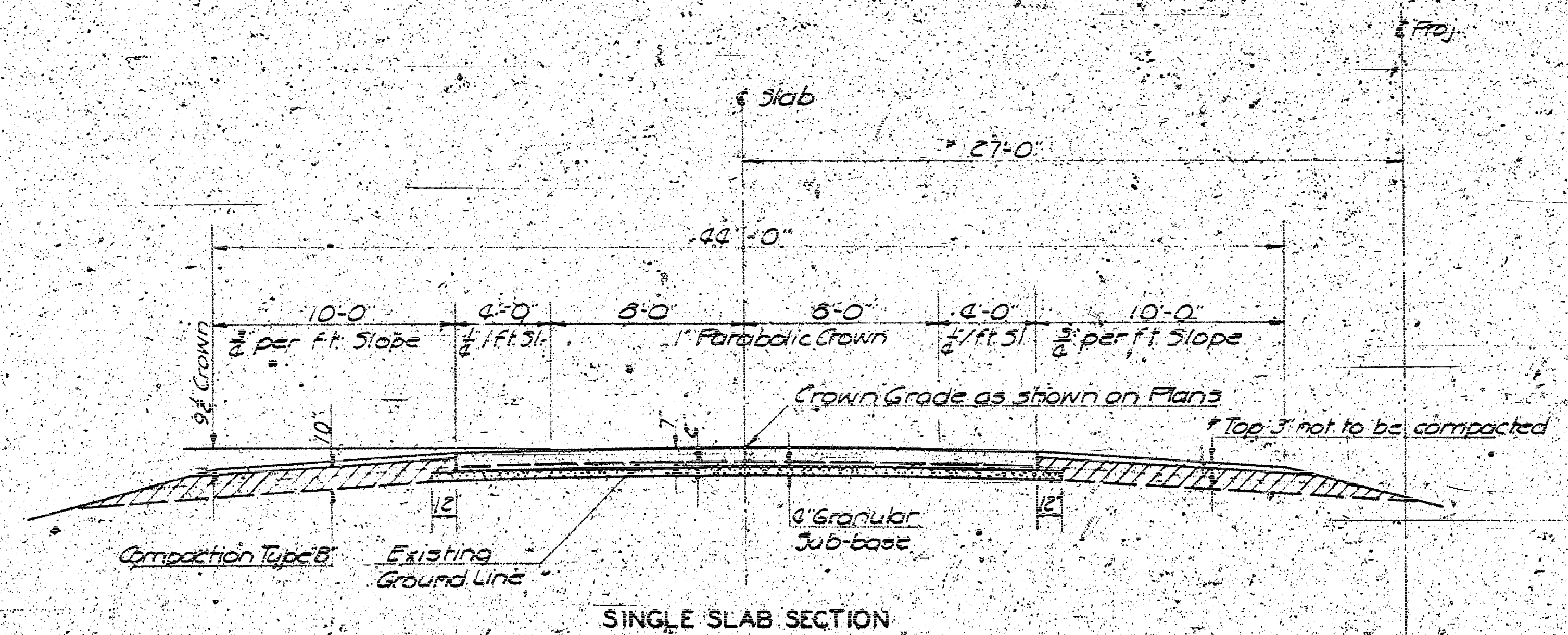
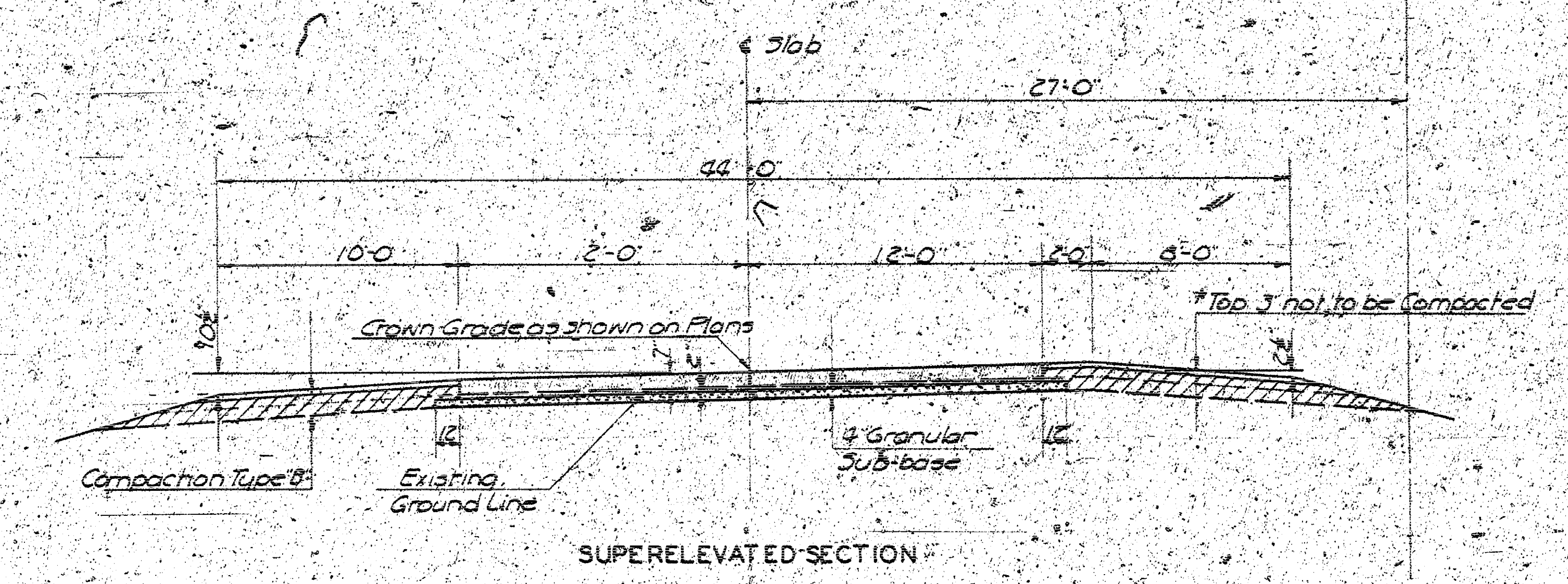




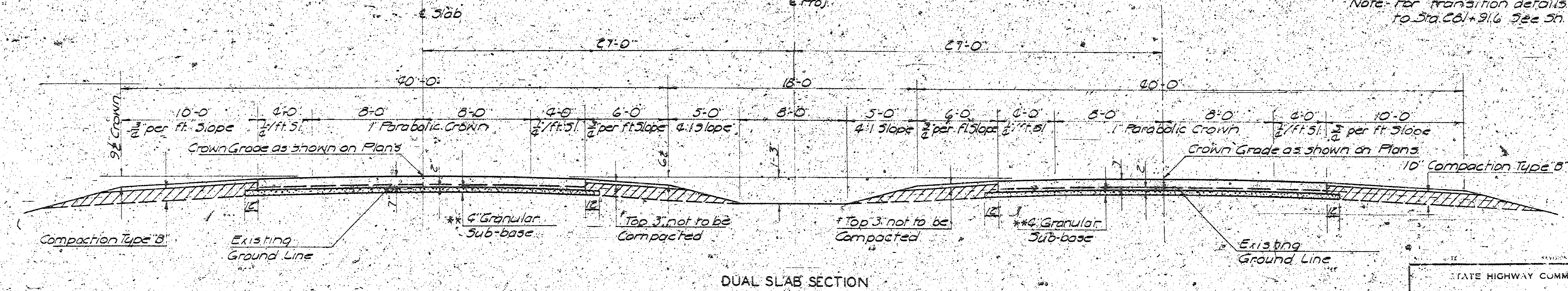
*Varies from 0' at Sta. 17+71.5
 to 27' at Sta. 29+40.



*The top 3" of shoulder material is
 to be obtained from shallow pits so that
 suitable seedbed material is secured
 for seeding.

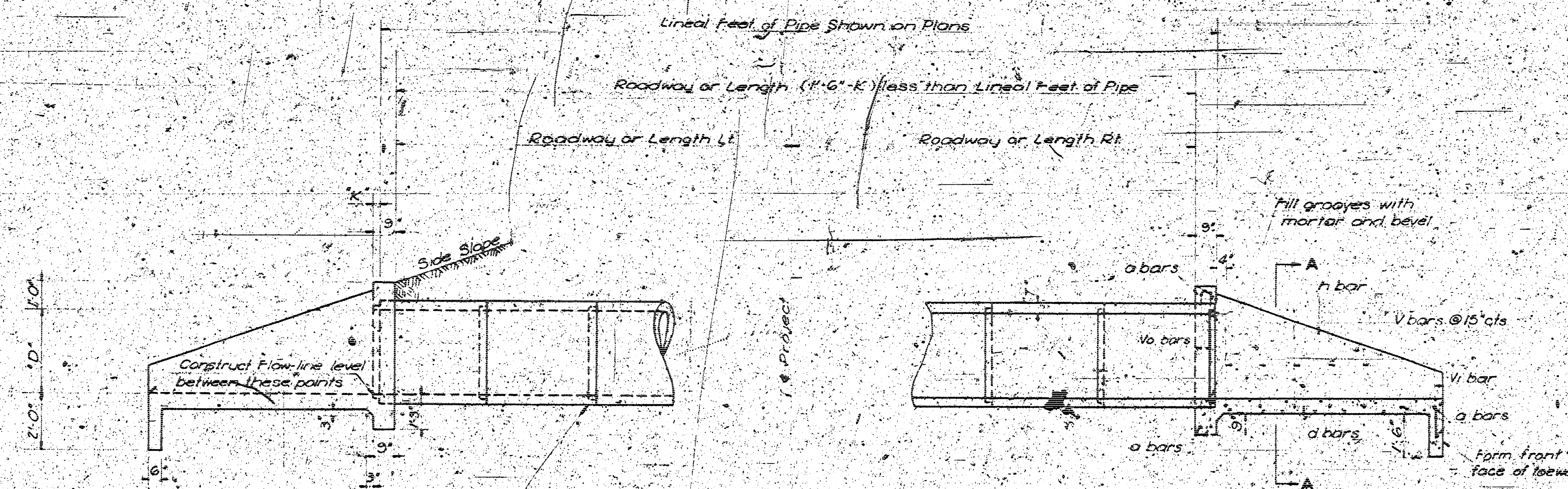
Note: The material excavated by
 paving contractor is to be used for
 pavement curing and shouldering.

