G.275/WSSR-511718 /2018-19

WORK STUDY TO REVIEW THE STAFF STRENGTH AT SSE/P. WAY (West)/PTJ PGT - DIVISION.

SOUTHERN RAILWAY

PLANNING BRANCH

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STUDIED BY

WORK STUDY TEAM
OF
PLANNING BRANCH

July 2018

I N D E X

(i)

ACKNOWLEDGEMENT

The study team conveys its sincere thanks to DRM/PGT, Sr.ADEN/PGT, SSE/P.Way/PTJ (West) and other staff of SSE/P.Way/PTJ (West)/Office for their co-operation and assistance for conducting and completing the work study in time.

(ii)

AUTHORITY

Annual Programme of work studies for the year 2017-18.

(iii)

TERMS OF REFERENCE

Work Study to review the staff strength at SSE/P.Way/PTJ (West) Palakkad Division.

(iv)

METHODOLOGY

The following methodology has been adopted while conducting the above study.

1) Collection and compilation of data.
2) Discussion with field Officials.
3) Applying rational formula to arrive the requirement of gang strength as per the data furnished by SSE/P.Way/PTJ(West)

(iv)

SUMMARY OF RECOMMENDATIONS

REVISED RECOMMENDATION :

The following 21 vacant posts are found excess to the requirement and the same may be surrendered and credited to the vacancy bank.

Sl. No	Category	GP (Rs)	Vacant
1	SSE/P.Way	4600	1
2	JE/P.Way	4200	2
3	Tech Black Smith Gr.II	2400	1
4	Tech Black Smith Gr.III	1900	1
5	Tech Brick layer Gr.I	2800	1
6	Tech Carpenter Gr.III	1900	1
7	Helper Carpenter	1800	1
8	Track Maintainer Gr.III	1900	1
9	Track Maintainer Gr.IV	1800	12
	Total		**21**

(Total No of Posts: 21)

RECOMMENDATION 1:

Based on the rational formula it is found that 08 post (Sl. No 1 to 7) is surplus to the Requirement, which may be surrendered and credited to the Vacancy bank. (**No. of Posts: 08)**

RECOMMENDATION 2:

As per the CTE/MAS standing instruction, some maintenance activities are to be outsourced which is equal to 13 posts of Track Maintainers (Sl. No 8 & 9), these 13 posts of Track Maintainers may be surrendered and credited to the Vacancy bank, after the implementation of outsourcing. **(No. of Posts: 13)**

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CHAPTER – I

1.0 INTRODUCTION

1.1 **The First Rail Transport** running in Steam Engine started in the year 1832 at England. East India Company made the Basement for Rail Transportation in India for receiving Cotton and Iron ore to the Ports from the Interior of the Country

1.2 **The First Indian Train** started its run on track on April 16, 1853, a Saturday evening 03.35 pm between Boribundar and Thane a distance of 34 kms.

1.3 **The Second Train** of the India connected between Howrah and Hubli on 15th August 1854.

1.4 **The Third Train** service made between Vysarpadi and Walajah road opened on 1st July 1856.

1.5 On the various developments, **this Never Rests System** now reaches the World highest Passenger carrier per km. As per the World Bank Data 2014 Indian Railways carried 11.54 lakh passenger per Km, where as China, Japan and Russia together carried 11.09 lakh passengers per Km only.

1.6 **Southern Railway** was formed on 14th April 1951 by the Amalgamation of Southern India Railway, Madras and Southern Maratha Railway and Mysore State Railway. It spreads to Tamil Nadu, Kerala, Karnataka and Pudhucherry to the Route Kilometerage of 5075.

1.7 **Palakkad Division** was formed on 31st August 1956. Historically, the beginning of the Railways in this Region started with the laying of the line from Podanur to Pattambi in 1860. The first Railway line was started between Beypore and Tirur on 12th March 1861 for a length of 30.5KM, followed by Tirur-Kuttippuramline (14.5KM) on 1st May 1861 & Pattambi–Podanur (105KM) on 14thApril 1862. The left over portion of Kuttippuram–Pattambi Line (37 KM) was completed on 23rd September 1862. The line was extended in phases to Mangalore by the year 1907. When

Trivandrum Division was formed on 2nd October 1979, the Shoranur-Cochin Harbour Terminus section was handed over to Trivandrum Division. With the formation of the new Salem Division on 1st November 2007, the present Palakkad Division has a Route kilometre of 577.74 Kms.

1.7.1 The route kilometers in Palakkad Division at these three stages was as given below:

Period	**Route Km**
31.08.1956 to 01.10.1979	1,247.58
02.10.1979 to 31.10.2007	1,132.98
01.11.2007 onwards	577.74

(Kerala-473.87Km Tamil Nadu–64.93 Km & Karnataka–38.94 Km)

1.7.2

List Of States, Union Territory And Civil Districts Served By Palakkad Division				
STATE		DISTRICT	STATIONS	KM
Karnataka	(1)	Dakshin Kanara	MAJN TO ULL	38.94
Kerala	(2)	Kasaragod	MJS TO WRA	473.87
	(3)	KANNUR		
	(4)	KOZHIKODE		
	(5)	WAYANAD		
	(6)	MALAPPURAM		
	(7)	PALAKKAD		
Tamilnadu	(8)	Coimbatore	ETMD,MDKI & POY	64.93
Puducherry	(9)	Mahe	MAHE	

1.8 **In Indian Railway, Engineering branch** maintains Buildings, Bridges & Track of Railways. The track is paramount for Railway transportation, and it is the prime driving factor for speed, safety and efficient operation of the trains, hence very much importance is given to engineering branch in all aspects.

1.9 The present modern technology in **Permanent Way**, like 52/60 kg rails, joint less (long welded rails), pre stressed concrete sleepers with elastic rail clips, high tech welding methods, mechanized packing through "on track heavy machines and maintenance", sophisticated testing's like USFD, track oscillation inspection cars and other modern techniques are helping for reliability, carrying capacity, speed and safety of the Trains. Also lot of work is outsourced in P.Way like Laying, relaying and some of scheduled maintenance works, which have reduced the work load of Railway men. Hence it is imperative to make scrutiny of the man power requirement for track maintenance.

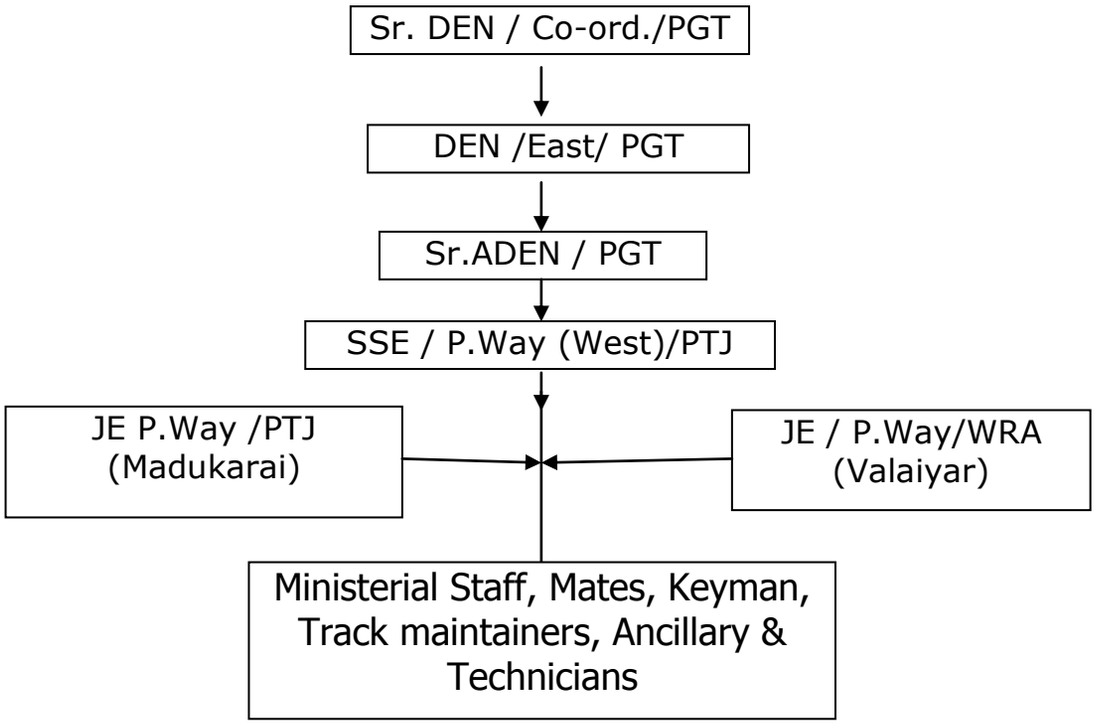
1.10 This Work Study is confined with **SSE/Permanent Way (West)/PTJ** of Engineering Branch /Palakkad Division.

