

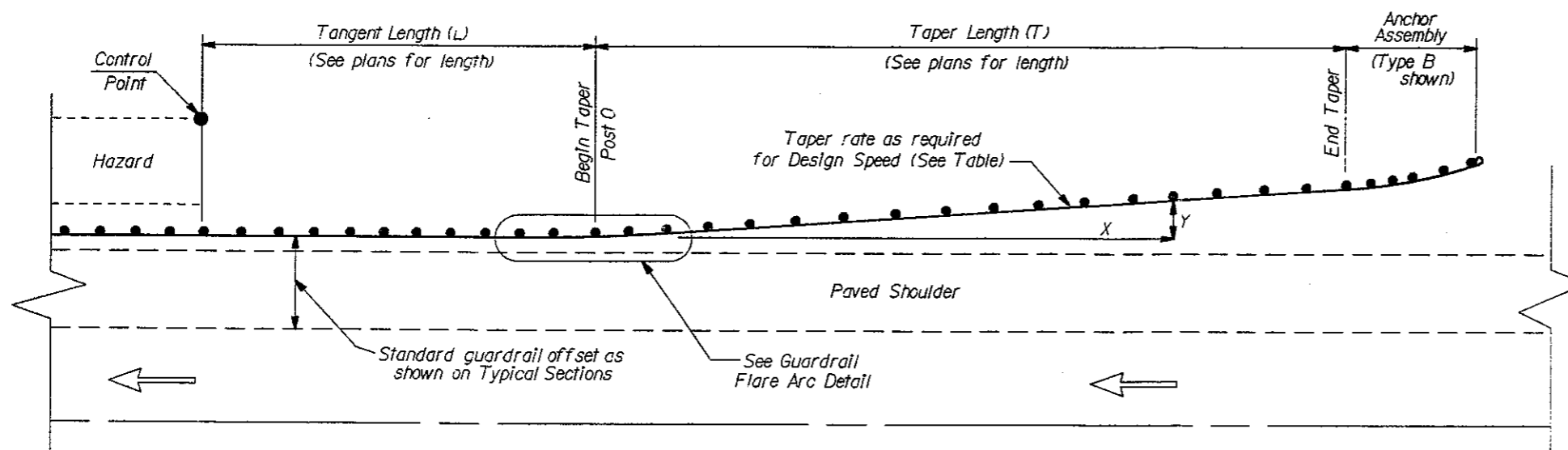
NOTES

THE STANDARD GUARDRAIL FLARE shown herein shall be constructed when indicated in the construction plans and in conjunction with Standard Construction Drawings GR-5.2, GR-6.1 and GR-6.2. The Tangent Length and Taper Length used to construct each flare shall be as specified in the plans.

SPEEDS used to determine taper rates and offsets shall be the design speed indicated in the plan. Where a design speed is not shown or available, the legal posted speed limit should be used.

AN ANCHOR ASSEMBLY, Type B shall be used with standard guardrail flares unless otherwise specified.

THE CONTROL POINT shown designates the extent of the hazard being protected and is shown for design use only.

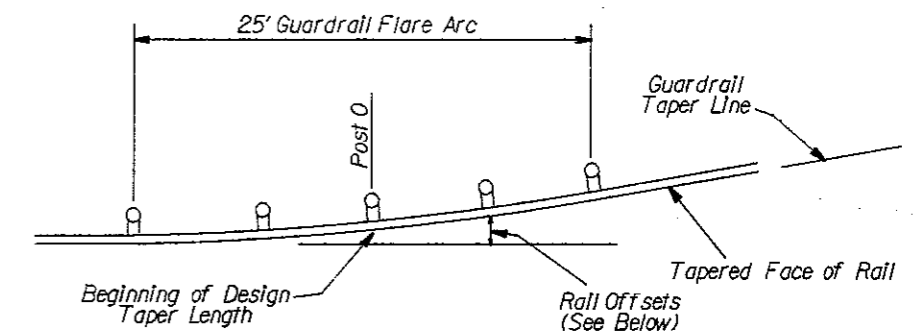


STANDARD GUARDRAIL FLARE
(Plan View)

TAPERED GUARDRAIL OFFSETS (in feet)

