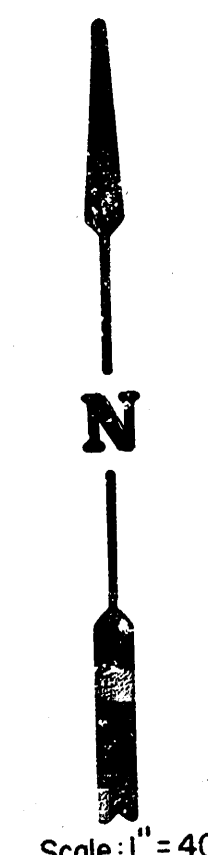
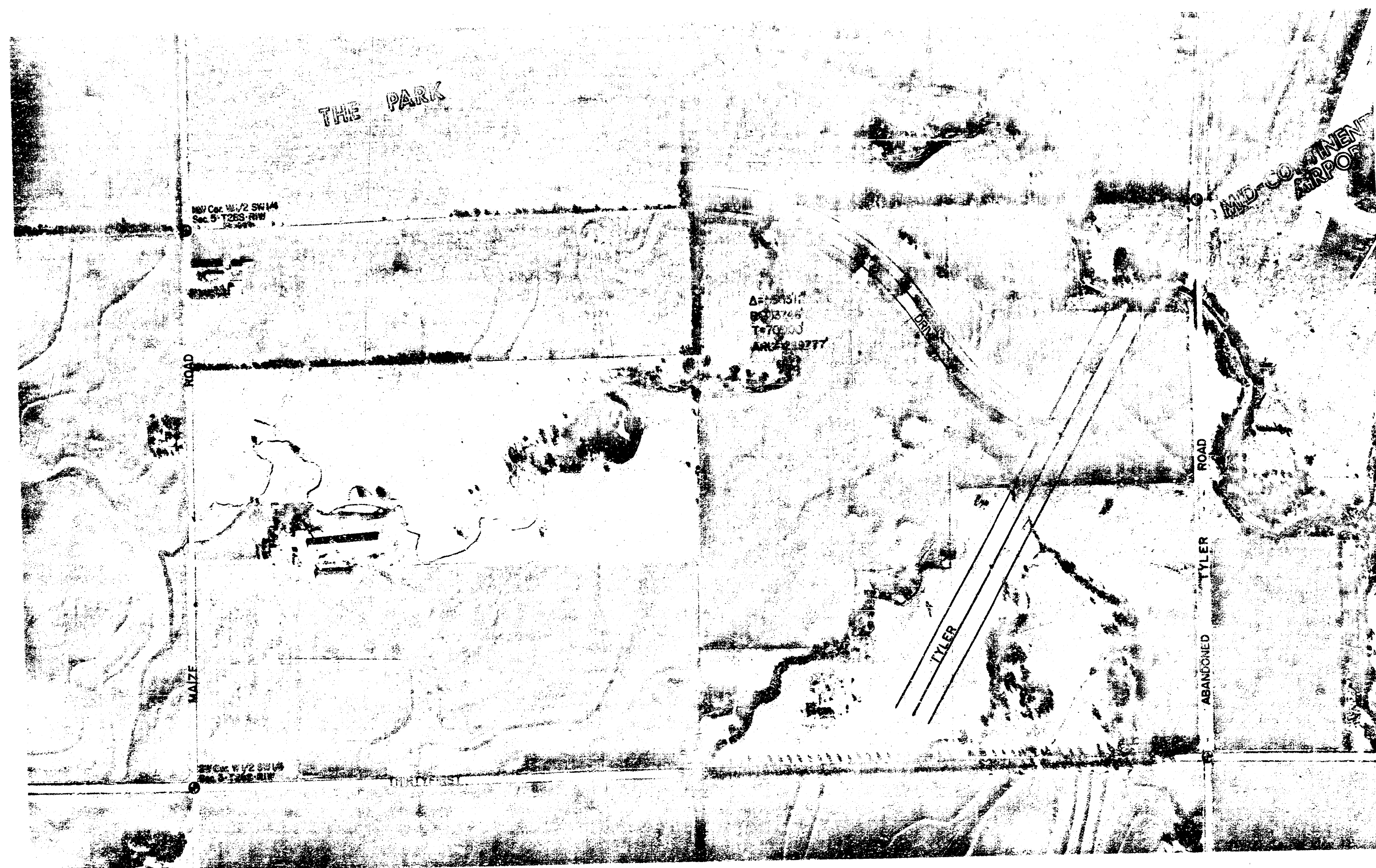


**YOSEMITE DRIVE,
FROM THE EAST LINE OF THE PARK
TO THE WEST LINE OF TYLER ROAD
PROJECT NO.
472-76-245-80908-000-000-001**



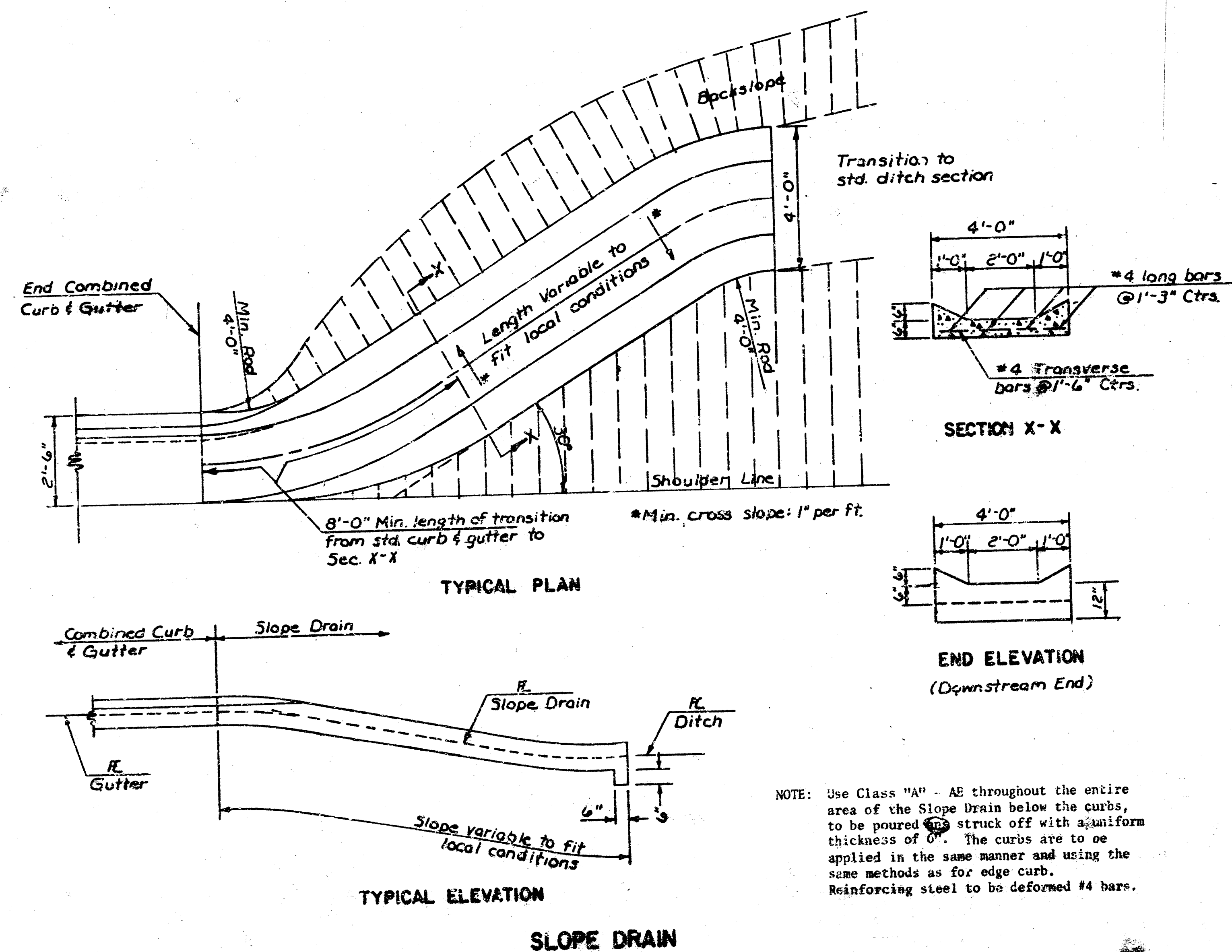
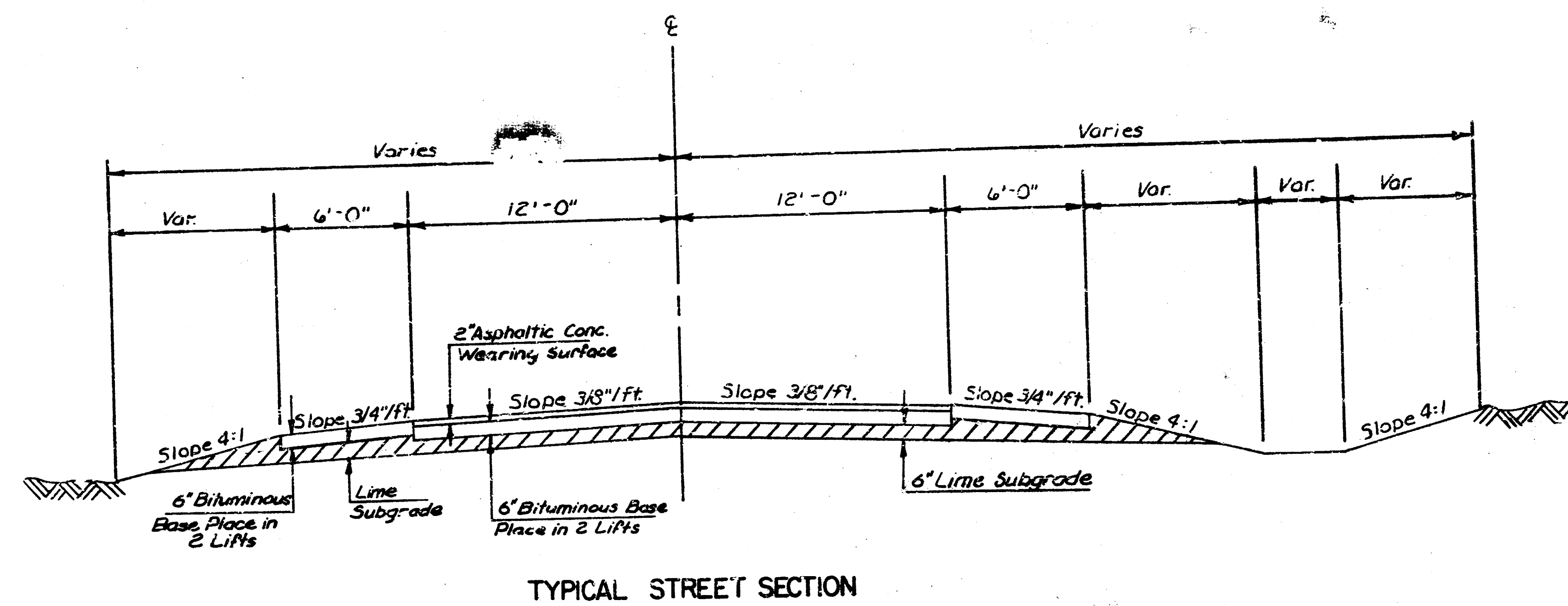
INDEX TO SHEET NO.	DRAWINGS DESCRIPTION
1	TITLE SHEET
2	PAVING DETAILS
3-4	YOSEMITE DRIVE
5-8	CROSS SECTIONS
9	BOX CULVERT LAYOUT
10-11	BOX CULVERT DETAIL
12	WASH CHECK DETAIL

CITY OF WICHITA, KANSAS
DEAN SELLERS, ACTING CITY ENGINEER

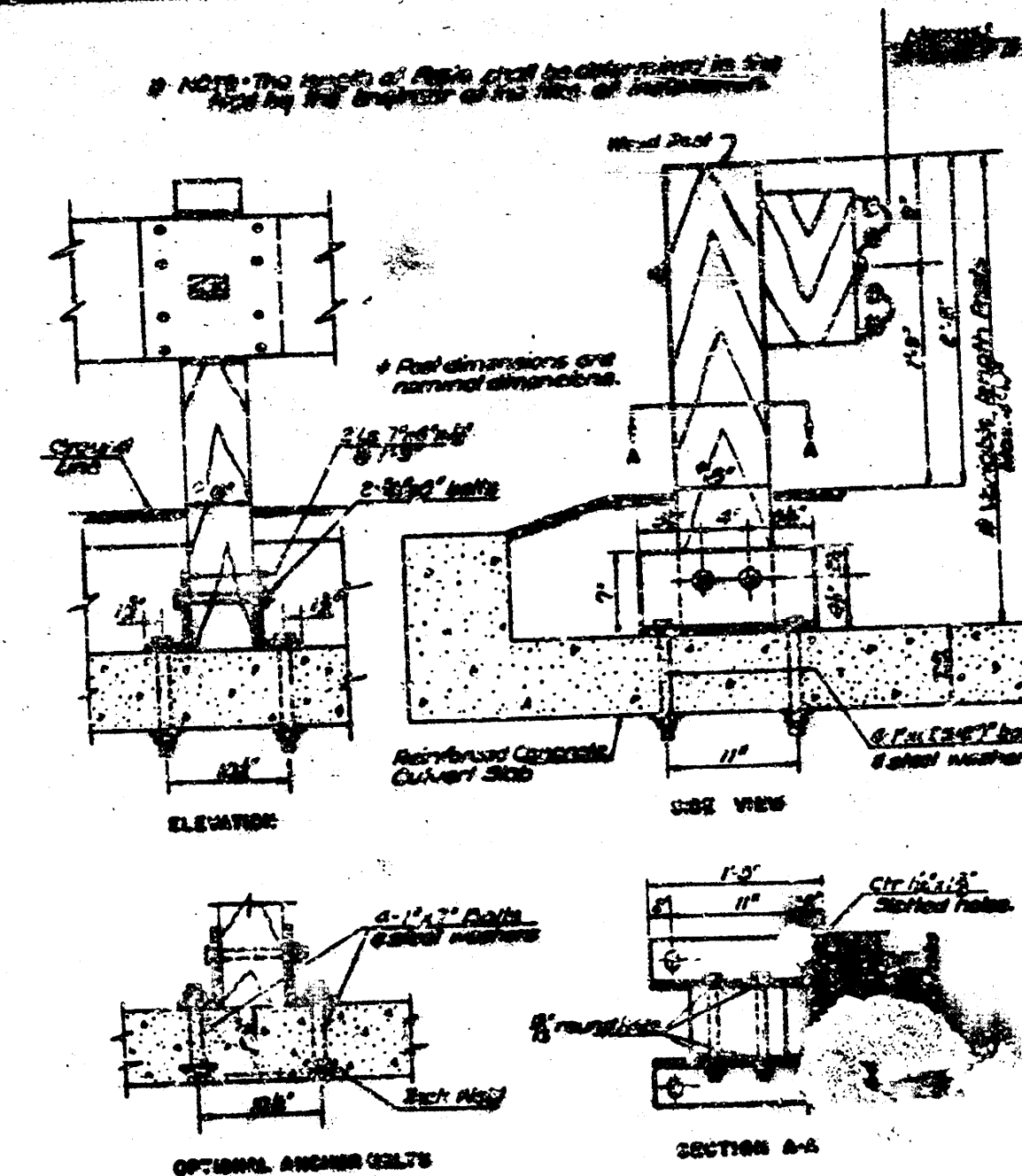


Van Doren - Hazard - Stallings
Architects • Engineers • Planners
Topeka Wichita Minneapolis

Sheet 1
of 12

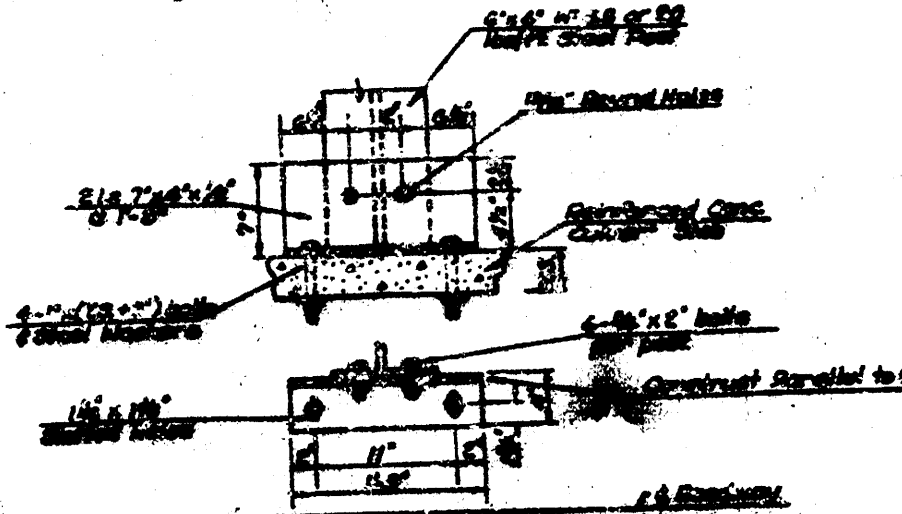


NOTE: Use Class "A" - AE throughout the entire area of the Slope Drain below the curbs, to be poured and struck off with a uniform thickness of 6". The curbs are to be applied in the same manner and using the same methods as for edge curb. Reinforcing steel to be deformed #4 bars.

