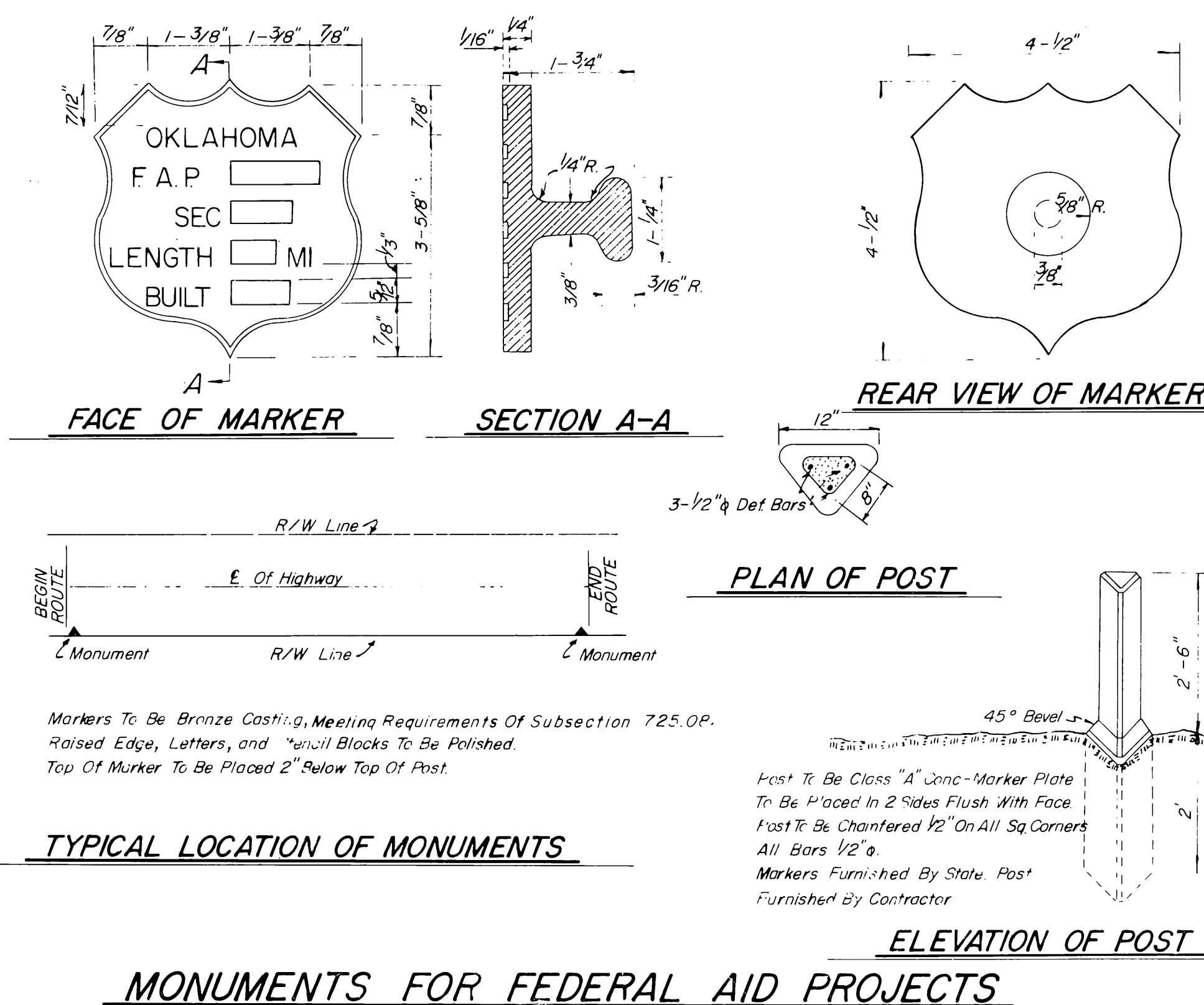
