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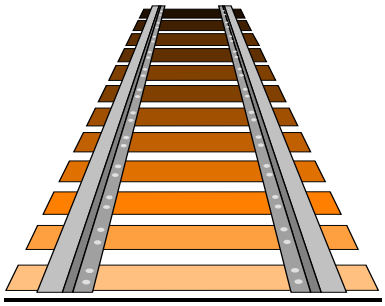

WORK STUDY TO REVIEW THE STAFF STRENGTH OF SSE / P.WAY / SRR PGT - DIVISION

SOUTHERN RAILWAY

PLANNING BRANCH

G. 275 / WSSR-751920 / 2019-20

WORK STUDY TO REVIEW THE STAFF STRENGTH OF SSE / P.WAY / SRR PGT - DIVISION

STUDIED BY

WORK STUDY TEAM
OF
PLANNING BRANCH

AUGUST - 2020

(i)

I N D E X

(i)
ACKNOWLEDGEMENT

The study team gratefully acknowledges the valuable guidance and co-operation given by ADRM, Sr.DEN/Co.ord & ADEN/SRR for successful completion of the study.

The work study team thankful to SSE/P.Way/SRR (Co-ordinating Supervisor), other supervisors and staff are giving data in completing the study.

Again, the study team thankful to **ADEN/SRR & SSE/P.Way/SRR** the Co-ordinating Officer and Co-ordinating Supervisor, who has rendered great co-operation in analyzing the data and thoroughly discussed the pros and corns, for proper completion of the study in time.

(ii)
AUTHORITY

Annual programme of work studies, approved by SDGM for the year 2019-20.

(iii)
TERMS OF REFERENCE

Work study to review the staff strength of SSE/P.Way/SRR in the light of TRMS formula by CMCNTM.

(iv)
METHODOLOGY

1) Collection of data
2) Observation of present system of working
3) Interaction with Co-ordinating Officer, Co-ordinating Supervisor and other supervisors & staff.
4) Analysing the data collected and assessment of manpower requirement based on the TRMS Rational formula of CMCNTM and need base for ground situations.

(iv)

Summary of Recommendation

The following 10 vacant posts of Track Maintainer – IV in GP Rs.1800 are found excess to the requirement and the same may be surrendered and credited to the vacancy bank.

Total : 10 Vacant Posts

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CHAPTER – I

1.0 INTRODUCTION

1.1 Indian Railways a part and parcel of every Indian's life, which cannot imagine the India without Railways, because this system is the backbone of Indian Economy and one of the Pillars of our Nation.

1.2 The Hon'ble Prime Minister of India described as "Railways perhaps along with the Post Offices are the only two Institutions in India with deep Network which if tapped judiciously can create substantial improvement in the Inter-Land. Railways were always considered only on a transport in our Country, we want to see Railways on the back bone of India's Economy Development".

1.3 The first Rail Transport running in Steam Engine started on 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.

1.4 In Indian soil, the First 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.

1.5 The second Train of the India connected between Howrah and Hubli on 15th August 1854.

1.6 The Third Train service made between Vysarpadi and Walajah Road opened on 1st July 1856. At present this section is under Southern Railway.

1.7 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.

1.8 Among the 17 zones of Indian Railways, 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, Andhra Pradesh and Pudhucherry to the Route Kilometerage of 5075.

1.9 Among the various branches 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.

1.10 The present modern technology in permanent way, mostly used 52/60 kg rails (rarely used 90R 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 works are outsourced in P.Way like laying, relaying and some of scheduled maintenance works, which are reduced the work load of Railway men. Hence it is imperative to make scrutiny of the man power requirement for track maintenance.

1.11 **Some important technical Points about Track:**

Engineering (PW) Branch: In Railways, Engineering department maintains the fundamental basic structure i.e., Permanent Way. It is the major activity of the Engineering Branch which is entrusted with the periodical maintenance of the Track, Bridges, Works, Level crossing gates and related areas.

A well maintained track is very essential for safety, speed and efficient operation of trains. Continuous monitoring and inspection on daily basis is warranted in ensuring a reliable permanent way.

1.12 **Permanent way** is the rail-road on which trains run. It basically consists of two parallel rails having a specified distance in between and fastened to sleepers, which are embedded in a layer or ballast of specific thickness spread over the formation.

1.13 The main components of permanent way or track are rails, sleepers, ballast, formation and fittings & fastenings. The basic function to perform of each components are one by one below:

- ✓ **Rails** act as girders to transmit the wheel loads of trains to the sleepers.

- ✓ **Sleeper** holds the rails in proper position and provide the correct gauge with the help of fittings and fastenings and transfer the load to the ballast.
- ✓ **Ballast** is placed on prepared ground known as formation, which gives a uniform level surface, provide drainage and transfers the load to larger area of formation.
- ✓ **Formation** gives a surface, where the ballast rests and transmits the total load of the track and that of the trains moving on it to the ground below.

1.14 **Characteristics of a good Track:**

(i) Sound condition of rails, sleepers and fittings.

(ii) All fittings are available and properly tightened.

(iii) Adequate good quality and clean ballast under the sleepers and also around it with full shoulder width.

(iv) Wear in rails, horizontal or vertical should be within limits.

(v) Alignment of rails should be perfect, kinks or other defects should be within permissible limits.

(vi) Formation is stable with good drainage and slopes well protected by grass or stones pitching and

(vii) Longitudinal and cross levels should be in good condition and within allowable limits.

1.15 **Annual programme of track maintenanace**

The following programme is normally followed annually on Indian Railways for systematic maintenance of track as per IRPWM.

Period	Work
1. Post-monsoon attention. For about six months after end of monsoon.	a) Attention to run down length in the entire gang beat to restore section to good shape.
	b) One cycle of through packing from one end of the gang beat to the other end including overhauling of 1/3 to ¼ of the beat.
	c) Attention during the monsoon; For about 4 months cleaning of side drains, catch water drains, repairs to bank and picking up of slacks.

2. Pre-monsoon attention: for about 2 months prior to break monsoon.	a) Attention to track as required; picking up of slacks.
	b) Attention to side drains, catch water drains and water ways.
3. Lubrication of rail joints, gap adjustment and curve re-alignment	Patrolling of track during heavy rains.

1.16 **Need for Mechanised Maintenance:**

The mechanised maintenance of track implies the deployment of track machines for day to day track maintenance works which are otherwise done by manual labour. The need for mechanised maintenance of track is felt due to the following reasons.

(i) With the introduction of concrete sleepers, the track structure has become very heavy therefore, it becomes difficult for the gangmen to lift the track.

(ii) There are chances of breakage of concrete sleepers if the same are hit by gangmen using the beaters.

(iii) Manual packing is very hard and strenuous job. It is not possible with manual maintenance to get good quality track which is essential for high speed operations.

1.17 **Inspection of track:**

Purpose of Inspection:

With the running trains, there is continuous degradation of track due to vibrations. The packing of sleeper gets disturbed, the fastenings become loose or some time come out of sleepers and there is general wear and tear in rails and sleepers.

The purpose of inspection of track is to detect various flaws such as looseness of packing, loose or missing fittings, wear in rail, disturbance in cross levels and versines in curves, deficiency of ballast, unusual movements in long welded rails, inadequate or excessive gaps at joints, defects at level crossings such as inadequate gap at check rail and condition of track and bridges in general. In IRPWM is explained in detailed inspection schedules for each Railway officials, supervisors and maintenance staff.

1.18 **Methods of Inspections:**

Various methods adopted for inspection are as under:

(a) By Push Trolley/ Motor Trolley

(b) By Engine of a fast train

(c) By rear most vehicle of a train

(d) By Track recording Car and

(e) By Oscillograph Car and OMS instrument

(a) By Push Trolley / Motor Trolley:

This is the age old method of inspecting the track visually by SSE/JE and ADEN. All visual defects of track such as loose packing, missing or loose fittings, broken sleepers, deficiency of ballast are noted during the inspection.

(b) By Engine of a fast Trains:

This inspection gives an idea of running quality of track. This inspecting officer keeps standings in the engine and records all jerks, vertical or lateral which are mainly due to loose packing, uneven cross level or misalignment.

(c) **By Rearmost Vehicle of a train:**

By travelling at the rear end of the last coach in running trains, one gets an idea of the running quality of track just as travelling in an engine. Main difference is that lateral alignment defects and cross level defects get amplified in the rear most coach.

(d) By Amsler Car:

Amsler car is an instrumented car which records defects like misalignment, gauge, vertical unevenness of both the rails, twist i.e., difference in cross levels and super elevation at curves. The recording is done in a continuous form and defects are shown as peaks. By taking note of defects and kilometerage, the defects can be attended later on.

1.19 **Track Recording cum Research Car**

By Osillograph Car & OMS Instrument:

Oscillograph car records accelerations in vertical and lateral direction when the train is running at full speed. The probes are kept at pre-determined locations which carry the acceleration through electric cables to the recording machines. This method of recording gives a very fair idea of various defects generated by rail wheel interaction due to track defects. OMS is the short name of

Oscillation Monitoring System, which is portable machine which records both vertical and lateral accelerations.

