REASONED DOCUMENTS OF DRAFT SPECIFICATION OF FULLY SEALED GANGWAY FOR VANDE BHARAT AND LHB COACHES.

Spec. Para No.	Description of clause	M/s Pioneer	M/s Cemcon Rly Industries Guhana.	M/s CRG Ind.	M/s Avadh Rail	M/s Hubner Interface System India	M/s Elastomer	ICF/ Chennai	M/s Dellner Interface System India	Remarks of RDSO
1.2	The aesthetically designed gangway shall have one Full Module between two coaches and should have quick coupling arrangement for quick attachment and detachment between the adjacent coaches at depot /yard or during train operation. There shall be quick release mechanism on one end and other end should be fastened easily with coach body.					The aesthetically designed gangway shall have one Full Module / two half modules between two coaches and should have quick coupling arrange-ment for quick attachment and detachment betw-een the adjacent coaches at depot/ yard or during train operation. There shall be quick release mechanism on one end and other end should be fastened easily with coach body / the centre of the gangway.	--			Comments of M/s Hubner are not acceptable. For having uniformity across all sealed Gangway and avoiding issue of non-compatibility, proven full module shall be followed.
4.	**OPERATING CONDITION** 4.1. Ambient Conditions (i) Ambient temp : -10 0C to 60 0C (ii) Altitude : Sea level to 2500m (iii) Max. operating temp : 70 0C (iv) Rainfall : Very heavy and continuous (up to 2500mm during rainy season) Max. Wind velocity 145 kmph. ----------			Yes, we comply			---			NA
5.	**WORKING CONDITION:** Gangway shall work under following working condition : Train speed160 Kmph for LHB Coaches and up to 200 Kmph for Vande Bharat Train set, Min Curvature :152.4 meter for Depot &175 meter for Main line, Gradient 1:100 Passenger load @ 60 kg per person 10 person/ m2 max.			Yes, we compl y			---			NA

6.	**Scope** – 6.1 The scope includes the design, manufacture, testing, supply, installation and commissioning of fully sealed gangways (Full module) for Vande Bharat Train set cars and LHB coaches operating at 200/160 Kmph speed on Indian Railways. The supplier shall be responsible for the provisions of all accessories including fasteners for Sealed gangway as per requirement of installation.			Yes, we compl y			---			NA`
7.	**PARTICULAR REQUIREMENTS**									
7.3	Since gangway system is a safety related item, in-service trials shall be necessary for OEM design before full clearance is given for supply.		Since the gangways are mfd exactly on the basis of design and drawings duly approved by thepurchaser, the field trials should run simultaneously with further supplies. This will enable the supplier to continue to deploy their workforce w/out letting them idle during the trial run goes on.	Yes, we compl y			--			Comments of M/s Cemcon Rly Ind. is not acceptable as being critical passenger safety item, field trial on limited coaches is necessary to monitor the performance before regular supply.
7.4	Simulation FEA: Vender/OEM shall have proper design wing of qualified professional's. They should have capability of doing FEA analysis.	Since, FEA is required only one time i.e. during design face. Hence, It shall notbe mandatory to have this facility. Further	External reputed and competent expert agencies who are up-to date with the latest developments	Yes, we comp ly (CRG Scop e)	Simulation FEA: Vender or their OEM partner or their design partner shall have well established		----	Noted. However, may be changed as "curve move ment analysis". The curve movement analysis in soft-ware is very		Comments of M/s Pioneer and M/s Cemcon are not acceptable as design wing at Vendor/OEM should be capable for curve movement analysis and the issue

		this analysis can be done in much better manner by an agency/ Institute which is regularly doing this work and have expertise in modelling. Out-source of FEA either from any agency or TOT partner should be allowed. It is requested to delete this clause.	in FEA should also be permitted along with in-house facility as well.		proper design wing with qualified and comp-etent design professionals. They should have capability of doing FEA analysis and simulation			important in gangway design. Additionally, this may also be added that "the design team of the firm should be capable enough to deal with any issu'es or problems occur in service and should be able to provide corrective and preventive action plan"		or problem occurs in service. The comment of ICF is agreed and necessary changes in clause will be done accordingly.
7.5	Vendor shall have Pan India maintenance facility for maintenance of their supplied product.	Maintenance shall be in scope of respective Railway shed. In case maintenance contract has been awarded to the supplier, then supplier may have maintenance facility at any suitable place. Hence this clause should be deleted.		Yes, we comply (CRG Scope)			----			M/s Pioneer's comments is not acceptable as CAMS is also part of para 16.2 of specification. Firm shall have to provide maintenance facility over Pan India.
7.6	Source of manufacture of each component shall be provided by the vendor at the time of design stage.	Source of major and critical items like bellow cloth, side protection plate can be provided but for each component it is not possible					----		~~Source of manufacture of each compo-nent shall be provided by the vendor at the time of design stage~~ We shall not be complied to this clause.	Comments of M/s Dellner are not acceptable as source of components are to be declared by firm in their QAP to ensure the minimum local content under Make in India policy.

<table>
<tr>
<td>9
9.1</td>
<td>SCOPE OF SUPPLY
The scope of supply of fully sealed gangway shall include the following major items including all fasteners/hardware required for installation of the system. However, it is supplier’s responsibility to ensure supply of all necessary accessories needed for reliable performance of sealed gangway.