	45 MPH 10:1 Taper		50 MPH 11:1 Taper		55 MPH 12:1 Taper		60 MPH 13:1 Taper		65 MPH 14:1 Taper		70 MPH 15:1 Taper		
	Post	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
25' Taper Length	0	0.00	0.31	0.00	0.28	0.00	0.26	0.00	0.24	0.00	0.22	0.00	0.21
	2	12.44	1.25	12.45	1.13	12.46	1.04	12.46	0.96	12.47	0.89	12.47	0.83
	4	24.88	2.49	24.90	2.26	24.91	2.08	24.93	1.92	24.94	1.78	24.94	1.66
50' Taper Length	6	37.31	3.73	37.35	3.40	37.37	3.11	37.39	2.88	37.40	2.67	37.42	2.49
	8	49.75	4.98	49.79	4.53	49.83	4.15	49.85	3.83	49.87	3.56	49.89	3.33
	10	62.19	6.22	62.24	5.66	62.28	5.19	62.32	4.79	62.34	4.45	62.36	4.16
75' Taper Length	12	74.63	7.46	74.69	6.79	74.74	6.23	74.78	5.75	74.81	5.34	74.83	4.99
	14	87.07	8.71	87.14	7.92	87.20	7.27	87.24	6.71	87.28	6.23	87.31	5.82
	16	99.50	9.95	99.59	9.05	99.65	8.30	99.71	7.67	99.75	7.12	99.78	6.65
100' Taper Length	18	111.94	11.19	112.04	10.19	112.11	9.34	112.17	8.63	112.21	8.02	112.25	7.48
	20	124.38	12.44	124.49	11.32	124.57	10.38	124.72	9.55	124.68	8.91	124.72	8.31
	22	136.82	13.68	136.94	12.45	137.03	11.42	137.09	10.55	137.15	9.80	137.20	9.15
150' Taper Length	24	149.26	14.93	149.38	13.58	149.48	12.46	149.56	11.50	149.62	10.69	149.67	9.98
	26	161.69	16.17	161.83	14.71	161.94	13.49	162.02	12.46	162.09	11.58	162.14	10.81
	28	174.13	17.41	174.28	15.84	174.40	14.53	174.48	13.42	174.56	12.47	174.61	11.64
175' Taper Length	30	186.57	18.66	186.73	16.98	186.85	15.57	186.95	14.38	187.02	13.36	187.08	12.47
	32	199.01	19.90	199.18	18.11	199.31	16.61	199.41	15.34	199.49	14.25	199.56	13.30

All "X" dimensions shown are from the centerline of Post 0 to the centerline of the indicated post along the standard guardrail offset line extended.
All "Y" dimensions shown are from the standard guardrail offset line extended to the face of rail at the post indicated.



0.00	0.08	0.31	0.70	1.25	45 MPH	RAIL OFFSETS (In Feet)
0.00	0.07	0.28	0.63	1.13	50 MPH	
0.00	0.06	0.26	0.59	1.04	55 MPH	
0.00	0.06	0.24	0.54	0.96	60 MPH	
0.00	0.06	0.22	0.50	0.89	65 MPH	
0.00	0.05	0.21	0.47	0.83	70 MPH	

GUARDRAIL FLARE ARC DETAIL

BUREAU OF LOCATION AND DESIGN
OHIO DEPARTMENT OF TRANSPORTATION

GUARDRAIL FLARE DETAILS

DATE
11-22-91

STANDARD
CONSTRUCTION
DRAWING

GR-5.1

APPROVED _____ ENGR., L & D

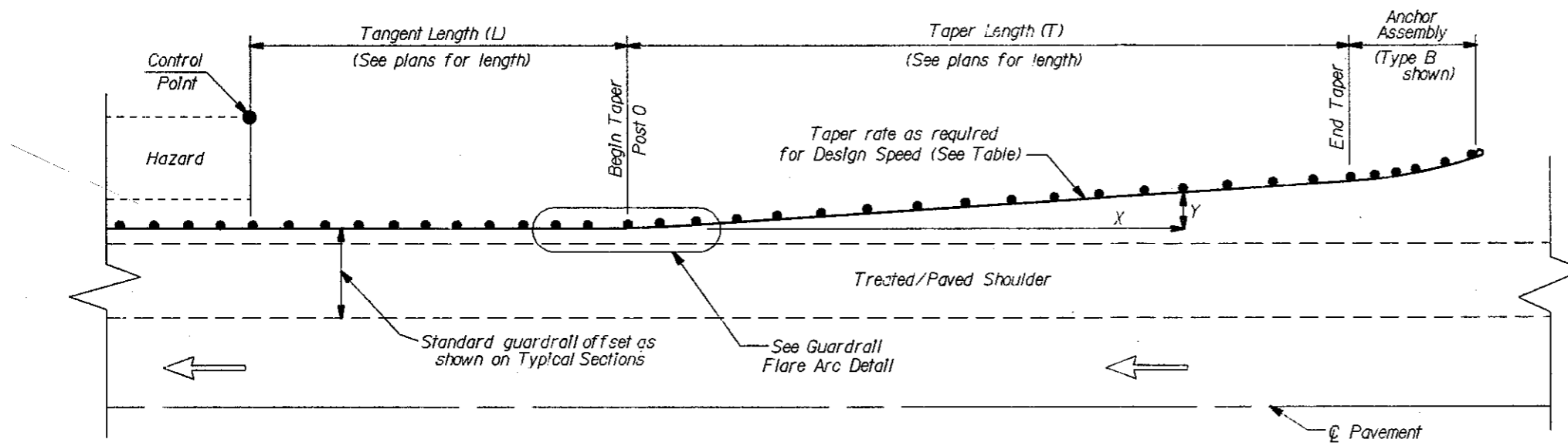
NOTES

THE STANDARD GUARDRAIL FLARE shown herein shall be constructed when indicated in the construction plans and in conjunction with Standard Construction Drawing GR-5.2. The Tangent Length and Taper Length used to construct each flare shall be as specified in the plans.

