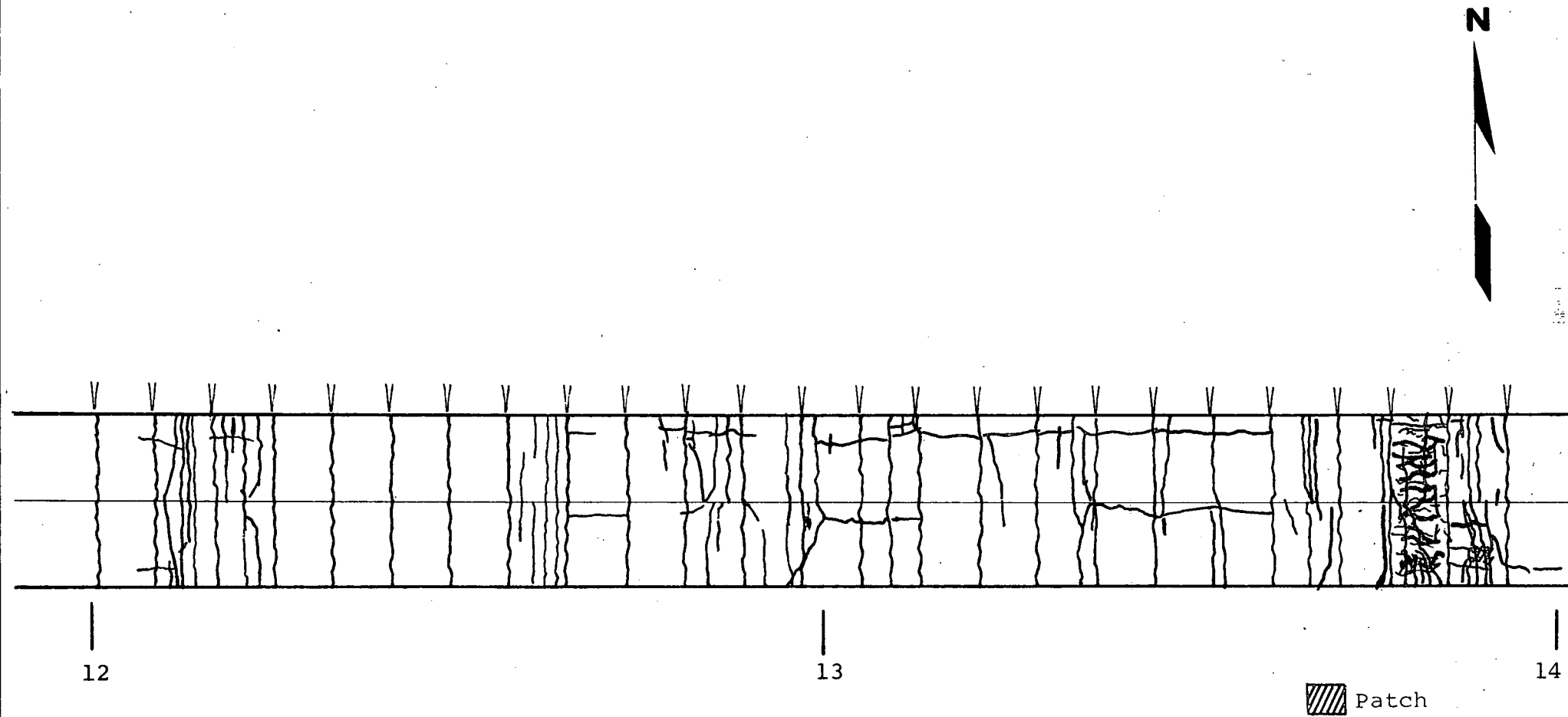
Section 4
(CRC)

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



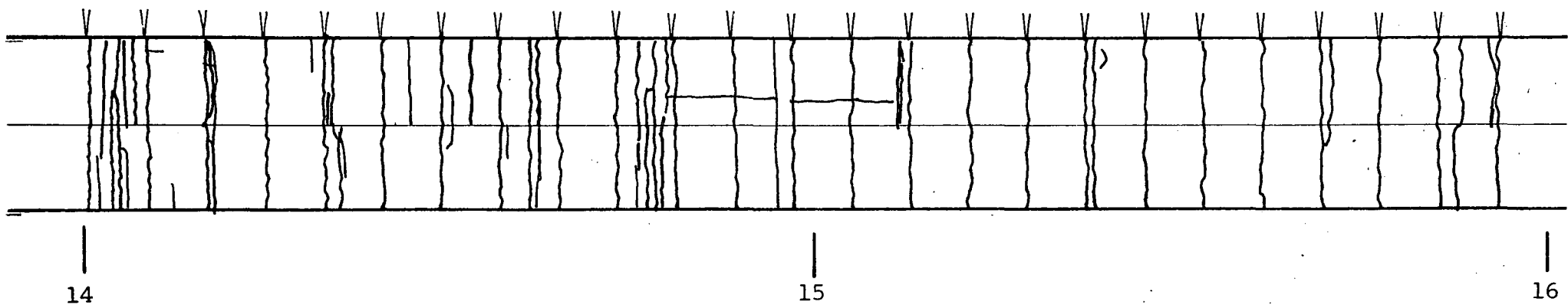
> indicates crack initiator location





∨ indicates crack initiator location

N

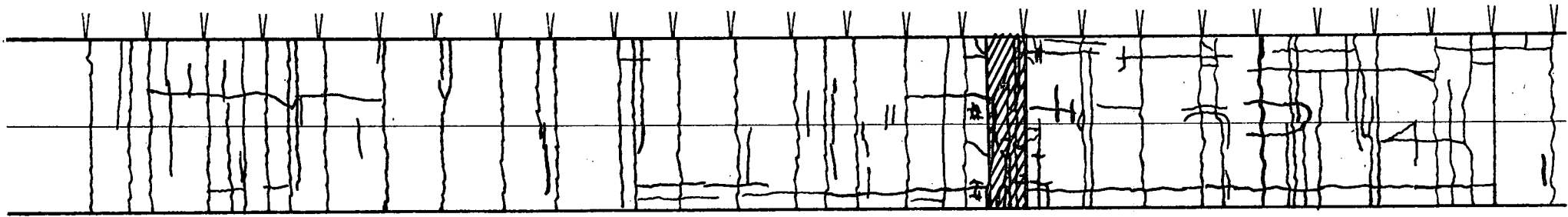


> indicates crack initiator location



16 + 65


Transition



16

17

18

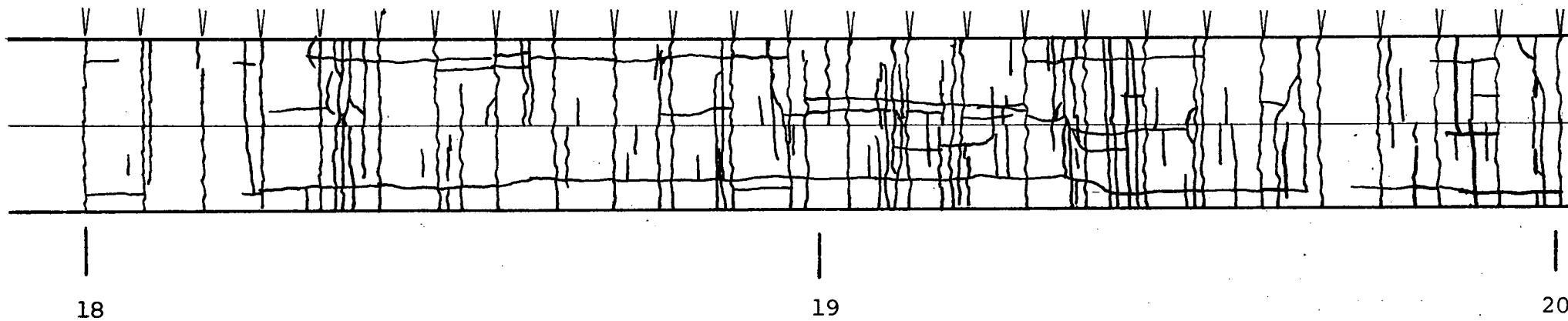
 Patched blowup

V indicates crack initiator location

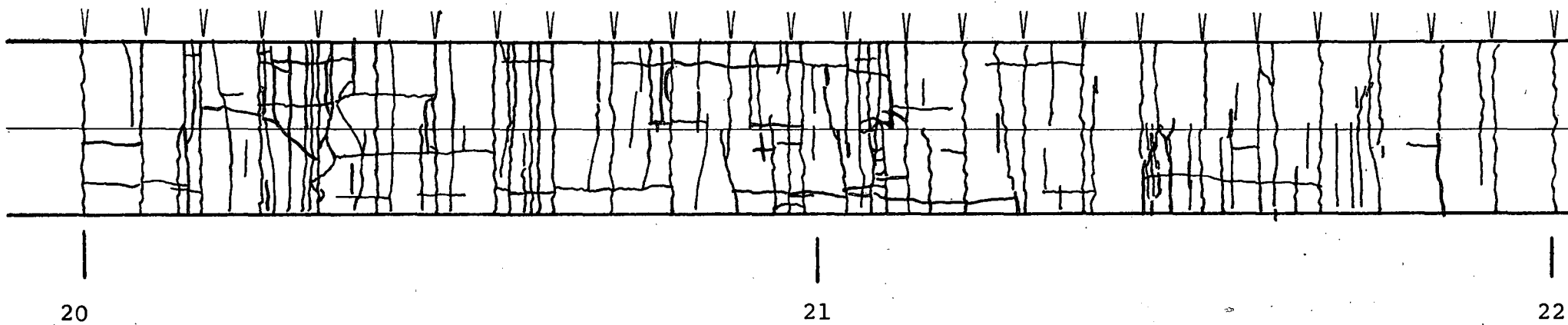
N

Section 5
(CRC)

