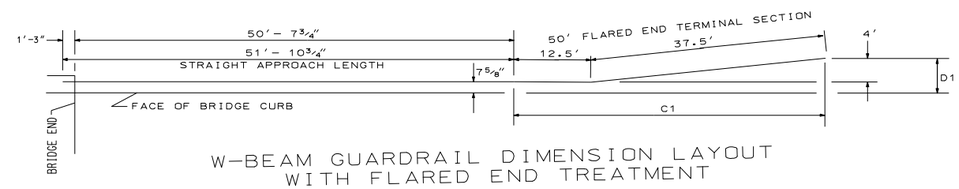
D-764-8

GUARDRAIL AT BRIDGE ENDS
60 MPH DESIGN SPEED

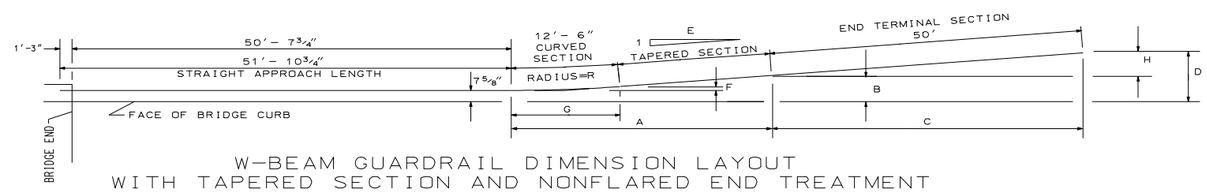
LENGTH OF NEED TABLE
60 MPH DESIGN SPEED