Note: For transition details Sta. 270+30
 to Sta. 281+31.6 See Sht. No. 5.

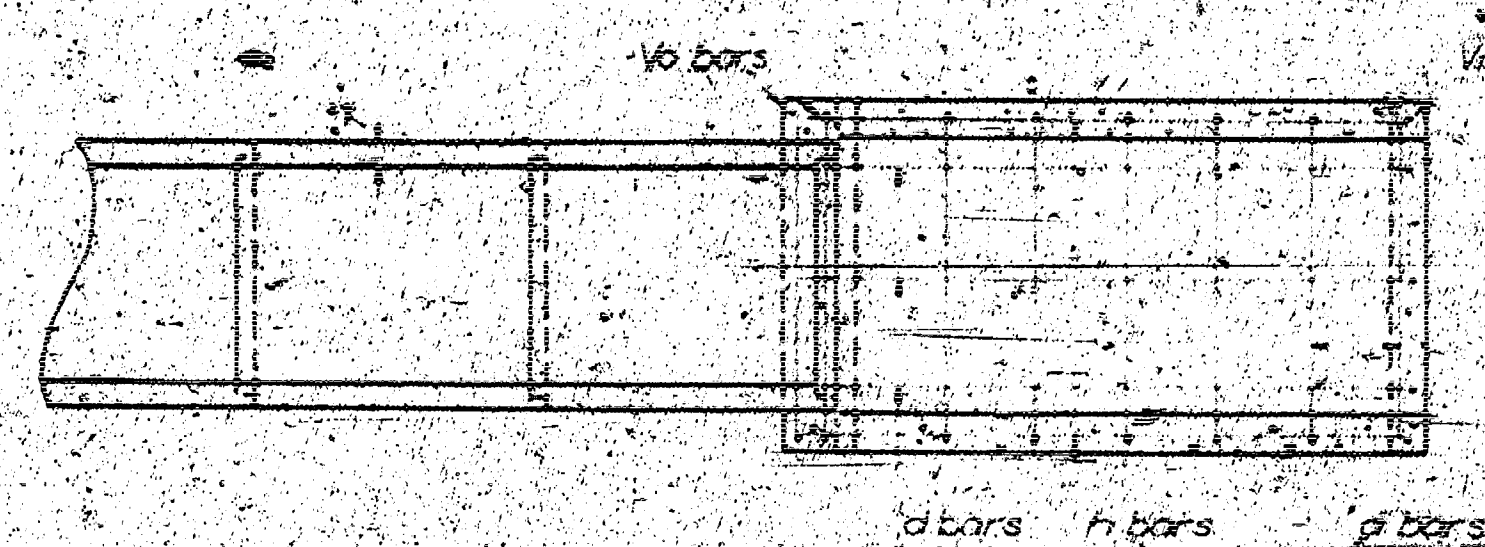
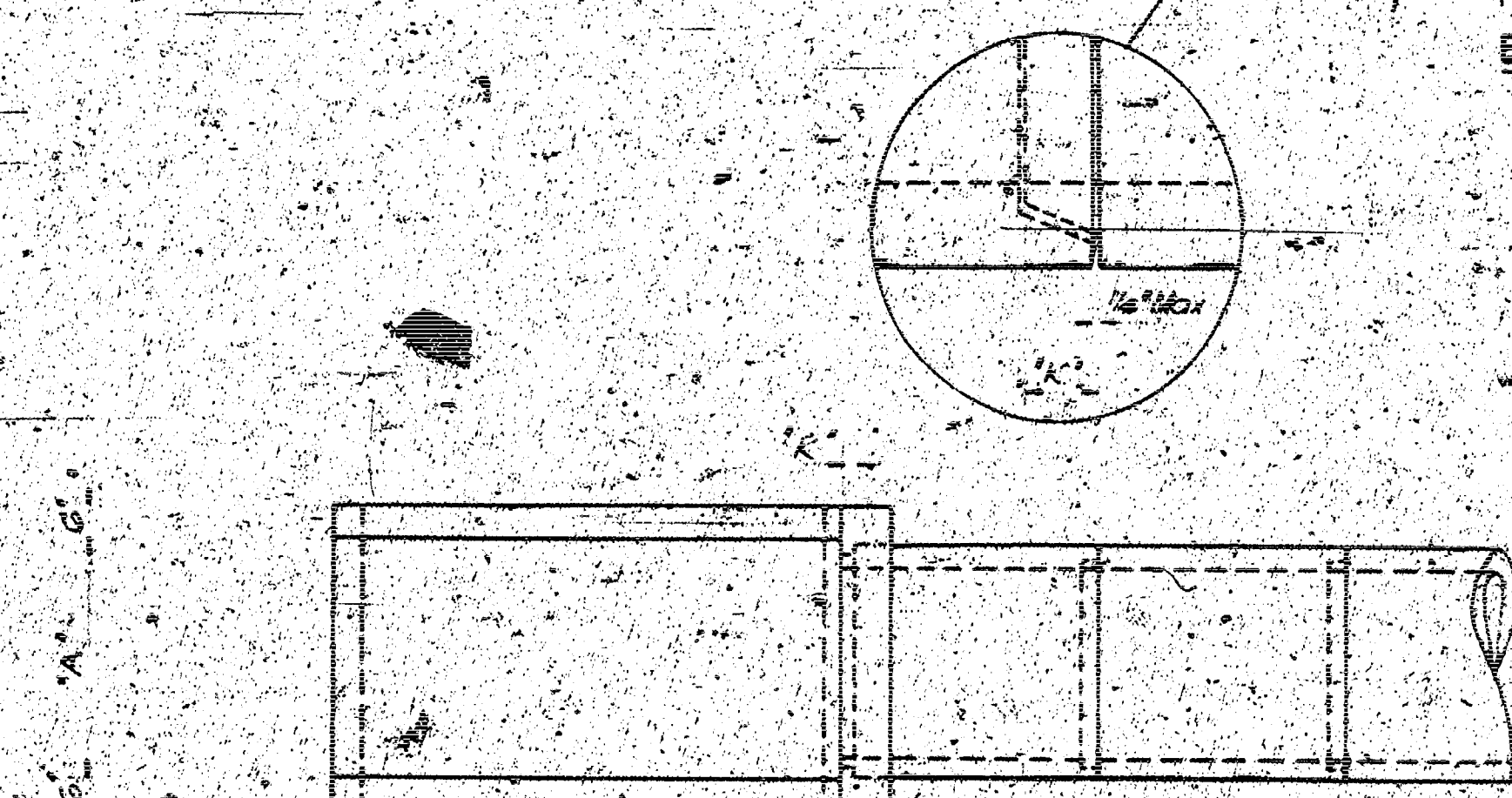


**Note: Granular sub-base not
 required from Sta. 331+00 to
 Sta. 399+330.

STATE HIGHWAY COMMISSION OF KANSAS
TYPICAL SECTIONS
 SHEET NO. 15
 DESIGNED BY N.L.A.
 CHECKED BY N.L.A.
 APP'D. BY N.L.A.
 QUANTITY BY N.L.A.
 TRACED BY N.L.A.
 SCALE 1" = 10'



SECTION A-A



PLAN AND SECTION

LIST OF BARS, DIMENSIONS AND QUANTITIES

TWO HEADVALS FOR 30" PIPE						TWO HEADVALS FOR 30" PIPE					
Letter	A	B	D	K	T	Letter	A	B	D	K	T
Dimension	2'6"	5'5"	20'	3"	3"	Dimension	3'0"	6'3"	23'	5 1/2"	3 1/2"
Bar	O	d	h	V	Vo	Bar	O	d	h	V	Vo
Number	16	4	8	4	8	Number	16	4	8	4	8
Length	3'9"	6'11"	5'11"	4'0"	2'0"	Length	3'9"	8'5"	7'6"	5'6"	2'0"
Class	A Concrete	2.4 Cu Yds				Class	A Concrete	3.4 Cu Yds			
Reinforcing Steel	120 Lbs					Reinforcing Steel	160 Lbs				

TWO HEADVALS FOR 36" PIPE						TWO HEADVALS FOR 42" PIPE					
Letter	A	B	D	K	T	Letter	A	B	D	K	T
Dimension	3'9"	8'3"	3'0"	3 1/4"	4"	Dimension	4'3"	9'9"	3'6"	3 3/4"	4 1/2"
Bar	O	d	h	V	Vo	Bar	O	d	h	V	Vo
Number	16	6	8	10	8	Number	16	6	8	12	8
Length	3'9"	9'11"	3'2"	5'0"	2'0"	Length	5'0"	11'5"	10'8"	5'6"	2'0"
Class	A Concrete	6.6 Cu Yds				Class	A Concrete	5.8 Cu Yds			
Reinforcing Steel	210 Lbs					Reinforcing Steel	250 Lbs				

GENERAL NOTES

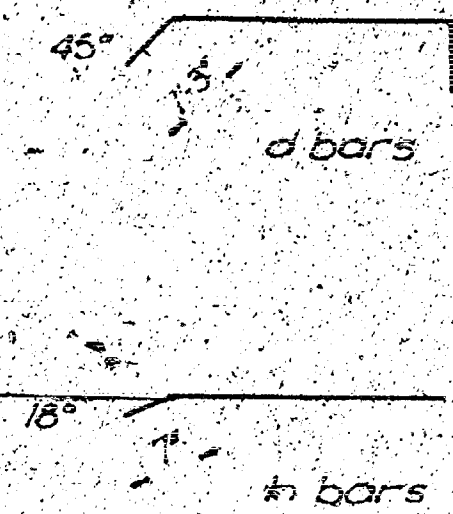
GENERAL NOTES
LOADING: H20-44, AASHTO Specifications, 1943 Edition.
UNIT STRESSES: $f_c = 3000 \text{ psi}$, $f_t = 1000 \text{ psi}$, $f_s = 20,000 \text{ psi}$.
CLASS A Concrete shall be used throughout. Bevel
all exposed edges with a $\frac{3}{4}$ " triangular mauling.
No deductions shall be made for pipe openings.
All reinforcing shall be billet steel, intermediate
grade. All dimensions are to center-line of
bars, unless otherwise noted.