<table>
<tr><th>S.N.</th><th>Item Description</th><th>Material</th><th>Qty / Coach</th></tr>
<tr><td>1.</td><td>Car Body Frame 1</td><td>ASTM-A240, Type 304</td><td>01</td></tr>
<tr><td>2.</td><td>Bellow Assembly</td><td>Silicon fire retardant rubber with fabric compliant to EN 45545-2 HL3</td><td>01</td></tr>
<tr><td>3.</td><td>Ceiling Panel Assembly</td><td>AA:6063-T5/IS:63400 or Equivalent</td><td>01</td></tr>
<tr><td>4.</td><td>Interior Assembly</td><td>FRP/GFRP compliant to EN 45545-2 HL3</td><td>02</td></tr>
<tr><td>5.</td><td>Latching Assembly</td><td>AA:6063-T5/IS:63400 or Equivalent</td><td>01</td></tr>
<tr><td>6.</td><td>Fairing Assembly</td><td>AA:6063-T5/IS:63400 or Equivalent</td><td>02</td></tr>
<tr><td>7.</td><td>Bridge plate assembly</td><td>AA:6063-T5/IS:63400 or Equivalent</td><td>01</td></tr>
<tr><td>8.</td><td>Car Body Frame 2</td><td>ASTM-A240, Type 304</td><td>01</td></tr>
</table>
</td>
<td>1.Car Body Frame 1 & Car Body Frame 2-
It is strongly recommended that aluminium alloy material shall be used for Car Body Frame 1 and Car Body Frame 2 instead of stainless steel. The reasons are:
1)It is very difficult to bend and clamp stainless steel profiles, the stainless-steel profiles are not suitable for profile frames of gangway bellow.
2)The density of stainless-steel material is about three times that of aluminium alloy material. Using stainless steel profile frames will increase the weight of the gangway. Taking the Train18 gangway as an example, if the Car Body Frame uses stainless steel material, the weight of a single gangway will be</td>
<td>The pictorial representation is requested for the scope of supply as tabulated under 9.1 to well understand given nomenclature. The MOC of latching mechanism and bridge plate assembly as well should be of stainless steel in place of aluminium alloy to withstand abrasion resistance for longer period.</td>
<td>Yes, we comply</td>
<td></td>
<td><table><tr><th>S.N.</th><th>Item Description</th><th>Material</th></tr><tr><td>1.</td><td>Car Body Frame 1</td><td>[illegible] Aluminium</td></tr></table>Usage of Aluminium frames would save weight.</td>
<td>-----</td>
<td></td>
<td></td>
<td>Comment of M/s Pioneer is not acceptable and material already provided in Vande Bharat Trains as per ICF’s specification shall be preferred.
However, some modification in material of Bridge plate and Latches assembly may be considered as suggested by M/s Cemcon from performance point of view.
The scope of supply for Vande Bharat Train set cars and LHB coaches may be different. Hence, new clause 9.2 is added for LHB coaches based on comments of firms in sub-sequent clause.
9.2” The scope of supply of fully sealed gangway for LHB coaches shall include the following major items including all fasteners/ hardware required for installation of the system. However, it is supplier’s responsibility to ensure supply of all necessary accessories needed for reliable performance of sealed gangway.</td>
</tr>
</table>

		increased by about 76kg. 3)We have previously supplied Car Body Frame made of aluminium alloy material and has no failures. It proves that the strength is completely sufficient**.** **2.Bridge Plate Assembly-** If weight is not the constraint; it is recommended to use stainless steel for the Bridge plate assembly. Passenger load shall be bear by bridge plate only. 1.Car Body Frame 1AA:6063/T5/ IS: 63400 or equivalent 7.Bridge plate assembly AS M - A240, Type 304 8.Car Body Frame 2AA: 6063 /T5/ IS:63400 or equivalent									***S. N.*** / ***Item Description*** / ***Material*** ***1.*** / ***Car Body Frame 1*** / ***ASTM-A240, Type 3*** ***2.*** / ***Bellow Assembly*** / ***Silicon fire retardant rubber with fabric compliant to EN 45545-2 HL3*** ***3.*** / ***Ceiling Panel Assembly*** / ***AA:6063-T5/ or Equivalent*** ***4.*** / ***Latching Assembly*** / ***AA:6063-T5/ or Equivalent*** ***5.*** / ***Bridge plate assembly*** / ***AA:6063-T5/ or Equivalent*** ***6.*** / ***Car Body Frame 2*** / ***ASTM-A240, 304***
10.2	The gangway system shall comply with structural and safety requirement as specified in EN 16286-1.					The gangway system shall comply with structural and safety requirement as specified in **EN 16286-1: 2023**	----			Noted. Latest Version of EN 16286 is 2023 and hence the same shall be followed

10.4	The gangway system shall be provided with emergency release mechanism to quickly separate the coaches within 10 minutes in case of emergency.	Time will vary as per the expertise of the team / manpower.		Yes, we comply			----			It should be possible to separate the coaches within 10 minutes and it will be practically demonstrated by firm. ***"The outer fairing in Vande Bharat Train set cars shall also have latches mechanism for quick release".*** This para will be modified accordingly.
10.6	The noise vale shall be equal to or less that 27dB from gangway center when recorded in accordance with EN 16286-2 / ISO 16283 Part-1 2014 / ISO 717/DIN 52210 Part-1 1989/IS 9901 Part-III-84 OR Equivalent spec for rolling stock.	The description is inappropriate. Specifications such as EN 16286-2 only test the sound insulation of the gangway. As a gangway product, the sound insulation NRw can be guaranteed to be ≥ 27dB, but the noise value inside the gangway cannot be guaranteed to be ≤ 27dB, because the decibel value of the noise source is determined by the vehicle and operating conditions, and cannot be controlled by the gang way. It is suggested to refer to the description of Annexure-5 in ICF/MD/SPEC-369.	The REDUCTION in noise value is suggested to be equal to or greater than 27 dB at gangway center. This must be a differential value of out-side Vs inside of gangway.	Yes, we comply		The noise value shall be equal to or less that 27 dB from gangway center when recorded in accordance with **EN16286 -2** ~~/ ISO 16283 Part-1 2014 / ISO 717/DIN 52210 Part-1 1989/IS 9901 Part-III-84 OR Equivalent spec~~ for rolling stock	----	-----	-------	Comments of the firms are considered and this clause shall be modified as under in line with ICF's specification: ***The weighted noise reduction shall be NRw ≥ 27dB from gangway center when recorded in accordance with EN 16286-2 for rolling stock.***