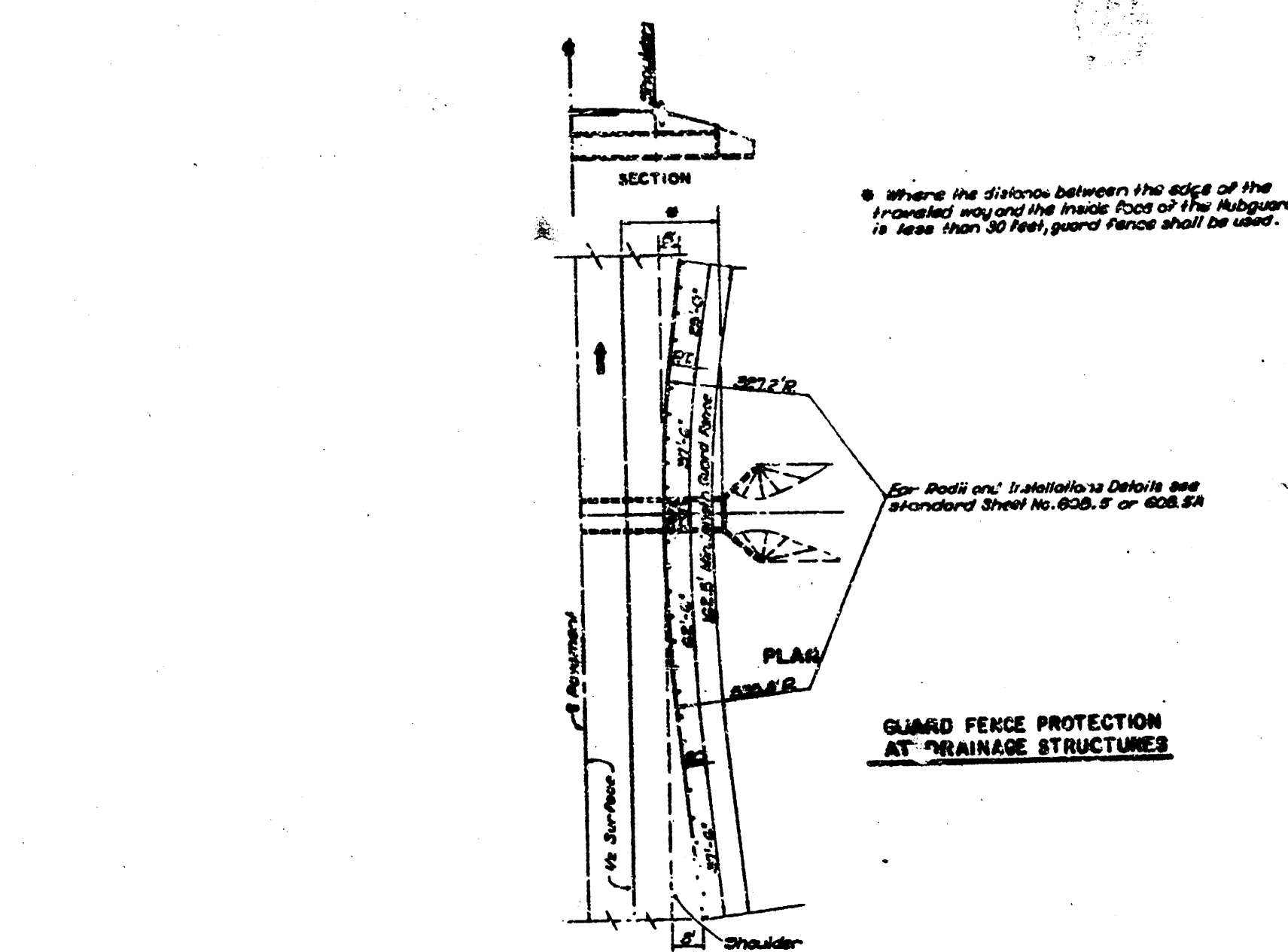


ANCHOR ASSEMBLY DETAILS FOR GUARD FENCE POSTS AS SHOWN TO REINFORCED CONCRETE BOX CULVERTS

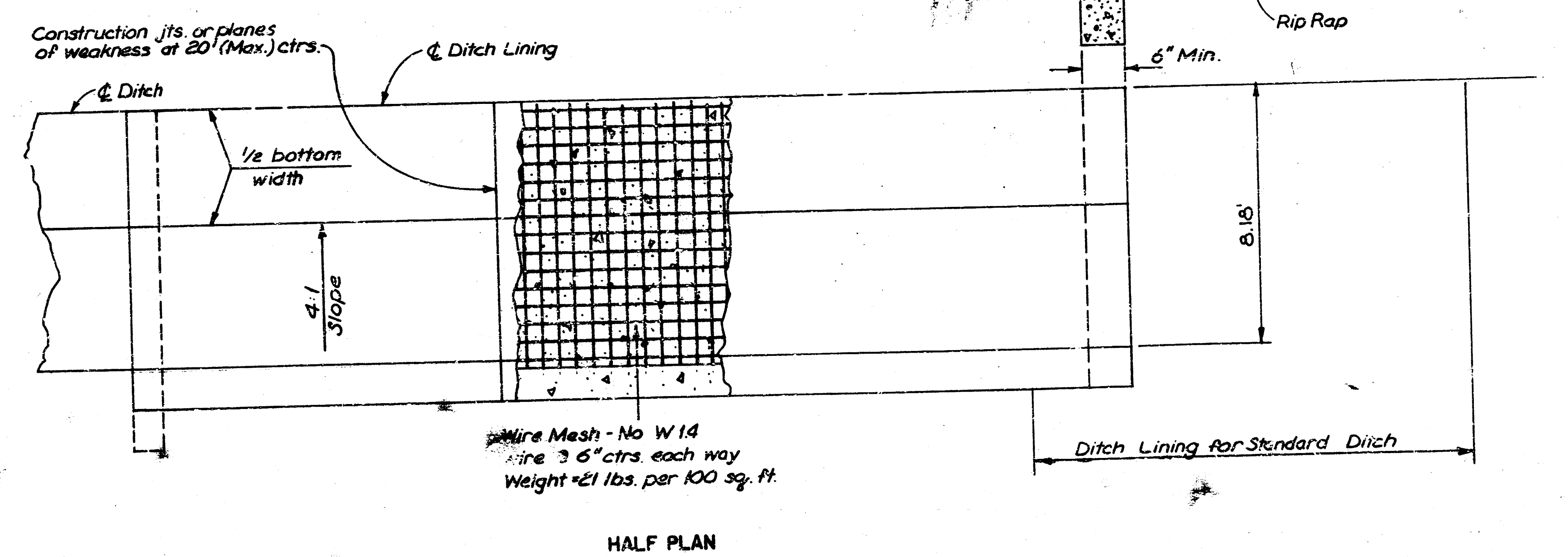
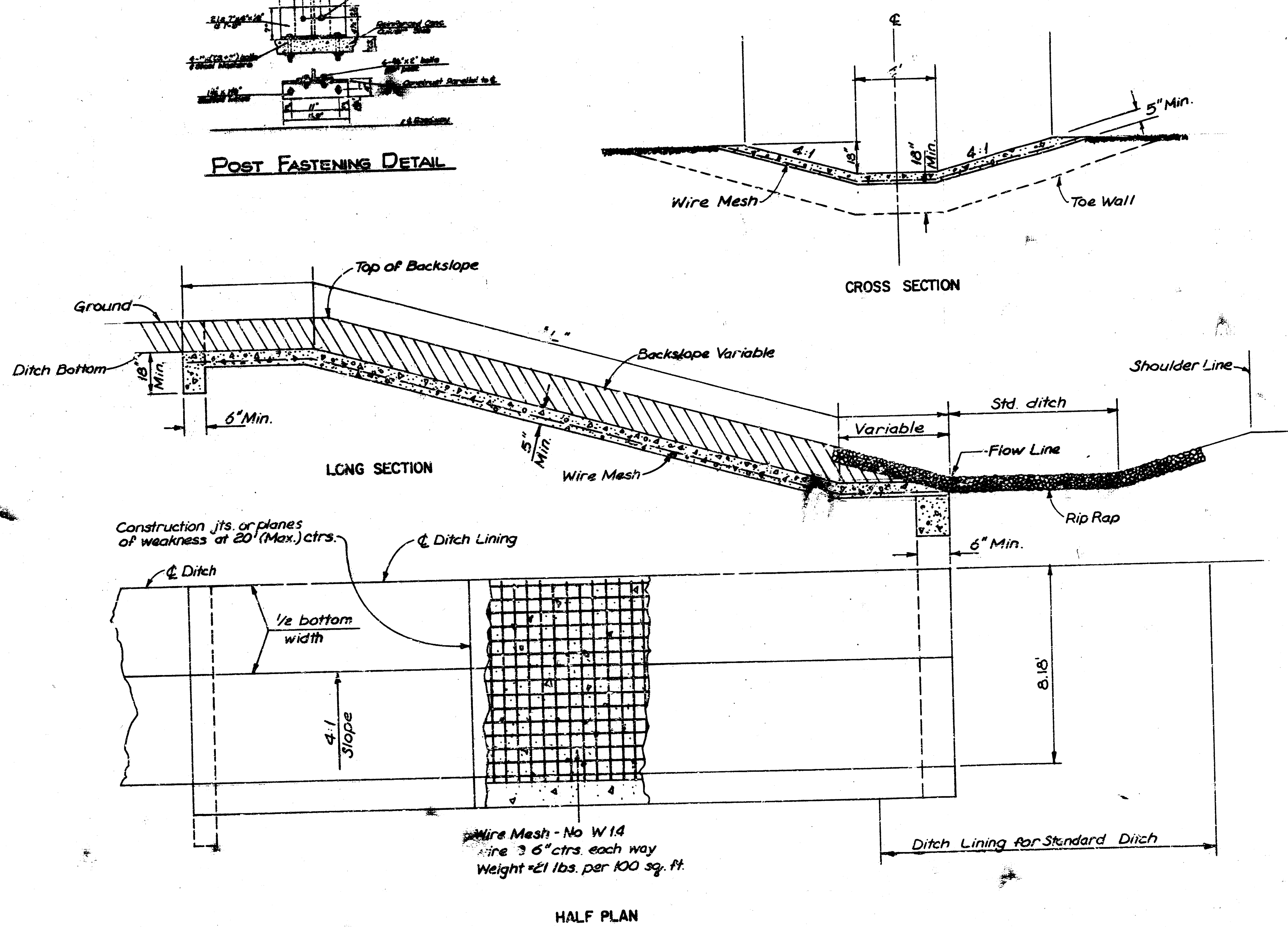
NOTE: The contractor installing the guard fence shall furnish and install the anchor assembly to the post. The anchor assembly shall be installed in accordance with the details shown. All anchor assembly parts shall be galvanized in accordance with ASTM specification A153-82.



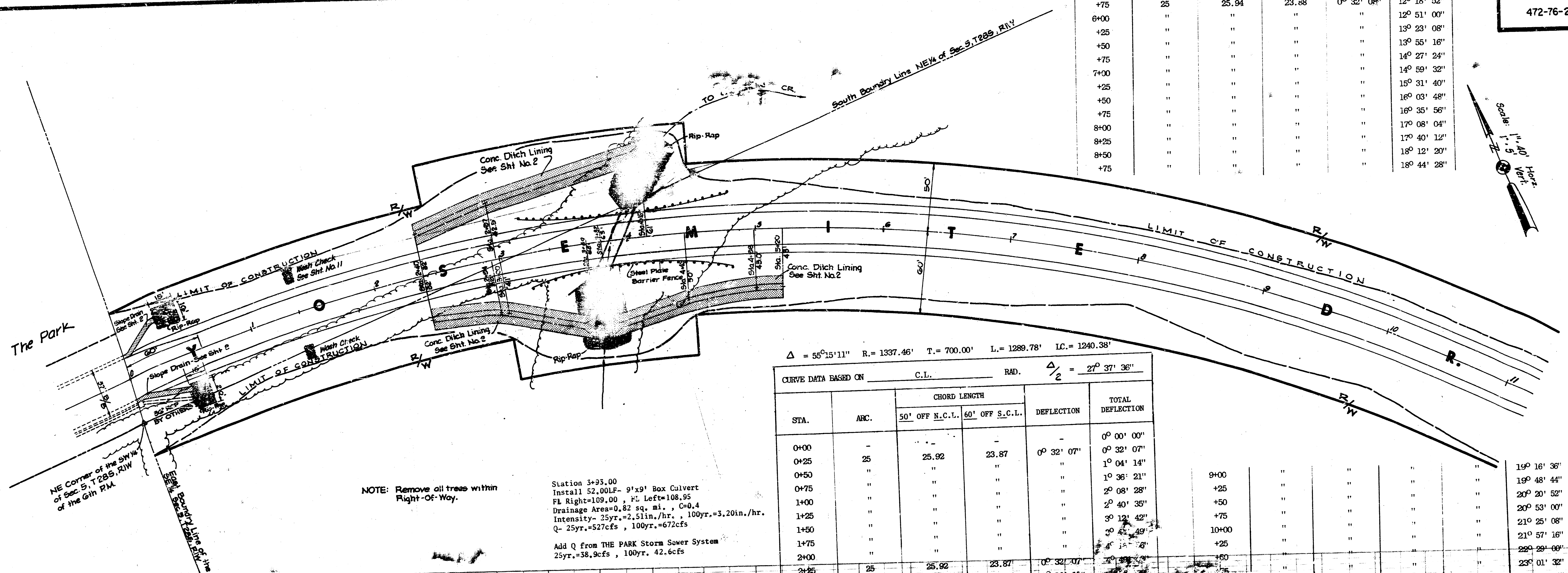
POST FASTENING DETAIL



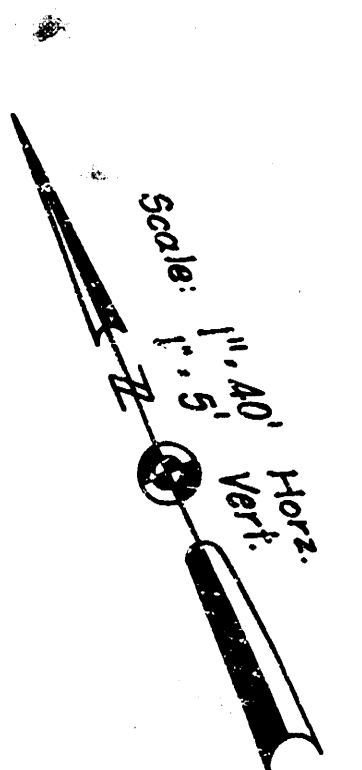
GUARD FENCE DETAILS



YOSEMITE DRIVE
472-76-245-80908-000-000-001



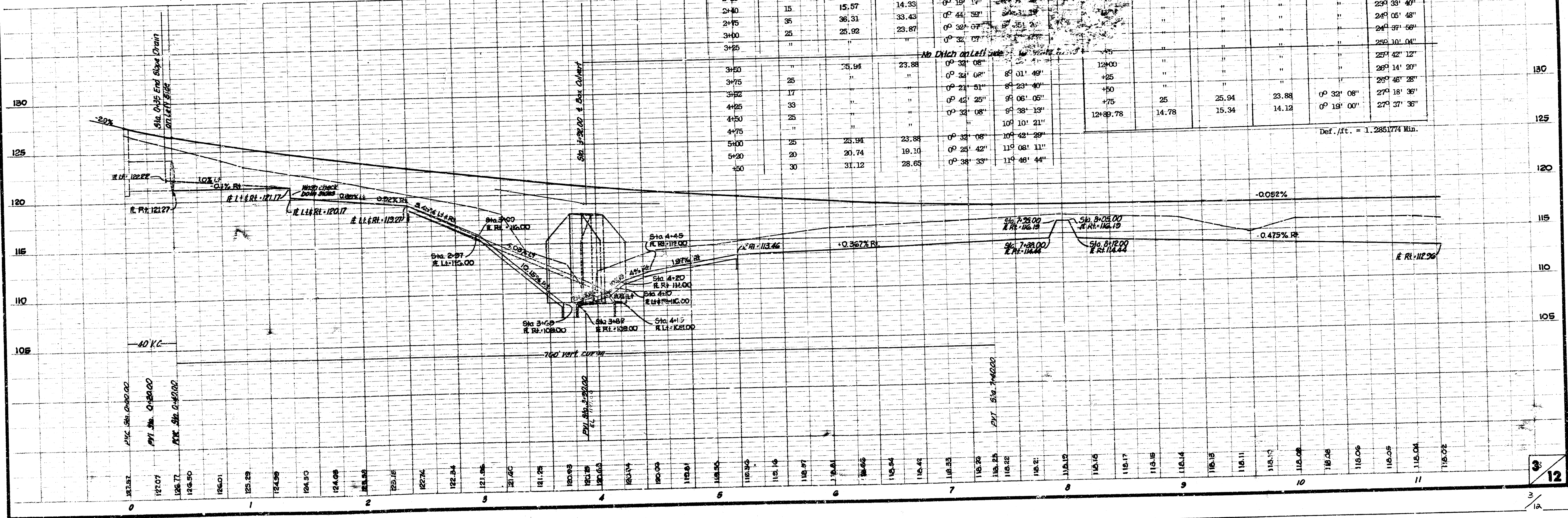
+75	25	25.94	23.88	0° 32' 08"	12° 18' 52"
6+00	"	"	"	"	12° 51' 00"
+25	"	"	"	"	13° 23' 08"
+50	"	"	"	"	13° 55' 16"
+75	"	"	"	"	14° 27' 24"
7+00	"	"	"	"	14° 59' 32"
+25	"	"	"	"	15° 31' 40"
+50	"	"	"	"	16° 03' 48"
+75	"	"	"	"	16° 35' 56"
8+00	"	"	"	"	17° 08' 04"
8+25	"	"	"	"	17° 40' 12"
8+50	"	"	"	"	18° 12' 20"
+75	"	"	"	"	18° 44' 28"