CHAPTER – II

2.0 PRESENT SCENARIO:

2.1 **Organization**:

Engineering Branch of PGT Division is working under the control of Sr. DEN Co-ordination/PGT in the Division level. This P.way section is managed by SSE/P.way (West)/PTJ with the general in charge of ADEN/PGT



2.2 The entire length is an absolute block system, double line operating section. The ruling gradient of the track is 1 in 62 (A line) Falling towards PGT and 1 in 100 (B line) Rising towards PTJ. It is classified as 'B' track route (permitted upto 105/110 kmph speed).

2.3 The following stations are coming under the jurisdiction of SSE/P.way (West)/ PTJ/PGT are :

1. Podanur Jn.	-	PTJ	@	485.92 km.
2. Madukarai	-	MDKI	@	495.58 km.
2. Ettimadai	-	ETMD	@	500.52 km
3. Walayar	-	WRA	@	509.59 km.

2.4 **This section jurisdiction** SSE/P.Way (West)/PTJ is the incharge for maintaining Track from Km 487/200 to 510/120= 47.79 kms (Up and down lines of PTJ-WRA side),

2.4.1 JE/P.Way/PTJ (Madukarai)

KM 487/200 – 499/0 A/L (Including MDKI yard) = 11.800 T.Km

KM 487/200 – 499/0 B/L (Including MDKI yard) = 11.800 T.Km

MDKI yard all loop lines = 06.682 T.Km

Total length = 30.282 T.Km

2.4.2 JE/P.Way/PTJ (Walayar)

KM 499/0 – 510/120 A/L (Including WRA yard) = 11.120 T.Km

KM 499/0 – 510/067 B/L (Including WRA yard) = 13.067 T.Km

(Including 505A & 506A)

WRA yard all loop lines = 02.418 T.Km

Total length = 26.605 T.Km

2.4.3 **Gang Details of this Section**

The stretch of 47.79 kms is being maintained by 6 gangs with 6 Supervisors. The gang strength and beat length in km. is as shown below:

S. No	Gang No.	Juridiction	HQ	Actual		
				Mates	Key Beat	Track man
1	**DTM 1 PTJ**	487/200 – 492/840 PTJ – MDKI (A&B lines)	489/200	1	2	8
2	**DTM 2 MDKI**	492/840 – 499/0 MDKI - ETMD (A&B lines)	495/260	1	2	18
3	**G.3 ETMD**	499/0 – 505/530 MDKI - WRA (B lines)	500/160	1	1	6
4	**G.4 ETMD**	499/0 – 505/300 MDKI - WRA (A lines)	500/160	1	1	7
5	**G.5 WRA**	505/300 – 510/120 ETMD – WRA (A lines)	509/160	1	7	7
6	**G.6 WRA**	505/530 – 510/067 ETMD – WRA (B lines)	509/160	1	2	10

Working hours of gangs are from 07.00 to 12.00 / 14.30 to 17.50 hrs.

Gangs	6		Man-days (Look out)	1004
Mates	6		Man-days (Waterman)	1764
Key Beats	9		RG to Key Man	639
Filth Affected Gangs	0			
Filth Removal	0			

2.5 **Track Details of this Section**:

S.No	Particulars	Unit Length in KM
1	Total section length DOWN line	22.92
2	Total section length UP line	24.87
3	Total section length DOWN & UP line	47.79
4	Section length on LWR (Long Welded Rail)	45.36
5	Equivalent PRC Track length	49.45
6	Turn-out on main line	23.00
7	LWR under Hot weather patrolling	45.36
8	LWR under Cold weather patrolling	45.36
9	Total track Kilometers	50.09
10	Maintenance type	Mechanised

2.6 **Yard data Details of section**:

			MDKI	**WRA**
Length of line (KM)	Running Yard Line	Machined Packed	0	0
		Manually Packed	2.4	2.65
		Laid on PRC Sleeper	0	0
	Non-Running Yard Line	Machined Packed	0	0
		Manually Packed	4.5	0.8
		Laid on PRC Sleeper	0	0
No. of Equivalent turn-outs	Running Yard Line	Machined Packed	9.2	10.4
		Manually Packed	0.136	0
		Laid on PRC Sleeper	0	0
	Non-Running Yard Line	Machined Packed	0	0
		Manually Packed	10.2	0
		Laid on PRC Sleeper	0	0
Yard data Summary				
Machined Packed Running Yard Line				1.96
Manually Packed Running Yard Line				5.06
Machined Packed Non-Running Yard Line				0
Manually Packed Non-Running Yard Line				6.32
Running Yard Line on PRC sleeper				0
Non-Running Yard Line on PRC sleeper				0

2.7 **Curve data Details of section**:

	Down Line	**Up Line**
No. of Curves	17	23
Degree of curve ranges Between	0.72^0 to 4^0	0.77^0 to 4.06^0
Length of curve ranges Between	0.19 to 3.069 kms	0.17 to 3.079 kms
Product of Degree and curve length	0.391 to 4.606	0.298 to 4.560
Track kms in straight	9.74 kms	8.88 kms
Product Sum	23.312	33.017

2.8 **LC data Details of section**:

LC No.	**152**	**152A**	**153**
Gauge	BG	BG	BG
Classification of LC	Traffic	Engg	Traffic
No. of Shift	0	2	0
No. of track on the LC	2	1	8
Gross man days	0	730	0

2.9 **Average Rain fall details of the section area in mm:**

Month	Podanur			Walayar (Based on East Palakkad)		
	Year			Year		
	2014	2015	2016	2014	2015	2016
January	Nil	Nil	Nil	Nil	Nil	Nil
February	Nil	Nil	Nil	0.8	Nil	Nil
March	5.0	8.0	27.0	Nil	4.5	Nil
April	Nil	87.0	Nil	36.0	124	Nil
May	85.0	166.0	39.80	150.0	283	100.2
June	14.0	43.0	Nil	303.0	497.4	364.0
July	25.0	3.0	34.0	699.0	201.6	383.0
August	49.0	30.0	Nil	472.0	214.2	137.9
September	64.4	127.4	1.0	274.0	123	55.4
October	245.7	76.1	84.0	234.0	91.4	95.4
November	2.6	187.3	5.8	15.0	184.7	45.3
December	36.6	16.02	47.0	3.0	Nil	30.8
Total	527.3	743.8	238.6	2186.8	1724	1212
Avg. Rainfall	**43.94**	**61.98**	**19.88**	**182.23**	**143.67**	**101**

The Average Rainfall in this section for the past 3 years **552.7 ÷ 6 = 92.17 cm**

The Average Rainfall in Podanur for the past 3 years **125.8 ÷ 3 = 41.93 cm**

The Average Rainfall in Valayar for the past 3 years **426.9 ÷ 3 = 142.3 cm**

2.10 **Temperature recorded in the section area:**

Year	Max Temp. ^{0} C	Min. Temp. ^{0} C	Average^0 C
2013	53	16	34.5
2014	53	18	35.5
2015	55	18	36.5
2016	58	19	38.5
Mean Avg. Temp.	54.75	17.75	36.25

From the above it could be seen that the Avg. temperature of this area could be 36.25^0 C. The actual de-stressed executed temperature of Track is about 17.75^0 C to 54.75^0 C. (For Zone III is suggested at 36^0 C).

2.11 **Monsoon Patrolling Details in this section**

Beat No.	Gauge	Patrolling days	No. of shifts	Infested with wild Animals	No. of men in each shift	Man-days required
1A	BG	61	2	No	1	122
1B		61	2	No	1	122
2A		61	2	No	1	122
2B		61	2	No	1	122
3A		137	2	Yes	2	548
3B		137	2	Yes	2	548
4A		137	2	Yes	2	548
4B		137	2	Yes	2	548
5A		137	2	Yes	2	548
5B		137	2	Yes	2	548
6A		137	2	Yes	2	548
6B		137	2	Yes	2	548
7A		137	2	Yes	2	548
7B		137	2	Yes	2	548
8A		137	2	Yes	2	548
8B		137	2	Yes	2	548
9A		137	2	Yes	2	548
9B		137	2	Yes	2	548
Man-days for 18 beat patrolling is 8160						

2.12 **Bridges in this Section**

There are 76 bridges including ROB, RUB, Fly overs etc. Out of 76 bridges, 3 are steel girders. The lineal waterway is 490.01.