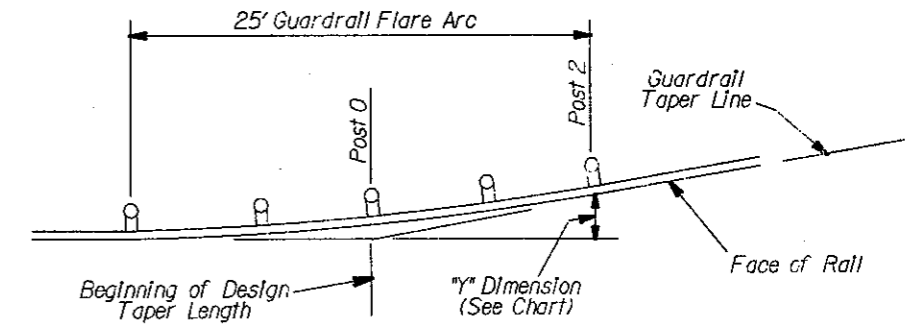
SPEEDS used to determine taper rates and offsets shall be the design speed indicated in the plan. Where a design speed is not shown or available, the legal posted speed limit shall be used. For design speeds below 45 mph, the tapered guardrail offsets shown for 45 mph may be used.

AN ANCHOR ASSEMBLY, Type B shall be used with standard guardrail flares unless otherwise specified.

THE CONTROL POINT shown designates the extent of the hazard being shielded and is shown for design use only.



STANDARD GUARDRAIL FLARE
(Plan View)



GUARDRAIL FLARE ARC DETAIL

TAPERED GUARDRAIL OFFSETS (In Feet)

Post	45 MPH 10:1 Taper		50 MPH 11:1 Taper		55 MPH 12:1 Taper		60 MPH 13:1 Taper		65 MPH 14:1 Taper		70 MPH 15:1 Taper	
	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
0	0.0	0.3	0.0	0.3	0.0	0.3	0.0	0.2	0.0	0.2	0.0	0.2
2	12.4	1.3	12.5	1.1	12.5	1.0	12.5	1.0	12.5	0.9	12.5	0.8
4	24.9	2.5	24.9	2.3	24.9	2.1	24.9	1.9	24.9	1.8	24.9	1.7
6	37.3	3.7	37.3	3.4	37.4	3.1	37.4	2.9	37.4	2.7	37.4	2.5
8	49.8	5.0	49.8	4.5	49.8	4.1	49.9	3.8	49.9	3.6	49.9	3.3
10	62.2	6.2	62.2	5.7	62.3	5.2	62.3	4.8	62.3	4.5	62.4	4.2
12	74.6	7.5	74.7	6.8	74.7	6.2	74.8	5.7	74.8	5.3	74.8	5.0
14	87.1	8.7	87.1	7.9	87.2	7.3	87.2	6.7	87.3	6.2	87.3	5.8
16	99.5	9.9	99.6	9.1	99.7	8.3	99.7	7.7	99.7	7.1	99.8	6.7
18	111.9	11.2	112.0	10.2	112.1	9.3	112.2	8.6	112.2	8.0	112.3	7.5
20	124.4	12.4	124.5	11.3	124.6	10.4	124.7	9.5	124.7	8.9	124.7	8.3
22	136.8	13.7	136.9	12.5	137.0	11.4	137.1	10.5	137.1	9.8	137.2	9.1
24	149.3	14.9	149.4	13.6	149.5	12.5	149.6	11.5	149.6	10.7	149.7	10.0
26	161.7	16.2	161.8	14.7	161.9	13.5	162.0	12.5	162.1	11.6	162.1	10.8
28	174.1	17.4	174.3	15.8	174.4	14.5	174.5	13.4	174.6	12.5	174.6	11.6
30	186.6	18.7	186.7	17.0	186.9	15.6	186.9	14.4	187.0	13.4	187.1	12.5
32	199.0	19.9	199.2	18.1	199.3	16.6	199.4	15.3	199.5	14.3	199.6	13.3

All "X" dimensions shown are from the centerline of Post 0 to the centerline of the indicated post along the standard guardrail offset line extended.
All "Y" dimensions shown are from the standard guardrail offset line extended to the face of rail at the post indicated.

