GOVERNMENT OF INDIA MINISTRY OF RAILWAYS RAILWAY BOARD

No.2022/Track-III/TK/15

New Delhi, dated

03.**10**.2023.

The Principal Executive Director (Infra-I), Research Design & Standards Organisation (RDSO), Lucknow.

Sub:- Technical Specifications of Worksite Tampers (WST) for Broad Guage (1676 mm) - (Technical Specification No.TM/HM/WST/402 - Rev.02 of 2021) - reg.

Ref:- EDTK/RDSO letter No. TM/HM/WST Pt. IV, dated 22.09.2023.

In reference to above-referred letter of RDSO, the Corrigendum No.1 to technical specification of WST (Technical Specification No.TM/HM/WST/402 - Rev.02 of 2021) has been approved by Competent Authority, and copy of the same is enclosed herewith.

(VIJAY SINGH)

Director, Track (Machines)

Railway Board

Acting onbehalf of the President of India

Tele: No. 011-47845531

Email_ID: <u>vijay.singh.2017@gov.in</u> Room No. 150, First Floor,Rail Bhawan, Raisina Road, New Delhi - 110 001.

Corrigendum no. 1 to Specification of Worksite Tamper (WST) (Specification no. TM/HM/WST/402- Rev. 02 of 2021)

78/B

E-Tender No.2023/TM/1 for Work site Tamper (WST) -Prebid Conference held on 05-09-2023

Manufacturing, Design, Manufacture, Supply, Testing & Commissioning of Work site Tamper (WST) on Indian Railways

									S.No.
									Clause No.
19.50	20.00	20.32	21.00	21.50	22.00	22.82	Maximum axle load (tonne)	diameter of 914 r lesser diameter profile can also b condition laid do condemnation lir wheel contact str permissible limit Railways profile s It is desirable th and permitted w available, but this The worn-out whout diameter)bas contact stresses are as under:	Existing Clause
787.00	805.00	816.00	841.00	860.00	878.00	908.00	Minimum worn out wheel diameter (mm)	neel profile). How mm for new provided it mee se 2.5 and 2.6 design and als 2 UTS rails are wheels to wided on the margin between diameter shout be less than 3 er (condemning criteria of rail maximum axle	shall have a desirable whee
19.50	20.00	20.32	21.00	21.50	22.00	22.82	Maximum axle load Minimum (tonne)		1
787.00	805.00	816.00	841.00	860.00	878.00	908.00	Minimum worn out wheel diameter (mm)	wheel is 1092 mm and 740 mm respectively. Minimum permitted diameter of worn wheel is 710 mm. The machine shall have a desirable wheel diameter of 914 mm(new wheel profile). However, Lesser diameter up to 763 mm for new wheel profile can also be permitted, provided it meets the condition laid down in clause 2.5 and 2.6 at its condemnation limit as per design and also rail wheel contact stresses for 72 UTS rails are within permissible limits. Forged wheels to Indian Railways profile shall be provided on the machine. It is desirable that 50 mm margin between new and permitted worn wheel diameter should be available, but this should not be less than 30 mm. The worn out wheel diameter (condemning worn out diameter for rail wheel contact stresses for various maximum axle loads are as under:	sision managements of source

