

REASONED DOCUMENT IN RESPONSE TO UPLOADED DRAFT SCHEDULE OF TECHNICAL REQUIREMENTS FOR MANUFACTURE OF PSC SLEEPER

Para no.	S. N.	Modified clause of STR uploading for 30 days	Comments /Suggestions by approved vendors	RDSO's Remarks	Final Draft of STR is to be upload for 15 days																																																																																							
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		15	7.06 cm (50 cm ²)mortar cube moulds						7.06 cm (50 cm ²)mortar cube moulds	
		16	Metallic scoop, pan type container and china tray etc.	2 sets					Metallic scoop, pan type container and china tray etc.	2 sets
		17	Aggregate Impact testing machine	1					Aggregate Impact testing machine	1
		18	Aggregate crushing testing machine	1					Aggregate crushing testing machine	1
		19	Aggregate Abrasion testing machine	1					Aggregate Abrasion testing machine	1
		20	Electric thermostatic oven with display of temperature	1					Electric thermostatic oven with display of temperature	1
		21	Set of IS Sieves 40 mm and below up to 75 micron	1					Set of IS Sieves 40 mm and below up to 75 micron	1
		22	Automatic electric sieve shaker	1					Automatic electric sieve shaker	1
		23	Proving rings of 2000 KN,1000 KN, 500 KN, and 100 KN capacity	1 each					Proving rings of 2000 KN,1000 KN, 500 KN, and 100 KN capacity	1 each capacity
		24	1.5 Volt AVO meter	1					1.5 Volt AVO meter	1
		25	Glass cylinders and Beakers 50 - 500 cc capacity	1 set					Glass cylinders and Beakers 50 - 500 cc capacity	1 set
		26	Miscellaneous measuring gadgets like steel tape, Vernier, filler gauge etc.	2 sets					Miscellaneous measuring gadgets like steel tape, Vernier, filler gauge etc.	2 sets
		27	Inspection gauges for dimension checking of sleepers with digital display of parameters as approved by RDSO. (Optional)	2 sets					Inspection gauges for dimension checking of sleepers with digital display of parameters as approved by RDSO. (Optional)	2 sets
		28	Master gauges for checking inspection gauges	1 set					Master gauges for checking inspection gauges	1 set
		29	Magnifying glass	1					Magnifying glass	1
		30	Level table steel for checking gauges	1					Level table steel for checking gauges	1
		31	pH meter & TDS meter (Digital)	1					pH meter & TDS meter (Digital)	1

9.0 New para	9.1	<p>Requirement of IP based CCTV camera and sensors</p> <p>IP based CCTV camera monitoring system for remote monitoring of sleeper production in CSPs of Zonal Railways. The live feed from these cameras installed at various critical locations (as given in the table below) shall be provided to concerned Zonal Railways and RDSO.</p>	New Para added. No Comments /Suggestions has been received from the stake holders	No change	<p>Requirement of IP based CCTV camera and sensors</p> <p>IP based CCTV camera monitoring system for remote monitoring of sleeper production in CSPs of Zonal Railways. The live feed from these cameras installed at various critical locations (as given in the table below) shall be provided to concerned Zonal Railways and RDSO.</p>
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	9.2	<p>Installation of Sensors to automatically measure and record various parameters of design mix such as w/c ratio, moisture content of aggregates etc. production process such as stressing, vibration, curing, etc. and testing parameters such as cube strength, SBT test etc. and to automatically transmit these parameters to Zonal headquarter continuously.</p>	New Para added. No Comments /Suggestions has been received from the stake holders	No change	<p>Installation of Sensors to automatically measure and record various parameters of design mix such as w/c ratio, moisture content of aggregates etc. production process such as stressing, vibration, curing, etc. and testing parameters such as cube strength, SBT test etc. and to automatically transmit these parameters to Zonal headquarter continuously.</p>
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	MATERIALS				
1	Cement Godown	2	-	-	
2	HTS Storage Area	1	-	-	
3	Insert Storage Area	1	-	-	
4	Coarse Aggregate Storage Area	1	-	-	
5	Fine Aggregate Storage Area	1	-	-	
6	Admixture Storage Area	1	-	-	
B	CONCRETE PRODUCTION				Sensor based mechanism system should be provided to remotely record and report weight of every ingredient of concrete in each batch of concrete.
1	Batching Plant Operator	1	-	-	
2	Coarse Aggregate CA-1	1	1		Sensor for testing moisture content in storage bin
3	Coarse Aggregate CA-2	1	1	-do-	
4	Fine Aggregate	1	1	-do-	
5	Cement	1	-	-	
6	Admixture	1	-	-	
7	Water	1	-	-	
8	Mixing of Concrete and output	1	-	-	
C	SLEEPER PRODUCTION				
1	Production line for concreting	4	1		One sensor for bench counting .
2	Compaction of concrete / Vibration		1		One sensor per vibrator to measure RPM of vibrator and time of vibration.
3	Extension of HTS wires	1	1		One sensor for measuring extension of HTS wires
4	Application of Load for stressing of HTS Strands	1	-	-	
5	Casting of concrete cubes / vibrating table	1	1	-	
D	CURING				
1	Steam Curing Chamber	1	1		One Camera and one Sensor per Chamber. Temperature of steam curing and steam characteristics to be measured and to be captured in the overall system being used at the centralized location.
2	Water Curing	1	-		One Camera per Chamber

