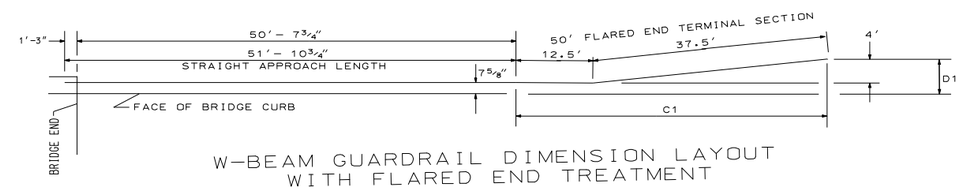
D-764-8A

GUARDRAIL AT BRIDGE ENDS
65 MPH DESIGN SPEED

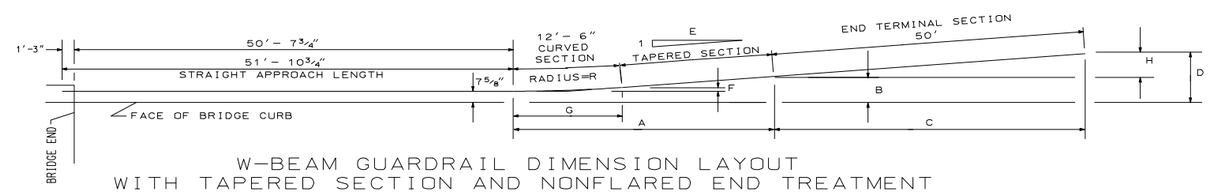
LENGTH OF NEED TABLE
65 MPH DESIGN SPEED