2.13 **The Tunnel in this section – NIL**

2.14 **Extremely bad formation in this section – NIL**

2.15 **Vulnerable Location in this section**

Vulnerable Location	01
No. of shift	03
Days watched	150
No. of Man days	450

The duties of Supervisors and Technical staff in P. Way section are:

2.16.1**Duties of SSE/P.way** [prescribed in para118 -135 of Part-B of IRPWM]

- Responsible for maintenance and inspection of track and safe condition for Traffic
- Execution of all works incidental to track maintenance including track relaying Works
- Accountal and periodical verification of stores and tools.
- Maintenance of land boundary between stations and at unimportant stations.
- Co-ordination with the works, Bridge, Signaling and Electrical staff.
- Accompanying on Inspection of higher officials.
- Testing of running qualities of track.
- Inspection of Gangs, Level Crossings, points and X-ings, curve Inspection
- Foot plate inspection, Rear vehicle inspection, Foot inspection.
- Accompanying OMS/TRC (RDSO) Inspection.
- Check on patrolling
- Maintenance of station yards.
- Witnessing payment to staff

- Maintenance of Records
- Custodian of stores etc.
- Apart from above P.Way maintenance activities Staff Welfare viz. promotion, claiming of salary, supply of equipment and uniform, procurement of materials, issuing of materials scrap delivery (DS8)

2.16.2 **Duties of JE/P.way:** [prescribed in para136 -145 of Part-B of IRPWM]

- Inspection and maintenance of track in a safe and satisfactory condition for traffic, including execution of all works, incidental to track maintenance.
- Execution of special works, such as a) Renewal, Directed Track maintenance curve re-alignment, deep screening etc.
- To assist the SSE/P.way.
- Co-ordination with Works, Bridge and staff of other departments.
- Inspection of Gangs, Level crossings, Points and Xings, Curves, foot plate inspection, rear vehicle inspection and foot inspection.

2.16.3 **P.Way Mistry /Track mate:** [prescribed in para136-166 of Part-B of IRPWM]

- Knowledge of Rules and Signal
- Safety of the Track
- Equipments at site of work
- Muster and Gang Charts/Diary Books
- Observance of sleepers packing during passage of train.
- Precaution when view is obstructed
- Tidiness of section and Safe custody of tools
- Action when line is unsafe or in the event of accident
- Patrolling during abnormal Rainfall
- Commencing work affecting safety of train
- Weekly inspection of Gang length by mate.
- Preventing Tress pass and theft of P.way fittings
- Relief arrangements in emergencies
- Assistance to P&T staff
- Assistance in protection of train and Assistance in placing fog signals
- Responsibilities of the mate in LWR track

2.16.4 **Duties of Key-man:** [prescribed in para167 -170 of Part-B of IRPWM]

- Key-man's daily inspection
- Equipment of key-man
- Rectifying the defects whichever possible by him.
- Reporting to Mate and PWI about the defects which require assistance for attending.
- In case of serious defects protection of Track & informing as per rules.
- Work at unmanned level crossings.
- Assisting mate after completing his routine inspection.
- Any materials found fallen safe custody and disposal.
- Apart from daily inspection, he should ensure tightness of fittings in systematic manner.

2.17 **The present staff deployment of SSE/P.Way (West)/PTJ unit:**

The book of sanction of the Unit is placed as **Annexure -I**

Sl.No	Category	GP	Sanction	Actual	Vacant	Excess
1	SSE/P.Way	4600	4	3	1	0
2	JE/P.Way	4200	3	1	2	0
3	Office Supdt.	4200	1	0	1	0
4	Jr.Clerk	1900	0	1	0	1
5	Sr. Tech Black Smith	4200	1	0	1	0
6	Tech Gr.I Black Smith	2800	1	0	1	0
7	Tech Gr.II Black Smith	2400	1	0	1	0
8	Tech Gr.III Black Smith	1900	1	1	0	0
9	Tech Gr.I Brick layer	2800	1	0	1	0
10	Tech Carpenter Gr.III	1900	1	0	1	0
11	Helper Carpenter	1800	1	0	1	0
12	Helper Painter	1800	0	1	0	1
13	Tech Gr. II Welder	2400	0	1	0	1
14	Tech Gr. III Welder	1900	1	0	1	0
15	Helper Welder	1800	1	0	1	0
16	Track Maintainer Gr.I	2800	7	6	1	0
17	Track Maintainer Gr.II	2400	15	14	1	0
18	Track Maintainer Gr.III	1900	27	24	3	0
19	Track Maintainer Gr.IV	1800	72	48	24	0
	Total		**138**	**100**	**41**	**3**

NET VACANT:38

2.18 **Track Maintenance Methods:**

2.18.1 The para228 of IRPWM prescribes the system of maintenance for concrete sleeper track as given below. The following 3-tier system of track maintenance shall be adopted on sections nominated for mechanized maintenance.

1. On track machines (OMU)
2. Mobile Maintenance unit (MMU)
3. Sectional gangs

2.18.2 The mobile maintenance units shall comprise of two groups:-

MMU-1:- One for each PWI section

MMU-2:- One for each Sub-division

MMU-1 shall be a Rail cum road vehicle with a PWI in-charge with a jurisdiction of 40-50Km. double line and 90-100Km for single line for various works including need based spot tamping and in situ rail welding.

MMU-2 shall be a road vehicle based unit with each sub-division for reconditioning of turnout and minor repairs to the equipments of MMU.

2.18.3 Existing Maintenance Practices on IR

As on date, the practice of maintenance can be briefly summarized as follows;

(a) In sections where relaying with PSC sleepers has been done,
   i. Tamping with machines as and when machines are available, plus
   ii. Conventional system of maintenance

(b) In sections where relaying has not been done,
   i. Only conventional system of maintenance is being used.

2.18.4 Annual programmed regular track maintenance is as follow:

Sl. No.	Period	Work
1.	Post monsoon attention for about six months	Attention to run down stretches, one round of through packing
2.	Pre-monsoon attention for about two months	Clearing of drains
3.	Attention during monsoon for about four months.	Attention to track as required.

2.18.5 The role of open line organization of Engineering Department in IR mainly Meant for maintenance/strengthening/modification of existing infrastructure i.e. track for permitting higher speeds and heavier Loads.

2.18.6 The manual maintenance of the track has given way to highly mechanized Maintenance practices that has become inevitable for the following reasons

a) The high safety standards that can be achieved
b) The capability for higher axle load, speed etc.,
c) The overall economy in cost of maintenance
d) The accuracy in testing, checking and inspections that can be achieved through mechanization.
e) The necessity to avoid harsh physical work under inclement Weather and isolated locations
f) The speed of maintenance
g) The need to carry out the maintenance works within the constraints of time for line block etc.,

2.18.7 **The provisions of "Small Track Machines Manual":-**

The para1.3.2 says that the "Requirement of Manpower doesn't includes Leave Reserve" Further, the para1.3.3 stipulates that the Creation of posts for Operation and maintenance of small track machines should be done by Surrender of equivalent money value of live revenue charged posts of Gangman /other category involved in the track maintenance. The component of unskilled staff being created should be barest minimum. The proportion of skilled personnel should form at least 75% of the total posts to be created.

2.18.8 **Various track machines and their periodicity of working is Detailed below**:-

Sl. No.	Name of the Machine	Work done	Frequency
1.	BCM-Ballast Cleaning Machine	Deep screening of track	Once in10 years
2.	DUOMAT/CSM – Continuous Action Tamper	Tie Tamping LWR work	Once in 2 years
3.	DGS - Dynamic Track stabiliser	For consolidating track after works affects core stability	Once in 10 years along with BCM
4.	UNIMAT/MPT	1.Tamping Points & crossing	Once in 2 years
5.	BRM - Ballast Regulating Machine	Boxing of track	
6.	UTV - Utility Track Vehicle	Leading and stacking materials	As per need
7.	T-28 - T28 cranes – One job crane (PRC laying Machine)	For re-laying of Points & crossing	As per requirement
8.	PQRS	For re-laying track	-do-
9.	TRT	For CTR of track	-do-

2.19 **ACTUAL GANG PERFORMANCE**:

The various gangs daily performance diaries were observed and noticed the following works are repeatedly allotted by the Supervisor and carried out by the Gangs are;

1. De-weeding
2. Weld collar painting
3. Cleaning
4. Boxing ballast working
5. ERC renewal / greasing.
6. Changing Rubber pad
7. Changing liners
8. Assisting various track machine activities.
9. Packing – manual at points, SEJ and other required areas.
10. Collecting store items.
11. Steel sleepers, chair plates changing.