NOTE: ALL REINFORCING BARS ARE 1/2" Ø

[illegible]

2" 10' 24" Pipe
3" 4' 30" Pipe
3" 9' 36" Pipe
4" 3' 48" Pipe

Decrease this
Dimension by
5" decr from above length
Cut 2 each length
- V bars -



BENDING DIAGRAMS

NO.	DATE	REVISIONS	BY	APP.
1	6-28-50	Revised Roadway & Length	JHB	EAR

STATE HIGHWAY COMMISSION OF KANSAS

CONCRETE HEADWALLS
FOR
PIPE CULVERTS

STD. NO. 300.1

SHEET NO. 1	OF 1	SCALE 1/8" = 1'	APPROVED <i>[Signature]</i>	
DESIGNED JMB	DETAILED JMB	QUANTITIES JMB	TRACED JF	
DESIGN CK JML	DETAIL CK JML	QUAN CK JML	TRACE CK JMB	

SIX'S CULVERTS

Letter	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Dimension	6'-0"	7'-0"	7'-6"	8'-0"	8'-6"	9'-0"	9'-6"	10'-0"	10'-6"	11'-0"	11'-6"	12'-0"	12'-6"	13'-0"	13'-6"	14'-0"	14'-6"	15'-0"	15'-6"	16'-0"	16'-6"	17'-0"	17'-6"	18'-0"	18'-6"	19'-0"
Bar	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
dia	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4
Length	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"

d bars

Hooked a 6" v bar

Use hooked a bars only on 6" & 9" spalls and under specified in design table.

Use hooked v bars only on 9" & 6" spalls and under design fills of 10'-0" or more.

2 bars
the

Increase this dimension by 6" increments from length shown above. Cut 2 bars each length.

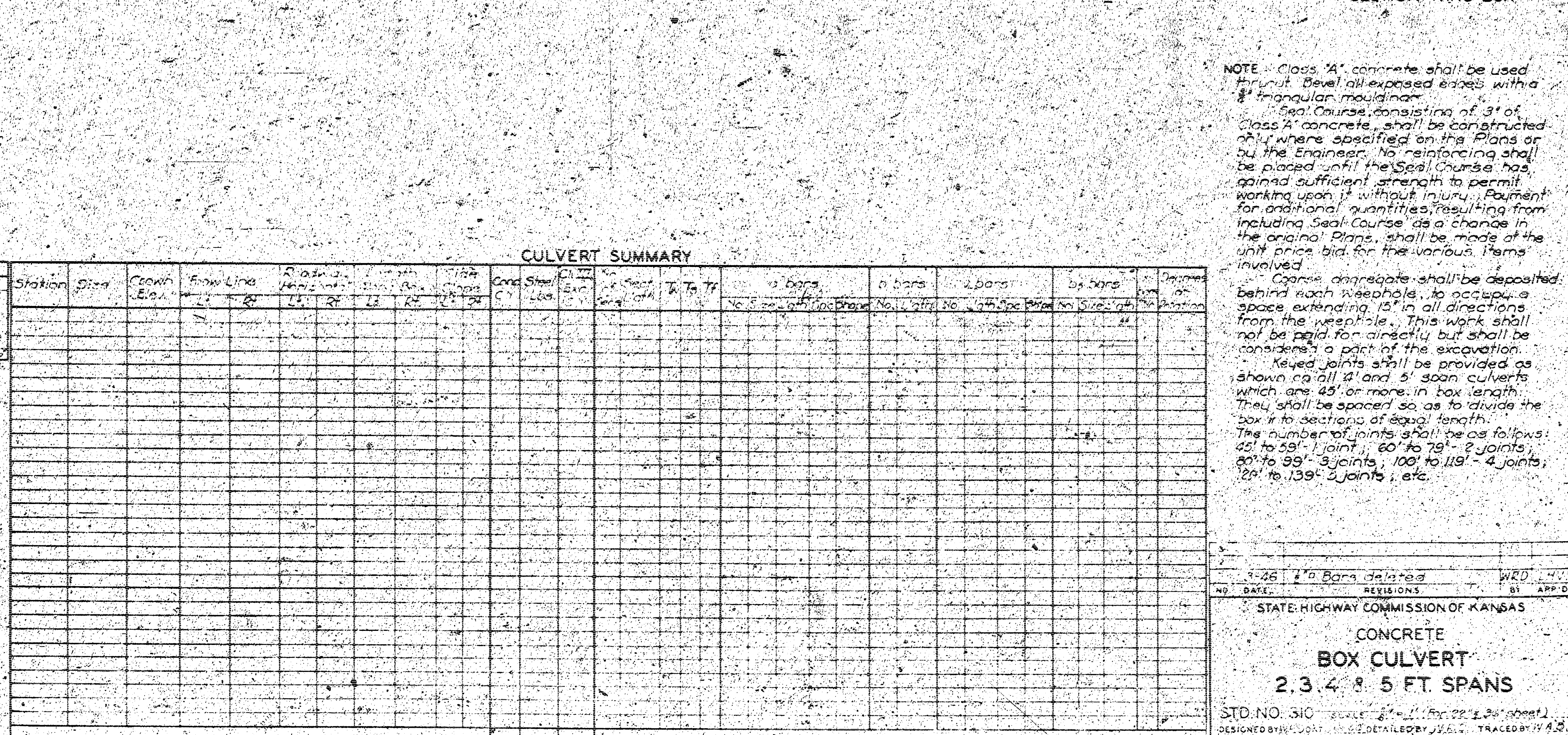
2 bars
the
2 bars
the
2 bars
the
2 bars
the

b bars

2 bars
the
2 bars
the
2 bars
the
2 bars
the

b bars

BENDING DIAGRAMS



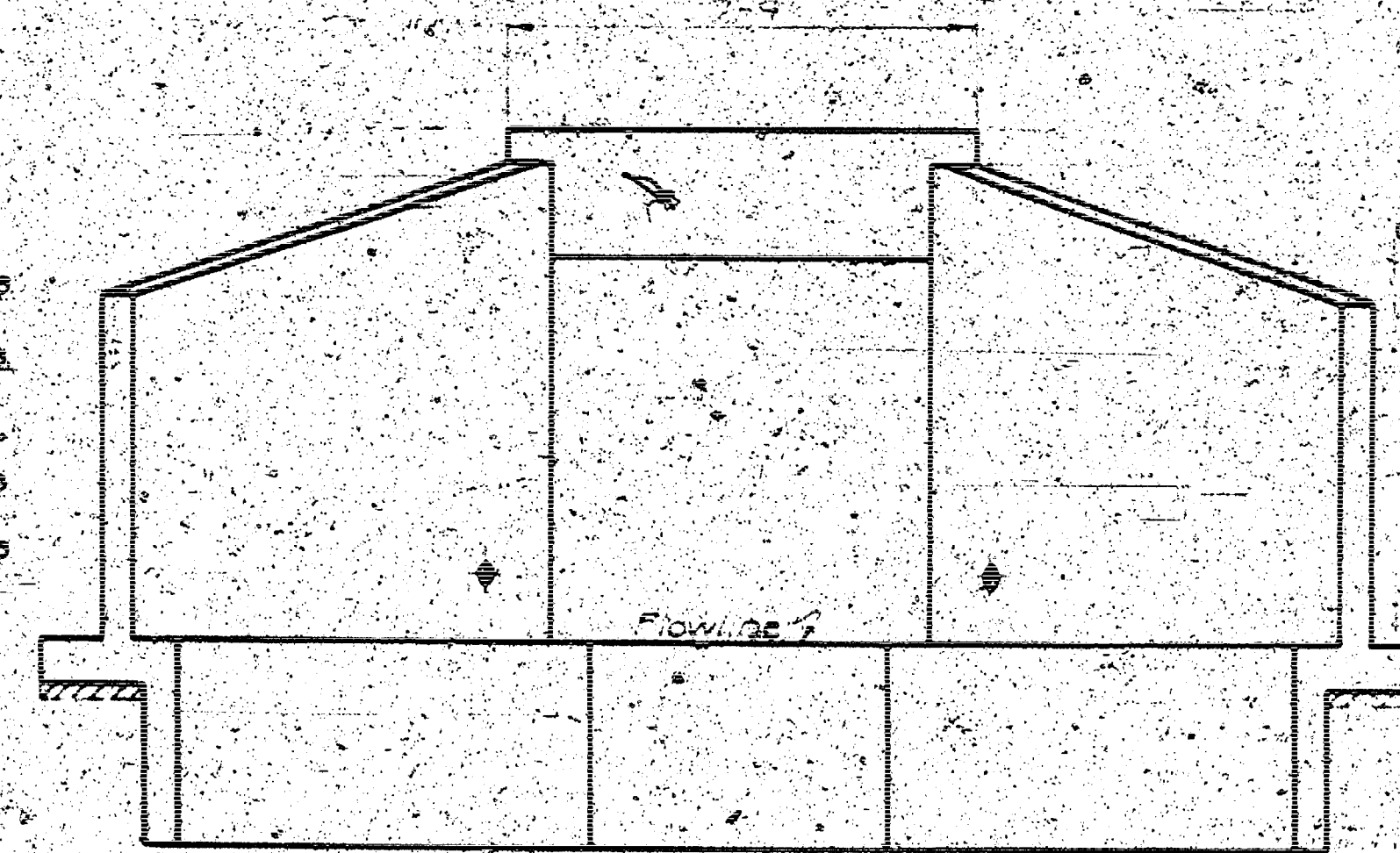
NOTE: Class 4 concrete shall be used throughout. All exposed faces, with a 3" triangular moulding.

