D-764-19

TYPICAL GRADING AT OBSTRUCTION

WITH
FLARED W-BEAM GUARDRAIL
50 MPH DESIGN SPEED

W-BEAM GUARDRAIL DIMENSION TABLE

FOR FLARED GUARDRAIL SECTION

DESIGN TRAFFIC VOLUME	GUARDRAIL OFFSET DISTANCE	APPROACH SIDE: TAPERED GUARDRAIL DIMENSIONS		APPROACH SIDE: END TERMINAL DIMENSIONS NON-FLARED		APPROACH SIDE: END TERMINAL DIMENSIONS FLARED		OPPOSITE SIDE: TAPERED GUARDRAIL DIMENSIONS		OPPOSITE SIDE: END TERMINAL DIMENSIONS NON-FLARED		OPPOSITE SIDE: END TERMINAL DIMENSIONS FLARED	
	FT	A FT	B FT	C FT	D FT	C1 FT	D1 FT	A FT	B FT	C FT	D FT	C1 FT	D1 FT
UNDER 250 ADT	10	25.0	0.0	50.0	0.0	49.8	4.0	25.0	0.0	50.0	0.0	49.8	4.0
	9	25.0	0.0	50.0	0.0	49.8	4.0	25.0	0.0	50.0	0.0	49.8	4.0
	8	25.0	0.0	50.0	0.0	49.8	4.0	25.0	0.0	50.0	0.0	49.8	4.0
	7	25.0	0.0	50.0	0.0	49.8	4.0	25.0	0.0	50.0	0.0	49.8	4.0
	6	37.5	0.6	49.8	5.1			25.0	0.0	50.0	0.0	49.8	4.0
	5	37.5	0.6	49.8	5.1			25.0	0.0	50.0	0.0	49.8	4.0
	4	49.9	1.7	49.8	6.2			25.0	0.0	50.0	0.0	49.8	4.0
	3	49.9	1.7	49.8	6.2			25.0	0.0	50.0	0.0	49.8	4.0
	2	62.4	2.8	49.8	7.4			25.0	0.0	50.0	0.0	49.8	4.0
	1	74.8	4.0	49.8	8.5			25.0	0.0	50.0	0.0	49.8	4.0
	0	74.8	4.0	49.8	8.5			25.0	0.0	50.0	0.0	49.8	4.0
250 to 800 ADT	10	25.0	0.0	50.0	0.0	49.8	4.0	25.0	0.0	50.0	0.0	49.8	4.0
	9	25.0	0.0	50.0	0.0	49.8	4.0	25.0	0.0	50.0	0.0	49.8	4.0
	8	37.5	0.6	49.8	5.1			25.0	0.0	50.0	0.0	49.8	4.0
	7	37.5	0.6	49.8	5.1			25.0	0.0	50.0	0.0	49.8	4.0
	6	49.9	1.7	49.8	6.2			25.0	0.0	50.0	0.0	49.8	4.0
	5	49.9	1.7	49.8	6.2			25.0	0.0	50.0	0.0	49.8	4.0
	4	62.4	2.8	49.8	7.4			25.0	0.0	50.0	0.0	49.8	4.0
	3	74.8	4.0	49.8	8.5			25.0	0.0	50.0	0.0	49.8	4.0
	2	74.8	4.0	49.8	8.5			25.0	0.0	50.0	0.0	49.8	4.0
	1	87.3	5.1	49.8	9.6			25.0	0.0	50.0	0.0	49.8	4.0
	0	87.3	5.1	49.8	9.6			25.0	0.0	50.0	0.0	49.8	4.0