2.20 **Man power calculation for Track maintenance a brief History:**

Permanent way gang strength was calculated by various methods right from 1931 through maflin formula. Over the years there has been lot of changes in Track maintenance practice, according to the timely changes the man power requirements also varied.

IR adopted various efforts to standardize in the past.

1.	Maflin formula	-	1931
2.	Lobo committee or modified Miff lin formula	-	1959
3.	Modified Maflin formula freezed in	-	1965
4.	Committee Report I in	-	1971
5.	Committee Report II in	-	1972
	No action taken on (4) & (5)		
6.	Appointment of special committee	-	1976
7.	Submission of Report by Spl. Committee	-	1979
	Though Rly. Board did not give any direct clearance for this formula of 1979, it was implemented with a 5% reduction in many Zones.		
8.	Committee for machine and manpower Deployment for Track Maintenance appointed in (Not accepted by Rly.Board)	-	1989
9.	(CMMDTM) Report submitted in	-	1995
10.	Kapoor committee appointed on	-	05.01.1996
11.	Reconstituted committee on	-	12.11.1997
12.	Renamed as CMCNTM – Committee for Man power and Cost Norms for Track Maintenance	-	13.08.199
13.	Finalization of the Report	-	May 2000
14.	Acceptance of the Report by Rly. Board	-	March 2006

The committee of "Man power and cost norms for Track maintenance "(MCNTM) is the latest which covers all the Track parameters and arrives the required Gang strength.

2.21 Evaluation of Man power through MCNTM formulae:

The man power requirements of Gangs (Trackman, Gatekeeper, Store watchman) are regularly calculated by division level through TRMS activities. IRICEN will be the custodian of the software for calculating man power.

The whole activities connected to Track Maintenance are clubbed under four main categories under MCNTM studies.

They are:

a) Activity 'T' - Affected by Traffic Density
b) Activity 'R' - Not affected by Traffic Density } Primary activities
c) Activity 'M' - Miscellaneous
d) Activity 'S' - Site specific } Auxiliary activities

Activity 'T' - Affected by Traffic Density

T_1	- Slack attention to	a) Bad spots b) Low joints (FP, welded, glued joints) c) SEJ (1 No. / km) d) Minor curve alignment
T_2	- For Tie tamper Working	a) Pre tamping operations b) Along with tamper c) Post tamping operations
T_3	- Casual Renewal of	a) Rails b) Sleepers c) Fasteners along with re-gauging
T_4	- Repair Welding	

Activity 'R' – Not affected by Traffic Density

R_1 - Lubrication of ERCs
R_2 - Shallow screening
R_3 - Loading, Leading, Unloading
R_4 - Overhauling of LC gates
R_5 - Watching of caution spots & misc.
R_6 - Tree cutting for visibility
R_7 - Lubrication of Rails in Curves

R_8 - Accident Relief and carcass renewal in runover cases

R_9 - Bridge, Sleeper attention & Renewal

R_{10} - Pre-monsoon attention such as clearing of drains and Waterways, cess repair, de-weeding of track and Attention to cuttings & Trolley refuges

R_{11} - Creep pulling approaches to bridges, turnout

R_{12} - Rectifying damage to LC posts and gates.

Activity 'M' – Miscellaneous

M_1 - Monsoon patrolling

M_2 - Hot weather patrolling

M_3 - Cold weather patrolling

M_4 - Watching vulnerable locations

M_5 - Gate keeping of LC gates

M_6 - Rest Giving for key man

M_7 - Water man duty

M_8 - Store watch man duty

Activity 'S' – Miscellaneous

S_1 - Tunnel Maintenance

S_2 - Bridge substructure maintenance

S_3 - Long girder maintenance

S_4 - Extra maintenance due to very steep curves, deep cutting , steep gradient

S_5 - Maintenance of track on extremely bad formation

S_6 - Look out man duty

S_7 - Fog signal man duty

S_8 - Filth removal from track

S_9 - Security patrolling

S_{10} - Watching of water level in suburban section

2.22 As per Field data P-Way (West)/PTJ Maintenance Record

2.22.1 'T'-Activity

PERMANENT WAY MAINTENANCE ACTIVITIES – MCNTM FORMULE

	ACTIVITIES	EXPLANATION	STAFF ACTUAL	CONTRACT
T	**Activities 'T' Affected by Traffic Density**			
T.1	**Slack attention to**			
a.	Bad spots	Pt.no.50A, 50B, 51A,51B scissor cross over PSC layout and Pt no.62A, 62B, 63A, 63B wooden layout MDKI yard	20 labours x4 days/monthx 12 months = 960	Nil
b.	Low joints (FP or welded), glued joints	Km 497/0-5010 FB welds slack attention	8 days x 6 labours x 12 month= 576	Nil
c.	SEJ(1 No per km)	10 sets	10 sets x 10 labours x 12 month= 1200	Nil
d.	Minor curve alignment	Sharper Curves and bridge approaches	30nos x 30 labours= 900	Nil
T-2	**For tie tamper working**			
a.	Pretamping operations	Km 487/200-510/120 A/L and km 487/200-510/067 B/L and MDKI, WRS yards	45 days x 4 labours= 180	Nil
b.	Along with tamper		45 days x 14 labours= 630	Nil
c.	Post tamping operations		49 days x 10 labours= 490	Nil
T-3	**Casual Renewal of**			
a.	Rails	Rails renewed due excess wear of Rail and to replace the defective welds, corroded rails and RF /MF locations	48 days x 44 labours= 2112	Nil
b.	Track sleepers	Renewal of track sleepers due to insert eye elongation, crack under rail seat (Casual renewal by departmentally)	250 nos x 1 labour /sleeper =250	Nil
c.	Fasteners (Along with regauging)	Km 502/600-510/067 B/L	18 days x 18 labours= 324	Nil
T-4	**Repair welding**	Rails renewed due to excess wear of Rail and to replace the defective weld, corroded rails and RF areas and worn out switch and stock rail renewal	48 days x 44 labours = 2112(168 nos)	Nil

PERMANENT WAY MAINTENANCE ACTIVITIES – MCNTM FORMULE

R.1	Lubrication of ERCs	Km 487/200-510/120 A/L and km 487/200-510/067 and MDKI, WRA yards by Keyman and gang	1553	Nil
R.2	Shallow screening (1/5 length)		Nil	Nil
R.3	Loading, leading, unloading	Loading, leading and unloading of Railway materials using road lorry by departmentally	210 days x 4 labours = 840	Nil
R.4	Overhauling of level crossing	LC No.152, 152A, 153 C overhauling	6 daysx 26 labours = 156	Nil
R.5	Watching caution spots & Miscellaneous	For protection of work site with Hand flag, banner flags and detonators (Twin sing line)	150 days x 9 labours = 1350	Nil
R.6	Tree cutting for visibility	To increase the visibility at sharp curves and to cut the trees which is likely to fallen on the track during monsoon period	32 days x 10 labours =320	Nil
R.7	Lubrication of rails in curves	Curve greasing (sharp curves) once in 15 days and turnout rails greasing in yards	71 labours x 2 times per month x 2 person/day x 12 months = 3408	Nil
R.8	Accident relief and carcass removal in run over case	4 cases per month	4 x 2 labours x12 months = 60	Nil
R.9	Bridge sleeper attention and renewal	Six major bridges (ind. three Girder bridges)	6 bridges x 15 labours per month x 12 months = 1080	Nil
R.10	Per monsoon attention, such as clearing of drains and waterways, cess repairs, deweeding of track and attention to cuttings and trolley refuges	Clearing of vegetations and drainage cleaning in cuttings before monsoon, deweeding of track in all gangs	1540	Nil
R.11	Creep pulling (Approaches of bridge turnout)		Nil	Nil
R.12	Rectifying damage to L/C posts and gates	Periodical maintenance of LC gates	3 times per month x 5 labours x 12 months = 180	Nil