$\Delta = 55^\circ 15' 11''$ $R = 1337.46'$ $T = 700.00'$ $L = 1289.78'$ $LC = 1240.38'$
CURVE DATA BASED ON C.L. RAD. $\frac{\Delta}{2} = 27^\circ 37' 36''$

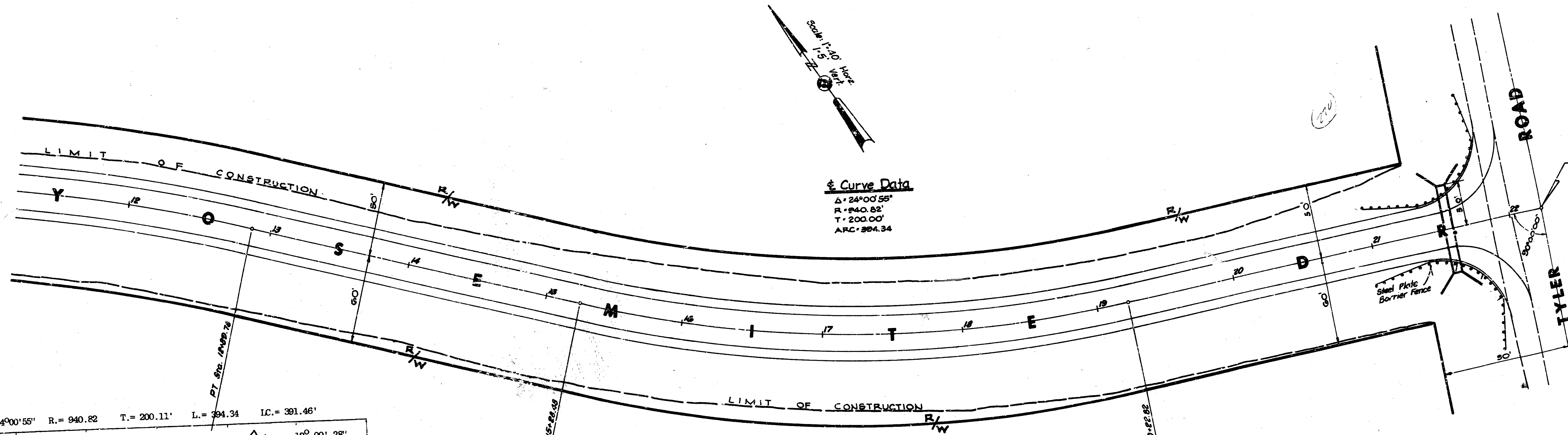
STA.	ARC.	CHORD LENGTH		DEFLECTION	TOTAL DEFLECTION
		50' OFF N.C.L.	60' OFF S.C.L.		
0+00	-	-	-	-	0° 00' 00"
0+25	25	25.92	23.87	0° 32' 07"	0° 32' 07"
0+50	"	"	"	"	1° 04' 14"
0+75	"	"	"	"	1° 36' 21"
1+00	"	"	"	"	2° 08' 28"
1+25	"	"	"	"	2° 40' 35"
1+50	"	"	"	"	3° 12' 42"
1+75	"	"	"	"	3° 44' 49"
2+00	"	"	"	"	4° 16' 56"
2+25	25	25.92	23.87	0° 32' 07"	4° 49' 03"
2+50	15	15.57	14.33	0° 19' 19"	5° 08' 22"
2+75	35	36.31	33.43	0° 44' 53"	5° 53' 15"
3+00	25	25.92	23.87	0° 32' 07"	6° 25' 22"
3+25	"	"	"	"	6° 57' 29"
3+50	"	"	"	"	7° 29' 36"
3+75	25	25.94	23.88	0° 32' 08"	8° 01' 44"
4+00	17	"	"	0° 21' 51"	8° 23' 40"
4+25	33	"	"	0° 45' 25"	9° 08' 05"
4+50	25	"	"	0° 32' 08"	9° 40' 13"
4+75	"	"	"	"	10° 12' 21"
5+00	25	25.94	23.88	0° 32' 08"	10° 44' 29"
5+25	20	20.74	19.10	0° 25' 42"	11° 10' 11"
5+50	30	31.12	28.65	0° 38' 33"	11° 48' 44"

9+00	"	"	"	"	19° 16' 36"
+25	"	"	"	"	19° 48' 44"
+50	"	"	"	"	20° 20' 52"
+75	"	"	"	"	20° 53' 00"
10+00	"	"	"	"	21° 25' 08"
+25	"	"	"	"	21° 57' 16"
+50	"	"	"	"	22° 29' 24"
+75	"	"	"	"	23° 01' 32"
11+00	"	"	"	"	23° 33' 40"
+25	"	"	"	"	24° 05' 48"
+50	"	"	"	"	24° 37' 56"
+75	"	"	"	"	25° 10' 04"
12+00	"	"	"	"	25° 42' 12"
+25	"	"	"	"	26° 14' 20"
+50	"	"	"	"	26° 46' 28"
+75	25	25.94	23.88	0° 32' 08"	27° 18' 36"
12+89.78	14.78	15.34	14.12	0° 19' 00"	27° 37' 36"



YOSEMITE DRIVE

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Curve Data

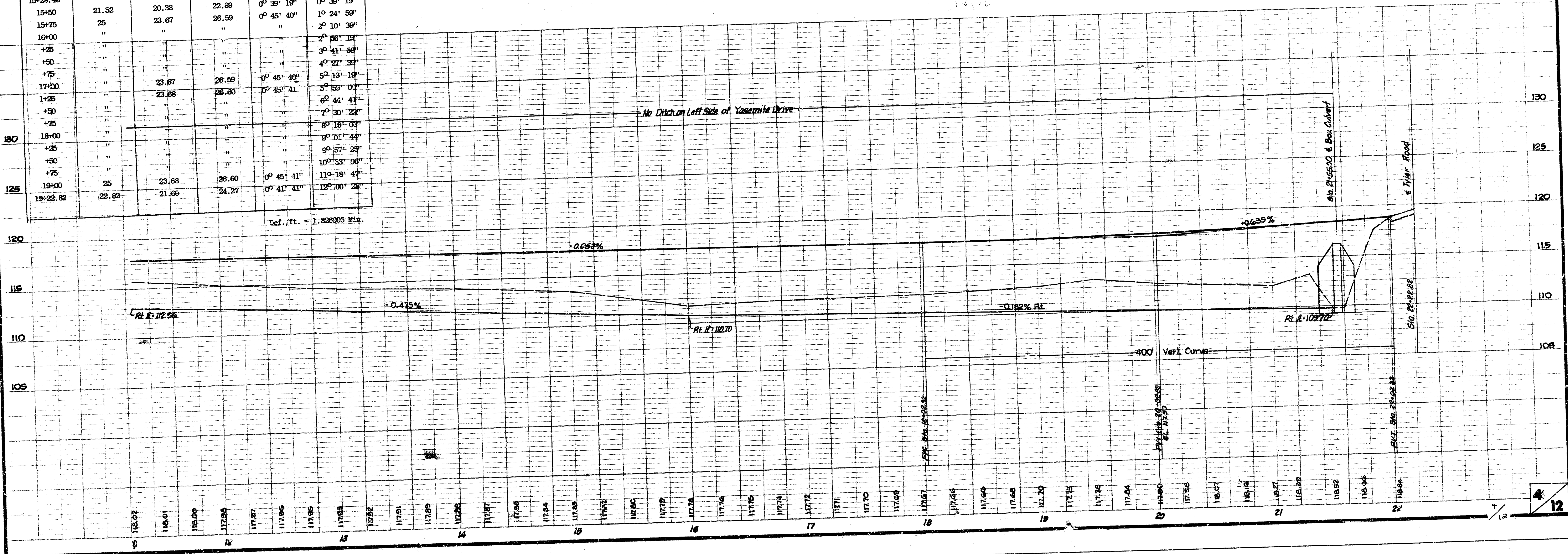
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 $R = 940.82'$
 $T = 200.00'$
 $ARC = 394.34'$

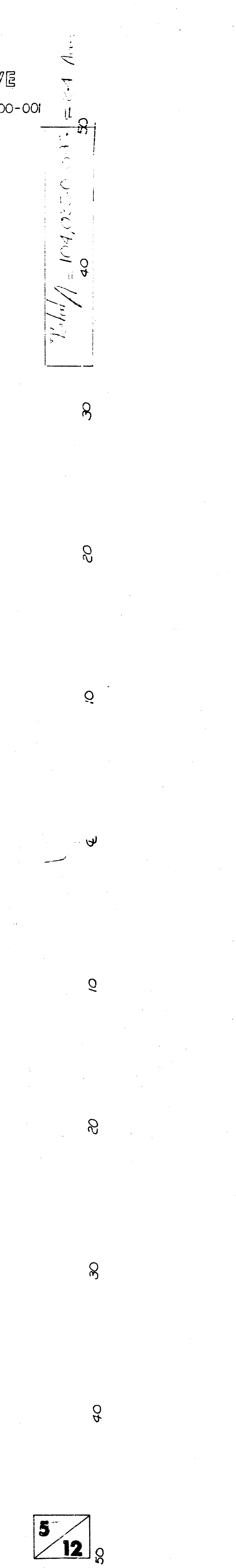
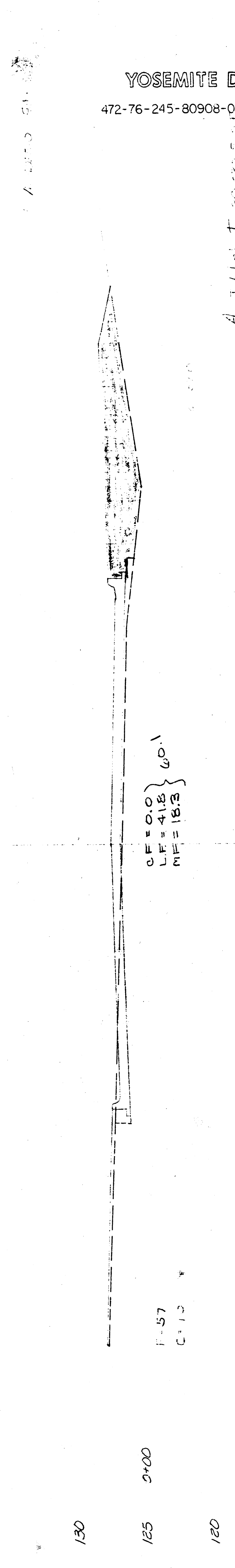
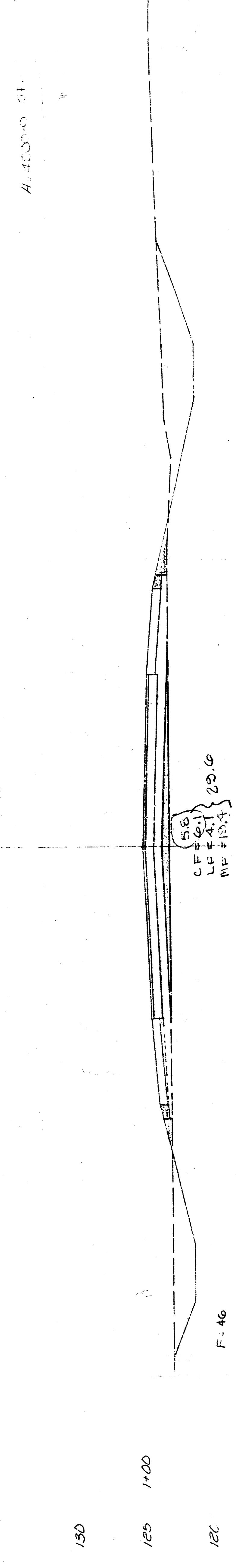
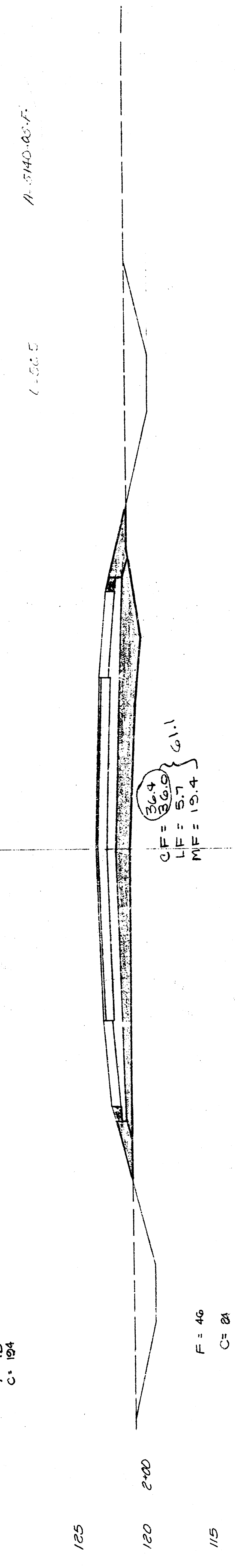
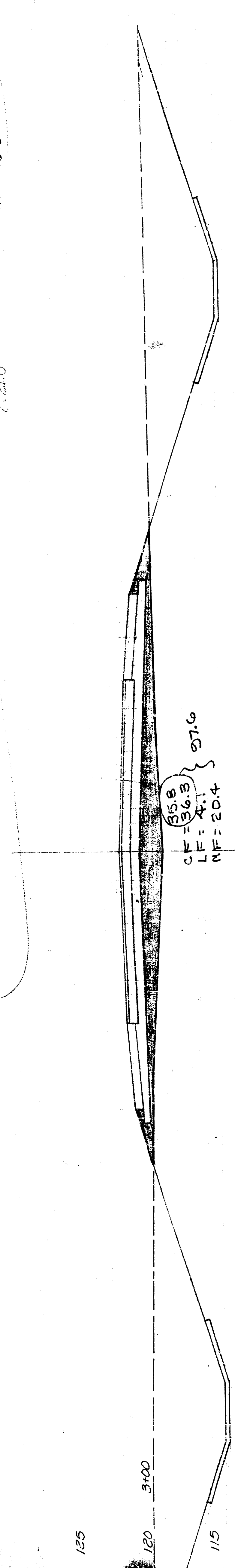
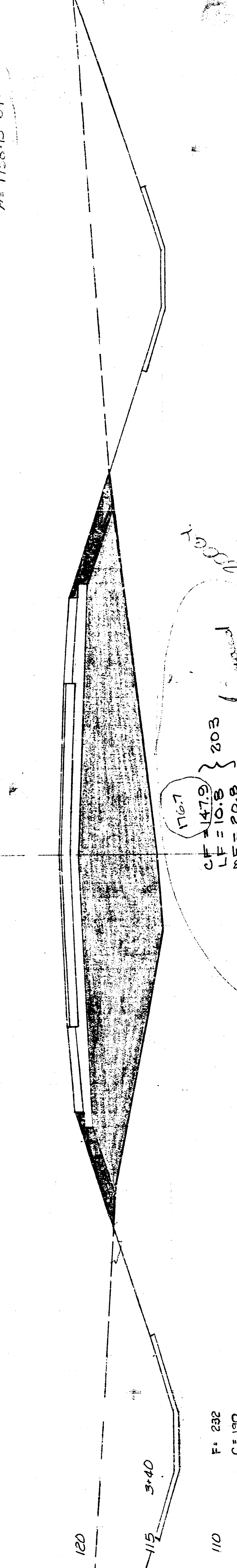
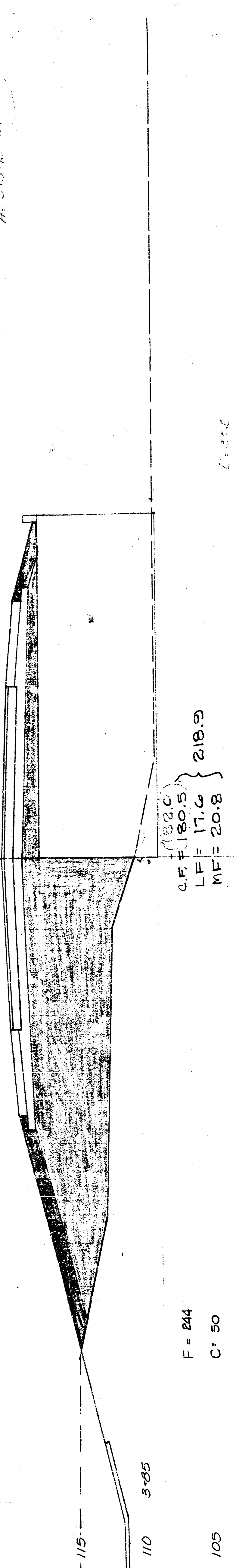
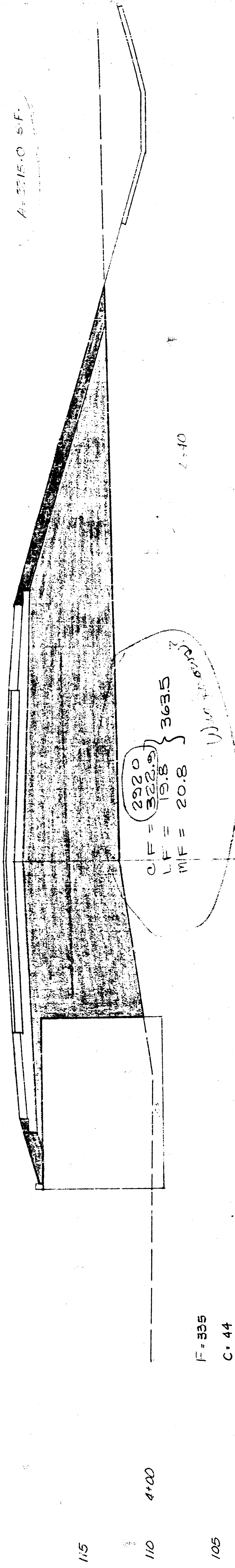
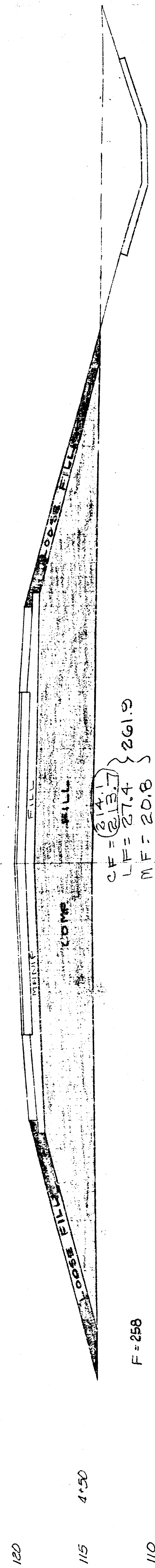
$\Delta = 24^\circ 00' 55''$ $R = 940.82$ $T = 200.11'$ $L = 394.34$ $LC = 391.46'$
 $\Delta/2 = 12^\circ 00' 28''$

