

## Fundamentals and Inspection Assessments Site Summary:

Location - \_\_\_\_\_ (reference station, GPS position, road names)

Inspector name \_\_\_\_\_ Signature \_\_\_\_\_ Date of inspection \_\_\_\_\_

1. Establish the design envelope/lateral extent of the area of concern (AGRD6: Section 3.2)
2. Hazard(s) identification – primary and secondary
3. Site layout – sketch
  - a) **Length of barrier** (Length<sub>ADVANCE</sub> + Length<sub>HAZARD</sub> + Length<sub>OPPOSING</sub>) (include points of need)
  - b) **Photos** - many
4. Design review
  - a) **System identification** – flexible, semi-rigid or rigid and which product?
  - b) **Selection assessment** – is the chosen system appropriate and compliant?
  - c) **Terminal identification and compliance** – NZTA: M23A e.g. MSKT, SoftStop, MAX-Tension, crash cushion, WRSB terminal etc.
  - d) **Gating clear area** - 6 m x 18.5 m
  - e) **Offset from traffic lanes** – AGRD6: Table 6.5 (e.g. 3.0 m for 110 km/h)
  - f) **Flare rate** – AGRD6: Table 6.9  
(e.g. 110 km/h close to the road = 30:1, further from the road = 15:1)
  - g)
    - i. **Runout length to back of hazard** – (does the barrier intercept the runout path?) - AGRD6: Table 6.10 (e.g. L<sub>R</sub> = 88 m for 1000 to 5000 AADT @ 110 km/h)
    - ii. **Approximate length of need** (leading and opposing, if applicable) – @ approx. 10° departure angle (i.e. 5:1 - measure distance perpendicular from edgeline to back of hazard and then multiply by 5)
5. Installation review
  - a) **Site Grading** – according to supplier or standard plan (i.e. max 10:1 on approach, max 6:1 in clear area)
  - b) **Terminal** (system specific checklists *and* the list below)
    - i. Flare
    - ii. Delineation
    - iii. Anchorage
    - iv. Bolting, washers, pattern
    - v. Breakaway posts
    - vi. Blockouts
    - vii. Post condition
    - viii. Height
    - ix. Damage
  - c) **System** (system specific checklists *and* the list below)
    - i. Height
    - ii. Bolting
    - iii. Post condition
    - iv. Missing posts, additional posts, nesting
    - v. Transitions
    - vi. Tension bays
    - vii. Rail damage
    - viii. Grading
    - ix. Delineation
6. Develop intervention program – prioritise based on risk (frequency x severity) and effort/cost

Table 6.10: Run-out lengths for barrier design

Operating speed (km/h)	Run-out length $L_R$ (m) for AADT range			
	> 10 000	5 000–10 000	1 000–5 000	< 1 000
110	110	101	88	76
100	91	76	64	61
90	80	67	56	54
80	70	58	49	46
70	60	49	42	38
60	49	40	34	30
50	34	27	24	21

Table 6.9: Flare rates

Operating speed (km/h)	Barrier offset distances requiring higher flare rates (m)		Flare rate for barriers closer to the road <sup>1,4</sup> (d:1)	Flare rate for stiffer barriers further from the road <sup>2,4</sup> (d:1)	Flare rate for flexible barriers further from the road <sup>3,4</sup> (d:1)
	Verge (left) side	Median (right) side			
50	1.5	1.0	13:1	8:1	7:1
60	1.5	1.0	16:1	10:1	8:1
70	1.5	1.0	18:1	12:1	10:1
80	2.0	1.0	21:1	14:1	11:1
90	2.5	1.5	24:1	16:1	12:1
100	3.0	2.0	26:1	18:1	14:1
110	3.0	2.0	30:1	20:1	15:1

Notes:

1. These flare rates refer to barriers located with offsets from the road less than those listed in columns 2 and 3
2. Stiffer barriers include concrete barriers, Thrie-beam barriers and the legacy non-proprietary W-beam barriers
3. Flexible barriers include wire rope barriers and flexible W-beam systems.
4. For a flare of d:1, the barrier is located 1 additional unit laterally for every d units longitudinally.

Table 6.5: Offset from the traffic lanes for Normal Design Domain treatments

	Rural high speed <sup>1,3</sup>	Rural low speed	Urban freeways <sup>3</sup>	Urban roads <sup>2</sup>
Desirable	4.0 – 6.0 m	3.0 – 6.0 m	4.0 – 6.0 m	2.5 - 3.0 m
Minimum	3.0 m	2.5 m	3.0 m	1.0 m

Notes:

1. Operating speed greater than or equal to 80 km/h
2. The offset may be governed by the required offset to kerbs
3. Adoption of barrier widths less than 3 m shall include assessment of desired operating practices, including emergency response, maintenance and police enforcement
4. Shoulder widths and barrier offset from traffic lane dimensions may differ. Refer Part 3 of the Guide (Austroads 2021d) for additional information regarding shoulder widths

Figure 6.12: Run-out length method to determine the leading point of need on two-way roads