PERMANENT WAY MAINTENANCE ACTIVITIES – MCNTM FORMULE

M	**Miscellaneous activities**			
M.1	Monsoon patrolling	1st june to 15th Oct	4384	Nil
M.2	Hot weather patrolling of LWR track		Nil	Nil
M.3	Cold weather patrolling of LWR track		Nil	Nil
M.4	Watching vulnerable locations		Nil	Nil
M.5	Gate keeping at level crossings	LC No. 152A	3 labours x30 days x 12 months = 1080	Nil
M.6	Rest giving for keyman	Weekly rest for keyman	9 labours x 4 weeks x 12 months = 432	Nil
M.7	Water man duty		Nil	Nil
M.8	Store watchman duty	PTJ and MDKI store	7 labours x 4 weeks x 12 months = 336	Nil
S	**Site – specific**			
S.1	Tunnel Maintenance		Nil	Nil
S.2	Bridge substructure maintenance		Pertains to SSE/Works /PGT	Nil
S.3	Long girder maintenance		Pertains to SSE/BR/PGT	Nil
S.4	Extra maintenance due to sharp curves, deep cutting and steep gradients	Interchanging of rails in sharp curves due to excess lateral wear and defective welds	10 days x 25 labours = 250	Nil
S.5	Maintenance of extremely bad formation		Nil	Nil
S.6	Look out man duty	For protection of SSE/JE trolley during their trolley Inspectors	216	Nil
S.7	Fog signal Man duty		Nil	Nil
S.8	Filth removal from Track	MDKI yard	4 per month x 4 labours x 12 months = 192	Nil
S.9	Security Patrol		Nil	Nil
S.10	Watching of water level in suburban sections		Nil	Nil

2.23 Based on Rational Formula the Track Maintainers [Gang strength] requirement of SSE/P.Way/AJJ section is arrived as follows: Number of working Days in a year for P.Way Gang is 294 days (vide above Rly. Bd. Order No.95/CE1/GNS/2.Vol.II/Pt.11 dt.6.3.2006–Item No.4). Annexure-III

One year	=	365 days.
Sundays	=	52 days.
National Holidays	=	09 days.
Casual leave	=	10 days.
Total No. of Holidays	=	71 days.
Available man days per year	=	365 – 71 = 294 days.

$$\text{No. of Gang men} = \frac{\text{T+R+M+S Activities (in man days)}}{\text{Available man days per year (294)}}$$

Also the MCNTM Committee recommended that Railway Board may order to review the Rational Formulae once in 5 years to incorporate the effects of Modernization to assess the Right Man Power which is on the anvil.

2.24 **ACTIVITIES RECOMMENDED FOR OUTSOURCING BY RATIONAL FORMULA.**

1. Formation of treatment Works:
2. Collection of ballast, training out ballast by material train leading ballast from stack to track, insertion of ballast in track
3. Deep screening of the ballast in track, carried out manually oh by deploying BCM in which case man power is provided by the contractor
4. Introduction of sub ballast and ballast layers
5. Heavy repairs to track, including lifting
6. Complete realignment of curved track
7. Through renewal of rails, Sleepers and fosterers
8. Complete renewal of points and crossings, SEJs, traps etc
9. Resurfacing of crossings and switch rails
10. Loading and unloading of P-Way materials is bulk

11. Loading out of P-Way materials for other than casual renewal
12. Security of materials kin a depot which is closed and locked
13. Painting of Rails and weld collars
14. Painting of bridge girders
15. Heavy repairs(Measurable) to formation cutting bides drains and catch water
16. Heavy repairs (measurable)to bridges, bridge protection works, river training works and tunnels
17. Providing (Repairing road surface at level crossings including speed, breakers
18. Removal of major sand breaches
19. Works arising due to restoration following breach or accident
20. Clearing of rank vegetation in platforms and in the insanity of tracks in coaching and goods yards, repair depots and workshops or Engineering/Mechanical/Electrical and S & T departments.

CHAPTER – III

3.0 CRITICAL ANALYSIS

3.1 The Running Track Km of southern Railway on the year 2016-17 is 7194 and the number of Staff of the Zone is 93381 as on April 2017. The Operational Ratio of Southern Railway for the year 2016-17 is 147.82, where as it was 134.89 in the previous year. As the Railways are not being seen as Profit earning Industry, it is not so possible to increase the fares to achieve the required efficiency. Instead, Indian Railways takes all necessary steps to control expenditure by all possible ways. Since the Staff cost is alone took 33.3% in total expenditure, it is insisting by the Railway Board to conduct Work Studies in all the Units to Right size the Man power by which reduce Unit cost in an effective way to increase efficiency.

3.2 In respect of Track maintenance, Railway Board stipulated the yardstick and guideline for man power assessment in the form of MCNTM formula through software. This formula will ensure Zero base review as per the actual traffic, and other related conditions to arrive the optimum staff requirement. **The committee has also recommended outsourcing certain activities.**

3.3 The work study team after scrutinizing the activities has made suitable changes in certain data provided by the division to arrive the manpower requirement through the MCNTM formulae. The data taken for calculation along with remarks is tabulated below.

The Data applied for "MCNTM" formula:

Sl. No.	Detail	Data	Remarks
1	Total Track KMs	50.087	TRMS Track data
2	ETKM	47.79	
3	Line segment Kms - DN	487.20/510.12	
4	Line segment Kms - UP	487.20/510.07	
5	GMT - DN	19.62	
6	GMT - UP	18.36	
7	Rain fall (Cms)	145.575 cm	
8	Length required for Hot patrolling	45.356	
9	Length required for Cold patrolling	45.356	
10	No. of EQ turn-outs in mainline	DN 12 & UP 11	

11	No. of EQ turn-outs on PRC Sleepers	DN 9.5 & UP 8.5	TRMS Yard data
12	Running yardline – machine packed	1.96	
13	Running yardline – manually packed	5.06	
14	Non-Running yardline manually packed	6.32	
15	No. of EQ turn-outs in RYL	M/C19.6 & Manual 0.14	
16	No. of EQ turn-outs in NRYL	Manual 10.2	
17	No. Gangs	6	TRMS Gang data
18	Beat length of the gangs	33.99 km	
19	No. mates	6	
20	No. Key men beats	9	
21	Man days Required for **RG** to key man	639	
22	Man days Required for look out	1004.02	
23	Man days Required for Waterman	1764	
24	No. Curve	DN 17 & UP 23	TRMS Curve data
25	Segment length	DN 22.92 & UP 24.87	
26	Product of degree & Curve length	DN 21.456	
27	Product of degree & Curve length	UP 33.015	
28	LC Gates	152A	TRMS LC data
29	No. of shifts	2	
30	No. of Track on LC	1	
31	Man-days for Gate keeping	730	
32	No. of Bridges	76	TRMS Bridge data
33	No. of steel girder Bridges	3	
34	No. of other Bridges	73	
35	Lineal water ways	490.01	
36	Man days Required for Substructure	260.71	
37	No. of Tunnel	Nil	Tunnel data
38	Extremely bad formation	Nil	-
39	No. of beats in Monsoon patrolling	18	TRMS Monsoon/ Vulnerable location data
40	No. of shifts	2	
41	Beat infested with wild animals	14	
42	Man days for beat patrolling	8160	
43	Vulnerable locations	1	
44	Man days Vulnerable locations	450	
45	No. of shifts	3	
46	Gateman sanction**(Clubbed with Track Maintainer)**	2	TRMS man-days Factor "M"
47	Man days Required for Gateman	142	
48	No. of site stores	2	
49	Man days Required for (**Stores Watchman**	2190	
50	Fog signal man	Nil	
51	Security patrolling	Nil	Factor "S"

3.4 **The following output obtained through MCNTM formulae**:

3.4.1 **Activity "T" (Affected by the Traffic Density)**

Segment		GMT	Track km.	Length of LWR	Composite Factor	Mandays Required
No.	Name					
1	DN	19.6	24.12	22.14	1.0762	3248.05
2	UP	18.4	25.97	23.21	1.1057	3509.33
Total Man days required for Activity "T"						**6757.38**

3.4.2 **Activity "R" (Un-affected by the Traffic Density)**

Segment		GMT	Track km.	Length of LWR	Composite Factor	Mandays Required
No.	Name					
1	DN	19.6	24.12	22.14	1.0762	3835.08
2	UP	18.4	25.97	23.21	1.1057	4128.75
Total Man days required for Activity "R"						**7963.83**