Seal Course, consisting of 3' of Class 4 concrete, shall be constructed at the same time as the concrete by the Engineer. No reinforcing shall be placed until the Seal Course has gained sufficient strength to permit working upon it. Seal Course shall be placed in quantity sufficient from including Seal Course as a chance in the original Plans, shall be made of the unit price bid for the various items involved.

Concrete aggregate shall be deposited behind each wheelbarrow, to occupy a space extending 15' in all directions from the wheelbarrow. This work shall not be considered a part of the excavation.

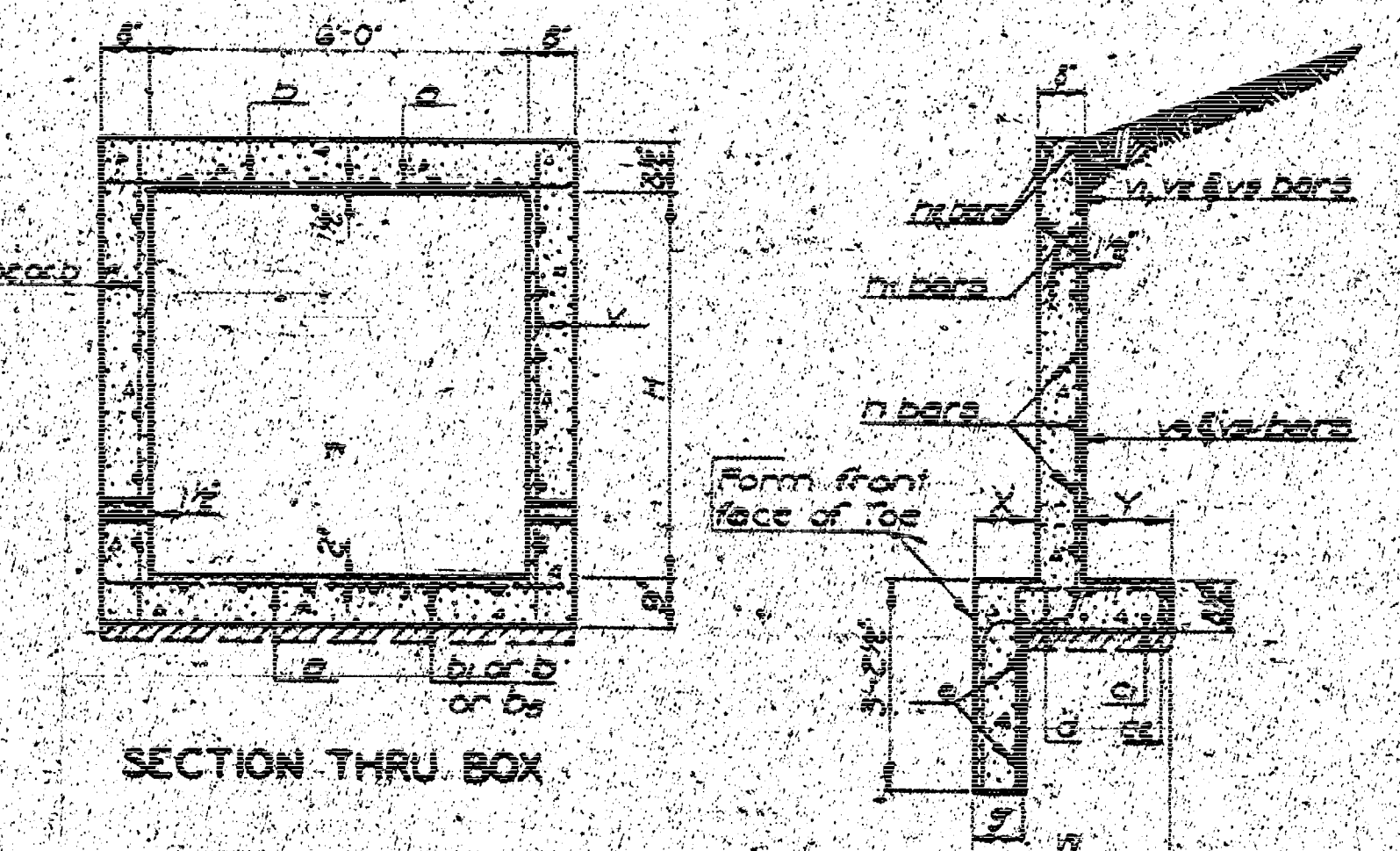
Keyed joints shall be provided as shown on all 12" and 6" span culverts where the depth of the box length is 12' or more. The joints shall be spaced so as to divide the box into sections of equal length. The number of joints shall be as follows: 25' to 30' 1 joint, 30' to 35' 2 joints, 35' to 40' 3 joints, 40' to 45' 4 joints, 45' to 50' 5 joints, etc.

3-26 20 Bars Delivered WRD
NO. DATE REVISIONS 81 APP'D
STATE: HIGHWAY COMMISSION OF KANSAS
CONCRETE
BOX CULVERT
2.3.4 8 5 FT. SPANS
STD. NO. 310
DESIGNED BY: DATE: CHECKED BY: DATE: TRACED BY: DATE:
CHECKED BY: DATE: TRACED BY: DATE:



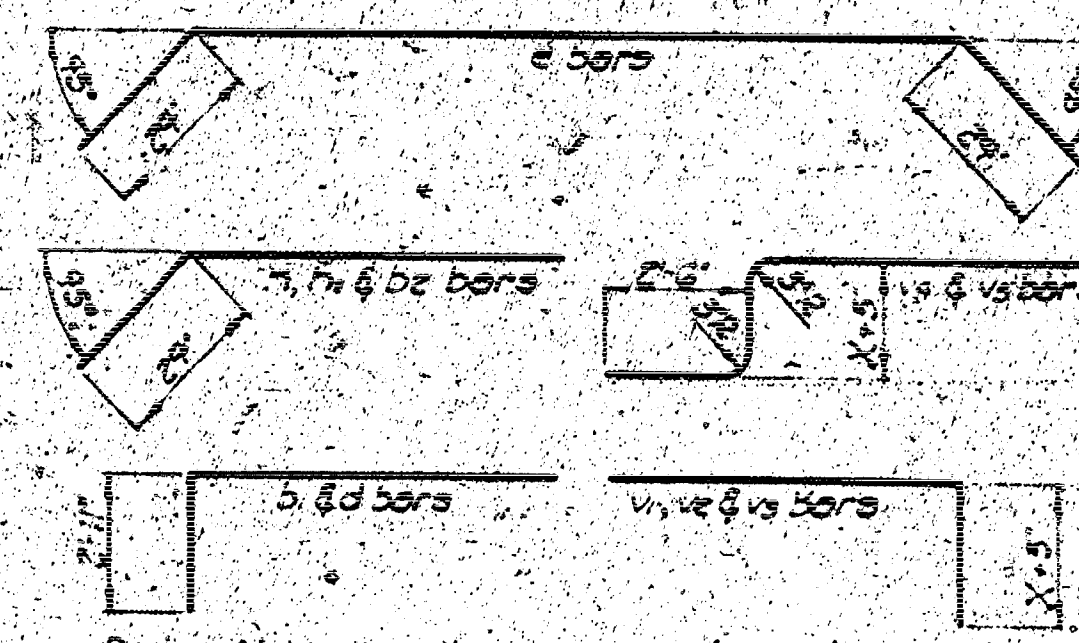
ELEVATION AND SECTION

END ELEVATION



SECTION THRU BOX

SECTION THRU WING



SECTION THRU APRON

NOTE: Keyed joints to be provided as shown and all curves to be 15' or more in length and to be as specified as to divide the box into sections of the length the number of joints to be used shall be as follows:

45' to 55'	1 joint
60' to 70'	2 joints
80' to 90'	3 joints
100' to 110'	4 joints
120' to 130'	5 joints

Maximum height of fill for
this design - 13'-0"

NOTE: Class A Concrete to be used thruout. Bevel all exposed edges in a dry random mending.

Base Course consisting of 4" or Class A Concrete to be constructed only where specified on the Plans or by the Engineer. No reinforcing shall be placed until Seal Course has gained sufficient strength to permit working upon it without raveling.

Drainage Apron to be constructed only between downstream wings in locations subject to scour where specified on the Plans or by the Engineer.

Payment for additional quantities resulting from including Seal Course and Apron, see changes in original Plans, shall be made of unit price bid for various items involved.

Wire reinforcing mesh shall be of the electrically welded square mesh type and shall be composed of No. 10 gauge steel wire spaced at 6" centers each way.

[illegible][illegible]

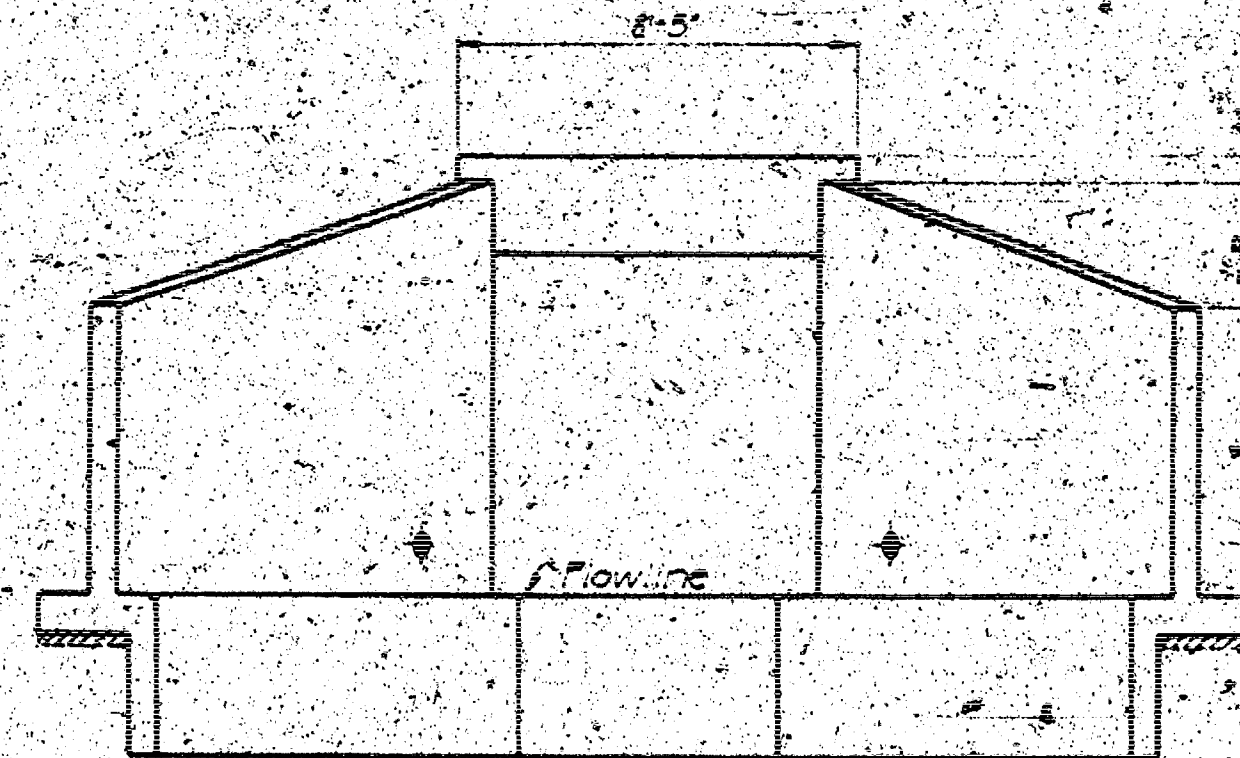
3	3-89	Revise Max. fill height. (WRD)	WAR	GOM
2	4-96	1-2 bars deleted	WRD	LHV
1	4-96	Notations & Revisions (WRD)	WAR	LHV
NO.	DATE	REVISIONS	BY	APP'D

