GUARDRAIL

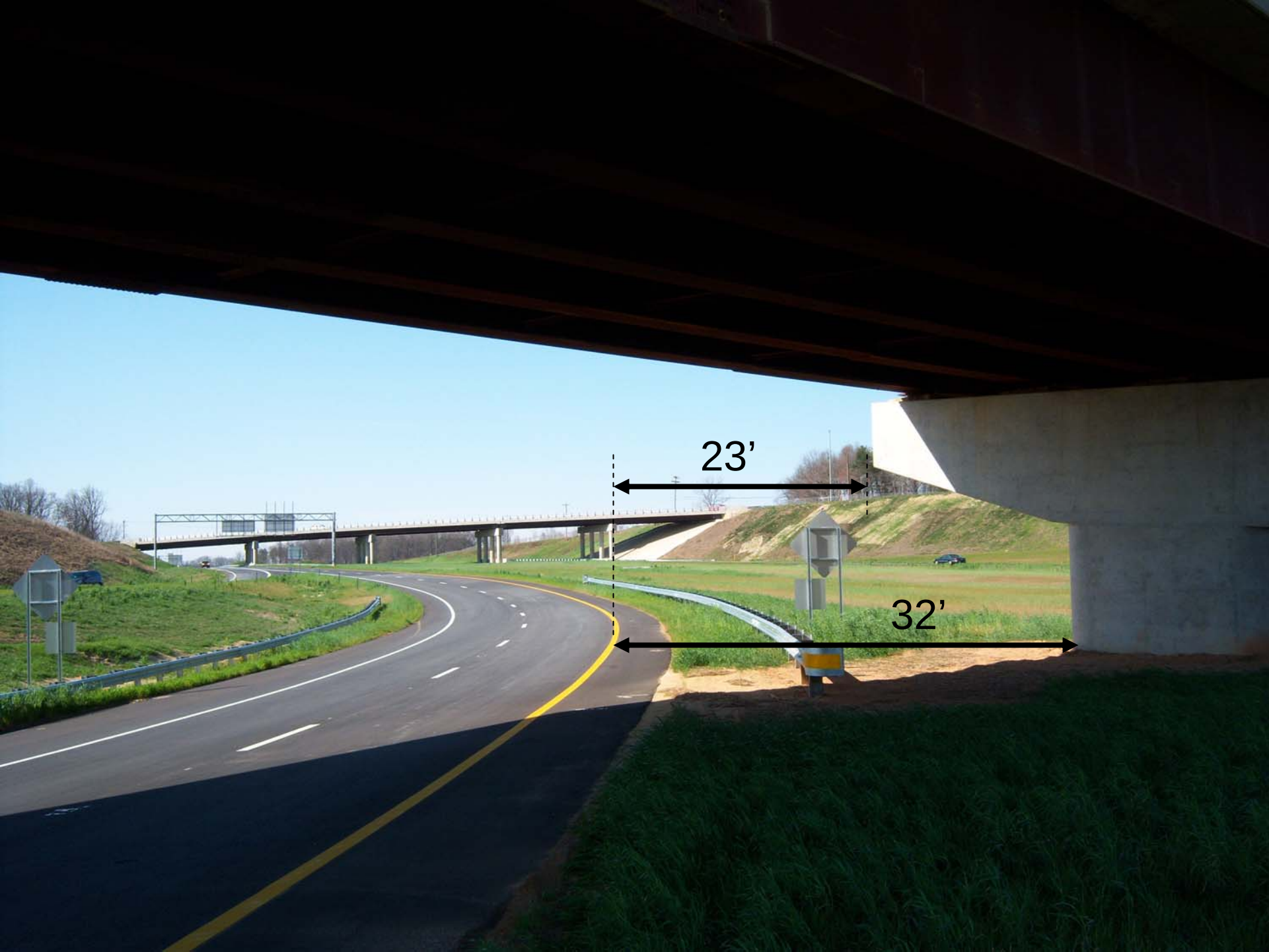
2008 CONSTRUCTION
ENGINEERS CONFERENCE

EXIT 212A
TO Bryan Blvd
PTI Airport
EXIT 212B
EAST SOUTH
BUSINESS
40
421
Greensboro
40'