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E	TESTING LABORATORY				
1	Concrete Cube Testing	1	1	-	
2	Beam Testing	1	1	-	
3	Static Bending Test	1	1	-	
4	Testing of various	4	-	-	

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			250sleepers whichever is earlier.	250sleepers whichever is earlier.				250sleepers whichever is earlier.	250sleepers whichever is earlier.	
4	Pre tensioning Jacks (500 KN capacity for single mould bench) & (1000 KN Capacity for twin mould bench)	Once a month or after casting 5000 sleepers for single mould and once a month or after casting 10,000 sleepers for twin mould, whichever is earlier.	-	-				Once a month or after casting 5000 sleepers for single mould and once a month or after casting 10,000 sleepers for twin mould, whichever is earlier.	-	
5	Pre- tensioning Jacks (1000 KN Capacity)	-	Once in a month or after casting 5000 sleepers, whichever is earlier.	Once in a month or after casting 5000 sleepers, whichever is earlier.				-	Once in a month or after casting 5000 sleepers, whichever is earlier.	
6	Pre- tensioning Load cell	Once a month or after casting 5000 sleepers for single mould and once a month or after casting 10,000 sleepers for twin mould, whichever is earlier.	Once in a month or after casting 5000 sleepers, whichever is earlier.	Once in a month or after casting 5000 sleepers, whichever is earlier.				Once a month or after casting 5000 sleepers for single mould and once a month or after casting 10,000 sleepers for twin mould, whichever is earlier.	Once in a month or after casting 5000 sleepers, whichever is earlier.	
7	Concrete beam testing machine (100 KNCapacity)	Once in 6 months	Once in 6 months	Once in 6 months				Once in 6 months	Once in 6 months	
8	Aggregate weigh batcher	Once every week or after casting 4000 sleepers, whichever is earlier.	Once every week or after casting 2000 sleepers, whichever is earlier.	Once every week or after casting 2000 sleepers, whichever is earlier.				Once every week or after casting 4000 sleepers, whichever is earlier.	Once every week or after casting 2000 sleepers, whichever is earlier.	
9	Cement Weighing Equipment	Once every week or after casting	Once every week or after casting	Once every week or after casting				Once every week or after casting	Once every week or after casting	

		4000 sleepers, whichever is earlier	2000 sleepers, whichever is earlier				4000 sleepers, whichever is earlier	2000 sleepers, whichever is earlier	
10	Water Meter	Once every week or after casting 4000 sleepers, whichever is earlier	Once every week or after casting 2000 sleepers, whichever is earlier			10	Water Meter	Once every week or after casting 4000 sleepers, whichever is earlier	Once every week or after casting 2000 sleepers, whichever is earlier
11	Admixture Dispenser	Once every week or after casting 4000 sleepers, whichever is earlier	Once every week or after casting 2000 sleepers, whichever is earlier			11	Admixture Dispenser	Once every week or after casting 4000 sleepers, whichever is earlier	Once every week or after casting 2000 sleepers, whichever is earlier
12	Master gauges for checking correctness of dimensions measuring gauges.	Once in 6 months	Once in 6 months			12	Master gauges for checking correctness of dimensions measuring gauges.	Once in 6 months	Once in 6 months
13	Dimension checking gauges.	Once every 15 days or after inspecting 5000 sleepers, whichever is earlier.	Once every 15 days or after inspecting 5000 sleepers, whichever is earlier.			13	Dimension checking gauges.	Once every 15 days or after inspecting 5000 sleepers, whichever is earlier.	Once every 15 days or after inspecting 5000 sleepers, whichever is earlier.
14	Proving Rings (All the Four-2000 KN, 1000 KN, 500 KN, 100 KN)	Once in 48 months or within the validity period of last calibration, whichever is earlier.	Once in 24 months or within the validity period of last calibration, whichever is earlier.			14	Proving Rings (All the Four-2000 KN, 1000 KN, 500 KN, 100 KN)	Once in 48 months or within the validity period of last calibration, whichever is earlier.	Once in 24 months or within the validity period of last calibration, whichever is earlier.
15	Weights & measures	By weights & measures department as per extant	By weights & measures department as per extant			15	Weights & measures	By weights & measures department as per extant	By weights & measures department as per extant

