NG Sample Appendix 4/1: Safety Barriers

*[Notes to compiler]*

1. The locations of safety barriers are shown on Drawing Nos ……………………… *[generally the 1:500 or 1:1000 Site Plans].*
2. The performance criteria for the safety barriers are shown on the above drawings/ scheduled in the following table. *[Delete as appropriate.]*
3. Schedule of Safety Barriers

| **Barrier Ref No** | **Start Chainage of LoN** | **End Chainage of LoN** | **Hazard Information** | | | | **Barrier Type** | **Single/ Double Sided** | **Minimum Safety Barrier Performance Criteria** | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Hazard Description** | **Hazard Chainage** | **Location** | **Drawing Reference** | **Containment Level** | **Impact Severity Level** | **Working Width** | **Vehicle Intrusion\*** | **Set-Back** |
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\* VI specified is in accordance with EN1317-2:2010. The procedure for measuring VI within EN1317-2:1998 + A1 2006 is different than EN1317:2010. If a VRS tested to EN1317-2:1998 + A1 2006 is proposed for use, it must be shown to achieve the required VI value as assessed under the EN1317:2010 through simulation or some other means.

*[Safety barriers with different performance criteria within a continuous length should be split into sections such that the performance criteria for each section are unique. Alternatively, the safety barriers on a scheme may be assigned categories each of which defines the performance criteria for that type of system. The table should identify the performance criteria for each section of safety barrier at each barrier location or of each barrier type.*

*Where a Length of Need comprises many short lengths of barrier with different performance criteria standard details should be provided on the Drawings and each combination of barriers given a reference. This barrier reference should then be entered in the table once only for each length of combined barrier. There is no need to indicate each length of each type of safety barrier, but performance criteria should be stated for all barriers in the combination (e.g. W6/W4/W3, H2/N2 etc.).*

*Barrier types will normally be indicated where:*

* *the In-situ Concrete Barrier is to be used; or*
* *there are exceptional and overriding reasons for specifying a particular barrier type.*

*In the latter case, the agreement of Transport Infrastructure Ireland is required before particular barrier types are included in the Schedule of Safety Barriers.*

*The Compiler should indicate the Working Width required as an absolute value (e.g. W6) and not as a range of acceptable values.*

*The Start and Finish Chainages shall be derived from the Approach and Departure Lengths which have been determined in accordance with DN-REQ-03034 and the Designer’s risk assessment of the level of protection required.]*

1. Temporary Safety Barriers

*[Note to compiler: State here:]*

1. Who is to provide temporary safety barriers.
2. Location for removal of temporary safety barriers on completion of the Works.
3. Location(s) from which temporary safety barriers are to be collected and returned by the Contractor if provided by the Employer.
4. Who is to own the temporary safety barriers on completion of the Works.
5. Other Details *[to be included as required]*
6. Any special details which are shown on the Drawings and have been designed by the specialist with responsibility for the design of the road furniture.
7. Any special requirements for setting out details.
8. Details of testing requirements and frequency of testing not covered already within the Specification.
9. Any special testing requirements for anchorages in drilled holes.
10. Any other relevant details.
11. Schedule of Transitions

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Transition Requirements** | | | | | **Upstream Connection** | | | | | **Downstream Connection** | | | |
| Performance Criteria | | | | | | | | | | | | | |
| Transition Ref No. | Performance Class | Impact Severity Level | Working Width | Barrier/ Terminal/  Parapet  Ref No | | Performance Class | Impact Severity Level | Working Width | Barrier/ Terminal/  Parapet  Ref No | | Performance Class | Impact Severity Level | Working Width |
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NG Sample Appendix 4/2: Pedestrian Restraint Systems

*[Note to compiler: Details should be given here of locations and type of pedestrian restraint systems required. Cross-reference may be made to the drawings where appropriate.]*

NG Sample Appendix 4/3: Safety Barrier Terminals

*[Note to compiler: Include here:]*

1. The locations of safety barrier terminals are shown on Drawing Nos ……………………… *[generally the 1:500 or 1:1000 Site Plans].*
2. The performance criteria for the safety barrier terminals are shown on the above drawings/scheduled in the following table. *[Delete as appropriate.]*
3. Schedule of Safety Barrier Terminals

| **Barrier Ref No** | **Upstream Terminal** | | | | | | | **Downstream Terminal** | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Minimum Performance Criteria** | | | | | | | **Minimum Performance Criteria** | | | | | | | | |
| **Performance Class** | **Impact Severity Level** | **Permanent Lateral Displacement Class** | | **Exit Box Class\*** | | **Directions Class** | **Performance Class** | **Impact Severity Level** | **Permanent Lateral Displacement Class** | | **Exit Box Class\*** | | **Directions Class** | **Ramp Down** | **Flared** |
| X  (1,2,3) | Y  (1,2,3,4) | Za | Zd | BDT, UDTA, UDTD | X  (1,2,3) | Y  (1,2,3,4) | Za | Zd | BDT, UDTA, UDTD | Y/N | Y/N |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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\* The Exit Box Class specified is the minimum Exit Box Class requirement e.g. if Zd3 is specified, products with a Zd value of Zd1, Zd2 or Zd3 are permitted.

