INDEPENDENT PHASE ONE PLANNING FORUM FOR HS2

PLANNING FORUM NOTE 18

LINESIDE NOISE BARRIER TYPES

Introduction

1. This Planning Forum Note describes the types of Lineside Noise Barrier that EKFB and BBV propose to test and use on HS2 Phase 1.

2. The Planning Forum Note is intended to simplify Schedule 17 pre-application conversations.

3. Typically, the Lineside Noise Barrier type for any given Schedule 17 package will be selected from the limited 'palette' presented here with reference to the relevant grounds for item 2 in the table in paragraph 3 of Schedule 17.

4. The selection will be discussed as part of the pre-application for that package in the normal way.

5. This Planning Forum Note should be read in conjunction with Planning Forum Notes 10 (Indicative Mitigation) and 14 (Operational Noise from the Railway and Altered Roads).

Definitions

6. **Lineside Noise Barriers** are structures that run alongside the HS2 line as required to mitigate the noise generated by the railway. Typically, Lineside Noise Barriers are used where the tracks are at grade (ground level), in a cutting or on an embankment.

Design Rationale

7. There are two types, Concealed Post Lineside Noise Barrier and Exposed Post Lineside Noise Barrier.

8. Concealed Post Lineside Noise Barriers will have concealed vertical steel posts and concrete panels with a high-quality concrete finish to the external face and fully bonded acoustic absorbency (e.g. wood concrete) to the internal (railway) face. The parameters for this type are illustrated in Appendix A, Table 1.

9. Exposed Post Lineside Noise Barriers will have exposed vertical steel posts and concrete panels with a high-quality concrete finish to the external face and fully bonded acoustic absorbency (e.g. wood concrete) to the internal (railway) face. The parameters for this type are illustrated in Appendix A, Table 2.

10. Variants: parameters for three possible variants to the design of Lineside Noise Barrier for both Concealed Post and Exposed Post types are illustrated in Appendix A, Table 3:

    - top of barrier cranked towards the railway
    - height transition

- surface pattern to the external (public) face.

11. The two Lineside Noise Barrier types both use a modular approach to construction with vertical steel posts and concrete panels between for durability and continuity with the Common Design Elements for Piers and Parapets.

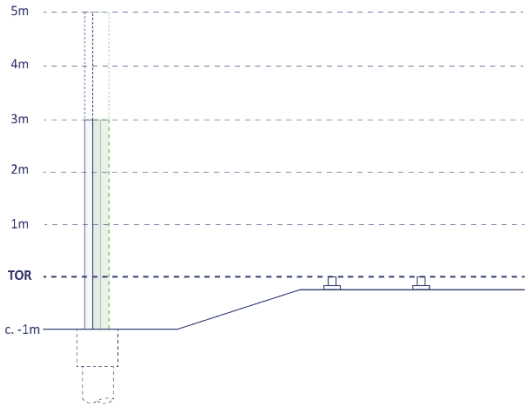
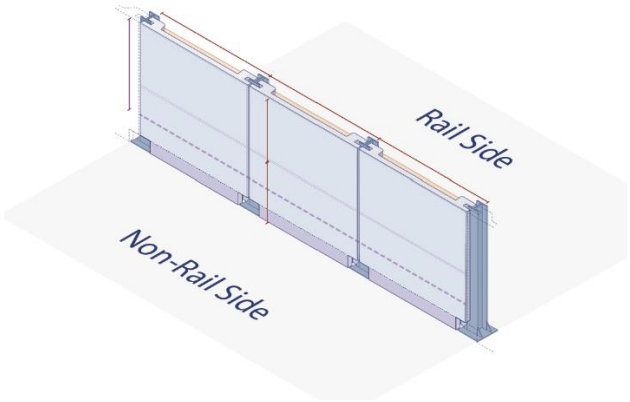
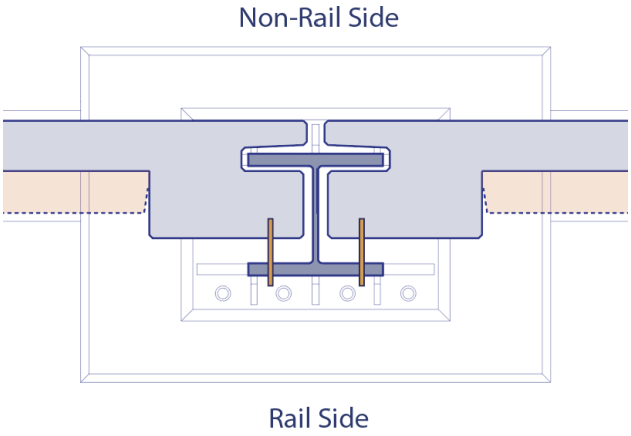
12. The 'reverse' (railway) side of the two Lineside Noise Barrier types will have fully bonded acoustic absorbency (e.g. wood concrete) and exposed vertical steel posts.