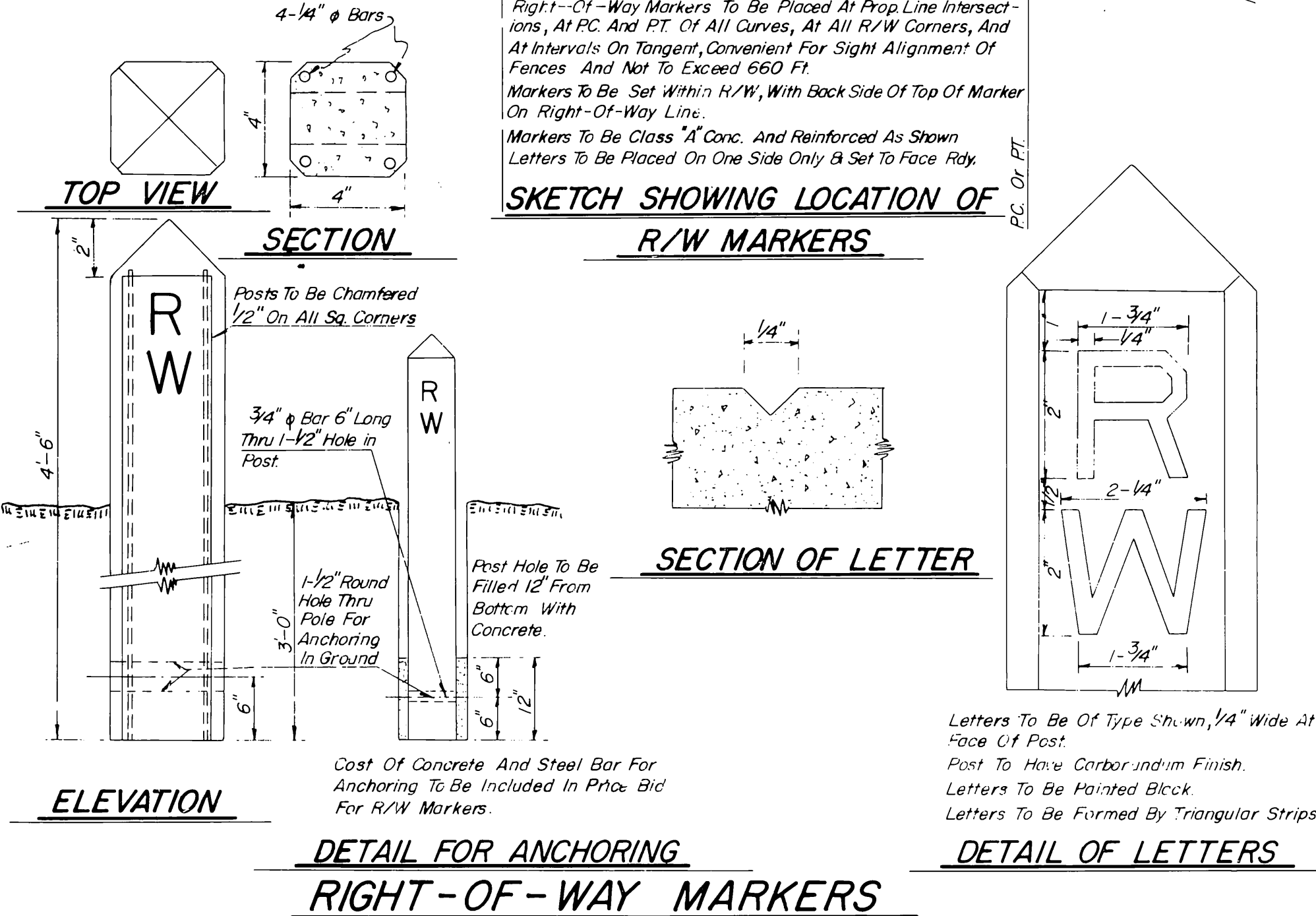