ω ω 2	2.14	
The machine sh automatic lifting, 1500 sleepers in track structures i. fish plated rails I kg/60 kg rails with may vary from spacing between mm. However, the tamping at the period of nor working shall the tamping work at weattributable to make the period of normal shall the tamping work at weattributable to make automatic lifting.	During transfer from one set to be capable of traveling on kmph and at a speed of 1 a train formation as it machine is likely to cover own power, the travel drive to sustain these requirement of the machine without significally the machine shall be considered wheeler coach/wagon approximately) should not and as per conditions specifically.	18.50 18.00 17.50 Permitted worn specified by the wheel for assess be the worn-out profile in the markailways standard III which is titled a
The machine shall be capable of carrying out automatic lifting, leveling, lining and tamping of 1500 sleepers in an hour of working on all type of track structures i.e. long welded, short welded or fish plated rails laid on concrete sleepers on 52 kg/60 kg rails with uniform sleeper spacing, which may vary from 550 mm to 650 mm and clear spacing between sleepers from 260 mm to 405 mm. However, the machine shall be capable of tamping at the peak rate of 2000 sleepers per hour over a period of not less than 10 minutes. The time of working shall be counted from start to finish of tamping work at work place. Stoppage of work not attributable to machine shall be discounted. The	During transfer from one station to another, it shall be capable of traveling on its own at a speed of 80 kmph and at a speed of 100 kmph when hauled in a train formation as last vehicle. Since the machine is likely to cover long distances on its own power, the travel drive system shall be robust to sustain these requirements during the life of the machine without significant break down/failure. The machine shall be capable of hauling an 8-wheeler coach/wagon (gross weight 90 t approximately) should not be less than 50 kmph and as per conditions specified in clause 2.11.	18.50 750.00 18.00 732.00 732.00 713.00 713.00 713.00 Permitted worn out wheel diameter should be specified by the manufacturer. The diameter of wheel for assessment of permitted axle load will be the worn-out wheel diameter. The new wheel profile in the machine shall be as per Indian Railways standard drawing attached as Annexure-III which is titled as "WORN WHEEL PROFILE".
The machine shall be califting, leveling, lining an hour of working on all welded, short welded or sleepers on 52 kg/60 kg which may vary from spacing between sleep However, the machine speak rate of 2000 sleep less than 10 minutes. The from start to finish of Stoppage of work not discounted. The setting be measured and the	During transfer from one capable of travelling on its formation as last vehicle a and at a speed of 100 k machine is likely to cover lethe travel drive system strequirements during the significant break down/fa capable of to hauling (maximum gross weight 90 at speed not less than 5 specified in clause 2.11.	H8.50 18.00 17.50 Permitted worn out wheel diameter the manufacturer. The diameter of permitted axle load will be the The new wheel profile in the Indian Railways standard drawir III which is titled as "WORN WHEEL Note: Annx-III "WORN WHEEL standard new wheel profile of IR.
The machine shall be capable of carrying out automatic lifting, leveling, lining and tamping of 1500 sleepers in an hour of working on all type of track structures i.e. long welded, short welded or fish plated rails laid on concrete sleepers on 52 kg/60 kg rails with uniform sleeper spacing, which may vary from 550 mm to 650 mm and clear spacing between sleepers from 260 mm to 405 mm. However, the machine shall be capable of tamping at the peak rate of 2000 sleepers per hour over a period of not less than 10 minutes. The time of working shall be counted from start to finish of tamping work at work place. Stoppage of work not attributable to machine shall be discounted. The setting up time and winding up time shall be measured and the total time taken by the two	During transfer from one station to another, it shall be capable of traveling on its own and when hauled in a train formation as last vehicle at a speed of 80 kmph-70 kmph and at a speed of 100 kmph train formation. Since the machine is likely to cover long distances on its own power, the travel drive system shall be robust to sustain these requirements during the life of the machine without significant break down/failure. The machine shall be capable of—to hauling an 8-wheeler coach/wagon (maximum gross weight 90 t approximately) should not be at speed not less than 50 kmph and as per conditions specified in clause 2.11.	18.50 18.00 750.00 18.00 732.0