STA.	ARC.	CHORD LENGTH		DEFLECTION	TOTAL DEFLECTION
		50' OFF N.C.L.	60' OFF S.C.L.		
15+28.48	-	-	-	-	0° 00' 00"
15+50	21.52	20.38	22.89	0° 39' 19"	0° 39' 19"
15+75	25	23.67	26.59	0° 45' 40"	1° 24' 59"
16+00	"	"	"	"	2° 10' 39"
+25	"	"	"	"	2° 56' 14"
+50	"	"	"	"	3° 41' 59"
+75	"	"	"	"	4° 27' 33"
17+00	"	23.67	26.59	0° 45' 40"	5° 13' 19"
17+25	"	23.68	26.60	0° 45' 41"	5° 59' 01"
+50	"	"	"	"	6° 44' 41"
+75	"	"	"	"	7° 30' 22"
18+00	"	"	"	"	8° 16' 03"
+25	"	"	"	"	9° 01' 44"
+50	"	"	"	"	9° 57' 28"
+75	"	"	"	"	10° 43' 08"
19+00	25	23.68	26.60	0° 45' 41"	11° 28' 47"
19+22.82	22.82	21.60	24.27	0° 41' 41"	12° 10' 28"

Def./ft. = 1.828305 in.

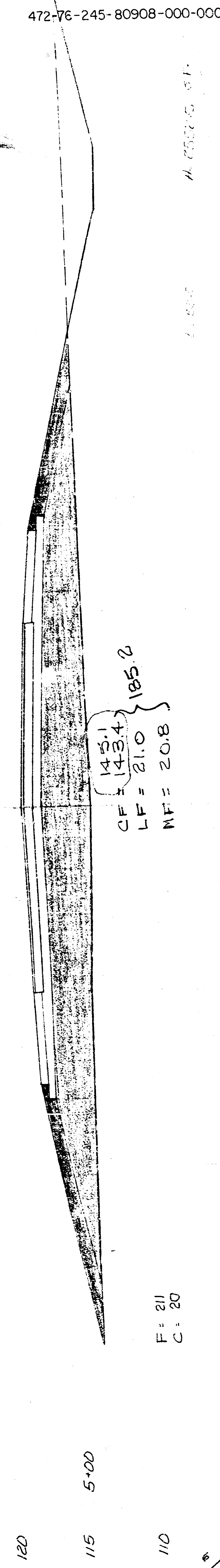
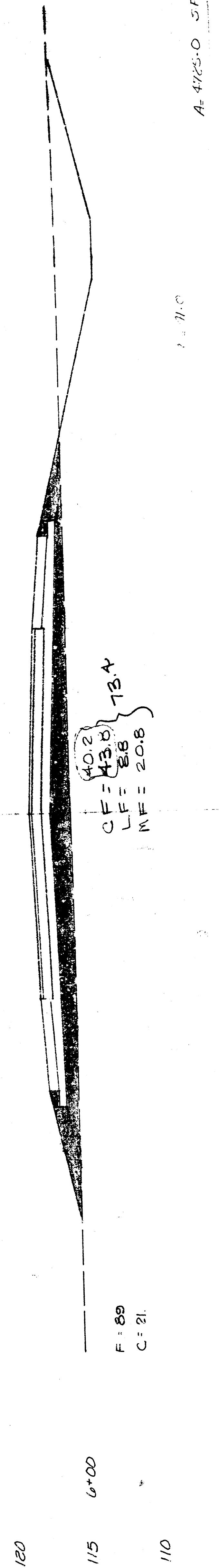
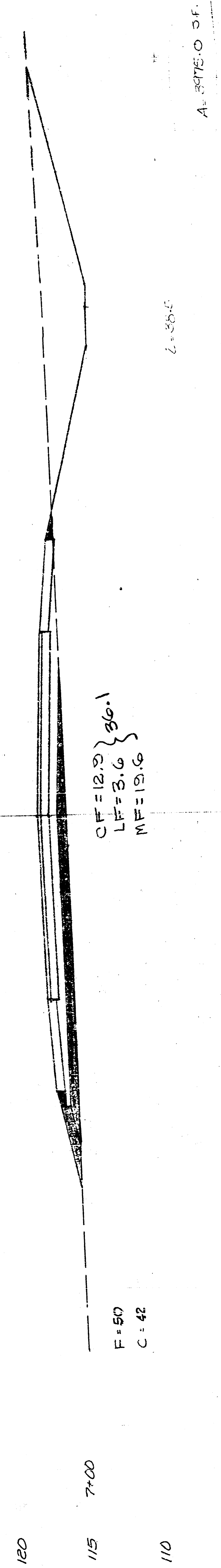
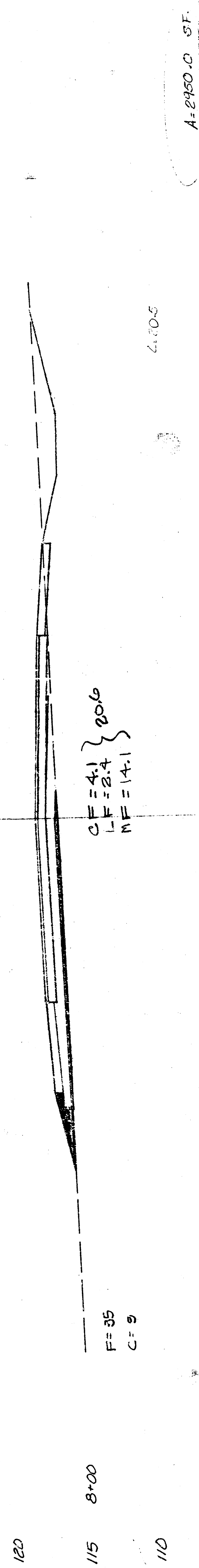
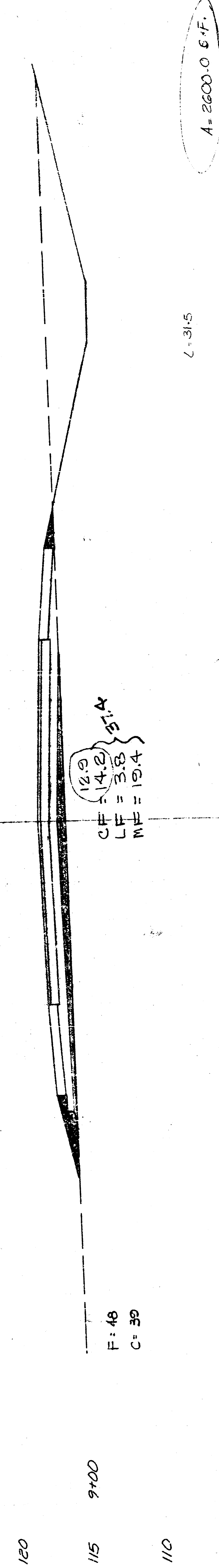
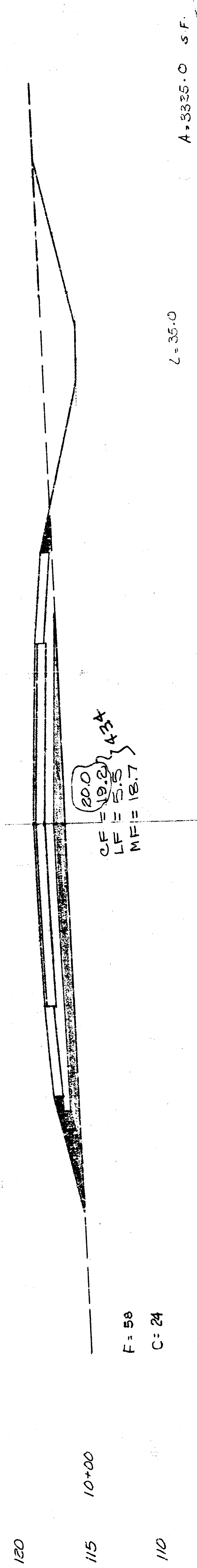
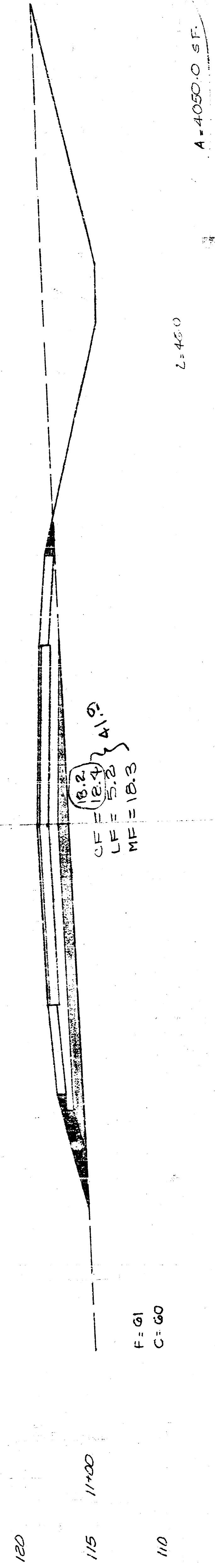
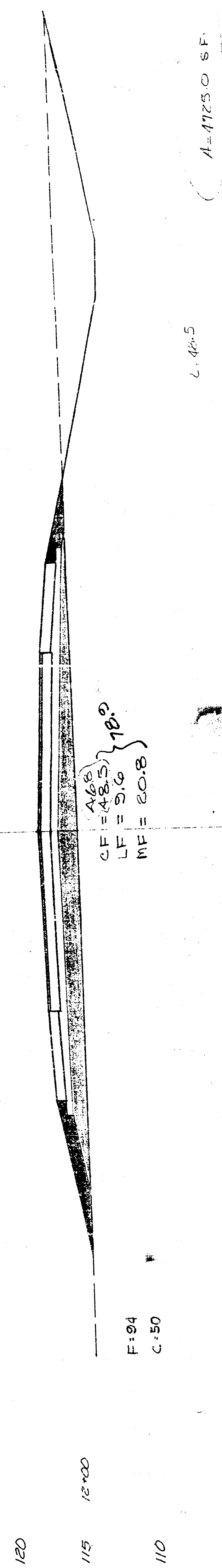
Station 21+55.00
 Install 60" x 7' Box Culvert
 Fl Right=109.20, Fl Left 109.14
 Drainage Area=0.31 sq. mi., $C=0.4$
 Intensity=25yr.=3.34in./hr., 100yr.=4.25in./hr.
 $Q=25yr.=264cfs$, 100yr.=337cfs



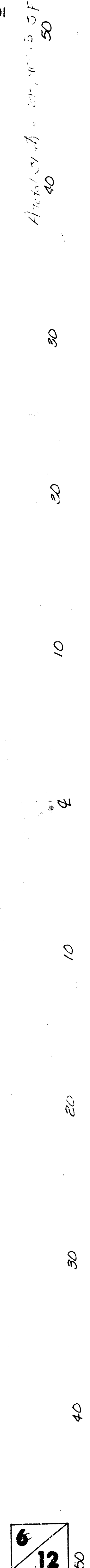


YOSEMITE DRIVE
472-76-245-80908-000-000-001

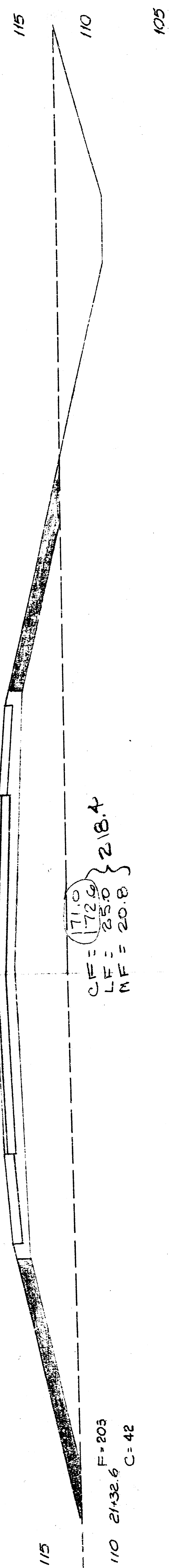
5
12



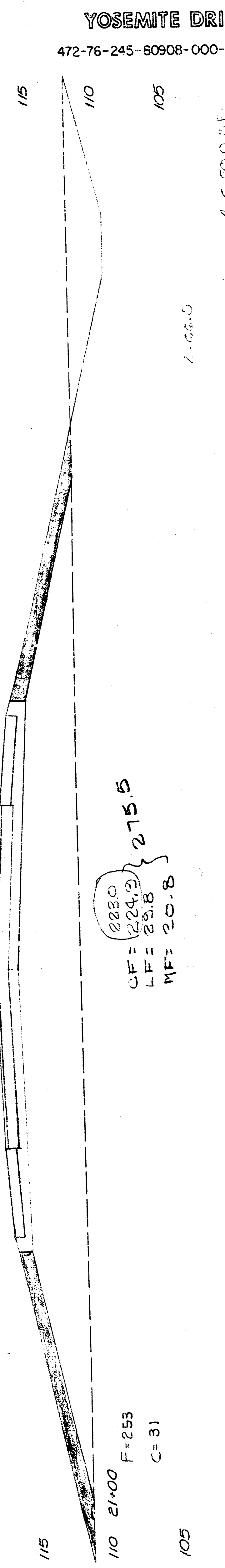
YOSEMITE DRIVE
472-76-245-80908-000-000-001



Hook-up
CF =
MF =



$P = 65.5$
 $A = 6,000.0$ S.F.



$CF = 224.3$
 $LF = 25.8$
 $MF = 20.8$
 275.5

$P = 65.5$
 $A = 6,000.0$ S.F.