NOTE -  
Prestressed Concrete Post Will be Acceptable For Prestressed Post 5/16" Steel Strands Shall be Used. Hole to be Offset to Clear Steel Strands.



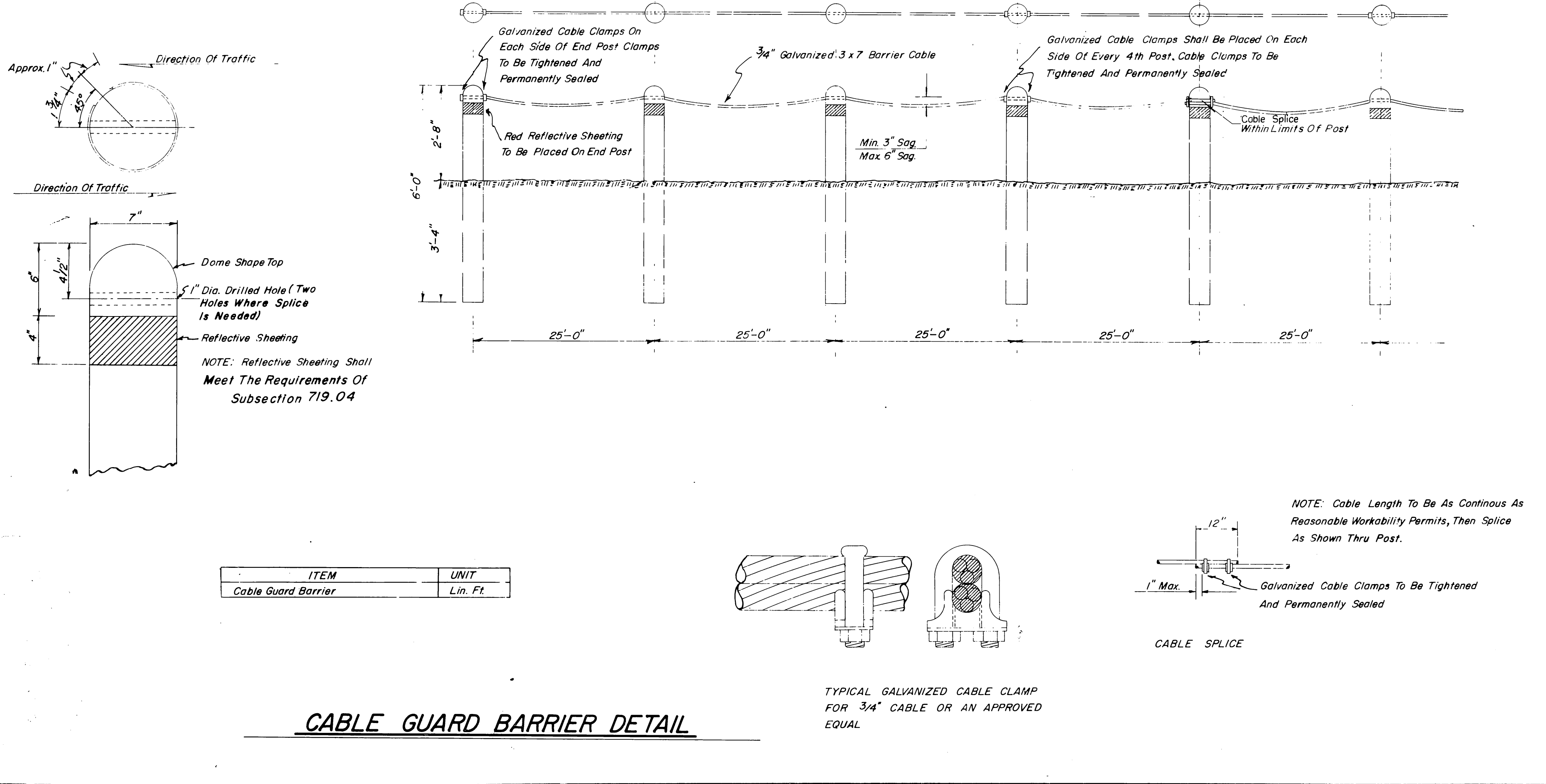
WIDENING DATA FOR HIGHWAY CURVES

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
6	OKLA.			