STATE HIGHWAY COMMISSION OF KANSAS

CONCRETE
BOX CULVERT
6 FT. SPAN

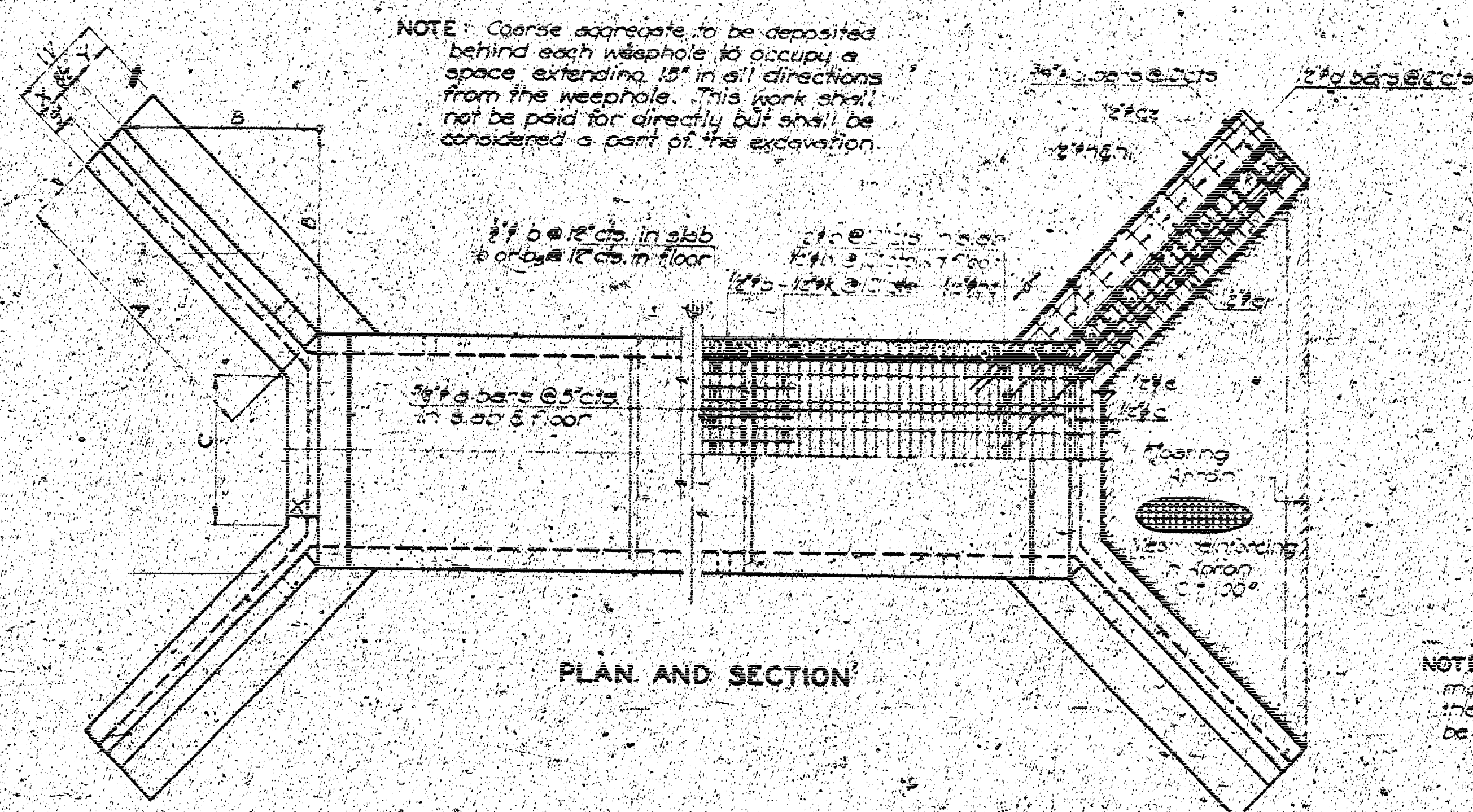
STD. NO. 312

DESIGNED BY H. D. DATE & R. D. DETMOLD TRACED BY H. D. DATE
 CHECKED BY G. L. R. APPROVED BY _____ DATE _____

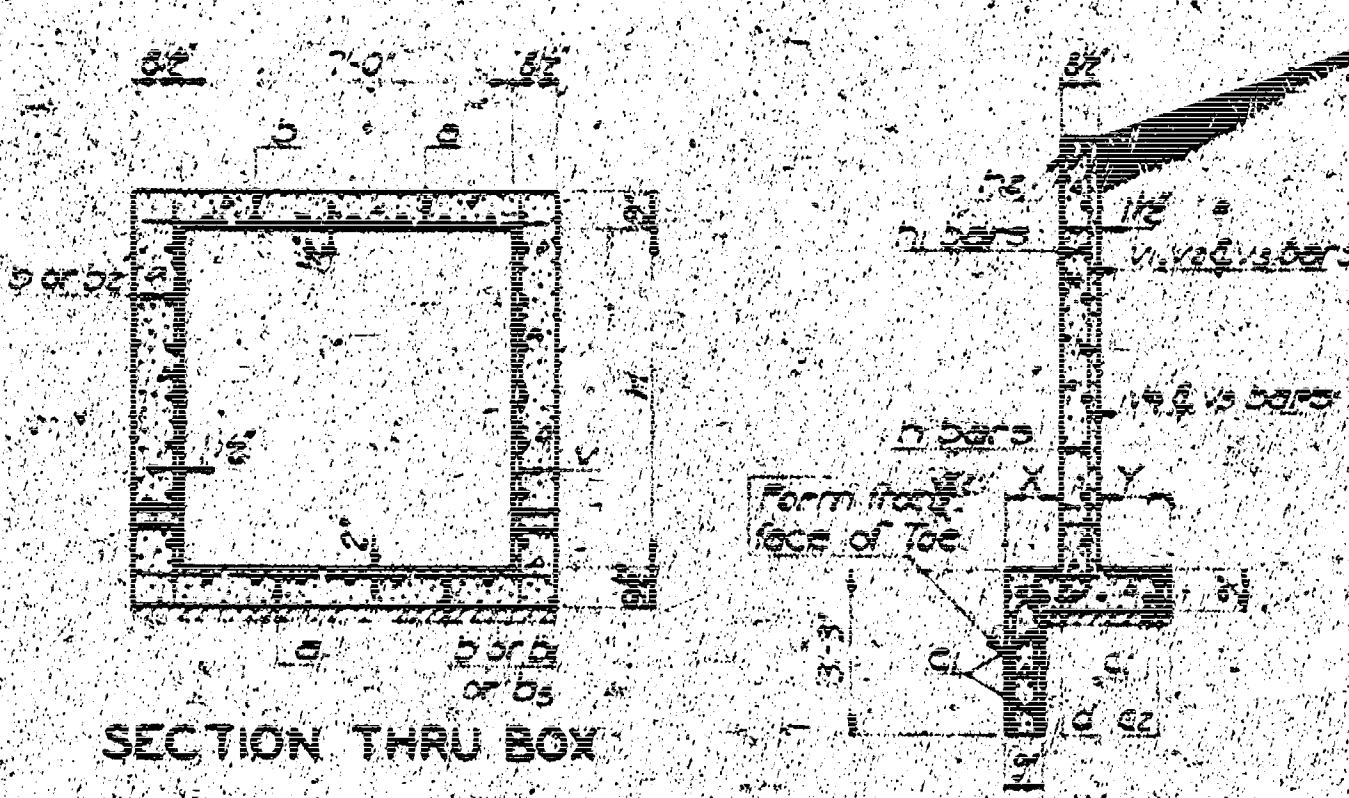


ELEVATION AND SECTION

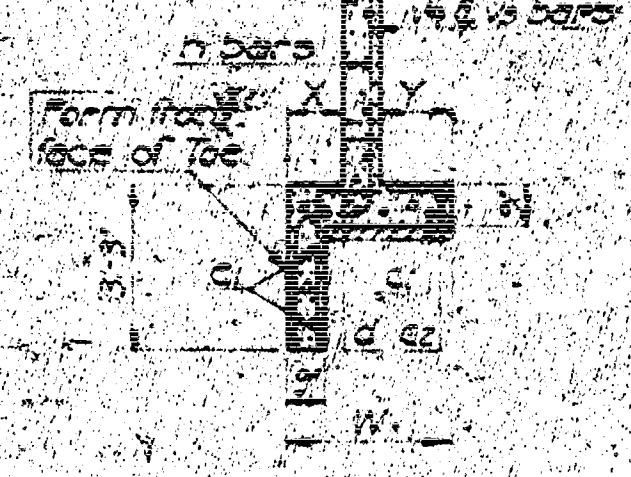
END ELEVATION



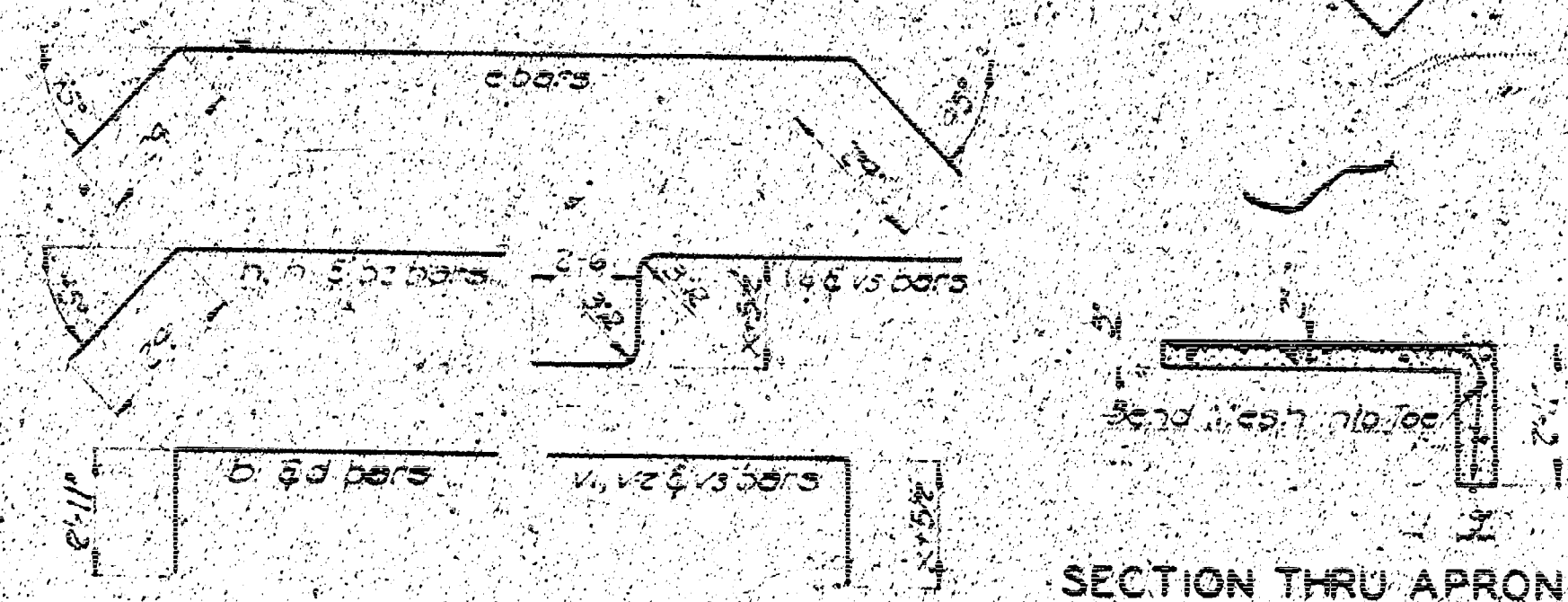
PLAN AND SECTION



SECTION THRU BOX



SECTION THRU WING



SECTION THRU APRON

NOTE: - Knees joints to be provided as shown on all girders of 45" or more in depth. Box girders ending to be spaced as to fit the depth of the box. Units sections of equal length. The number shown to be used shall be as follows:

45 to 59" - 1 joint	Box
60 to 79" - 2 joints	
80 to 99" - 3 joints	
100 to 119" - 4 joints	
120 to 139" - 5 joints	
140 to 159" - 6 joints	

Max. min. height of girder to be used shall be as follows:

15' - 16' - 17' - 18' - 19' - 20' - 21' - 22' - 23' - 24' - 25' - 26' - 27' - 28' - 29' - 30' - 31' - 32' - 33' - 34' - 35' - 36' - 37' - 38' - 39' - 40' - 41' - 42' - 43' - 44' - 45' - 46' - 47' - 48' - 49' - 50' - 51' - 52' - 53' - 54' - 55' - 56' - 57' - 58' - 59' - 60' - 61' - 62' - 63' - 64' - 65' - 66' - 67' - 68' - 69' - 70' - 71' - 72' - 73' - 74' - 75' - 76' - 77' - 78' - 79' - 80' - 81' - 82' - 83' - 84' - 85' - 86' - 87' - 88' - 89' - 90' - 91' - 92' - 93' - 94' - 95' - 96' - 97' - 98' - 99' - 100'	Box