DESIGN TRAFFIC VOLUME	CLEAR ROADWAY WIDTH OF BRIDGE	STRAIGHT APPR. LENGTH	FLARED GUARDRAIL SECTION – APPROACH SIDE A	B	C	D	C1	D1	E	TOTAL W-BEAM LENGTH ①	OPPOSITE SIDE A	B	C	D	C1	D1	E	TOTAL W-BEAM LENGTH ①
		FT	FT	FT	FT	FT	FT	FT		FT	FT	FT	FT	FT	FT	FT		FT
UNDER 250 ADT	44	51.9	12.49	1.12	49.85	4.95			13	64.4	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	42	51.9	12.49	1.12	49.85	4.95			13	64.4	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	40	51.9	24.95	2.08	49.85	5.91			13	76.9	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	38	51.9	24.95	2.08	49.85	5.91			13	76.9	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	36	51.9	37.42	3.04	49.85	6.87			13	89.4	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	34	51.9	37.42	3.04	49.85	6.87			13	89.4	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	32	51.9	49.88	4.00	49.85	7.83			13	101.9	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	30	51.9	49.88	4.00	49.85	7.83			13	101.9	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	28	51.9	62.34	4.95	49.85	8.79			13	114.4	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	26	51.9	74.81	5.91	49.85	9.75			13	126.9	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	24	51.9	74.81	5.91	49.85	9.75			13	126.9	12.49	1.12	49.85	4.95			13	64.4
250 - 800 ADT	44	51.9	24.95	2.08	49.85	5.91			13	76.9	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	42	51.9	37.42	3.04	49.85	6.87			13	89.4	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	40	51.9	37.42	3.04	49.85	6.87			13	89.4	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	38	51.9	49.88	4.00	49.85	7.83			13	101.9	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	36	51.9	49.88	4.00	49.85	7.83			13	101.9	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	34	51.9	62.34	4.95	49.85	8.79			13	114.4	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	32	51.9	62.34	4.95	49.85	8.79			13	114.4	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	30	51.9	74.81	5.91	49.85	9.75			13	126.9	12.49	1.12	49.85	4.95			13	64.4
	28	51.9	74.81	5.91	49.85	9.75			13	126.9	12.49	1.12	49.85	4.95			13	64.4
	26	51.9	87.27	6.87	49.85	10.71			13	139.4	12.49	1.12	49.85	4.95			13	64.4
	24	51.9	87.27	6.87	49.85	10.71			13	139.4	12.49	1.12	49.85	4.95			13	64.4
800 - 2000 ADT	44	51.9	37.42	3.04	49.85	6.87			13	89.4	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	42	51.9	49.88	4.00	49.85	7.83			13	101.9	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	40	51.9	49.88	4.00	49.85	7.83			13	101.9	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	38	51.9	62.34	4.95	49.85	8.79			13	114.4	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	36	51.9	62.34	4.95	49.85	8.79			13	114.4	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	34	51.9	74.81	5.91	49.85	9.75			13	126.9	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	32	51.9	74.81	5.91	49.85	9.75			13	126.9	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	30	51.9	87.27	6.87	49.85	10.71			13	139.4	12.49	1.12	49.85	4.95			13	64.4
	28	51.9	87.27	6.87	49.85	10.71			13	139.4	12.49	1.12	49.85	4.95			13	64.4
	26	51.9	99.73	7.83	49.85	11.67			13	151.9	24.95	2.08	49.85	5.91			13	76.9
	24	51.9	99.73	7.83	49.85	11.67			13	151.9	24.95	2.08	49.85	5.91			13	76.9
2000 - 6000 ADT	44	51.9	62.34	4.95	49.85	8.79			13	114.4	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	42	51.9	62.34	4.95	49.85	8.79			13	114.4	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	40	51.9	74.81	5.91	49.85	9.75			13	126.9	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	38	51.9	74.81	5.91	49.85	9.75			13	126.9	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	36	51.9	87.27	6.87	49.85	10.71			13	139.4	12.49	1.12	49.85	4.95			13	64.4
	34	51.9	87.27	6.87	49.85	10.71			13	139.4	12.49	1.12	49.85	4.95			13	64.4
	32	51.9	99.73	7.83	49.85	11.67			13	151.9	24.95	2.08	49.85	5.91			13	76.9
	30	51.9	99.73	7.83	49.85	11.67			13	151.9	24.95	2.08	49.85	5.91			13	76.9
	28	51.9	112.20	8.79	49.85	12.62			13	164.4	37.42	3.04	49.85	6.87			13	89.4
	26	51.9	112.20	8.79	49.85	12.62			13	164.4	37.42	3.04	49.85	6.87			13	89.4
	24	51.9	124.66	9.75	49.85	13.58			13	176.9	49.88	4.00	49.85	7.83			13	101.9
OVER 6000 ADT	44	51.9	74.81	5.91	49.85	9.75			13	126.9	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	42	51.9	87.27	6.87	49.85	10.71			13	139.4	12.49	1.12	49.85	4.95			13	64.4
	40	51.9	87.27	6.87	49.85	10.71			13	139.4	12.49	1.12	49.85	4.95			13	64.4
	38	51.9	99.73	7.83	49.85	11.67			13	151.9	24.95	2.08	49.85	5.91			13	76.9
	36	51.9	99.73	7.83	49.85	11.67			13	151.9	24.95	2.08	49.85	5.91			13	76.9
	34	51.9	112.20	8.79	49.85	12.62			13	164.4	37.42	3.04	49.85	6.87			13	89.4
	32	51.9	112.20	8.79	49.85	12.62			13	164.4	37.42	3.04	49.85	6.87			13	89.4
	30	51.9	124.66	9.75	49.85	13.58			13	176.9	49.88	4.00	49.85	7.83			13	101.9
	28	51.9	124.66	9.75	49.85	13.58			13	176.9	49.88	4.00	49.85	7.83			13	101.9
	26	51.9	137.12	10.71	49.85	14.54			13	189.4	62.34	4.95	49.85	8.79			13	114.4
	24	51.9	137.12	10.71	49.85	14.54			13	189.4	62.34	4.95	49.85	8.79			13	114.4

① Does not include end treatment section



W-BEAM GUARDRAIL DIMENSION LAYOUT
WITH FLARED END TREATMENT



W-BEAM GUARDRAIL DIMENSION LAYOUT
WITH TAPERED SECTION AND NONFLARED END TREATMENT

DESIGN SPEED	F	G	H	R
60	0.48	12.49	3.83	162.82

NOTES:
On divided highways use distance from roadway centerline to bridge rail x 2 and use this as clear roadway width of the bridge to determine guardrail length.

The contractor shall use wood posts for w-beam guardrail.

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

09-01-98

REVISIONS

DATE	CHANGE
12-21-00	Revised flared end treatment
08-09-01	Revised note
12-18-02	Revised table
12-01-04	PE Stamp added

This document was originally issued and sealed by MARK S GAYDOS, Registration Number PE-4518, on 12/01/04 and the original document is stored at the North Dakota Department of Transportation