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

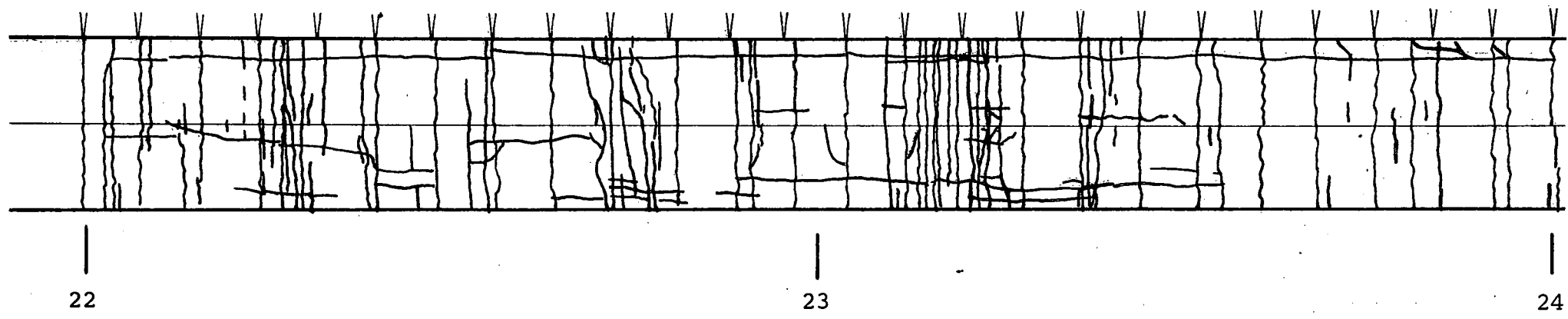


∨ indicates crack initiator location



∨ indicates crack initiator location

N



> indicates crack initiator location



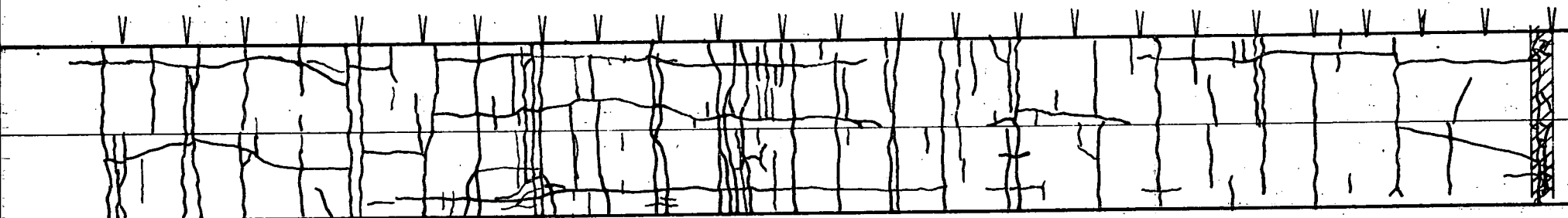
24 + 00

Section 6
(CRC Anchor)

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


25 + 85

N



24

25

 Patch

26

∇ indicates crack initiator location

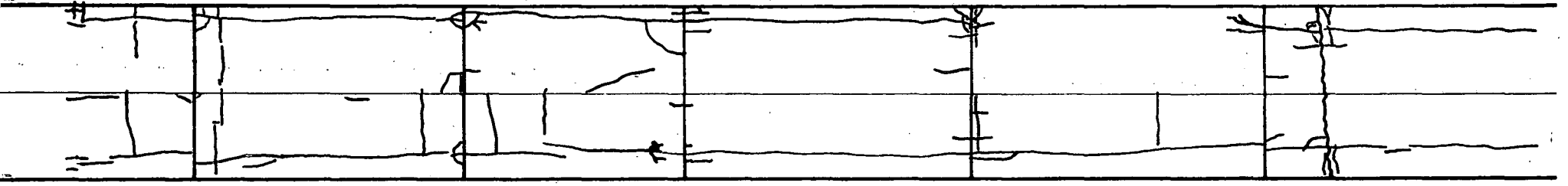


26 + 58

Transition

Section 7
(Fibrous)

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

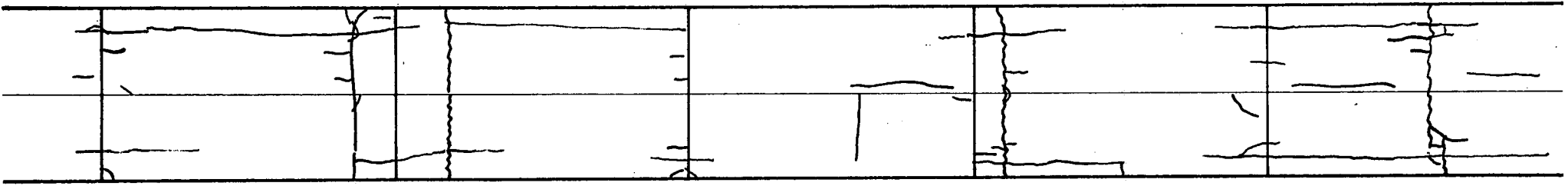


26

27

28





28

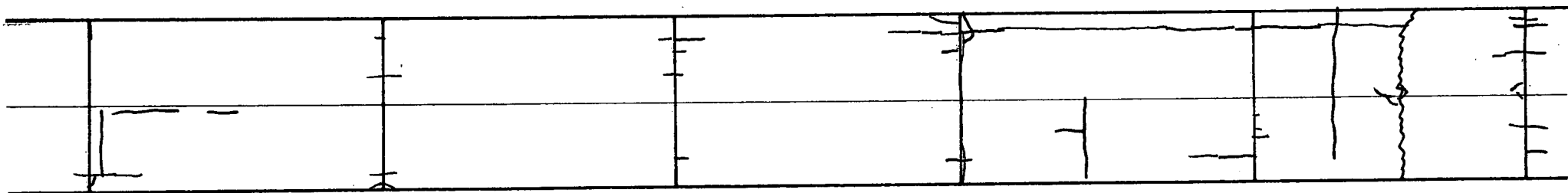
29

30

N

31 + 61

Transition



30

31

32

32 + 16

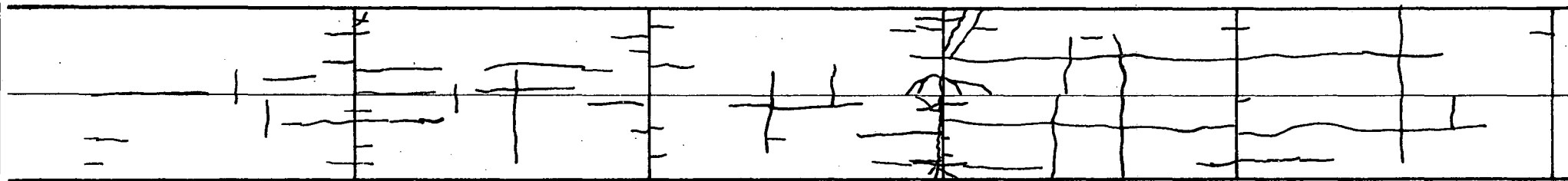
Section 8
(Fibrous)

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

33 + 57

Transition

N



32

33

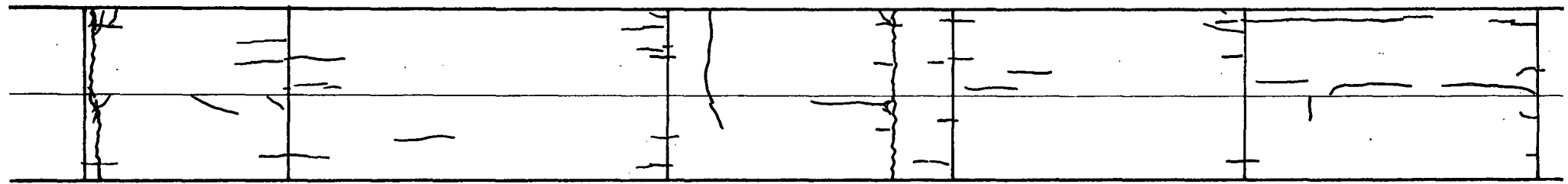
34



34 + 28

Section 9
(Fibrous)

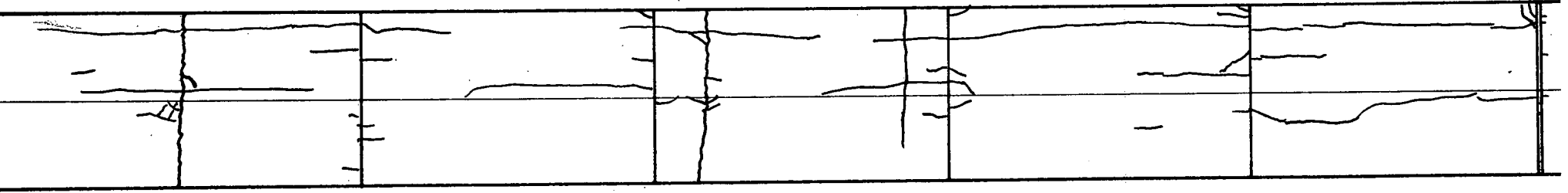
Bond - Partial
Cement - 600 lb.
Fiber - 1", 100 lb.
Thickness - 3"



34

35

36



36

37

38

Expansion Joint

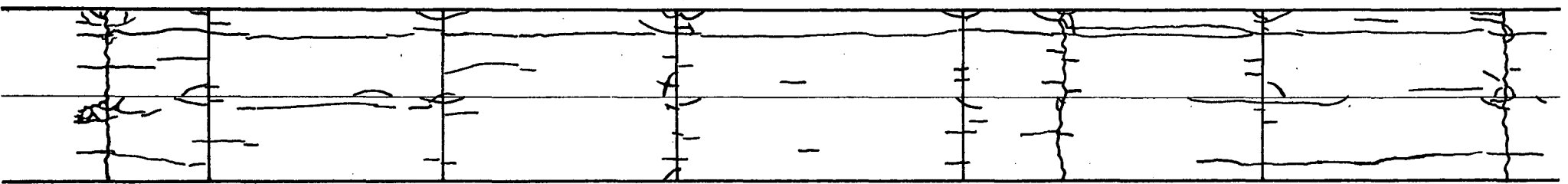
38 + 19

Transition

38 + 75

Section 10
(Fibrous)