1.20 **Types of Patrolling :**

- ✓ ***Keyman's Daily Patrol*** – Every portion of the permanent way shall be inspected daily on foot by the keyman of the beat in which the portion of the track falls.
- ✓ ***Gang Patrol during Abnormal Rainfall or Storm*** – In the event of abnormal rainfall or storm during day or night, the Mate should, on his own initiative organised patrolling over the length affected, independently of other patrolling, if any being done.
- ✓ ***Night Patrolling during Monsoon*** – During the monsoon, certain section of the railway line, as may be specified, shall be patrolled to detect damage by flood, such as breaches, settlements, slips and scours and immediate action taken to protect trains, when so warranted.
- ✓ ***Security Patrolling*** during Civil Disturbance and on Special occasions
- ✓ ***Hot weather Patrolling*** for LWR/CWR – Hot weather patrol is carried out when the rail temperature reaches td + 20 degree or above. The patrolling should be done in accordance with the provisions of Manual of Long Welded Rails.
- ✓ ***Cold weather Patrolling*** for LWR/CWR – Cold weather patrol is carried out when the rail temperature reaches td -20 degree or below. The patrolling should be done in accordance with the provisions of Manual of Long Welded Rails.
- ✓ ***Watchmen at vulnerable locations*** in addition to patrolmen, stationary watchmen are posted at known or likely locations of danger or trouble.

1.21 **Trent of Track maintenance system (TMS) :**

The modern technologies have taken the track maintaining techniques from the era of pick axe and shovels to the era of mechanised track maintenance. 60 kg rails are the norm of the day. The equipments for testing the track have become sophisticated so as to trace all sorts of failures of the track. The interconnections with S&T branch and TRD branch is a new development to be considered during track maintenance. The computerization and TMS, the

ubiquitous use of various hues of track machines, testing techniques etc., has reduced the manual labour and hence man power required for maintenance. Many of the maintenance activities are now outsourced or are proposed for it.

1.22 So it has become imperative to have a hard look at the man power requirement for the following reasons.

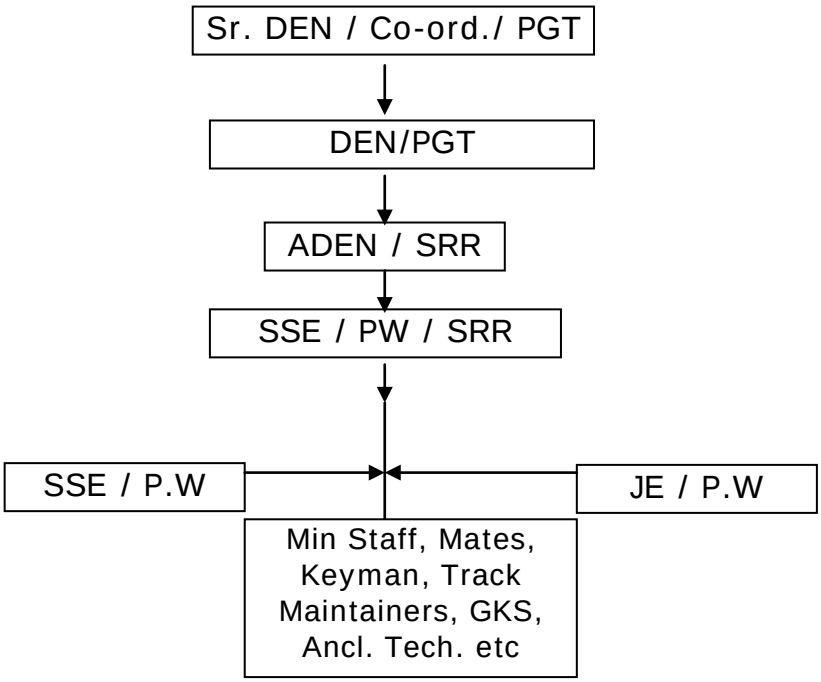
- To tailor in the cost of mechanical maintenance to improve productivity.
- To create required man power for mechanised operations by matching surrender of trackmen.
- To improve the overall financial position of the Railways and to evolve standardized cost norms.

CHAPTER – II

2.0 PRESENT SCENARIO:

2.1 Organization:

Engineering Branch of PGT – Division is working under the control of Sr. DEN /Co-ord/PGT in the Division level. This P. Way section is managed by SSE/P.Way/SRR with the general in charge of ADEN/SRR through the direct control of DEN/PGT.



2.2 The following stations and staff distribution are coming under the jurisdiction of SSE/P.Way/SRR:

Brief out line of Jurisdiction and Units/Gangs distribution:

Gang No.	Jurisdiction			Staff deputed for each gang			
	From (Km)	To (Km)	Actual (Km)	Mate	Keyman	Track Maintainer	Total
1/OTP – UP&DN	566.536	569.950	3.414	1	1	4	6
2/MNUR	569.950	572.930	2.98	1	1	7	9
3/MNUR	572.930	576.150	3.22	1	1	6	8
4/SRR – UP & DN	576.150	577.200	1.05	1	1	6	8
4/SRR – UP & DN	0/0	1/830					
4/SRR – UP & DN	1.200	1.850	0.650				
4/SRR – SL	577.200	578.150	0.95				

4/SRR – Short link	0.500	1.200	0.700				
5/SRR – UP & DN	578.150	578.900	0.75	1	1	9	11
5/SRR – Yard	578.670	578.900	0.23				
6/SRR – UP & DN	578.900	583.200	4.3	1	2	10	13
6/SRR	578.900	579.470	0.57				
7/KRKD – UP & DN	583.200	589.400	6.2	1	2	11	14
8/PTB –UP & DN	589.400	596.100	6.7	0	2	17	19
9/PUM – UP & DN	596.100	602.400	6.3	1	2	16	19
10/KTU – UP & DN	602.400	609.210	6.81	1	2	8	11
TOTAL				**9**	**15**	**94**	**118**

2.3 **Duty Hours :**

The normal working hours of the Artisans & Gang staff is given below.

Artisans and Units staff:

Morning : 07.00 to 12.00 hours

Evening : 14.30 to 17.30 hours

Sunday is rest.

2.4 **Track Structure**:

The entire length is an absolute block system of double line section, both traction and diesel operation. The track structure is 52/60 KG, PSC with sleeper density of M + 7 sleepers with long/continuous welded rails. The yard, stabling, station lines are laid with 52 KG or may use 72DH/90R, m+4, PSC, SWP. The Rail structure is properly maintained by Track machines and some of maintenance activities are being carried out by manual also. Generally, deep screening of Ballast for the whole section was carried out by Track machines periodically.

2.5 **Details of section**:

2.5.1 **Number of Level Crossing Gates:**

Engineering LC	Traffic LC	Total
3	1	4

There are 4 LC gates available in this section, in which 3 LC gates (2 Spl.Class and 1 B-1) manned by engineering staff and 1 LC gates manned by traffic staff.

2.6 **The duties of Supervisors and Technical staff in PW section are:**

i. 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 crossing, 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).

ii. 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.

iii. P.Way Mistry /Track mate: [prescribed in para146-148 of Part-C & Part-D 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

iv. Duties of Key-man: [prescribed in para167 -171 of Part-D 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.

2.7 **The present staff deployment of SSE/P.Way/SRR unit :**

As per Sr. DPO/PGT, the book of sanction of the Unit is 175 and the actual is 161 as on Scale Check Statement of December – 2019, the vacant posts are 14. The Sr.DPO/PGT scale check Statement is placed as **Annexure –I.**

2.8 In chapter –II, Para No. 228 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

2.9 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 40-50 Km double line and 90-100 Km 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. The MMUs equipments and functions are explained in Para 228(3).

2.10 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 Conventional system of maintenance

(b) In sections where relaying has not been done,

i. Only conventional system of maintenance is being used.

2.11 Annual programmed regular track maintenance is as follow:

Sl. No.	Period	Work
1.	Post monsoon attention for	Attention to run down stretches, one

	about six months	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.

2.12 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.

2.13 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.,

2.14 The provisions of “Small Track Machines Manual”:-

The para1.3.2 says that the “Requirement of Manpower doesn’t include 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 Track maintainer/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.

2.15 **Some of the track machines and their working are Detailed below:-**

Sl. No.	**Name of the Machine**	**Work done**
1.	BCM-Ballast Cleaning Machine	Deep screening of track

2.	DUOMAT/CSM – Continuous Action Tamper	Tie Tamping LWR work
3.	DGS – Dynamic Track stabilizer	For consolidating track after works affects core stability
4.	UNIMAT/MPT	Tamping Points & crossing
5.	BRM – Ballast Regulating Machine	Boxing of track
6.	UTV – Utility Track Vehicle	Leading and stacking materials
7.	T-28 – T28 cranes – One job crane (PRC laying Machine)	For re-laying of Points & crossing
8.	PQRS	For re-laying track
9.	TRT	For CTR of track

2.16 **Actual Unit/Gang Performance** :

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

2.17 **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.

2.18 **IR adopted various efforts to standardize in the past.**

1.	Maflin formula	-	1931
2.	Lobo committee or modified Maflin 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	-	1989 (Not accepted by Rly.Board)
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)	-	13.08.1998
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 arrive the required track maintainer strength.