BUREAU OF LOCATION AND DESIGN
OHIO DEPARTMENT OF TRANSPORTATION

GUARDRAIL FLARE DETAILS

STANDARD CONSTRUCTION DRAWING

GR-5.1

APPROVED *D.K. Hubman* ENGR., L & D

DATE
10-30-92

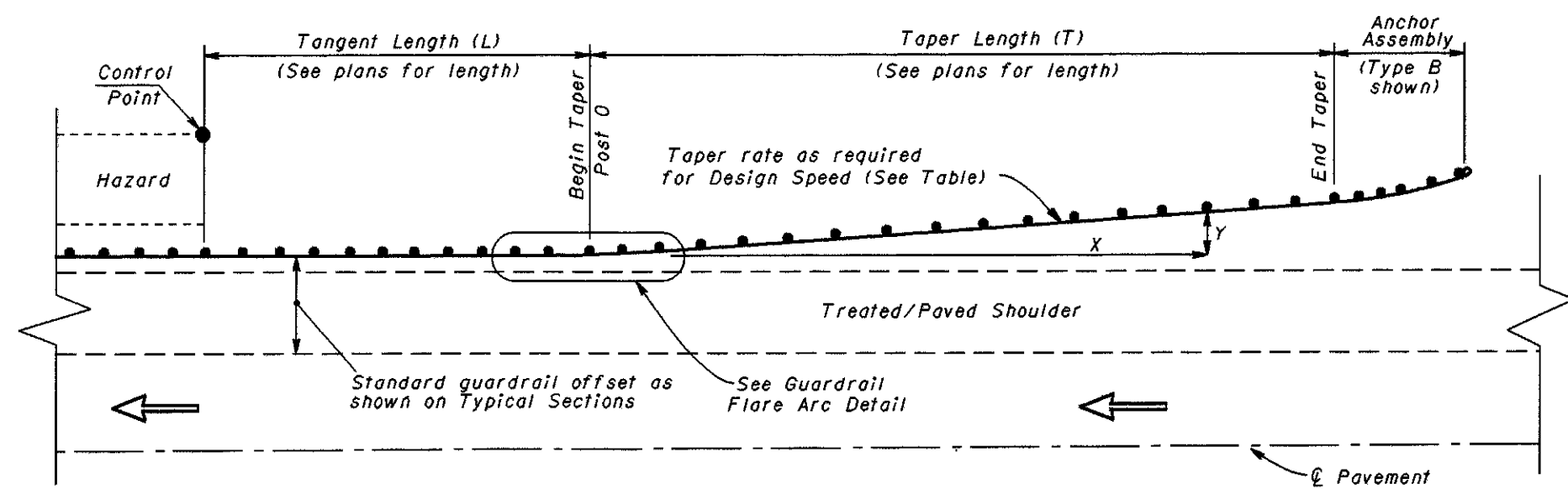
NOTES

STANDARD GUARDRAIL FLARE: The flare shown herein shall be constructed when indicated in the construction plans and in conjunction with Std. Constr. Dwg. GR-5.2M. The Tangent Length and Taper Length used to construct each flare shall be as specified in the plans.

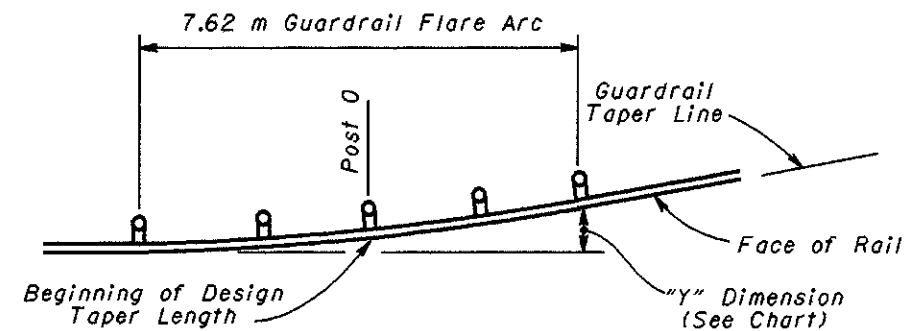
TAPER RATES AND OFFSET SPEEDS: Speeds used to determine taper rates and offsets shall be the design speed indicated in the plan. Where a design speed is not shown or available, the legal posted speed limit shall be used. For design speeds below 70 km/h, the tapered guardrail offsets shown for 70 km/h may be used.

ANCHOR ASSEMBLY: A Type B Anchor Assembly shall be used with standard guardrail flares unless otherwise specified.

CONTROL POINT: The point shown designates the extent of the hazard being protected and is shown for design use only.