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

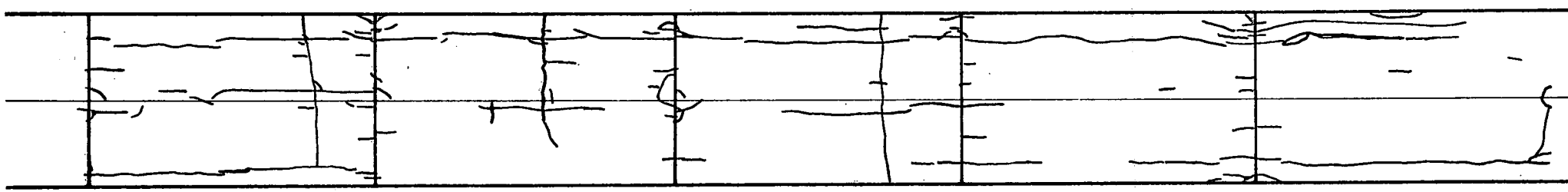


38

39

40





40

41

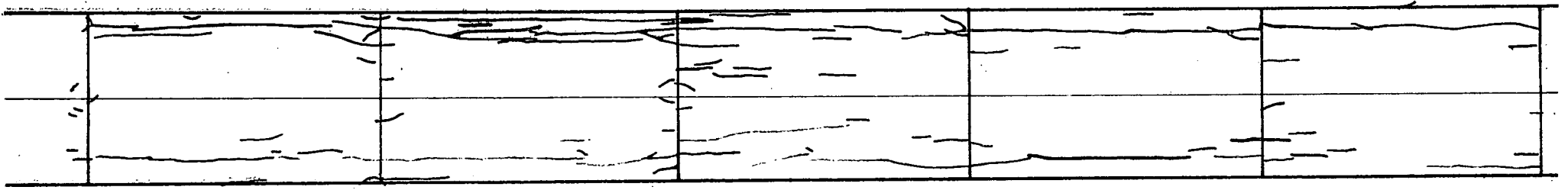
42



42 + 00

Section 11
(Fibrous)

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



42

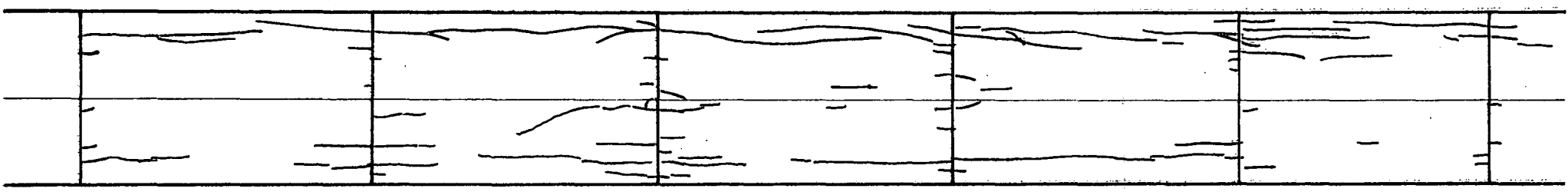
43

44



45 + 60

Transition



44

45

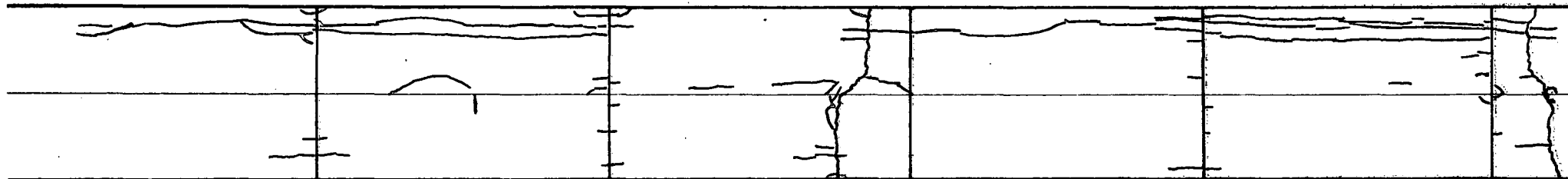
46

46 + 04

Section 12
(Fibrous)

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

N



46

47

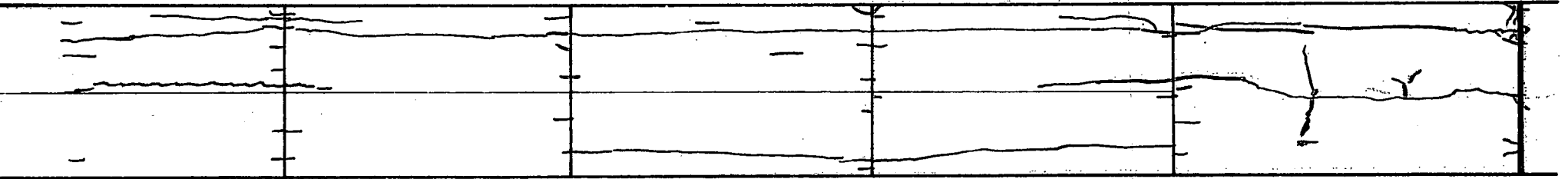
48



48

49

50



49 + 52

Transition

N

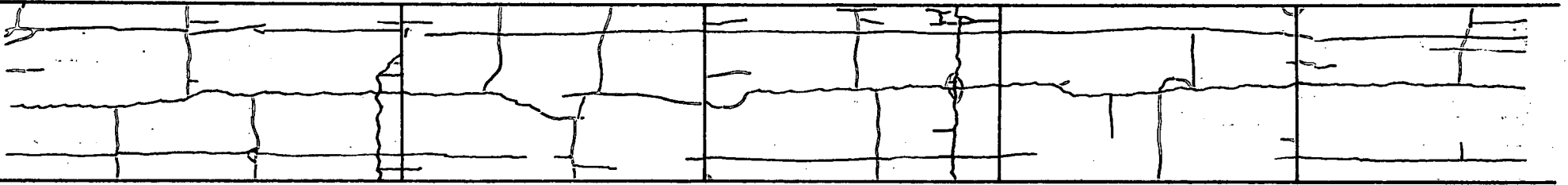


Expansion Joint

50 + 05

Section 13
(Fibrous)

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

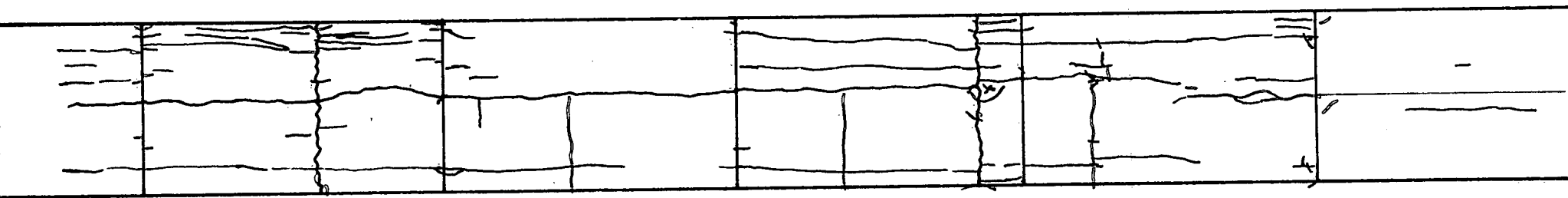


50

51

52





52

53

54

53 + 70

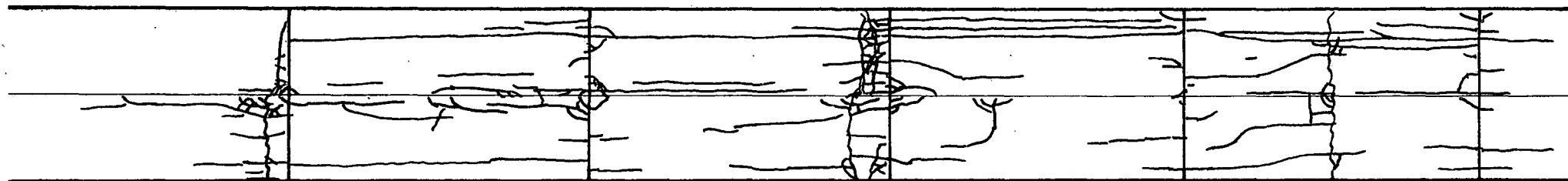
Transition



54 + 45

Section 14
(Fibrous)

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



54

55

56

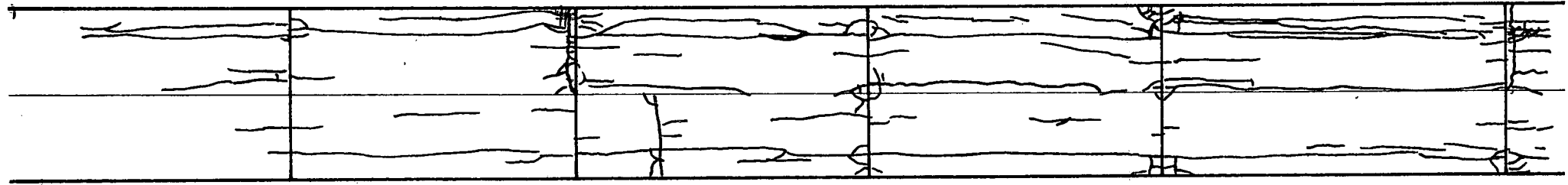


N



57 + 48

Transition



56

57

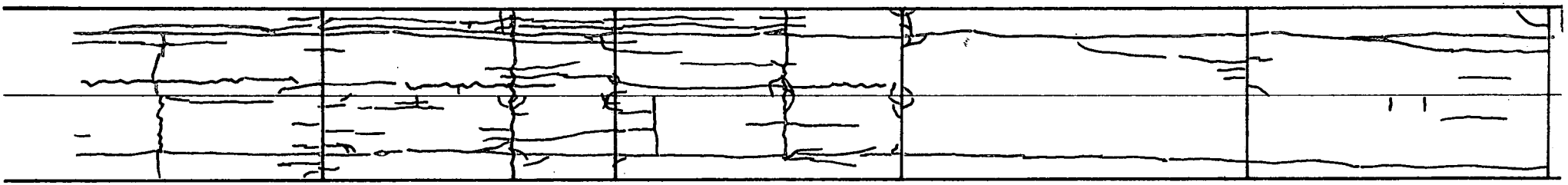
58



57 + 94

Section 15
(Fibrous)