WIDENING AREAS - PAVEMENT

W = 0.5' For Each D Over 7° - A1 = Both Ends Of Curve - A2 = 1° Of Uniform Widening - A3 = 1 Station Due To Length Of Arc

D	W1	20' PAVEMENT			22' PAVEMENT			24' PAVEMENT											
		θ	T	X	A1	A2	A3	θ	T	X	A1	A2	A3						
1°00'																			
1°30'																			
2°00'																			
2°30'																			
3°00'																			
3°30'																			
4°00'																			
4°30'																			
5°00'																			
5°30'																			
6°00'	1.00	2°38.17'	43.48	43.43	9.33	1.832	0.102	2°38.22'	43.45	43.40	9.68	1.830	0.112	2°38.24'	43.42	43.47	9.51	1.827	0.122
6°30'	1.00	2°45.17'	41.88	41.83	9.00	1.690	0.120	2°44.76'	41.73	41.68	9.26	1.688	0.132	2°44.90'	41.69	41.64	9.19	1.685	0.144
7°00'	1.00	2°51.14'	40.26	40.21	8.48	1.568	0.138	2°51.05'	40.19	40.14	8.94	1.566	0.151	2°51.21'	40.15	40.10	8.99	1.563	0.165
7°30'	1.25	2°57.75'	43.38	43.31	12.03	1.827	0.158	2°58.04'	43.38	43.31	12.03	1.825	0.173	2°58.25'	43.34	43.27	11.97	1.821	0.189
8°00'	1.50	3°04.00'	46.02	45.92	15.66	2.054	0.180	3°04.17'	45.99	45.89	15.33	2.051	0.198	3°04.42'	45.94	45.84	15.20	2.048	0.216
8°30'	1.75	4°09.56'	48.21	48.08	18.71	2.253	0.204	4°09.70'	48.16	48.03	18.72	2.249	0.225	4°10.00'	48.11	47.98	18.60	2.244	0.245
9°00'	2.00	4°34.60'	50.05	49.89	22.21	2.429	0.228	4°34.81'	50.01	49.85	22.23	2.425	0.252	4°35.16'	49.94	49.78	22.12	2.419	0.275
9°30'	2.25	4°59.18'	51.61	51.41	25.77	2.586	0.255	4°59.61'	51.60	51.40	25.79	2.582	0.281	5°00.04'	51.52	51.33	25.70	2.574	0.307
10°00'	2.50	5°23.63'	53.02	52.78	29.53	2.727	0.282	5°24.18'	52.98	52.74	29.43	2.722	0.311	5°24.68'	52.90	52.66	29.30	2.713	0.339
10°30'	2.75	5°48.27'	54.25	53.97	33.10	2.850	0.300	5°48.87'	54.20	53.92	33.13	2.848	0.342	5°49.44'	54.11	53.83	32.96	2.839	0.373
11°00'	3.00	6°12.54'	55.34	55.02	36.85	2.968	0.342	6°13.21'	55.27	54.95	36.84	2.962	0.377	6°13.87'	55.17	54.85	36.74	2.952	0.411
11°30'	3.25	6°36.50'	56.28	55.91	40.61	3.072	0.372	6°37.35'	56.23	55.86	40.62	3.066	0.411	6°38.00'	56.12	55.75	40.48	3.054	0.448
12°00'	3.50	7°00.49'	57.14	56.71	44.42	3.167	0.425	7°01.00'	57.09	56.66	44.39	3.160	0.447	7°01.65'	56.97	56.54	44.26	3.147	0.488
12°30'	3.75	7°24.54'	57.94	57.46	48.24	3.254	0.442	7°25.19'	57.86	57.38	48.21	3.246	0.486	7°25.93'	57.74	57.25	48.14	3.232	0.527
13°00'	4.00	7°48.30'	58.62	58.08	52.08	3.333	0.477	7°49.00'	58.56	58.02	52.04	3.325	0.526	7°49.77'	58.43	57.88	51.84	3.310	0.571
13°30'	4.25	8°12.17'	59.27	58.66	55.85	3.406	0.516	8°12.77'	59.20	58.59	55.89	3.398	0.567	8°13.47'	59.06	58.45	55.68	3.381	0.618
14°00'	4.50	8°35.88'	59.84	59.17	59.61	3.474	0.553	8°36.61'	59.78	59.11	59.75	3.465	0.609	8°37.39'	59.63	58.95	59.63	3.447	0.661
14°30'	4.75	8°59.70'	60.38	59.64	63.69	3.536	0.593	9°00.43'	60.31	59.57	63.63	3.526	0.653	9°01.28'	60.14	59.40	63.48	3.507	0.715
15°00'	5.00	9°23.48'	60.87	60.05	67.13	3.593	0.635	9°24.22'	60.79	59.97	67.52	3.583	0.699	9°25.08'	60.62	59.80	67.26	3.563	0.764
15°30'	5.25	9°47.14'	61.32	60.43	71.49	3.652	0.680	9°48.00'	61.24	60.35	71.41	3.636	0.748	9°48.77'	61.06	60.16	71.13	3.614	0.815
16°00'	5.50	10°10.83'	61.73	60.76	75.40	3.696	0.724	10°11.77'	61.65	60.68	75.31	3.685	0.797	10°13.68'	61.46	60.48	75.09	3.662	0.867
16°30'	5.75	10°34.57'	62.15	61.06	79.31	3.742	0.769	10°35.53'	62.03	60.97	79.21	3.731	0.846	10°37.62'	61.82	60.76	78.90	3.706	0.922
17°00'	6.00	10°58.24'	62.47	61.33	83.23	3.785	0.818	10°59.27'	62.38	61.24	83.12	3.773	0.900	11°01.57'	62.16	61.02	82.78	3.747	0.983
17°30'	6.25	11°21.95'	62.80	61.57	87.15	3.825	0.867	11°23.03'	62.71	61.47	87.03	3.813	0.953	11°25.52'	62.48	61.24	86.67	3.785	1.051
18°00'	6.50	11°45.66'	63.11	61.79	91.14	3.862	0.916	11°46.80'	63.00	61.68	90.95	3.849	1.007	11°49.50'	62.77	61.44	90.58	3.820	1.100
18°30'	6.75	12°09.30'	63.39	61.97	95.00	3.900	0.970	12°10.56'	63.29	61.87	94.86	3.884	1.066	12°13.45'	63.04	61.60	94.46	3.853	1.159
19°00'	7.00	12°33.04'	63.66	62.14	98.93	3.929	1.022	12°34.33'	63.55	62.03	98.77	3.916	1.124	12°37.43'	63.28	61.75	98.33	3.883	1.224
19°30'	7.25	12°56.73'	63.90	62.28	102.85	3.960	1.076	12°58.08'	63.79	62.16	102.69	3.945	1.183	13°01.47'	63.51	61.88	102.19	3.911	1.295
20°00'	7.50	13°20.28'	64.12	62.39	107.02	3.988	1.133	13°21.88'	64.01	62.28	106.59	3.973	1.247	13°25.48'	63.72	61.98	106.12	3.938	1.358