10.9	"The interior design shall be fitted with aesthetically pleasing paneling".							The IVD (intravehicular distance) of LHB coaches is 460 mm against 900 mm for Train set coaches. Hence the provision of inner panels in LHB gang ways may be difficult compare to Trainset.		ICF's comment is acceptable and this clause is modified as under: "***The interior design of Vande Bharat Train set shall be fitted with aesthetically pleasing paneling***. ***No interior paneling shall be provided in LHB Coaches".*** Accordingly, scope of supply for LHB coaches is also modified.
10.10	Handrails and grip points shall be strategically positioned to assist passengers in maintaining balance while traversing the gangway.	**To be Deleted** 1. We can meet this requirement if handrail is required on the gangway. 2. But for Train 18 gangway with side protection plate, no hand - rail can be fitted as there is no proper fitment space available. 3. It is recomm-ended to fit the handrail on car body at the both sides of gangway, but not on gangway itself. Hence, kindly delete this clause.		Yes, we comply	It is not possible to provide hand rails or hand grip on the inner FRP panel area. However the same can be provided at both end of the gangway on the car body.	Handrails and grip points shall be strategically positioned to assist passengers in maintaining balance while traversing the gangway.	-----	It is noted that the provision is not available in the drawing of Trainset Gangway. Being a safety item it is essential to provide. However, the location needs to be studied. It is proposed to provide on end wall similar to Vande push pull coaches without disturbing the aesthetics of gangway.	10.10 ~~Handrails and grip points shall be strategically positioned to assist passengers in maintaining balance while traversing the gangway.~~ Dellner: Handrails and grips should be provided by car builder and this will not be part of gangways.	Comments of firm is considered and this clause may be deleted based on the justification given by ICF.
10.12	The floor through the inter-car gangway shall be maintained as nearly as possible at the same height as the rest of the car floor.			Yes, we comp			----			----

10.14	Vertical gaps between the hinged moving tread-plates of the inter-car gangway and the general floor level of the car shall not exceed 5mm. The means shall be provided to minimise wear of the floor by the sliding action of each moving tread plate.		The vertical gap should be at least 10mm so that moving tread plate may be buffered with sufficiently thick wear resistance material which may last for longer period of operations and avoid frequent replacement thereof.	Yes, we comply						Comments of firm considered and this para may be Modified as under. ***"Vertical gaps between the hinged moving tread-plates of the inter-car gangway and the general floor level of the car shall not exceed 5mm. (Excluding thickness of wear resistance material) The means shall be provided to minimise wear of the floor by the sliding action of each moving tread plate".***
10.17	Clear markings and visual cues shall guide passengers with disabilities.			Yes, we comply	What sort of marking or visual cues should be provided, in which portion of the gang way should these markings be there.Stand-ardisation is required				~~Clear markings and visual cues shall guide passengers with disabilities~~ Dellner: Clear markings and visual cues should be provided by car builder, and this will not be part of gangways.	Clear markings and visual cues for guidance of passengers with disabilities shall be provided by the supplier in consultation with the purchaser.
10.18	The horizontal clearway for wheelchairs shall be at least 800mm up to a minimum height of 1450 mm									NA
10.19	The headroom in the inter-car gangway area shall be at least 1950mm, and the clear width at least 550mm.									NA
10.20	The centre line of the gangway shall be coincidental with the centre line of the Vehicles.	The centre line of the gangway shall be coincidental with the centre								Comments of firm is acceptable and this para will be Modified accordingly.

<table>
<tr><td></td><td></td><td>line of the coach door cut out.</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>10.21</td><td>An inter-car gang way structure shall be totally inter changeable with one another</td><td>An inter-car gang way installation holes shall be totally inter changeable with one another</td><td></td><td></td><td></td><td></td><td>_____</td><td></td><td></td><td>Comments of firm is not acceptable since Sealed Gangway assembly shall be compatible to other make.</td></tr>
<tr><td>10.23</td><td>The components of the gangway system shall give a service life as per following tables under normal conditions of use:
<table>
<tr><th>S. No.</th><th>Components of gangway system</th><th>Service Life in years</th></tr>
<tr><td>1.</td><td>Silicon bellows</td><td>12</td></tr>
<tr><td>2.</td><td>Flexible side panels</td><td>08</td></tr>
<tr><td>3.</td><td>Wearable parts</td><td>05</td></tr>
<tr><td>4.</td><td>Metal parts</td><td>12</td></tr>
</table></td><td></td><td>The service life of the wearable parts is suggested to be 3 years in place of 5 years.</td><td>Yes, we comply</td><td></td><td></td><td>_____</td><td></td><td></td><td>Comments of firm is not acceptable since all components of Sealed Gangway assembly shall be covered under warranty clause.</td></tr>
<tr><td>10.28</td><td>New clause has been introduced.</td><td></td><td></td><td></td><td></td><td>Following new clause may be added.
“The bridge system should be of combination bridge type with two stainless steel car sided bridge plate and a middle tread plate made out of lightweight, slip resistant and fire retardant material”</td><td>_____</td><td></td><td></td><td>Firms comment is acceptable and new clause is added in specification.
“The bridge system should be of combination bridge type with two stainless steel car sided bridge plate and a middle tread plate made out of lightweight, slip resistant and fire retardant material”</td></tr>
<tr><td>11
11.1</td><td>SUBMISSION OF TECHNICAL DOCUMENTS:
The firm shall submit the following documents at the time of vendor registration for approval by Nodal agency nominated by Indian Railway for vendor development:
a. Interface drawings
b. Major assembly drawings/Installation drawings</td><td></td><td></td><td>Yes, we will do and submit the CAE Repo</td><td></td><td>The firm shall submit the following docs. at the time of vendor registration for approval by Nodal agency nominated by Indian Rly for vendor develop:</td><td>_____</td><td>The condition for the submission of physical validation reports by the firms not included. The same may be</td><td>g. <s>List of spare parts for In-service requirements</s>