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

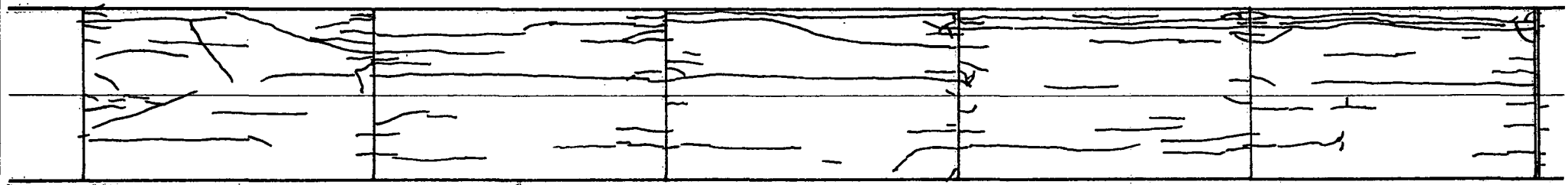


58

59

60





60

61

62

61 + 64

Transition

N

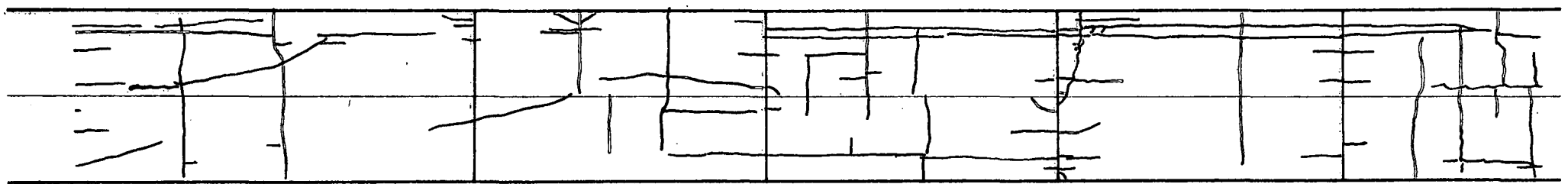
Expansion Joint

33

62 + 15

Section 16
(Fibrous)

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

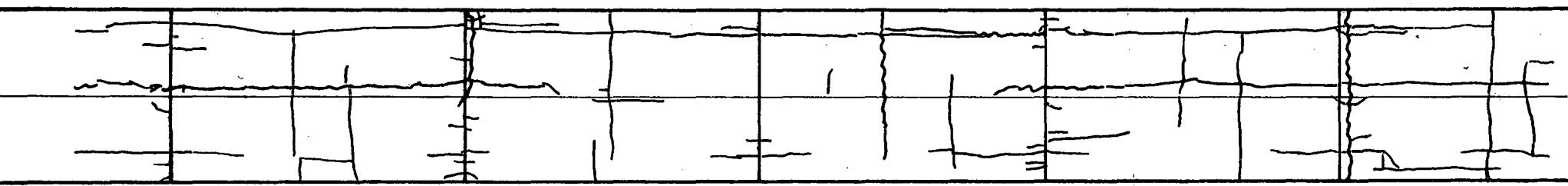


62

63

64





64

65

66

65 + 72

Transition

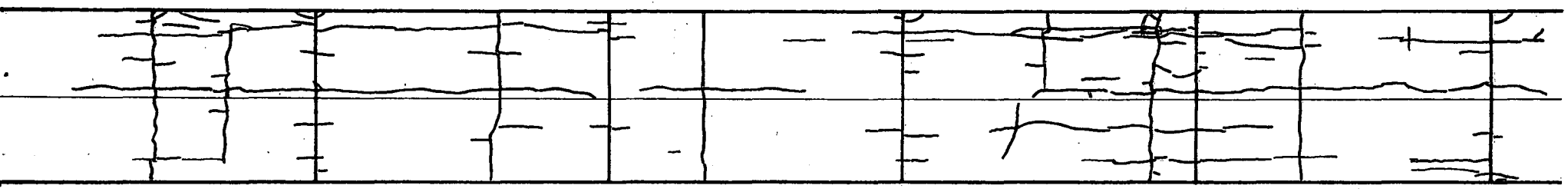




66 + 35

Section 17
(Fibrous)

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

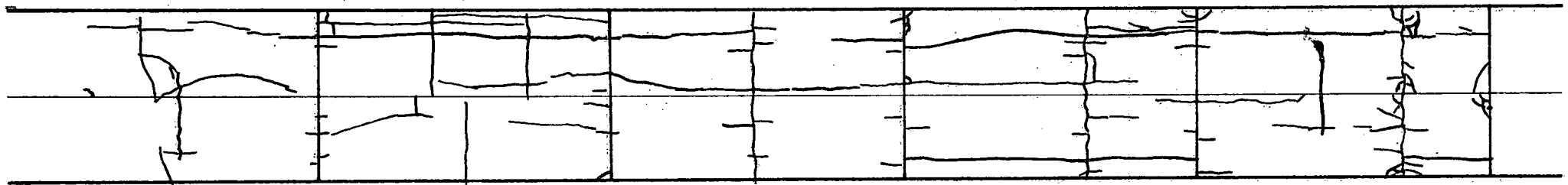


66

67

68





68

69

70

N

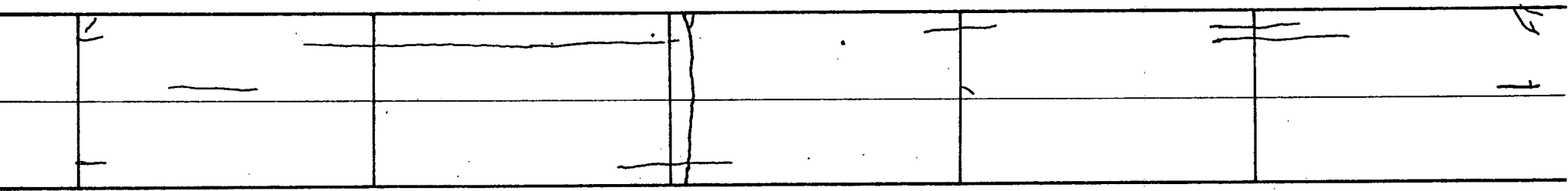
Section 18
(Fibrous)

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

70

71

72



72

73

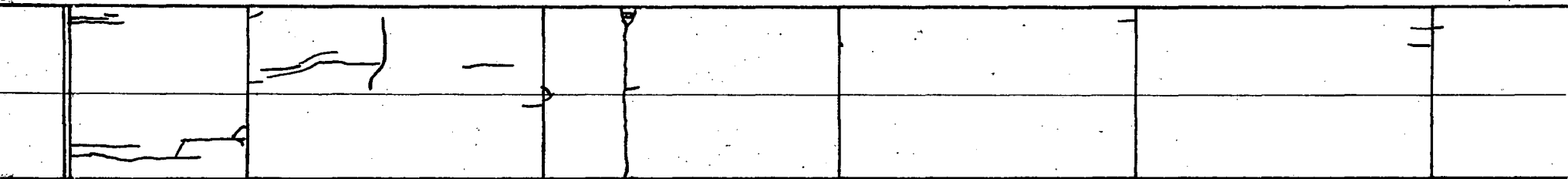
74



74 + 00

Section 19
(Fibrous)

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



74

75

76



76

77

78

77 + 44

77 + 84

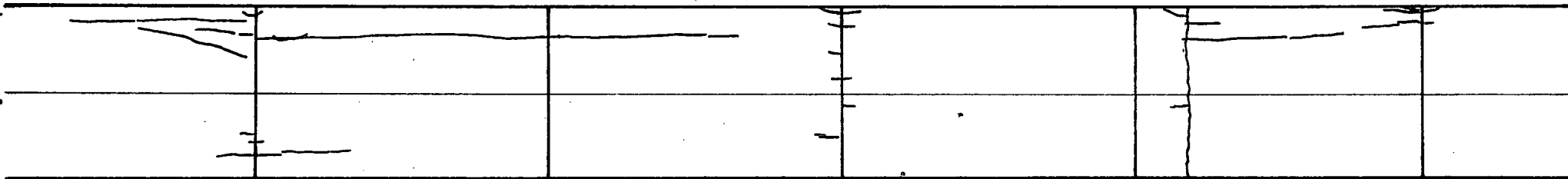
Transition

N



Section 20
(Fibrous)

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



78

79

80



80

81

82

81 + 44

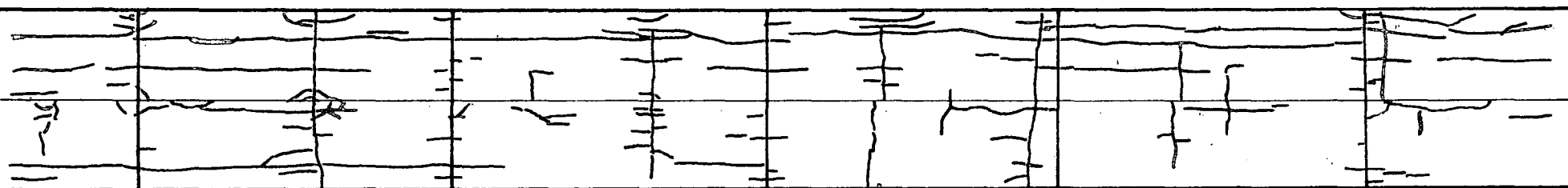
Transition

N

82 + 10

Section 21
(Fibrous)