2.19 **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 } Primary activities
b) Activity 'R' – Not affected by Traffic Density }
c) Activity 'M' – Miscellaneous } Auxiliary activities
d) Activity 'S' – Site specific }

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 and 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 run over 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

2.20 Based on MCNTM Formula the Track Maintainers [Gang strength] requirement of SSE/P.Way/SRR 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).

One year	=	365 days.
Sundays	=	52 days.
National Holidays	=	9 days.
Casual leave	=	10 days.
Total No. of Holidays	**=**	**71 days.**
Available man days per year	=	365 – 71 = **294** days.

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

2.21 **Norms for Mandays Requirement per km (CMCNTM) :**

For Mainline BG **Machine** packed
For Activity T : (80+2.3GMT) x (1+A+B+C)
For Activity R: 159

Correction : 28 (increase in Manpower on PRC Track for shallow screening

For Mainline BG **Manually** packed
For Activity T : (223 +8.42GMT) x(1+A+B+C)
For Activity R : 168
Correction : 28 (increase in Manpower on PRC Track for shallow screening

For Mainline MG Manually packed
For Activity T : (160 +13.56GMT) x(1+A+B+C)
For Activity R : 128

For Mainline NG Manually packed
For Activity T : (105 +188GMT) x(1+A+B+C)
For Activity R : 91

2.22 **For Running Yard Lines $(RYL) & Non- Running Yard lines #(NRYL)**

Lines	**BG**		**MG**	**NG**
	Machine packed	Manually packed	Machine packed	Manually packed
RYL	177	297	228	153
NRYL	-	198	152	102

1km of manually packed NRYL is equivalent to 2/3 km of manually packed RYL, as regards mandays requirement

$: Lines on which trains are received on Signal

: Non Running yard lines, marshalling lines, sidings

2.23 M – Activity :

Sub Activity	**Norm**	**Legend**	**Authori Sation**
1. Monsoon patrolling	$\sum_{1 \text{ to } N}$ (Dxbxsxm)	N : Total No. of beat-lengths D :No. of days needing patrolling in a year in the n^{th} beat length b: No. of beats in the n^{th} beat length S : No of shifts in the n^{th} beat length m : No of men in each shift in the n^{th} beat length m = 2 in area infested with wild animals / terrorists otherwise m =1	CTE/CBE
2. Hot Weather Patrolling	30xL	L = Length of LWR requiring hot weather patrolling	
3. Cold weather	12xL	L = length of LWR requiring cold	

patrolling		weather patrolling	
4. Watching vulnerable Location	Σ (sxd) 1 to N	N : Total No. of vulnerable locations s : No. of shifts in the n^{th} location d : No. of days watching at the n^{th} location in a year	CTE/CBE
5. Gate keeping at level crossings	365 x Σ s)- 294xNg 1 to N	N : No. of Engg. Level crossings s : No. of shifts at the n^{th} LC Ng : mandays available per annum due to regular Engg. Gate keepers	-
6. Rest giving for keymen	K (365-294)	K : No. of keyman-beats	-
7. Waterman duty	N x 294	N : No. of gangs	-
8. Store –watchman duty	N x 3 x365	N : No. of stores locations in addition to Sr.DEN's HQ stores N is not to exceed 2.	Sr.DEN/Co-ord.

2.24 S- Activity :

Sub Activity	Norm	Legend	Authori-sation
1.Tunnel maintenance	1.2 x 0.29 x Σ (1 x r) 1 to N	N : No of tunnels l : Length of the n^{th} tunnel in km r : No of tracks in the n^{th} tunnel	Subject to works/ bridge staff not being available for this work
2. Bridge substructure maintenance	1.1 x 0. 29 x Σ (b x r) 1 to N	N : No. of tunnels b : Lineal water way of the n^{th} bridge, in metre r : No. of tracks in the n^{th} bridge	Subject to works/ bridge staff not being available for this work
3. Load girder maintenance	0.64 x Σ (bxr) 1 to N	N : No of bridges each having more than 150 m lineal water way b: Lineal waterway of the n^{th} bridge, in metre r : No. of tracks in the n^{th} bridge	-
4. Extra maintenance due to very sharp curves deep curves deep cutting and steep gradients	Lcx 294	Lc : Total length of curves in km sharper than 3^o on BG/6^o on MG(NG track does not need extra manpower on this reasons)	CTE
5. Maintenance of extremely bad formation	0.6 x Σ l 1 to N	N : No of locations where track needs more than 12 attentions in a year l : Length of track in the n^{th} location, in metres	-
6. Look out man duty	294 Σ v / g 1 to N	N : No of gangs v : Length of track with poor visibility in the n^{th} gang-	Sr.DEN/Co-ord.

		length g: length of the n^{th} gang-length	
7. Fog signal man duty	Mf /3	Mf : Total mandays actually utilized in the past 3 years for this duty	Sr.DEN/Co-ord.
8. Filth removal from track	f x 294	f : No of gangs having this kind of problem	Sr.DEN/Co-ord.
9. Security patrolling	Ms / 3	Ms : Total mandays actually utilized in the past 3 years for this duty.	Sr.DEN/Co-ord.
10. Watching of water level in sub-urban sections.	$\sum_{1to\ N}$ (s x d)	N: No. of locations where flooding of track occurs in rainy season, due to water entering from built-up area outside. S: No. of shifts required at the n^{th} location. d : No. of days requiring watching at the n^{th} location. Normally s = 2; d = 60 in Mumbai suburban sections.	

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.

2.25 Activities recommended for outsourcing by MCNTM/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 depts.

CHAPTER – III

3.0 CRITICAL ANALYSIS

3.1 In respect of Track maintenance, Railway Board stipulated the yardstick and guideline for man power assessment in the form of CMCNTM (Committee on Manpower and Cost Norms for Track Maintenance) 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.

3.2 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.

3.3 **The Data applied from T R M S in "MCNTM" formula of Mechanized maintenance type in BG section:**

Sl. No.	Detail	Data	Composite factor
T & R – ACTIVITIES			
1	Total Track KMs	94.267	-
2	Segment No.1	13.03 DN, GMT – 20.2	1.2000
3	Segment No.2	11.67 UP, GMT – 19.8	1.2000
4	Segment No.3	32.46 DN, GMT – 15.4	1.2000
5	Segment No.4	1.20 SL, GMT – 3.6	1.2000
6	Segment No.5	2.44 DN, GMT – 22.5	1.3000
7	Segment No.6	2.14 UP, GMT – 24.1	1.2960
8	Segment No.7	0.46 SL, GMT – 22.8	1.2000
9	Segment No.8	30.86 UP, GMT – 14.8	1.2415
M – ACTIVITY			
10	Monsoon patrolling	No of beats 10	-
11	Hot/Cold weather patrolling	Length of LWR 64.66 Kms	Required if td+25 or td-25
12	Vulnerable location	3 Locations	-
13	Gate Keepers	No of Engg. Manned gates -3	2 Special & 1- B1 class
14	Rest giver for keymen	For 10 Keymen	-
15	Waterman	No of Gangs 10	Not use in site
16	Store watchman	No of store – 1	-
S – ACTIVITY			
17	Tunnel data	Nil	-

18	Bridge structure maintenance	134 Bridges	Linear water way – 1619.95 m
19	Long Girder bridge	2 Nos.	Linear water way – 812 m
20	Extra very sharp curve	2.74 Kms	-
21	Extremely bad formation	0.32 Km.	-
22	Fog signal Man	Last 3 years average	Nil
23	Filth removal	3 – locations	-
24	Security patrolling	Last 3 years average	-

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

Activity ‘ T ’ – Affected by the Traffic Density:

T = (80 + 2.3 GMT) x (1 + A + B + C) L

Segment	GMT	Track km.	Composite Factor	Mandays
1	20.2	13.03 DN	1.2000	1977.33
2	19.8	11.67 UP	1.2000	1758.06
3	15.4	32.46 DN	1.2000	4495.83
4	3.6	1.20 SL	1.2000	127.12
5	22.5	2.44 DN	1.3000	417.91
6	24.1	2.14 UP	1.2960	375.60
7	22.8	0.46 SL	1.2000	73.10
8	14.8	30.86 UP	1.2415	4369.18
Total Mandays				13594.13

For mandays shallow screening correction for this section is 2574.62, this also included in T activities. Therefore the total mandays of T activities is making a total of (13594.13+2574.62) **16168.75**

3.5 **Activity ‘ R ’ – Unaffected by the Traffic Density:**

The Total Manpower required to carry out for “R” activities is derived as 159 per km per annum.