Dellner: Preventive Maintenance</td><td>The comment of firms and ICF is acceptable and necessary changes in clause will be done accordingly. 11.1. The firm shall submit the following documents at the time of vendor registration for</td></tr>
</table>

	c. Load/strength calculation of gangway system along with FEA report d. Quality Assurance plan e. Test scheme for type test and routine test. f. Maintenance Manual g. List of spare parts for in-service requirements.			rt.		a.Interface drawings ~~b. Major assembly drawings/Installation drawings.~~ **Drawing of the Main Assembly groups.**		added in the new specification..		***approval by Nodal agency nominated by IR for vendor development:*** ***a. Interface drawings,*** ***b. Major assembly / Installation drawings.*** ***C. Load/ strength calculation of gangway system along with FEA report*** ***d.Quality Assurance plan*** ***e. Test scheme for type test and routine test*** ***f. Maintenance Manual*** ***g. List of spare parts for Special condition undertaken in-service requirements may be submitted.*** ***h. Physical validation report after prototype manufacturing.*** ***i. Provision of the supply of one set of tools & fastener is necessary for the fitment of one gangway and shall be supplied along with every rakes of gangway, to be handed over to the user Railways where the rake is running.*** ***j. Professional video shall be made for coupling and uncoupling of gangway. The same shall be submitted along with bulk supplies***

11.4	Material grade / specifications for each component shall be indicated on the relevant drawings of the firm and the firm shall supply copies of translation in English of such specifications / drawings other than Indian Standards specification to Nodal agency nominated by Indian Railway for vendor development.						———		~~Material grade specifications for each component shall be indicated on the relevant drawings of the firm and the firm shall supply copies of translation in English of such specifications/ drgs other than Indian standards specification to Nodal agency nominated by Indian Railway for vendor development.~~ Dellner: We do not comply to this require-ment and regret for the same.	Comment of M/s Dellner is not acceptable as firm has not given any justification for deletion of this clause.
11.7	**Simulation Validation of Gangway before prototype:**			Yes, we will do it.			———			To be followed as per spec.
12	**PROTOTYPE INSPECTION**									
12.1	The manufacturer shall offer at least 2 Nos. Prototype fully sealed gangway assembly complete for necessary testing in accordance to Para 14 of this specification. The tests for all the requirements as laid down in this specification are mandatory for product approval.		The endurance test is assumed to reduce the life of the gangway, the prototypes should be excluded from the supply order quantity and the cost of it, should	Yes, we comp ly	Manufacturer shall offer at least 1 No. Prototype fully sealed gangway assembly complete for necessary testing in accordance to		———	It may be clearly specified that 1 number for type testing (destructive testing) and the other is for prototype fitment trial on coach and if any changes		Comment of M/s Pioneer is not acceptable as all cost of prototype testing shall be borne by the firm as per existing policy of IR. ICF's comment is acceptable and this para will be modified accordingly.

			be in purchaser's account being high value of the item.		Para 14 of this spec. The tests for all the require-ments as laid down in this spec. are mandatory for product approval. (In case of half module gang way 2 Nos prototype can be offered. In case of single module gangway with quick release then one gangway is sufficient for prototype.)			required at the time of proto type fitment, the same may be carried out by the supplier without any financial implication. Further, it may be specified that the necessary modifications proposed during prototype inspection shall be incorporated in firm's drg and the same may get approved.		***12.1The manufacturer shall offer at least 2 Nos. Prototype fully sealed gangway assembly (one for complete type testing and another for fitment in coach) complete separately for Vande Bharat car set and LHB coaches for necessary testing in accordance to Para 14 of this specification. The tests for all the requirements as laid down in this specification are mandatory for product approval.***
12.2	The Prototype inspection of gangway assembly shall be carried out at manufacturer's premises by authorized representative of Nodal agency nominated by Indian Railway for vendor development.			Yes, we comply			———			---
13 13.5	**PURCHASE INSPECTION** Inspection Authority shall conduct the necessary routine tests of the gangway assembly from each lot of purchase thereof in accordance to para 14 of this specification as per test check sheet approved by Nodal agency nominated for vendor development.			Yes, we comply					The Inspection Authority shall conduct only the necessary routine tests of the gangway assembly from each lot of purchase thereof in accordance to para 14 of this	Firms comment is not acceptable as other clauses of Para 13 shall also be applicable.

<table>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>specification as per test check sheet approved by Nodal agency nominated for vendor development.</td><td></td></tr>
<tr><td>14</td><td>TESTS</td><td></td><td></td><td>Yes, we comply</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>14.1.1</td><td>Type Tests
The following tests under Table -1 shall constitute type tests and shall be carried out in accordance with test method given against each test at the time of Prototype approval of new entrant or at the time of design change or localization of-existing design:
<u>Table - 1</u>
<table>
<tr><th>S. N.</th><th>Description of Test</th><th>Sample Size</th><th>Test Method</th></tr>
<tr><td>1.</td><td>Weight Check</td><td>1 Set</td><td>Appendix - 1</td></tr>
<tr><td>2.</td><td>Min. curve test</td><td>1 Set</td><td>Appendix - 2</td></tr>
<tr><td>3.</td><td>Air tightness test</td><td>1 Set</td><td>Appendix - 3</td></tr>
<tr><td>4.</td><td>Heat insulation test</td><td>1 Set</td><td>Appendix - 4</td></tr>
<tr><td>5.</td><td>Sound/Noise Dampening test</td><td>1 Set</td><td>Appendix - 5</td></tr>
<tr><td>6.</td><td>Rain test (Leakage test)</td><td>1 Set</td><td>Appendix - 6</td></tr>
<tr><td>7.</td><td>Load test</td><td>1 Set</td><td>Appendix - 7</td></tr>
<tr><td>8.</td><td>Fire Test (for all non-metallic items) as per EN 45545-2, R1-HL3.</td><td>1 Set</td><td>Appendix - 8</td></tr>
<tr><td>9.</td><td>Endurance Test</td><td>1 Set</td><td>Appendix -</td></tr>
</table>
14.1.10</td><td>Fire Test including Heat Release Test compliant to EN 45545-2 R1 HL3 should be indicated for major Rubber parts in place of all non-metallic items.</td><td>Yes, we comply</td><td>Heat Release Test MARHE (Max) HL3 as per EN 45545-2 for all non-metallic items will be conducted along with fire property testing and will be submitted.</td><td></td><td>_____</td><td>The validity period of type test not mentioned in the specification. Same shall be specified.</td><td>In Table-1
Sample Size at the time of Prototype approval of new entrant or at the time of design change or localization of-existing design, It should be I No. in place of 1 set for each test from SN. 01 to 10 and</td><td>Being a critical safety item, HL-3 compliance of all non-metallic items ie. Rubber & interior panel's item (FRP/GFRP & friction plate) shall be ensured. Validity of fire tests are specified in 14.1.2