		rules.	rules.
16	Tachometer	Once a year	Once a year

- 1) The items referred at S. Nos. 1 to 6-7 above should be calibrated by proving ring by the sleeper plant itself.
- 2) The items referred at S. Nos. 7-8 & 9 should be calibrated by the dead weights and item at S. No. 9 10 by measuring cans that should be available in the plant

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16	Tachometer	Once a year	Once a year

- 1) The items referred at S. Nos. 1 to 6-7 above should be calibrated by proving ring by the sleeper plant itself.
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Format-VII

A

COMBINED FLAKINESS AND ELONGATION INDEX OF 20 MM AGGREGATE (IS: 383, 2016, CL:5.3) & (IS:2386, PART-1)

IS SIEVE		FLAKINESS INDEX		ELONGATION INDEX	
Passing through 20 Sieve(mm)	Retained on IS Sieve(m)	Wt. of sample taken (At least 200 pieces)(A)	Weight of passed material on thickness gauge (B)	Wt. Retained material on thickness gauge (C)=A-B	Wt. of Retained material on gauge (D)
20	16				
16	12.5				
12.5	10				
TOTAL					
Combined Flakiness and Elongation Index= $\frac{(B/A)+(D/C)}{100}$ %					
Combined Flakiness and Elongation Index					<40% (ok)

No Comments /Suggestions has been received from stake holders

No change

COMBINED FLAKINESS AND ELONGATION INDEX OF 20 MM AGGREGATE (IS: 383, 2016, CL:5.3) & (IS:2386, PART-1)

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16	12.5				
12.5	10				
TOTAL					
Combined Flakiness and Elongation Index= $\frac{(B/A)+(D/C)}{100}$ %					
Combined Flakiness and Elongation Index					<40% (ok)

B

COMBINED FLAKINESS AND ELONGATION INDEX OF 10 MM AGGREGATE (IS: 383, 2016, CL:5.3) & (IS:2386, PART-1)

IS SIEVE		FLAKINESS INDEX		ELONGATION INDEX	
Passing through 20 Sieve(m)	Retained on IS Sieve(mm)	Wt. of sample taken (At least 200 pieces) (A)	Weight of passed material on thickness gauge (B)	Wt. Retained material on thickness gauge (C)=A-B	Wt. Retained material on gauge (D)
12.5	10				
10	6.3				
TOTAL					
Combined Flakiness and Elongation Index= $\frac{(B/A)+(D/C)}{100}$ %					
Combined Flakiness and Elongation Index					<40 % (ok)

COMBINED FLAKINESS AND ELONGATION INDEX OF 10 MM AGGREGATE (IS: 383, 2016, CL:5.3) & (IS:2386, PART-1)

IS SIEVE		FLAKINESS INDEX		ELONGATION INDEX	
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12.5	10				
10	6.3				
TOTAL					
Combined Flakiness and Elongation Index= $\frac{(B/A)+(D/C)}{100}$ %					
Combined Flakiness and Elongation Index					<40 % (ok)

As per IRS-T-39 the above result of combined flakiness and elongation Index is less than 40 %.