Segment	GMT	Track km	Multiplication Factor	Mandays
1	20.2	13.03 DN	159	2071.77
2	19.8	11.67 UP	159	1855.53
3	15.4	32.46 DN	159	5161.14
4	3.6	1.20 SL	159	190.80
5	22.5	2.44 DN	159	387.96

6	24.1	2.14 UP	159	340.26
7	22.8	0.46 SL	159	73.14
8	14.8	30.86 UP	159	4906.74
Total Mandays				**14987.34**

For the mandays required for Running Yard lines, Non Running Yard Lines & turnouts (for composite sections)

Mandays for M – Activities			
	Activity	**Mandays**	**Remarks**
1	Monsoon patrolling	4640	10 beats
2	Hot weather patrolling	1236.30	Required if td+20
3	Cold weather patrolling	494.52	Required if td-20
4	Vulnerable location	762	2 Locations
5	Gate Keepers (3 LC gates)	2920	Man power assessed, by class of manned gates
6	Rest giver for keymen	710	For 10 keymen
7	Waterman (10 gangs)	2940	Nowadays 2 litres Milton made container provided
8	Store watchman	1095	For 1 store.
	Total	**14797.82**	

Mandays for S – Activities			
	Activity	**Mandays**	**Remarks**
1	Tunnel maintenance	0	-
2	Bridge Sub Structure maintenance	844	134 bridges
3	Long Girder bridge	872.96	2
4	Extra very sharp curve	805.56	2.74 Kms
5	Extremely bad formation	0.19	0.32 Kms.
6	Look out man	594.01	-
7	Fog signal Man	0	-
8	Filth removal	882	3 Gangs
9	Security patrolling	0	Assessed by last three years average
	Total	**3998.72**	

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

Sl. No.	Activity	Mandays
1	**T**	16168.75
2	**R**	14987.34
3	**M**	14797.82
4	**S**	3998.72
Total Mandays of 'T R M S'		**49952.63**

Total man days required - 49953 / year

All T,R,M,S activities listed are included in MCNTM formula and arrived the total maydays requirement as 49953. Based on the field inspection and study, it is understood that some of the activities are left out by the section and some other works are dealt through contracts. Hence, such activities are considered to the extent of actual staff deployment while evaluating the man power.

3.7 **The following activities are altered to suit the present level of requirement.**

As per rational formula the total manpower required to maintain for all the "R" activities is derives as 159 Man Days per KM per annum.

R 2 – Shallow Screening:

After the utilization of Heavy Track Machines Maintenance, the need of unit/gang maintenance in Shallow Screening is not fully required as rational formulae; it is mainly used for LC gates road side approaches i.e the length of 30 Sleepers, creepers and grass penetrated area inside formation etc are being done by the Railway Staff. Also, yard areas in this zone an agreement is in progress for this activity by private agent; hence, Man power required for the Shallow Screening is not allowed fully.

Moreover, the Man power requirement of shallow screening is 55 Mandays/Km in MCNTM (Total Mandays requirement for R activity is 159/Km), which is equal to 35% of R activities if deed fully. Hence, the study team recommended to deduct the mandays of shallow screening and shallow screening correction also from TRMS formula.

However, the study team allowed 20% of 35% of R activities for, after every monsoon, unexpected rain in the approach of LC gates, Station approaches,

track where nearby drainages etc, the shallow screen must be done to avoid choking of ballast, resulting rail fractures and weld fractures.

3.8 Hence, the mandays requirement for shallow screening is calculated as below.

Total mandays for shallow screening	=	55 mandays /Km
20% of 55 mandays	=	11 mandays /Km
Total track 94.267 Km is (11 x 94.267)	=	1036.93 say **1100** mandays

Therefore, 1100 mandays is allowed for shallow screening.

3.9 **Activity M in M7 water man duty.**

As per the records maintained by SSE/P.Way/SRR, it was observed that no waterman has been provided exclusively to supply the water for 10 gangs (TRMS) for more than a decade. The daily duty hours for the gang strength are 8 hours. By utilizing one staff exclusively to bring the water is not justified.

These 10 gangs available for which the requirement is projected as 2940 man days per year for exclusively bringing drinking water for the Unit staff while on duty.

Since, this jurisdiction is not isolated open area also the whole section stations, inside the yards all have water facility. Also, to carry required water individual water bottles (Milton made – 2 liters.) was supplied to every Track man by the department. Hence, the work study team has not considered for allowing of 2940 man days exclusively for water man duties, but these mandays is allowed to work as need base such as materials handling from other depots, official uses for registers maintenance etc. on condition basis.

Gate Keeping:

2920 mandays is allowed in TRMS formula for gate keeping of 2 manned Special Class & 1 – B1 LC gates, but the work study team is calculated the requirement of manpower separately based on LC gates Yardstick. Thus the gate keeping of 2920 mandays is deduced from the TRMS formula.

M-8 Store activity

1095 Man days are allowed in TRMS formula for store activity of 1 location, but the work study team is calculated the requirement of manpower separately based on need base. Hence the store activity of 1095 mandays are reduced from the TRMS.

3.10 **Scoring through the deduced Man Days :**

Sl. No	Activity	Reduced Mandays	Remarks
1	R 2 – Shallow Screening	4146	35 % of total R activities (14987.34) is 5246 and 20% of 5246 allowed as 1049 say 1100 mandays, the net deduced value is 4146 (5246-1100).
2	M7 – Water Man Duty	2940	Given by T R M S
3	Gate keeping at level crossing	2920	Given by T R M S, but manpower requirement is based on yardstick of LCs
4	M-8 Store activity	1095	Man power arrived on need basis.
	Total	**11101**	

3.11 **Gang/Unit Strength Requirement :**

Total mandays of T+R+M+S (49953 – 11101) = 38852

Gang/Unit Strength calculation is based on T R M S formula

i.e Total man days of (T + R + M + S) = 38852/294

Gang/Unit Strength (Track Maintainer + RG for Keyman)

= 132.14 say **132** men

Therefore, Gang/Unit Strength (Track Maintainer + RG for Keyman) = 132 men

3.12 Contract works undertaking for ADEN/SRR and other units:

Cost of Outsourcing activities:

As per the agreement in position at ADEN/SRR Sub-division, the following works were undertaken of ongoing and proposed through contract in SSE/PW/SRR.

TABLE – I

On going contract:

Sl. No	Description of Work	LOA	Commencement date	Estimated cost of work Rs.	Contractor
1	SSE/PW/SRR Section – Rag picking and disposal of garbage from mid section in entire width of the formation/muting for a period of two years (730 days)	J/W.148/6966 DT.14.11.2017	01.12.2017	2534776	M/s. A.R. Constructions
2	PTJ-SRR/(BG)- Through Turnout Renewal (CMSC+CS)-35 sets, Renewal of Points & crossings in 1 in 12-24 ets., 1 in 8.5-11 set with CMS crossings curved switch and lead rails.	J/W.148/6923 dt.06.03.2018	22.06.2019	6098680	K.K. Biju
3	SSE/PW/SRR-Proposed supply of one light commercial vehicle of 5MT capacity for transportation of Railway materials for a period of two years (600 vehicle days)	J/W.148/7019 dt.29.03.2018	01.05.2018	1644003	M/s. T.P. Saw Mill
4	PTJ-SRR section-CTR (P) for the length of 4.135km of existing 52 Kg 90 UTS rails as LWR on PSC sleeper 1660 Nos/KM with elastic fastenings between km 572.130-573.530, 575.700-577.000 on up line and Km 577.000-578.435 on single line including.	J/W.148/7017 dt.22.05.2018	23.12.2018	1468662	K.K. Biju
5	PTJ-SRR-MAQ Section – Replacement of girders with PSC/R Slab(2 Bridge) 1) Br.No.833 (1x12.190mg at KM 607/300-400) – Proposed replacement of girder with 1x12.190m PSC slab between PUM and KTU stations.	J/W.148/6942 dt.17/01/2018		5580773	M/s.CVM & Co.
6	ADEN/SRR Sub-division proposed cutting of trees standing either side of track TIR-1129, SRR=1318	J/W.148/7089 dt.17.10.2018		1719199	
7	SRR-ERS-SRR-CLT-PGT-PGTN & SRR-NIL Section-CTR(P) for a length of 4.15 km with new 60 kg 90 UTS rails a LWR on PSC Sleeper 1660 Nos/Km with elastic fastening at various locations by manual laying (2.800 km between SRR-LT Section both UP & DN line and 1.354 km Dn line between SRR-LT section) and TRR(P)24.018km with 60 Kg 90 UTS rails at various locations (16.00 km between PGT-PGTN & SRR-NIL section on SL and 8.018 km between SRR-LT on Dn &Up line)	J/W.148/7066 dt.31.12.2018	08.12.2019	32237056	K.R. Baiju
8	PTJ-SRR & SRR CLT Section: Through Renewal of fittings and fastenings of PSC Sleepers for a length of 163.509 km.	J/W.148/7015 dt.31.12.2018		26635497	K.R. Baiju