TO 40
Winston-Salem
EXIT ONLY
ing Rd
MILE
36’

70
High Point
Charlotte
EXIT ONLY
40’
2:1

45
M.P.H.


23’
32’

[U.S. Customary Units]

DESIGN SPEED	DESIGN ADT	FORESLOPES			BACKSLOPES		
		1V:6H of flatter	1V:5H TO 1V:4H	1V:3H	1V:3H	1V:5H TO 1V:4H	1V:6H or Flatter
40 mph or less	UNDER 750	7 – 10	7 – 10	**	7 – 10	7 – 10	7 – 10
	750 – 1500	10 – 12	12 – 14	**	10 – 12	10 – 12	10 – 12
	1500 – 6000	12 – 14	14 – 16	**	12 – 14	12 – 14	12 – 14
	OVER 6000	14 – 16	16 – 18	**	14 – 16	14 – 16	14 – 16
45–50 mph	UNDER 750	10 – 12	12 – 14	**	8 – 10	8 – 10	10 – 12
	750 – 1500	12 – 14	16 – 20	**	10 – 12	12 – 14	14 – 16
	1500 – 6000	16 – 18	20 – 26	**	12 – 14	14 – 16	16 – 18
	OVER 6000	18 – 20	24 – 28	**	14 – 16	18 – 20	20 – 22
55 mph	UNDER 750	12 – 14	14 – 18	**	8 – 10	10 – 12	10 – 12
	750 – 1500	16 – 18	20 – 24	**	10 – 12	14 – 16	16 – 18
	1500 – 6000	20 – 22	24 – 30	**	14 – 16	16 – 18	20 – 22
	OVER 6000	22 – 24	26 – 32 *	**	16 – 18	20 – 22	22 – 24
60 mph	UNDER 750	16 – 18	20 – 24	**	10 – 12	12 – 14	14 – 16
	750 – 1500	20 – 24	26 – 32 *	**	12 – 14	16 – 18	20 – 22
	1500 – 6000	26 – 30	32 – 40 *	**	14 – 18	18 – 22	24 – 26
	OVER 6000	30 – 32 *	36 – 44 *	**	20 – 22	24 – 26	26 – 28
65–70 mph	UNDER 750	18 – 20	20 – 26	**	10 – 12	14 – 16	14 – 16
	750 – 1500	24 – 26	28 – 36 *	**	12 – 16	18 – 20	20 – 22
	1500 – 6000	28 – 32 *	34 – 42 *	**	16 – 20	22 – 24	26 – 28
	OVER 6000	30 – 34 *	38 – 46 *	**	22 – 24	26 – 30	28 – 30

* Where a site specific investigation indicates a high probability of continuing crashes, or such occurrences are indicated by crash history, the designer may provide clear-zone distances greater than the clear-zone shown in Table 3.1. Clear zones may be limited to 30 ft for practicality and to provide a consistent roadway template if [illegible] satisfactory performance.

** Since recovery is less likely on the unshielded, traversable 1V:3H slope [illegible] of these slopes. Recovery of high-speed vehicles that encroach beyond [illegible] toe of slope. Determination of the width of the recovery area at the [illegible] availability, environmental concerns, economic factors, safety needs, a[illegible] through traveled lane and the beginning of the 1V:3H slope should infl[illegible] application may be limited by several factors, the foreslope parameters [illegible] recovery area are illustrated in Figure 3.2.

For 70mph design speed & ADT > 6000, clear zone is 30’ minimum.

6’ paved ditch

2008/03/17

2008/03/17

Install rail at curb face or 12’ behind curb per RSD 862.03

3’
9.6.2003

21”
10.5.2004

27”
21”
Measure rail height from gutter

21”
15. 10. 2003

Lap rail in direction of traffic flow
6. 4. 2004

End shoe lapped incorrectly
Traffic flow
28. 5. 2003

How much does guardrail deflect?