3.4.3 **Activity "M" (Miscellaneous)**

As per standard calculation(MCNTM)	**Man Days**	**Actual man days (As per field data)**
Monsoon Patrolling	8160.00	Activity **M1** **4384.00** (As Per Table 2.22.3)
Hot weather Patrolling	1360.68	Activity **M2** NIL (As Per Table 2.22.3)
Cold weather Patrolling	544.27	Activity **M3** NIL (As Per Table 2.22.3)
Vulnerable location	450.00	Activity **M4** NIL (As Per Table 2.22.3)
Gate Keeping	142.00	
Rest Giver for Key man	636.00	
Water man	1764.00	Activity **M7** NIL (As Per Table 2.22.3)
Store watch man	2190.00	Activity **M8** **336** (As Per Table 2.22.3)
Total	**15246.95**	

<u>Considering table 2.22.3 (to be scored off)</u> Monsoon Patrolling (8160 -5699)* = 2461.00 Hot weather Patrolling = 1360.68 Cold weather Patrolling = 544.27 Vulnerable location = 450.00 Water man = 1764.00 Store Watchman (2190 – 504)* = <u>1686.00</u> Total = 8265.95	**As per TRMS** Activity"M" = 15246.95 scored_off = <u>8265.95</u> Total Man days of Activity **"M"=6981.00** *Note **As per FIELD DATA the Man-days of** M1 = 4384 is increased by 30% (ie) **5699** M8 = 336 is increased by 50% (ie) **504**

3.4.4 **Activity "S" – Site – specific:**

Activities	Man Days
Tunnel Maintenance	0
Bridge substructure Maintenance	260.71
Extra for very sharp curve	1076.63
Look out man	1004.02
Long girder Maintenance	0
Extremely bad formation	0
Fog signal	0
Filth removal	0
Security patrolling	0
Total	**2341.36**

3.5 **The Total Man Days Calculated / Year:**

'T' Activity	6757.38
'R' Activity	7963.83
'M' Activity	6981.00
'S' Activity	2341.36
Total	**24043.57**
24043.57 ÷_294 = 81.78	**82 Men**

"The total evaluated TRMS of 24043.57 is equal to 82 Track Men"

(Detailed calculation sheet enclosed as **Annexure – II)**

3.6 Railway Board has authorized General Managers to make available man power through department as well as outsourcing also according to the needs in all assets maintenance vide Railway Board letter No.2011/CEDO/Southern Railway/15/O/Vol.I dated 16.12.2013.

On this view, GM/S.Rly has approved the following track maintenance activities for outsourcing (CTE's letter No.W.315/94/G.Men Rational Formula/Vol.III (pt) dated 17.01.2014). Copy of the letter is enclosed as **Annexure – III.**

Activities :

T_2 - For Tie tamper
a) Pre tamping operations
b) Along with tamper
c) Post tamping operations

T_3 - Casual Renewal of
a) Rails
b) Sleepers
c) Fasteners along with re-gauging

T_4 - Repair Welding

R_4 - Overhauling of LC gates

R_{10} - Pre-monsoon attention such as clearing of drains and waterways, cess Repair, deweeding of track and attention to cuttings & Trolley refuges

The above activities, if outsourced, will result in saving of **17 men**.

Considering the workload activities,

(Calculation sheet enclosed as **Annexure - IV**).

After deducting the outsourcing equivalent man power from total TRMS calculation is

T + R + M + S	=	82 men (Refer Para No. 3.5)
Outsourcing Identified	=	17 men
Total trackmen requirement	=	82 - 17 = 65 men

Total Trackmen requirement =65

(Track Maintainer + Gate Keeper + Store watchman)

3.7 Evaluation of Trolley man:

There are two push type Trolleys are available in SSE/P.Way (West)/PTJ for the scheduled and other inspections.

The total running kilometer of this section is 47.79 in three routes which are manned by 3 supervisors. The average monthly inspection conducted by each supervisor is 50 kms by the push trolleys.

3.7.1 TROLLEY INSPECTION SCHEDULE.

SSE/P.Way (in charge) – once in a month (CS No.132 Para 124(a), Dt.: 08.04.2013)
SSE/JE (section in charge) – once in a fortnight (CS No.132 Para 139, Dt.: 08.04.2012)
The section supervisor normally took two days to inspect the section in trollies in the fortnight period.

For the movements of a push trolley two person are required in which, two will physically push the trolley and the other two is sitting and watching back side of the movement on safety view. As per the movement record at a day maximum of two trollies will be engaged, also the maximum no. of movement in a month is 10. On need basis three batches are permitted for this section.

Total no. of trolley men required = 12 men.

3.8 Evaluation of Supervisors:

On need base, the supervisor requirement is as follows:

1. Over all in charge	=	1
2. Section supervisors	=	2
3. Reserve	=	1
Total requirement	**=**	**4 supervisors**

3.9 Evaluation of ministerial staff:

At present there is only one Ministerial staff look after the Staff personal matters and other allied works which are permitted to continue by the study team.

On need base, the ministerial staff requirement = 1

3.10 Requirement of other Technicians:

Sl. No.	Category	Requirement	Remarks
1	Blacksmith	1	As per the yardstick for 10 LC, 2 B.S required
2	Blacksmith Helper	1	
3	Welder (AT)	1	One per section supervisor
4	Helper welder	1	

On need base, the Artizans requirement = 4

3.11 THE COMPOSITE STAFF REQUIREMENT OF SSE/P,WAY(WEST)/PTJ

Men required as per TRMS	65
Trolley man	12
6 Mates & 9 Key man	15
LR 12.5% for 92 Men	12
Artizans	4
Ministerial Staff	1
Supervisor	4
Total	**113**

Sanction Vs Requirement:

Sanction	Actual	Requirement	Surplus
138	100	113	25

SUMMARY OF RECOMMENDATION

The following 25 vacant posts are found excess to the requirement and the same may be surrendered and credited to the vacancy bank.

Sl.No	Category	GP (Rs)	Vacant
1	SSE/P.Way	4600	1
2	JE/P.Way	4200	2
3	Tech Black Smith Gr.II	2400	1
4	Tech Black Smith Gr.III	1900	1
5	Tech Brick layer Gr.I	2800	1
6	Tech Carpenter Gr.III	1900	1
7	Helper Carpenter	1800	1
8	Track Maintainer Gr.I	2800	1
9	Track Maintainer Gr.II	2400	1
10	Track Maintainer Gr.III	1900	3
11	Track Maintainer Gr.IV	1800	12
	Total		**25**

RECOMMENDATION 1:

Based on the rational formula it is found that 08 post (Sl. No 1 to 7) is surplus to the Requirement, which may be surrendered and credited to the Vacancy bank. **No. of Posts: 08**

RECOMMENDATION 2:

As per the CTE/MAS standing instruction, some maintenance activities are to be outsourced which is equal to 17 posts of Track Maintainers (Sl. No 8 to 11), these 17 posts of Track Maintainers may be surrendered and credited to the Vacancy bank, after the implementation of outsourcing. **No. of Posts: 17**

Total No of Posts : 25

CHAPTER - IV

4.0 PLANNING BRANCH'S REMARKS ON CO'S VIEWS:

4.1 The draft report has been handed over to Sr.ADEN/PGT (Co-ordinating Officer) on 08.06.2018. The views of the Co-ordinating Officer's was received vide letter No. C.I, Dt. 18.07.2018 and the remarks of the Planning Branch on the Co-ordinating Officer's views are given below. The copy of Co-ordinating officer's remark is placed as **Annexure - V**

4.2 **Co-ordinating Officer's Remarks :**

1. The No.of monsoon patrolling beats have to be corrected.

Planning Branch Remarks :

The number of monsoon patrolling beats was previously approached as 18. As per the division's remarks, the number is corrected to 22, which requires an addition of 4 men, which is allowed in the total requirement.

Additional man power allowed for monsoon patrolling = 4 men

4.3 **Co-ordinating Officer's Remarks :**

2. Lubrication of ERC's are to be done by gang only, not by keyman.

Planning Branch Remarks : **Agreed to.**

It was already described in the para No.2.19 (Sl.No.5) – Actual Gang Performance.

As per MCNTM formula lubrication activity is group under "R" activity (Not affected by Traffic density) which was already covered in the man power arrival.

4.4 **Co-ordinating Officer's Remarks :**

3. The sanctioned strength of the section has to be verified with personnel department.

Planning Branch Remarks :

The study was commenced on June 2017. DPO/PGT statement for the unit was collected during September 2017 which was taken as datum and identified the surplus posts as 25. However, the present sanctioned strength of the unit is taken into consideration in arriving the surplus posts for the release of this work study.