Comment of</td></tr>
</table>

				9	Emergency Release mechanism timing check (It should not take more than 20 min.)						Emergency Release mechanism timing check (It should not take more than 10 - 15 min.)	M/s Dellner are acceptable ***and*** ***It should not take more than 10 - 15 min including outer fairing in Vande Bharat Train set.)***
		10.	Emergency Release mechanism timing check (It should not take more than 10 min.)	1 Set	-							
14.1.2	All the Fire tests except HRR mentioned at S.No. 1 (b) of Appendix 8 shall be carried out once in a year or after every 500 coach sets or there is any change made to their tested formulation, whichever is earlier. These fire tests shall be conducted at any CERTIFIER lab or labs empanelled by RDSO.		All the Fire tests shall be type test and shall be carried out again if there is any change made to their tested formulation. These fire tests shall be conducted at any CERTIFIER lab or labs empanelled by RDSO.		Yes, we comply				Noted	All the Fire tests except HRR mentioned at S.No. 1 (b) of Appendix H shall be type test ~~and~~ shall be carried out ~~once in a year or~~ after every 500 coach sets--------.	The comments of the firm are not acceptable, as frequency and quantity of test has been specified in line with other coach furnishing item as per uniform policy
14.1.3	All the Fire tests mentioned in Appendix 8 should be in single report. No separate report will be acceptable at the time of initial approval stage.		All the Fire tests mentioned in **Appendix H** should be in single report. No separate report will be acceptable at the time of initial approval stage.	Appendix 8 to replace with Appendix H	Yes, we comply				May be corrected as H	All the Fire tests mentioned in Appendix 8 H should be in ~~single c~~ombined report. Relevant report hyperlink will be attached. ~~No separate report will be acceptable at the time of initial approval stage.~~	The comments of M/s dellner is not acceptable. Typographical error will be corrected.
14.2	**Routine Tests**										
14.2.1	The following tests under Table – 2 shall constitute routine tests and shall be done for each lot of purchase order by inspecting authority nominated by the purchaser:		**14.2.4 Routine test:** Heat Release Test MARHE (Max.) HL3 as per EN	Fire Test including Heat Release Test compliant to EN 45545-2 R1	Yes, we comply	Heat Release Test MARHE (Max.) HL3 as per EN 45545-2 for all non-				~~Heat Release Test MARHE (Max.) HL3 as per EN 45545-2 for all non-metallic items~~	Justification provided in all non-metallic items as written in para 14.1.

REASONED DOCUMENTS OF DRAFT SPECIFICATION OF FULLY SEALED GANGWAY FOR VANDE BHARAT AND LHB COACHES.

	Table - 2 **S. N.** / **Description of Test** / **Sample Size** / **Test Method** **1.** Visual examination / 10% / - **2.** Dimensional check / 2% / - **3.** Functionality check of Latching mechanism / 2% / - **4.** Heat Release Test MARHE (Max.) HL3 as per EN 45545-2 for all non-metallic items / 2% / ISO:5660-1 : 50 kW/m2	45545-2 for all non-metallic items. **It should consider as type test. Hence, deleted it from this clause.**	HL3 should be indicated for major Rubber parts in place of all non-metallic items.		metallic items will be conducted along with fire property testing and will be submitted				Dellner: HL3 material test report valid for 5years. Unless otherwise any composition change in material we do test again or else We will submit tested report.	
14.3.1	The gangway system offered by any new supplier shall be compatible with a wide range of already supplier gangway and coach configurations. The supplier shall be fully responsible for the compatibility between different makes of sealed gangway and it shall be ensured by the actual fitment at car/rake during prototype stage.	Gangway shall be installed on coordinate/hole specified by Rly drawing. There shall be no other compatibility with other Make								Noted. The interface dimension shall be matched with other manufacturer. Some changes has been done for both stock.
15	**FIELD TRIAL**									
15.1	The gangway assembly shall be subjected to field trials according to para 15.2. The following parameters shall be monitored during the trial period:			Yes, we comply	Yes, we comply				C-~~Handrails to be checked for sturdiness and proper height~~ Dellner: Handrails are not gangway manufacturer scope .	Noted and clause will be modified accordingly as ICF has also provided comment regarding provision of handrails.
15.2	The conditions of field trials shall be applicable as under: **S. N.** / **Status of Vendor** / **Past supply of sealed Gangway to IR** / **Field Trial Mandate** 1. Conditional Devel / Nil / Field trial shall be mandatory on minimum	Conditional Developmental Vendor (OEM Design): Already supplied more than 15 coach set to IR which have completed 6 months of	15.2.2. Field trial should be mandatory for 15 coach-sets (Preferably 1 rake set) as ICF Spec-369 indicates for 8 coach sets	Yes, we comply	Yes, we comply		_____	However, the status of regular vendor is not specified clearly.	a. The OEM should have established design, manufacturing testing facilities. b. The OEM who has already supplied flexible	The comments of the firms are acceptable for decrease the trial QTY from 30 to 15 coaches (Preferably ~~2~~ 1 Rakes) for both supplier (Indigenous as well as OEM vendor).