800 to 2000 ADT	10	25.0	0.0	50.0	0.0	49.8	4.0	25.0	0.0	50.0	0.0	49.8	4.0
	9	37.5	0.6	49.8	5.1			25.0	0.0	50.0	0.0	49.8	4.0
	8	37.5	0.6	49.8	5.1			25.0	0.0	50.0	0.0	49.8	4.0
	7	49.9	1.7	49.8	6.2			25.0	0.0	50.0	0.0	49.8	4.0
	6	49.9	1.7	49.8	6.2			25.0	0.0	50.0	0.0	49.8	4.0
	5	62.4	2.8	49.8	7.4			25.0	0.0	50.0	0.0	49.8	4.0
	4	74.8	4.0	49.8	8.5			25.0	0.0	50.0	0.0	49.8	4.0
	3	74.8	4.0	49.8	8.5			25.0	0.0	50.0	0.0	49.8	4.0
	2	87.3	5.1	49.8	9.6			25.0	0.0	50.0	0.0	49.8	4.0
	1	87.3	5.1	49.8	9.6			25.0	0.0	50.0	0.0	49.8	4.0
	0	99.7	6.2	49.8	10.8			25.0	0.0	50.0	0.0	49.8	4.0
2000 to 6000 ADT	10	37.5	0.6	49.8	5.1			25.0	0.0	50.0	0.0	49.8	4.0
	9	37.5	0.6	49.8	5.1			25.0	0.0	50.0	0.0	49.8	4.0
	8	49.9	1.7	49.8	6.2			25.0	0.0	50.0	0.0	49.8	4.0
	7	49.9	1.7	49.8	6.2			25.0	0.0	50.0	0.0	49.8	4.0
	6	62.4	2.8	49.8	7.4			25.0	0.0	50.0	0.0	49.8	4.0
	5	74.8	4.0	49.8	8.5			25.0	0.0	50.0	0.0	49.8	4.0
	4	74.8	4.0	49.8	8.5			25.0	0.0	50.0	0.0	49.8	4.0
	3	87.3	5.1	49.8	9.6			25.0	0.0	50.0	0.0	49.8	4.0
	2	87.3	5.1	49.8	9.6			25.0	0.0	50.0	0.0	49.8	4.0
	1	99.7	6.2	49.8	10.8			25.0	0.0	50.0	0.0	49.8	4.0
	0	112.2	7.4	49.8	11.9			25.0	0.0	50.0	0.0	49.8	4.0
OVER 6000 ADT	10	62.4	2.8	49.8	7.4			25.0	0.0	50.0	0.0	49.8	4.0
	9	62.4	2.8	49.8	7.4			25.0	0.0	50.0	0.0	49.8	4.0
	8	74.8	4.0	49.8	8.5			25.0	0.0	50.0	0.0	49.8	4.0
	7	74.8	4.0	49.8	8.5			25.0	0.0	50.0	0.0	49.8	4.0
	6	87.3	5.1	49.8	9.6			25.0	0.0	50.0	0.0	49.8	4.0
	5	87.3	5.1	49.8	9.6			25.0	0.0	50.0	0.0	49.8	4.0
	4	99.7	6.2	49.8	10.8			25.0	0.0	50.0	0.0	49.8	4.0
	3	99.7	6.2	49.8	10.8			25.0	0.0	50.0	0.0	49.8	4.0
	2	112.2	7.4	49.8	11.9			25.0	0.0	50.0	0.0	49.8	4.0
	1	112.2	7.4	49.8	11.9			25.0	0.0	50.0	0.0	49.8	4.0
	0	124.6	8.5	49.8	13.0			25.0	0.0	50.0	0.0	49.8	4.0