	2019				
9	PTJ-SRR section CTR(P) or a length of 3.07 km with long 60 kg 90 UTS rails as LWR on PSC Sleeper 1660 Nos/KM with elastic fastenings between km 492.000-495.075 on DN line by SQRS & TRR(P) 2.170 km with 60 Kg 90 UTS rails between 573.530-575.700 on DN line.	J/W.148/7113 DT.10.01.2019		8820783	K.K. Biju
10	Sr.DEN/E/PGT jurisdiction a) TRR(CS+CMSC) on points and crossings including TFR 12 sets (1 in 12) and 53 sets (1 in 12-45 Sets, 1 in 8.5 Sets & 1 in 16-3 sets)	PGT Div-Engg/PGT-Works-2019-N3-11/0153230000 4532 DT.06/08/2019.		3327730	M/s. S & J
11	Proposed collection and trainingout 50 mm machine crushed hard stone ballast at Shoranur Dept.	J/W.148/7129/0 1502780004552 DT.06/08/19	28.08.2019	36660000	M/s. Southern Rocks
12	Zonal contract for execution of works and supply of materials in Zone C SE/Pway/Shoranur from Km 566.54 OTP (excl) to km 609/21 KTU (INCL)-SRR-ERS line km 0.00-1/94 RES line 0.00 SRR-NIL line 0.80 NIL Road for a period of one year from 01.07.19 to 30.06.2020.	J/W.149/Zone C/2019-2020 dt.16.09.2019	06.11.2019	9000000	M/s. Alikutty & Co.
13	Removal of vegetation jungle bushes of mid section along side the track in between the tracks in UP & DN lines in DEN/E/PGT Jurisdiction.	PGT DIV-ENGG/PGT Works-2019-N6-12/0119696000 60 dt.06/09/2019		3439250	M/s. R. Murugesan
14	PGT division – conducting detailed survey with total station equipment and submitting reports, preparation of Engineering scaled plan.	LOA No.PGT Divn.-Engg/PGT-Works-2019-N7-08/1021092000 8095 dt.16.10.2019		1543604	M/s. Good Land Survey Pvt. Ltd.,
15	TTR(CS+CMSC)-15 sets in Kanjikode and Shoranur Yard (TRR on Points & Crossings) (1 in 16-2 sets, 1 in 12-6 sets 1 in 8.5-6 sets and Trap – 1 set)	LOA No.PGT Divn.-Engg./PGT-Works-2019-N6-17/0153230000 9049 DT.01.11.2019		2989475	M/s. S&J Enterprises.
16	SSE/W/PGT and SSE/SRR section- proposed preparatory works in connection with GM inspection.	LOA No.J/W.148/722 3 dt.09.12.2019		10194790	M/s. Muthu Construction
	TOTAL			**167044278**	

TABLE – II
Proposed Contract:

Sl. No.	Description of Work	Estimated cost of work
1.	Renewal of conventional 52 Kg SEJs on Both UP & DN lines (31 Nos.) in SSE/PWAY/SRR Section	21 Lakhs
2.	Standardisation of cutting with RCC side drain at Km 569/060-569/620 in UP & DN line and cess making up on UP & DN line between OTP-MNUR stations.	1.79 Crore
3.	Protecting Track at vulnerable cutting at Km.583/5-582/31 UP line between SRR-KRKD stations in SSE/PW/SRR section.	12 Lakhs
4.	Strengthening of Major bridge approaches in Section Br.No.713 UP, 713 DN, 766 UP, 766 DN, 809 DN, 823 UP, 823 DN, 829 UP, 829 DN, 833 UP & 833 DN (Total – 12 Bridges). TSR of existing 52 Kg. sleeper to new 60 Kg sleeper for a length of 150 m over Br. No.829 DN.	1.2 Crore
	Renewal of guard rail sleeper on Rd 2 & 3 at PTB yard under FOB No.791A and on Rd 2 & 3 at KTU yard under FOB No.837A.	
5.	Renewal of defective/damaged/glued joints at MNUR, SRR, KRKD, PTB, PUM & KTU stations(Total 190 Nos.) and removal of existing dummy glued joints after electrification work between SRR-KTU.	1.10 Crore
6.	Providing Standard Height Gauges (IRS Type) in LC No.166 A (Total 1 No.) providing standard concrete speed breaker at LC No.166A (Total – 1 No.)	60 Lakhs
7.	Easing out of sharp curve in Rd 5, PF line at SRR yard duly altering the existing PF No.5 at CLT end for a length of 120 m from chainage 0.850 to 0.970 to bring the versine variation within permissible limits.	95 Lakhs
8.	Construction of Trolley refugees along UP & DN line (70 Nos.)	35 Lakhs
9.	TSR on switch portion of points crossing in SRR yard 1 in 8.5 pt. No.104 A, 104B, 107 A, 107 B, 108 B, 111 A, 115, 119 B, 121 B, 124 B, 124 A, 130 B & 1 in 12 Pt. No.105 B, 110 A, 110 B, 114 & 121 A (1 in 8.5 = 11 Nos. & 1 in 12 = 5 Nos.)	45 Lakhs
10.	Proposed deep screening with BCM and ancillary works after BCM for a length of 7.46 Km on DN line and manual deepscreening of station yards and isolated location where working of BCM is not possible for a length of 9.559 km (Total 17.019 km).	1.15 Crore
	TOTAL	**7.92 Crores**

From the above tables – I &II, the total amount of maintenance contract for both ongoing and proposed value is Rs.16,70,44,278 and Rs.7,92,00,000 respectively. Generally, the work study team has taken the 35% to 40% of the contract/outsourcing value of maintenance work. From the above huge amount the work study team has taken 30% of the proposed contract value alone i.e., Rs.7.92 Crores is works out to Rs.2,37,60,000/-.

So, this value is taken and converted into track maintainer for outsourced activities that can be deduced from the sanctioned strength of track maintainer to arrive the net requirement of track maintainer after outsourced activities based on TRMS formula.

Outsourced value (30% of proposed contract value) - Rs. 2,37,60,000/-

The contract cost per month (Rs.23760000/12) - Rs. 19,80,000/-

Mean pay of Track maintainer III / month	-	Rs. 48614/-
Converted into Track maintainer(Rs.1980000/48614)	-	40.73 say 41 staff
L.R. at 12.5%	-	5.13 say 5
Total staff on account of outsourcing	-	**46** staff
Hence, the Net Gang/Unit Strength (Track Maintainer)	**= 132 – 46**	**= 86 TRMNTR**

3.13 **Supervisors :-**

There are 4 posts of SSEs and 2 posts of JEs in the sanctioned list and the actual is 6 & 1 respectively leading to 1 surplus post. The man power requirement of supervisors of this unit is calculated as follows:

Over all in charge SSE	=	1
SSE/PW/SRR (Sub-section)	=	2
SSE/PW/SRR (LR/Special Works)	=	2
JE/PW/SRR (Section)	=	1
Total	**=**	**6**

Hence, the present system of working the sanction of 6 Supervisors has allowed to continue as such.

Track Machine staff at HQ level:-

In present trend of Mechanised maintenance, about 1000 staff approximately operated for track maintenance in Headquarters Track Machine Unit, of which, a portion is chargeable to this section also ie., to be taken at HQ level.

3.14 **Artizans :-**

There are 6 posts of Artisan staff sanctioned in various trades like Blacksmith, Carpenter and Welder, but the actual is 5. This study recommends multi skilling for these staff including training for welding, trolley working etc., and they can be used for emergency patrolling also when they are spare. Their movements and programmes are also show the scope for this proposal.

The average failure of LC gates 10 approximately and the No. of Rail Fracture and Weld failures is 5 for 2018 and 3 for 2019. Further the total number of LCs both Engineering and Traffic gates is 4, the sanctioned of Black smith posts are 2 in various grades and actual is 3. The areas of other works for blacksmith are very limited. It is also pointed out that the TRMS calculation

already contains some allocation of man power strength for LC gates overhauling and rectifying damage in R4 & R12 under R activities.

Also two Welders in Gr.III are allowed for regular welding work. After the introduction of PSC sleeper the carpentry works is merely less, even though the bridge timbers (sleepers) are also modified to channel sleepers and moreover bridge sleepers are manufactured and mounted through contract.

From the above, it is concluded that the sanction of 6 Artizans in various trades, out of which one vacant post of Carpenter/Gr.III is recommended for surrender. The remaining 5 Artizan sanctioned posts are allowed to continue as such.

3.15 **Track mate**

As per CTE's order No.3/2005 vide Circular No.W/506/14/circular dated 04.10.2005 in para 4, Two gangs constitute a unit and each unit should have one PW Supervisor and one Trackmate (at present PWS post is abolished and their duties are shouldered into Trackmate). Such being the case, the 10 gangs are converted in 5 units, therefore the number of Trackmates required for these sections is 10 working posts and study team also allowed **10** Trackmate posts. The LR provision for Trackmate has been provided while calculating the requirement of gang strength.

Moreover, the latest **Railway board order is conversion from track mate, keyman, trolleyman, gate keeper, store watchman etc. to track maintainer I, II, III, & IV.**

3.16 **Trolleyman**

One trolley requires 4 trolleymen for its working. Due to the mechanical maintenance and improvement in road traffic facilities, the movement by trollies by the inspecting officials has come down drastically. Since the railway materials are carried by road / lorry by the contractor and the requirement for Rail Lorries is almost non-existent.

3.16.1 **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 four 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.

There are four trolleys available in PW/SRR section out of which three push trolley and one material trolley. The normal speed of trolley is 10 kmph approximately. The E&R Directorate of RB had also advised the usage of trolley by turn basis and reduction in number of trolley and trolleymen. The no. of trolley movement by three Supervisors viz. SSE/PW/SRR(IC) – 31; SSE/PW/SRR (Subsection) – 14 and SSE/PW/KTU (Subsection) – 19 in toto 64 trolley movements for the last six months and average movement per month is 11 (64/6) and ADEN/Officers movement 47 for one year and average movement per month is 4 (47/12). Therefore, the average movement per month is 15.