DESIGN TRAFFIC VOLUME	CLEAR ROADWAY WIDTH OF BRIDGE	STRAIGHT APPR. LENGTH	FLARED GUARDRAIL SECTION															
			APPROACH SIDE								OPPOSITE SIDE							
			A	B	C	D	C1	D1	E	TOTAL W-BEAM LENGTH ①	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	24.96	1.98	49.87	5.54			14	76.9	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	42	51.9	24.96	1.98	49.87	5.54			14	76.9	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	40	51.9	37.43	2.87	49.87	6.43			14	89.4	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	38	51.9	37.43	2.87	49.87	6.43			14	89.4	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	36	51.9	49.89	3.76	49.87	7.32			14	101.9	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	34	51.9	49.89	3.76	49.87	7.32			14	101.9	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	32	51.9	62.36	4.65	49.87	8.21			14	114.4	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	30	51.9	62.36	4.65	49.87	8.21			14	114.4	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	28	51.9	74.83	5.54	49.87	9.11			14	126.9	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	26	51.9	74.83	5.54	49.87	9.11			14	126.9	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	24	51.9	87.30	6.43	49.87	10.00			14	139.4	12.49	1.09	49.87	4.65			14	64.4
250 - 800 ADT	44	51.9	37.43	2.87	49.87	6.43			14	89.4	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	42	51.9	49.89	3.76	49.87	7.32			14	101.9	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	40	51.9	49.89	3.76	49.87	7.32			14	101.9	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	38	51.9	62.36	4.65	49.87	8.21			14	114.4	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	36	51.9	62.36	4.65	49.87	8.21			14	114.4	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	34	51.9	74.83	5.54	49.87	9.11			14	126.9	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	32	51.9	74.83	5.54	49.87	9.11			14	126.9	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	30	51.9	87.30	6.43	49.87	10.00			14	139.4	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	28	51.9	87.30	6.43	49.87	10.00			14	139.4	12.49	1.09	49.87	4.65			14	64.4
	26	51.9	99.77	7.32	49.87	10.89			14	151.9	12.49	1.09	49.87	4.65			14	64.4
	24	51.9	99.77	7.32	49.87	10.89			14	151.9	24.96	1.98	49.87	5.54			14	76.9
800 - 2000 ADT	44	51.9	49.89	3.76	49.87	7.32			14	101.9	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	42	51.9	62.36	4.65	49.87	8.21			14	114.4	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	40	51.9	62.36	4.65	49.87	8.21			14	114.4	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	38	51.9	74.83	5.54	49.87	9.11			14	126.9	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	36	51.9	87.30	6.43	49.87	10.00			14	139.4	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	34	51.9	87.30	6.43	49.87	10.00			14	139.4	12.49	1.09	49.87	4.65			14	64.4
	32	51.9	99.77	7.32	49.87	10.89			14	151.9	12.49	1.09	49.87	4.65			14	64.4
	30	51.9	99.77	7.32	49.87	10.89			14	151.9	24.96	1.98	49.87	5.54			14	76.9
	28	51.9	112.24	8.21	49.87	11.78			14	164.4	24.96	1.98	49.87	5.54			14	76.9
	26	51.9	112.24	8.21	49.87	11.78			14	164.4	37.43	2.87	49.87	6.43			14	89.4
	24	51.9	124.70	9.11	49.87	12.67			14	176.9	37.43	2.87	49.87	6.43			14	89.4
2000 - 6000 ADT	44	51.9	62.36	4.65	49.87	8.21			14	114.4	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	42	51.9	74.83	5.54	49.87	9.11			14	126.9	0.00	0.64	50.00	0.64	49.79	4.64		51.9
	40	51.9	87.30	6.43	49.87	10.00			14	139.4	12.49	1.09	49.87	4.65			14	64.4
	38	51.9	87.30	6.43	49.87	10.00			14	139.4	12.49	1.09	49.87	4.65			14	64.4
	36	51.9	99.77	7.32	49.87	10.89			14	151.9	24.96	1.98	49.87	5.54			14	76.9
	34	51.9	112.24	8.21	49.87	11.78			14	164.4	24.96	1.98	49.87	5.54			14	76.9
	32	51.9	112.24	8.21	49.87	11.78			14	164.4	37.43	2.87	49.87	6.43			14	89.4
	30	51.9	124.70	9.11	49.87	12.67			14	176.9	37.43	2.87	49.87	6.43			14	89.4
	28	51.9	124.70	9.11	49.87	12.67			14	176.9	49.89	3.76	49.87	7.32			14	101.9
	26	51.9	137.17	10.00	49.87	13.56			14	189.4	49.89	3.76	49.87	7.32			14	101.9
	24	51.9	137.17	10.00	49.87	13.56			14	189.4	62.36	4.65	49.87	8.21			14	114.4
OVER 6000 ADT	44	51.9	99.77	7.32	49.87	10.89			14	151.9	12.49	1.09	49.87	4.65			14	64.4
	42	51.9	99.77	7.32	49.87	10.89			14	151.9	24.96	1.98	49.87	5.54			14	76.9
	40	51.9	112.24	8.21	49.87	11.78			14	164.4	24.96	1.98	49.87	5.54			14	76.9
	38	51.9	112.24	8.21	49.87	11.78			14	164.4	37.43	2.87	49.87	6.43			14	89.4
	36	51.9	124.70	9.11	49.87	12.67			14	176.9	37.43	2.87	49.87	6.43			14	89.4
	34	51.9	124.70	9.11	49.87	12.67			14	176.9	49.89	3.76	49.87	7.32			14	101.9
	32	51.9	137.17	10.00	49.87	13.56			14	189.4	49.89	3.76	49.87	7.32			14	101.9
	30	51.9	137.17	10.00	49.87	13.56			14	189.4	62.36	4.65	49.87	8.21			14	114.4
	28	51.9	149.64	10.89	49.87	14.45			14	201.9	62.36	4.65	49.87	8.21			14	114.4
	26	51.9	149.64	10.89	49.87	14.45			14	201.9	74.83	5.54	49.87	9.11			14	126.9
	24	51.9	162.11	11.78	49.87	15.34			14	214.4	74.83	5.54	49.87	9.11			14	126.9

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
65	0.45	12.49	3.56	175.30

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
07-05-02	Values in column C
12-18-02	Revised table
01-29-03	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