Total requirement as per Para No. 3.11 = 113 men

Allowed additional man power for Monsoon Patrolling as per Division Remarks = 4 men.

Net requirement = **117.**

Sanction Vs Requirement:

Sanction	Actual	Requirement	Surplus
138	100	117	21

REVISED RECOMMENDATIONS ;

The following 21 vacant posts are found excess to the requirement and the same may be surrendered and credited to the vacancy bank.

Sl.No	Category	GP (Rs)	Vacant
1	SSE/P.Way	4600	1
2	JE/P.Way	4200	2
3	Tech Black Smith Gr.II	2400	1
4	Tech Black Smith Gr.III	1900	1
5	Tech Brick layer Gr.I	2800	1
6	Tech Carpenter Gr.III	1900	1
7	Helper Carpenter	1800	1
8	Track Maintainer Gr.III	1900	1
9	Track Maintainer Gr.IV	1800	12
	Total		**21**

RECOMMENDATION 1:

Based on the rational formula it is found that 08 post (Sl. No 1 to 7) is surplus to the Requirement, which may be surrendered and credited to the Vacancy bank. (**No. of Posts: 08)**

RECOMMENDATION 2:

As per the CTE/MAS standing instruction, some maintenance activities are to be outsourced which is equal to 13 posts of Track Maintainers (Sl. No 8 & 9), these 13 posts of Track Maintainers may be surrendered and credited to the Vacancy bank, after the implementation of outsourcing. **(No. of Posts: 13)**

CHAPTER – V

5.0 **FINANCIAL S**AV**INGS:**

5.1 If the recommendations made in the study report are implemented, the annual Recurring financial savings will be as under:

Sl. No.	**Category**	**Grade pay (Rs.)**	**No. of posts**	**Mean Pay (Rs.)**	**Annual Financial savings (Rs.)**
1	SSE/P.Way	4600	1	100206	1202472
2	JE/P.Way	4200	2	79073	1897752
3	Tech Black Smith Gr.II	2400	1	57031	684372
4	Tech Black Smith Gr.III	1900	1	44459	533508
5	Tech Brick layer Gr.I	2800	1	65003	780036
6	Tech Carpenter Gr.III	1900	1	44459	533508
7	Helper Carpenter	1800	1	40072	480864
8	Track Maintainer Gr.III	1900	1	44459	533508
9	Track Maintainer Gr.IV	1800	12	40072	5770368
Total			**21**		**12416388**

*****

ANNEXURE-I

' S.A.V.E. ' STATEMENT OF SSE / P.WAY (West)/PTJ

S.R.

दक्षिण रेलवेSouthern/ Railway

मंडल कार्यालय /Divisional Office
कार्मिक शाखा/ Personnel Branch
पालक्काड /Palghat
दिनांक Date: 22.09.2017

No. J/P.483/IX/Misc./Vol.I

Dy.Chief Planning Officer/MAS

Sub: Vacancy position of SSE/PW/W/PTJ
Ref: Letter No. G.275/WSSR-51178/2017-18 dt. 21-09-17

With reference to the letter cited, the Sanction, Actual, Vacancy & Excess postion of staff of SSE/PW/W/O/PTJ is furnished herewith for information, please.

Category	GP	SAN	ACT	VAC	EXCESS
OS	4200	1	0	1	
Jr.CLEK	1900	0	1		1
SSE/PWAY	4600	4	3	1	
JE/PW	4200	3	1	2	
Sr.Tech/B.Smith	4200	1	0	1	
Tech.I/B./Smith	2800	1	0	1	
Tech.II/B/Smith	2400	1	0	1	
Tech.III/B/Smith	1900	1	1	0	
Tech.I/B./Layer	2800	1	0	1	
Tech.III/Carpenter	1900	1	0	1	
Helper/Carpenter	1800	1	0	1	
Helper/Painter	1800	0	1		1
Tech.II/Welder	2400	0	1		1
Tech.III/Welder	1900	1	0	1	
Helper/Welder	1800	1	0	1	
TrackMaintainer-I	2800	7	6	1	
TrackMaintainer-II	2400	15	14	1	
TrackMaintainer-III	1900	27	24	3	
TrackMaintainer-IV	1800	72	48	24	
TOTAL		138	100	41	3

(के.के.अरविन्दाक्षन/K.K.Aravindakshan)
सकाधि/ इन्जी/APO/E
कृते वरिपृठ मंडल कार्मिक अधिकारी/पघट
For Sr. Divl. Personnel Officer/PGT

ANNEXURE-II

HELP

MANPOWER

MANDAYS T,R

DIV : PALGHAT AS ON: 1-Apr-17

Senior Section Engineer Unit : W/PTJ

Segment No.	Gauge	Segment Name	GMT	Maintenance Type	Track km of Segment	Length of LWR in the Segment	Composite Factor 1+A+B+C	Mandays Required for T Activities	Mandays Required for R Activities	Mandays for T+R
A	B	C	D	E	F	G	H	I	J	K
1	BG	DN	19.6	MECHANISED	24.12	22.14	1.0762	3248.05	3835.08	7083.13
2	BG	UP	18.4	MECHANISED	25.97	23.21	1.1057	3509.33	4128.75	7638.09
3	0	0	0.0	0	0.00	0.00	1.0000	0.00	0.00	0.00
4	0	0	0.0	0	0.00	0.00	1.0000	0.00	0.00	0.00
5		0	0.0	0	0.00		1.0000	0.00	0.00	0.00
6	0	0	0.0	0	0.00	0.00	1.0000	0.00	0.00	0.00
7	0	0	0.0	0	0.00	0.00	1.0000	0.00	0.00	0.00
8	0	0	0.0	0	0.00	0.00	1.0000	0.00	0.00	0.00
9	0	0	0.0	0	0.00	0.00	1.0000	0.00	0.00	0.00
10	0	0	0.0	0	0.00	0.00	1.0000	0.00	0.00	0.00
11	0	0	0.0	0	0.00	0.00	1.0000	0.00	0.00	0.00
12	0	0	0.0	0	0.00	0.00	1.0000	0.00	0.00	0.00
13	0	0	0.0	0	0.00	0.00	1.0000	0.00	0.00	0.00
14	0	0	0.0	0	0.00	0.00	1.0000	0.00	0.00	0.00
15	0	0	0.0	0	0.00	0.00	1.0000	0.00	0.00	0.00
16		0	0.0	0	0.00		1.0000	0.00	0.00	0.00
17		0	0.0	0	0.00		1.0000	0.00	0.00	0.00
18		0	0.0	0	0.00		1.0000	0.00	0.00	0.00
19		0	0.0	0	0.00		1.0000	0.00	0.00	0.00
20		0	0.0	0	0.00		1.0000	0.00	0.00	0.00
Total					50.087	45.36		6757.38	11066.00	17823.38

Summary Mandays T,R	Activity T	Activity R	Total Mandays
BG	8141.95 Mandays*	11066.00 Mandays	19207.95
MG	0.00 Mandays	0.00 Mandays	0.00
NG	0.00 Mandays	0.00 Mandays	0.00
Total	8141.95 Mandays	11066.00 Mandays	19207.95

v2006.jun

ANNEXURE-II

HELP

MANPOWER

MANDAYS M

DIV : PALGHAT

AS ON: 1-Apr-17

Senior Section Engineer Unit Name : W/PTJ

Gauge	Monsoon Patrolling		Hot/Cold Weather Patrolling of LWR					Vulnerable Locations		Gate Keeping			Rest Giver for Keymen		Waterman		Store Watchman		Total Mandays Required For M Activities
	No. of Beats	Mandays Required	Total Length of LWR	Length of LWR Requiring Hot Weather Patrolling	Length of LWR Requiring Cold Weather Patrolling	Mandays Required for Hot Weather Patrolling	Mandays Required for Cold Weather Patrolling	No of Locations	Mandays	No of Engg Manned Gate	Sanctioned Cadre of Gatemen	Mandays Required	No of Keymen	Mandays Required	No of Gangs	Mandays Required	No of Site Stores	Mandays Required	
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
BG	18	8160.00	45.36	45.36	45.36	1360.68	544.27	1	450.00	1	2	142.00	9	639.00	6	1764.00	2	2190.00	15249.95
MG	0	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0		0.00	0	0.00	0	0.00		0.00	0.00
NG	0	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0		0.00	0	0.00	0	0.00		0.00	0.00
TOTAL	18	8160.00	45.36	45.36	45.36	1360.68	544.27	1	450.00	1	2	142.00	9	639.00	6	1764.00	2	2190.00	15249.95