																								4. 3.23										
																								23										
	with the Track Management System (TMS) of Indian Railways.	-	Interference (HMI)/Display and various other	facility to interface with Human Machine	for shall have recorded data. It shall also have	directly from the computer shall also be available	this purpose. Arrangement for providing 3G/4G	Minimum storage of 500 GB shall be available for	to store these data for 100 engine running hours.	installed in working cabin and there shall be facility	All these data shall be displayed on a monitor	monitor of the computer installed in operator cabin.	and such gauge shall also be displayed on the	recording and logging of machine working hours	rate, voltage etc.). There shall be provision of	others section), electrical (charging/discharging	(pressure of main reservoir, brake cylinder and	temperature, oil level in tank etc), pneumatic	hydraulics (hydraulic pressure in different units,	temperature, rpm with engine running hours etc.),	system such as engine (lubricant oil pressure,	which shall monitor the health of machine working	computer-based control and monitoring system	The machine shall be equipped with a centralized	sleepers are given in Annexure–IV.	moving away from the work site. Dimensions of	the work is stopped to the time machines starts	The winding up time will be counted from the time	machine arrives at site to the time work is started.	The setting up time shall be counted from the time	machine together shall not exceed 10 minutes.	operations of setting up and winding up of the	_	setting up time and winding up time shall be
the Dashboard in ad-	machines requiring at machine maintenance	comprehensive view	Indian Railways.	compatible with the T	and various other sen	interface with Human	in soit format directly	providing 3G/ 4G/5G	shall be available fi	for 100 engine running	working cabin and the	these data shall be	monitor of the compi	hours and such gauge	provision of recording	(charging/discharging	cylinder and	pneumatic (pneumatic	in different units, water	engine running hours)	engine (lubricant oil	monitor the health of	computer-based contr	The machine shall				Dimensions of sleeper	machines starts mo	counted from the tim	to the time work is s	time shall be counted	together shall not exc	operations of setting

erations of setting up and winding up of the machine jether shall not exceed 40–12 minutes. The setting up he shall be counted from the time machine arrives at site the time work is started. The winding up time will be unted from the time the work is stopped to the time achines starts moving away from the work site. mensions of sleepers are given in Annexure–IV.

the hard disk, these whole data shall be stored in a cloud the Dashboard. In addition to local storage at machine in based software for further interlinking with e shall be possible to be entered via Frack Management System (TMS) of ed data. It shall also have facility to ig hours. Minimum storage of 500 GB ere shall be facility to store these data outer installed in operator cabin. All er temperature, oil level in tank etc) attention with alert. Data for required nsors. The data transfer unit shall be n Machine Interference (HMI)/Display ly from the computer shall also be for this purpose. Arrangement for displayed on a monitor installed in ge shall also be displayed on the ng and logging of machine working c pressure of main reservoir, brake rol and monitoring system which shall etc.) hydraulics (hydraulic pressure internet connection for sending data rate, voltage) etc.). There shall be of whole fleet and highlights be equipped with a centralized machine working system such as pressure, temperature, Dashboard shall ensure section) rpm with electrica

The machine shall be capable to work in manual mode also in case of failure of computer/software/display units of ALC (Automatic Guiding Computer) system along with provision of manual feeding of required data. Necessary calculation chart shall be provided with each machine.	The machine shall be capable to work in manual mode also in case of failure of computer/software/display units along with provision of manual feeding of required data. Necessary calculation chart shall be provided with each machine	3.29	ဂ
the operator carry out the tamping operations shall be provided. Besides this additional cameras shall be fixed on the machine so that video of the important working units of machine which are working on track, location of worksite and post-work track can be recorded. They shall have built-in function for recording and thus can record directly to any standard storage media, such as SD cards. Sufficient internal memory space of shall also be available to record CCTV footage for at least 30 days.			
by the authorized person with commonly used browsers in India—over—the—internet.—Cameras—shall—be—password protected, decentralized—and—IP—based.—They shall have built-in function for recording and thus can record directly to any standard storage media, such as SD cards. Internal memory space of 500 GB shall also be available. Sufficient No. of CCTV cameras shall be provided to assist	worksite and post-work track can be seen by the authorized person with commonly used browsers in India over the internet. Cameras shall be password protected, decentralized and IP based. They shall have built-in function for recording and thus can record directly to any standard storage media, such as SD cards. Internal memory space of 500 GB shall also be available.		
To monitor the working of machines, closely from any location in the country, suitable number of IP based cameras shall be installed. The cameras shall be fixed on machine at such location that the live video of the important working units of machine which are working on track, location of worksite and post-work track can be seen	To monitor the working of machines, closely from any location in the country, suitable number of IP based cameras shall be installed. The cameras shall be fixed on machine at such location that the live video of the important working units of machine which are working on track, location of	3.27	Ģ.
Management System (TMS) by Indian Railways. Weekly reports per machine shall summarize performance data and shall provide information about tamping work performed eg. Tamping distance, incomplete vibration, incomplete levelling and incomplete penetration counts along with machine position. The Software shall be made available for min.10 years incl. all required maintenance activities and updates The SIM for data transfer will be provided by Railways to manufacturer of the machine prior to commencement of machine commissioning.			