*Each length of permanent safety barrier listed in Appendix 4/1 should be cross referenced here providing details of both the upstream and downstream terminal performance requirements.*

1. Schedule of Crash Cushions

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Crash Cushion Ref No** | **Performance Class** | **Impact Severity Level** | **Permanent Lateral Displacement Class** | **Exit Box Class** | **Redirective (R)/**  **Non-Redirective (NR)** |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
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NG Sample Appendix 4/4: Safety Barrier Maintenance

*[Note to compiler: Where required by the Employer, the compiler should include a schedule of:*

1. *Installation and/or maintenance manuals for each barrier and terminal type;*
2. *Any materials which are to be provided for maintenance purposes;*
3. *Special items of equipment etc required for the installation, testing, maintenance and demolition of the safety barriers and terminals.*

*The schedule should take account of the barrier and terminal types specified (if any) and the overall length of each barrier type. The schedule should generally include sufficient length of safety barrier (and components) to allow for the replacement of at least 50m of each safety barrier type or 5% of the overall length of each barrier type installed on that contract. At least one terminal and transition of each type should also be provided. However, reference should be made to Transport Infrastructure Ireland and the body responsible for maintaining the barriers for replacement materials requirements. Manuals and training shall be provided for all safety barriers.*

*Where a scheme is anticipated to be maintained by more than one maintenance body, the schedule should identify which barriers and terminals are provided to the individual maintenance depots. The schedule should also state where the barriers, terminals and components should be delivered to. Entries in the schedule for a safety barrier and a terminal to be provided to a particular maintenance depot may be as follows:]*

1. Schedule of Barrier Materials for Maintenance

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Barrier Information** | | | | **Barrier Quantity to be Supplied for Maintenance** | | | **Provision of Information, Training etc.** | | **Address for Delivery** |
| Barrier Type | Containment Rating | Impact Severity | Working Width | Barrier Length | Transitions | Other Items | Manuals | Training |  |
| N/A | N2 | A | W6 | 55m | 1 No.  (N2-H2) | 1 No. set of tools for installation | 2 No. | 1 No. course for 5 operatives | XXX Depot XXX |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |

1. Schedule of Terminal Materials for Maintenance

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Terminal Information** | | | | | | | **Terminals Quantity to be Supplied for Maintenance** | | **Provision of Information, Training etc.** | | **Address for Delivery** |
| Terminal Type | Performance Class | Impact Severity Level | Permanent Lateral Displacement Class | | Exit Box Class | | Number | Other Items | Manuals | Training |  |
|  | X (1,2,3) | Y (1,2,3,4) | Za | Zd |
| N/A | T110 | A | X2 | Y2 | Z1 | Z3 | 5 | 1 No. set of tools for installation | 2 No. | 1 No. course for 5 operatives | XXX Depot XXX |

NG Sample Appendix 4/5: Anti-Glare Screens

*[Note to compiler: Include here:]*

The locations of anti-glare screens are shown on Drawing Nos ……………………… *[generally the 1:500 or 1:1000 Site Plans].*

*[Include location details, preferably by chainage reference together with any specific performance requirements here.]*

NG Sample Appendix 4/6: Not Used

NG Sample Appendix 4/7: Vehicle Parapet Systems

*[Note to compiler: This should list the following and cross-refer to Appendix 1/5 and Appendix 1/11 as necessary:]*

1. The locations of Vehicle Parapet Systems are shown on Drawings Nos ……………………… *[generally the 1:500 or 1:1000 Site Plans].*
2. The performance classes for the Vehicle Parapet Systems are shown on the above drawings/scheduled in the following table. *[Delete as appropriate]*
3. Schedule of Vehicle Parapet Systems

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Structure Ref No** | **Length of Vehicle Parapet** | **Height of Vehicle Parapet** | **Vehicle Parapet Type** | **Vehicle Parapet Performance Criteria** | | |
| Containment Level | Impact Severity Level | Working Width |
|  |  |  |  |  |  |  |
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|  |  |  |  |  |  |  |
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*[Vehicle Parapet type will normally be indicated where:*

1. *A bespoke vehicle parapet system is to be used; or*
2. *there are exceptional and overriding reasons for specifying a particular vehicle parapet type.*

*In the latter case, the agreement of Transport Infrastructure Ireland is required before particular vehicle parapet types are included in the Schedule of Vehicle Parapet Systems.*

*The Compiler should indicate the Working Width required as an absolute value (e.g. W6) and not as a range of acceptable values.]*

1. Other Details *[to be included as required]*
2. Any special details which are shown on the Drawings and have been designed by the specialist with responsibility for the design of the road furniture.
3. Any special requirements for setting out details.
4. Details of testing requirements and frequency of testing not covered already within the Specification.
5. Any special testing requirements for anchorages in drilled holes.
6. Any other relevant details.