--	-----

[illegible]

NOTE: Class A Concrete to be used in road base on exposed edges with a minimum depth of 12" and Class A Concrete Seal Course consisting of 1" of Class A Concrete to be constructed only where specified on Plans or by the Engineer. No reinforcing shall be placed until Seal Course has gained sufficient strength to permit working upon it without injury.

Rolling Apron to be constructed only between downstream and upstream abutments to be located where specified on Plans or by the Engineer.

Payment for additional quantities resulting from including Seal Course and Apron, as changes in original Plans, shall be made at unit price bid for various items involved.

Reinforcing mesh shall be of the electrically welded square mesh type and shall be composed of No. 6 gauge steel wire spaced of 6" centers each way.

[illegible]

3			
2	6-66	2nd bars deleted	W.R.D. L.H.V.
1	4-68	Notations & Tables (W.R.D.)	W.R.D. L.H.V.
NO.	DATE	REVISIONS	BY APP'D

STATE HIGHWAY COMMISSION OF KANSAS

CONCRETE

BOX CULVERT

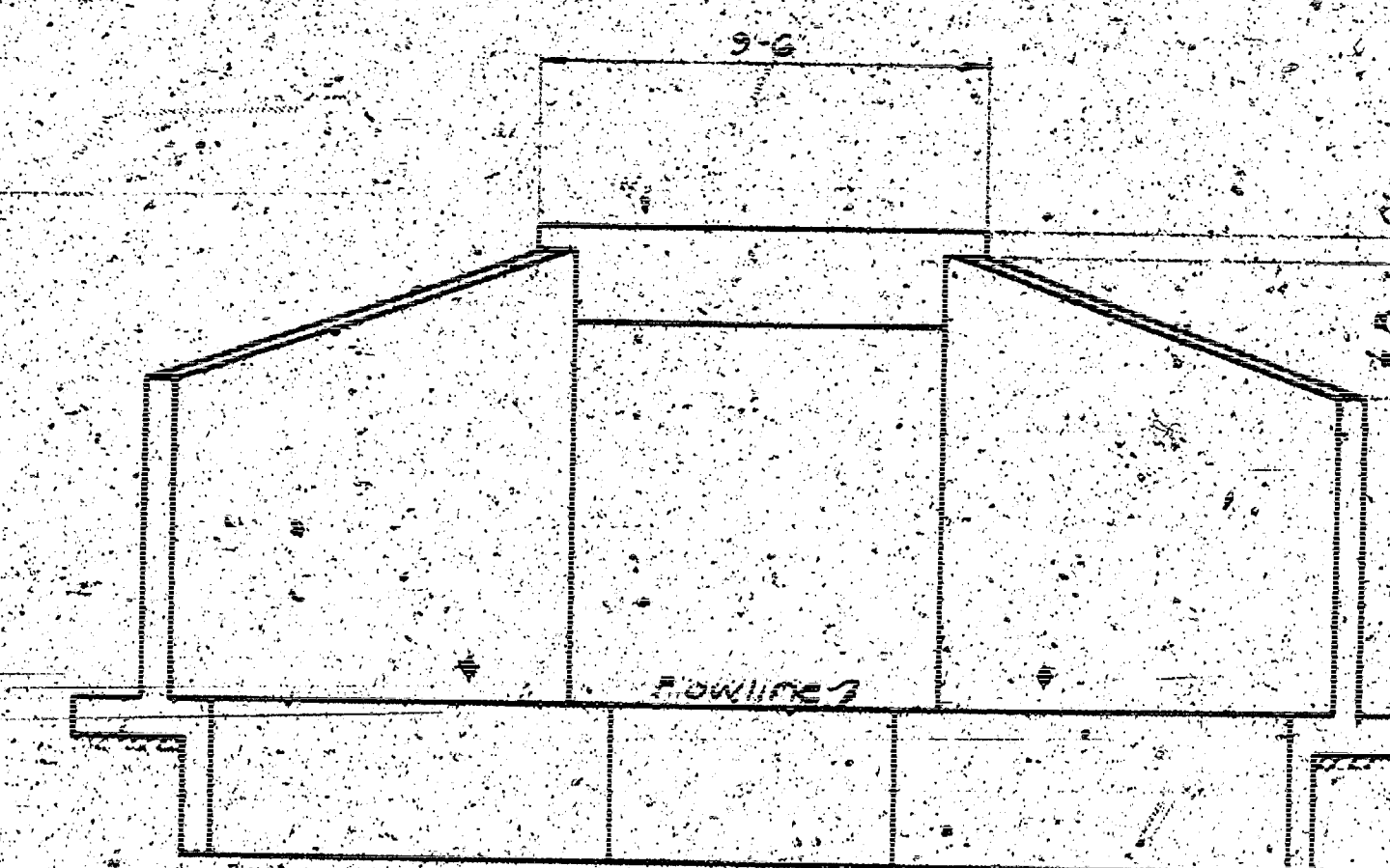
7 FT. SPAN

STD. NO. 314

SCALE 1" = 1'

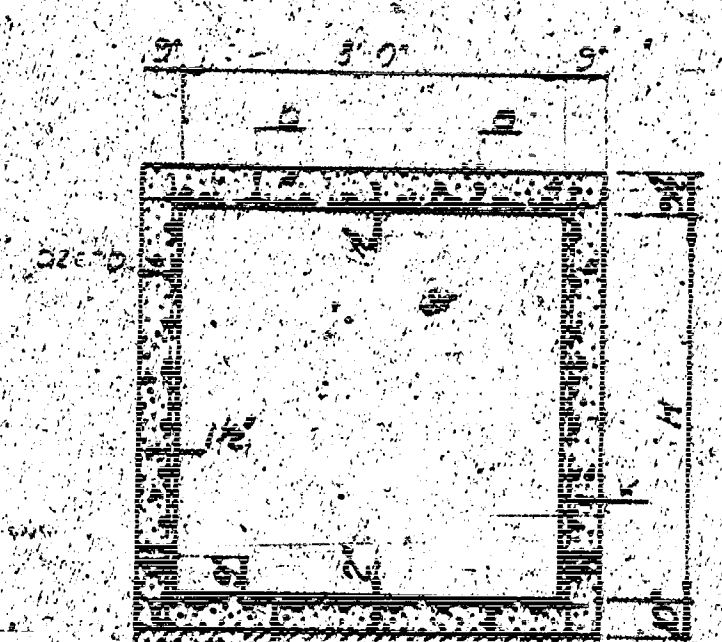
DESIGNED BY T.M.C. DATE 7-21 DETAIL'D BY R.O.G. TRANS'D BY M.C.S.