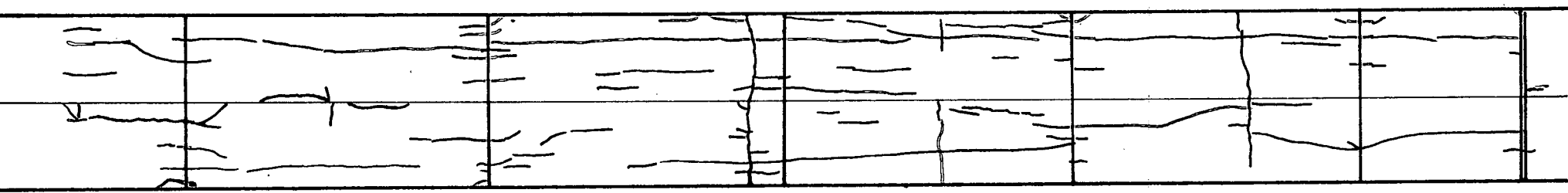
Bond - Bonded
Cement - 750 lb.
Fiber - 2 1/2", 100 lb.
Thickness - 3"



82

83

84



84

85

86

85 + 76

Transition

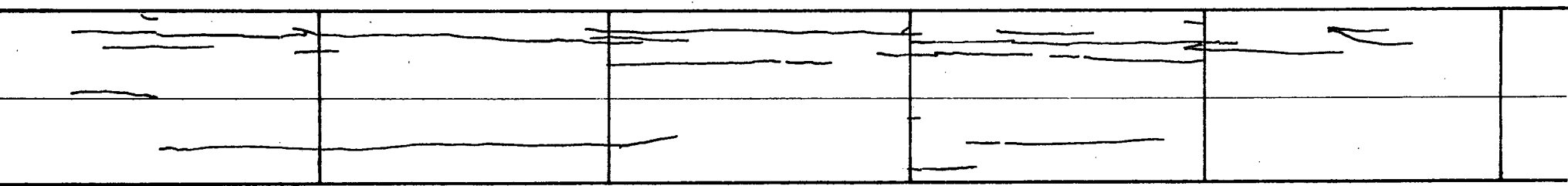
N



86 + 15

Section 22
(Fibrous)

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



86

87

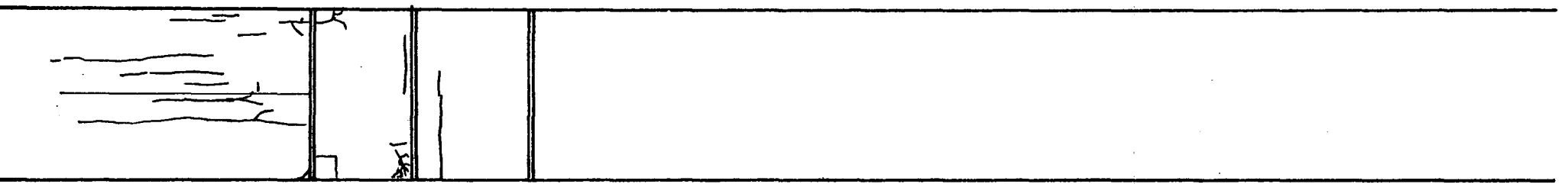
88



88 + 64



BRIDGE



88

89

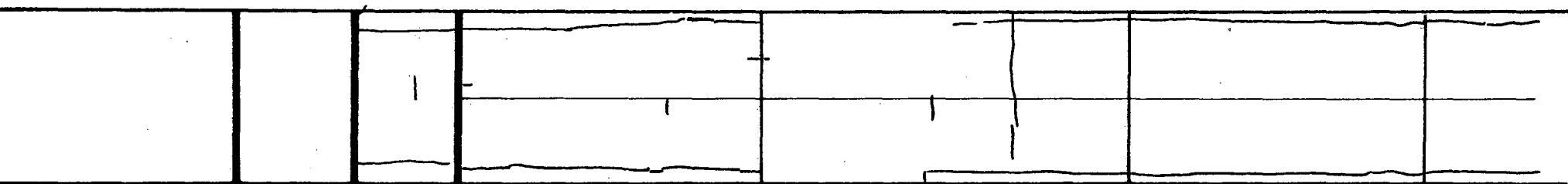
90



90 + 54

Section 24
(Fibrous Curb Section)

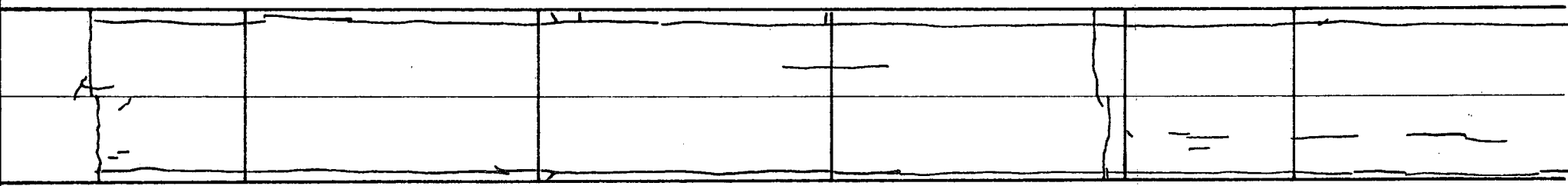
Bond - Partial
Cement - 600 lb.
Fiber - 1", 100 lb.
Thickness - 3"



90

91

92



92

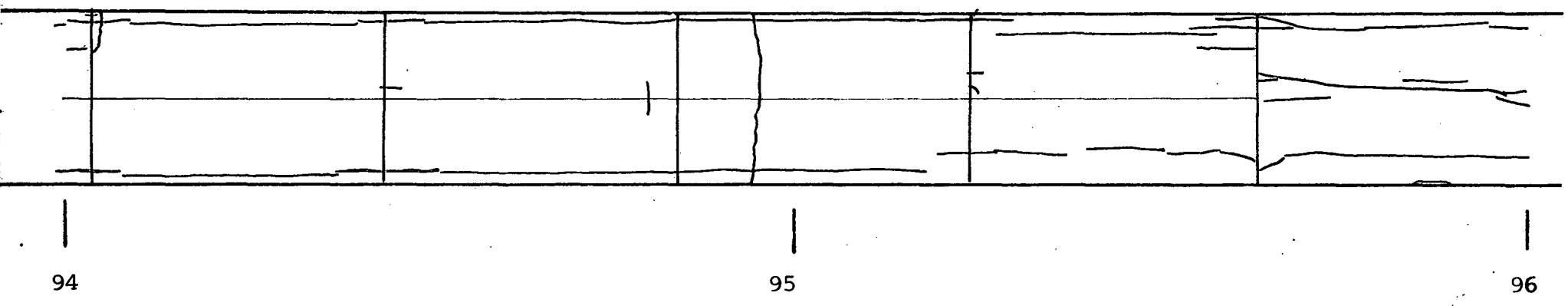
93

94

92

93

94



95 + 63

Transition

95 + 85



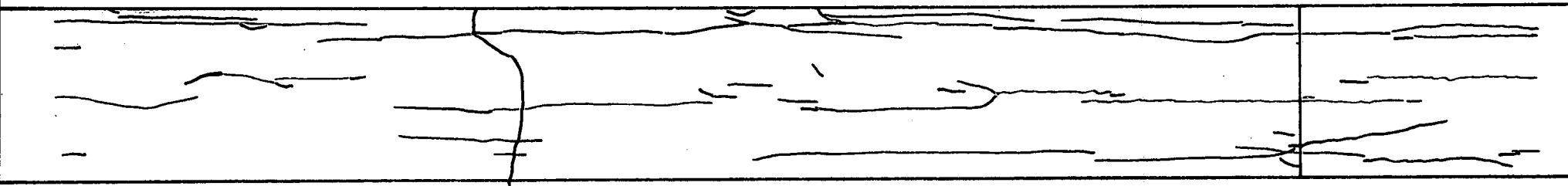
94

95

96

Section 25
(Fibrous)

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



96

97

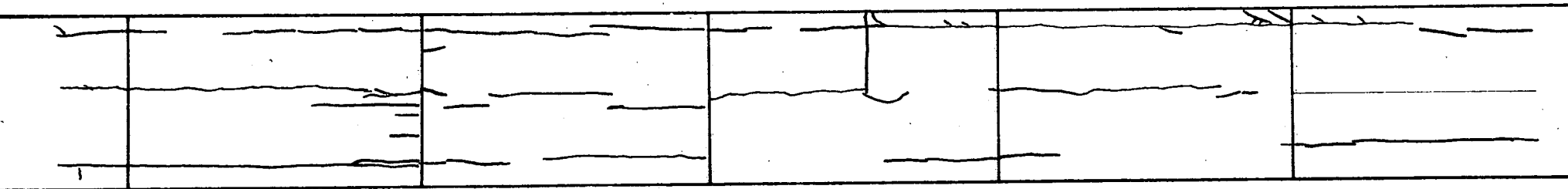
98

N



99 + 66

Transition



98

99

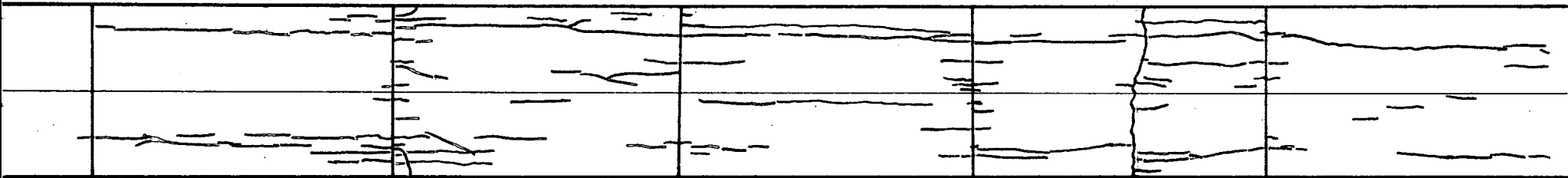
100

100 + 43

Section 26
(Fibrous)