3.16.2 The average trolley movement per month is 15 and the trolley working time is surely 4 or 5 hours per trolley inspection due to line block problem and also this section have double lines. But the supervisor movement for regular track inspection and accompany with higher officials, other departmental purposes, etc. are limited, it must be two full gang of trolleymen required for track inspection.

3.16.3 Hence the study team allowed two full gang of trolleymen is more than sufficient to the requirement. Hence, the requirement of trolleymen can be allowed as 8 staff. The LR provision for trolleymen has been given while calculating the requirement of gang strength. As per the latest correction slip in IRPWM the fifth man is allowed for trolley movement for carrying tool box. The fifth man is allowed from the staff allotted for Office/Store/material handling/LC census etc.,

The requirement of Trolleymen posts is 8.

3.17 **Gate Keepers:**

There are 3 Engineering Manned LC gates, their classification as two Special class and one is B-1, which is decided on the basis of TVU. So, the manpower requirement of 3 manned LC gates is as follows:

For 2 Special LC gates (2 x 3)	=	6
For 1 B-1 LC gate (1x2)	=	2
Sub-Total	=	8

RG at 16.66%	=	1.33 say as 2
Total	**=**	**10**

The LR provision for Gate keepers have been given while calculating the requirement of total strength.

The requirement of Gate keepers for 3 manned LC gates is 10.

3.18 **Evaluation of ministerial staff:**

At present, there is one Ministerial staff of OS/WB available in the sanctioned list and the actual is 1. So, the study team is allowed as such.

Ministerial staff requirement = 1 staff.

3.19 **The cumulative staff strength of track maintainers:**

Track maintainer	-	86	(Para No.3.12)
Trackmate	-	10	(Para No.3.15)
Trolley	-	8	(Para No.3.16)
Gate keepers	-	10	(Para No.3.17)
Keyman (One Keyman for each gang) (RG is given by TRMS in M-activities)	-	10	
Store watchmen	-	2	
Sub Total	**-**	**126**	
L.R. at 12.5% (15.75)	-	16	
For Trainee reserve need basis	-	2	
For Office and Material handling at Depot or other places, LC census etc., As need basis	-	4	
Total Track Maintainer	-	148	

Sanction Vs Requirement of Track maintainer:

Category	Sanction	Actual	Requirement	Surplus
Track Maintainer Gr-I	18	16	18	0
Track Maintainer Gr-II	35	29	35	0
Track Maintainer Gr-III	34	36	34	0
Track Maintainer Gr-IV	71	62	61	10
Total	**158**	**143**	**148**	**10**

3.20 **The total Sanction Vs Requirement of SSE/P.Way/SRR**

Sl. No	Category	Sanc	Act.	Req.	Surplus
	Supervisors				
1	SSE	4	6	4	0
2	JE	2	1	2	0
	Total (A)	**6**	**7**	**6**	**0**
	Ministerial Staff				
3	OS	1	1	1	0
	Total (B)	**1**	**1**	**1**	**0**
	Artisans Staff				
4	Sr. Technician (Welder)	1	0	1	0
5	Tech. Gr.III (Welder)	1	3	1	0
6	Helper (Welder)	1	0	1	0
7	Tech. Gr.I (Black smith)	1	0	1	0
8	Tech. Gr.II (Black smith)	1	0	1	0
9	Tech. Gr.III (Black smith)	0	2	0	0
10	Helper Black smith	0	1	0	0
11	Tech. Gr.I (Painter)	0	0	0	0
12	Tech. Gr.I (Carpenter)	1	0	1	0
13	Helper (Small track machine)	3	0	3	0
14	Tech. Gr.I (STM)	0	3	0	0
15	M.T. Driver	1	0	1	0
	Total I	**10**	**9**	**10**	**0**
	Track Maintainer (Mate, Key man, Gate Keeper, store watchman & Trolley men etc,)				
16	Track Maintainer Gr-I	18	16	18	0
17	Track Maintainer Gr-II	35	29	35	0
18	Track Maintainer Gr-III	34	36	34	0
19	Track Maintainer Gr-IV	71	62	61	10
	Total (D)	**158**	**143**	**148**	**10**
	Grant Total (A+B+C+D)	**175**	**160**	**165**	**10**

3.21 **<u>Sanction Vs Requirement</u>:**

Sanction	Actual	Requirement	Surplus
175	160	165	10

3.22 **Summary of Recommendation**

The 10 vacant posts in Track Maintainer-IV in GP Rs.1800 are found excess to the requirement and the same may be surrendered and credited to the vacancy bank.

Total : 10 Vacant Posts

3.23 **Scope of Outsourcing and the current GM approval for Permanent Way activities out sourcing:**

The CMCNTM committee ear marked about 20 track maintenance works for out sourcing in the initial report it (CMCNTM report part – I /Vol-II/Appendix 8) and it is periodical review at board level. In 2013, Railway Board has authorized General Managers to make available man power through 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).

3.24 The following activities are approved by General Manager for outsourcing:

"T" Activities

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

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

T_4 - Repair Welding

"R" Activities

R_4 - Overhauling of LC gates

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

If the above activities are outsourced, will result in saving of hand some of manpower which is not detailed in the study but the division may initiate the out sourcing the above activities and after the achievement of out sourcing the equivalent manpower may be deduced and compile for vacancy bank.

CHAPTER – IV

4.0 PLANNING BRANCH'S REMARKS ON CO-ORDINATING OFFICER'S VIEWS:

Co-ordinating Supervisors Views:

1. The contract work mention in this work study are not maintenance oriented but creation/renewal of assets which requires additional man power during execution and less affect in maintenance. Hence, deduction of 46 men is not justifiable.

Planning Branch Remarks:

Not agreed. The study team has not taken creation/renewal of assets, but taken only 30% of the contract value for some works involved in T, R, M & S activities. Hence the study team taken in to account of 46 men is in order.

Co-ordinating Supervisors Views:

2. In the case of artisan – It is true that bridge timbers are no more now. But the steel channel sleepers give more trouble and works to Black Smith, each sleeper got 10 bolts and nuts with different types of tapered washers. If not attended monthly, bolts and nuts will fall into river. Reduction in man power tends the staff to use short cut methods and lead into accidents. This can be seen in every work spot accidents. Being in track circuited area, when ever track circuit fails all MS clips to be removed by removing bolts and nuts for finding out fault and to be renewed faulty insertion in track circuited area. Hence the work of carpenter post changed to Black Smith. Now a days, most of the days welding work to be done departmentally. Each welding team has at least 6 men, this is not taken into account in the work study.

Planning Branch Remarks:

No agreed. The works like Black smith, welding etc., are done by Artizan staff along with particular Gang strength by the application of multi-skilling. The bridge attention and maintenance activities are carried out based on IRBM and IRPWM, so the staff may utilized judicially as per the directives of Bridge manual and P.way Manual to avoid accidents against the personnel safety. Therefore, as stated by the Co-ordinating Supervisor the above works are routine and mandatory works/duties of P.way staff.

Co-ordinating Supervisors Views:

Due to introduction of TMS at all locations of track including in yards chainages are to be marked at every 10m on rail and to be repainted before it faded off. SRR section consists 75% of curves. In all curve at every 10m station number, versine, super elevation etc., to be painted in every 6 months whenever variation occur. All points & crossing board, locations for measurements like versine stations at every 3m are to be painted in every six months, more over hectometer posts, gradient posts, curve boards, point boards, Bridge No., plaque, boards, gang limit board, section limit board, reference pillars, SEJ Boards etc., are to be painted regularly. Hence a sanction of Artizan post painter is required in this section. Hence, kindly keep sanctioned strength of artisans as six.

Planning Branch Remarks:

Not agreed. The said maintenance works are coming under TRMS formula, if any new activities involved the same may be included in the P.Way section TRMS, with the approval of competent authority. Moreover, as stated by the Co-ordinating Supervisor the above works are almost routine and mandatory works/duties of P.way staff.

Co-ordinating Supervisors Views:

3. The post of PWS abolished and made as JEs. Hence one JE may be posted as incharge of 2 gangs; previously also there was no change in their wages (PWs & JEs). Hence requested to add an additional sanction for JEs. One more problem for converting the gangs into unit is inconvenient head quarter. Hence in this section both type available. BD special available in this section also not taken into account. SSE/PW with minimum 4 men required to maintain BD special.

Planning Branch Remarks:

The work study team not identified for surrender any Supervisory post. At the time of collection of data for work study the data for BD special not given. However, for periodical mock test for BD special the yard gang, staff utilized in office and LR staff may be utilized.

Co-ordinating Supervisors Views:

4. There is fundamental mistake in the calculated of Trolley men. Trolley men are not only for pushing the trolleys but also required for all inspection, checking and supervision. In fact they are doing all measurements, for checking curves for SSE, JE, ADEN, DEN and all above Officer's inspection the same trolley men are checking the assets. Even a curve measurement required 4 men + SSE/JE, like each and every assets required some men for checking. Following are some of the assets to be checked.