STANDARD GUARDRAIL FLARE
(Plan View)



GUARDRAIL FLARE ARC DETAIL

TAPERED GUARDRAIL OFFSETS (in meters)												
	70 km/h 10:1 Taper		80 km/h 11:1 Taper		90 km/h 12:1 Taper		100 km/h 13:1 Taper		110 km/h 14:1 Taper		120 km/h 15:1 Taper	
Post	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
7.62 m Taper Length	0	0.09	0	0.09	0	0.08	0	0.07	0	0.07	0	0.06
	2	3.79	0.38	3.79	0.35	3.80	0.32	3.80	0.29	3.80	0.27	3.80
	4	7.58	0.76	7.59	0.69	7.59	0.64	7.60	0.59	7.60	0.54	7.60
15.24 m Taper Length	6	11.37	1.14	11.38	1.04	11.39	0.95	11.40	0.88	11.40	0.82	11.40
	8	15.16	1.52	15.18	1.39	15.19	1.27	15.19	1.17	15.20	1.09	15.21
22.86 m Taper Length	10	18.95	1.91	18.97	1.73	18.98	1.59	18.99	1.47	19.00	1.36	19.01
	12	22.75	2.29	22.77	2.08	22.78	1.91	22.79	1.76	22.80	1.63	22.81
30.48 m Taper Length	14	26.54	2.67	26.56	2.42	26.58	2.22	26.59	2.05	26.60	1.91	26.61
	16	30.33	3.05	30.35	2.77	30.37	2.54	30.39	2.34	30.40	2.18	30.41
38.10 m Taper Length	18	34.12	3.43	34.15	3.12	34.17	2.86	34.19	2.64	34.20	2.45	34.21
	20	37.91	3.81	37.94	3.46	37.97	3.18	37.99	2.93	38.00	2.72	38.02
45.72 m Taper Length	22	41.70	4.19	41.74	3.81	41.76	3.49	41.79	3.22	41.80	2.99	41.82
	24	45.49	4.57	45.53	4.16	45.56	3.81	45.58	3.52	45.60	3.27	45.62
53.34 m Taper Length	26	49.28	4.95	49.32	4.50	49.36	4.13	49.38	3.81	49.40	3.54	49.42
	28	53.07	5.33	53.12	4.85	53.15	4.45	53.18	4.10	53.20	3.81	53.22
60.96 m Taper Length	30	56.86	5.72	56.91	5.20	56.95	4.76	56.98	4.40	57.00	4.08	57.02
	32	60.65	6.10	60.71	5.54	60.75	5.08	60.78	4.69	60.80	4.35	60.82

All "X" dimensions shown are from the centerline of Post 0 to the centerline of the indicated post along the standard guardrail offset line extended.
All "Y" dimensions shown are from the standard guardrail offset line extended to the face of rail at the post indicated.



BUREAU OF LOCATION AND DESIGN OHIO DEPARTMENT OF TRANSPORTATION	
GUARDRAIL FLARE DETAILS	DATE 4-21-95
STANDARD CONSTRUCTION DRAWING GR-5.1M	APPROVED <i>D.K. Hubman</i> ENGR., L & D

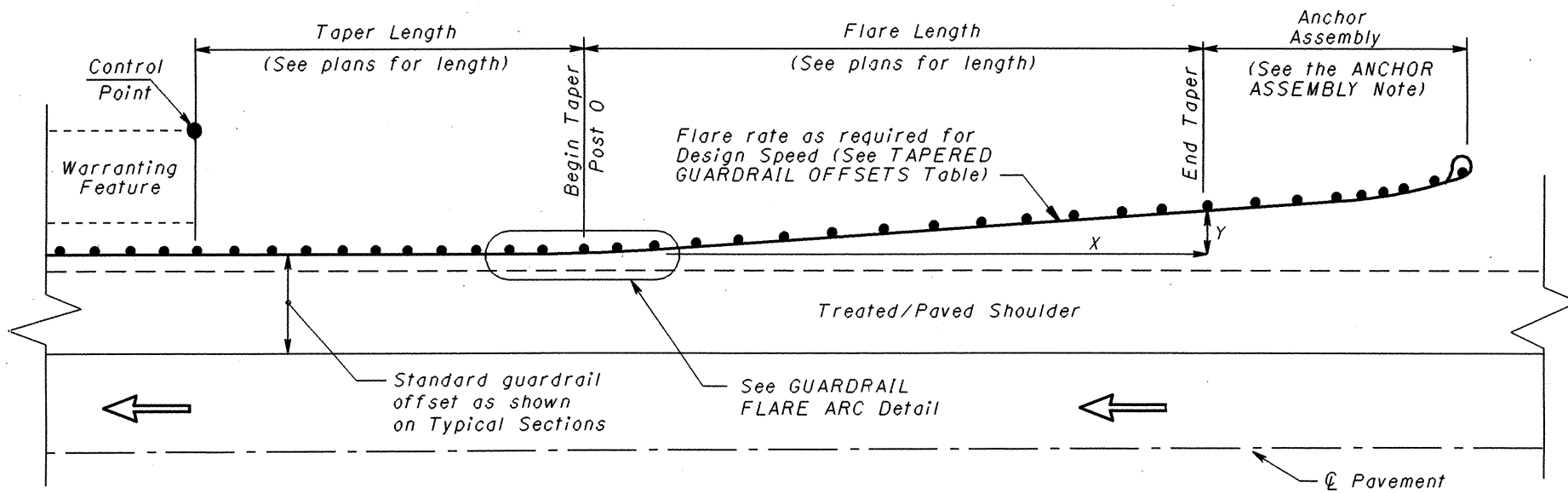
NOTES

STANDARD GUARDRAIL FLARE: Construct the flare shown here when indicated in the construction plans and in conjunction with **SCD GR-5.2**.