Requests for Schedule 17 Approval

13. Requests for Schedule 17 approval will include information to enable a decision, including elevations and sections showing dimensions from ground level as appropriate. The drawings and information to be provided can be discussed during pre-submission engagement.
14. The choice of barrier type and its location in the landscape will be described in the "Design Approach and Rationale" section of the written statement that will be part of the request for approval.

Appendix A: Lineside Noise Barriers - Parameters

Table 1: Concealed Post Lineside Noise Barriers Parameters

#	Parameter		Description
1.	Geometry		Concealed Post Lineside Noise Barriers shall be vertical with a height to meet the acoustic requirements. The required height is measured from the Top of Rail (TOR).
2.	Concealed Vertical posts		Concealed Post Lineside Noise Barriers shall be vertical with concealed steel posts. Height to meet the acoustic requirement.
3.	Concealed Detail		Precast panels will wrap around front of the steel post to create concealing detail. Visible vertical joint between the panels will be a maximum of 50mm wide to meet construction and installation tolerances. Bolt fixing through rail side flange of steel post.

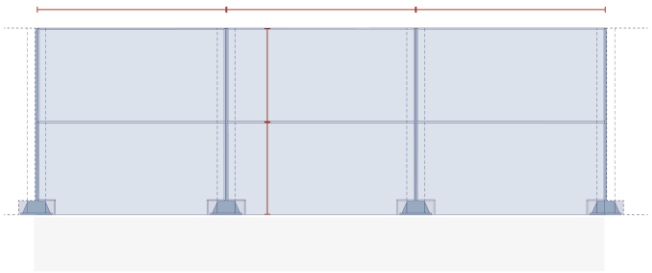
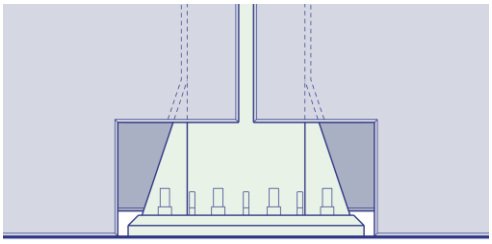