			opmental Vendor (Indigenous design)		30 Coaches (Preferably 2 Rakes) for period of 12 Months.	satisfactory service from the date of fitment. No trial needed. Firm shall be included as devel -opmental vendor for Sealed Gangway based on past performance. **One Rake Gangway are sufficient to prove the design. Also, in other specification for other component quantity for prototype approval are given as one Rake only.**	only. In development orders the qty to be supplied before field trials remains 15 coach sets (1 rake set) only, it will take around 2 yrs to complete field trials in case of 30 sets with OEM design and 3 yrs with indigenous design. It will cause huge revenue loss to the purchaser.					G.ways to Metro Railways in India. Or The OEM who have supplied gangways for train 18 to ICF against bulk order or The OEM who have designed, manufactured, and supplied at least 100 coach sets of flexible gangway with inner and outer fairings for trains operating at 160 kmph or more than 160 Kmph. c. The tenderer shall submit the satisfactory performance details from the user railways for flexible g.way with inner and outer fairings (flexibleinterior system) along with the offer.	
				Already supplied more than 30 coach set to IR which have completed 1 year of service from the date of fitment	No trial needed. Firm shall be included as developmental vendor for Sealed Gangway based on past performance.								
		2.	Conditional Developmental Vendor (OEM Design)	Nil	Field trial shall be mandatory on minimum 30 Coaches (Preferably 2 Rakes) for period of 6 Months.								
				Already supplied more than 30 coach set to IR which have completed 6 Months of service from the date of fitment	No trial needed. Firm shall be included as development al vendor for Sealed Gangway based on past performance.								
15.3	After satisfactory performance of fully sealed gangway in field trials, gangway system offered may be considered for regular service on IR Coaches.										———		~~After satisfactory performance of fully sealed gangway in field trials, gangway system offered~~	The comments of M/s Dellner is not acceptable, as firm has not given any justification. Same ha been modified as

									~~may be considered for regular service on IR Coaches~~	under- "***After satisfactory performance of fully sealed gangway in field trials, gangway system offered for particular design may be considered for regular service on IR Coaches".***
16.1	The initial warranty on gangway assembly is 60 months from date of train commissioning or 72 months from date of supply. Firm shall replace free of cost at primary depot location of Indian railway the whole system or portion of items which malfunction during the warranty period.	The initial warranty on gangway assembly is 24 months from date of train commissioning or 30 months from date of supply. Firm shall replace free of cost at primary depot location of Indian railway the whole system or portion of items which malfunction during the warranty period.		Yes, we comply (CRG Scope)	The initial warranty on gangway assembly is 24 months from date of train commissioning or 36 months from date of supply. Firm shall replace free of cost at primary depot location of Indian Rly the whole system or portion of items which malfunction during the warranty period	Our standard warranty on g.way assembly is 36 months from date of supply. Hubner shall replace free of cost at primary depot location of Indian Rly the whole system or portion of items which malfunction during the warranty period. Hubner can offer CAMC along with OE offer for 36 months that is applicable from date of supply. Hubner can submit the list along with unit price rate of the following: a. Must change spares, b. Spares required during periodic overhauling, c. Any other spares that may be required	———		~~The initial warranty on gangwayassembly is 60 months from date of train commissioning or 72 months from date of supply. Firm shall replace free of cost at primary depot location of Indian railway the whole system or portion of items which malfunction during the warranty period~~ Products will be warranted for a period of 2 years from entering into service or 3 years after delivery,whichever comes first, against defects in design, materials and workmanship appearing under normal service condition.	Firm's comments are not acceptable. The warranty period has been mentioned as per Railway Board's policy in line with similar item specification.

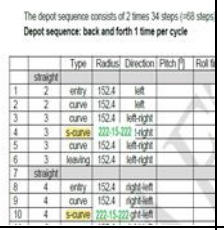
16.2	The firm must offer CAMC along with OE offer for 72 months that is applicable from date of train commissioning or 78 months from date of supply. Firm has to submit the list along with unit price rate of the following: Must change spares a. Spares required during periodic overhauling b. Any other spares that may be required			Yes, we compl y			_____	Noted.	16.2 The firm must offer ~~CAMC~~ Comprehensive maintenance period along with OE offer for 72 months that is applicable from date of train commiss-ioning or 78 months from date of supply. Dellner-Firm must submit the list along with unit price rate of the following Please clarify meaning of comprehensive maintenance. What do you expect Dellner to do here? a. ~~Must change~~ Mandatory spares.	Comprehensive annual maintenance contract includes all parts and labour for period indicated in this clause.
17.1	Supplier shall provide recommended list of spare parts required for maintenance of the Fully Sealed Gangways (Full module) and spares in the form of kit for various sub-assemblies for the maintenance at the time of POH. The list shall give the Part number and quantity of each component						_____		Dellner: We shall provide the Spare parts details in operating manuals.	Agreed
17.2	Supplier shall ensure availability of all spares for a period of at least 10 years. This shall be irrespective of the fact whether the tenderer or his sub-contractor(s) have stopped manufacturing the equipment to the design supplied to Indian Railways.			Yes, we compl y			_____	Methodology for the implementation of the same may also be specified.		To be followed as per Rly/PU's Stores terms & condition.

18.3	Firm shall associate with Indian Railways during the trials. He shall also undertake to modify the equipment supplied, if required as a result of trials.			Yes, we compl y			-	It may be added that "their drawing may be modified accordingly and submit the same for updating in documents of ICF/RCF/ICF".		Agreed.
18.5.1	Details of attention to be given during IOH / POH or any other schedule.								We shall provide details in our OMM user manual	It is part of OMM
18.5.3	Typical defects and their remedial measures.								~~Typical defects and their remedial measures~~. Dellner : Not comply, We will provide standard OMM manual.	It is part of OMM
App-"C"	The air tightness test (before putting drain hole) shall be carried out as per EN 16286-1:2013 after minimum curve passing test. The gangway simulates in the coupling state of vehicle, is installed on the test frame and forms a closed test chamber. **Inflate to test chamber in order to increase pressure**, until the pressure in the test chamber exceeds the maximum charge pressure as specified in the below table, measure the time of leakage in the corresponding depressurization interval in test chamber. The test shall be carried out not less than 3 times, and take the average of three tests as the test result.		Vehicle Speed which cannot be introduced physically in air tightness test rig suggested to be deleted from the table.			**Air Tightness Test: Not recommended**. Air Tightness test is not necessary for trains with speed < 200kmph. Also doing the test without drain holes and then putting holes in the gangways that will be supplied will make the test of no use. Does it refer to the requirement to check aerodyne-amic load as per EN 16286-1: 2023 Cl	------			Not accepted. Testing shall be done as per spec. EN 16286-1 (latest).