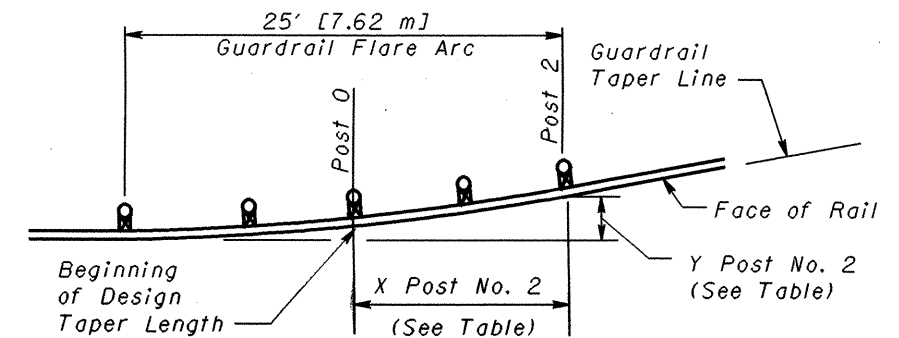
FLARE RATES AND OFFSET SPEEDS: Use the Design Speed shown on the plans to determine flare rates and offsets. Where a Design Speed is not shown or available, use the legal posted speed limit.

ANCHOR ASSEMBLY: Use a Type B-98 Anchor Assembly with standard guardrail flares unless otherwise specified. The Type A can be used, with restrictions. See **Location & Design Manual, Volume I**, Section 603.

CONTROL POINT: The point shown designates the extent of the hazard being protected and is shown for design use only.



STANDARD GUARDRAIL FLARE
(Plan View)



GUARDRAIL FLARE ARC DETAIL

TAPERED GUARDRAIL OFFSETS (Feet)

Post No.	Flare Length	45 MPH or less 10:1 Taper		50 MPH 11:1 Taper		55 MPH 12:1 Taper		60 MPH 13:1 Taper		65 MPH 14:1 Taper		70 MPH 15:1 Taper	
		X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
0		0	0.3	0	0.3	0	0.3	0	0.2	0	0.2	0	0.2
2		12.4	1.3	12.5	1.1	12.5	1.0	12.5	1.0	12.5	0.9	12.5	0.8
4	25	24.9	2.5	24.9	2.3	24.9	2.1	24.9	1.9	24.9	1.8	24.9	1.7
6		37.3	3.7	37.3	3.4	37.4	3.1	37.4	2.9	37.4	2.7	37.4	2.5
8	50	49.8	5.0	49.8	4.5	49.8	4.1	49.9	3.8	49.9	3.6	49.9	3.3
10		62.2	6.2	62.2	5.7	62.3	5.2	62.3	4.8	62.3	4.5	62.4	4.2
12	75	74.6	7.5	74.7	6.8	74.7	6.2	74.8	5.7	74.8	5.3	74.8	5.0
14		87.1	8.7	87.1	7.9	87.2	7.3	87.2	6.7	87.3	6.2	87.3	5.8
16	100	99.5	9.9	99.6	9.1	99.7	8.3	99.7	7.7	99.7	7.1	99.8	6.7
18		111.9	11.2	112.0	10.2	112.1	9.3	112.2	8.6	112.2	8.0	112.3	7.5
20	125	124.4	12.4	124.5	11.3	124.6	10.4	124.7	9.5	124.7	8.9	124.7	8.3
22		136.8	13.7	136.9	12.5	137.0	11.4	137.1	10.5	137.1	9.8	137.2	9.1
24	150	149.3	14.9	149.4	13.6	149.5	12.5	149.6	11.5	149.6	10.7	149.7	10.0
26		161.7	16.2	161.8	14.7	161.9	13.5	162.0	12.5	162.1	11.6	162.1	10.8
28	175	174.1	17.4	174.3	15.8	174.4	14.5	174.5	13.4	174.6	12.5	174.6	11.6
30		186.6	18.7	186.7	17.0	186.9	15.6	186.9	14.4	187.0	13.4	187.1	12.5
32	200	199.0	19.9	199.2	18.1	199.3	16.6	199.4	15.3	199.5	14.3	199.6	13.3

All "X" dimensions shown are from the centerline of Post 0 to the centerline of the indicated post along the standard guardrail offset line extended.
All "Y" dimensions shown are from the standard guardrail offset line extended to the face of rail at the post indicated.