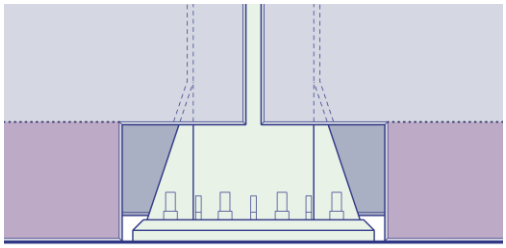
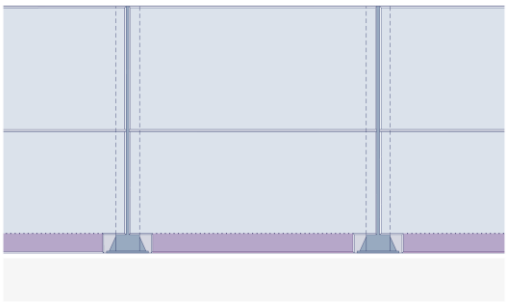
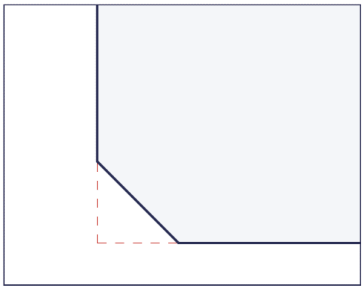
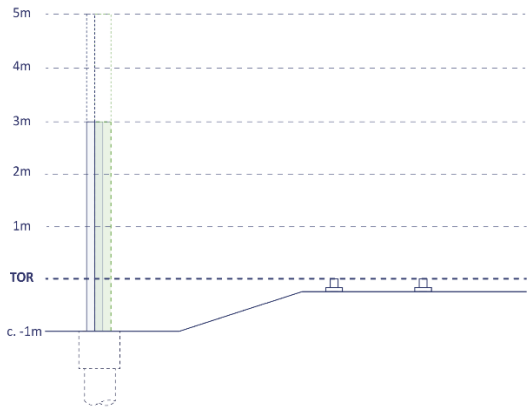
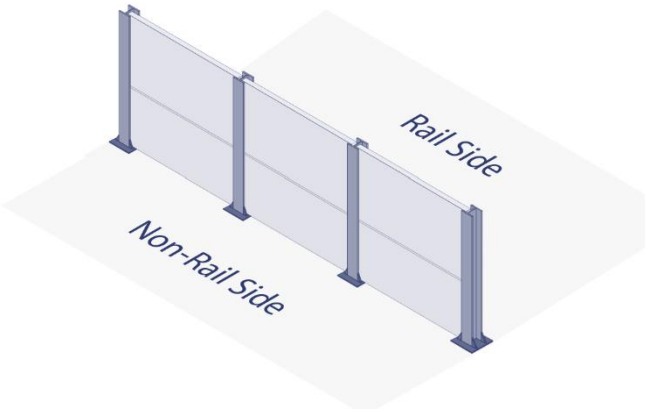
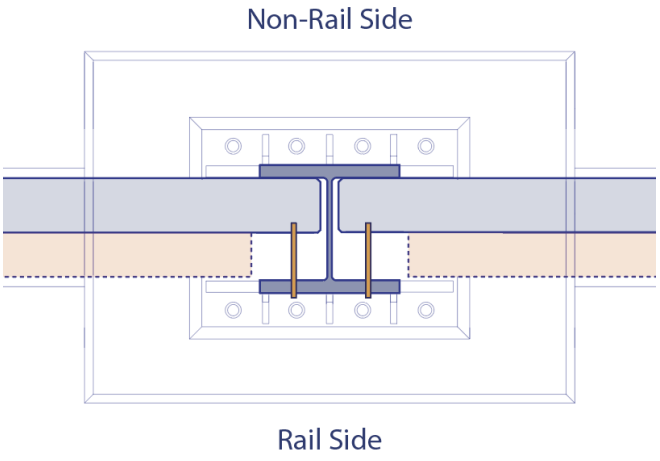
4.	Consistent widths/heights		Typically, the panel width along any continuous length of noise barrier will be consistent, except where design requirements dictate otherwise. Panel heights may need to change along the length of a barrier. Changes shall be set out in a logical way.
5.	Maintenance notch details		Notches will be required in the bottom concealed panel on the external (public) face to expose the post base locally for maintenance of the anchor points. The notched element will be optimised to meet minimum spatial requirements relevant to the size of the post.
6.	Notch Skirt detail		A skirting detail can be introduced to the external (public) face where appropriate between the notched elements to visually integrate the maintenance requirement into the design solution.
7.	Finish		Typically, Concealed Post Lineside Noise Barriers will have a high-quality external finish in smooth concrete.
8.	Panel Chamfers		Panels corners shall be chamfered. The size of the chamfer will be in line with manufacturers' recommendations; it is currently anticipated that the chamfer will be between 10mm and 25mm.