Curve	=	4 men
P&C	=	4 men
SEJ	=	3 men
Toe Load	=	4 men
Liner Seat Correction	=	4 men
Ballast Inspection	=	3 men
Rail	=	2 men
Joggle Fish Plate Opening & Examination	=	4 men
Bridge Inspection	=	4 men
Cutting Inspection	=	2
Track Machine working	=	4
Boundary Checking NOC Measurements etc.,	=	4 men

Trolley men are required at all special work locations to assist in checking the quality and ensuring safety of works. Hence, all SSEs/JEs (Section/Sub Section) should have 5 trolley men each for maintaining track in safety and to keep the records correctly. After introduction of TMS whenever an asset is renewed or created, its location, nos, name, specifications to be recorded and to be up dated in TMS. For proper updating of TMS proper trolley men and office staff required. Hence minimum 15 nos. of trolley man is required in SRR section.

Planning Branch Remarks:

Not agreed. The requirement of trolley men has assessed based on trolley movement per month, if any additional men required for checking/measurement etc., the gang staff available in the particular gang and staff utilized on office or even staff allotted for trainee reserve may also be utilized. Moreover, the trolley movement is very limited due to line block problem since the route is busiest one. Hence, the work study team allowed 8 men for trolley movement holds good.

Co-ordinating Supervisor's Views:

5. One OS/WB could not do all works related to SSE/PW/Office. Now store module is to be introduced and material transaction will be done through TMS. Hence, requested that the existing sanction to be maintained and two additional posts may be recommended for digital/computer work in office.

Planning Branch Remarks:

The proposal for creation may be processed with divisional level with the approval of competent authority.

Co-ordinating Supervisors Views:

6. In this work study leave reserve is calculated at the rate of 12.5% . But after increasing the number of women track maintainers, the leave like CCL, ML, Sick etc., increased and this is not taken into scope of this study. The other problem is inefficiency/inability of track women's in maintenance activities makes requirement more man days for maintenance of track in safe condition. None of the women track maintainers in this section are useful in night patrolling, in rail renewal, welding, packing, sleeper renewal or any safety works. 25% of track women numbers to be sanctioned additionally in gang strength. Total 33 nos. of track women available in this section. Hence, 8 number of post to be sanctioned additionally.

Considering all the above facts, kindly recommend to increase our sanctioned strength accordingly.

Planning Branch Remarks:

As per Railway Board`s guidelines LR (Leave Reserve) has been provided in the work study report. There is no separate provision of LR for granting CCL/PL/ML. These special leave have to be granted duly utilizing the current provision of LR only. Hence, the Co-ordinating Supervisor's view on the above issue is not agreed to. **The Division may distribute Women track maintainers in a balanced basis in all the SSE/P.WAY units.**

<u>ADEN/SRR REMARKS:</u>

Co-ordinating Officers Views:

i) Man days lost regarding Monsoon patrolling – The priod of monsoon patrolling is from 1st June to 15th September every year. It covers 1190 days in a year. There are 11 beats in SSE/PWAY/SRR section. This year due to limitation of traffic, night patrolling is not introduced in full. The available strength is insufficient if patrolling is introduced in full swing.

Planning Branch Remarks:

The said Monsoon patrolling are comes under TRMS formula, if any new activities involved the same may be included in the PW sectional TRMS with the approval of competent authority.

Co-ordinating Officers Views:

ii) Extra man power for defective rail/weld attention (IMR attention) – As per the correction slip No.3 of USFD Manual, 2 OBS within 4 mtrs. is classified as IMR. This IMR rails are to be renewed within 3 days. Extra man power is required for this work.

Planning Branch Remarks:

Defective Rail/weld attention (IMR attention), the man days provision is given in TRMS formula. The said work may be attended on priority basis.

Co-ordinating Officers Views:

iii) Staff deputed for USFD testing Team – 1 track man is directed to SSE/PWAY/USFD/PGT. There is Man days lost on this account in SRR section.

Planning Branch Remarks:

If USFD team is needed assistant permanently, the division may create such post. Deputing one Track maintainer from the section is not agreeable.

Co-ordinating Officers Views:

iv) Staff deputed for Painting work – At present there is no Painter in SSE/PWAY/SRR section. Track maintainers are deputed for painting work for brightening the curve boards, hectometer posts, LC details, painting LWR, Points and Crossing, Bridge boards etc.,

Planning Branch Remarks:

Noted. If any post needed for such activity, post may be created/Outsourced for by the division.

Co-ordinating Officers Views:

v) Child Care Leave – There are 28 lady gang staff in SSE/PWAY/SRR section. Out of 28 except 4 seniors, all the 24 are eligible for CCL and they are frequently

availing the facility. In this year total 900 mandays lost on this account. The man days lost on account of CCL is not considered in this work study.

vi) Man days lost on account of Maternity leave – 2 lady staff availed maternity leave during the year. 360 man days lost on account of maternity leave.

vii) Man days lost on account of Paternity Leave – 45 Man days had been affected on account of paternity leave of staffs.

Planning Branch Remarks :
For Para v) vi) & vii):

As per Railway Board`s guidelines LR (Leave Reserve) has been provided in the work study report. There is no separate provision of LR for granting CCL/PL/ML. These special leave have to be granted duly utilizing the current provision of LR . Hence, the Co-ordinating Officer's view on the above issue is not agreeable to. **The Division may distribute Women track maintainers in a balanced basis in all the SSE/P.WAY units.**

Co-ordinating Officers Views:

viii) Man days lost on account of LWP – Three staff of SSE/P/SRR availed LWP during the year – Man days lost on this account is 255 days.

Planning Branch Remarks:

As per Railway Board`s guidelines LR (Leave Reserve) has been provided in the work study report. There is no separate provision of LR on account of LWP.

Co-ordinating Officers Views:

ix) Man days lost on account of OMS/TRC Run – OMS Run in SSE/PWAY/SRR section is once in a month – 2 men is accompanying with SSE in OMS recording car to identifying KMs, Points & Crossings, bridges etc., Therefore affected man days 12 x 2 = 24 days.

Planning Branch Remarks:

As per RDSO guidelines the schedule of OMS/TRC Run, the required staff may be utilized in Office and also from LR or Trainee reserve.

Co-ordinating Officers Views:

x) Monitoring of USFD defects by joggling OBS defects are very much important in view of safety. Trackmen are to be deputed for this work that is not reflected in the work study while recommending for trackman surrendering.

Planning Branch Remarks:

The above mentioned work is a part of the Track maintainer's duty. There is no separate provision given for this work.

Co-ordinating Officers Views:

xi) Man days lost on account of LC road surfacing work – At present there is no bricklayer available in SSE/PWAY/SRR section. Track maintainers are being directed for brick layer work such as LC road surfacing work and bridge plastering work etc.,

Planning Branch Remarks:

Regarding utilization of Track maintainers, it is to be mentioned that there is a provision of Brick layer available in the sub-division which can be shared by other P.Ways.

Co-ordinating Officers Views:

xii) Routine inspection of track is a basic vital item, in order to find the deficiencies maintenance of track to the prescribed standard for ensuring safety. For this push trolley inspection is a must to carry out the inspection, so that the track can be assessed to the full satisfaction without compromise. For push trolley four men are required other than a look out man. These inspections are compulsory for JEs/SSEs/ADEN. Apart from the scheduled inspections, higher officials are doing P.Way Inspections. In addition to the working of trolleys, the trolley men are utilized for the measurement of track parameters, curves LCs etc., Trolley men are always accompanying the concerned SSEs/JEs to carry out all works such as rail/weld failure, accident, accompanying special inspection etc., Hence 4 trolley men for each SSE/JE is unavoidable. In this account 12 Trolley men post essentially required to carry out all safety inspections.

Planning Branch Remarks:

The requirement of trolley men has assessed based on trolley movement per month, if any additional men required for checking/measurement/look out man etc., the gang staff available in the particular section, staff utilized on office or even staff allotted for trainee reserve may also be utilized. Further, S activity in TRMS formula, 594 man days has allowed for look out man duty. Moreover, the trolley movement is very limited due to line block problem since the route is busiest one. Hence, the work study team allowed 8 men for trolley movement holds good.

Co-ordinating Officers Views:

xiii) Renewal of broken fittings and fastening of switch portion at SRR yard along with Keyman patrolling, the additional staff requirement daily is one blacksmith with two trackmen to avoid failures on switch portion and Bridge No.2 UP & DN – 3 X 365 = 1095 Man days annually.

Planning Branch Remarks:

The staff allotted for yard gang may be utilized for the said work. The same has been commuted in TRMS formula.

Co-ordinating Officers Views:

xiv) Greasing of gauge face of turn outs as well as outer rails of connecting curves from one end to another end of yard, consumes two trackmen in non-monsoon and four Trackmen in monsoon seasons – 3 x 365 = 1095 Man days.

Planning Branch Remarks:

For the said work man days is already allowed in M activity in TRMS formula.