TAPERED GUARDRAIL OFFSETS (Meters)

Post No.	Flare Length	70 km/h or less 10:1 Taper		80 km/h 11:1 Taper		90 km/h 12:1 Taper		100 km/h 13:1 Taper		110 km/h 14:1 Taper		120 km/h 15:1 Taper	
		X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
0		0	0.09	0	0.09	0	0.08	0	0.07	0	0.07	0	0.06
2		3.79	0.38	3.80	0.35	3.80	0.32	3.80	0.29	3.80	0.27	3.80	0.25
4	7.62	7.58	0.76	7.59	0.69	7.59	0.64	7.60	0.59	7.60	0.54	7.60	0.51
6		11.37	1.14	11.38	1.04	11.39	0.95	11.40	0.88	11.40	0.82	11.40	0.76
8	15.24	15.16	1.52	15.18	1.39	15.19	1.27	15.19	1.17	15.20	1.09	15.21	1.02
10		18.95	1.91	18.97	1.73	18.98	1.59	18.99	1.47	19.00	1.36	19.01	1.27
12	22.86	22.75	2.29	22.77	2.08	22.78	1.91	22.79	1.76	22.80	1.63	22.81	1.52
14		26.54	2.67	26.56	2.42	26.58	2.22	26.59	2.05	26.60	1.91	26.61	1.78
16	30.48	30.33	3.05	30.35	2.77	30.37	2.54	30.39	2.34	30.40	2.18	30.41	2.03
18		34.12	3.43	34.15	3.12	34.17	2.86	34.19	2.64	34.20	2.45	34.21	2.29
20	38.10	37.91	3.81	37.94	3.46	37.97	3.18	37.99	2.93	38.00	2.72	38.02	2.54
22		41.70	4.19	41.74	3.81	41.76	3.49	41.79	3.22	41.80	2.99	41.82	2.79
24	45.72	45.49	4.57	45.53	4.16	45.56	3.81	45.58	3.52	45.60	3.27	45.62	3.05
26		49.28	4.95	49.32	4.50	49.36	4.13	49.38	3.81	49.40	3.54	49.42	3.30
28	53.34	53.07	5.33	53.12	4.85	53.15	4.45	53.18	4.10	53.20	3.81	53.22	3.56
30		56.86	5.72	56.91	5.20	56.95	4.76	56.98	4.40	57.00	4.08	57.02	3.81
32	60.96	60.65	6.10	60.71	5.54	60.75	5.08	60.78	4.69	60.80	4.35	60.82	4.06

All "X" dimensions shown are from the centerline of Post 0 to the centerline of the indicated post along the standard guardrail offset line extended.
All "Y" dimensions shown are from the standard guardrail offset line extended to the face of rail at the post indicated.

OHIO DEPARTMENT OF TRANSPORTATION
 4-18-03
 DATE
 ROADWAY DESIGN ENGINEER
 D. Focke
 STOS. ENGR.
 ROADWAY ENGINEERING SERVICES
 ALL metric dimensions (in brackets []) are in millimeters unless otherwise noted.
 STANDARD ROADWAY CONSTRUCTION DRAWING
 GUARDRAIL FLARE DETAILS
 NUMBER
 GR-5/1
 THIS DRAWING REPLACES GR-5.1M DATED 4-21-95.

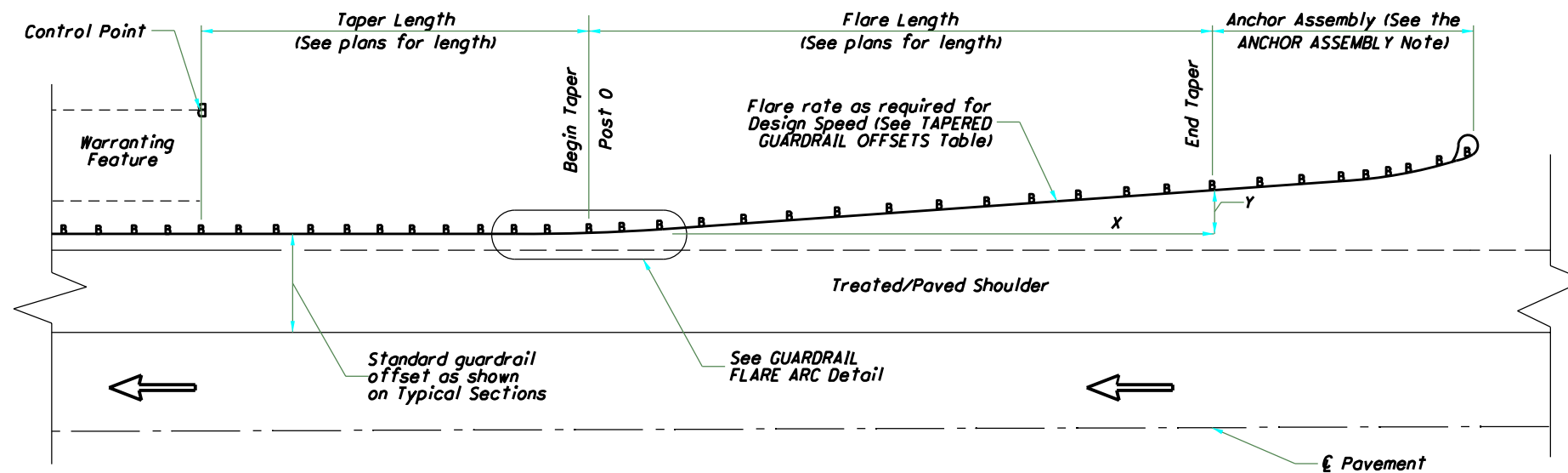
NOTES

STANDARD GUARDRAIL FLARE: Construct the flare shown here when indicated in the construction plans and in conjunction with SCD GR-5.2.