2238281/2023/O/o PED/INFRA-1/RDSO

All Holl-Hetalic and fairlishing materials saon as armora	All non-metallic and jurilstillig illaterials such as	13.9.7	1
1 4 # # # # + + # 1	High safety fire survival cables for fire-prone areas are designed to sustain high temperatures for a defined minimum period of time under direct fire. They find applications in hazard-prone areas where people and equipment are exposed to the threat of fire with qualities that will prevent them from overheating; they can withstand temperatures of up to 650°C, 750°C, and 950°C as per various conditions of operation and applications.	13.9 .9	10.
The suitable capacity of jack along with hydraulic pumps, aluminum beams, and other accessories shall be provided for lifting and side slewing for re-railing of the machine in case of derailment. Two nos. 50 t manually operated hydraulic lifting jack, with more than 300 mm traversing facility suitable to lift the machine frame at lifting point, should be made provided to meet out the urgency. Also a hydraulic hand pump unit should also be provided to operate any other emergent operation of hydraulic cylinders.	The suitable capacity of jack along with hydraulic pumps, aluminum beams, and other accessories shall be provided for lifting and side slewing for rerailing of the machine in case of derailment.	11.3	ю
The spring-loaded electro-pneumatic parking brake shall be provided as per RDSO specification no. C K 408 with latest amendments. The pneumatic parking brake should also be spring loaded so that in case of drop in pneumatic pressure below certain value the brake will be automatically be applied. The brakes shall be protected from ingress of water, grease, oil or other substances, which may have an adverse effect on them. Mechanical brakes shall also be provided in addition for use as parking.	The spring-loaded electro-pneumatic parking brake shall be provided as per RDSO specification no. C-K 408 with latest amendments. Mechanical brakes shall also be provided in addition for use as parking	7.4	œ
The machine shall be equipped with hot axle sensor for each axle and also adequate safety circuit such that any unit/part which may endanger the safety is unlocked and the air pressure in brake circuit is less than 5 bars, the machine shall not move during run drive. The indication of hot axle, locking and unlocking of all units shall be displayed in the cabin-	The machine shall be equipped with hot axle sensor for each axle and also adequate safety circuit such that any unit/part which may endanger the safety is unlocked and the air pressure in brake circuit is less than 5 bars, the machine shall not move during run drive. The indication of hot axle, locking and unlocking of all units shall be displayed in the cabin	5.8	7.

2238281/2023/O/o PED/INFRA-1/RDSO

and-staffs	machine operators and staffs		
the spread of fire to promote the escape of spread of fire to promote the escape of machine operators	the spread of fire to promote the escape of		
conditioning system shall be controlled to minimize conditioning system shall be controlled to minimize the	conditioning system shall be controlled to minimize		
In the event of detection of a smoke/fire, the air In the event of detection of a smoke/fire, the air	In the event of detection of a smoke/fire, the air	13.10.2	12
HL-2	Class A or superior international standard.		
visibility due to smoke etc. as per UIC 564-2 OR 2 or Class A or superior international standard. EN 45545	visibility due to smoke etc. as per UIC 564-2 OR		
resistance to spread of flame and deterioration in deterioration in visibility due to smoke etc. as per UIC 564-	resistance to spread of flame and deterioration in		
material etc. shall satisfy the requirements of requirements of resistance to spread of flame and	material etc. shall satisfy the requirements of		
vestibule material. GFRP paneling, cushioning GFRP paneling, cushioning material etc. shall satisfy the	vestibule material, GFRP paneling, cushioning		
artificial leather seat covering. flooring material, leather seat covering, flooring material, vestibule material,	artificial leather seat covering, flooring material,		

(S.K.Singh)
Executive Director/TM/RDSO

Page 6 of 6