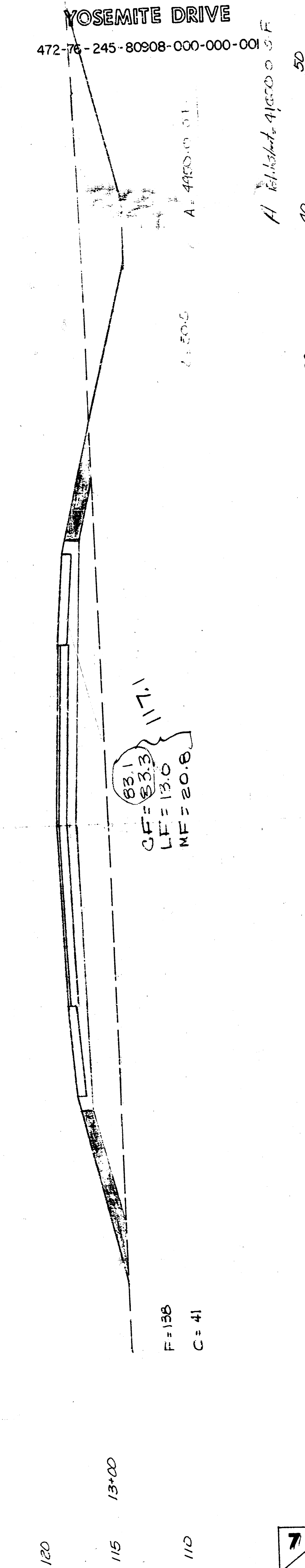
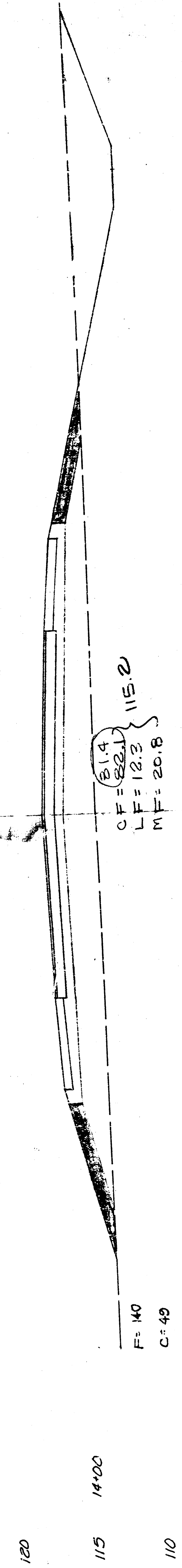
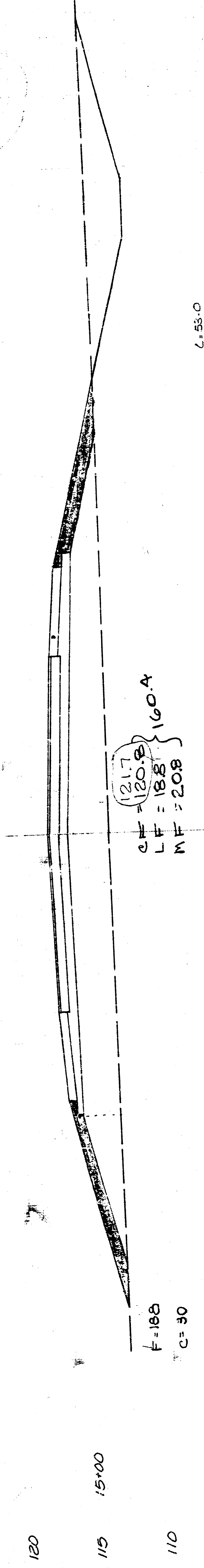
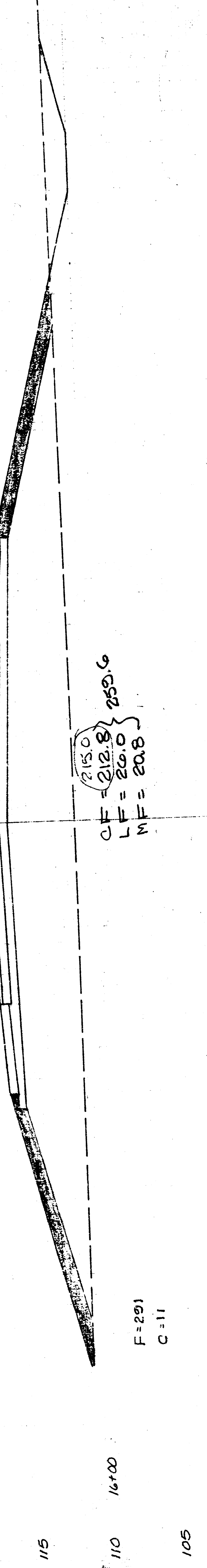
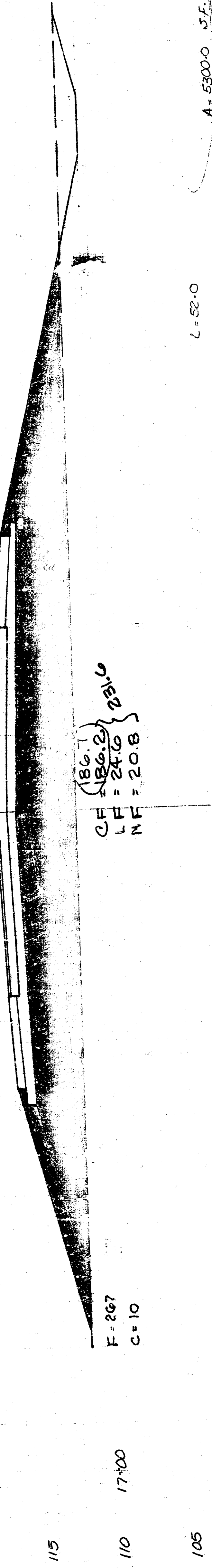
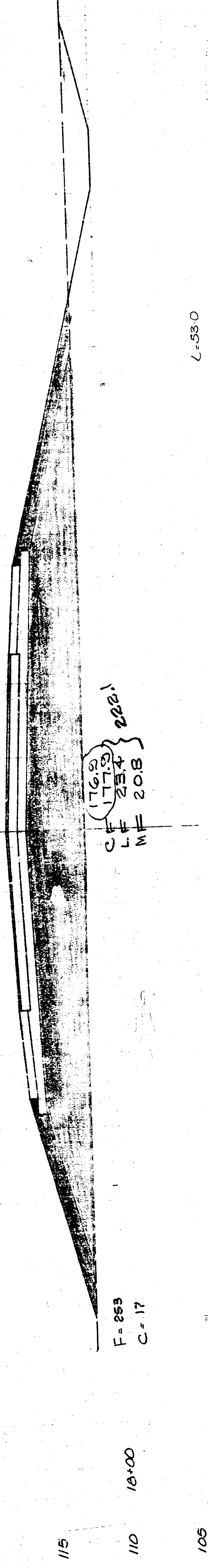
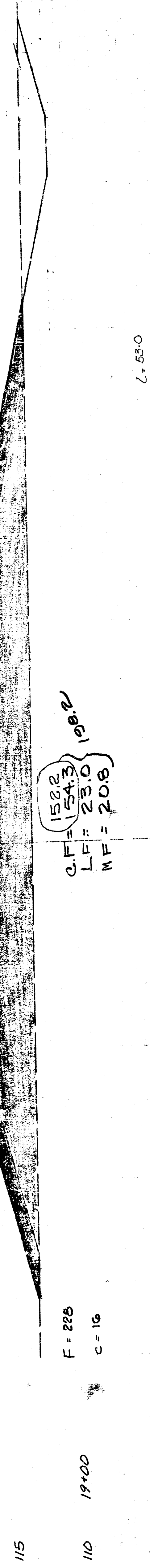
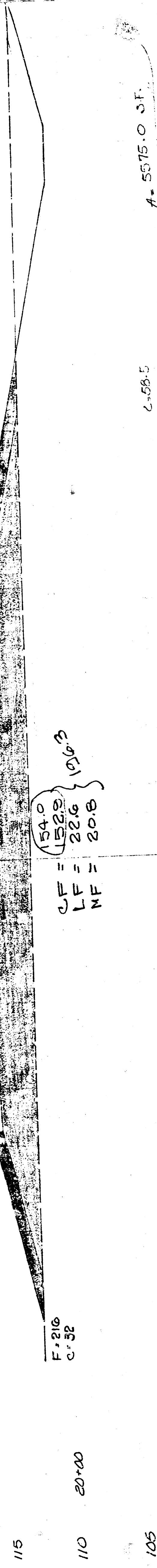
YOSEMITE DRIVE
472-76-245-60908-000-000-001

$A_{Total} = 12850.0$ S.F.
50 60

40 30 20 10 0

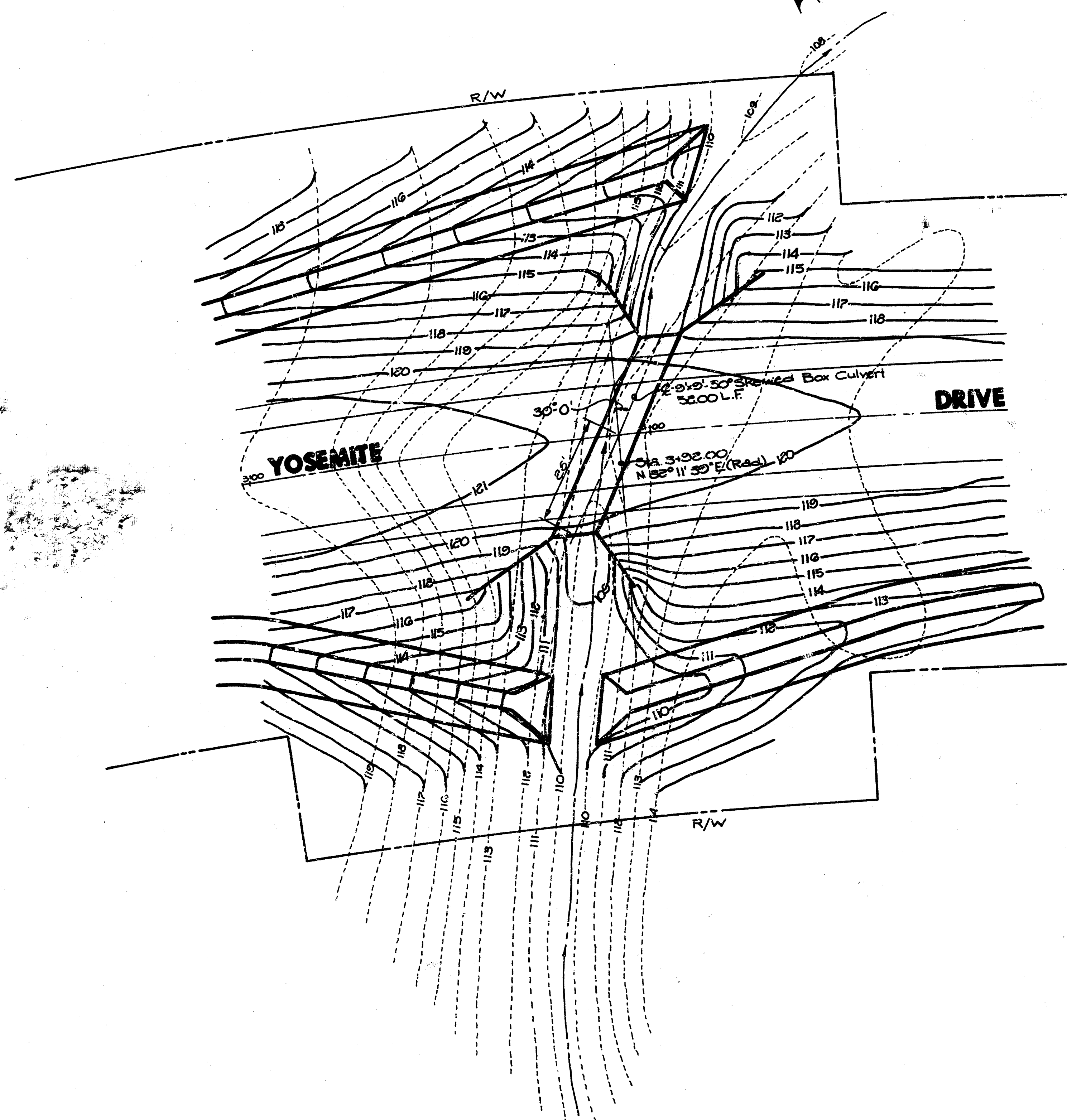
40 30 20 10 0

8 12 40



9' x 9' - 30° Skewed Box Culvert			
Description	North Coordinate	East Coordinate	Elev.
Sta. 4+00.00 - Yosemite Drive	1000.000	1000.000	120.63
4' Box Culvert - South Flow Line	996.480	995.511	108.00
4' Box Culvert - North Flow Line	1020.785	1005.507	128.95
T.O.W. - SE Wing Wall - South End	990.040	970.614	115.14
T.O.W. - SE Wing Wall - North End	994.040	965.070	118.21
T.O.W. - SW Wing Wall - South End	996.234	953.711	115.14
T.O.W. - SW Wing Wall - North End	998.313	957.555	118.21
T.O.W. - NE Wing Wall - North End	1020.980	1035.507	115.09
T.O.W. - NE Wing Wall - South End	1018.255	1015.065	118.16
T.O.W. - NW Wing Wall - North End	1037.174	1004.404	115.09
T.O.W. - NW Wing Wall - South End	1023.174	1003.948	118.16

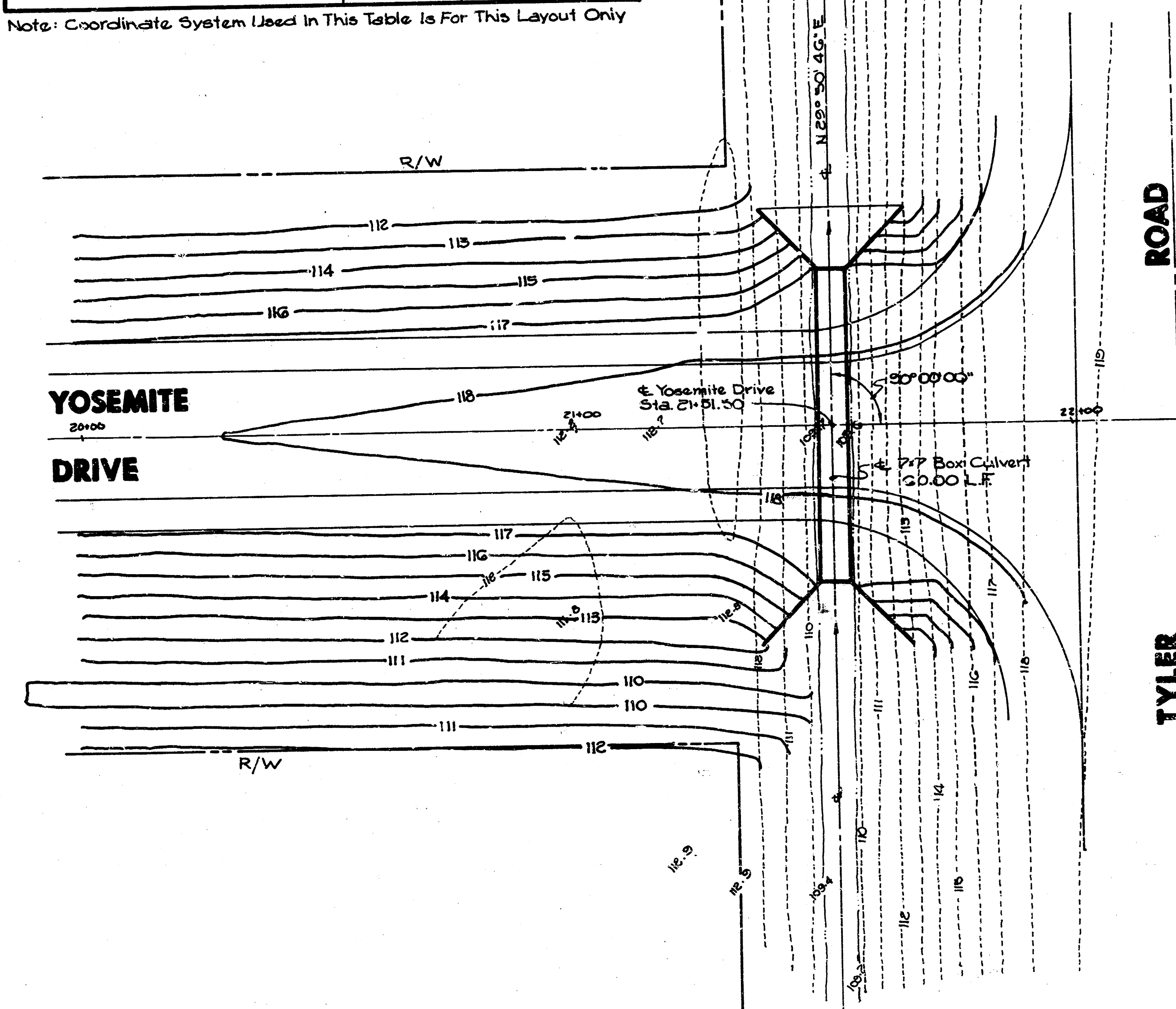
Note: Coordinate System Used In This Table Is For This Layout Only



SITE LAYOUT
9' x 9' - 30° SKEWED BOX CULVERT

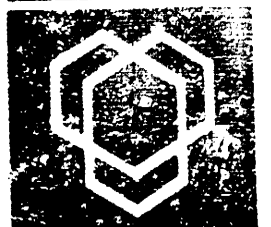
7' x 7' Box Culvert			
Description	North Coordinate	East Coordinate	Elev.
Sta. 21+51.50 - Yosemite Drive	1000.000	1000.000	118.53
7' Box Culvert - South Flow Line	973.979	965.070	109.20
7' Box Culvert - North Flow Line	1026.021	1014.930	109.14
T.O.W. - SE Wing Wall - South End	956.319	988.935	114.05
T.O.W. - SE Wing Wall - North End	971.804	988.687	117.33
T.O.W. - SW Wing Wall - South End	971.807	965.709	114.05
T.O.W. - SW Wing Wall - North End	976.054	981.453	117.33
T.O.W. - NE Wing Wall - North End	1028.193	1034.231	113.99
T.O.W. - NE Wing Wall - South End	1023.946	1018.547	117.27
T.O.W. - NW Wing Wall - North End	1043.781	1007.066	113.99
T.O.W. - NW Wing Wall - South End	1038.086	1011.313	117.27