30”

When posts are doubled, guardrail deflection is reduced from 3’ to 1.5’
Begin 3’-1.5”
post spacing 25’
before obstacle

7
5
5
7
7
3’-1 ½”
2008/03/06

Can guardrail posts be eliminated?
12’-6” post spacing
2008/03/06

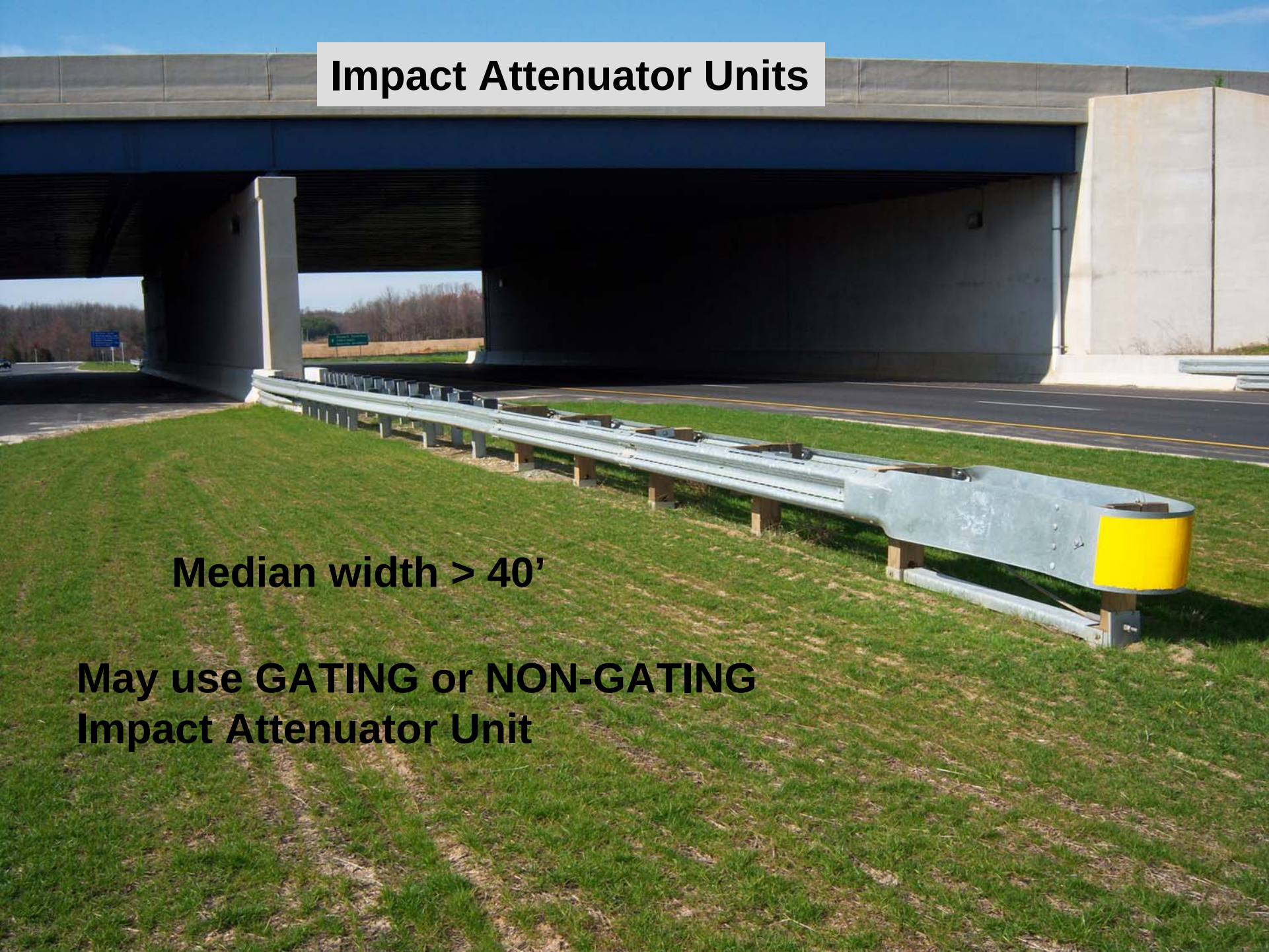
2008/03/06
Rail is nested in
12’-6” clear span

Type III anchor unit
What is missing??
2008/03/06

140° Bridge skew

B-77 Anchor Unit

Impact Attenuator Units



Median width > 40’