CRT

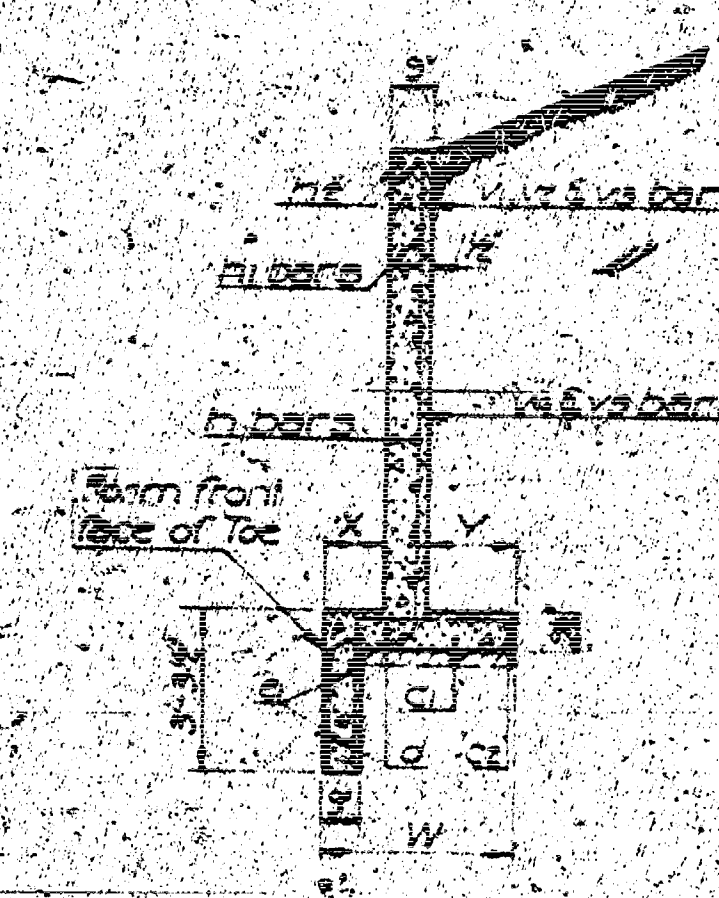


ELEVATION AND SECTION

END ELEVATION



SECTION THRU BOX

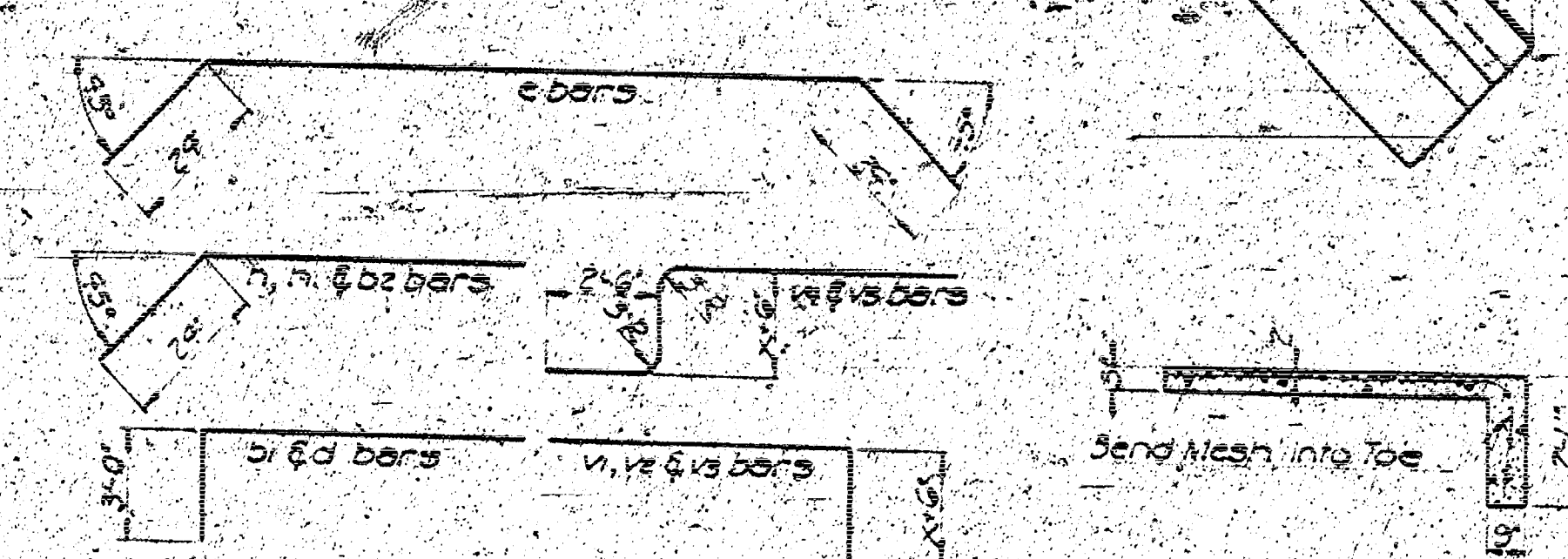


SECTION THRU WING

NOTE: Keyed joints are provided as shown on all culverts
4' or more in box length and 16" or spaced at
to divide the box into sections of equal length. The number
of joints to be used shall be as follows:

45 to 55': 1 joint
60 to 75': 2 joints
80 to 95': 3 joints
100 to 115': 4 joints
120 to 135': 5 joints

Maximum height fill
in this design - 5'-0"



SECTION THRU APRON

"Roadway" = Horizontal distance.
"Length" = Distance along box.

BENDING DIAGRAMS

LIST OF CULVERTS

[illegible][illegible]

NOTE: Class A Concrete to be used thru-out. Bevel all exposed edges with a 3/4" triangular mounding.

Seal Course consisting of 3" of Class A Concrete to be constructed only where specified on the Plans or by the Engineer. No reinforcing shall be used until Seal Course has gained sufficient strength to permit working upon it without injury.

Flashing Apron to be constructed only between down stream wing and location subject to scour where specified on the Plans or by the Engineer.

Payment for additional quantities resulting from including Seal Course and Apron, as changes in original Plans, shall be made at unit price bid for various items involved.

Wire reinforcing mesh shall be of the electrically welded, square mesh type and shall be composed of No. 10 gauge steel wire spaced at 6" centers each way.

3	4-64	4-64 bars deleted	W.R.D.	L.H.T.
4	4-64	Notations & tables (W.R.D.)	W.A.D.L.M.V.	
W.D.	DATE	REVISION	BY	APP'D