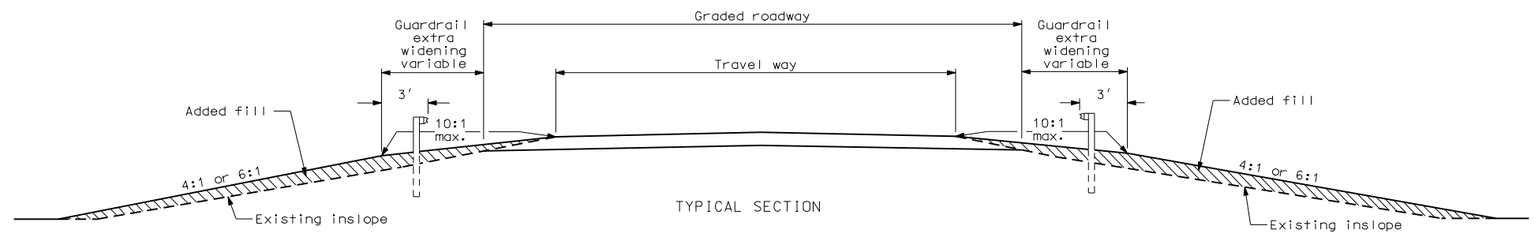
Note:

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

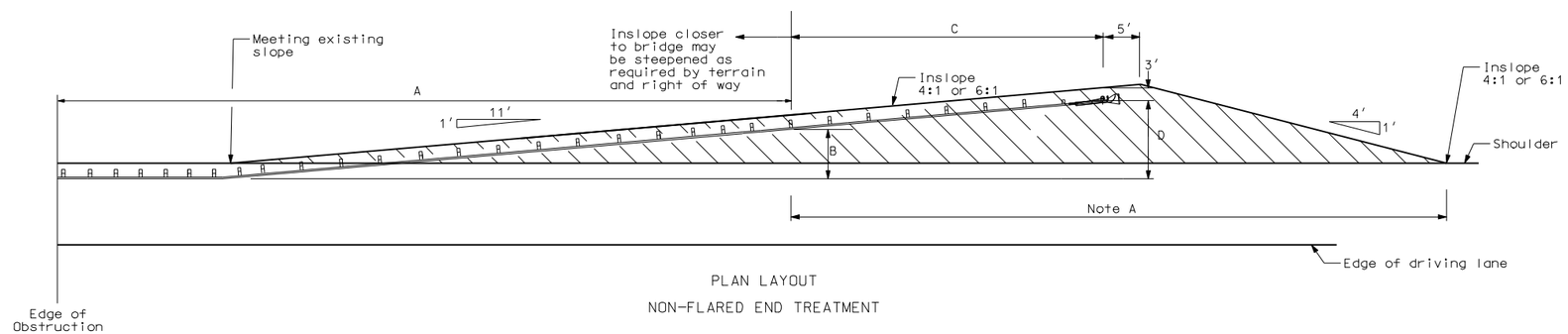
Where normal inslope is 4:1, the added fill shall be 4:1.

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.

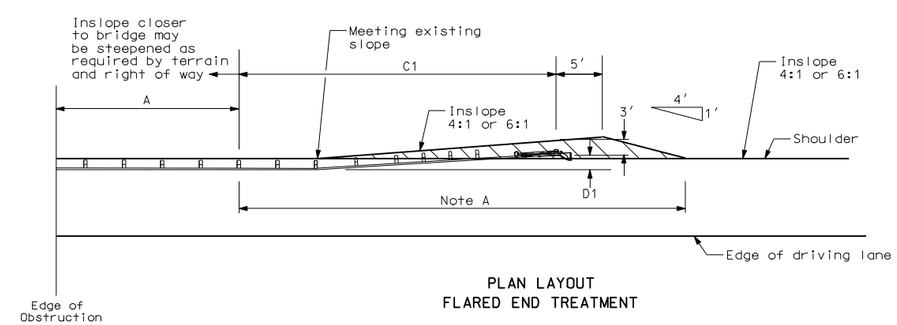


TYPICAL SECTION

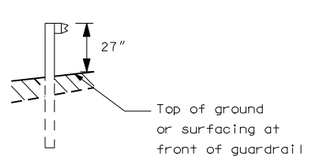


PLAN LAYOUT

NON-FLARED END TREATMENT



PLAN LAYOUT
FLARED END TREATMENT



GUARDRAIL HEIGHT

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
09-01-98	
REVISIONS	
DATE	CHANGE
10-29-98	Offset dimensions
12-21-00	Revised flared end treatment
12-17-03	Revised flare 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