Co-ordinating Officers Views:

xv) In SRR yard there is 86 Nos. of points & crossings. Since the fittings on Points & Crossings, switch and crossing portion are prone to heavy corrosion, anticorrosive painting is to be done once in six months. An estimated 1032 man days are exhausted on this account annually. On points & crossings track circuit affects punctuality as SRR is a major junction connected with three double line section, one single line section including TVC-SRR 'B' Line, and CLT-SRR 'D' Line and SRR-NIL 'E' Line. Apart from SRR yard, the other important yards including MNUR, KRKD, PTB PUM & KTU are being maintained by Keyman during non-monsoon season and one additional Trackman is being deployed in monsoon season to maintain the standard of points & crossing for four and half months. So additional staff strength of 135 days per year and hence for 5 yards 5 x 135 = 675 man days required annually.

In view of the above facts, it is recommended not to surrender the 10 posts of Track maintainers as it will lead to manpower shortage affecting safety.

Planning Branch Remarks:

The said maintenance works are comes under TRMS formula, if any new activities involved the same may be included in the PW section TRMS with the approval of competent authority. Moreover, as stated by the Co-ordinating Officer, the above works are almost routine and mandatory works/duties of P.Way staff.

Hence, the recommended surrender of **10 post of Track maintainer may be surrendered at the earliest.**

***

CHAPTER – V

5.0 FINANCIAL SAVINGS:

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	Track maintainer – IV	1800	10	43,817	52,58,040
Total			**10**		52,58,040

ANNEXURE-I

Sanction, Actual and Vacancy position submitted by Sr.DPO/PGT

Sl. No	Category	Grade Pay	Level	Sanc.	Act.	Vac.
1	SSE	4600	7	4	6	-2
2	JE (1 trainee)	4200	6	2	2	0
3	OS	4200	6	1	1	0
4	Sr. Technician (Welder)	4200	6	1	0	1
5	Tech. Gr.III (Welder) (1trainee)	1900	2	1	3	-2
6	Helper (Welder)	1800	1	1	0	1
7	Tech. Gr.I (Black smith)	2800	5	1	0	1
8	Tech. Gr.II (Black smith)	2400	4	1	0	1
9	Tech. Gr.III (Black smith)	1900	2	0	2	-2
10	Helper Black smith	1800	1	0	1	-1
11	Tech. Gr.I (Painter)	2800	5	0	0	0
12	Tech. Gr.I (Carpenter)	2800	5	1	0	1
13	Tech. Gr.II (STM)	2400	4	0	3	-3
14	Helper (Small track machine)	1800	1	3	0	3
15	M.T. Driver	2800	5	1	0	1
16	Track Maintainer Gr-I	2800	5	18	16	2
17	Track Maintainer Gr-II	2400	4	35	29	6
18	Track Maintainer Gr-III	1900	2	34	36	-2
19	Track Maintainer Gr-IV	1800	1	71	62	9
	Total			**175**	**161**	**14**

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18

18/1

SOUTHERN RAILWAY

Headquarters office
Works Branch
Chennai 600 003
Dt. 21.11.2009

No.W.OM/45/Post/General.

Sr.DEN/Co-ord/SA, PGT, TVC,TPJ & MDU

Sub: Yardstick for skilled category in Engineering Department of SA, PGT, TVC, TPJ & MDU Divisions.

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It is proposed to adopt the following yardstick for the posts of Artizans in SA, PGT, TVC, TPJ & MDU Divisions.

S.No.	Post	Yardstick	Remarks
1	Blacksmith	2 nos for each SE/P.Way	The yardstick is for maintenance of all assets under the SE/P.way including lifting barriers at level crossings. The average work load for each blacksmith is taken as 10 LCs.
2	Blacksmith Khalasi	2 nos for each SE/P.Way	The yardstick is for maintenance of all assets under the SE/P.way including lifting barriers at level crossings. The average work load for each blacksmith Khalasi is taken as 10 LCs.
3.	Additional Blacksmith for maintenance of manned level crossings (extra over the item (1))	1 no. for every additional 25 manned LCs or part thereof over and above 20 manned LCs in each P.Way section	For e.g. in a P.Way section if there are 45 manned level crossings, the first 20 will be maintained by Blacksmiths at S.No 1 and one more additional Blacksmith shall be created for the balance 25 manned LCs

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MANPOWER

MANDAYS M

DIV PALGHAT

Senior Section Engineer Unit Name : SRR

AS ON 01-Apr-19

Gauge	Monsoon Patrolling		Hot/Cold Weather Patrolling of LWR					Vulnerable Locations		Gate Keeping			Rest Giver for Keymen		Waterman		Store Watchman		Total
	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	Mandays Required For M Activities
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
BG	10	4640.00	64.66	41.21	41.21	1236.30	494.52	3	762.00	3	3x365x3	2920.00	10	710.00	10	2940.00	1	1095.00	14797.82
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	10	4640.00	64.66	41.21	41.21	1236.30	494.52	3	762.00	3	0	2920.00	10	710.00	10	2940.00	1	1095.00	14797.82

MANPOWER

MANDAYS S

DIV: PALGHAT

Senior Section Engineer Unit Name: SRR

AS ON: 01-Apr-19

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	134	1619.95	844.00	2	812.00	872.96	2.74	805.56	0.32	0.19	594.01				0.00	3	882.00				0.00	3998.72
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	134	1619.95	844.00	2	812.00	872.96	2.74	805.56	0.32	0.19	594.01	0	0	0	0.00	3	882.00	0	0	0	0.00	3998.72

JGIM 09.01.2020

MANPOWER

GANG STRENGTH

DIV PALGHAT

Senior Section Engineer Unit Name: SRR

AS ON 01-Apr-19

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	94.27	16167.34	23108.48	14797.82	3998.72	58072.36	20	27	225			-225	
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	BG	94.27	16167.34	23108.48	14797.82	3998.72	58072.36	20	27	225	0	0	-225	0

18

(18)

570

SOUTHERN RAILWAY

Headquarters office
Works Branch
Chennai 600 003
Dt. 26.11.2009

No.W.OM/45/Post/General.

Sr.DEN/Co-ord/SA, PGT, TVC,TPJ & MDU

Sub: Yardstick for skilled category in Engineering Department of SA, PGT, TVC, TPJ & MDU Divisions.

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It is proposed to adopt the following yardstick for the posts of Artizans in SA, PGT, TVC, TPJ & MDU Divisions.

S.No.	Post	Yardstick	Remarks
1	Blacksmith	2 nos for each SE/P.Way	The yardstick is for maintenance of all assets under the SE/P.way including lifting barriers at level crossings. The average work load for each blacksmith is taken as 10 LCs.
2	Blacksmith Khalasi	2 nos for each SE/P.Way	The yardstick is for maintenance of all assets under the SE/P.way including lifting barriers at level crossings. The average work load for each blacksmith Khalasi is taken as 10 LCs.
3.	Additional Blacksmith for maintenance of manned level crossings (extra over the item (1))	1 no. for every additional 25 manned LCs or part thereof over and above 20 manned LCs in each P.Way section	For e.g. in a P.Way section if there are 45 manned level crossings, the first 20 will be maintained by Blacksmiths at S.No 1 and one more additional Blacksmith shall be created for the balance 25 manned LCs

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4.	Additional Blacksmith khalasi for maintenance of manned level crossings (extra over the item (1))	1 no. for every additional 25 manned LCs or part thereof over and above 20 manned LCs in each P.Way section	For e.g. in a P.Way section if there are 45 manned level crossings, the mainatenance of first 20 manned LCs will be assisted by Blacksmith khalasi at S.No.2 and one more additional Blacksmith khalasi shall be created for the balance 25 manned LCs
5.	Additional Blacksmith for maintenance of major yards (extra over the item (1) & (3)	1 blacksmith each for major yards i.e. SA, ED in SA division (2 nos.), PGT, SRR in PGT division (2nos.) ERS in TVC division (1 no.) GOC, TPJ in TPJ division (2 nos.)	
6	Additional Blacksmith khalasi for assisting in maintenance of major yards (extra over the item (2) & (4)	1 blacksmith khalasi for assisting maintenance of each major yards i.e. SA, ED in SA division (2 nos.), PGT, SRR in PGT division (2nos.) ERS in TVC division (1 no.) GOC, TPJ in TPJ division (2 nos.)	
7	Bricklayer	1 each for sub-division	These posts may be operated with any of the SE/P.Way to be decided by Division and shall be shared by other SE/P.way as per the programme to be issued by ADEN.

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8.	Bricklayer Khalasi	1 each for sub division	These posts may be operated with any of the SE/P.Way to be decided by Division and shall be shared by other SE/P.way as per the programme to be issued by ADEN.
9.	Painter	1 for each SE/P.Way	
10.	Welder	1 for each SE/P.Way	
11	Welder Khalasi	1 for each SE/P.Way	

Wherever the minimum above staff are not available, such requirement is proposed to be met by creating posts duly using the Staff Bank provision available either at division or Headquarters or surrendering excess Carpenters, Brick layers and any other posts identified as necessary.

(DANI THOMAS)
CHIEF TRACK ENGINEER

Sr. DEN/Co-ord	✓	ADEN/CTR	
Sr. DEN/ E		SSE/Drg.	
DEN/ ₹		Section	Estt
DEN/Br.		CH.OS	

1/12/09