STATE HIGHWAY COMMISSION OF KANSAS

CONCRETE

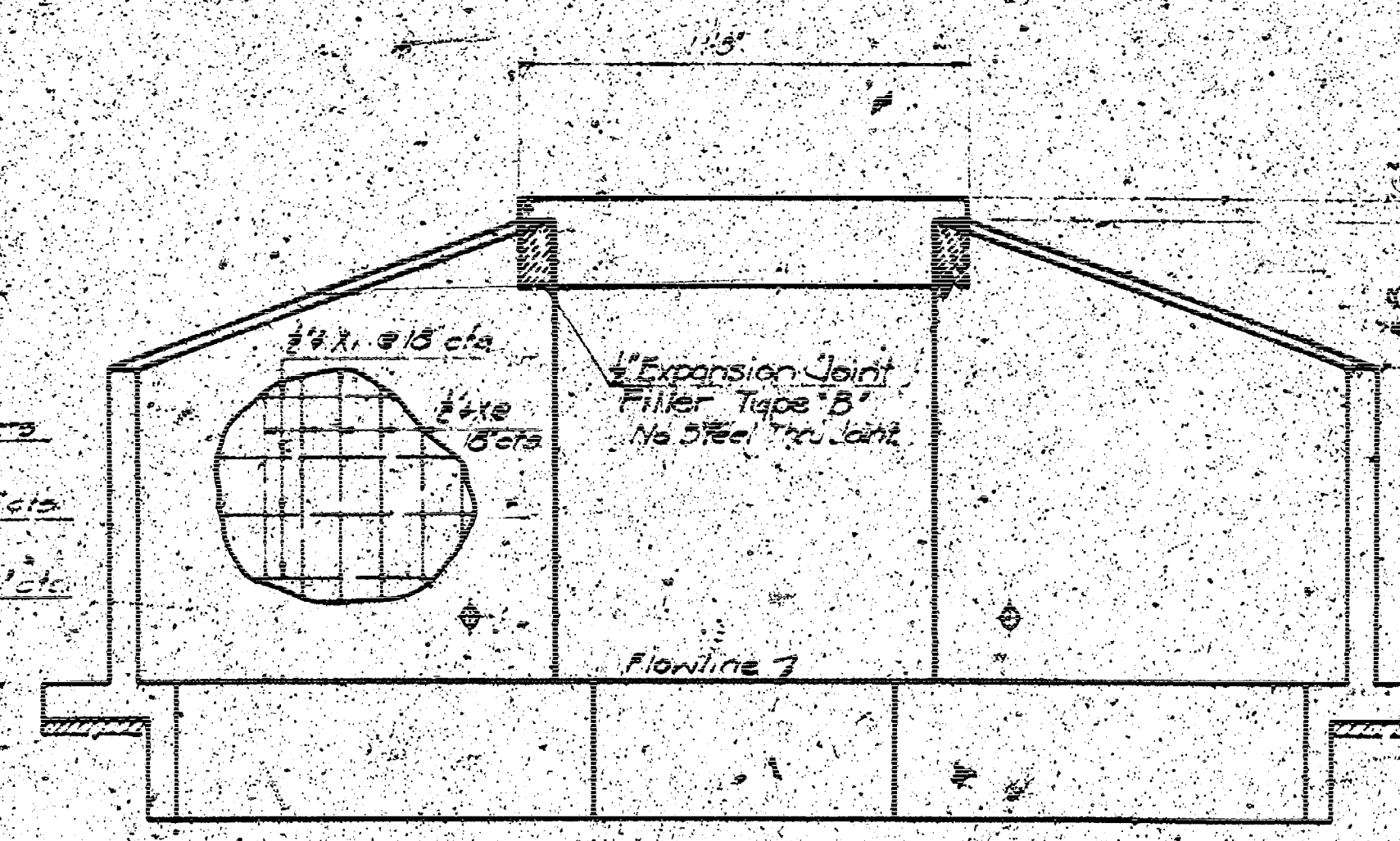
BOX CULVERT

8 FT. SPAN

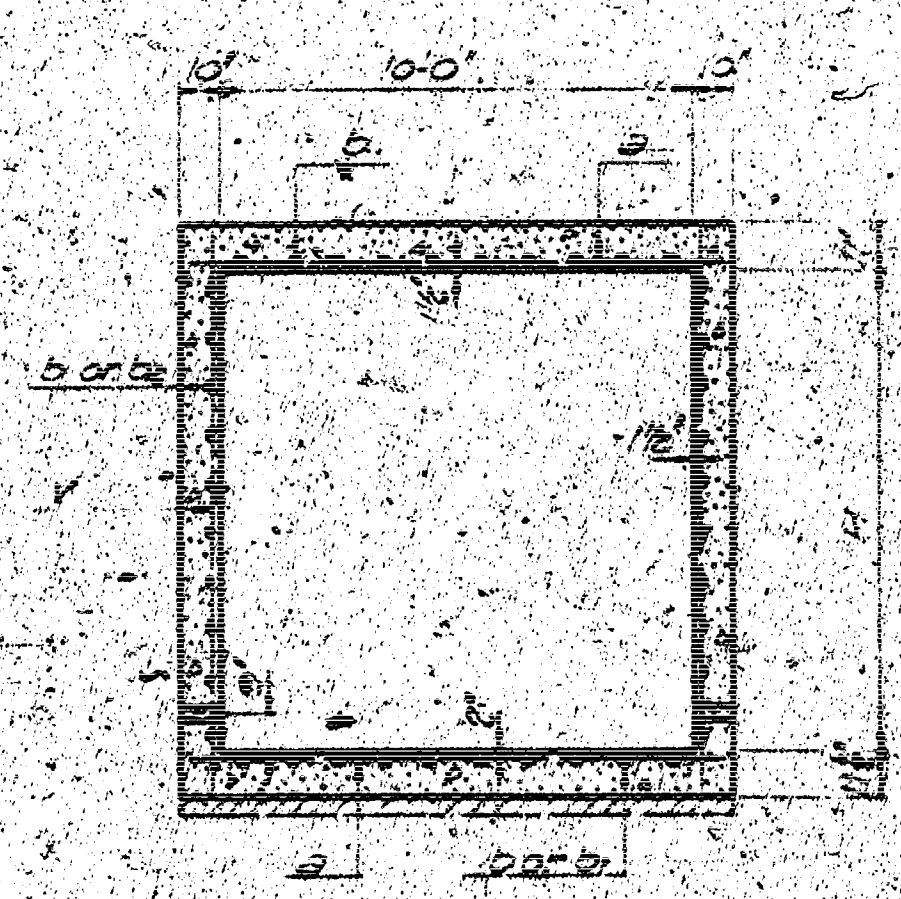
STD. NO. 315

DESIGNED BY T.M.D. DATE 8-31 DETAIL BY S.D.S. TRACED BY M.O.S.

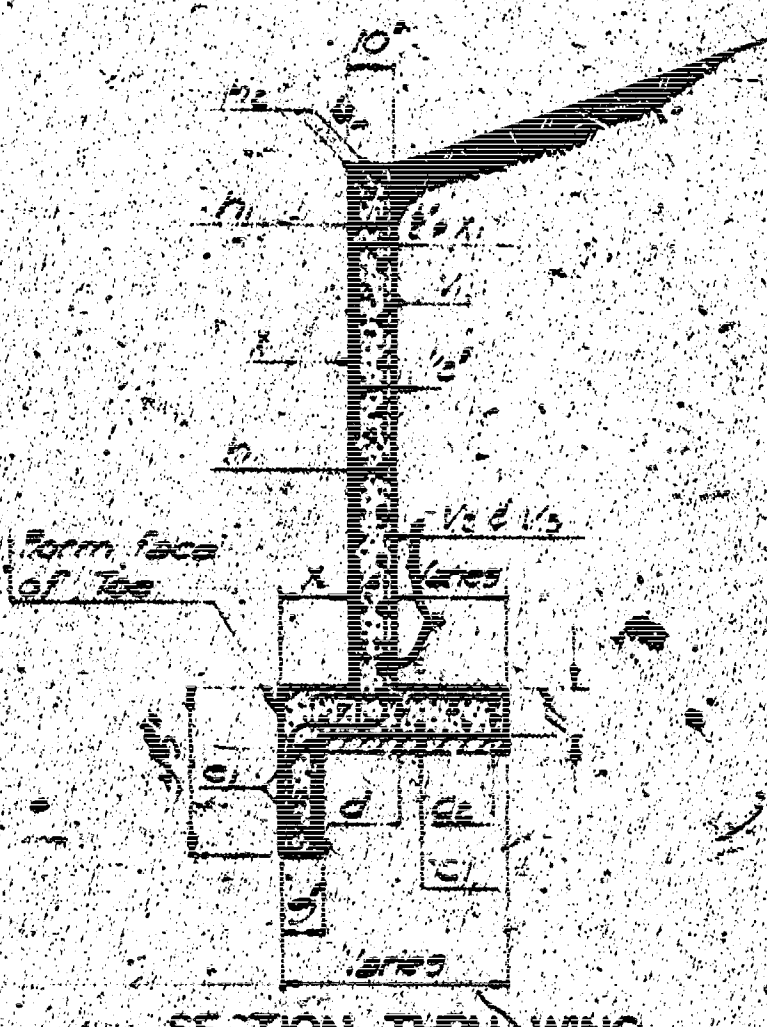
CHECKED BY G.L.E. APPROVED BY _____ DATE _____



ELEVATION AND SECTION



SECTION THRU WING



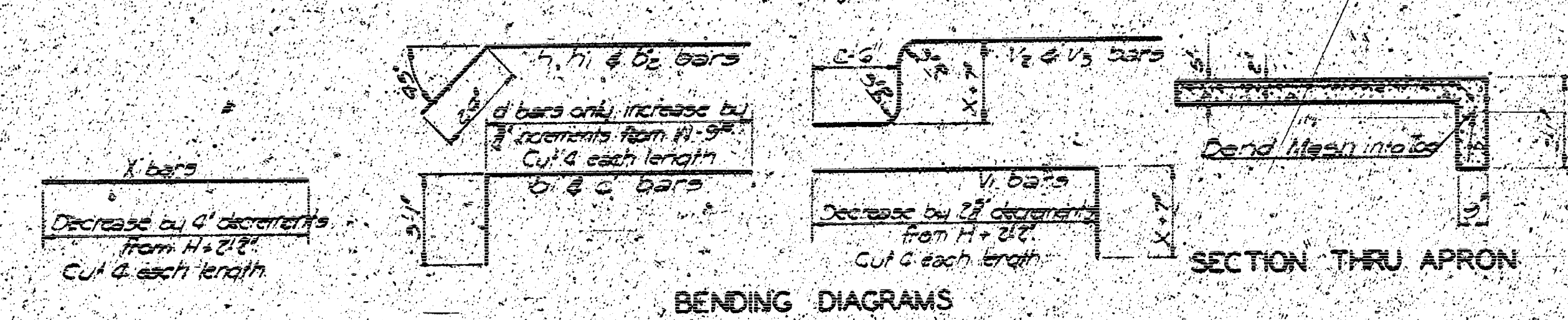
NOTE: Class 4 Concrete to be used throughout. Detail all exposed edges with a 90° triangular mauling.

Concrete consisting of 3" of Class A Concrete to be constructed only where specified on the Plans or in the Specifications and to be maintained until Seal Course has gained sufficient strength to permit working upon it without injury.

Reinforcing Bars to be constructed only between downstream winged in locations. Bars to be used where specified for the Bars by the Engineer.

Payment for additional quantities resulting from, including Seal Course and Bars, as changes in original Plans, shall be made at unit price bid for various items involved.

Wire mesh reinforcement shall be of the electrically welded square mesh type and shall be composed of No. 10 gauge steel wire spaced at 6" centers each way.



BENDING DIAGRAMS



LIST OF CULVERTS

[illegible][illegible]

3					
2	5-68	1/2 bars deleted		WPD	LTV
1	4-64	Notations & Tables (NRD)		NAB	LTV
NO	DATE	REVISIONS		BY	APP'D

STATE HIGHWAY COMMISSION OF KANSAS

CONCRETE
BOX CULVERT
10 FT. SPAN

STD. NO. 317

DESIGNED BY W.D. GATE DATE 12-28-67 DETAIL BY C.S.S. TRACED BY H.H.H.

CHECKED BY C.S.S. APPROVED BY _____ DATE _____