						7.5.5.				
App-"D"	Heat transfer coefficient shall be K ≤ 5.0 W/(M2°K) and shall be done for bellow in accordance to EN/ISO 6946 or Equivalent spec for rolling stock.					**Heat transfer coefficient for Calculation shall be K ≤ 5.0 W/(M2°K)** and shall be done for bellow in accordance to EN/ISO 6946 or Equivalent spec for rolling stock. **As per EN 16286-1: 2023 Thermal insulation refers to the calculations performed as per EN ISO 6946, so no heat insulation test are performed**.	_____			Methodology given in EN/ISO 6946 has to be followed.
App-"E"	The weighted noise reduction shall be NRw≤ 27dB from gangway centre and shall be done in accordance with EN 16286-2 / ISO 16283 Part-1 2014 / ISO 717/DIN 52210 Part-1 1989/IS 9901 Part-III-84 OR Equivalent spec for rolling stock.	The weighted noise reduction shall be NRw ≥ 27dB from gangway center and shall be done in accordance with EN 16286-2 / ISO 16283 Part-1 2014 / ISO 717/DIN 52210 Part-1 1989/IS 9901 Part-III-84 OR Equivalent spec for Rolling Stock.				**Sound/Noise Dampening Test** The weighted noise reduction shall be NRw≤ 27dB from gangway centre and shall be done in accordance with EN ~~16286-2 / ISO 16283 Part-1 2014 / ISO 717/DIN 52210 Part-1 1989/IS 9901 Part III 84 OR Equivalent spec. for rolling stock.~~ **EN 16286-2 is the correct standard** specially formulated for gangway systems.	_____			ISO 16283-1 2014: Field measurement of sound insulation in buildings and of building elements EN 16286-2 is the correct standard specially formulated for gangway systems. Clause modified accordingly.
App-"F"	Water shall be sprinkled for the period of minimum 15 minutes as shown in below fig. The total delivery rate of water and the						------			Testing shall be done as per spec. EN 16286-1 (latest).

	pressure shall be recorded before and after the test. After the rain test, get into the gangway passing area, inspect gangway for ingress of water and record. Water seepage and leakage phenomenon shall not appear.									
App-"G"	Gangway vertical load test shall be carried out with a downward force of 10 people/m2@60 kg person which has been distributed on the lower platform of gangway. No significant permanent deformation is present after the removal of load. No obvious deforms, damage or abnormality shall be reported.	To be deleted.	'The gangway shall stay in the gauge of the vehicle' to be clarified. Reference input parameters for aerodynamic loading need to be stated to incorporate during FEA (software simulation) of the gangway.				———			Testing shall be done as per spec. EN 16286-1 (latest).
App-"I"	5.2. The wagon coupler (connection beam with similar mechanical properties as well as a coupler's gangway support sliding surface) shall be positioned between the interfaces of the test rig in a way that all movements including height misalignment can be simulated through movements of the test rig interfaces..							May be removed as the gangway designs of both Trainset & LHB are not coupler supported.		Accepted & to be deleted.
App-"I"	5.3. The gangway shall be mounted in the test rig in the same way as it will be installed on the trains						———	The gangway (two coupled gangways halves/full module		Noted.
App-"I"	5.5 Test sequence Track test cycle and Depot sequence cycle					TEST SEQUENCE The depot sequence consists of 2 times 34 steps (=68 steps) Depot sequence: back and forth 1	———			As stated by the M/s Hubner that Type of Curve is mentioned as "S Curve", however the radius is shown as a single value. Shall be

REASONED DOCUMENTS OF DRAFT SPECIFICATION OF FULLY SEALED GANGWAY FOR VANDE BHARAT AND LHB COACHES.

						time per cycle 4 s-curve 222-15-222 10 s-curve 222-15-222  The depot sequence consists of 2 times 34 steps (=68 steps) **Depot sequence: back and forth 1 time per cycle** Type | Radius | Direction | Pitch [°] | Roll straight 1 2 entry 152.4 left 2 2 curve 152.4 left 3 3 curve 152.4 left-right 4 3 s-curve 222-15-222 right 5 3 curve 152.4 left-right 6 3 leaving 152.4 left-right 7 straight 8 4 entry 152.4 right-left 9 4 curve 152.4 right-left 10 4 s-curve 222-15-222 ght-left				updated with S Curve Value as 222-15-222 based on the latest sleeper cars for Vande Bharat train set.
ANNEXURE-1	3.2. Firm shall have following manufacturing facilities at in-house or at their sister concerns / allied units: i) Cutting Table, ii) Cutting/ skiving knives iii) Stitching/sewing (single & Double needle type) machines of Reputed make, iv) Pneumatic staplers v) Crimping/punching pneumatic & Hydraulic tools vi)Final Assembly tables vii) Child parts assembly table viii) Pneumatic Rivet guns ix) MIG welding machines for frame welding, x) Bending Tools and Jig for bending Aluminum frames . xi) CAD and FEA simulation facilities with suitable software license.	To be deleted he following— X) Bending Tools and Jig for bending Aluminium ~~frames~~ components xi) CAD and FEA simulation facilities with suitable software license	Use of Pneumatic staplers to be cleared. MIG/TIG suggested to be incorporated in place of MIG in order to minimize heat input during welding of the sections.				-----		xiii) DELLNER: Controlled storage condition for critical consumables. xiv) DELLNER: In house manufacturing facilities for flexible thread plate (Floor plates) with bonding application and vacuumized curing chamber.	Firms suggestions are considered and some necessary equipment/facilities may be included in this clause. Following points may be modified as under- ix) MIG /TIG welding machines for frame welding, x) Bending Tools and Jig for bending of components
ANNEXURE-1	4.1 Firm should have in-house testing facilities for following tests as per test method given in this specification: i) Visual & Dimensions ii) Weight Check iii) Minimum curve test iv) Air Tightness test v) Leakage (Rain Test)	Firm can outsource testing facilities for following tests as per test method given in this specification. iii)Min. curve test				Add ix) **Sound Insulation Test according to EN 16286-2.**	_____		vi) Endurance test in 06 degrees of freedom testing bed. vii) ~~Heat release rate (HRR) as per EN 45545-2~~	In house testing facilities for HRR test may be deleted, the same can be done from RDSO empaneled labs or CERTIFER labs Other testing facilities should be available