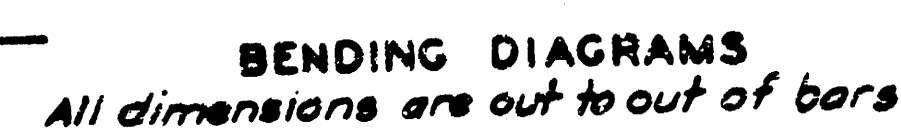
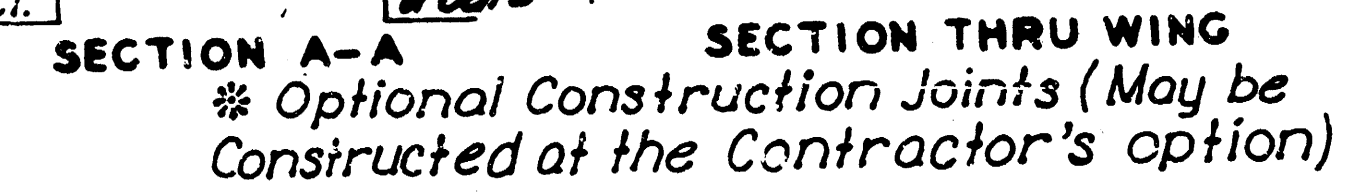
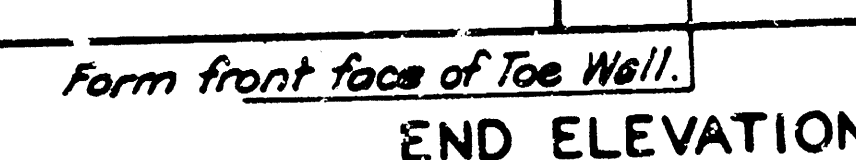
Note: Coordinate System Used In This Table Is For This Layout Only



SITE LAYOUT
7' x 7' BOX CULVERT

Note: For location of coordinate points and elev. for Box Culverts see Box Culvert Details Sheets

BOX CULVERT LAYOUTS  Van Doren - Hazard - Stallings Architects • Engineers • Planners Topeka Wichita Minneapolis		Design
		Drawn by
		Checked by
		Date
		Job no.
		Sheet
		of 12

[illegible][illegible]

2	4-5-79	Steel & Conc. Quant. Fence Bolt	W.L.H.	L.R.P.
1	9-26-77	Keyed Joint Option	W.L.H.	L.R.P.
NO	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

STD. 9" SPAN CONCRETE BOX
30° SKEW 10/12

STD. NO. 326-3 DATE: March 13, 1979

SHEET NO.	OF	SCALE	APP'D BY: <i>K. H. Karsner</i>	DATE: <i>3/13/79</i>
DESIGNED BY: <i>McCollum</i>	DETAILS: <i>Slump</i>		QUANTITIES: <i>1</i>	TRACED
DESIGNED BY: <i>Armstrong</i>	DETAIL ON: <i>Chairs/Reinced</i>		QUANT. ON: <i>Chairs/Reinced</i>	TRACE ON

10 / 12

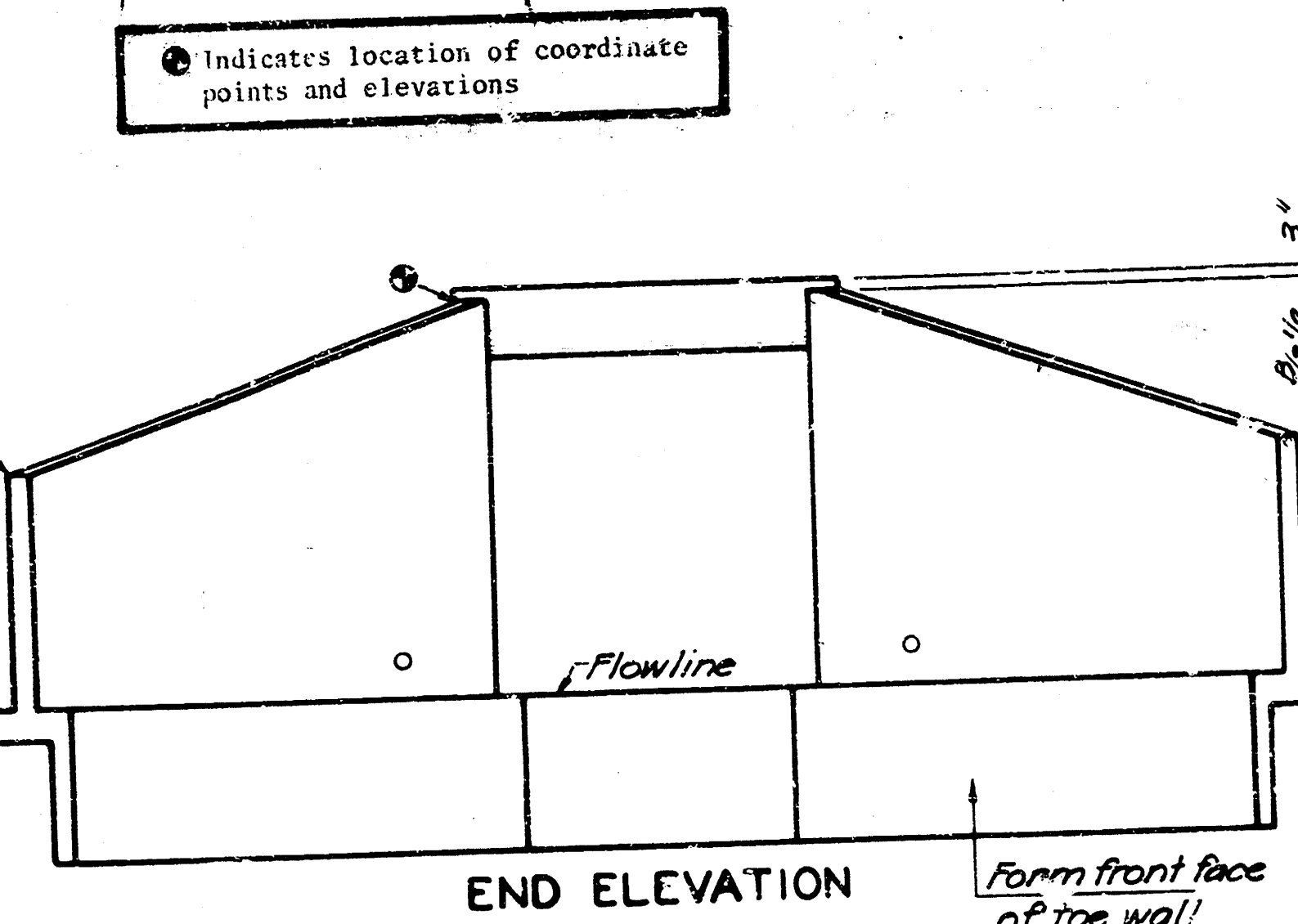
FHWA REG. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
7	KANSAS				

GENERAL NOTE

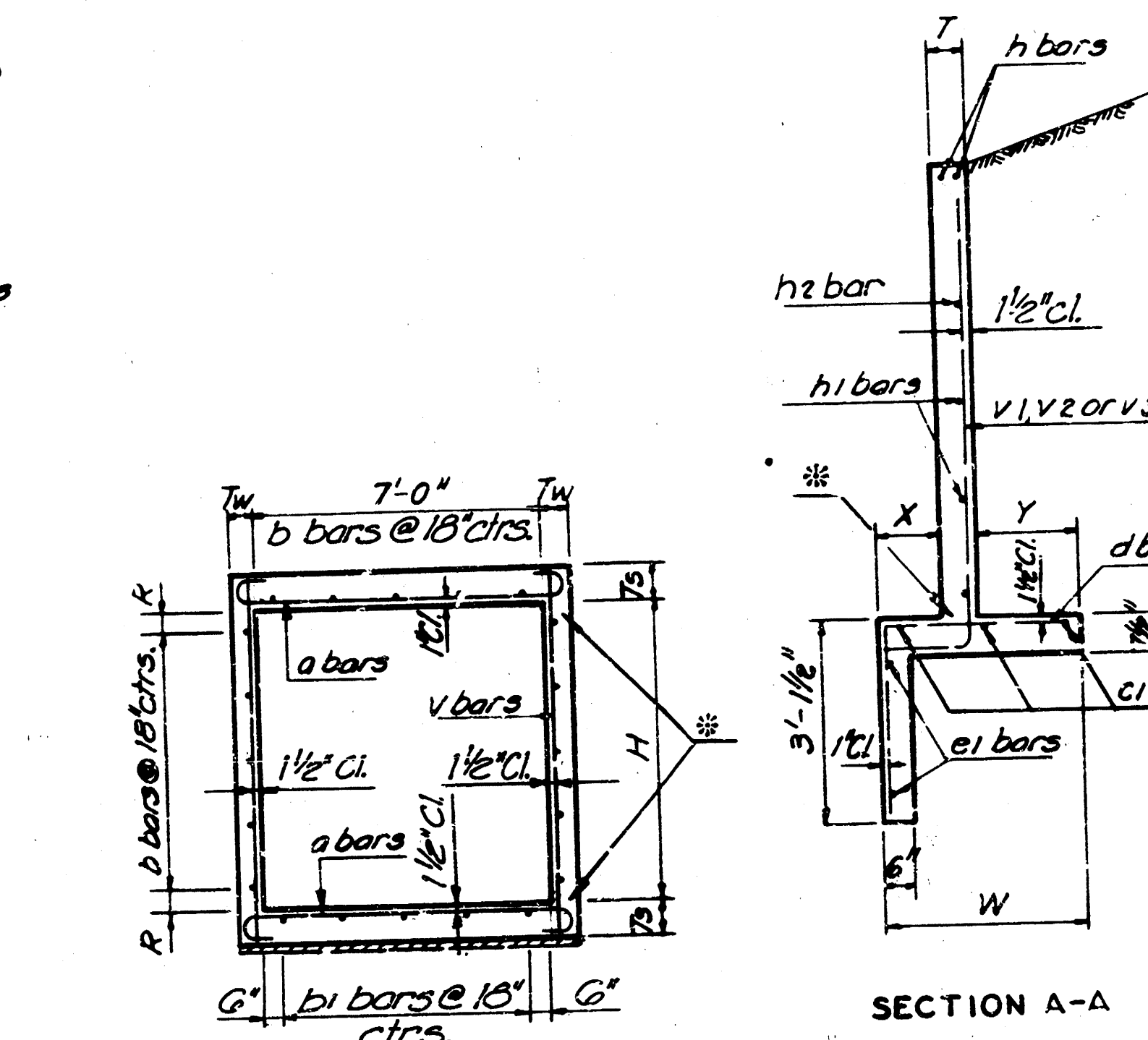
LOADING: H20-44AASHO Specifications, Edition of 1969
UNIT STRESSES: $f'_c = 3,000$ p.s.i.; $f_{ct} = 1,200$ p.s.i.; $f_s = 20,000$ p.s.i.
Class A AE Conc. shall be used throughout. Reveal all exposed edges with a 3/4" triangular moulding, and all other otherwise noted. All dimensions relative to reinforcing steel are to center-line of bars unless otherwise noted.
Seal Course consisting of 3" of Class A Concrete shall be constructed only where specified on the plans or by the Engineer. No reinforcing steel shall be placed until the Seal Course has gained sufficient strength to permit working upon it without injury.
Floating Apron shall be constructed only between downstream wings in locations subject to scour where specified on the plans or by the Engineer.
~~Wire Reinforcing Mesh shall be electrically welded and shall be composed of No. 14 wire at 4' centers each way. Weight of reinforcing mesh shall be classified as pounds of reinforcing steel.~~
Payment for additional quantities resulting from including Seal Course and for Floating Apron as a change in the original plans, shall be made at the Unit Price bid for the various items involved.
Coarse Aggregate shall be deposited behind each weephole to occupy a space extending 15" in all directions above the weephole flowline. This work shall not be paid for directly, but shall be considered as part of the excavation work.
Keyed Joints shall be provided as shown on or to divide the box into sections of equal length. The number of joints to be used shall be as follows: 40' to 80'-1 joint; 80' to 120'-2 joints; 120' to 160'-3 joints, etc.
The quantities shown in the Culvert Summary include Apron and or Soil Saver quantities, if they are to be constructed.

The Contractor may, at his option, substitute No. 4 steel reinforcing bars for the keyed construction joints. Rebars are to be a minimum of thirty (30) inches in length, set so the joint divides the bar equally and these extra rebars will be required in each plane of steel in the culvert. The extra steel required will not be paid for, but it will be considered subsidiary to other items in the contract.

CALCULATED BY _____ DATE _____
CHECKED BY _____ DATE _____



ELEVATION AND SECTION



PLAN AND SECTION

GENERAL NOTES

LOADING: H20-44 AASHTO Specifications, Edition of 1969.

UNIT STRESSES: $f_t = 3,000$ p.s.i.; $f_c = 1,200$ p.s.i.; $f_s = 20,000$ p.s.i.

UNIT STRESSES: $f_c = 3,000 \text{ p.s.i.}$; $f_t = 1,000 \text{ p.s.i.}$; $f_s = 20,000 \text{ p.s.i.}$
 Since A-36 Conc shall be used throughout. Bevel all exposed edges with a $\frac{3}{4}"$ triangular

Class A-AE Conc shall be used
unless otherwise noted

All dimensions relative to reinforcing steel are to center line of bar unless otherwise noted.

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

Floating Apron shall be constructed only between downstream wings in locations subject to occur, where specified on the Plans or by the Engineer.

Wire reinforcing mesh shall be electrically welded and shall be composed of No. 10 Gage wire at 6" centers each way. Weight of reinforcing mesh shall be classified as pounds of re-

Payment for additional quantities resulting from including Seal Course and or Floating shall be made at the Unit Price bid for the various

Apron as a change in the original plans, shall be made at the Unit Price bid for the various items involved.

Coarse aggregate shall be deposited behind each weephole to a depth of 15" in all directions above the weephole flowline. This work shall not be paid for directly, but shall be considered a part of the excavation work.

Keyed Joints shall be provided as shown on all culverts where the box length is 30' or more. These joints shall be spaced so as to divide the box into sections of equal length. Joints to be used shall be as follows: 40' to 80' - 1 joint; 80' to 120' - 2 joints;

The number of joints to be used shall be as follows; 40 to 80 - 1 joint, 80 to 120 - 2 joints, 120 to 160 - 3 joints, etc.

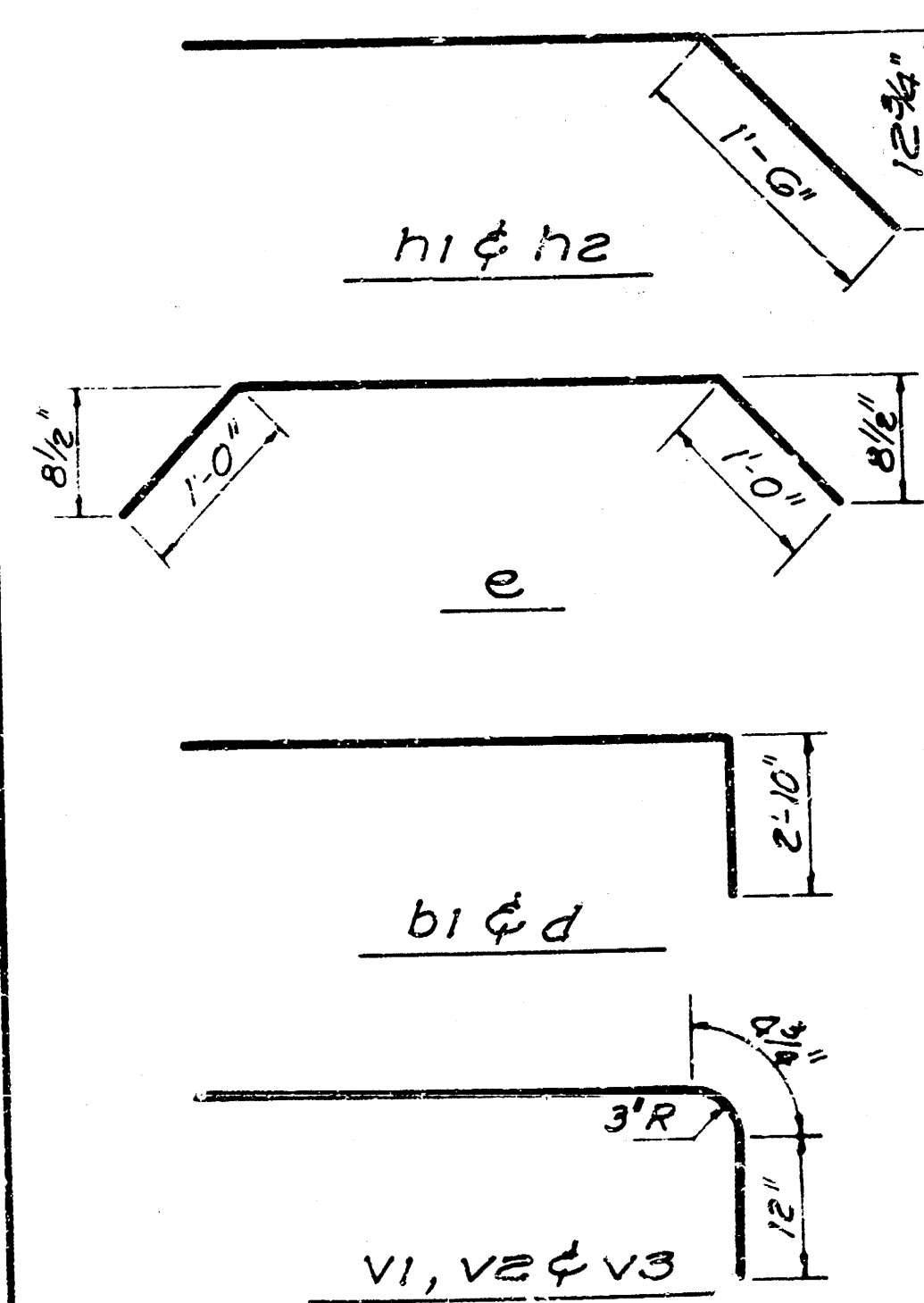
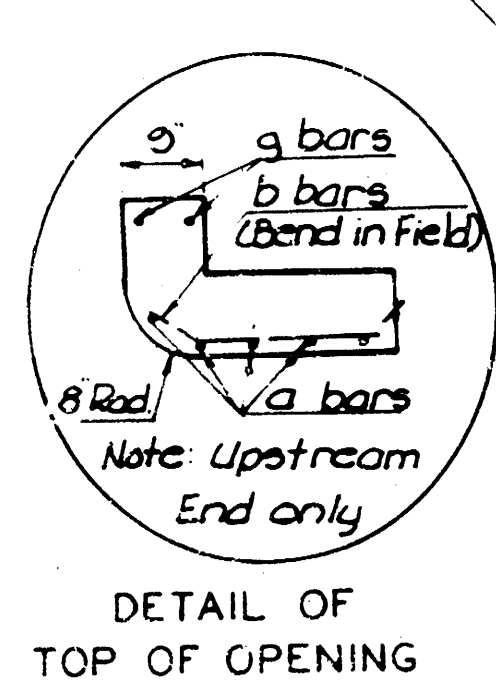
The quantities shown in Culvert Summary include Apron and or Soil Saver quantities if they are to be constructed.