May use GATING or NON-GATING Impact Attenuator Unit

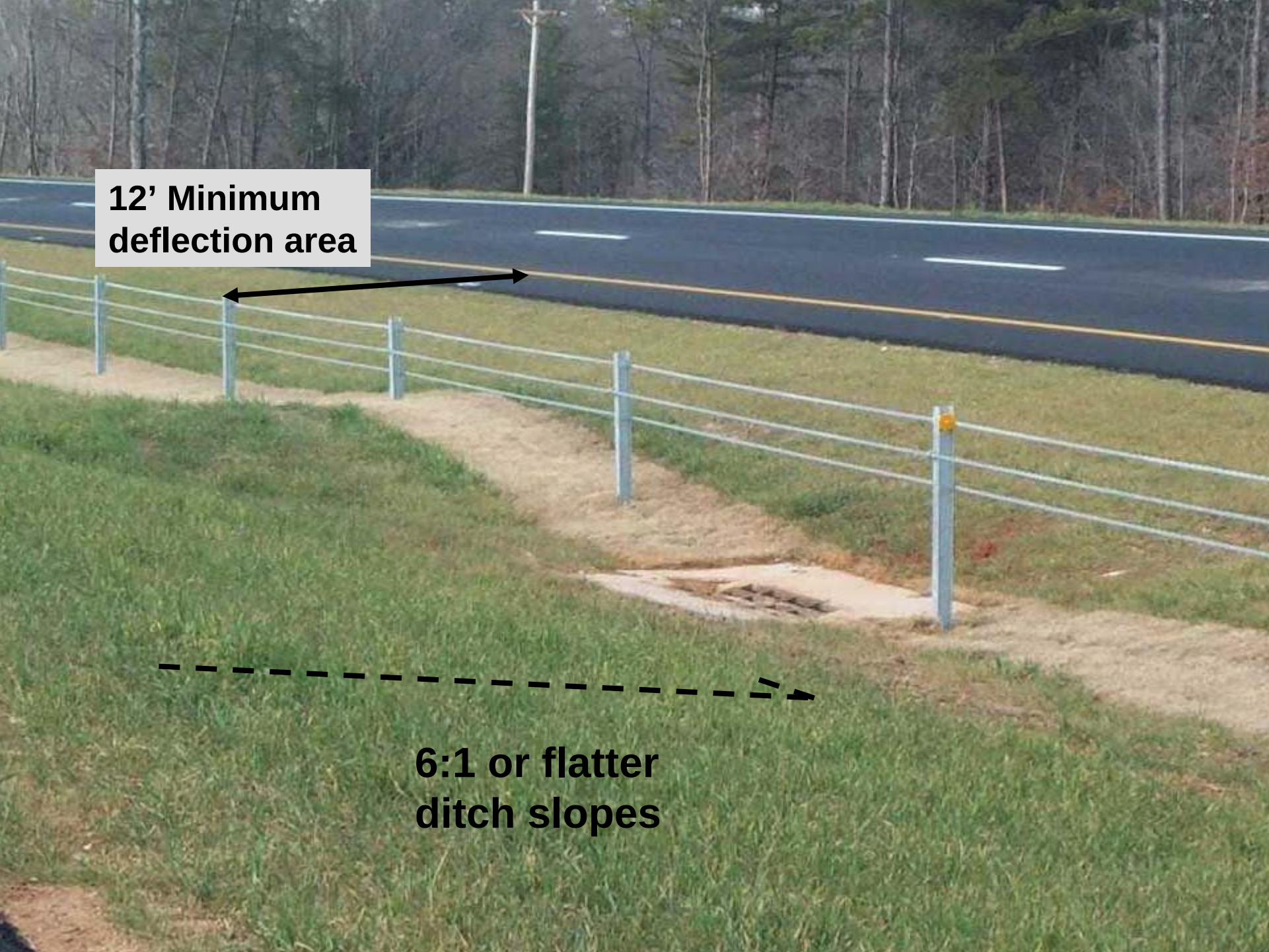
Must use a NON-GATING

Impact Attenuator Unit

10:1 or flatter

3:1 slope

DOES THIS MEET CURRENT POLICY?
Cable guiderail is no longer used in medians for protection from rigid obstacles


12’ Minimum
deflection area
6:1 or flatter
ditch slopes