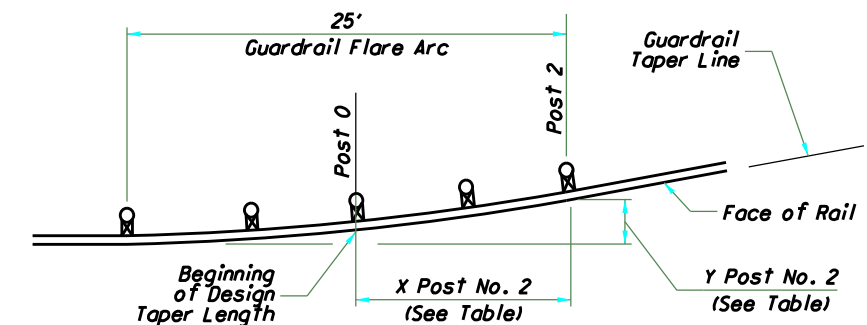
FLARE RATES AND OFFSET SPEEDS: Use the Design Speed shown on the plans to determine flare rates and offsets. Where a Design Speed is not shown or available, use the legal posted speed limit.

ANCHOR ASSEMBLY: Use a Type B Anchor Assembly with standard guardrail flares unless otherwise specified. The Type A can be used, with restrictions. Location and Design Manual, Volume 1, Section 603.

CONTROL POINT: The point shown designates the extent of the hazard being protected and is shown for design use only.



STANDARD GUARDRAIL FLARE
(Plan View)



GUARDRAIL FLARE ARC DETAIL

TAPERED GUARDRAIL OFFSETS (Feet)

Post No.	Flare Length	45 MPH or less 10:1 Taper		50 MPH 11:1 Taper		55 MPH 12:1 Taper		60 MPH 13:1 Taper		65 MPH 14:1 Taper		70 MPH 15:1 Taper	
		X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
0		0	0.3	0	0.3	0	0.3	0	0.2	0	0.2	0	0.2
2	25	12.4	1.3	12.5	1.1	12.5	1.0	12.5	1.0	12.5	0.9	12.5	0.8
4		24.9	2.5	24.9	2.3	24.9	2.1	24.9	1.9	24.9	1.8	24.9	1.7
6	50	37.3	3.7	37.3	3.4	37.4	3.1	37.4	2.9	37.4	2.7	37.4	2.5
8		49.8	5.0	49.8	4.5	49.8	4.1	49.9	3.8	49.9	3.6	49.9	3.3
10	75	62.2	6.2	62.2	5.7	62.3	5.2	62.3	4.8	62.3	4.5	62.4	4.2
12		74.6	7.5	74.7	6.8	74.7	6.2	74.8	5.7	74.8	5.3	74.8	5.0
14	100	87.1	8.7	87.1	7.9	87.2	7.3	87.2	6.7	87.3	6.2	87.3	5.8
16		99.5	9.9	99.6	9.1	99.7	8.3	99.7	7.7	99.7	7.1	99.8	6.7
18	125	111.9	11.2	112.0	10.2	112.1	9.3	112.2	8.6	112.2	8.0	112.3	7.5
20		124.4	12.4	124.5	11.3	124.6	10.4	124.7	9.5	124.7	8.9	124.7	8.3
22	150	136.8	13.7	136.9	12.5	137.0	11.4	137.1	10.5	137.1	9.8	137.2	9.1
24		149.3	14.9	149.4	13.6	149.5	12.5	149.6	11.5	149.6	10.7	149.7	10.0
26	175	161.7	16.2	161.8	14.7	161.9	13.5	162.0	12.5	162.1	11.6	162.1	10.8
28		174.1	17.4	174.3	15.8	174.4	14.5	174.5	13.4	174.6	12.5	174.6	11.6
30	200	186.6	18.7	186.7	17.0	186.9	15.6	186.9	14.4	187.9	13.4	187.1	12.5
32		199.0	19.9	199.2	18.1	199.3	16.6	199.4	15.3	199.5	14.3	199.6	13.3

All "X" dimensions shown are from the centerline of Post 0 to the centerline of the indicated post along the standard guardrail offset line extended.
All "Y" dimensions shown are from the standard guardrail offset line extended to the face of rail at the post indicated.