METHOD OF CALCULATING WIDENING AREAS

A1 = A1  
A2 = A2 (Δ - 2θ)  
A3 = A3 (Length Of Curve in 100' Stations)  
A1 + A2 + A3 = Total Add. Area  
NOTE: A3 Is Used Only When Curve Is Not Set By Arc Definition.

NOTE: Where "T" Is Too Long For Existing Conditions, Formulae Do Not Apply. Use Y As Distance From Beginning Of Widening To P.C. Or P.T. Then:  $T = \frac{Y \cdot W_1}{2} (R_1 + R_2)$

W = Width Of Paving  
W1 = Width Of Maximum Widening In Feet  
R = Radius Of Curve.  
R1 = R - 1/2 W  
R2 = R - W  
R3 = R + R2  
θ = Cos<sup>-1</sup>  $\frac{R_2}{R_1}$   
T = R1 Sin θ  
X = T Cos θ  
A1 = (R2 + R1) (  $\frac{T}{R_1} - 0.00032321 \theta - R_2$  ) Sq. Yds.  
A2 = 0.0193925 W1 (R1 - 1/2 W1) Sq. Yds.

For Superelevation See Current SU-EL Standard

REVISIONS		RECORD	
NO.	DESCRIPTION	BY	DATE
1	Add Prestressed Conc. R/W Marker		7-18-62
2	Deleted Guide Post Added	LED	2-63
3	Cable Guard Barrier	LED	6-65
4	Rev. For 1967 Spec.	LED	6-67

OKLAHOMA DEPARTMENT OF TRANSPORTATION  
OKLAHOMA CITY, OKLAHOMA

OKLAHOMA STATE HIGHWAY COMMISSION STANDARDS

APPROVED  $\frac{1}{8}$  M 6-3-60

SQUAD:

100  
SHC 4-14