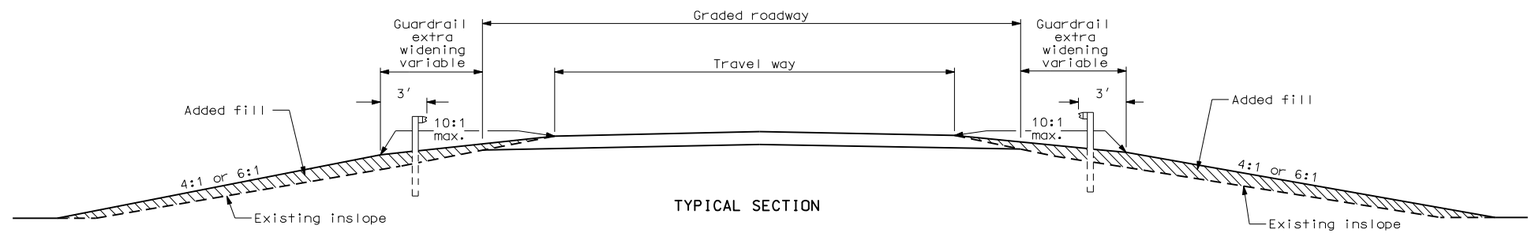
D-764-13

TYPICAL GRADING AT BRIDGE ENDS

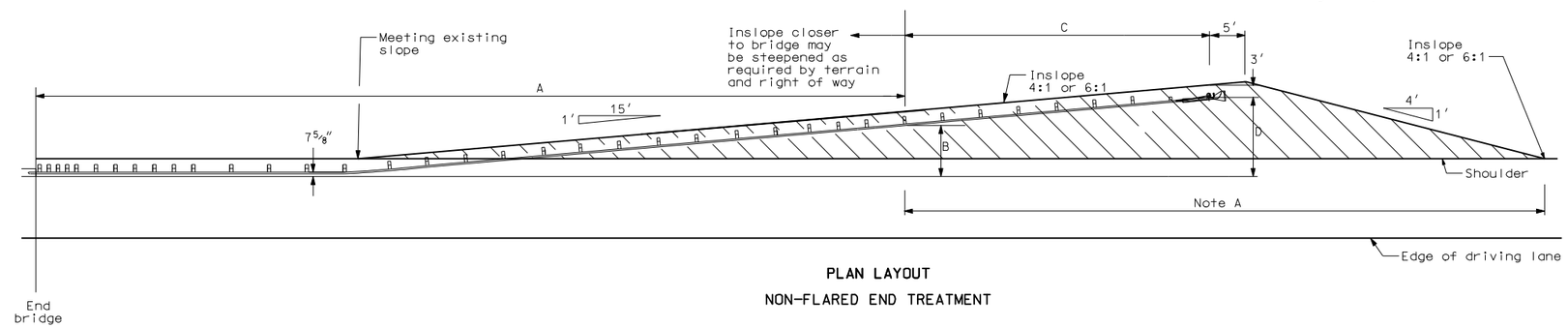
WITH
FLARED W-BEAM GUARDRAIL
70 MPH DESIGN SPEED

W-BEAM DIMENSION TABLE

DESIGN TRAFFIC VOLUME (ADT)	CLEAR RDWY. WIDTH OF BRIDGE	APPROACH SIDE: STRAIGHT AND FLARED GUARDRAIL A	B	END TREATMENT TERMINAL NON-FLARED C	D	END TREATMENT TERMINAL FLARED C1	D1	OPPOSITE SIDE: STRAIGHT AND FLARED GUARDRAIL A	B	END TREATMENT TERMINAL NON-FLARED C	D	END TREATMENT TERMINAL FLARED C1	D1
		FT.	FT.	FT.	FT.	FT.	FT.	FT.	FT.	FT.	FT.	FT.	FT.
UNDER 250	44	88.1	2.7	49.9	6.1			50.7	0.6	50.0	0.6	49.8	4.6
	42	100.6	3.6	49.9	6.9			50.7	0.6	50.0	0.6	49.8	4.6
	40	100.6	3.6	49.9	6.9			50.7	0.6	50.0	0.6	49.8	4.6
	38	113.0	4.4	49.9	7.7			50.7	0.6	50.0	0.6	49.8	4.6
	36	113.0	4.4	49.9	7.7			50.7	0.6	50.0	0.6	49.8	4.6
	34	125.5	5.2	49.9	8.5			50.7	0.6	50.0	0.6	49.8	4.6
	32	125.5	5.2	49.9	8.5			50.7	0.6	50.0	0.6	49.8	4.6
	30	138.0	6.1	49.9	9.4			50.7	0.6	50.0	0.6	49.8	4.6
	28	138.0	6.1	49.9	9.4			63.1	1.1	49.9	4.4		
	26	150.5	6.9	49.9	10.2			63.1	1.1	49.9	4.4		
	24	162.9	7.7	49.9	11.0			75.6	1.9	49.9	5.2		
800-250	44	100.6	3.6	49.9	6.9			50.7	0.6	50.0	0.6	49.8	4.6
	42	113.0	4.4	49.9	7.7			50.7	0.6	50.0	0.6	49.8	4.6
	40	113.0	4.4	49.9	7.7			50.7	0.6	50.0	0.6	49.8	4.6
	38	125.5	5.2	49.9	8.5			50.7	0.6	50.0	0.6	49.8	4.6
	36	138.0	6.1	49.9	9.4			50.7	0.6	50.0	0.6	49.8	4.6
	34	138.0	6.1	49.9	9.4			50.7	0.6	50.0	0.6	49.8	4.6
	32	150.5	6.9	49.9	10.2			63.1	1.1	49.9	4.4		
	30	150.5	6.9	49.9	10.2			75.6	1.9	49.9	5.2		
	28	162.9	7.7	49.9	11.0			75.6	1.9	49.9	5.2		
	26	162.9	7.7	49.9	11.0			75.6	1.9	49.9	5.2		
	24	175.4	8.5	49.9	11.9			88.1	2.7	49.9	6.1		
2000-800	44	125.5	5.2	49.9	8.5			50.7	0.6	50.0	0.6	49.8	4.6
	42	138.0	6.1	49.9	9.4			50.7	0.6	50.0	0.6	49.8	4.6
	40	138.0	6.1	49.9	9.4			50.7	0.6	50.0	0.6	49.8	4.6
	38	150.5	6.9	49.9	10.2			63.1	1.1	49.9	4.4		
	36	150.5	6.9	49.9	10.2			75.6	1.9	49.9	5.2		
	34	162.9	7.7	49.9	11.0			75.6	1.9	49.9	5.2		
	32	162.9	7.7	49.9	11.0			88.1	2.7	49.9	6.1		