Table 2: Exposed Post Lineside Noise Barriers Parameters

#	Parameter		Description
1.	Geometry		Exposed Post Lineside Noise Barriers shall be vertical with exposed steel posts; height to meet the acoustic requirements. The required height is measured from the Top of Rail (TOR).
2.	Exposed Vertical Posts		Typically, the panel width along any continuous length of noise barrier will be consistent, except where design requirements dictate otherwise.
3.	Exposed Post Detail		Precast panels are slotted down the web of the steel post. Bolt fixing through railway side flange of steel post.

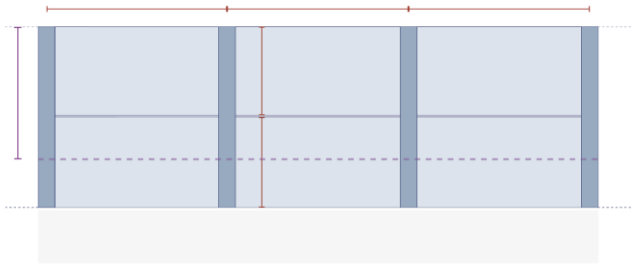
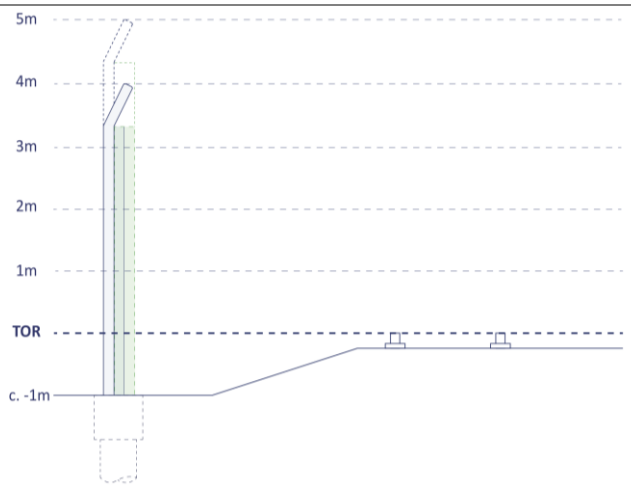
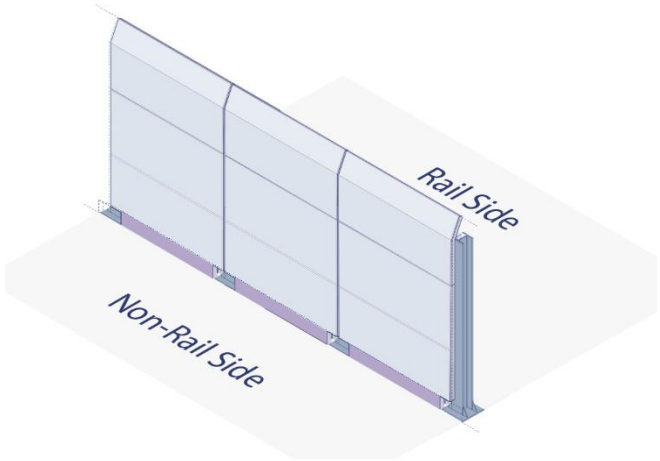
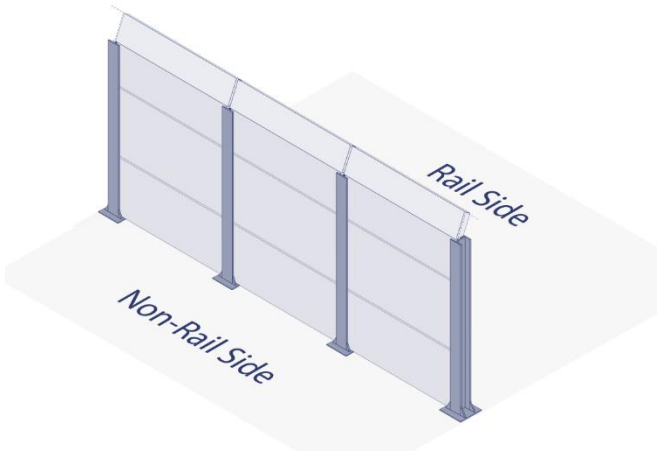
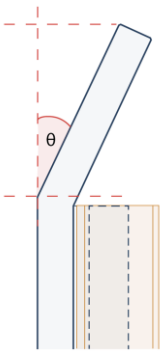
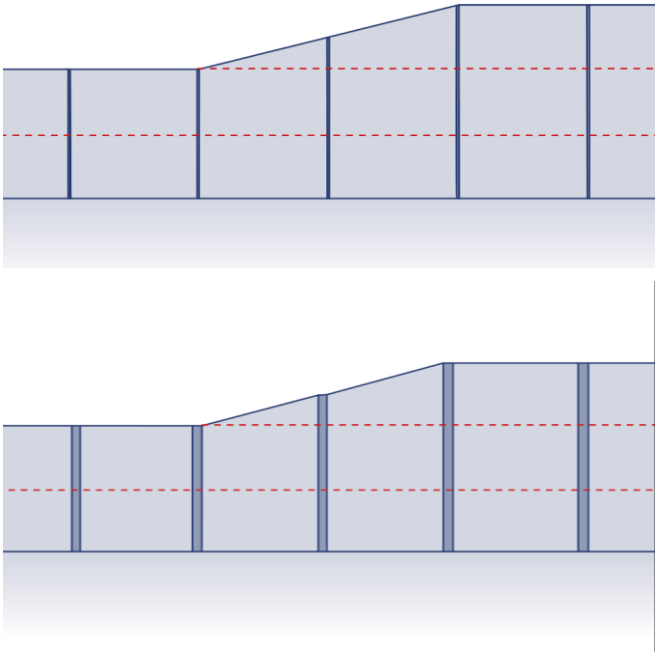
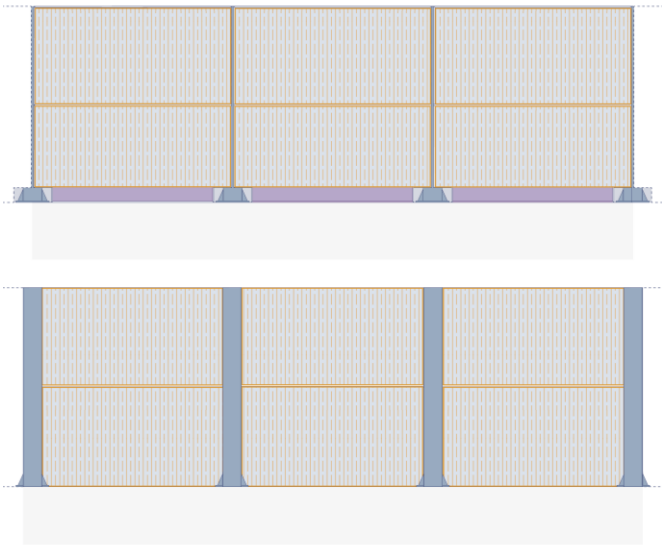
4.	Consistent Panel Width, Plain Surface		Typically, the panel width along any continuous length of noise barrier shall be consistent, except where design requirements dictate otherwise. Panel heights may need to change along the length of a barrier. Changes shall be set out in a logical way.

Table 3: Lineside Noise Barriers Variants Parameters

#	Parameter		Description
1.	Geometry and crank introduction		Barriers shall be vertical with a height to meet the acoustic requirements. Noise requirement is measured from Top of Rail (TOR). Where appropriate, barriers taller than 3m above top of rail may integrate a small crank.
2.	Crank Detail	 	The top of the panel may be cranked where appropriate to soften the relationship with the sky and give the appearance the overall height is reduced. The crank may only be used where it does not compromise the headroom of the maintenance walkway and is limited in length due to its proximity to the overhead catenary system. Subject to testing.

3.	Angle of Crank		The angle of the crank shall be approximately 25-30 degrees from the vertical (subject to testing).
4.	Transition in Height		If a barrier is required to change height a transition panel can be used where appropriate, to avoid sudden stepping in the barrier. To be agreed with the local authority per instance.
5.	Finish		A surface pattern can be provided where appropriate in line with the context. Where a pattern is applied it will be vertical in nature.