	vi) Endurance test vii) Heat release rate (HRR) as per EN 45545-2 (viii) Load Test	vi)Endurance test vii) Heat release rate (HRR) as per EN 45545-2 viii) Load Test							Dellner: Not complied, Will be carried out in accredited lab	with firm or their OEM.
ANNEXURE-1	4.2 For fire properties other than HRR as mentioned in Appendix-H, firm should have in-house testing facility at their own premises or testing is to be done from labs empanelled by RDSO or any CERTIFER labs. The testing charges shall be borne by the manufacturer.	**In above para 4.1-** iii), vi), vii) & viii) should be deleted from this list as these type tests are one-time test and to be allowed (except vii heat release rate test) to conduct by TOT provider. **Heat release rate test** should be allowed to outsourced from any reputed lab. This type of tests is best carried out by specialized labs who are doing this work regularly.						Noted. However the clause may be added in the specification for the Submission of sample of Bellow fabric of size 100mmX 100mm to ICF/ RCF/MCF on demand for testing in their labs to ensure the fire properties	~~For fire properties other than HRR as mentioned in Appendix-H, firm should have in-house testing facility at their own premises or testing is to be done from labs empanelled by RDSO or any CERTIFER labs. The testing charges shall be borne by the manufacturer.~~ Dellner : HL3 Flat stock will be outsourced and above-mentioned test will be perfor-med by the flat stock manufac-turer and kindly remove the clause.	HRR test may also be carried out in same lab as other fire properties. This clause will be modified accordingly.

Additional clause suggested by M/s Dellner	**Remarks of RDSO**
8. **RAMS (Reliability, Availability, Maintainability, serviceability)** The firm shall have at least 05 technically qualified and experienced personnel in the field of RAMS / LCC (LIFE CYCLE COST) for gangway system having industrial experience of not less than 05 years. The firm shall submit complete details of the qualifications and experience of the personnel involved.	Quality control requirement already specified in para 6 of Annexure-1 of specification as per existing practice followed in specification of other safety items.

	9. **Dellner: R&D** The firm shall have at least 05 technically qualified and experienced personnel in the field of R&D for gangway system having industrial experience with analysis tools of not less than 05 years. The firm shall submit complete details of the qualifications and experience of the personnel involved. 10. **Dellner: Rapid Prototype machine facilities.** The firm shall have a rapid prototype machine for proper validation of frame structure in the gangways system.	Required qualification for experienced personnel is already defined in clause 7 of specification. Comments of other industry stakeholders and ICF/RCF/MCF to be considered before finalising its inclusion.

Additionally, the following are suggestions of ICF :

S.No.	Suggestion given by Dy. CME/D-II, ICF / CHENNAI	Remarks of RDSO
1.	It is noted that fully sealed gangway for Trainset and LHB coaches will be added in Vendor Directory. Hence it is suggested that the gangways for Kolkatta Metro, AC/EMU, EMU/US and MEMU/US coaches also may be added in the new specification so that standard vendor status can be maintained in ICF/RCF/MCF.	Railway Board has instructed RDSO to prepare specification for sealed Gangways for Vande Bharat Trainset Cars. This specification also covers the sealed gangways for LHB coaches.
2.	Quick release mechanism for outer fairing in LHB coaches, is not given clearly in the draft specification and the same may be specified, similarly to that of Trainset.	Outer fairing is not to be provided in LHB coaches. The same has been specified.
3.	The clause may be added that "outsourcing of design cannot be agreed to, as the design of gangway includes critical design processes such as FEA analysis and curve movement analysis, which are critical for design validation".	Agreed upon. Same has been included in spec.
4.	As Trainset gangway being already manufactured and running in service, the drawings and other details are available. Whereas the full module gangway with inner and outer fairings for LHB coaches are not yet developed and manufactured. Hence more clarity regarding the same may be given in the specification.	Presently, It is not proposed to include outer fairing for LHB coaches.
5.	Provision of the supply of one set of tools & fastener is necessary for the fitment of one gangway and shall be supplied along with every rakes of gangway, to be handed over to the user Railways where the rake is running	Agreed upon. Same has been included in spec. However, supply of toolset for every rake may escalate the cast.
6.	Details of 'S' curve and reverse curve shall be added	Agreed upon. Same has been included in spec.
7.	Ratchet / Belt shall be provided in built in each gangway.	Agreed upon. Supply of all fasteners and necessary accessories are included in scope of supply.
8.	Professional video shall be made for coupling and uncoupling of gangway. The same shall be submitted along with bulk supplies	Agreed upon. Same has been included in spec.
9.	Gap between bellow bottom and coupler top shall be more than 95mm.	Agreed upon. It shall be mentioned in detailed drawing for approval.
10.	Clarify regarding inner panel to be specified.	Not to be provided in LHB coaches.
11.	Quick release mechanism for outer fairing is also required.	Agreed and included in specification.
12.	There shall not be any ramp in the vestibule area.	EN 16286-1 shall be followed regarding this aspect.