	30	175.4	8.5	49.9	11.9			88.1	2.7	49.9	6.1		
	28	175.4	8.5	49.9	11.9			100.6	3.6	49.9	6.9		
	26	187.9	9.4	49.9	12.7			100.6	3.6	49.9	6.9		
	24	200.3	10.2	49.9	13.5			113.0	4.4	49.9	7.7		
6000-2000	44	162.9	7.7	49.9	11.0			75.6	1.9	49.9	5.2		
	42	162.9	7.7	49.9	11.0			88.1	2.7	49.9	6.1		
	40	175.4	8.5	49.9	11.9			88.1	2.7	49.9	6.1		
	38	175.4	8.5	49.9	11.9			100.6	3.6	49.9	6.9		
	36	187.9	9.4	49.9	12.7			100.6	3.6	49.9	6.9		
	34	200.3	10.2	49.9	13.5			113.0	4.4	49.9	7.7		
	32	200.3	10.2	49.9	13.5			125.5	5.2	49.9	8.5		
	30	212.8	11.0	49.9	14.4			125.5	5.2	49.9	8.5		
	28	212.8	11.0	49.9	14.4			138.0	6.1	49.9	9.4		
	26	225.3	11.9	49.9	15.2			138.0	6.1	49.9	9.4		
	24	225.3	11.9	49.9	15.2			150.5	6.9	49.9	10.2		
OVER 6000	44	187.9	9.4	49.9	12.7			100.6	3.6	49.9	6.9		
	42	187.9	9.4	49.9	12.7			100.6	3.6	49.9	6.9		
	40	200.3	10.2	49.9	13.5			113.0	4.4	49.9	7.7		
	38	200.3	10.2	49.9	13.5			125.5	5.2	49.9	8.5		
	36	212.8	11.0	49.9	14.4			125.5	5.2	49.9	8.5		
	34	212.8	11.0	49.9	14.4			138.0	6.1	49.9	9.4		
	32	225.3	11.9	49.9	15.2			138.0	6.1	49.9	9.4		
	30	225.3	11.9	49.9	15.2			150.5	6.9	49.9	10.2		
	28	237.8	12.7	49.9	16.0			150.5	6.9	49.9	10.2		
	26	237.8	12.7	49.9	16.0			162.9	7.7	49.9	11.0		
	24	250.2	13.5	49.9	16.9			162.9	7.7	49.9	11.0		

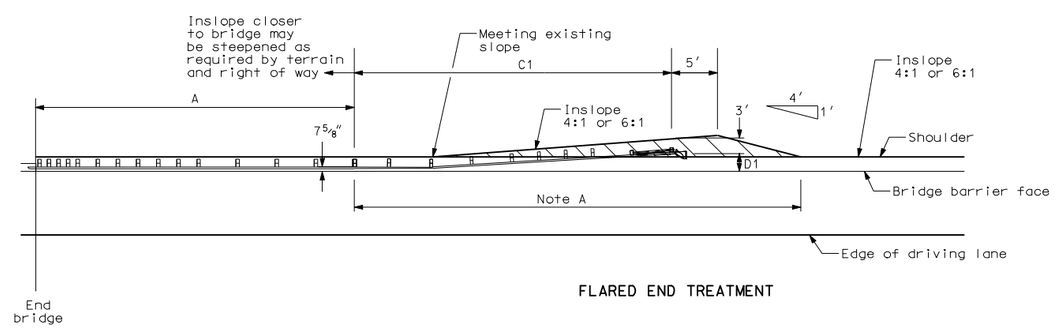


TYPICAL SECTION

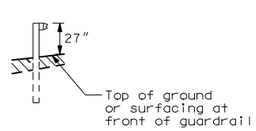


PLAN LAYOUT

NON-FLARED END TREATMENT



FLARED END TREATMENT



GUARDRAIL HEIGHT

Note:

The design traffic volumes (ADT) shall be as shown on title sheet under traffic forecast.

Where normal inslope is 4:1, the added fill shall be 4:1.

Where normal inslope is 6:1, the added fill shall be 6:1.

Note A: This area may have to be placed at flatter than 10:1 to provide the proper guardrail height.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

09-01-98

REVISIONS

DATE	CHANGE
10-29-98	Offset dimensions
12-21-00	Revise flared end treatment
12-18-02	Revised table
12-17-03	Revised flared rate detail
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