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HELP

MANPOWER

MANDAYS S

DIV: PALGHAT

AS ON: 1-Apr-17

Senior Section Engineer Unit Name : W/PTJ

Sr. No.	Gauge	Tunnel Maintenance		Bridge Substructure Maintenance			Long Girder Bridge Maintenance			Extra for very Sharp Curves		Extremely Bad Formation		Lookout Man Mandays Required	Fog Signal Man				Filth Removal		Security Patrolling				Mandays Required For 'S' Activities
		Total Length in km	Mandays Required	No. of Bridges	Lineal Water Way in meters	Mandays Required	No. of Long Girder Bridges	Lineal Water Way of Long Girder Bridges	Mandays Required	Track Km on > 3deg(BG) >6deg(MG)	Mandays Required	Length of Bad Formation	Mandays Required		No of Mandays Required Yr(-3)	No of Mandays Required Yr(-2)	No of Mandays Required Yr(-1)	Mandays Required	No of Gangs working in Affected Area	Mandays Required	No of Mandays Required Yr(-3)	No of Mandays Required Yr(-2)	No of Mandays Required Yr(-1)	Mandays Required	
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	BG	0.00	0.00	73	490.01	260.71	0	0.00	0.00	3.66	1076.63	0.00	0.00	1004.02				0.00	0	0.00				0.00	2341.36
2	MG	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00	0	0.00				0.00	0.00
3	NG	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.00	0	0.00				0.00	0.00
Total		0.00	0.00	73	490.01	260.71	0	0.00	0.00	3.66	1076.63	0.00	0.00	1004.02	0	0	0	0.00	0	0.00	0	0	0	0.00	2341.36

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HELP

MANPOWER

GANG STRENGTH

DIV: PALGHAT

AS ON : 1-Apr-17

Senior Section Engineer Unit Name: W/PTJ

Sr. No.	Gauge	Total Track KM	Mandays T	Mandays R	Mandays M	Mandays S	Total Mandays T+R+M+S	No of Mates & Keyman	Leave Reserve	Calculated Gang Strength	Sanctioned Gang Strength Excluding Mate, Keymen and DC Gangmen	Sanctioned Decasualised Gangmen Posts	Excess(+) Shortage(-)	Available Manpower
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	BG	50.09	8141.95	11066.00	15249.95	2341.36	36799.26	15	18	143	101		-42	
2	MG	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0			0	
3	NG	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0			0	
Total	0	50.09	8141.95	11066.00	15249.95	2341.36	36799.26	15	18	143	101	0	-42	0

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ANNEXURE -III

SOUTHERN RAILWAY

Headquarters Office,
Works Branch,
Chennai – 600 003.

No.W.315/94/G.Men Rational Formula/Vol.III (pt) **Dt: 17 /01/2014.**

Sr.DEN/Co-ordn./MAS SA PGT TVC TPJ & MDU

Sub: Organising the resources for Track Maintenance Activities on Indian Railways – "Standing Instructions"- reg.

Ref: Railway Board's letter No.2011/CEDO/SR/15/O/Vol.I dt.16.12.2013.

***

Railway Board has authorized General Managers to make available required manpower through departmental staff as well as through outsourcing as per needs, for the maintenance of all assets including track – vide – Board's letter above.

Copy of Railway Board's letter under reference regarding Organising the resources for Track Maintenance Activities on Indian Railways is enclosed. (in 3 sheets)

Railway Board desires that regular exercise for working out the required strength of Trackmen as per MCNTM formula, for maintenance of all running sections on the Railway, should be carried out by Zonal Railways.

Divisions are hereby advised to calculate the SE/P.Way section-wise requirement of Trackmen needed for Safety Related Track Works as per Railway Board format and submit the same to this office jointly signed by Sr.DEN/Co-ord, SR.DPO and Sr.DFM.

The following activities are approved by General Manager for outsourcing:

Activity - T2: For tie tamper working

a. Pretamping operations
b. Along with tamper
c. Post tamping operations

Activity - T3: Casual Renewal of

a. Rails
b. Sleepers Fasteners (along with regauging) Activity - T4: Repair Welding

Acitivity - R4: Overhauling of level crossings

Activity - R10 Pre monsoon attention, such as clearing of drains and waterways, cess repairs, deweeding of track and attention to cutting and trolley refuges. (From Table-P of MCNTM Report Vo.II page 76)

....2.

ANNEXURE-III

- 2 -

A sample calculation for the above works under the column "d" of Board's format (Total requirement of identified for Outsourcing) is also enclosed. The calculations are based on the worksheet "Manpower TR"- from Manpower xl work book of MCNTM Formula.

SE/P.way section-wise requirement as per Board's format jointly signed as mentioned above may be submitted to this office at the earliest so as to process further.'

Note for MDU division: MDU division is yet to submit the SE/P.WaySection-wise requirement of Trackmen as per MCNTM Formula for the year ending 31/3/2013 copied on a CD. This may be sent by return.

Encl:1. Rly Bd. Letter in 3 sheets.
2. Sample calculation for outsourcing activities.

13/01/2014
(K.K.SHARMA)
Chief Track Engineer

O/C

प्रेषण अनुमोदित
दिनांक.....
लिपिक का हस्ताक्षर.....
प्रधान कार्यालय (संकर्म शाखा)
दक्षिण रेलवे, चेन्नै-3.

DESPATCHED
Date 20/1/14
Signature of the Clerk
Head Quarters Office (Works Branch)
Southern Railway, Chennai-3.

ANNEXURE- IV

	Senior Section Engineer Unit :		**P-Way (West)/PTJ/PGT**									
	Activities affected by Traffic Density									**Unaffected by Traffic Density**		
	For Tie tamping working			**Casual Renewals**			**Repair welding**	**TOTAL**		**Opening, examining & Overhauling of LCs**	**Pre-monsoon attention**	**TOTAL**
	Pretamping operatiions	**Along with tamper**	**Post tamping operations**	**Rails**	**Track sleepers**	**Fasteners**						
No.of mandays reqd	**10**	**3**	**14**	**6**	**6**	**10**	**12**	**61**		**13**	**18**	**31**
	239.50	71.85	335.31	143.70	143.70	239.50	287.40	1460.97		294.06	407.16	701.22
	261.36	78.41	365.90	156.81	156.81	261.36	313.63	1594.28		316.77	438.61	755.38
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
				0	0	0	0	0		0	0	0
				0	0	0	0	0		0	0	0
				0	0	0	0	0		0	0	0
				0	0	0	0	0		0	0	0
				0	0	0	0	0		0	0	0
				0	0	0	0	0				
Total mandays reqd.	**500.86**	**150.26**	**701.21**	**300.52**	**300.52**	**500.86**	**601.03**	**3055.25**		**610.83**	**845.77**	**1456.60**
No.of working days in a year	294	294	294	294	294	294	294	294		294	294	294
No.of Trackmen	**1.70**	**0.51**	**2.39**	**1.02**	**1.02**	**1.70**	**2.04**	**10.39**		**2.08**	**2.88**	**4.95**
LR @ 12.50%	0.21	0.06	0.30	0.13	0.13	0.21	0.26	1.30		0.26	0.36	0.62
Total men reqd	**1.92**	**0.57**	**2.68**	**1.15**	**1.15**	**1.92**	**2.30**	**11.69**		**2.34**	**3.24**	**5.57**
	Note : No. Of working days in a year = 294											
		No. of men to be outsourced:					**15.35**					
			LR12.5%:				**1.92**					
						Total:	**17.26**	Men				

ANNEXURE- V

SOUTHERN RAILWAY

No.C.1

Office of the-
Asst.Divisional Engineer
Palakkad- 678 002
Date: 18.07.2018

A.Dasan Michael Pushparaj,

Chief Planning Inspector/HQ,

Sub: Work study conducted to review the staff strength at SSE/PW/West/PTJ-PGT Division.

Ref: Letter No.G.275/WSSR-511718/2018-19.

*****

The following observations are made after perusal of the draft work study report pertaining to SSE/PW/West/PTJ section.

1.The No. of monsoon patrolling beats have to be corrected.

2.Lubrication of ERC's are to be done by gang only not by keyman.

3. The sanctioned strength of the section has to be verified with personnel department.

18/7/18

Loganayaki.T
Sr.Asst.Divisional Engineer,
PGT subdivision