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

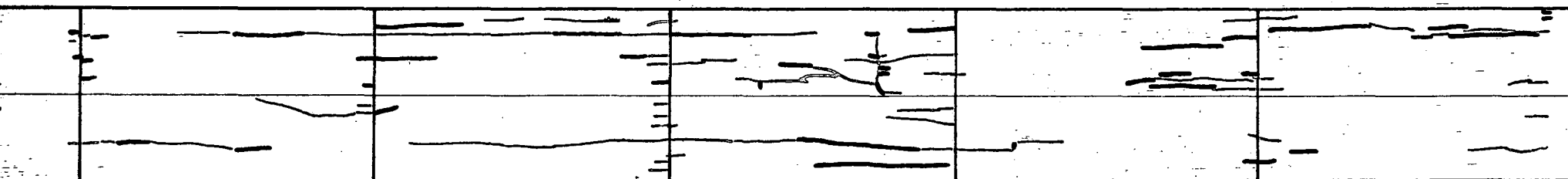
N



100

101

102



102

103

104



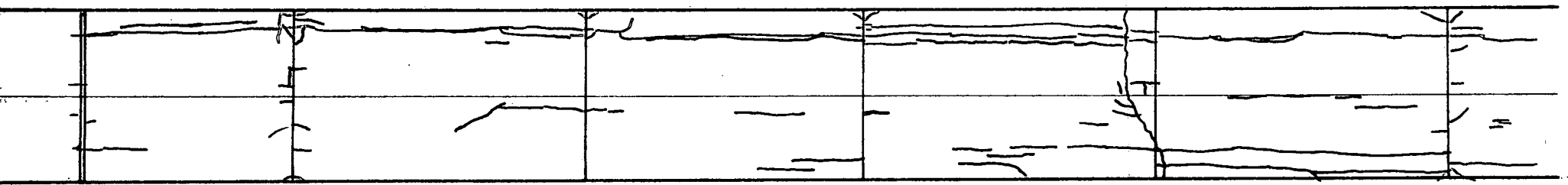
104 + 00

104 + 32

Transition

Section 27
(Fibrous)

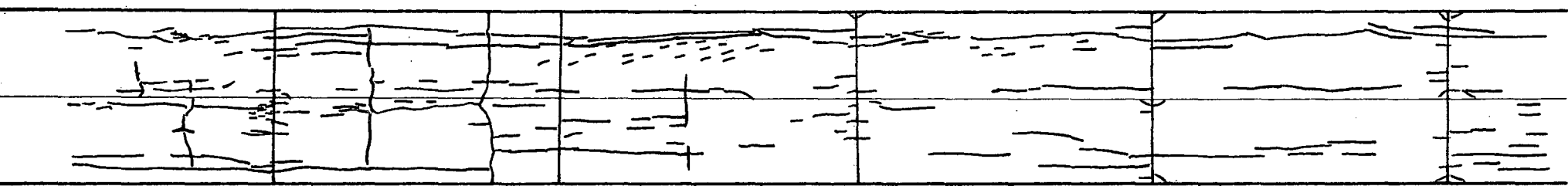
Bond - Partial
 Cement - 600 lb.
 Fiber - 1", 100 lb.
 Thickness - 2"



104

105

106



106

107

108

107 + 46

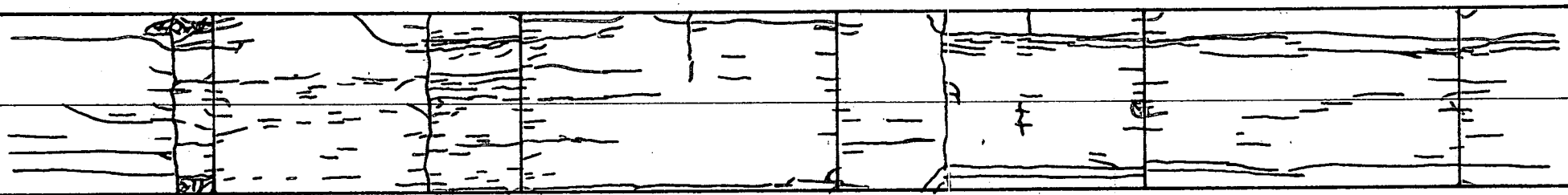
107 + 83

Transition



Section 28
(Fibrous)

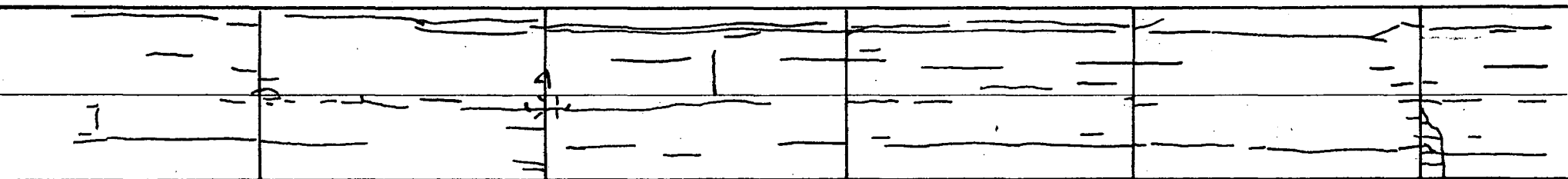
Bond - Partial
Cement - 750 lb.
Fiber - 1", 100 lb.
Thickness - 2"



108

109

110



110

111

112

111 + 85

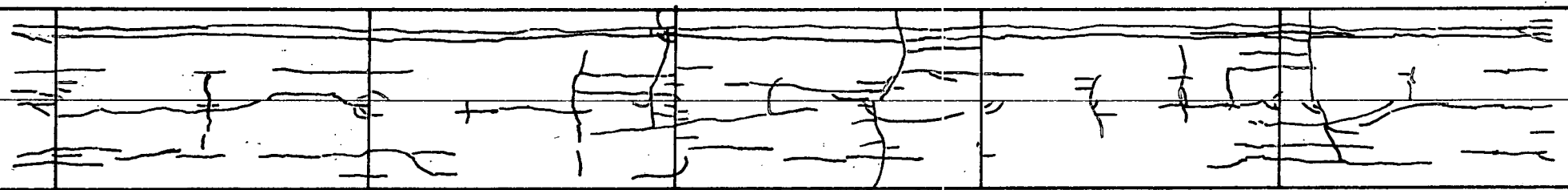
N

112 + 04

Section 29
(Fibrous)

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

N

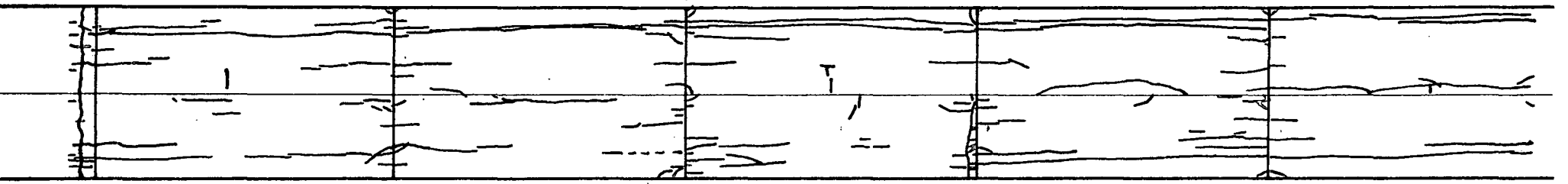


112

113

114

N



114

115

116

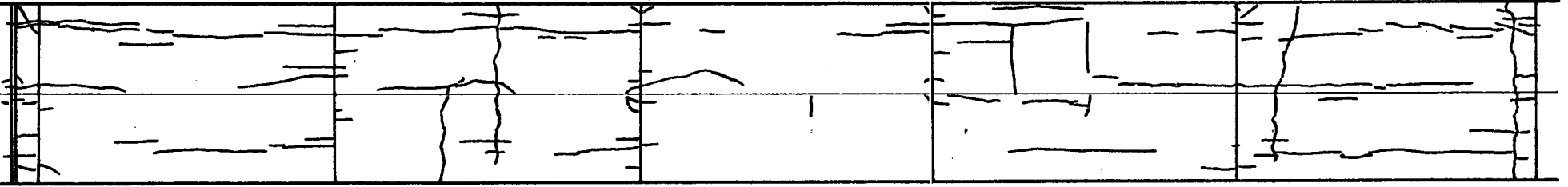


116 + 00

Section 30
(Fibrous)

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

N



116

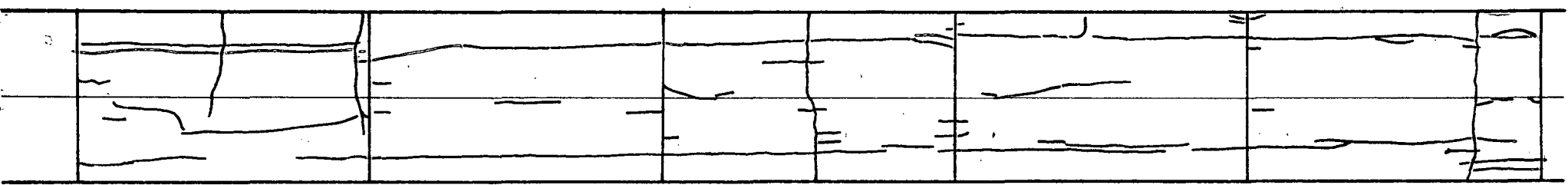
117

118



119 + 50

Transition



118

119

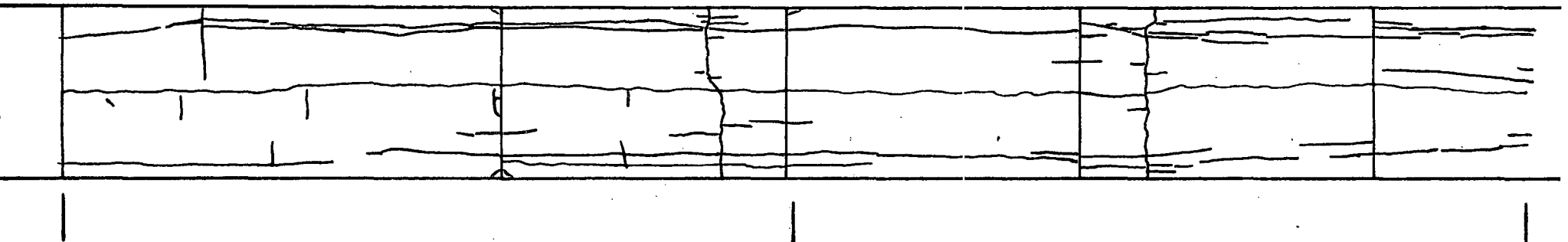
120



120 + 00

Section 31
(Fibrous)