~~See Standard No. 6711 (Woven Wire) or Standard No. 6721 (Barbed Wire) for details of attachment to culvert wings.~~

The Contractor may, at his option, substitute No. 4 steel reinforcing bars for the keyed construction joints. Rebars are to be a minimum of thirty (30) inches in length, set so the

joint divides the bar equally and these extra rebars will be required in each plane of steel in the culvert. The extra steel required will not be paid for directly but will be considered

in the culvert. The extra steel required will not be paid as a subsidiary to other items in the contract.



BENDING DIAGRAMS

Design Note: Length $b_1 = b + X + 2'-9"$

LIST OF BARS AND DIMENSIONS

[illegible]

7x3x													
Apron Steel (One)	23 Lbs		Seal Course	C.Y. Hdwl. Concrete (Two)								6.778 C.Y.	
Apron Concrete (One)	1.849 C.Y.		Apron Seal Course	C.Y. Concrete Per Ft. of Box								C.Y.	
Letter	A	B	C	H	R	T	Tw	W	X	Y	Bar	a	v
Dimension	8'-3"	5'-0"	4'-9 1/2" x 2'-11"	3'-0"	9'-1"	6'-1"	6'-1"	6'-0"	1'-0"	1'-0"	Space		
Bar	a	b	b1	c	d	e	e1	g	h	h1		1	12
Number			10		12	36	8	8	8	8		8	12
Size	#4	#4	#4	#4	#4	#4	#4	#5	#5	#4		#4	#4
				14'-0"	10'-0"	5'-11"	8'-0"	8'-3"	7'-9"	5'-9"		5'-2"	4'-0"

Length		7'x4'x												Hwll Concrete (Two)		8.720 CY	
Apron Steel (One)		30 Lbs Seal Course		CY Concrete Per Ft of Box												CY	
Apron Concrete (One)		2395.6 K		Apron Seal Course													
Letter	A	B	C	H	K	T	Ts	Tw	W	X	Y	Bar	a	v			
Dimension	10'-3"	7'-3"	4'-3 1/2" + 2 Tw	4'-0"	6'-4"	6'-4"	6'-4"	2'-6"	1'-0"	1'-0"	Space						
Bar	a	b	b1	c	c1	d	e	e1	g	h	h1	h2	v	v1	v2		
Number		10		2	12	44	4	8	4	8	8	4		12	12		
Size	#4	#4		#4	#4	#4	#4	#4	#5	#5	#4	#4		#4	#4		
Length				10'-0"	12'-3"	5'-11"	8'-0"	10'-3"	7'-9"	11'-5"	11'-6"	8'-8"		5'-10"	4'-7"		

[illegible]

7'x6'x													
Apron Steel (One)			47 Lbs		Sisal Course			CY Hdwl Concrete (Two)					14.558 C.Y.
Apron Concrete (One)			3.6 TONS		Apron Seal Course			C/F Concrete Per Ft of Box					C.Y.
Lefter	A	B	C	H	T ₁	T ₂	TW	X	Y	Z	a	v	
Dimension	14'-3"	0'-0"	7'-0"	6'-0"	9'	6 1/2'	3'-0"	1'-0"	1'-0"	Space			
Bar	a	b	b ₁	c	e ₁	d	e	e ₁	g	h	h ₁	he	
Number		10		2	12	60	4	9	8	12			
Size	#4	#4		#4	#4	#4	#4	#5	#4	#4			
						4'-0"	4'-0"	4'-0"	14'-0"	14'-0"	17'-0"	7'-0"	

Length	10'-0" 11'-0" 5'-7" 6'-0" 14'-3" 1'-0" 10'-0" 11'-0" 12'-0"														
	7'x7'x60'														
Apron Steel (One)	57 Lbs		Seal Course for Box		4.32		CY Hdwl Concrete (Two)		19.97 CY						
Apron Concrete (One)	4.44 CY		Apron Seal Course		12.92		CY Concrete Per Ft of Box		.757 CY						
Letter	A	B	C	H	R	T	TS	TW	W	X	Y	Bar	a	v	
Dimension	14'-3"	11'-5"	5'-7"	7'-0"	6'-0"	0"	0"	0"	5'-6"	1'-0"	1'-0"	Space	5/8"	12"	
Bar	a	b	b1	c	d	e	e1	g	h	h1	h2	h3	v	11	
Number	268	30	10	2	12	68	4	4	8	16	4	20	124	20	
Size	#5	#4	#4	#4	#4	#4	#4	#5	#5	#4	#4	#4	#4	#4	

[illegible][illegible]

R.C. BOX CULVERT
7 FT. SPAN

#12
4-G

STD NO - 314-2

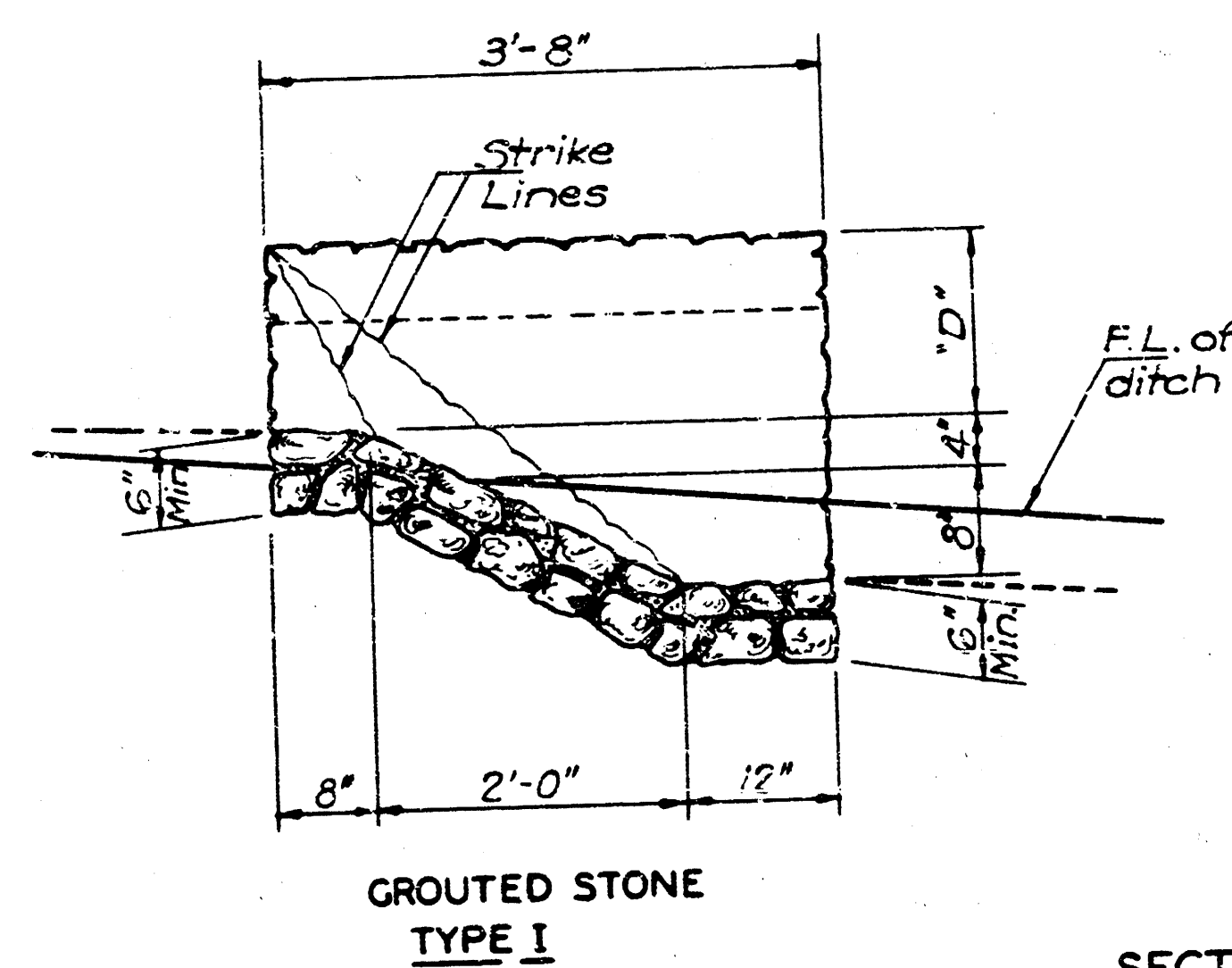
SHEET NO. OF SCALE APP'D *P. G. Schwartz*

DESIGNED BY *Richard C. Cannon* QUANTITIES *Richard C. Cannon* TRACED BY *B. L. Cannon*

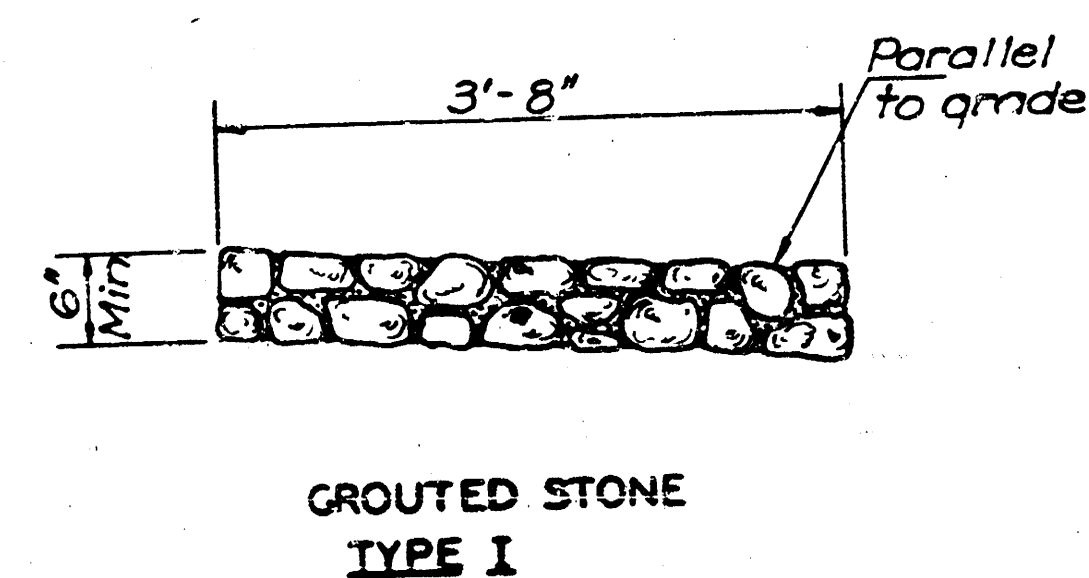
DESIGN CR *Latham* DETAIL CR *Schwartz* QUAN CR *Cannon* TRACE CR *Latham*

90° 10' - 10' 11'

CULVERT SUMMARY[illegible]

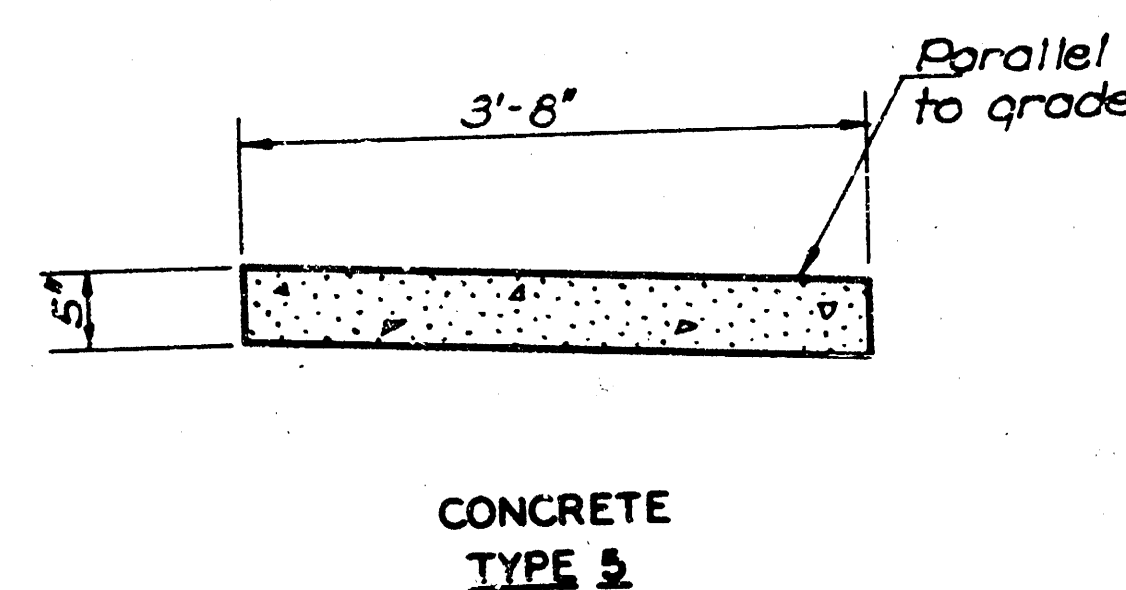
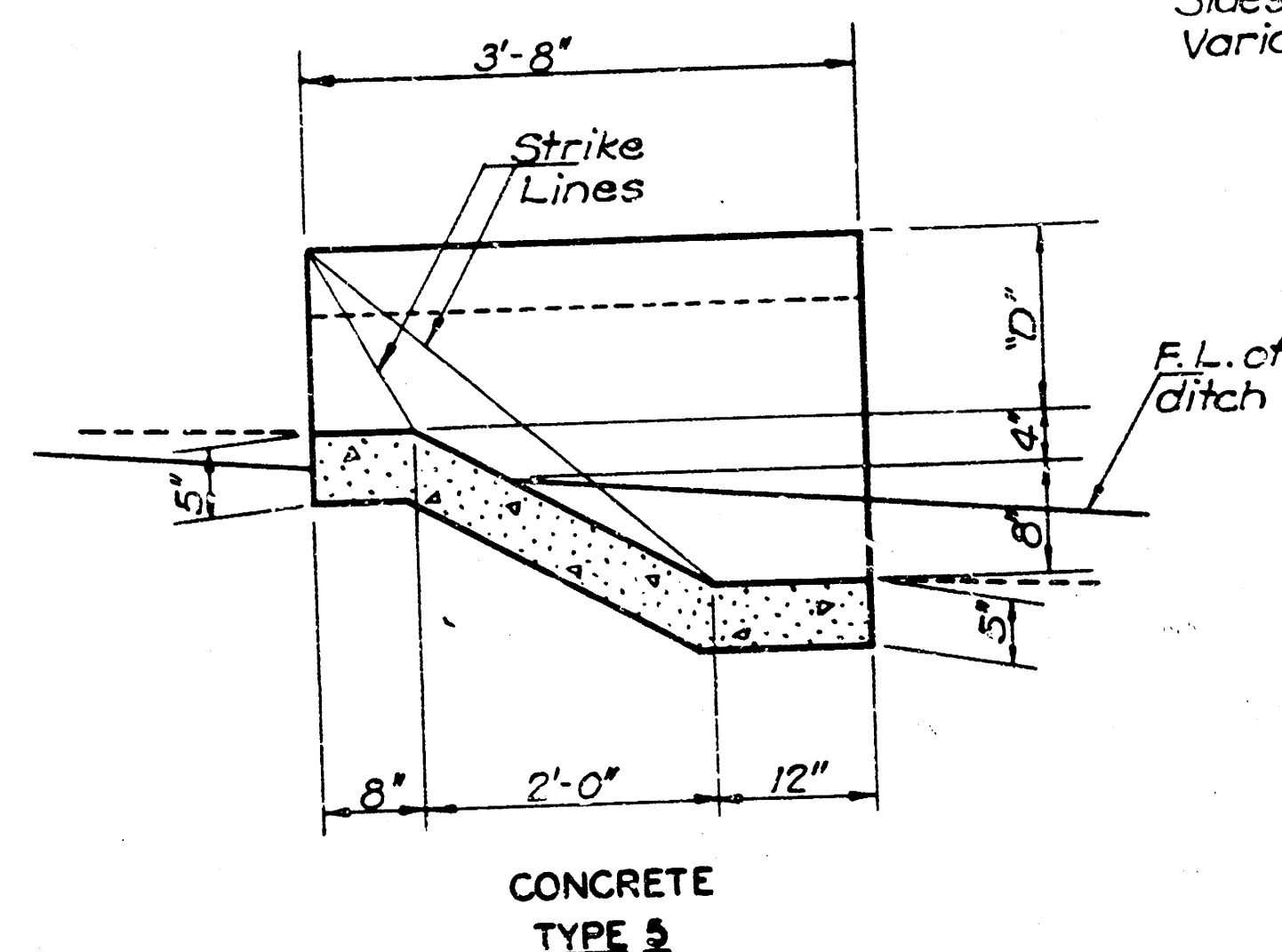


SECTION A-A
Without Toe Wall.