Format-
XVIA

SGCI Insert : DIMENSIONAL & WEIGHT CHECK LIST

Description: SGCI insert to RDSO/T-6901 Alt.5 & specification IRS/T-46 (1996) (latest version)

SGCI Supplier:-----

Gauge Employed: Gauge and fixtures conforming to RDSO/T-6943 Alt.3
IC no. and date (As issued by rites/ Inspecting authority)

S	He	P	Jig	Len	Thic	H	W	T	Gat	S	W	Soundnes
at	a	a		gth	knes	o	id	o	ing	qu	t	sthrugh
No.	tt			of	sof	l	h	p	ar	e		hammer
o.				head	stem	e	of	r	itio	g		test
			1			25/3	e	d	h	a	n	
				76	5	23	a	a	u	g	K	
				+1/-	+2/-	+0.						
				0.5	-1	5/-						
						0						
							71				1.4	
							+1				84-	
							-				3%	
							0.					
							5					

No. of inserts Checked _____,
No. of inserts passed _____,

No. of inserts rejected _____, Rejection Rate :

Note:

1) Railway Inspector will check 1% inserts on random basis.

2) AEN/XEN will check at least 20 inserts, once in 2 weeks on random basis. He will also ensure that tests prescribed for Rly Inspectors are being conducted.

3) Other Instructions contained in Board's letter no. 98/TK-II/22/11/17/Pt. Policy, dtd.11.08.2003 are to be adhered to.

No Comments / Suggestions has been received from stakeholders

As per Railway Board letter dated 09.02.2022 & 22.02.2022, SGCI insert has been decontrolled. Accordingly para has been modified

As per IRS-T-39 the above result of combined flakiness and elongation Index is less than 40 %.

SGCI Insert : DIMENSIONAL & WEIGHT CHECK LIST

Description: SGCI insert to RDSO/T-6901 Alt.5 & specification IRS/T-46 (1996) (latest version)

SGCI Supplier:----- RDSO Approval of supplier valid up to: _____

Gauge Employed: Gauge and fixtures conforming to RDSO/T-6943 Alt.3
IC no. and date (As issued by purchaser rites / Inspecting authority)

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					-1		23+0	71+			1.48	gh
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								0.5				test

No. of inserts Checked _____, No. of inserts passed _____,

No. of inserts rejected _____, Rejection Rate :

Note:

2) Railway Inspector will check 1% inserts on random basis.

2) AEN/XEN will check at least 20 inserts, once in 2 weeks on random basis. He will also ensure that tests prescribed for Rly Inspectors are being conducted.

3) Other Instructions contained in Board's letter no. 98/TK-II/22/11/17/Pt. Policy, dtd.11.08.2003 are to be adhered to.

Format- XVI		SGCI Insert : DIMENSIONAL & WEIGHT CHECK LIST Description: SGCI insert to RDSO/T-381 Alt.8 & specification IRS/T-46 (latest version) SGCI Supplier: _____ RDSO Approval of supplier valid up to:----- Gauge Employed: Gauge and fixtures conforming to RDSO/T-454 Alt.9IC no. and date (As issued by RITES/Inspecting authority)	No Comments /Suggestions has been received from stakeholders	As per Railway Board letter dated 09.02.2022 & 22.02.2022, SGCI insert has been decontrolled. Accordingly para has been modified	SGCI Insert : DIMENSIONAL & WEIGHT CHECK LIST Description: SGCI insert to RDSO/T-381 Alt.8 & specification IRS/T-46 (latest version) SGCI Supplier: _____ <u>RDSO Approval of supplier valid up to: _____</u> Gauge Employed: Gauge and fixtures conforming to RDSO/T-454 Alt.9IC no. and date (As issued by <u>RITES/ purchaser</u> / Inspecting authority)
Format- XVII	A	STATISTICAL ANALYSIS OF CONCRETE STRENGTH AND STATIC BENDING STRENGTH TEST ON PSC SLEEPERS	No Comments /Suggestions has been received from stakeholders	No Change	STATISTICAL ANALYSIS OF CONCRETE STRENGTH AND STATIC BENDING STRENGTH TEST ON PSC SLEEPERS
Format- XVII	C	STATIC BENDING STRENGTH TEST RESULTS UPTO CRACKING LOAD OF MBC, TURNOUT, OTHER SLEEPER. :	No Comments /Suggestions has been received from stakeholders	No Change	STATIC BENDING STRENGTH TEST RESULTS UPTO CRACKING LOAD OF MBC, TURNOUT, OTHER SLEEPER. :
Format- XVIII		YEARLY STATISTICAL ANALYSIS OF CONCRETE STRENGTH AND STATIC BENDING STRENGTH TEST OF PSC SLEEPERS	No Comments /Suggestions has been received from stakeholders	No Change	YEARLY STATISTICAL ANALYSIS OF CONCRETE STRENGTH AND STATIC BENDING STRENGTH TEST OF PSC SLEEPERS