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



120

121

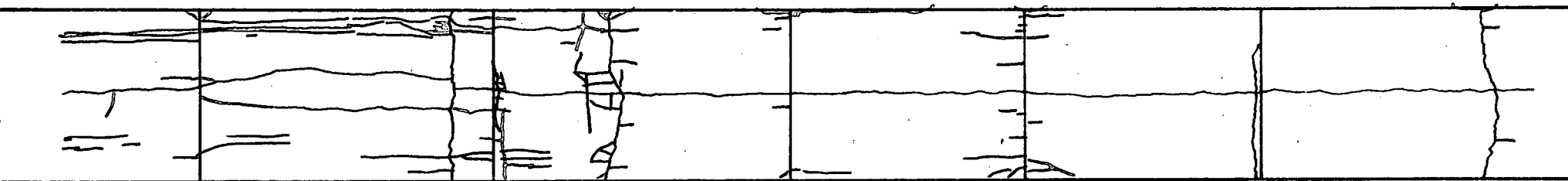
122



123 + 00

123 + 41

Transition



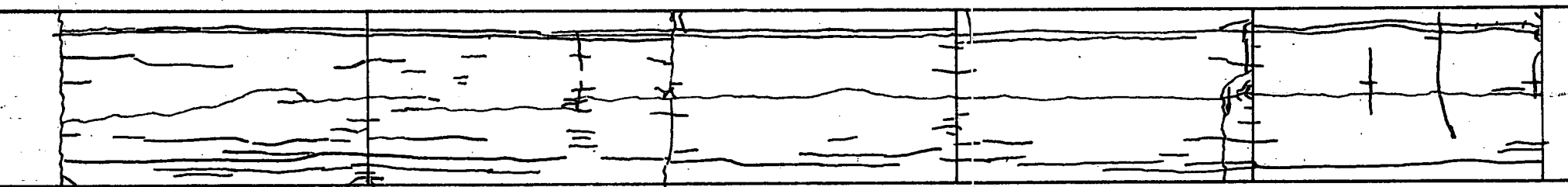
122

123

124

Section 32
(Fibrous)

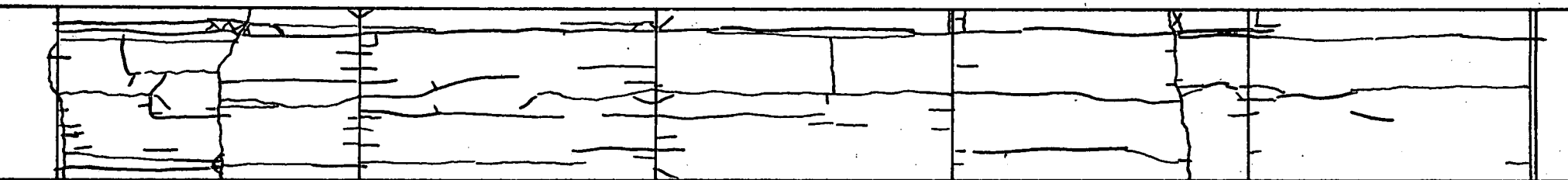
Bond - Partial
Cement - 750 lb.
Fiber - 1", 100 lb.
Thickness - 2"



124

125

126



126

127

128

127 + 58

Transition

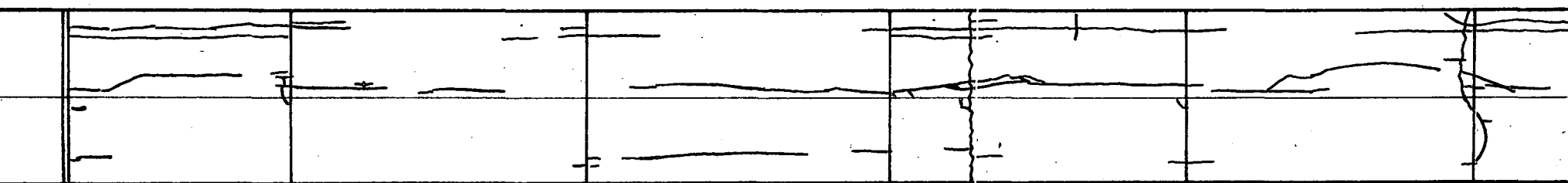


127 + 99

99

Section 33
(Fibrous)

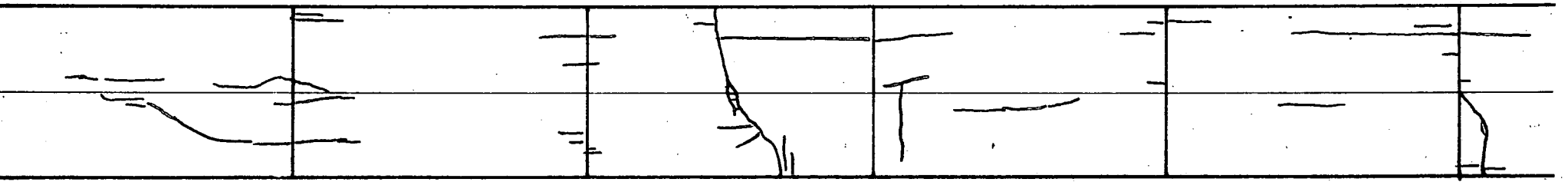
Bond - Partial
Cement - 600 lb.
Fiber - 1", 160 lb.
Thickness - 2"



128

129

130



130

131

132

N

131 + 89

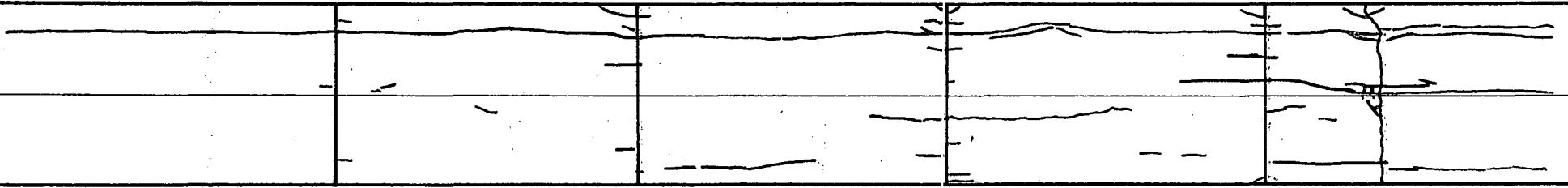
132 + 22

Transition

Section 34
(Fibrous)

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

N

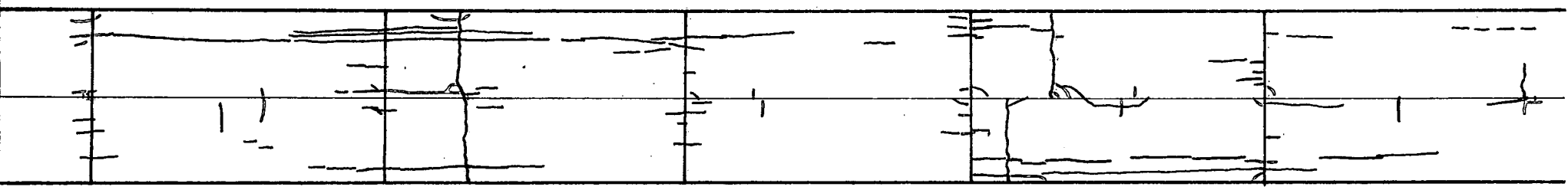
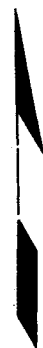


132

133

134

N



134

135

136



136 + 00

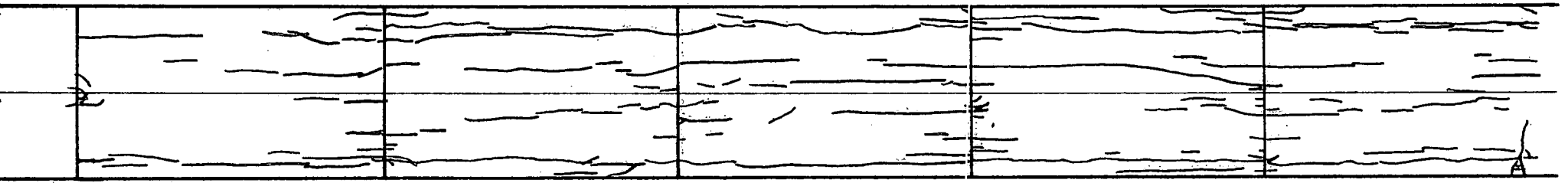
136 + 65

Transition

Section 35
(Fibrous)

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

N

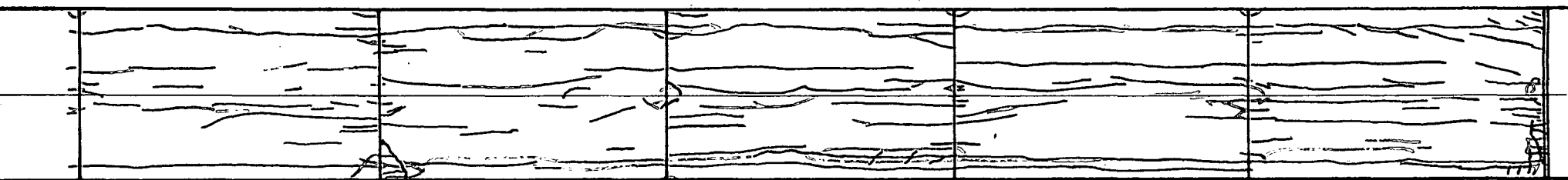


136

137

138

N



138

139

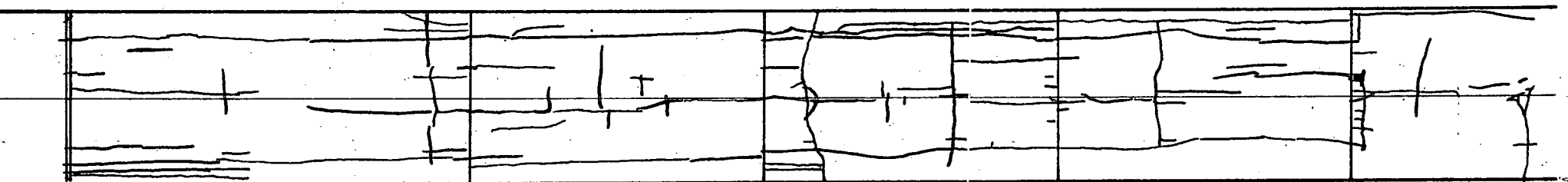
140

140 + 00

Section 36
(Fibrous)