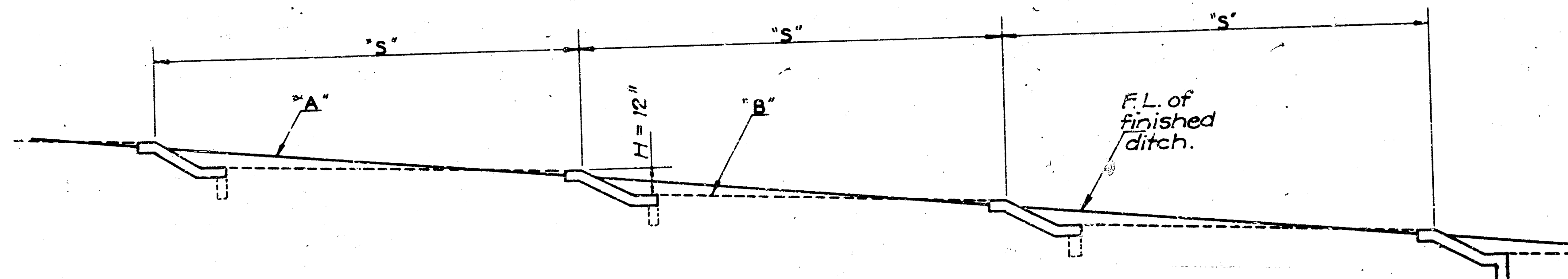


SECTION B-B
Same section at each end of unit.
Without Toe Wall.

Note: The stone in all stone wash checks shall be laid in a 3" mortar bed and the spaces between stones shall be filled with mortar.



Note: Use Class "A" concrete thruout for Type 5 & 5-T Wash Checks.



SPACING DIAGRAM
Same for each type.

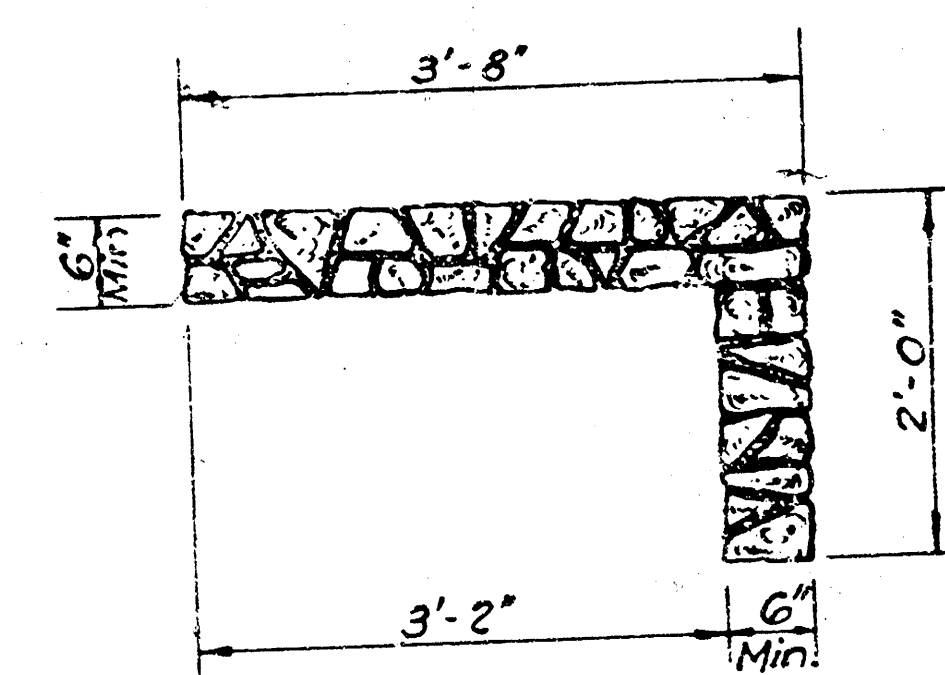
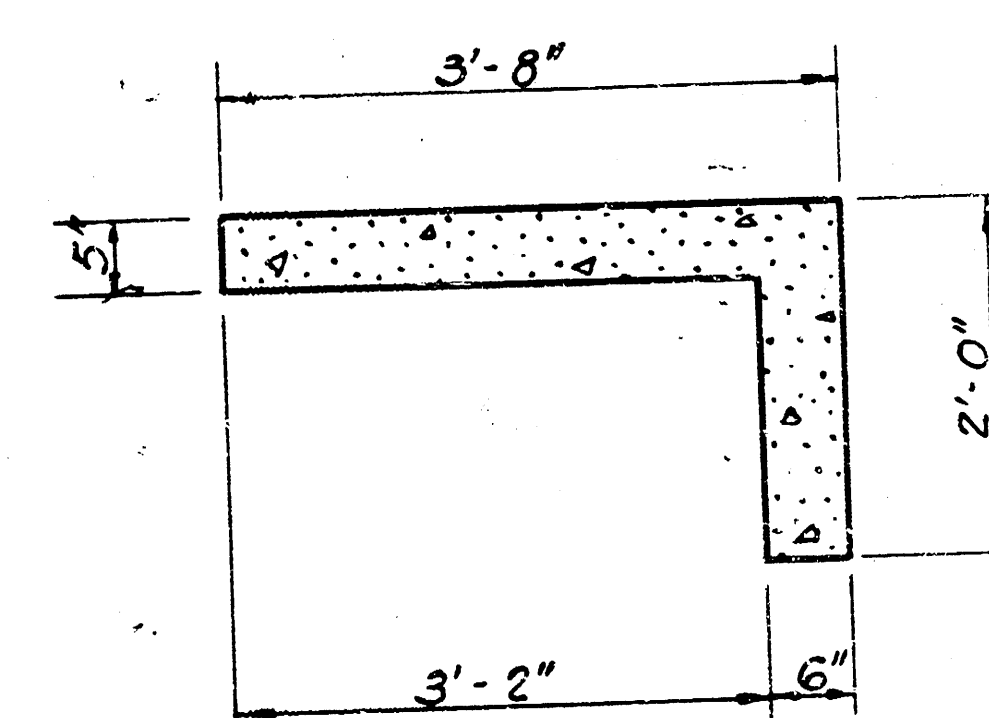
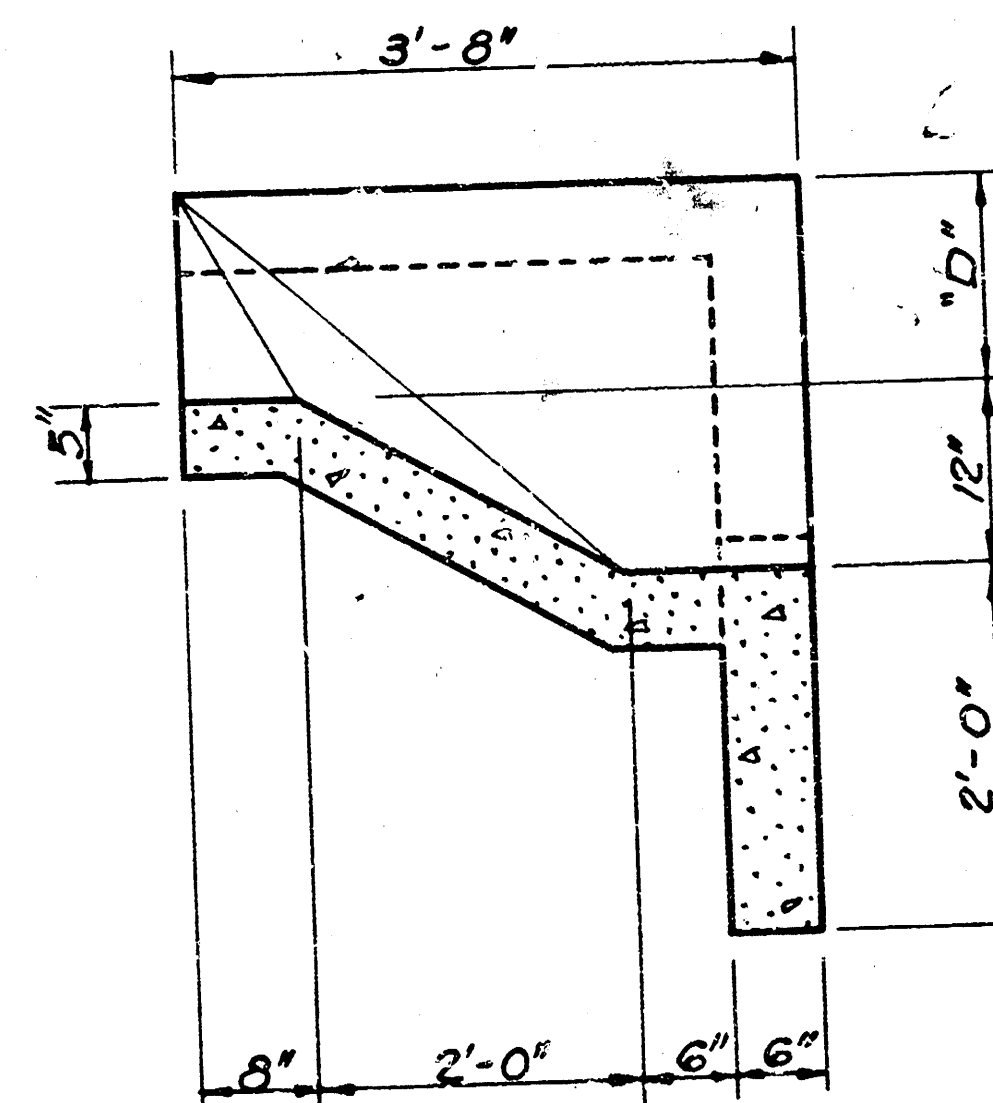
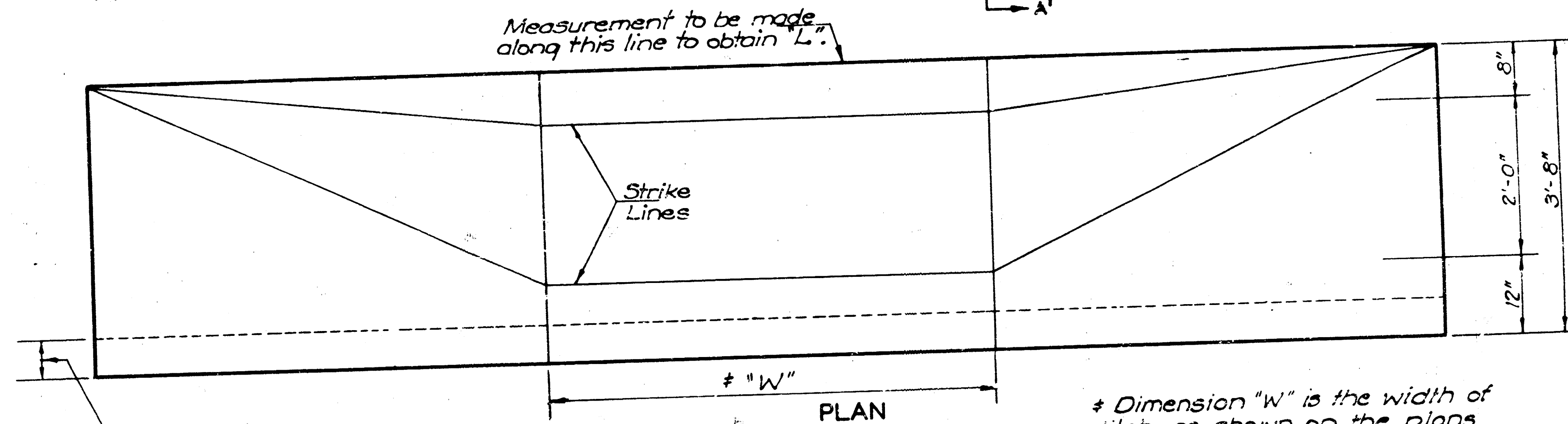
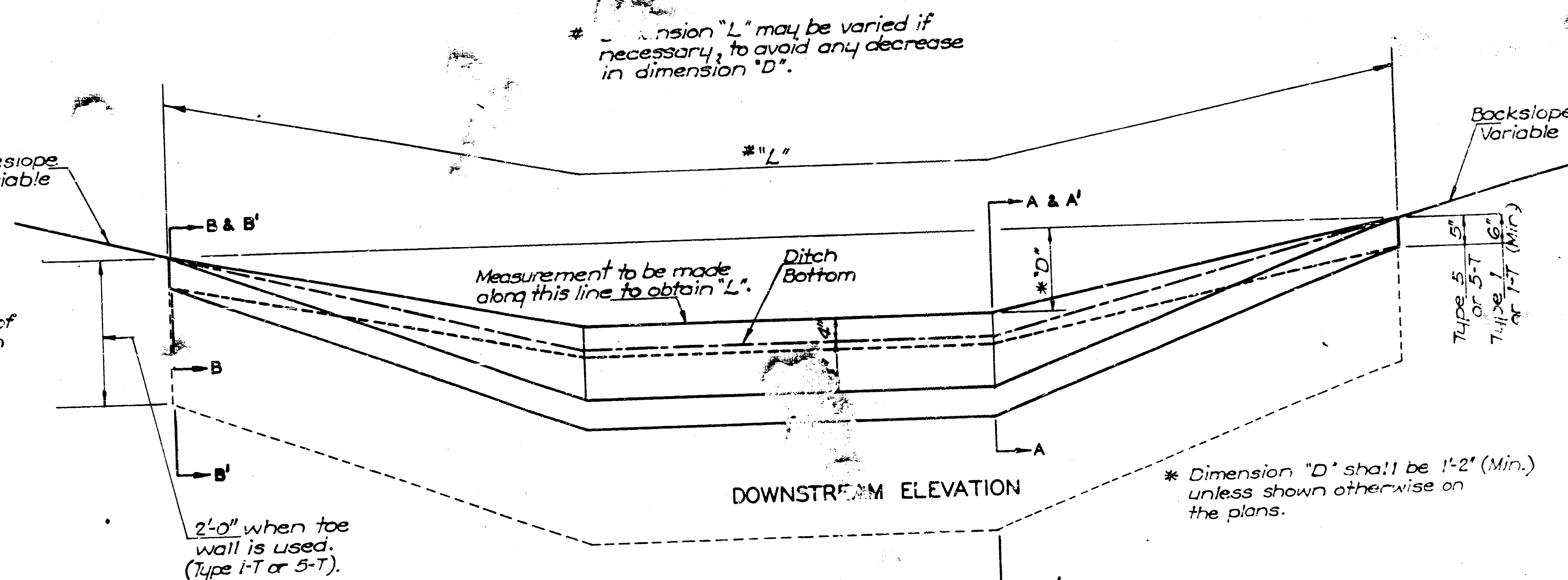
S = Spacing of units in feet (10' min.).
A = Per cent grade of ditch.
B = Per cent at which washing is expected to stop. This will vary with the type of soil, etc.
H = Height of drop at each unit.

$$S = \frac{100H}{(A-B)}, (10' \text{ min.})$$

FORMULA

TABLE OF SPACING Same for each type			
(A-B)	Spacing	(A-B)	Spacing
1	100'	6	17'
1.5	67'	6.5	15.5'
2	50'	7	14'
2.5	40'	7.5	13'
3	33'	8	12.5'
3.5	29'	8.5	12'
4	25'	9	11'
4.5	22'	9.5	10.5'
5	20'	10	10'
5.5	18'		

Note: Type 1-T or 5-T wash checks shall be used on the lowest unit in each row. Additional locations where these units are to be constructed shall be designated by the Engineer.



Note: Unless otherwise noted, either of these types may be used.



Van Doren - Hazard - Stallings

Architects - Engineers - Planners
Topeka Wichita Minneapolis