Safety Barriers – Design and Installation Developments and Pitfalls

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Safety Barriers

NRA TD 19 Safety Barriers

NRA BD 52 Parapets

Series 400 Safety Barriers and Pedestrian Guardrails
NRA APPROVAL LIST WITHDRAWN

All Safety Barriers to be CE Marked!!!!!!

CE Marking for a barrier kit does NOT mean that the barrier system is a fully compliant installation.

NRA will maintain a list of CE marked barriers for designers to obtain information on available systems.
Checklist – Pre-Construction

• Do you need a barrier (could the obstruction be removed or made passively safe)

3.9 Hazard mitigation measures shall be considered by the Designer prior to designing a safety barrier. A safety barrier shall only be introduced if the hazard cannot be mitigated. The mitigation measures for hazards within the Clear Zone are listed below in order of preference:

a) Remove;

b) Relocate;

c) Re-design the hazard to reduce the risk to road users e.g. introducing a passively safe sign post;

d) Revise the road layout or cross-section to lower the risk, e.g. increase the width of the hard shoulder, improve the road alignment, etc.;

e) Reduce impact severity (e.g. by using a breakaway feature or by setting a culvert flush with the existing ground);

f) Provide a suitable safety barrier.
• Specify barrier in accordance with NRA TD 19?
  • This includes Containment (N2, H2 or H4a for rail)
  • Impact Severity (A or B, now also C)
  • Working Width (Is there anything within the working width, including passively safe products)
  • Set-back (How far the barrier should be from the road)
Checklist – Pre-Construction

•Does the specified barrier exist?
  •For example
    •Terminal specified
      •N2 Containment
      •X1y1 displacement

•Terminal does not exist!!!
•Check NRA list (soon) or Highways Agency list first
Construction Checklist
Clause 401.2: The person responsible for the design shall ensure:

(i) comply with this Series, Appendices 4/1, 4/3 and 4/7 and the requirements of standards NRA TD19 and NRA BD52 (as appropriate);

(ii) are certified in accordance with IS EN 1317-5 to conform to the parameters of containment level, impact severity level and working width identified in Appendices 4/1 and 4/7; and

(iii) are installed in accordance with the manufacturers’ installation manual, attached to the relevant CE Certificate.
Construction Checklist

- Is the barrier CE marked to EN 1317
- Has it been installed in accordance with the test report (Installation Manual)?

Ask for it!!!
Construction Checklist

- Has the barrier been modified?
- Have the Ground Conditions been certified by an independent Chartered Engineer?
TERMINALS AND TRANSITIONS
Safety Barriers - Terminals

Full height Terminals (P4 to EN 1317 Part 4) now required upstream on all National Roads with a design speed of 100km/h or greater where the terminal is in the direct line of traffic.
Therefore:
  
  o A ramped terminal is allowable where:
    o the end is buried in a cutting face or bund.
    o the terminal is not in the direct line of traffic.

Terminating barriers shall have a flare of 1:20 away from the road.
Terminals

- **Compatibility**
  - Can the terminal function adequately in combination with the type of safety barrier it is attached to.
  - Contractor must check with the Safety Barrier manufacturer(s) and ensure that the proposed Safety Barrier and Terminal will act together and meet the Performance criteria.
Safety Barriers - Transitions

• Paragraph 7.7 of NRA TD 19:
  "All transitions shall comply with the requirements of the impact assessment test criteria specified in IS EN 1317-2 and ENv 1317-4 for safety barriers and the critical impact requirements in Paragraphs 7.8 to 7.11."

• Computer Simulation allowable as a Departure from Standard.
Safety Barriers - Transitions

Barrier tested to EN 1317

Transition tested to EN 1317
Paragraph 7.6 of NRA TD 19/09 states, "...Additionally the length of the transition should be sufficient to ensure that no significant changes in the dynamic deflection occur over short lengths:...."
When to replace with EN 1317 compliant barrier:

- Timber Post Barriers where warranted by risk assessment process
When to repair:

- Any EN 1317 compliant barrier if deemed still necessary further to risk assessment
Repair like for like if:
  - Damaged pre-EN 1317 barrier
    - If damage is less than half of the overall length.
Replace with EN 1317 barrier:

- Damaged pre-EN 1317 barrier
  - If the overall barrier length of the barrier is less than 100m in length. Engineers discretion is advised.
  - If due to successive pavement overlays the barriers is now at an insufficient height
Spot the mistakes
Manhole location
Working Width
Flowing?
Working Width?
No comment
Is a H2 barrier required?
Construction?
Are the bolts fastened?
Are bolts missing?
Installation
Instalation
Installation
Installation
Safety Barrier Site Info

THANK YOU

ANY QUESTIONS??

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