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

N



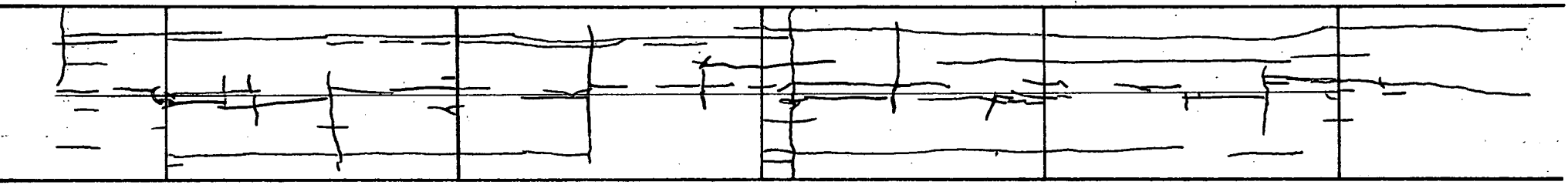
140

141

142



143 + '74



142

143

144

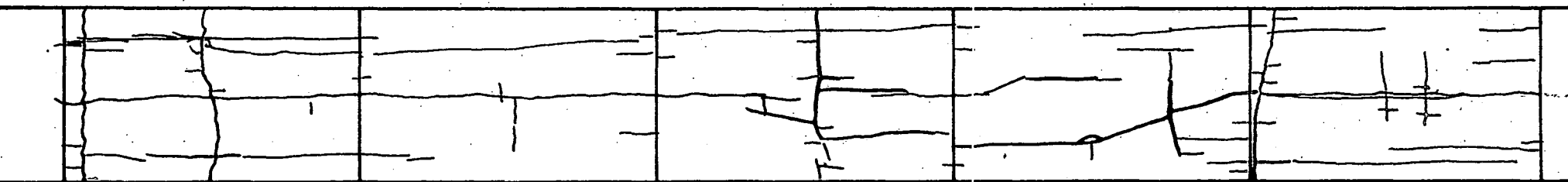


Transition

144 + 17

Section 37
(Fibrous)

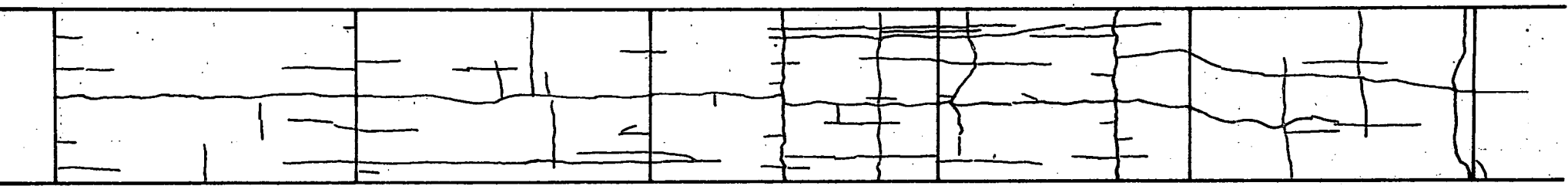
Bond - Partial
Cement - 600 lb.
Fiber - 2 1/2", 60 lb.
Thickness - 3"



144

145

146



146

147

148

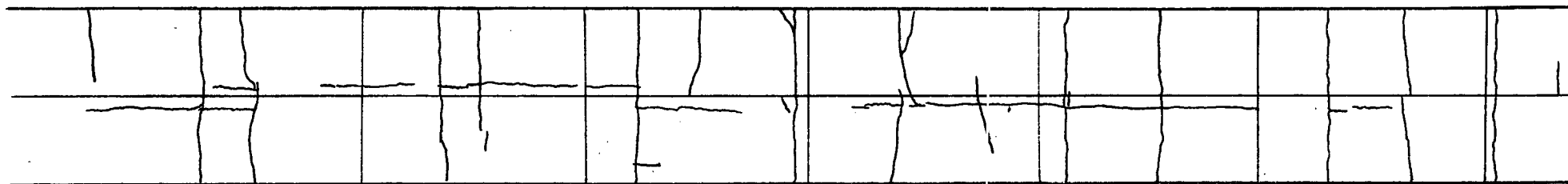
147 + 21

Transition



Section 38
(Mesh).

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

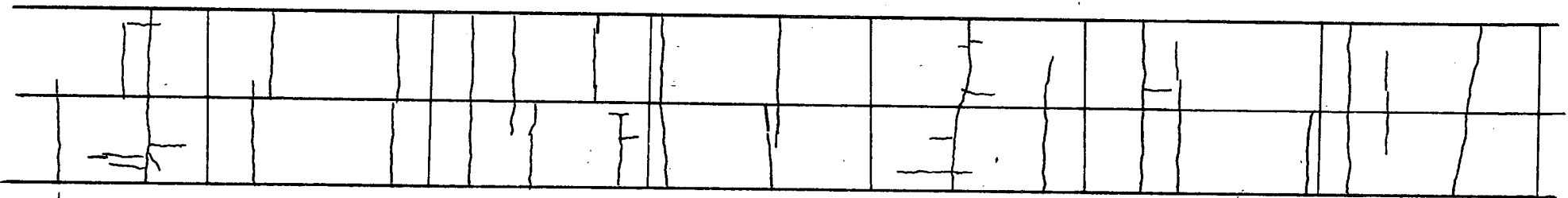


148

149

150

151 + 84
N



150

151

152

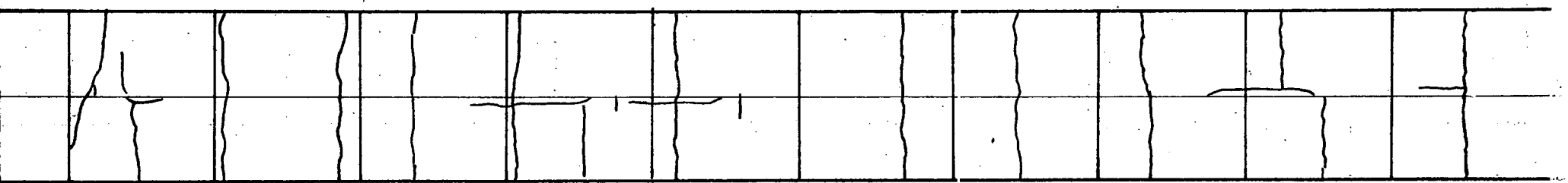


152 + 50

Section 39

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

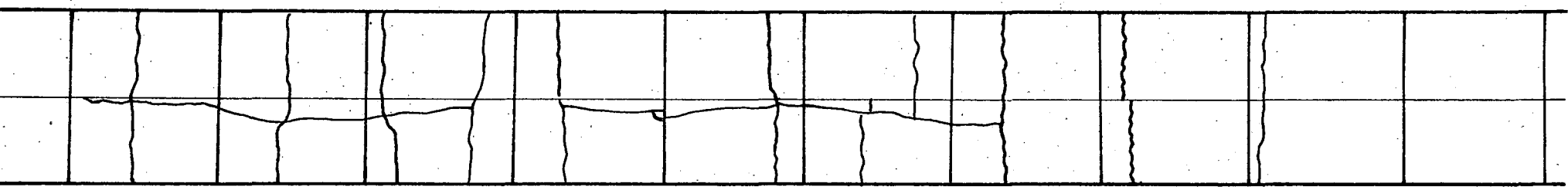
N



152

153

154



154

155

156

155 + 43

Transition

155 + 84

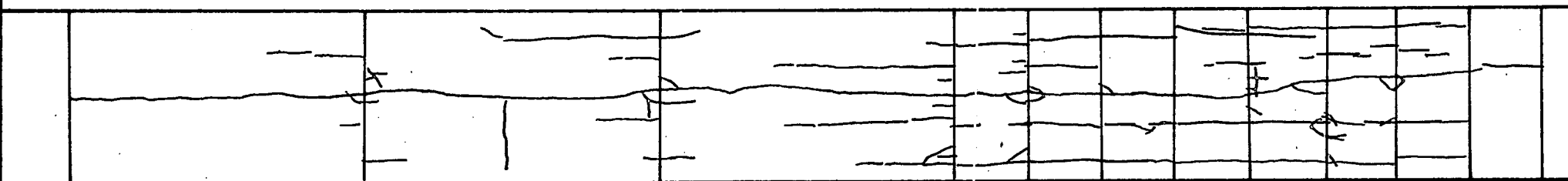


7

Section 40
(Fibrous)

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

N



156

157

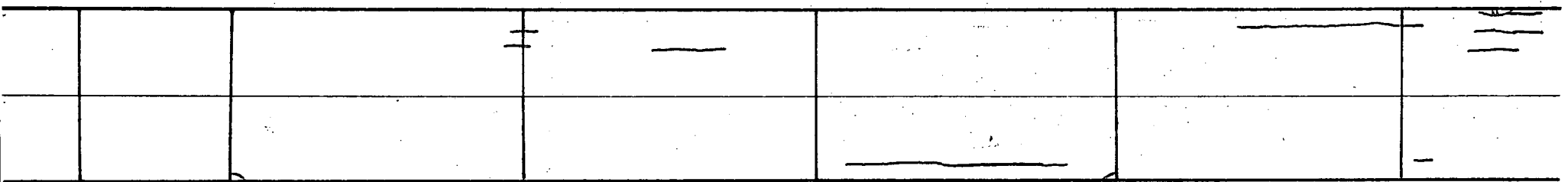
158



158 + 00

Section 40A
(Fibrous)

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



158

159

160



160 + 12



Old Pavement

160

End of Project